Appendix to the Notice
of the Minister of Health
of 27 August 2021 (item 69)

Minister Zdrowia

Map of Health Needs

from 1 January 2022 to 31 December 2026

Warsaw, August 2021

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Glossary of abbreviations

OSC - outpatient specialist care

AOTMiT - Agency for Health Technology Assessment and Tariff System

CMJ - National Centre for Quality Assessment in Healthcare

COCIR - *European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry*

CRP- Central Register of Medical Practitioners and Dental Practitioners of the Republic of Poland

CRHP - Central Register of Healthcare Professionals

CIR - Central Insurance Register

CMH - Centre for Mental Health

DALY - *disability-adjusted life years*

DCC - Day Care Centre

DiLO - oncological diagnosis and treatment card

EAPC - *European Association for Palliative Care*

Eurostat - European Statistical Office

GBD - *Global Burden of Disease*

GUS - Statistics Poland

IHME - *Institute for Health Metrics and Evaluation*

ICD-10 - International Statistical Classification of Diseases and Related Health Problems

DRG - diagnosis-related group

EC- European Commission

KRUS - Agricultural Social Insurance Fund

HEMS- Helicopter Emergency Medical Services

MZ - Ministry of Health

NFZ - National Health Fund

NIK - Supreme Audit Office

NIZP-PZH-PIB - National Institute of Public Health – National Institute of Hygiene – National Research Institute

NHHC - night and holiday health care

NHP - National Health Programme

PFRON - State Fund for Rehabilitation of Disabled People

PHC - primary health care

EMS- Emergency Medical Services

PHCPS- Primary Hospital Care Provision System

REPMA- Register of Entities Performing Medical Activities

RA - rheumatoid arthritis

SDI - *Socio-Demographic Index*

ED - emergency department

CSS EMS - Command Support System of the Emergency Medical Services

EU – European Union

WHO - *World Health Organisation*

YLD - *years lived with disability/years lost due to disability*

YLL - *years of life lost*

CTT- community treatment teams

CTC - care and treatment centre

NCC - nursing and care centre

ERT- emergency rescue team

ZUS – Social Insurance Institution

Definitions

Professionally active (medical staff) - a medical staff member who works in a medical or a non-medical entity. Thus, it does not have to be a person actually practising medicine, but, for example, a medical practitioner doing scientific work, working in a pharmacy or a pharmaceutical company, or even running a non-medical business.

API REGON- a programming interface developed by Statistics Poland that allows for automated retrieval of data from the REGON Register.

Centre for Mental Health - a centre that helps patients aged 18 or more with psychiatric diagnoses, which includes a mental health outpatient clinic, a day ward, crisis beds in case of hospitalisation and a home-based care team. The main planks of CMH include integrated lump sum payment per population, integration of forms of care, coordination of care and changing hospital care to a supportive intervention.

Prevalence rate- according to the GBD, the number of all cases of a given health problem including new cases affected by a given health problem, registered during the analysed year, which is understood as the period from 1 January to 31 December in a given population. This rate includes those who became ill and died during the year and those who became ill in the previous year and died or were cured in that year.

Rare diseases - diseases for which the number of patients is less than 5 per 10,000 population.

Births per woman - the average number of children a woman would give birth to over the entire reproductive period (15-49 years), assuming that she would give birth at the intensity observed among women in the studied year during the various phases of the period.

Healthy life years - the average number of remaining years of disability-free life for a person of a certain age, i.e. disability-free life expectancy. It is based on individually perceived ability.

Length of stay - the average number of days of hospitalisation, calculated from the date of admission to the date of discharge.

Hospitalisation - a patient's stay in a hospital or other health care centre providing inpatient services for a minimum of one night for diagnostic tests or treatment. Hospitalisation has a unique ID entered in the hospital register.

Psychiatric hostel - a form of care involving psychotherapeutic rehabilitative programmes in a home-like setting of sheltered accommodation.

Potentially avoidable hospitalisations - hospitalisations that a patient, especially one with a chronic condition, could have avoided if the health care system had worked effectively.

Product category - products divided by type (surgical, non-invasive treatment) and complexity (e.g. minor surgeries, major surgeries, complex surgeries).

Product contract amount - the total contract amount awarded in a given billing period.

Years lived with disability/years lost due to disability - a rate constituted by the product of the number of disease cases and the average duration of the disease, and the weight function of the severity of the disease. The weight functions take values between [0, 1], where 0 represents health and 1 represents death.

Disability-adjusted life years - the main indicator used in the GBD methodology. It represents the sum of two indicators: YLL and YLD. It is determined for individual health problems, using weight functions that reflect the severity of the health problem for the affected persons and their family and the environment. In simple terms, 1 unit of the indicator represents 1 year of healthy life lost.

Number of day care beds at the end of the year (rehabilitation) - the sum of all day care beds of a given entity at the end of a given year in specialties of the entity (part VIII of the Ministry of Health code) in day rehabilitation.

Number of person-days (availability of services) - the number of service days (interpreted as single health care contacts) among all patients to whom a given service was provided.

Number of person-days (long-term care) - the difference between the discharge date and the admission date (except when the discharge occurs on the admission date - then the number of person-days is 1). A patient on a pass was considered 50% of a person-day and a patient's stay in the hospital was considered 15% of a person-day.

Number of person-days (rehabilitation) - the difference between the discharge date and the admission date (except when the discharge occurs on the admission date - then the number of person-days is equal to 1) for day or inpatient services.

Number of medical consultations (rehabilitation) - the number of home-based or outpatient rehabilitation services reported as rehabilitation consultations.

Number of physiotherapy visits - the number of home-based or outpatient rehabilitation services reported as physiotherapy visits.

Number of visits (long-term care) - the number of unique episode IDs for a nurse visit in home-based care.

Number of visits (palliative and hospice care) - the number of unique episode IDs reported for palliative and hospice care.

Number of physiotherapy treatments - the number of home-based or outpatient rehabilitation services provided that are not medical consultations or physiotherapy visits.

Number of beds at the end of the year - the sum of all beds of a given health service provider at the end of a given year in the unit specialties (part VIII of the Ministry of Health code).

Beds in total - the total average number of beds in each ward, excluding day wards.

Active lists - a monthly summary of registered patients in a given PHC entity.

Pre-working age population - population aged 0-17**.**

Working-age population - men aged 18-64, women aged 18-59.

Post-working age population - men aged 65 or more, women aged 60 or more.

Median age (middle age) of mothers - a parameter that determines the age limit that half of the mothers have already passed and the other half have not yet reached.

Name of speciality - the name of the speciality of the organisational unit of the medical facility of the medical entity.

Psychiatric day ward - a form of therapy for people with mental health problems that require professional help beyond the capabilities of a mental health outpatient clinic and do not require a stay in a 24-hour hospital psychiatric ward.

Healthy life expectancy *(HALE)* - the number of years a person of a given age can expect to be in good health, taking mortality and disability into account. The HALE/DALE measures of health-adjusted life expectancy were estimated by WHO using mortality, incidence and prevalence data. It is based on epidemiological data.

Palliative care - comprehensive and holistic care for people with incurable, progressive and life-limiting diseases. This care aims to improve the quality of life of patients, prevent or relieve pain and other somatic symptoms, alleviate psychological, spiritual and social suffering.

Long-term care - the entirety of medical and social activities involving the provision of long-term nursing care, rehabilitation, therapeutic and nursing care services and the continuation of pharmacological and dietary treatment to chronically ill people and those requiring support in daily functioning but do not require hospitalisation.

Perinatal palliative care - care primarily directed towards severe birth defects and developmental disorders, and other conditions considered lethal.

Primary health care - the place of a patient's first contact with the health care system, excluding medical emergencies. Within this care, access to preventive, diagnostic, therapeutic, nursing and rehabilitation health care services financed from public funds is provided, except as indicated in the relevant laws.

Consultation - a health care service coded in the NFZ service databases under a unique ID contact. It may be in the form of specialist consultation, diagnostic tests or surgical procedures.

Outpatient clinic - an organisational unit of a medical facility with a speciality defined on the basis of part VIII of the Ministry of Health code; unlike a hospital ward, it does not provide hospitalisation but mainly offers outpatient services.

GBD health problem - the name of a disease entity or injury according to the classification used in the *Global Burden of Disease Study* conducted by IHME, a research unit of the University of Washington, USA.

Unit product - the smallest unit associated with the performance of a single medical procedure, with its own code appropriate to the DGR.

Drug programmes - a guaranteed service that provides treatment for selected diseases, includes a strictly defined group of patients treated with innovative, costly active substances that are not funded under other guaranteed services.

Life expectancy by age - the average number of years that a person of a given age is likely to live in given population mortality conditions. The assumption is that these conditions will persist for a sufficiently long time.

Average waiting time (waiting lists) - the average of (average) waiting times (reported by the health service providers) to individual centres weighted by the number of waiting patients.

Average waiting time (carried out services) - the median waiting time for hospitalisation determined by the difference between the date of elective hospital admission and the date of referral.

Urgent/stable case - a way to categorise patients when placing them on the waiting list, based on assessing the patient's condition, prognosis, comorbidities and risk of disability. Medical institutions maintain separate waiting lists for each of these categories.

Birth rate - the difference between the number of live births and the number of deaths during a given period (e.g. a year).

Demographic old-age threshold - the point at which people aged 65 or more make up 7% of the total population.

Female fertility - the quotient of the number of live births and the number of women of reproductive age (15-49).

Migration balance - the difference between the number of patients from other areas treated in a given area and the number of patients from a given area treated in another area.

Hospital network - a primary hospital care provision system implemented on 1 October 2017 pursuant to the Act of 23 March 2017 on the
amendment to the Act on health care services financed from public funds (Dz. U. /Journal of Laws/ of 2017, item 844).

ZD-3 reports - report on outpatient health care submitted to Statistics Poland by medical institutions performing activity within the scope of outpatient primary or specialist health care. In the case of medical practices, the reporting obligation applies only to those that provide publicly funded health care services.

Speciality training - the process of training a medical practitioner and dentist to become a specialist in a specific field of medicine.

Hospital - a health care provider that performs services under a contract for hospital treatment.

Hospitals outside the network/PHCPS - health care providers that were not qualified for the primary hospital care provision system until 2019 (or by 2018, the year of analysis).

Average number of beds (during the year) - the number of beds of a health care provider taking into account whether the facility may have suspended or started operations during the year, or existed for an incomplete year, i.e. a facility that has 100 beds and operates 6 months in a given year shows an average of 50 beds for that year.

Average bed occupancy - the difference between the end date and the start date of a ward stay (+1 day in the case of a one-day stay) divided by the sum of the products of the number of beds in a given period and the length of that period in days.

Outpatient services (palliative and hospice care) - services in the field of palliative and hospice care provided in medical entities with the following speciality of the organisational unit (part VIII of the Ministry of Health code): palliative care outpatient clinic (1,180).

Home-based services (palliative and hospice care) - services in the field of palliative and hospice care provided in medical entities with the following

specialties of the organisational unit (part VIII of the Ministry of Health code): home-based hospice/home-based palliative care team (2,180), home-based paediatric hospice (2,181).

Inpatient services (palliative and hospice care) - palliative and hospice care services provided in medical entities with the following specialties of the organisational unit (part VIII of the Ministry of Health code): inpatient hospice (5180), inpatient paediatric hospice (5181), inpatient hospice/inpatient palliative care centre (2184), inpatient paediatric hospice/inpatient paediatric palliative care centre (2185), palliative care ward (5182, 4180).

Live birth - the complete expulsion or extraction from the mother's body of a newborn infant (regardless of the duration of pregnancy) who is breathing or shows any other signs of life, such as heart function, pulsation of the umbilical cord, or contraction of will-dependent muscles (skeletal muscles).

Years of life lost - an indicator that is the product of the number of deaths and the average life expectancy for the age at which death occurred due to the health problem under consideration. In the case of death during childhood, the number of years lost is adjusted (reduced) because of the lesser weight function given to this period of life.

Failure Coefficient- an indicator of how much of a health care service was delivered too late. The third quartile of the empirical distribution was taken as the cut-off point, which, if exceeded, implied excessive waiting time for hospitalisation. The value of the index was determined from the cumulative value of the empirical distribution of wait times for hospitalisation from the third quartile to a fixed point in time (here: 2 years), and then standardised.

Effectiveness Coefficient - an indicator that determines the proportion and rate of service delivery over a set period of time (here: 2 years). To determine the coefficient, the cumulative value of the empirical distribution of hospitalisation wait time was considered, which was then standardised. Thanks to this coefficient, both information on the number of carried out services and information on the dynamics of their realisation were included.

Demographic dependency ratio - the relationship between the various economic age groups of the population. This is the number of people of non-productive age per 100 people of productive age.

Care coefficient - the ratio of the number of women aged 50-64 (potential caregivers) to the number of people aged 80 or more per 100 people.

Birth rate - the ratio of the difference between the number of live births and the number of deaths to the population at the midpoint of the studied period or to the average population during that period, expressed in *%* (i.e. per 1,000 people).

Perinatal mortality rate - stillbirths and deaths of infants aged 0-6 days per 1,000 live births and stillbirths.

Death rate - the ratio of the number of deaths in a given period (usually in a year) to the population as of the middle of the period or to the average population for that period, expressed as a *%* (i.e. per 1,000 people).

Generational interchangeability (of medical staff) - a situation in which medical staff who leaves the workforce is replaced in the same or greater numbers by new employees. To estimate generational interchangeability, the number of medical staff reaching retirement age was calculated and compared with the number of students in training or medical practitioners undergoing speciality training by region and speciality.

Community (home-based) treatment - a form of therapy for people with chronic mental disorders.

Hospital-acquired infection - in accordance with the Act of December 5, 2008 on preventing and combating infections and infectious diseases among people (Dz. U. /Journal of Laws/ of 2020, item 1845, as amended), as amended), it is "an infection that occurred in connection with the provision of health care services, where the disease: was not in the incubation period at the time of the provision of health care services, or occurred after the provision of health care services, during a period no longer than its longest incubation period."

Service scope- the scope of medical procedures performed, consisting of several DGRs, e.g., drug programmes, hospitalisations, treatment plans.

Incidence rate - within the GBD, means the number of new cases of a given health problem during the analysed year, understood as the period from 1 January to 31 December in a defined population. A new case is also included if the patient died soon after diagnosis.

part VIII of the Ministry of Health code - a 4-character code describing the speciality of the organisational unit of the medical facility of the medical entity.

Introduction

Pursuant to Art. 95a sec. 1 and 7 of the Act of 27 August 2004 on health care services financed from public funds (Dz. U. /Journal of Laws/ U. /Journal of Laws/ of 2021, item 1285), the Minister of Health shall develop, establish and update a map of health needs in order to identify priority health needs and challenges for the organisation of the health care system and to ensure balanced and coordinated spending of public funds. The Map of Health Needs includes:

1) demographic and epidemiological analyses, analyses of the state of health care system and the use of its resources, including medical personnel, available on a dedicated website in the form of an advanced analytical tool,
2) challenges of the health care system, as well as recommended courses of actions on the territory of the Republic of Poland and in the provinces.

A dedicated website can be found at basiw.mz.gov.pl (go to page 71). The data on the website is an integral part of the map and will be updated annually. The challenges of the health care system and recommended courses of actions on the territory of the Republic of Poland are presented in this document, and on the territory of the province - in the appendices.

The place of the maps of health needs in the health care system

The creation, form and functioning of maps of health needs are inextricably linked with the activities of the EC, which, for the purposes of the financial perspective 2014-2020, has called the maps one of the so-called baseline conditions. The fulfilment of these baseline conditions is required to obtain European funds for the health care system. The documents submitted by the Minister of Health in 2015-2017 have enabled the spending of allocated funds.

Preparations are now underway for the next financial perspective for 2021-2027. Along the lines of the previous perspective, one of the baseline conditions proposed by the EC is the mapping of health and long-term care needs, including care for medical personnel, to ensure balanced and coordinated measures* [1].

Solutions proposed and introduced in the Act of 27 August 2004 on health care services financed from public funds

[1] Regulation of the European Parliament and the Council laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, and the European Maritime and Fisheries Fund and financial rules for those and for the Asylum and Migration Fund, the Internal Security Fund

and the Border Management and Visa Instrument (COM(2018) 375).

(Dz. U. /Journal of Laws/ of 2021, item 1285) go much further, serving not only to map health needs but also to ensure the implementation of solutions to meet the needs, i.e. to introduce a strategic planning system in health care. There is no question that the basis for the actions taken must be based on the real, objectified health needs of the society. In order for the system to function effectively, it is necessary to identify priorities and major challenges. Due to limited resources (money, staff, time) it is not possible to complete all tasks at one time. It is necessary to prioritise those tasks that will bring the greatest health benefit to the entire society – particularly focusing on areas where current health outcomes fall most short of expectations.

The Minister of Health prepares and publishes a map of health needs in order to identify priority health problems and key challenges for the organisation of the health care system and the proper spending of public funds (not only European funds). The map presents, on the one hand, demographic and epidemiological analyses, analyses of the state and use of resources, including medical personnel, which are made available on a dedicated website in the form of an advanced analytical tool, and, on the other hand, recommended courses of action for the area of the Republic of Poland and individual provinces. The analyses made available on a dedicated website in the form of an advanced analytical tool are an integral part of the map. It is where all the data that formed the basis for the analyses presented in this document can be found in an interactive form.

Transformation plans are used to implement the recommended courses of action presented in the map of health needs. Specific actions and interventions proposed to fulfil the demands of the map are included in transformation plans. The Minister of Health is responsible for setting and implementing the national transformation plan, while provincial transformation plans are the responsibility of province governors. In order to draft, monitor and update the prepared plans, these bodies are supported by health needs councils of each province.

The transformation plans developed by the Minister of Health and the governors of each province with their councils identify health problems and challenges in the organisation of the health care system that require coordinated action at the supra-regional level or at the level of provinces, respectively. At the same time, transformation plans outline specific actions to be taken with timelines, expected outcomes, estimated financial impacts and assigning responsibility for implementation to the appropriate entities. These documents are reviewed for the broadest possible stakeholder consensus.

In terms of financing and organising health care services from public funds, the implementation of maps of health care needs falls to the directors of regional branches of the NFZ, within the framework of plans for purchase of services drawn up by them. During the preparation

of the map of health needs, the directors of branches of the NFZ are required to take into account the availability of health care services within the province, the planned costs of health care services and the provisions of national and regional transformation plans. The compliance of these documents with transformation plans is reviewed by the boards of regional branches of the NFZ and ultimately approved by the NFZ Executive.

Structure of the document

For ease of navigation through the document, all chapters adhere to the same general structure covering:

- introduction - presenting the issue in the context of health needs, key challenges identified,
- international comparison - key comparative indicators, as well as an assessment of the situation in the country in relation to European Union member states,
- the specificity of the Republic of Poland and conditions in a given area,
- the analytical part, which includes an analysis of beneficiaries, health care services provided to them and health care providers. For the purposes of inference and recommendations, the analysis focused on the appropriateness of the services provided to the health problems that affect the beneficiaries receiving the type of services,
- other area-specific aspects - e.g., staff, waiting time for services, number of beds,
- forecast, as appropriate, based in particular on the literature.

The final section of each chapter provides a summary, health system challenges, and recommended courses of action. The sections try to indicate, at national level analysis:

- whether the organisation with a particular type of service meets the health needs of patients and fulfils its role in this respect, or whether it is plagued by deeper systemic problems that need to be remedied first,
- whether the aims and objectives of care organisation in a particular type of health care service are being achieved and whether accessibility is adequate to needs,
- what factors contribute to inadequate delivery of a particular type of service.

The presented recommended courses of actions of the Republic of Poland refer to systemic issues whose undertaking is necessary on a wider scale, both due to their seriousness as well as to the division of competence and capabilities of entities which

can make an effective intervention in a given area. Recommendations were dropped from chapters related to demographics and epidemiology, which provide key context for the rest of the document.

Separately, in the appendices, the challenges of health care and recommended courses of actions to be taken in order to meet the health needs at the local level are presented, taking into account the specificity of individual provinces.

This document uses all available and reliable data sources, including the Minister of Health data collected by the NFZ, GUS, e-Health Centre, ZUS and others, including secondary studies. The document presents data as recent as possible, in particular data on queues and waiting time - current as of February 2020, the NFZ billing data until the end of 2019. Disease burden estimates are based on year-end 2019 data.

In the case of the ERT and medical dispatch centres, the data source was CSS EMS. Due to the changes in the functioning of EMS, among others, in terms of operating regions and the number of medical dispatch centres, changes in waiting places and transformations of the ERT, data from 1 April to 31 December 2019 were analysed. The latest available data for the period 1 January - 31 May 2020 was used to analyse the HEMS teams.

The demand projections for health care services and hospital beds were not included in the document. There are several factors behind this decision:

1) an impractical assumption of *ceteris paribus*. Apart from demographics and epidemiology the other factors affecting the system remain unchanged. This applies in particular to changes in the organisation of the system, which are a consequence not only of medical advances and the emergence of new medical technologies, but also of the expected outcome of the development and implementation of maps of health needs,
2) events related to the COVID-19 pandemic, in particular its immediate and indirect effect on the availability of health care services, which may accelerate the changes taking place and also affect, among other things, the way patient care is delivered in the long term (e.g. by rapidly deploying telemedicine services),
3) hospital bed demand projections presented in previous editions of the maps covered the currently programmed period through 2027 and can still provide a reference point[2].

The key assumptions, limitations and methodology of the analyses and projections performed are presented in detail in an advanced analytical tool on a dedicated website [3] that is an integral part of the map of health needs.

[2] http://mpz.mz.gov.pl/wp-content/uploads/2019/06/17 polska.pdf, [accessed 01.08.2021].

[3] https://basiw.mz.gov.pl/index.html#/visualization?id=3304, [accessed 01.08.2021].

Advanced analytics tool on a dedicated website

The issues discussed in the map of health needs are very complex and multidimensional. To facilitate the analysis of the maps, advanced analytical tools have been developed in the form of data visualisation applications that allow for a interactive and user-friendly form of presentation. Nearly 20 independent applications covering the entire document were prepared. This solution makes it possible to avoid presenting the results of all the analyses carried out in the document, which would negatively affect its coherence and readability. With the prepared applications, you can easily see the information you are looking for in the sections of your choice, generally broader than those cited in the document. They were made available on an online platform called the System and Implementation Analyses Base [4].

Due to the comprehensiveness of the analyses, individual chapters of the document often contain references to various applications. For ease of use and readability, the applications have been divided thematically into narrower areas than the chapters are devoted to. Thus, data and analysis in some applications are used in the referenced chapters of the document. This applies in particular to applications developed, among others, for the analysis of health care services in the type of hospital treatment (queues, beds and occupancy, drug programmes, selected hospital infections and their complications).

Not all analyses performed and collected for the map of health needs were included in the applications. This mainly refers to data presented in secondary studies, official documents, and international comparisons.

[4] https://basiw.mz.gov.pl, [accessed 01.08.2021].

Health needs - a broader perspective

Measuring health needs

The problem of identifying and estimating health needs is faced by every country. Different methodologies and approximations are used in this regard. In the previous editions of the maps of health needs, the fulfilment of health needs were publicly funded health care services. Their analysis provided a basis for forecasting future demand based on registered incidence and prevalence and projected demographic changes. Significant limitations of this approach arise not only from its reliance on data whose original purpose was to be used in the billing of health care services but also from its limited consideration of health care services financed directly by patients and its availability limitations in the form of queues. However, even with full consideration of all these areas and excellent data, the services provided represent only one perspective of looking at health needs[5].

Scientific development enables us not to be limited to health problems in determining incidence, prevalence and mortality only. The quality of life after becoming ill or suffering an injury is also important information. To conduct an analysis that takes this information into account, it is necessary to use an appropriate measurement tool. One approach is to assess disease burden.

The most commonly used tool for such an assessment is DALY indicator. It determines disability-adjusted life years and has two components
- YLL and YLD indicators. The former determines the number of life years lost due to the onset of disease or following an injury, while the latter determines the number of life years in disability. This approach looks at the patient's entire life and assesses the severity of all episodes of health deterioration.

[5] J. Wright, W. Rhys, J. R. Wilkinson, *Health needs assessment: Development and importance of health needs assessment*, BMJ: British Medical Journal 316.7140 (1998): 1310.

Figure 1. Diagram of DALY indicator assumptions

Source: Ministry of Health study

YLD indicator is of particular interest from the perspective of health needs. It is calculated based on prevalence, severity (the distribution of cases across all health states, e.g., asymptomatic, mild, moderate, and severe), and disability degree on a scale from 0 (full health) to 1 (death). These degrees represent the severity of each condition as a percentage impairment and are compared with loss of life (e.g. if the weight of vision loss is 0.2, the life year of five blind people is compared to 1 year of life lost due to premature death). It should be noted that the weights of each condition have been determined by years of scientific research.

This approach allows the DALY indicator to be used for more in-depth analysis, not limited to monitoring basic epidemiological measures. It provides an opportunity for multidimensional analysis, focusing on the quality of life of the population as assessed by health problems, while allowing comparisons of very different diseases.

On this basis, in 2019, five key health problems in Poland (diabetes, stroke, heart failure, chronic obstructive pulmonary disease, schizophrenia) were selected. The analyses conducted allowed us to look for the most effective ways to deal with these problems and to look at them through the perspective of all levels and types of necessary care[6]. The results obtained in these analyses also support the conclusions presented in this document.

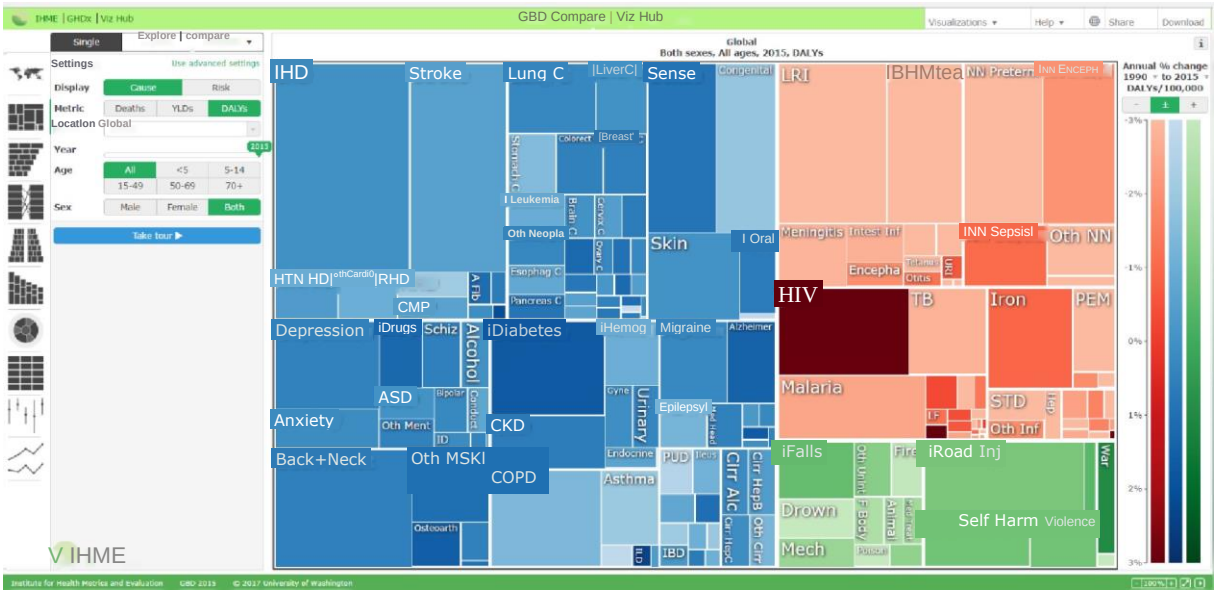
Estimates of the disease burden in the Republic of Poland and in individual provinces within the map of health needs were made by the GBD project team at the University of Washington in the United States. It is an international initiative that brings together experts, researchers, policy makers and other health care stakeholders to produce estimates of the disease burden of populations worldwide. The GBD study is one of the largest

[6] Analysis of selected health problems in Poland, https://basiw.mz.gov.pl/index.html#/visualization?id=3157, [accessed 01.08.2021].

global public health projects, working on disease burden for years. Currently, regular global reports (including the Republic of Poland) are published in the leading medical journal LANCET. The work involves 4,500 experts from 146 countries, including the Republic of Poland[7].

The most recent estimates, including those for Poland in the map of health needs, were released in October 2019 and they cover 204 countries and territories. Mortality and life expectancy were estimated for a total of 990 regions. The study includes 369 diseases and injuries and 87 risk factors. Individual components have been reversely estimated from 1980 and demographics from 1950[8]

Figure 2. Estimates of the disease burden of the population worldwide



Source: Institute for *Health Metrics and Evaluation Global Burden of Disease* (IHME GBD), https://vizhub.healthdata.org/gbd-compare/

The scale and methodology of the survey provide yet another invaluable benefit, i.e. they make it possible to compare Polish indicators with those of other countries around the world, and thus to place them in a broader context and assess whether, for example, other countries perform better or worse in a given area, and thus to look for the causes of these differences.

In the comparative analyses, the obtained indicator values were compared with the average values for the European Union and with the values for countries with similar SDI values in 2019 (with similar socio-demographic characteristics, being at similar economic levels).

[7] IHME, *About GBD*, http://www.healthdata.org/gbd/about, [accessed 01.08.2021].

[8] https://vizhub.healthdata.org/gbd-compare/, [accessed 01.08.2021].

The adoption of a disease burden methodology is consistent with current global trends. Given the origins of studies on the disease burden of populations, it is not surprising that it has been used, among other things, in assessing the achievement of the Sustainable Development Goals (SDG). *The Sustainable Development Goals*) of the United Nations. Several countries (e.g. United Kingdom[9], Sweden[10], Norway[11]) also use these data in creating national health policy.

These indicators have even been used directly by the EC for recommendations to EU member states for low whole grain products in the diet based on DALY and mortality data[12].

However, the health problems faced by Polish residents are not the only aspect of their health needs. In the search for effective solutions, in particular, a broader evaluation of the health care system is needed, especially taking into account the assessment of patients and limitations in access to publicly funded health care services. It is necessary to evaluate whether the following shift of the patients out of the public health care system is good for their health and good for the system itself. It is important to bear in mind that direct patient co-financing of health care services can act as an service access barrier for patients while practice and experience show that in the most severe cases they return to publicly funded health care services anyway.

Satisfaction with health care

When asked for their opinions on health care, those satisfied are always in the minority. Currently, three in ten respondents have a positive view of the functioning of the health care system in Poland, while two-thirds have a negative view, including 27% who have a strongly negative view. Only a few have no opinion on the subject (4%).

Over the past two years, there has been an increase in those who are satisfied with how health care is working (up 7 percentage points) and a decrease in those who are dissatisfied (down 8 percentage points). It should be noted, however, that two years ago we saw a deterioration in ratings (28% were satisfied and 68% were dissatisfied), and this year's results are similar to those recorded four years ago.

How medical care is used is important in this context. The functioning of the health care system is assessed best by respondents who, during the last

[9] 2017-18 Action Plan for CVD Prevention.

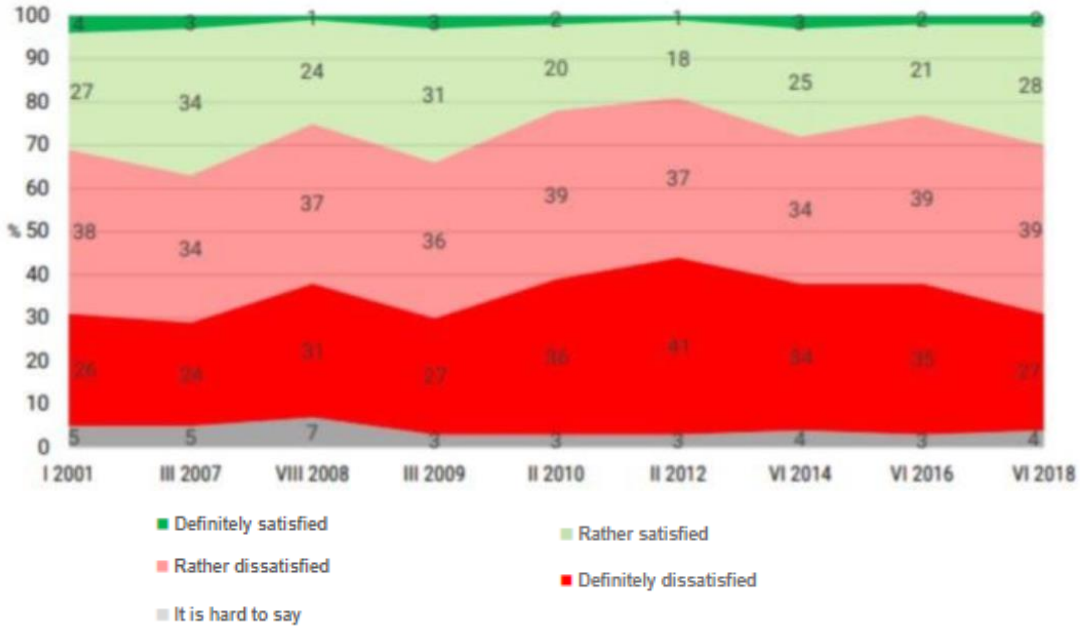
[10] Stockholm County Council Public Health Report.

[11] A Strategy for Good Mental Health (2017-2022): Managing All Aspects of Life.

[12] https://ec.europa.eu/jrc/en/health-knowledge-gateway/promotion-prevention/nutrition/whole-grain, [accessed 01.08.2021].

six months were treated exclusively in the public health care system (although also in this group negative evaluations predominate), and most critically by those who were treated only outside the public health care system.[13]

Figure 3. Assessment of satisfaction with the performance of health care in the country



Source: Centre for Public Opinion Research (CBOS); Opinions on the performance of health care, No. 89/2018, July 2018.

Services not financed from public funds

A significant impediment to the analysis of meeting health needs in the Republic of Poland is the limited scope of data collected in relation to services not financed from public funds. The main sources of information concerning these health care services are surveys and data collected as part of official statistics research conducted by the Minister of Health. Unfortunately, despite the elapse of time since the publication of the first maps of health needs, still, not all entities report adequately, which results in the quality of reported statistical data leaving much to be desired. With the above reservation in mind, these data are presented and analysed in individual chapters in order to make an overall assessment of the effectiveness of the health care system and its ability to meet the health needs of citizens.

[13] *Opinions on the performance of health care*, CBOS, Centre for Public Opinion Research; no. 89 (2018), July 2018. https://www.cbos.p1/SPISKOM.POL/2018/K 089

According to surveys, the Polish population declares widespread use of health care services. In 2018, in a CBOS survey, it was declared by 88% of respondents [14]. At the same time, less than one in three people have used only publicly funded health care services in the last six months (31%, with this indicator decreasing by 15% over 15 years and by 6% over the last two years). During the same period, the percentage of concurrent use of publicly funded health care services and of services outside this system has increased in practically the same way[15] - reaching 48% and rising respectively by 16% in 15 years and 8% in the last two years. Only 9% of Poles received private treatment (this figure varies slightly over time).

Poles' growing expectations of health care are reflected in the fact that in 2018, more than one in four adult Poles had purchased additional health insurance - a prepaid medical care package or a medical policy (28%), of which 18% paid for it themselves, and one in ten (10%) had it fully or partially funded by their employer. These values have been increasing over recent years.

[14] *Use of health care services and health insurance*, CBOS, Centre for Public Opinion Research; no. 97 (2018), July 2018. https://www.cbos.p1/SPISKOM.POL/2018/K 097 18.PDF,[accessed 01.08.2021].

[15] Use of health care services entirely self-funded or available under the supplementary health insurance held (a prepaid medical care package or a medical policy).

Table 1. Percentage of beneficiaries using a given health care service

Unit	Percentage of respondents using a given service in the last 6 months before the survey	Percentage of beneficiaries of a given service – publicly funded	Percentage of beneficiaries of a given service – not financed by public funds
PHC	75%	94%	16%
OSC	55%	73%	54%
Diagnostics - laboratory	55%	84%	42%
Diagnostics - laboratory (USG, CT, gastroscopy, etc.)	36%	78%	36%
Dentistry (including prosthetics)	53%	36%	82%

Source: Ministry of Health study based on data from NFZ

The survey results indicate generally good availability of publicly funded PHC services. Undoubtedly, a greater barrier to accessing publicly funded health care services occurs in the further stages of treatment, i.e.
when it is necessary to extend the diagnosis or seek advice from a specialist. In the latter case, more than half of the respondents looked for medical practitioners outside the public system. The vast majority of respondents (over four-fifths) use dental services outside the publicly funded system (only one in three respondents used publicly funded services). In this case, however, the scope of the funded services themselves may also play an important role.

By far the most frequently reason for using non-publicly funded services in the survey was waiting time for an appointment or examination (74%).

The other answers of the respondents did not indicate that in their opinion there was a significant advantage of the private system over the public one in the quality of services provided - only one in five respondents indicated higher qualifications and better competencies of medical practitioners or medical personnel

(22%), and that in the case of paid visits, specialists are more diligent and can be counted on for greater personal commitment (21%).

The impact of the COVID-19 pandemic on health care

For the time being, it is not possible to assess either the short- or long-term impact of the COVID-19 pandemic that affected Poland and the rest of the world at the beginning of 2020. There is no doubt that it will affect not only the availability of health care services but also the structure and organisation of the system. At the same time, the challenges of counteracting the impact of a pandemic provide an opportunity to implement positive system changes and observations and to better identify areas of system inefficiencies.

There is no doubt that a pandemic can have a multidimensional impact on the system – not only on changing the health needs of the society, but also the ability and manner in which those needs can be met. The expected impacts will be considered from several aspects[16]:

- new health needs due to treating COVID-19 patients, which are currently met by, among other things, the COVID hospital system,
- limiting access to other services due to the reduce of scheduled services, lower seeking help of patients with certain emergency conditions (e.g. lower stroke detections),
- future health needs of people with chronic diseases, among others, due to limited availability of services, delayed rehabilitation, or lack of follow-up visits,
- distant effects related to mental health deterioration resulting from, among other things,

  from a worsened financial situation and increased level of stress.

There is no doubt that many hitherto unexpected challenges will arise in the near future, necessitating solutions to adequately monitor and coordinate activities in the system, not only in the area of infectious disease control and flexible response, but also using new solutions.

[16] https://twitter.eom/VectorSting/status/1244671755781898241/photo/1, [accessed 01.08.2021]

Key findings

The only answer to the challenges the health care system is facing may significantly improve its efficiency. In some areas, the historical background, such as the ownership of medical entities, the infrastructure and even the structure of guaranteed services package or its valuation, is a significant obstacle for modernisation. At the same time, regardless of the limitations and inequalities in access to health care services, some areas of the system, even in their original design, are not adequate for the health needs they are intended to address (e.g. psychiatric care). In many such areas, attempts at reform have already been made in recent years, but we are still waiting for the results and full implementation of the changes begun. It is also clear that the challenges the health care system is facing cannot be reduced to a common denominator, and many of them will not be answered only by increased health care funding.

The data analysed does not give an unambiguously negative picture of the system as a whole, even though such an impression may be given by an assessment focused on the search for unmet needs. In particular, international comparisons show that the health of the Polish population is improving over time. This is also true for indicators that are more dependent on the health care system, such as perinatal indicators.

Among health problems, ischaemic heart disease is and will continue to be the biggest challenge for the Polish health care system. Action is needed to reverse the upward trend in prevalence and death rates, particularly given the significantly higher disease burden than in other EU countries. Invariably, strokes remain an extremely serious health problem, and in addition to being the second most common cause of death, they significantly affect condition. New cases and deaths among patients suffering from neoplastic diseases are expected to increase in the coming years. At the same time, Alzheimer's disease and other dementia-related diseases will see significant increase. Chronic diseases such as diabetes and chronic obstructive pulmonary disease, as well as mental illness, are also a continuing problem.

In recent years, the health problems that pose the greatest threat to Polish patients have been correctly identified. In some cases, broad actions have been taken, such as the development and adoption of a National Cancer Strategy or various new strategies and solutions in the health care system to improve the situation in the given areas. It is necessary to monitor the effects of these actions to assess whether they are giving the expected results.

Facing these issues, however, is only the beginning of the road. We must prepare for far-reaching changes in the structure and size of Polish society associated with

demographic changes. It is projected that by 2050 the population of Poland will fall to just under 34,000,000. The rapid ageing of the population and the slower growth in health adjusted life expectancy than general life expectancy indicates that health care challenges will only increase. The challenges will be primarily related to the increased demand for elderly care (long-term care, palliative and hospice care) and the difficulty of financing the system due to the declining working-age population.

All the organisational and infrastructural problems of the health care system are compounded by the problems of staff availability. Despite the limitations in the availability of medical practitioners, the most serious problem in the medium and long term will be the shrinking number of nurses and midwives. Over the next 10 years, it is estimated that the number of nurses aged 25-59 will decrease by 34% and the number of midwives by 25%. The demand for midwifery services may fall along with the declining births per woman rate in Poland, but in view of the ageing population and the shortage of nurses, this situation may have serious consequences for the functioning of the Polish health care system.

It should be kept in mind that no matter what measures are taken, the ageing of the population cannot be stopped in the near future. The retired or just about to retire are the post-war baby boomers, and in the next 20 years they will also be joined by those born in the baby boom of the 1970s and 1980s. These processes will not be stopped even by a rapid increase in the births per woman rate, which currently does not provide full replacement of generations anyway.

In 2019, behavioural risk factors had approx. 26% less impact on DALY in the EU than in Poland. In contrast, in Poland in 2019, group of these factors accounted for the loss of approx. 49% of years lived in health and approx. 44% of deaths. With such a significant impact on health, it is imperative to take care of health education and prevention. These areas are inextricably linked to the role of PHCs in health care, which , while accessible to patients in principle , should take a more proactive role in their care, ensuring that it is coordinated.

The availability and organisation of OSC need to be significantly improved. OSC plays an important role in the health care system by allowing patients to receive speciality treatment that is not available in the PHC, but does not involve the large financial outlays that accompany hospital treatment. Strengthening outpatient specialist care and at the same time relieving the burden of hospital treatment has been indicated for years as a priority in the reform of the Polish health care system. Despite this, spendings on outpatient specialist care have been declining for several years (from 8.6% in 2014 to 5.7% in 2018 and 2019) while hospital spendings increased (from 31.1% in 2014 to 47.4% in 2019). The number of consultations given in OSC centres is also decreasing, as well as the number of patients receiving outpatient medical care under the NFZ: between 2015 and 2019, visits decreased by 4.9% per one patient.

At the same time, these negative trends are accompanied by an increase in private health care visits. A major factor pushing patients out of the public health care system is long wait times for health care services. Data on privately provided services should be more widely reported and monitored to ensure that negative changes in this area can be effectively addressed.

As part of the optimisation of hospital treatment, the concentration of services, as well as profiling and networking of hospitals in terms of their service types, should be pursued. At the same time, the creation and contracting of wards providing health care services that go beyond the basic profile resulting from the affiliated level of the hospital network (in particular first- and second-level) should be limited. They may lead to unsustainable development of medical entities, which is incompatible with their assigned function in the health care system while increasing the pressure to finance services incompatible with health needs.

The number of hospitalisations among some chronic diseases is higher than the aetiology of the disease would indicate. A significant number of health services is performed that could be successfully performed either on an outpatient or one-day inpatient hospitalisation. Inpatient hospitalisations are also often a response to availability limitations in other types of services. This includes long-term care. The progressive ageing of the population inevitably results in the need to provide long-term care and nursing services to an increasing number of people. Currently, 17.5% of the population is in the 65 and older age group, and by 2050 this percentage will increase to 32.7% (including 10.4% in the 80+ age group). As early as 2030, 26% of the population will be at that age. Changes in long-term care cannot wait due to the fact that the coming demographic changes (resulting in, among other things, a significant decline in the nursing rate) are not far off.

At the same time, the greatest constraints on the availability of services related to existing infrastructure appear in this area. The number of people receiving long-term care in the health care system in the population aged 65 and over is 1.4%, while the average for 25 OECD countries is 10.8%. The OECD average availability of long-term care beds in Poland for a 1,000 population of persons aged 65 or more is 11.9, compared to an average of 47.2 beds for this age group in 33 OECD countries.

Access to palliative and hospice care services is also significantly limited and unequal - this is only due to unevenly distributed infrastructure and "blank spots" on the map. The indications with which these health services are provided to patients should also be verified.

Medical rehabilitation needs more profound reform as this area is not functioning properly and is not adjusted to the real needs of patients. Despite obtaining the

possibility of determining the therapy plan by physiotherapists, no changes were noticed in the structure of the services provided. Growing number of physiotherapy visits from 3,000 in December 2018 to 211,000 in July 2019 has not transferred to adjusting services to individual patient needs. Approximately % of patients annually use rehabilitation services regularly, which is normal for patients with disabilities, but this group represents only 3% of rehabilitated patients. Therefore, one can conclude that rehabilitation is ineffective or used for chronic conditions. There is also a lack of treatment coordination with the full treatment process (between "levels" of rehabilitation) and a lack of specific objective tools to define the clinical (functional) status of the patient.

The already-mentioned psychiatric care, for both children and adults, needs thorough reform, which fortunately has already been initiated as a pilot. Access to comprehensive psychiatric care varies across the country (369 communes are at a distance of more than 30 km from the nearest health care services in recommended forms of treatment, enabling patients to improve social and working life). The situation is even more unfavourable for psychiatric treatment of children (2,303 municipalities at a distance of more than 30 km away).

Also, thanks to the investments made so far with European funds, the hospital infrastructure, as well as the availability of medical equipment, is at a good level – there are no major regional differences in this respect. Given the relatively low wear and tear of the equipment, the priority should at most be to replace it as it wears out, rather than to increase its number. As indicated above, much more serious infrastructure deficiencies affect other areas of health services.

1. Demography

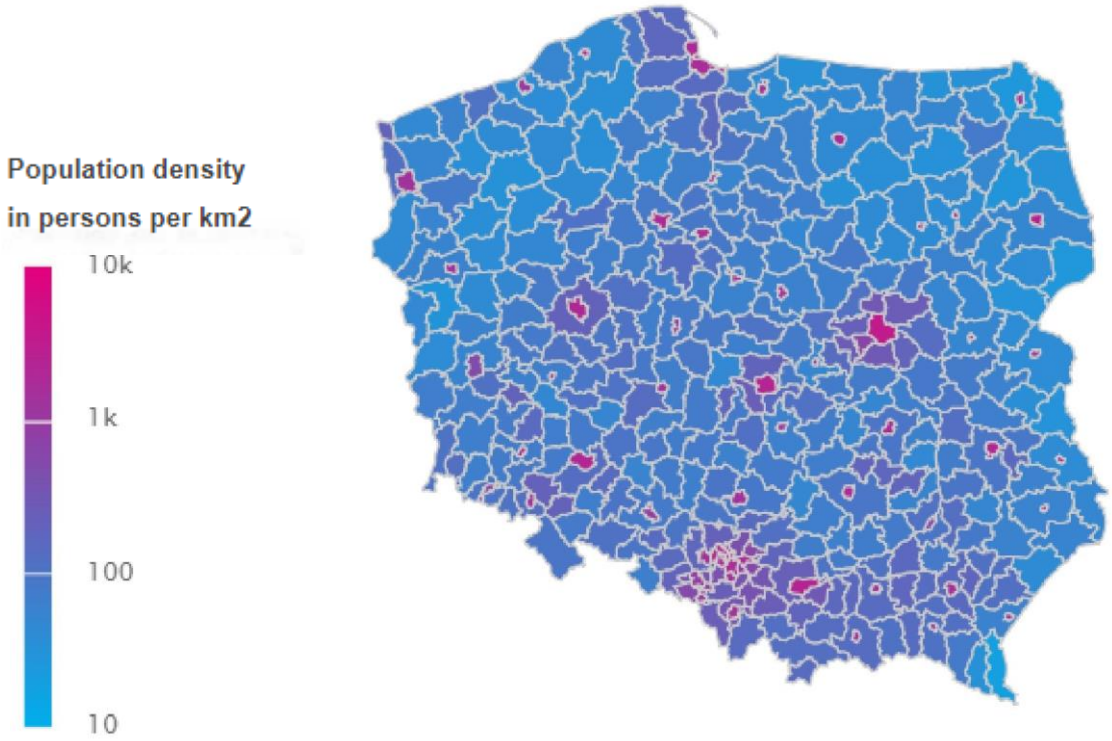
The analysis of the current demographic structure of the population provides an important background for all other areas presented in the map of health needs. Such issues as the structure of gender and age, territorial distribution, the number of births and deaths or migration constitute important information for the analysis of the health needs of Poles. Moreover, the demographic trends that have been observed for many years, both in Poland and in EU countries, will have a significant impact on the health care system in the future. Such factors as population ageing, feminisation, lack of generation substitution, changing territorial structure of the population or a decrease in the number of births will determine to a large extent the health needs of Poles, and their appropriate identification will enable an earlier adaptation of the health care system and thus a better meeting of health needs in the future.

Data from the GUS, Eurostat and IHME, among other things, were used in the chapter.

1.1. Population size and structure

The population of Republic of Poland has been declining steadily for many years, and in 2019 it amounted to 38,382,576 people. The Poles represented 7.3% of the EU's population out of a total of 519,200,000 people in its 28 countries, which ranked Poland in sixth place.
In 2019, more people were living in urban areas (3/5 of the total), and there has been a steady surplus of women over men over the years (107 women for every 100 men), which meant that the Republic of Poland had a population of 18,600,000 men and 19,800,000 women in 2019. The Mazowieckie Province had the highest population density, with 366 inhabitants per km ^{2}, followed by the Śląskie Province, with a national average of 123 inhabitants per km ^{2}. The Opolskie Province was the least populous (2.56% overall), while the Podlaskie Province had the lowest population density (59 inhabitants per km^2). In terms of districts, the highest population density was observed in the following: municipal district (a city with district rights) Świętochłowice - 3,723 inhabitants per km^2, and city Warsaw - 3,462 inhabitants per km^2; in contrast, the lowest population density was reported in: Bieszczady District - 19 inhabitants per km^2, and Sejny District - 23 inhabitants per km^2 .

Figure 4. Population density in districts in 2019. (logarithmic scale).



Source: Ministry of Health study based on data from GUS

In a division into urban and rural areas, the highest number of urban inhabitants was recorded in the Mazowieckie Province, with 3,496,000 citizens, and a slightly lower number in the Śląskie Province, with 3,461,000 citizens. As for rural areas, the largest population was still registered in the Mazowieckie Province - 1,927 thousand inhabitants, and in the Małopolskie Province - 1,767,000 inhabitants. In relative terms, the highest urbanisation coefficient was observed in the following provinces: Śląskie (76.6%), Zachodniopomorskie (68.4%) and Dolnośląskie (68.4%), and the lowest in: Podkarpackie (41.4%), Świętokrzyskie (45.3%) and Lubelskie (46.4%).

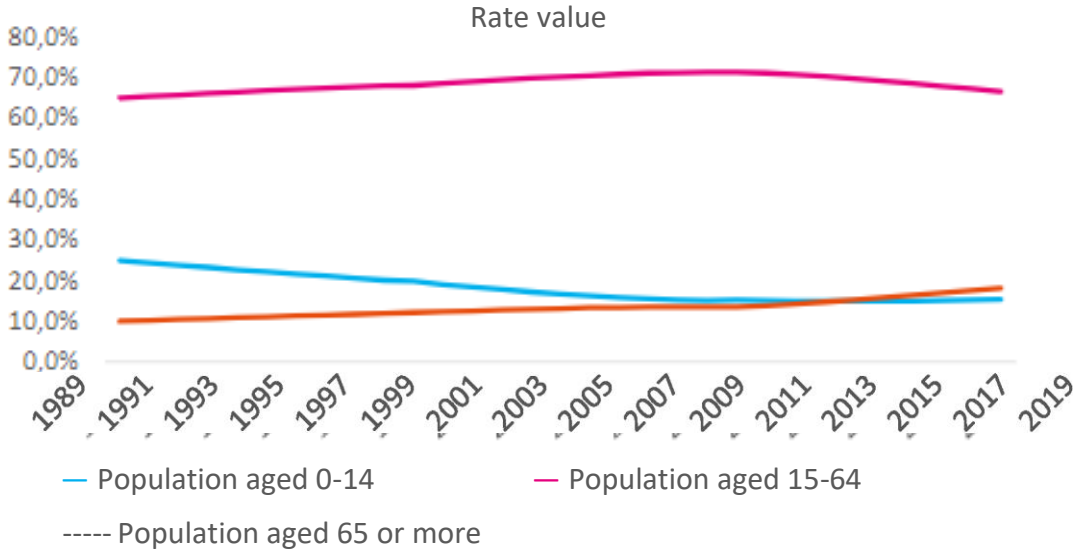
In 2019, 468,300 people (18,500 more than the previous year) changed their place of permanent residence by moving to another commune, or from a rural area to an urban area, or vice versa (within an urban-rural commune). Since 2000, as a result of internal migration, rural areas have been gaining new inhabitants, while urban areas have been losing them - the negative balance for cities was reaching 29,400 in 2019. The population is growing especially in rural suburban communes concentrated around large cities. The vast majority of migrants moved within their provinces, only one citizen in four changed their province of residence. In the years 2010 to 2019 analysed, internal migration fluctuates diversely, oscillating between values of over 378,000 in 2016, and over 468,300 in 2019,

Foreign migration occurred at a much lower rate than internal migration. For the first time since 1960, immigration was greater than emigration of Poles abroad in 2016. Until that time, it was mostly Poles leaving the country than foreigners settling in Poland. In 2019, the principal countries in which Poles would settle permanently were,

listed in order of the highest number of emigrants: Germany, the United Kingdom and the Netherlands.
As for immigrants in Poland, mainly citizens of Ukraine and Belarus registered for permanent residence, followed by Italian, German and British citizens.

In Poland, as in the EU as a whole, ageing of the population is observed as a result of increasing life expectancy, low births per woman rates and the current age structure of the population. In 1967, the Republic of Poland exceeded the threshold of demographic ageing, and the threshold of advanced demographic ageing 13 years later[17]. When classified by the so-called biological age groups, people aged 0-14 accounted for 15.3% of the population in 2019, people aged 15
-64 for 66.6%, and those aged 65 years and overfor18.1%. The group of people of the oldest of these categories continues to grow consistently, compared with 1990, increasing by 215,000 people in 2019, as compared to 2018. The share of this group in the total population is determined by the ageing ratio, which in 2019 was 7.9 percentage points higher than in 1990.

Figure 5. Structure of the population of the Republic of Poland by biological age groups, between 1989 and 2019



Source: Ministry of Health study based on data from GUS

Analysing the so-called economic age groups, in 2019 the population of pre-working age (i.e. 0-17 years) amounted to 18.1% of the country's population, people of working age (men aged 18-64, women aged 18-59) represented 60.0%, and those of post-working age (men aged 65 years and over, women aged 60 years and over) - 21.9%. The ageing of the country's population is accelerating. Between 1990 and 2019, the post-working age population increased by more than 3,500,000 to a total of 8,400,000, and its proportion increased by 9 percentage points during this period. A measure of the relationship between the various economic age groups of the population is

[17]The demographic ageing threshold for a particular country is 12% of the population aged 60 and over or 7% of the population aged 65 and over.

the age dependency ratio, calculated as the ratio of the number of people of non-working age to the number of people of working age. This ratio has been increasing for several years - in 2009 it amounted to 55, and in 2019 - 67. The dependency ratio for people of pre-working age increased marginally in the period between 2009 and 2019, from 29 to 30 respectively, while it increases considerably for the post-working age. In 2019, for every 100 people of working age, there were 37 people of post-working age, while as recently as 2009 it was 26.

One of the important factors affecting health is education. It is associated with greater awareness of prevention and a different lifestyle of better educated people. The largest proportion of the population of the Republic of Poland aged 15 and over in 2018 had post-secondary and secondary education - 34% of the total, followed by higher education - 24.4% and basic vocational education - 24.1%, and primary and lower secondary education combined - 17.6%.[18]

1.2. Vital statistics - births and deaths

The number of live births is decreasing, while the number of deaths is increasing in absolute numbers. In 2019, most live births were in urban areas (58.75% of all live births). Regionally, the Mazowieckie Province was the leader (15.89% of all births in the country), while the Opolskie Province had the smallest share of births (2.27%).

Analyses of the number of deaths yield similar results. In 2019, more men (51.60% overall) than women died and more urban residents (61.80% overall) died than rural residents. Mazowieckie and Opolskie were the provinces with the highest and lowest number of deaths, respectively (14.08% and 2.61% of the total, respectively). 40.55% of deaths were due to cardiovascular disease (primarily ischaemic heart disease), and neoplasms was responsible for 26.38% deaths (with a significant proportion of malignant tracheal, bronchial and lung neoplasm, and colon neoplasm).

The situation is somewhat different when looking at rates per 1,000 population. Analogous to the absolute numbers, the trend in the rate of live births per 1,000 population was downward (in 2019 it reached 9.8), while the death rate is upward (10.7 in 2019). However, analysis of the live birth rate per 1,000 population in 2019 showed that more live babies were born in rural areas (10.1), while urban areas had more deaths per 1,000 population (11.0 compared to 10.2 in rural areas). The highest number of live births per 1,000 population was in the Pomorskie Province (11.1), and the lowest in the Świętokrzyskie Province (8.3). The value of this rate above the average value for Poland in 2019 was reached by four provinces (Małopolskie, Mazowieckie, Pomorskie and Wielkopolskie). For most of the 2010-2019 period, on a national level, the trend in the live birth rate

[18] *Human Capital in Poland 2014-2018*, GUS, Warsaw, Gdansk, 2019.

was downward (a slight increase in 2014 by 0.1 points compared to the previous year). Since 2016 the rate was increasing, and since 2018 the trend was downward again.

In contrast, the most deaths per 1,000 population in 2019 were in the Łódzkie Province (12.5) and the least in the Pomorskie Province (9.6). The value of this indicator above the national average was reached by eight provinces (Dolnośląskie, Lubelskie, Lubuskie, Łódzkie, Opolskie, Świętokrzyskie, Śląskie, Zachodniopomorskie). Number of deaths per 100,000 population of a given gender in Poland was 1,001 women and 1,139 men. Death rate in 2019 was 10.8%. *In* 2010-2019, the rate increased and oscillated around 10 and 9. By 2012 more deaths per 1,000 population were in rural areas, but as of 2012, when rural and urban rates were the same (10.0), more deaths were in urban areas. In 2019, the value of this rate for rural areas was 10.2 and 11.0 for urban areas. The main causes of death have been studied previously, and detailed information in this regard is provided in the epidemiology section.

The difference between the number of live births and the number of deaths is referred to as a birth rate. In 2019, For the first time in 30 years, such a low birth rate of -34,800 was recorded. Since 1990, the negative birth rate also occurred between 2002 and 2005. Deaths outnumbered live births in both urban and rural areas, but the problem was far greater in urban areas (-32,900 rate in cities compared to -1.800 rate in rural areas). This indicator was positive in five provinces (Małopolskie, Pomorskie, Wielkopolskie, Podkarpackie and Mazowieckie).

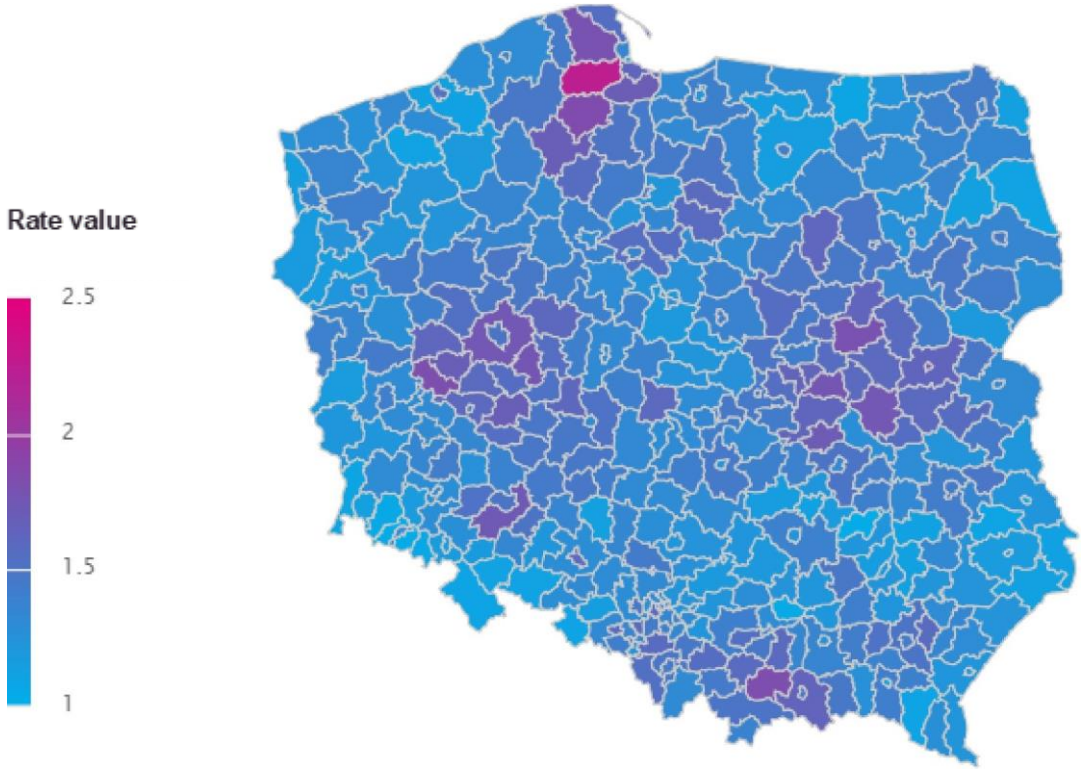
Between 2010 and 2019, the birth rate in Poland was declining, reaching -0.9 in 2019. The rate was also a negative between 2013 and 2018, although in 2014 and 2017 the rate value was almost zero. In 2019, The birth rate per 1,000 population was -1.4 in cities and -0.1 in rural areas. Analysing the birth rate by province, the highest value per 1,000 population in 2019 was reached by the Pomorskie Province (1.5), and the lowest negative value was reached by the Łódzkie Province (-3.6).
Five provinces (Małopolskie, Pomorskie, Wielkopolskie, Podkarpackie and Mazowieckie) achieved positive values and eleven provinces achieved negative values.

According to Eurostat data, in 2019 the situation in Poland was slightly worse than in the EU as a whole, namely the birth rate was -0.9 in Poland and -0.8 in the EU.

The value of births per woman rate over the 10 years (2010-2019) in Poland decreased until 2013 before increasing to reach 1.435 in 2018 and fall to 1.419 in 2019. In 2019, this rate had a slightly higher value for women living in rural areas (1.427) than for the ones in urban areas (1.407). The leading province in terms of births per woman was the Pomorskie Province (1.598), and the difference between it and the province with the lowest rate, i.e. Świętokrzyskie Province, was 0.363. The value of this rate above the average value for Poland in 2019 was reached by four provinces (Małopolskie, Mazowieckie, Pomorskie and Wielkopolskie). In comparison, according to Eurostat, in 2018

EU births per woman rate was 1.56, and Polish – 1.46. These values do not guarantee easy replacement of generations, for which a rate value of 2.1-2.15 is needed. In Poland, only one district (Kartuzy) reached births per woman rate level of 2.236 in 2019.

Figure 6. Births per woman rates in Polish districts in 2019.



Source: Ministry of Health study based on data from GUS

Many factors affect births per woman rates, among them the increase in the average age at which women bore the first child is significant. Started in the 1990s, demographic changes have increased the median age of women giving birth to their first child, which in 2010 was 26.6 years compared to 28.2 years in 2019. Eurostat data from 2009-2018 shows that the average age of women at childbirth is increasing in Poland, as in the EU. In the above-mentioned decade, it increased by 1 year (in 2018 Poland it was 29.6 years and in EU – 30.8 years). The data shows that in Poland, and in the EU, the age at which women give birth to their first child is increasing. In both Poland and the EU, this age increased by 1.2 years between 2009 and 2018 (in 2018 Poland it was 27.4 years, while in the EU – 29.3 years).

Perinatal indicators are important in the analysis of the organisation of maternal and child health care during pregnancy, childbirth and the postpartum period. In 2019, 1.238 there were stillborn babies, more in urban areas (59.29% of the total) than in rural areas, and by gender, there were more boys (51.86% of the total) than girls. The number of stillbirths decreased by 28.44% in the analysed period of 2010-2019. In terms of absolute numbers,

the highest number of stillborn children was in the Mazowieckie Province (15.75% of the total), the lowest in the Świętokrzyskie Province (2.58%). Between 2010 and 2019, the rate of stillbirths per 1,000 live births in Poland decreased by 0.9, reaching 3.3 in 2019.

An analysis of live births and stillbirths shows that more boys than girls are born in Poland. In 2000 6.19% more boys than girls were born, in 2010 – 7.82% more, in 2016 – 5.49% more, and in 2019 – 5.72% more.

The value of birth weight and the percentage of infants born with a birth weight of less than 2,500 g, or low birth weight (LBW), is one of the rates for assessing the biological status of a population. In Poland, the percentage of total births to low weight births out of all total births in 2019 was 5.65%. This percentage was decreasing from 2010 to 2019. The percentage of stillbirths with low birth weight as a proportion of all births of this type was also decreasing. There were 22,056 such children were born in 2019, including 21,174 live births and 882 stillbirths.

In 2019, most low birth weight live births were 3,076 children in the Mazowieckie Province and 493 in the Opolskie Province. However, the percentage of live births with LBW in a given province in relation to all live births in a given province with the highest value was recorded in the Śląskie Province – 6.50%, followed by the Zachodniopomorskie Province – 6.43% and the Lubelskie Province – 6.27%, with the lowest value in the Podlaskie Province – 4.46%, followed by the Pomorskie Province – 4.91% and Mazowieckie Province – 5.16%.

Low birth weight is a major risk factor for infant mortality. In 2019, 69.48% of all total infant deaths were low birth weight infants – 981 infants weighing up to 2,499 g at birth died.

Over the past 10 years (2009-2019), the proportion of LBW infant deaths to total LBW live births has decreased. In 2009 6.44% of low birth weight infants among live-born infants died, and in 2019 only 4.63%.

Value of infant death rate per 1,000 live births has steadily declined since 2009, but increased slightly in 2016. in 2019, the values of this rate were higher in rural areas (3.88) than in urban areas (3.69). Analysis by gender indicates that female infant deaths per 1,000 live births were less frequent (3.64) than male infant deaths (3.89). By provinces, the highest number of infant deaths per 1,000 live births was in the Kujawsko-Pomorskie Province (4.91), and the lowest in the Świętokrzyskie Province (2.84). The value of this rate below the average for Poland was reached by eight provinces (Małopolskie, Mazowieckie, Opolskie, Podlaskie, Pomorskie, Lubuskie, Wielkopolskie and Świętokrzyskie), and in Łódzkie Province the value of the index was only slightly higher (3.79) than the national average – 3.77. In 2018, the value of this rate for Poland was 0.3 higher than the EU average (3.5). The lowest values of this

rate are recorded in Estonia (1.6) and Slovenia (1.7), and the highest in Romania (6.0) and Bulgaria (5.8).

Perinatal mortality in Poland decreased by 29.29% during the analysed period of 2010-2019. The rate in rural areas was no less than in urban areas in each year. In 2019, the rate value for both rural and urban areas was 5.3. The highest values of the rate were recorded in the Kujawsko-Pomorskie (7.2) and Pomorskie provinces (6.3), and the lowest in the Świętokrzyskie (4.1) and Małopolskie provinces (4.2). The value below the national average was reached by eight provinces (Dolnośląskie, Lubelskie, Lubuskie, Mazowieckie, Świętokrzyskie, Warmińsko-Mazurskie and Wielkopolskie). The value of this indicator in the Śląskie Province was equal to the national average (5.3).

1.3. Life expectancy

The demographic changes are influenced by the increase in life expectancy observed for many years, both for women and men. There is a difference between the life expectancy of men and women, with women living longer as a result of male over-mortality. In 2019, life expectancy at birth was 77.79 years overall (74.07 for men and 81.75 for women). Compared to 1990, Polish men lived longer by 7.8 years and Polish women by 6.5 years, so the rate of increase in life years is faster for men. In terms of provinces, the longest life expectancy at birth was achieved by women in the Podkarpackie Province (83.2 years), the shortest in the Śląskie Province (80.8 years). In the case of men, the longest life expectancy was in the Podkarpackie Province at 75.4 years and the shortest in the Łódzkie Province at 72.5 years.

Over the period of 2010-2018, an increase in life expectancy was observed for both genders, both in Poland and in EU countries. The year of 2019 was unique for Poland, because there was a slight decline in life expectancy. In 2018, the maximum age of the Polish people was several years shorter than the EU average – for men by 4.6 years and for women by 1.9 years.

In 2019, the differences in life expectancy at birth and at the age of 60 between urban and rural women were practically non-existent, slightly bigger differences are observed in the case of men, with the advantage in favour of cities.

Among the countries with the same sustainability development indicator in 2019 (Estonia, Latvia, Malta, Slovakia, Hungary and Italy) in terms of life expectancy at birth, inhabitants of Italy are about to live the longest, both in total and by gender, and the shortest in Latvia. Poland ranked 3rd out of 7 for total value and for women, and 4th for men.

Health adjusted life expectancy (HALE)

According to IHME data for Poland, in 2019 health adjusted life expectancy rate for those aged 0-6 days was 68.12 years overall, 65.4 years for men, and 70.9 years for women. Thus, a significantly higher value of this rate is observed for women than for men (difference of 5.5 years). The trend is upward, with an increase of 6.6 years for men between 1990 and 2019 (from 58.8 to 65.4) and an increase of 5.6 years for women (from 65.3 to 70.9).

in 2019, the value of health adjusted life expectancy in Poland diverged from the value of this rate in the EU countries. In total the difference was 1.7 years. For men, the value of the rate in Poland was 3.3 years lower, while for women it was 0.1 years higher.

Among countries with the same SDI, residents of Italy had the longest healthy lives and residents of Latvia the shortest. Poland ranked 4th out of 7 for total value and by gender.

Healthy Life Years (HLY)

According to Eurostat data, the expected number of healthy life years at birth in Poland in 2018 was 64.3 years for women and was 0.5 years longer than the average value calculated for the EU (63.8 years), while for men it was 60.5 years and was 2.9 years shorter than the average value calculated for the EU, which was 63.4 years. The above data show that the health status of Polish women at birth is slightly better than the average EU woman and worse for men. Women in the EU live the longest in health in Malta (73.4 years) and the shortest in Latvia (53.7 years). In contrast, men live the longest in health in Sweden (73.7 years) and the shortest again in Latvia (51 years).

Over the period 2009-2018, healthy life expectancy in Poland has fluctuated. Nevertheless, in 2018 the value of this rate, for both men and women at birth, was the highest. The difference of healthy life expectancy between men and women at birth was 3.8 years in favour of women.

The difference between the HALE and HLY measures is that HALE was estimated by WHO using mortality, incidence and prevalence data. It is based on epidemiological data. In contrast, HLY is based on individually perceived condition.

Comparing the data for 2017, HALE (66.81 years in total, 63.7 years for men and 69.9 years for women) and HLY (62 years in total, 60.6 years for men, 63.5 years for women), it can be concluded that Polish people of both genders assess their health worse than it actually is.

The same conclusion can be drawn by looking at the percentage of healthy years in life expectancy.

Relationship between healthy life years and life expectancy

The percentage of HALE in life expectancy in Poland for the entire study period (2008-2017) was higher than the percentage of HLY in life expectancy in the 2009-2018 period. Comparing HLY to life expectancy (LE) in 2018, the result which says that 78.7% of women's life years and 82.1% of men's life years in Poland passed in a state of health evaluated opposite to negative will be obtained.

Comparing HALY to life expectancy in 2017, the result which says that 85.4% of women's life years and 86% of men's life years in Poland passed in good health will be obtained.

Comparing LE and HLY and HALE over the 10 years analysed, it can be seen that the percentages of HLY and HALE in life expectancy for women are lower than for men. This is most likely because women's life expectancy is longer, not because women's health is worse or women rate their health worse than men.

To find out if people in Poland live longer in full health, it is necessary to see if the values of the HLY and HALE rates increase faster than the height of LE.

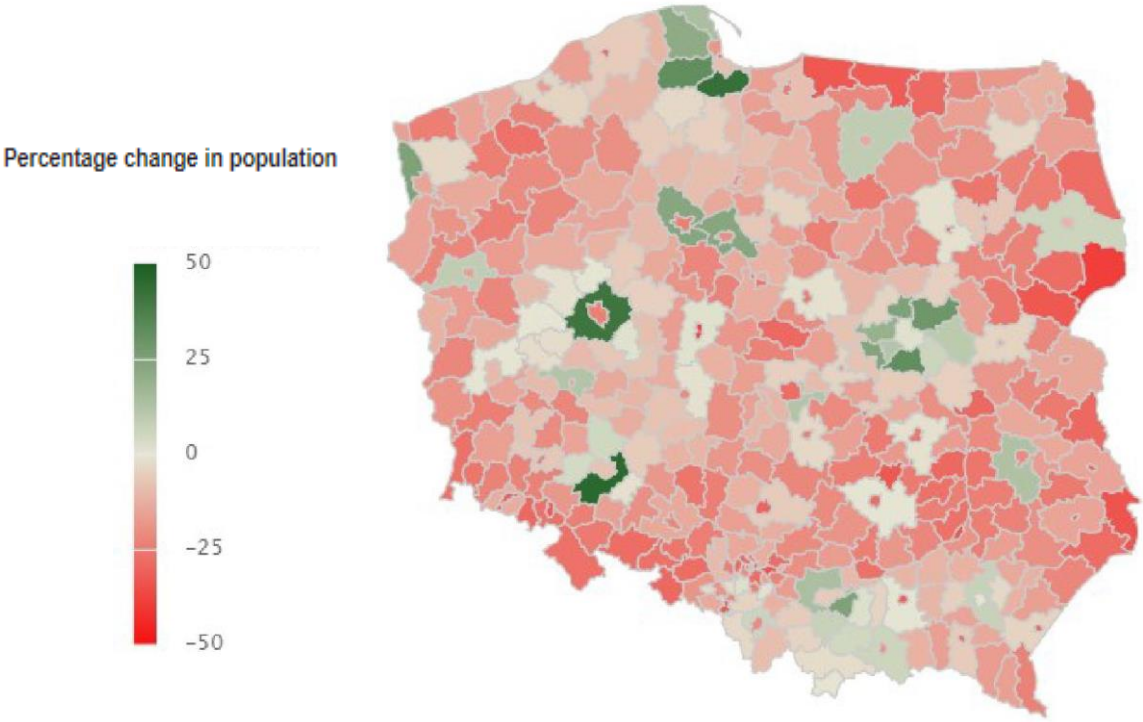
For both HALE and HLY, life expectancy increased faster than healthy life expectancy for both men and women from 2008 to 2017. Thus, the health of Polish people, both assessed and actual, is not improving as rapidly as their life expectancy increases.

1.4. Population forecast

According to forecasts of the Statistics Poland, at the end of 2025, in Poland there will be 37,741 population (a fall of 1.04% compared to 2019), in 2030 – 37,185 (2.50%), in 2040 – 35,668 (6.48%), and in 2050 – 33,951 (11%). The decline in population will not take place evenly either by territory or by urban and rural areas.

All provinces in Poland will experience a decline in absolute population number. The largest decline in 2050, comparing to 2019. will take place in the Śląskie Province, where the number of inhabitants will decrease by 817,000 and the smallest in the Pomorskie Province (55,000). However, the relative numbers are distributed differently. The province with the largest population loss comparing to 2019, will be the Opolskie Province (23.4% fall). The least population loss, i.e. only 1.1%, will occur in the Mazowieckie Province.

Figure 7. Projected population changes for the districts in 2019-2050 in percentage terms



Source: Ministry of Health study based on data from GUS

Projected population changes at the district level present even greater variation. In absolute numbers, the largest declines will affect large cities, i.e. by 2050, the population in Łódź will decrease by 195,700, and in Poznań by 130,000. At the same time, the districts surrounding large cities will grow significantly, i.e. the population of Poznań District will increase by 168,000 and that of Wołomin District (Mazowieckie Province) by 76,000. In percentage terms, these differences will look slightly different. In Hajnówka District (Podlaskie Province), it is projected that by 2050 population will decline by as much as 39.9%, and in the City of Konin District (Wielkopolskie Province) by 38.1%. In turn, Wrocław District (+49.1% of the population) and Gdańsk District (+45.8%) will be the leaders of population growth.

These changes will require appropriate organisational and infrastructural adjustments in the health care system in Poland. A very important phenomenon will be, the so-called, Suburbanisation, which is the urbanisation of the areas adjacent to the large cities and reducing the population within the current city borders. It is worth noting that outside the area of influence of large cities, the population will decline, which may hinder the access to medical services and further increase social exclusion.

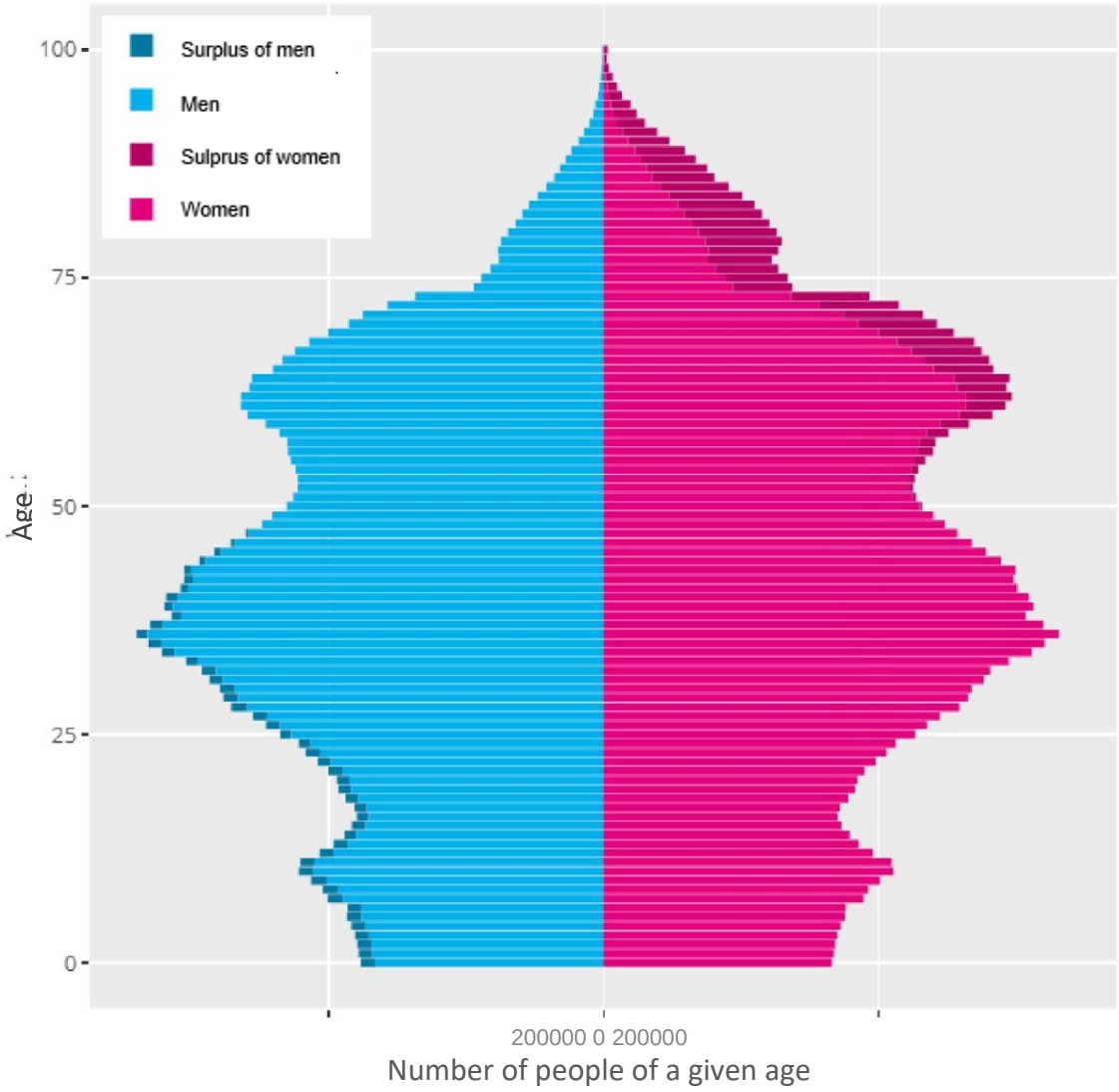
Analysing the cross-section by place type, by 2050 the urban population will decrease by as much as 17.4%, while the rural population will decrease by only 1.8%. This is largely related to the phenomenon of the above-mentioned suburbanisation – suburban areas, to which

the population of cities will migrate, are often statistically classified as villages. This can be seen in the analysis at the district level.

The districts in which the population in villages will increase the most will be: Police Districts, close to Szczecin (increase of rural residents by 63.3%) and Poznań District (increase of rural residents by 59.9%). It can be assumed that some of the areas that today we classify as villages will change their status to cities under the influence of migration. On the other hand, there are districts where villages are significantly depopulated, such as the above-mentioned Hajnówka District in the Podlaskie Province (40.7% decrease in rural population) and Hrubieszów District in the Lubelskie Province (39.1% decrease).
In the case of urban areas, small towns in particular will be depopulated. Although the district with one of the largest population declines is Konin, it is only ranked 14th place in terms of percentage decline in urban population. The worst situation is in the Łęczna District in the Lubelskie Province, where the population of cities will fall by 56.6% (it is worth mentioning that there is only one municipal commune there – Łęczna with 23,000 inhabitants) and Końskie District in the Świętokrzyskie Province, where there will be the fall of 44.3% of the urban population (there are three towns there – Końskie with 19,000 inhabitants, Stąporków with almost 6,000 inhabitants and Radoszyce with 3,000 inhabitants). The most dynamic percentage increase in urban population will occur in Siedlce District (+57.1%) and Kalisz District (+51.8%).

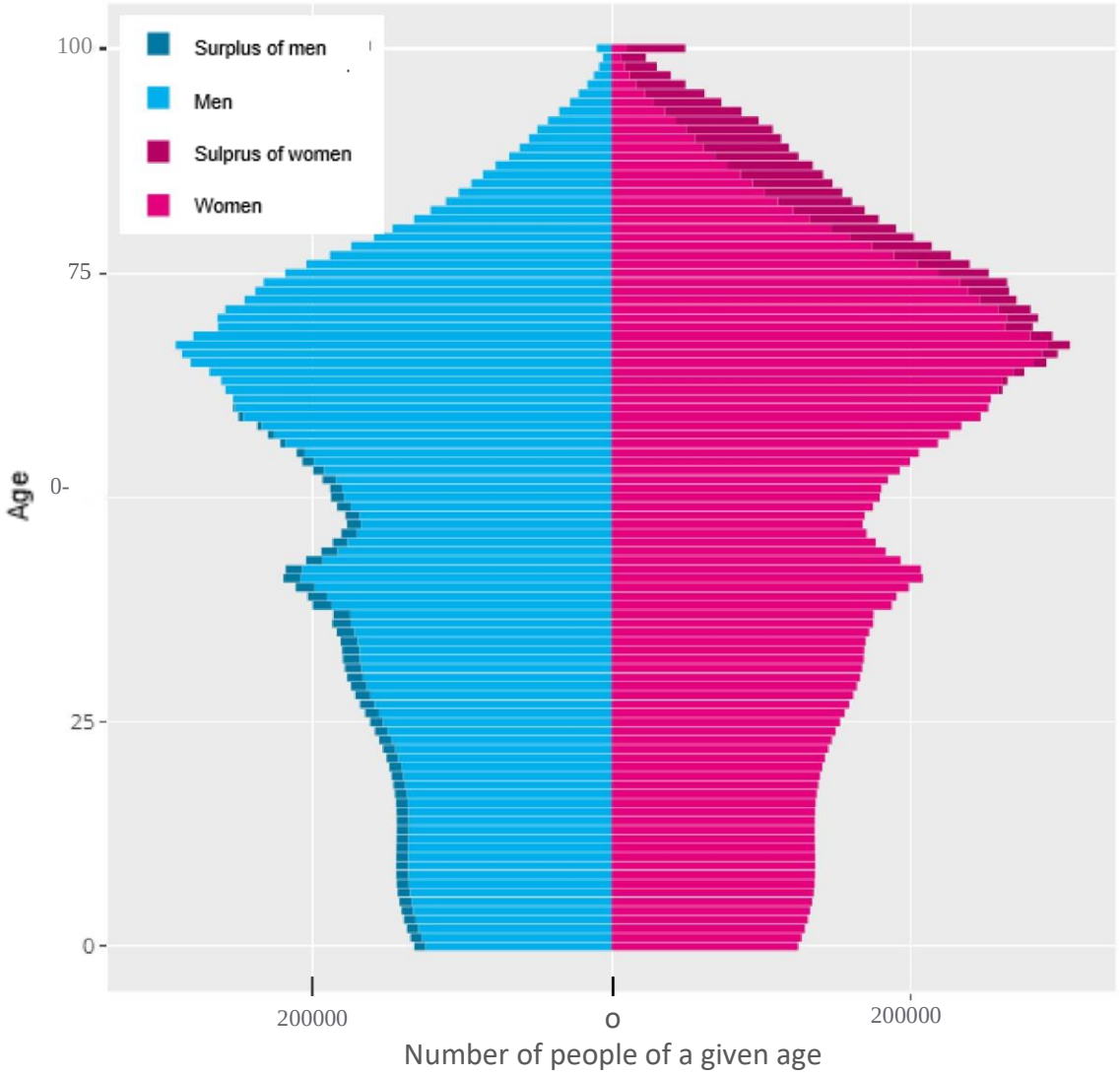
The projected demographic changes are not only changes in the number, but also in the structure of the population of Poland. Declining birth rates and increasing life expectancy will cause the age pyramid to invert.

Figure 8. The age pyramid of Poland in 2019



Source: Ministry of Health study based on data from GUS

Figure 9. The age pyramid of Poland in 2050



Source: Ministry of Health study based on data from GUS

1.5. Health care system challenges and conclusions

In Poland, as in other EU countries, demographic changes affecting the organisation and functioning of the health care system are taking place. These are mainly population ageing, over-mortality of men, and lack of replacement of generations.

It is projected that by 2050 the population of Poland will fall to just under 34,000,000. The rapid ageing of the population and the slower growth in health adjusted life expectancy than general life expectancy indicate that health care system challenges will only increase. These will be primarily related to the increased demand for elder care and the difficulty of its financing due to the declining working age population.

A disturbing conclusion from the demographic analysis is that no matter what measures are taken, the ageing process of the Polish society

cannot be stopped any time soon. The post-war baby boom is a real phenomenon, and representatives of this generation are already retired or will retire in a few years. Those born in the boom of the 1970s and 1980s will also join the post-war baby boomers in the next 30 years. Even assuming a very rapid increase in births per woman rate, it is important to keep in mind that this has no effect on the ageing of the population already living. Moreover, with the declining number of women of childbearing age, no realistic demographic scenario predicts that the population decline will stop.

Although currently approx. 60% of the population of Poland lives in cities, it is projected that by 2050 the urban population will decrease by as much as 17.4%, while the rural population will decrease by only 1.8%. This is a result of higher births per woman rates in rural areas than in urban areas and migration from cities to suburban areas statistically classified as villages. On a district level, the population will increase in the districts surrounding capitals of provinces and decrease in the cities themselves and districts away from them. This will be mainly due to migration from cities to suburban areas and the spread of the territory of cities (suburbanisation). This will force a change in the location of those health care facilities that should be closest to the patient, particularly PHC. The location of services such as senior day care and others requiring frequent patient interaction will also change. Some of the PHCs located in rapidly depopulating areas will likely have to be closed, and new PHCs will have to be established in suburban areas to provide adequate care to the growing population of these areas.

Life expectancy information by gender shows that men have a significantly shorter life expectancy than women. This is especially true for men living in rural areas. The variation in life expectancy between genders is significantly higher than that measured for the same genders but between different provinces. It suggests that it is gender, particularly the lifestyle associated with it (e.g. type of work, less intensive preventive care, more frequent addictions) and not, for example, the availability of health care services that affects the observed life expectancy results. Although the life expectancy of Polish population is lower than the EU average, men in Poland deviate more clearly from the average for their gender than women. Although the cause of this problem is complex, it seems necessary to take more active measures to reduce the gender gap in life expectancy and to reduce the gap between Poland and the EU. These activities can take place in various ways, particularly by health education and prevention.

At the same time, life expectancy has been increasing for years, for both men and women, regardless of the age analysed. In the case of older people, women aged 60 will live the longest in the Podlaskie Province and the shortest in the Śląskie Province; men of the same age will live the longest in the Podkarpackie Province and the shortest in the Opolskie Province.

There is a downward trend in stillbirths and stillbirths per 1,000 live births. At the same time, infant deaths per 1,000 live births are more common in rural

than in urban areas. While there may be many causes of it (including living conditions), some of the potentially important ones seem to be the availability of perinatal services (e.g. community nurse visits) and parental awareness of proper infant care (e.g. awareness of disturbing health signals).

Births per woman rate is declining in the long term in both Poland and the EU. Although from 2014 to 2017 in Poland, this indicator was increasing slightly compared to previous years, as of 2018 it has been in decline. Demographic forecasts of Statistics Poland and Eurostat predict an increase in births per woman rate in the coming years, but it is not expected to reach a level that would guarantee a simple replacement of generations. in 2019, there were four provinces in Poland where this indicator was significantly higher than in the country as a whole: the Mazowieckie, Pomorskie, Małopolskie and Wielkopolskie provinces. The decline in birth rates in these regions should be the lowest. On the district level, the highest value of the indicator (2.236) was reached by Kartuzy District, which as the only one in Poland, reached a value guaranteeing the simple replacement of generations.

At the same time, the decline in the number of women of childbearing age, with a slowly rising births per woman rate, will result in fewer absolute births and, consequently, in a decline in demand for obstetric services and paediatric care. The median age of women giving birth to their first child and the average age at delivery and at the first child birth are rising, although Polish women are still choosing to give birth to their first child at a younger age than European women.

The birth rate in 2019 was negative and the lowest in 30 years. The birth rate was decreasing. For cities, it reached a negative value, for villages – around zero. In 2012-2016, the value of this rate for Poland was worse than for the EU, in 2017 it has equalised, however, in 2019 it was a little worse again.

Although more boys are born, there is a consistent surplus of women over men, due to higher infant mortality for boys and shorter life expectancy for men at birth. In the context of a population ageing and with the current retirement age differential, the burden on the health care system further increases and reduces contribution revenue.

According to the analysis of HALE and HLY, the health of the Polish population as measured by epidemiological indicators is better than in their self-assessment. At the same time, in terms of HLY, which is based on a subjectively assessed condition, the expected health of Polish women at birth is slightly better than the EU average. However, in other indicators, Poland performs worse than the EU. It is worth noting that the health of Poles, both subjectively assessed and observed on the basis of medical data, does not improve over the years as quickly as the overall life length

increases. This means that as the population ages, there will be a need to provide care to an increasingly large and sicker group of Poles.

2. Epidemiology and epidemiological forecasting

One of the most relevant issues in public health research is epidemiological analysis. More and more frequently, it is not limited to determining incidence, prevalence and mortality. The quality of life after becoming ill or suffering an injury is also important information. To conduct an analysis that takes such information into account, it is necessary to use an appropriate measure. One of the most commonly used tools of this kind is the DALY measure, developed by Harvard University for the WHO. It determines disability-adjusted life years
and consists of two components, the YLL and YLD indices. The former determines the number of life years lost due to the onset of disease or following an injury, while the latter determines the number of life years in disability. Thus, the implementation of the DALY indicator allows for a more in-depth analysis that is not limited to monitoring basic epidemiological measures. It also considers information on the burden on the population due to their disability caused by a health impairment or disease. This provides an opportunity for multidimensional analysis, concentrating on the quality of life of the population, assessed through the prism of health problems.

In order to be able to prevent the main health problems in the following years, the information on the future evolution of epidemiological indicators should be available early enough. The epidemiological forecast may constitute the basis for implementing preventive programmes, defining necessary specialities for future medical personnel or opening hospital wards, which will be in the greatest demand in the following periods.

It is worth mentioning that this type of forecast is strongly conditioned by demographic changes. The ageing of the population and the increase in civilisation diseases determine and will determine the demand for specific medical services.

The results of epidemiological forecasts have a wide range of applications, and are particularly useful for appropriate health policy in the context of evaluating the effectiveness and usefulness of measures taken for the health of the population. It is especially important with regard to the formulation and clarification of the classification of goals and objectives, as well as for making decisions on how, when and where to achieve them. In other words, epidemiological forecasting is a tool to support decision-making aimed at guaranteeing adequate medical care for the population and improving health[19].

[19] W. Jędrychowski. *Podstawy epidemiologii*. Kraków, 2002.

Basic assumptions used in the analyses

In the epidemiological analysis conducted, the values of the DALY indicator in the whole country and individual provinces were considered. It was assumed to be the main measure of the burden of health problems on the population. In addition, in order to perform multivariate analysis, incidence, prevalence, and deaths on the basis of the CoD were also included. The higher the value of the indicators, the health problem or group of health problems has a more significant negative impact on the population quality of life of the population. All indicator values and demographic data are derived from the dataset developed under the GBD research programme.

The analyses were not limited to diseases and groups of diseases but used an extended set to the so-called health problems. By definition, diseases are health problems, but health problems include occurrences such as injuries or falls, in a narrower context. Furthermore, some problems are of a chronic nature. An additional analysis based on the YLD values is warranted in such a situation.

In comparative analyses concerning the Republic of Poland, the obtained values of indicators are juxtaposed with average values for the EU and those for countries with SDI values close to that of the Republic of Poland in 2019. By countries with a similar SDI value are meant countries with similar socio-demographic characteristics, representing a comparable economic level. To ensure the reliability of comparisons of this type, it is required to apply age-standardised indicator values per 100,000 of the population. The use of age-standardised indicator values results from the different demographic structure of the populations while using values of indicators per 100,000 population is required due to the difference in the size of individual populations. For comparison within countries, the only limitation is the application of indicators per 100,000 population, thus in comparative analyses of this type, an additional division into age groups is introduced.

The analysis was conducted on the basis of GBD data covering the years 1999-2019 for the next 9 years, i.e. for the period from 2020 to 2028. It was performed on the basis of annual data, allowing for the elimination of possible monthly seasonality. In the comparative analysis for the Republic of Poland, the obtained values of indicators were compared with the average values for the EU and six countries with a similar SDI value to that of the Republic of Poland (Estonia, Latvia, Malta, Slovakia, Hungary and Italy). Moreover, considering the possibility of socio-demographic differences between particular areas of the Republic of Poland, a comparative analysis of obtained forecasts for provinces was conducted.

Definitions of the indicators and concepts used in the analyses performed are discussed in a separate section of the document. The following chapters present

the results of epidemiological analyses and forecasts. In these chapters, the sections describing the results for the Republic of Poland overall provide both absolute values and those per 100,000 of the population. Analyses regarding the division into provinces and comparisons of the Republic of Poland with the previously indicated countries and groups include only the values of indicators per 100,000 of the population.

2.1. Epidemiology in Poland

This chapter focuses on epidemiological analyses for Poland. Therefore, in addition to the DALY values and values of indices standardly used in epidemiology, information on the YLL and YLD values indices was also included. Subsections one and two compare the situation in Poland to other individual countries and groups of countries. All analyses were conducted using data for 1999, 2009, and 2019, but the most relevant year was the most recent year, for which the most detailed description of the population health situation in Poland was made.

Comparative analysis of the situation in Poland and the European Union

A comparative analysis of Poland and the EU and its member states was conducted in terms of health problems on the basis of their DALY values per 100,000 population in 2019 Five health problems for each analysed territory were selected that exhibited the highest DALY values. In the case of Poland, these were the following:

– ischaemic heart disease (IHD),

– stroke,

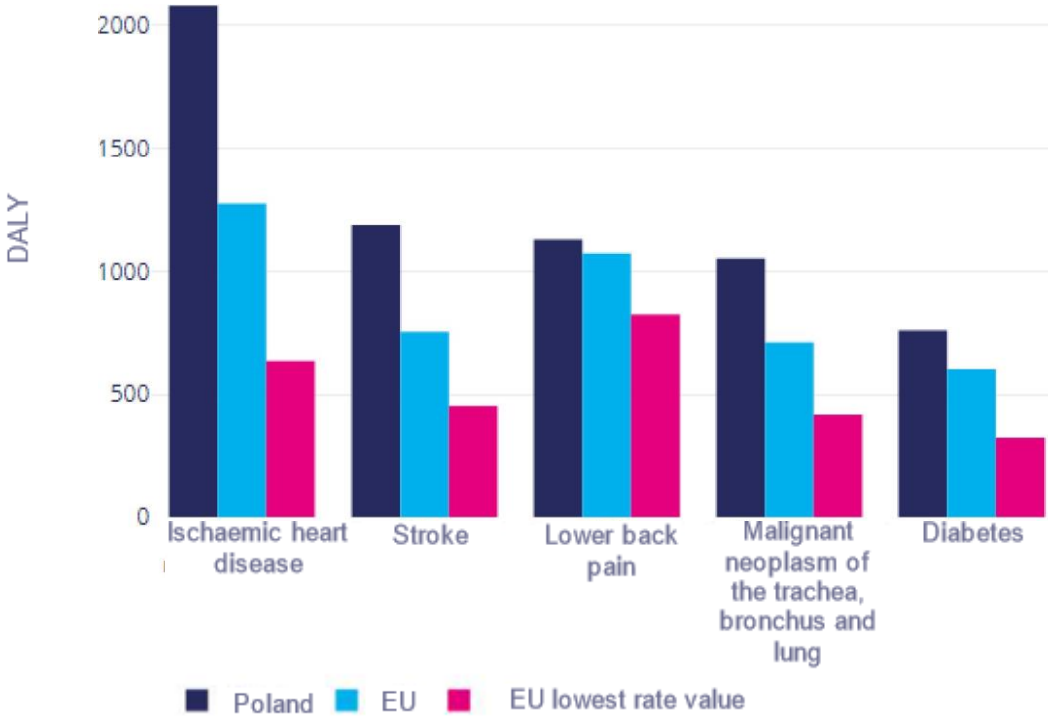
– lower back pain,

– malignant tracheal, bronchial and lung neoplasm,

– diabetes.

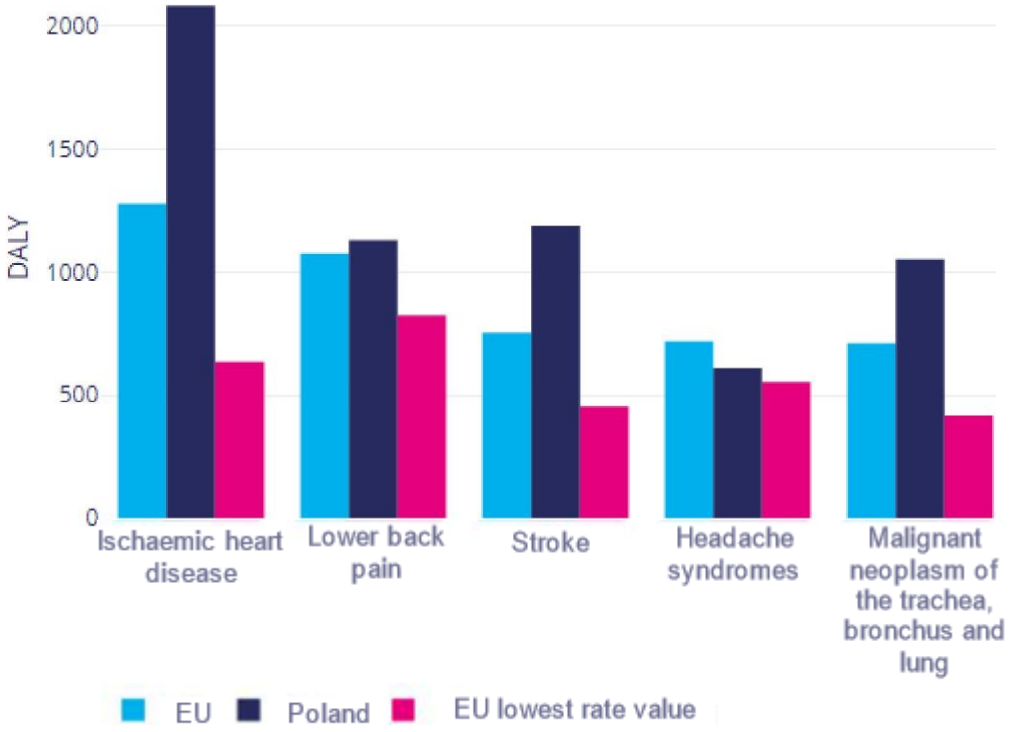
In the EU, the main five health problems were similar to the ones for Poland. The difference was diabetes, which, in the EU, did not rank among the top five problems in favour of headache syndromes.

Figure 10. Comparison of DALY values per 100,000 population for the five most severe health problems in Poland and the values for the best-ranking country in the EU and the values for the EU in 2019.



Source: Ministry of Health study based on GBD IHME data

Figure 11. Comparison of DALY values per 100,000 population for the five most severe health problems in Poland and the values for the best-ranking country in the EU and the values for the EU in 2019.



Source: Ministry of Health study based on GBD IHME data

Ischaemic heart disease had the largest impact on DALY value per 100,000 population. Since the beginning of the considered range of years, i.e. since 1999, this disease has ranked first in the rankings of Poland and the EU. However, ischaemic heart disease took a much higher DALY in Poland compared to the EU – in 2019 by more than 1/3. Among EU countries, the lowest DALY for this health problem was observed in France, where the value was lower by more than 2/3 than in Poland.

In 2019, in both Poland and the EU, strokes and low back pain ranked second and third. In Poland, based on DALY, strokes were the more severe problem, but there was only a slightly lower value for low back pain. In the EU, on the other hand, the opposite relationship was observed, with strokes being of approx. 1/4 lower DALY than low back pain. The number of healthy life years lost due to low back pain was similar in the EU and Poland. The country with the lowest value was Spain. On the other hand, in case of strokes, the differences between Poland and the EU were significant, namely in Poland the DALY value was higher for stoke by approx. 40%. Even greater differences were observed between Poland and the best-ranking country in the EU in this respect – France, where the value of the index was three times lower.

In Poland, the fourth most serious health problem based on the DALY was malignant tracheal, bronchial and lung neoplasm. Compared to the EU, where this health problem ranked fifth, the value of DALY in Poland was approx. 30% higher. The best-ranking country in this respect was Sweden, where the DALY value was 60% lower than the value of Poland.

On the other hand, headache syndromes ranked the fourth place in the EU. Although this problem in Poland did not rank high, the differences between Poland, the EU and the best-ranking EU country (Lithuania) were not significant.

Diabetes is the last of the five most acute health problems in Poland, although it does not rank as high in the EU. A significant difference of 60% was observed between Poland and France, which had the lowest DALY among EU countries in 2019.

While making judgments based on comparative analyses, one should take into account not only information about indicator values, but also the characteristics of the countries selected for comparison. In case of EU comparisons, the selection of countries is connected to their geolocation. Selecting the best-ranking country in the EU and comparing its health situation with that of Poland allows indicating the direction of the model value of health measures to which Poland should aspire. Such comparisons, however, lack information about economic conditions and socio-demographics. Changing them in the short term is not always possible. Therefore, it is worth conducting a comparative analysis not only with respect to EU countries but also to countries with similar socio-demographic characteristics. This study conducts such a comparison and its results are presented in the next subsection.

Comparative analysis of the situation in Poland and countries with similar SDI values

The situation in Poland is often compared to the situation in the EU. The only determinant in selecting countries for this type of analysis is membership in a community. Normally, these countries are not diversified by their socio-demographic characteristics. Therefore, in order to make this type of distinction, the study performs an additional comparative analysis of Poland and European countries with similar SDI values, i.e., countries in Europe with a similar socio-demographic structure. SDI value for Poland in 2019 was 0.803. A set of six countries was included in the analysis, of which three had a higher SDI value than Poland and the other three had a lower value. The selected countries included (SDI value in 2019 is given in the brackets):

- Estonia (0.831),
- Latvia (0.820),
- Malta (0.802),

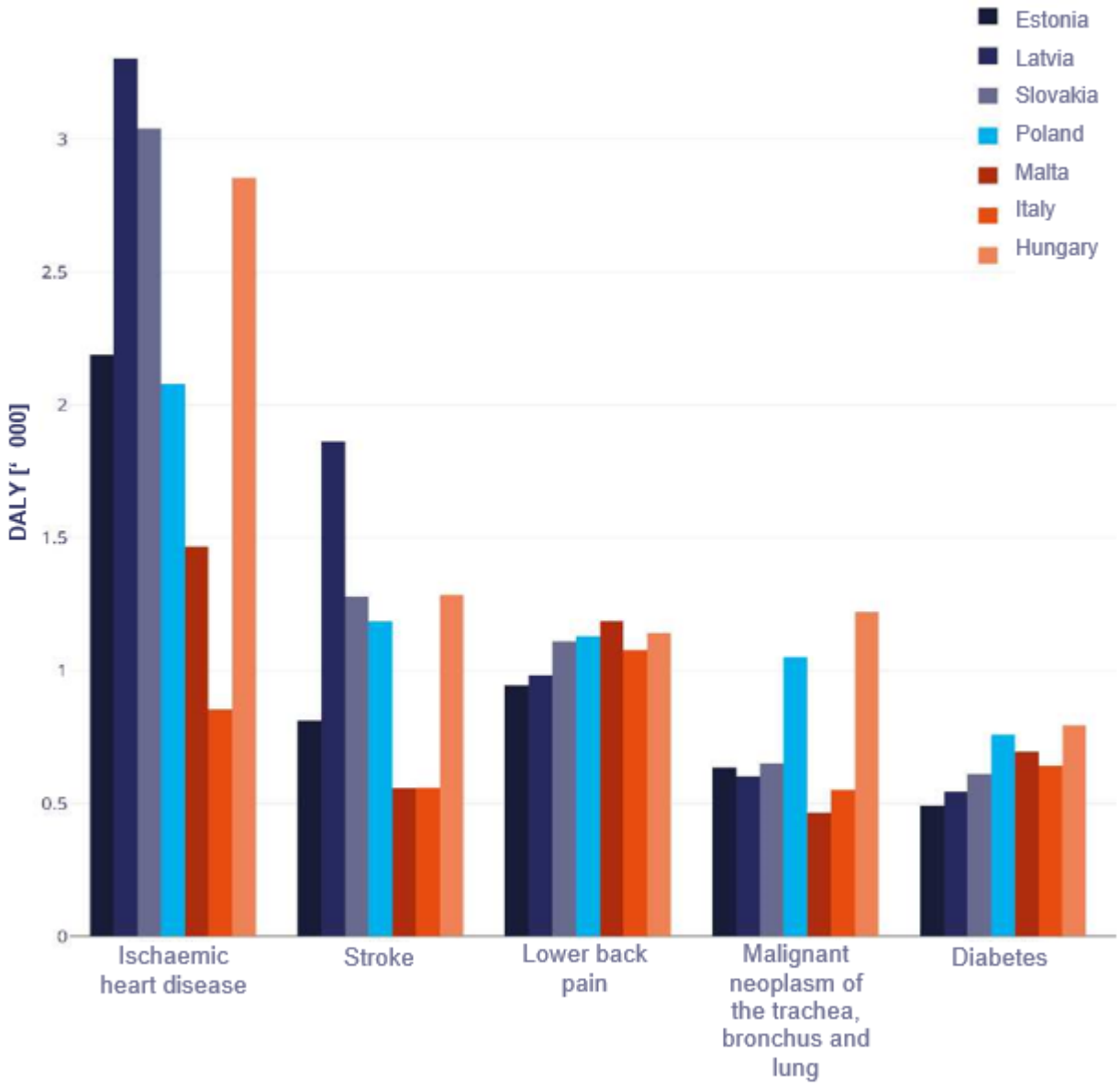
- Slovakia (0.817),
- Hungary (0.793),
- Italy (0.801).

Taking into account previous observations, the most important health problem in Poland was ischaemic heart disease in all years considered, i.e. in 1999, 2009 and 2019. Despite the fact that the value of the IHD index was much higher than in other countries, in comparison with their SDI, the situation of Poland looked favourable. Higher DALY values were found in as many as four countries, i.e. Estonia, Latvia, Slovakia and Hungary. Latvia, where the value of the index was over 1.5 times higher than in Poland, ranked the worst. Among the countries studied, noticeably higher values were recorded for Slovakia and Hungary, while the situation of Estonia and Poland was similar in this respect. The best-ranking country was Italy, for which the DALY value was more than half lower than in Poland.

The second health problem taking away the most years of healthy life in Poland was stroke, for which significant differences in DALY values were observed between the countries studied. Italy, Malta and Estonia were again better ranking than Poland. The lowest DALY was observed in Italy, where the value of the index was more than doubled. The other countries, Latvia, Slovakia and Hungary, ranked worse than Poland. Among them, the highest value of the indicator was recorded for Latvia. The second health problem taking away the most years of healthy life in Poland was stroke, for which significant differences in DALY values were observed between the countries studied. Italy, Malta and Estonia were again better ranking than Poland. The lowest DALY value was observed for Italy, where it was more than 2 times lower compared to Poland. The other countries, Latvia, Slovakia and Hungary, ranked worse than Poland. Among them, the highest value of the indicator was recorded for Latvia.

The third most significant health problem in Poland was lower back pain. Similarly to the comparative analysis considering the situation in the whole EU, no significant differences were observed among countries with similar SDI. The lowest values were recorded for Estonia and Latvia, while the highest values were for Poland, Hungary and Malta.

Figure 12. Comparison of DALY values per 100,000 age-standardised population for the five most severe health problems in Poland with values for European countries with the most similar SDI values in 2019.



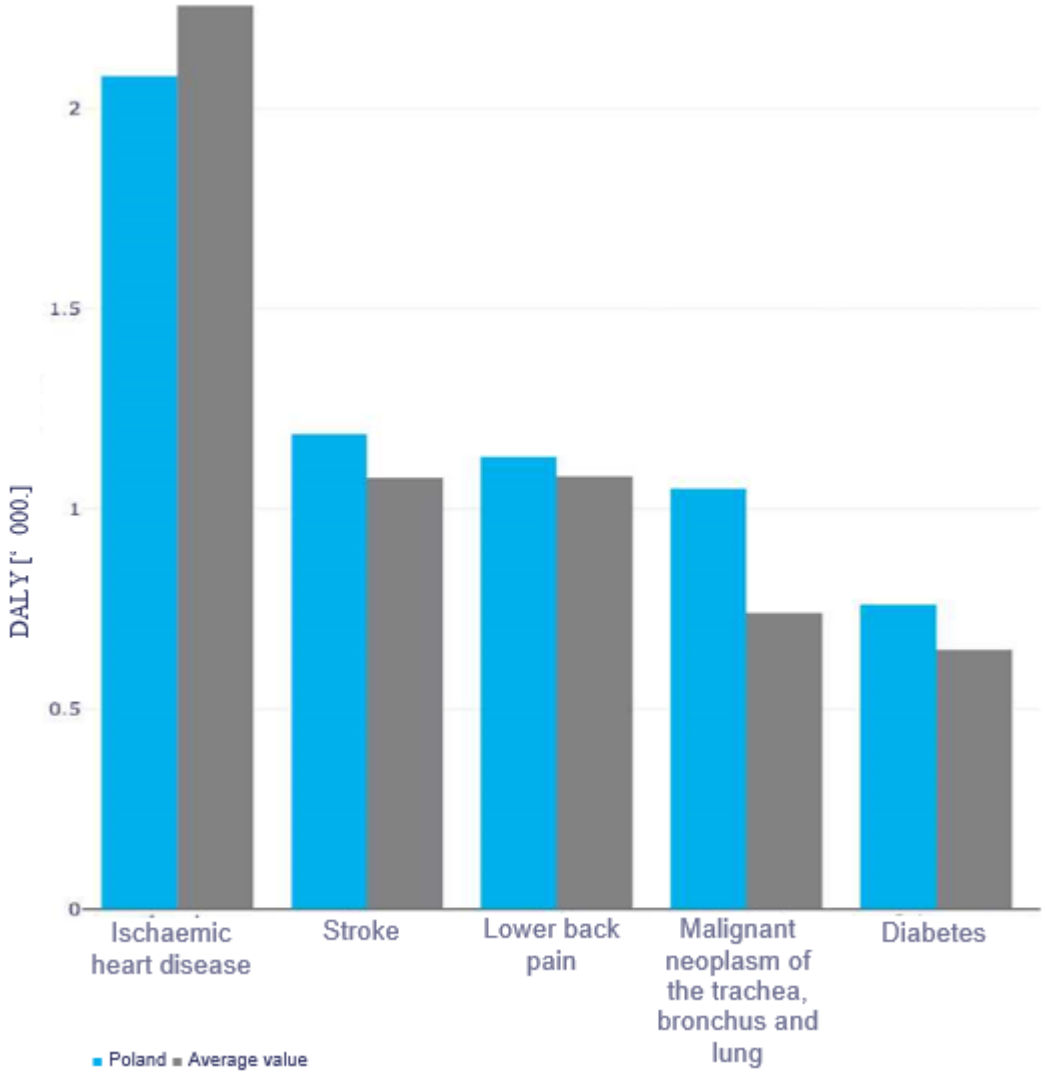
Source: Ministry of Health study based on GBD IHME data

Malignant tracheal, bronchial and lung neoplasms were another of the top five health problems in Poland and Poland ranked second among the group of countries analysed. Only Hungary was in a slightly worse situation. The difference between the values obtained for Poland and Hungary and the other countries studied was significant. This is confirmed by comparing the DALY value to the average value. When comparing DALY values in Poland with the average SDI values of the countries, the greatest differences were for the afore-mentioned neoplasms.

Diabetes is among the five most significant health problems in Poland. The DALY for Poland is not much lower than for Hungary, which, among the analysed

group of countries ranked the worst. The lowest value of the index was observed in Estonia, which was about 1/3 lower than the value for Poland.

Figure 13. Comparison of DALY values per 100,000 age-standardised population for the five most severe health problems in Poland with values for European countries with the most similar SDI values in 2019.



Source: Ministry of Health study based on GBD IHME data

Further, a more detailed analysis of health problems in Poland is discussed in the next section. It is worth noticing that among the most severe problems, two of them (ischaemic heart disease and lower back pain) are very likely to be considered chronic conditions. In their case, the analysis of DALY values indicates the intensity of their impact on the health status of the population. However, only an in-depth analysis that includes the component values of the index allows us to determine what contributed to the high ranking among the most acute health problems in Poland.

Health problems and groups of health problems in Poland

A health problem is a broader concept compared to the concept of illness because it can result not only from a medical condition but also from random causes. For example, a health impairment such as a disability can result from both a developing disease (mainly other, demyelinating diseases), as well as random causes (e.g. traffic accident). The inclusion of additional information regarding the random causes and their impact on the health status of the population, allows to obtain results more similar to the real health situation of the studied population.

According to the methodology, health problems were divided into three main groups:

- non-communicable diseases,
- injuries,
- communicable diseases, maternal and neonatal conditions, and eating disorders.

A more detailed subgrouping was distinguished for each group and health problems were included within subgroups. The analysis for Poland considers these three levels of division. The values of DALY, YLL, YLD, incidence, prevalence and number of deaths including a cause of death were determined at each level. In addition, due to the specificity of both genders, information about the obtained values of the indexes according to genders was included.

In 2019 in Poland, The DALY index was 12,600,000 (absolute value), of which non-communicable diseases accounted for 85% of the value. Compared to 1999, the index increased by about 4 percentage points. Cardiovascular diseases (primarily ischaemic heart disease and stroke) and neoplasms were responsible for half of the DALY value in the non-communicable disease group. Among neoplasms, the highest index values were obtained for malignant tracheal, bronchial and lung cancer, and malignant colorectal neoplasm. Differences were observed between the percentage of non-communicable diseases in DALY total value by gender, i.e. 89% of women, 81% of men. The list of neoplastic diseases with the greatest impact on the value of the index (in addition to those mentioned above) included malignant prostate neoplasm among men and malignant breast neoplasm among women. Health problems from the group of injuries, communicable diseases, maternal and neonatal conditions and eating disorders were responsible for the remaining 15% of DALY values.

In 2019, in Poland, the YLL rate reached 7,700,000 (absolute value) and its distribution by groups of diseases was similar to that of DALY, i.e. 87% of the value pertained to the group of non-communicable diseases, most of which were neoplasms (39%) and cardiovascular diseases (39%). Compared to 1999, the impact of the non-communicable disease group on the YLL value increased by 5 percentage points. The remaining DALY value in 2019 were constituted by injuries, infectious diseases, maternal

and neonatal conditions and eating disorders, with the percentage attributable to the injuries being about 2.5 times that of the remaining health conditions.

In 2019, the YLD value for Poland was nearly 5,000,000 (absolute value). A group of non-communicable diseases was responsible for 81% of the presented value, among which 1/5 were musculoskeletal diseases (primarily lower back pain) and 1/8 were psychiatric disorders, among which depressive disorders and anxiety disorders had the greatest impact. Nervous system and sensory organs diseases, diabetes and kidney diseases, and other non-communicable diseases each had a relatively significant share of about 10%. Approximately 15% of YLD value for Poland in 2019 were constituted by the injuries (of which about 75% were unintentional), and the remaining share was constituted by communicable diseases, maternal and neonatal conditions, and eating disorders.

Incidence in Poland in 2019 was 173,500,000 new cases of health problems. Nearly 60% of them were infectious diseases, maternal and neonatal conditions, and eating disorders, from which upper respiratory infections accounted for nearly 75% of the cases. The non-communicable diseases were responsible for approx. 35% of the incidence and injuries were responsible for about 5% of the incidence. Over the past 20 years, the contribution of each group to the incidence value has fluctuated slightly, but invariably the major components have been communicable diseases, maternal and neonatal conditions, and eating disorders.

In the case of prevalence, the value of which in 2019 was 169,000,000, the main component were also non-communicable diseases, accounting for about 50%. Other non-communicable diseases (half of which were related to oral disorders), diseases of the nervous system (95% of which were headache syndromes), and digestive system diseases (90% of which were upper gastrointestinal diseases, cirrhosis, and other chronic liver diseases) were primarily responsible for such an outcome.
Over the past 20 years, the contribution of the communicable diseases, maternal and neonatal conditions, and eating disorders to the prevalence value has declined by about 5 percentage points. In addition, about 30% of the prevalence value in 2019 fell into the injuries (of which about 81% were unintentional injuries), and the remainder was in the communicable diseases, maternal and neonatal conditions, and eating disorders group (of which about 77% were respiratory infections, HIV/AIDS, and sexually transmitted infections).

In 2019, 406,300 deaths were reported, 91% of which occurred due to health problems in the non-communicable disease group. Cardiovascular diseases (primarily ischaemic heart disease and stroke) were responsible for nearly half of these 91%, and cancer was responsible for one-third (with significant contributions from malignant tracheal, bronchial, and lung cancer and malignant colorectal cancer). Over the past 20 years, deaths caused by neoplasms have increased and cardiovascular deaths have decreased slightly. The causes of about 5% of deaths in 2019 were injuries (of which unintentional injuries were responsible for 45% while self-injury and interpersonal violence for 34% of the cases). About 4% of the deaths were accounted for by communicable diseases,

maternal and neonatal conditions, and eating disorders (respiratory infections and tuberculosis were responsible for nearly 90% of them).

Detailed information and visualisations can be found in the advanced analytics tool, on a dedicated website at (visit platform 71).

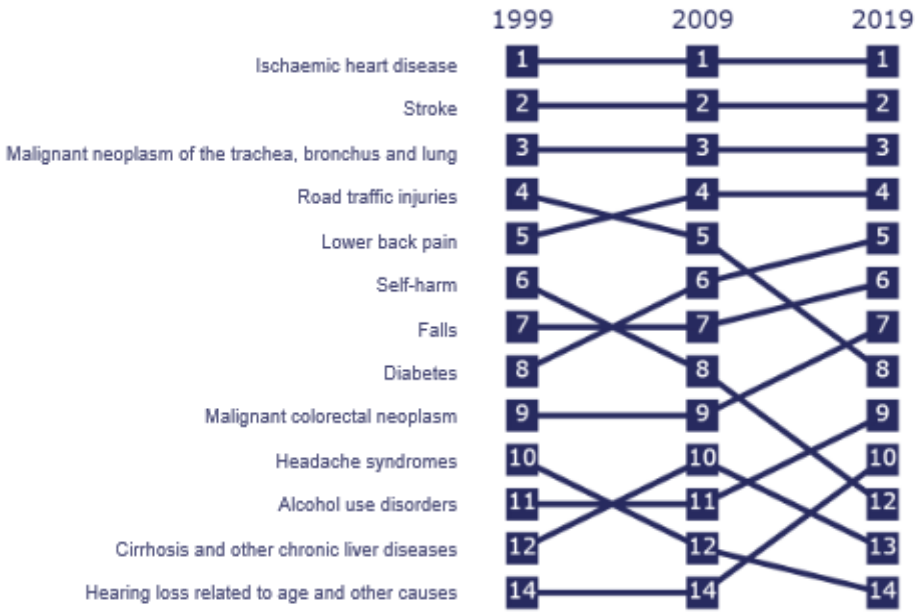
Significant health problems in Poland by DALY index

The burden of health problems in Poland was analysed above, taking into account the structure of groups and subgroups of problems. Disregarding these divisions and considering the DALY index and health problems, it is possible to identify which health problems were the most significant and to assess their impact on public health. It is worth noting the distribution of DALY values in 2019, namely - 5,800,000 for women (29,000 per 100,000 women), and 6,900,000 for men (37,000 per 100,000 men).

Based on data from 1999, 2010, and 2019, the most significant health problems[20] in Poland were invariably ischaemic heart disease, stroke, and malignant tracheal, bronchial, and lung neoplasm (the first three positions of DALY for Poland by absolute value, without a division per gender or age groups). There was an apparent decrease in the share of injuries in traffic incidents (from 4th position in 1999 to eighth place in 2019) and self-harm (from 6th position in 1999 to 12th in 2019). The opposite trend, i.e. an increase in the share,-was seen for diabetes (from 8th in 1999 to 5th position in 2019) and malignant colon neoplasm (from 9. position in 1999 to 7th in 2019).

[20] The top ten health problems according to the DALY index value (ranked from greatest to least) were considered the most important health problems.

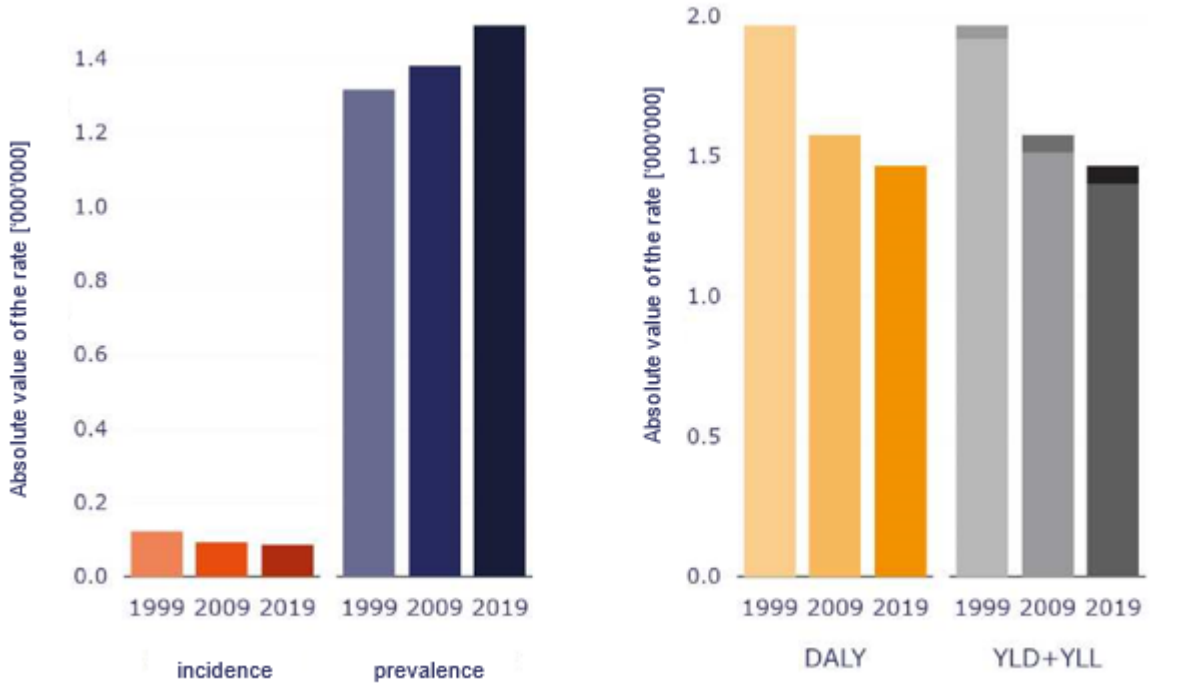
Figure 14. Ranking of health problems according to absolute value of DALY for Poland in 2019, without a division per gender and age groups



Source: Ministry of Health study based on GBD IHME data

In 2019, in Poland, the DALY value for ischaemic heart disease was 1,500,000 (3,800 per 100,000 population). Comparing the DALY rate per 100,000 population, the highest value was recorded in the Opolskie Province (4,600) and the lowest in the Wielkopolskie Province (3,100). Absolute values of prevalence in the last 20 years for IHD had an increasing trend, the opposite trend was observed for DALY and incidence. The downward trend for DALY was most influenced by the decrease of the YLL.

Figure 15. Absolute values of incidence, prevalence, DALY, YLD and YLL for Poland in the years 1999, 2009 and 2019, without division per gender and age groups for ischaemic heart disease[21]

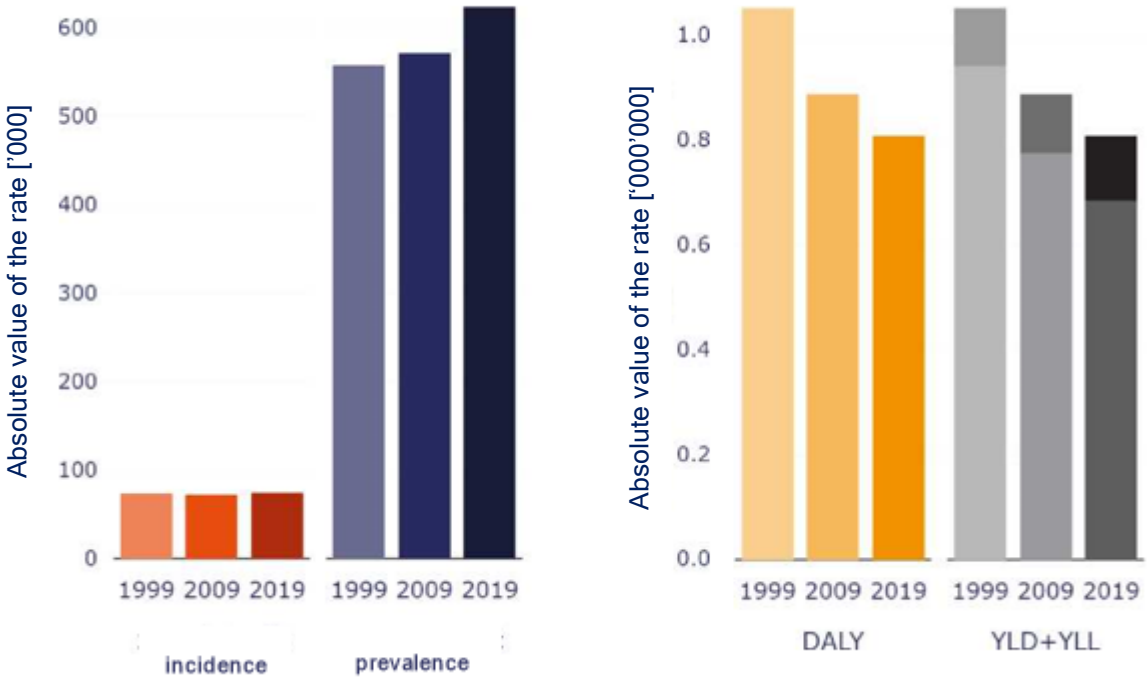


Source: Ministry of Health study based on GBD IHME data

DALY value for strokes in 2019 amounted to 800,000 (2,100 per 100,000 population). The highest value of the indicator per 100,000 population was recorded in the Łódzkie Province (2,800) and the lowest in the Pomorskie Province (1,600). The absolute value for incidence in 1999, 2009, and 2019 remained constant, the prevalence value increased, and the DALY value decreased. The change in DALY values was due to a decrease in YLL values, which means that in 2019 strokes corresponded for less life years loss due to premature death than in 1999.

[21] In the figure showing the sum of YLD and YLL, the top part of the bar represents the value of YLD and the bottom part represents the value of YLL.

Figure 16. Absolute values of incidence, prevalence, DALY, YLD and YLL for Poland in the years 1999, 2009 and 2019, without division per gender and age groups for stroke [22]

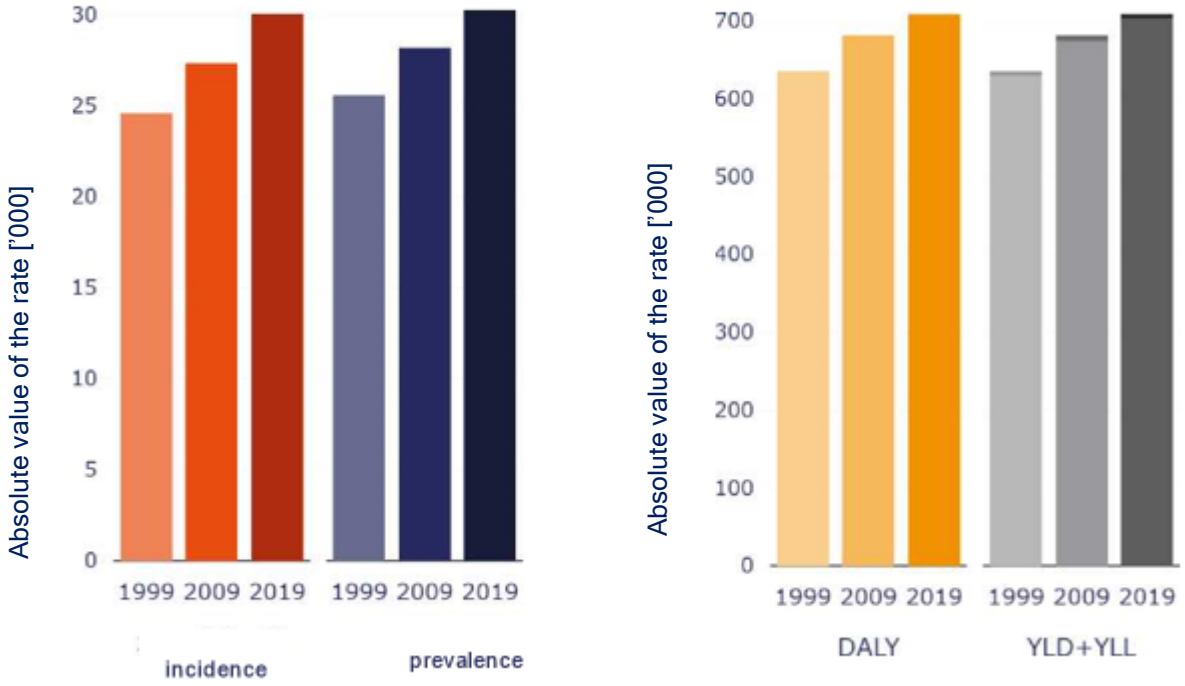


Source: Ministry of Health study based on GBD IHME data

For malignant tracheal, bronchial, and lung neoplasm in Poland in 2019 DALY amounted to 700,000 (1,800 per 100,000 population). The highest DALY value per 100,000 population was the highest in the Kujawsko-Pomorskie Province (2,300) and the lowest in the Małopolskie Province (1,400). During the years analysed, the absolute value of the incidence rate observed for stroke had an increasing trend, as did the prevalence rate. The increase in the YLL value, which represents an increase in the number of life years loss due to premature death, is responsible for the observed increase in the value of the DALY index.

[22] In the figure showing the sum of YLD and YLL, the top part of the bar represents the value of YLD and the bottom part represents the value of YLL.

Figure 17. Absolute values of incidence, prevalence, DALY, YLD and YLL for Poland in the years 1990, 2009 and 2019, without division per gender and age groups for malignant tracheal, bronchial, and lung neoplasm [23]



Source: Ministry of Health study based on GBD IHME data

The hierarchy of health problems discussed looked similar when the division by gender was taken into account. Among women, ischaemic heart disease and stroke were also the most significant problems during the period analysed, lower back pain came in third position, while malignant tracheal, bronchial, and lung neoplasm came in only fifth. place (9th position in 1999). The health problems which had a significant impact were: diabetes (from 6th position in 1999 to 4th in 2019), Alzheimer's disease and other dementia-related diseases (from 13th position in 1999 to 6th position in 2019) i.e. health problems that did not appear in the general and men comparison.

The most significant health problem among men is, as in women and for the general population, ischaemic heart disease. Malignant tracheal, bronchial, and lung neoplasm are second, and stroke is third health problem. A large increase was observed for diabetes (from12th position in 1999, to 5th position in 2019), a smaller increase was observed for low back pain (from 6th position in 1999 to 4th in 2019). Health problems that were found to be significant only in the analysis for men were alcohol use disorders (8th position between 1999 and 2019).

[23] In the figure showing the sum of YLD and YLL, the top part of the bar represents the value of YLD and the bottom part represents the value of YLL.

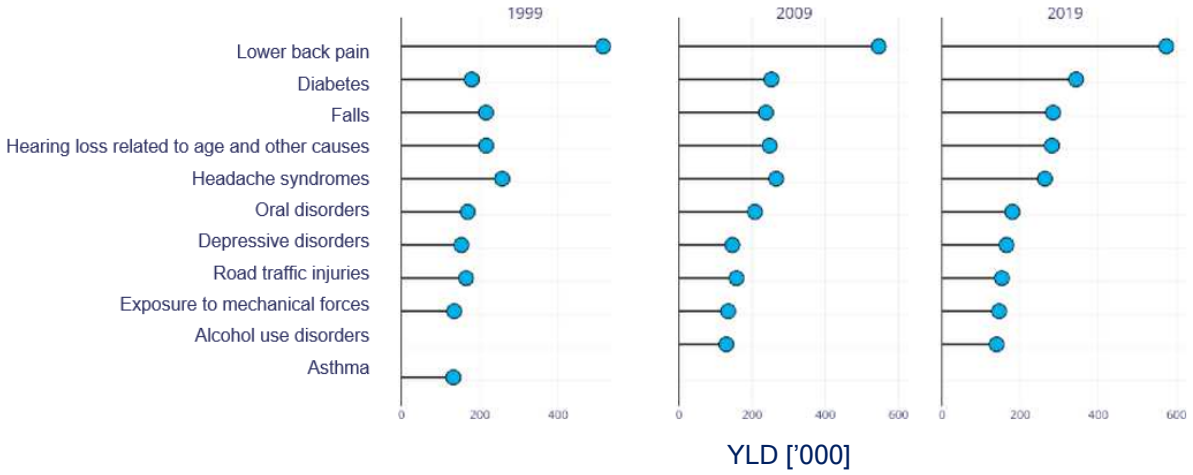
DALY value for diabetes in 2019 was 490,000 (1,200 per 100,000 population). In comparison, for women the absolute value was 240,000 (1,200 per 100,000 women), and for men – 250,000 (1,300 per 100,000 men). DALY value per 100,000 population was the highest in the Śląskie Province (1,600) and the lowest in the Podkarpackie Province (900). The gender breakdown was similar, with the highest DALY per 100,000 population in the Śląskie Province (1,700 - men, 1,500 - women), and the lowest DALY in the Podkarpackie Province (1,000 - men, 900 - women).
In 1999, 2009 and 2019, the absolute values of incidence, prevalence and DALY for diabetes had an increasing trend.
In Poland, DALY of Alzheimer's disease and other dementing diseases in 2019 reached the value of almost 280,000 (700 per 100,000 population). For women, the absolute value was 190,000 (1,000 per 100,000 women), and for men – 80,000 (450 per 100,000 men). DALY value per 100,000 population was the highest in the Mazowieckie Province and the lowest in the Wielkopolskie Province (600). In case of men, DALY value per 100,000 population reached the highest value in the Mazowieckie Province (500) and the lowest in the Warmińsko-Mazurskie Province (400), while for women - in the Mazowieckie Province (1,000) and in the Wielkopolskie Province (800), respectively. Compared to 1999, absolute values of DALY, incidence and prevalence in 2019 were on an upward trend.

In Poland, DALY value for alcohol use disorders in 2019 in Poland amounted to 300,000 (800 per 100,000 population). The index value according to gender for men was 230,000 (1,200 per 100,000 men), and for women – 70,000 (300 per 100,000 women). DALY value per 100,000 population and per 100,000 men was the highest in the Łódzkie Province (1,100 and 1,800, respectively) and the lowest in the Opolskie Province (500 and 800, respectively). DALY value per 100,000 women reached the highest value in the Łódzkie Province (400) and the lowest in the Podkarpackie Province (300). Absolute values of DALY, incidence and prevalence since 1999 had an upward trend.

Significant health problems in Poland by YLD index

The absolute value of DALY consists of YLL and YLD. Analysis of the YLD index (number of years lived in disability) represents the burden of a given health problem on the health care system, the health insurance system, and the patients themselves and their families. As the index increases, the patient's disability increases, which translates into the need for increased care for the patient.

Figure 18. Absolute value of YLD for the most significant health problems in Poland, without distinctions by gender and age groups [24]



Source: Ministry of Health study based on GBD IHME data

The highest absolute value of YLD for Poland in 2019 was recorded for health problems including: low back pain (570,000), diabetes (340,000), and falls (280,000), accounting for 25% of the YLD total. It worth noting that the impact of diabetes nearly doubled compared to 1999 (180,000). Living in disability was also caused by age-related hearing loss and other causes (280,000 in 2019) and headache syndromes (260,000 in 2019).

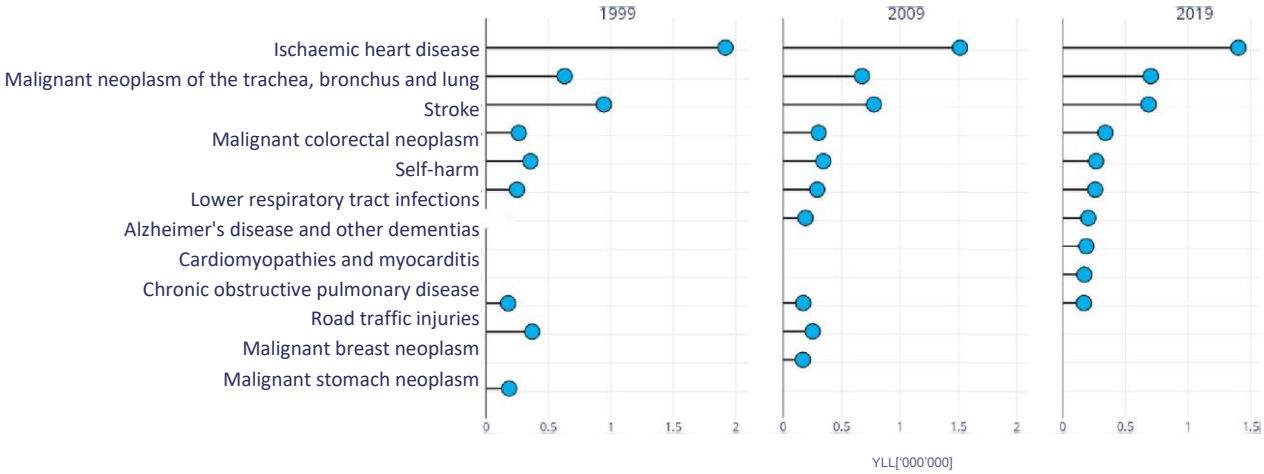
Significant health problems in Poland by YLL index

The YLL rate measures the number of years lost due to premature death. Typically, the health problems responsible for the largest YLL value are also the most significant causes of death.

This relationship was true for ischaemic heart disease (1,400,000 in 2019), malignant tracheal, bronchial, and lung neoplasm (700,000 in 2019), and stroke (680,000 in 2019), which together accounted for 36% of the YLL for Poland in 2019. The next two problems with a significant impact on YLL totals were colorectal neoplasms (340,000 in 2019) and self-harm (260,000 in 2019).

[24] The first 10 health problems were considered the most significant according to the value of the YLD index for each analysed year separately.

Figure 19. Absolute value of YLL for the most significant health problems in Poland, without distinctions by gender and age groups [25]



Source: Ministry of Health study based on GBD IHME data

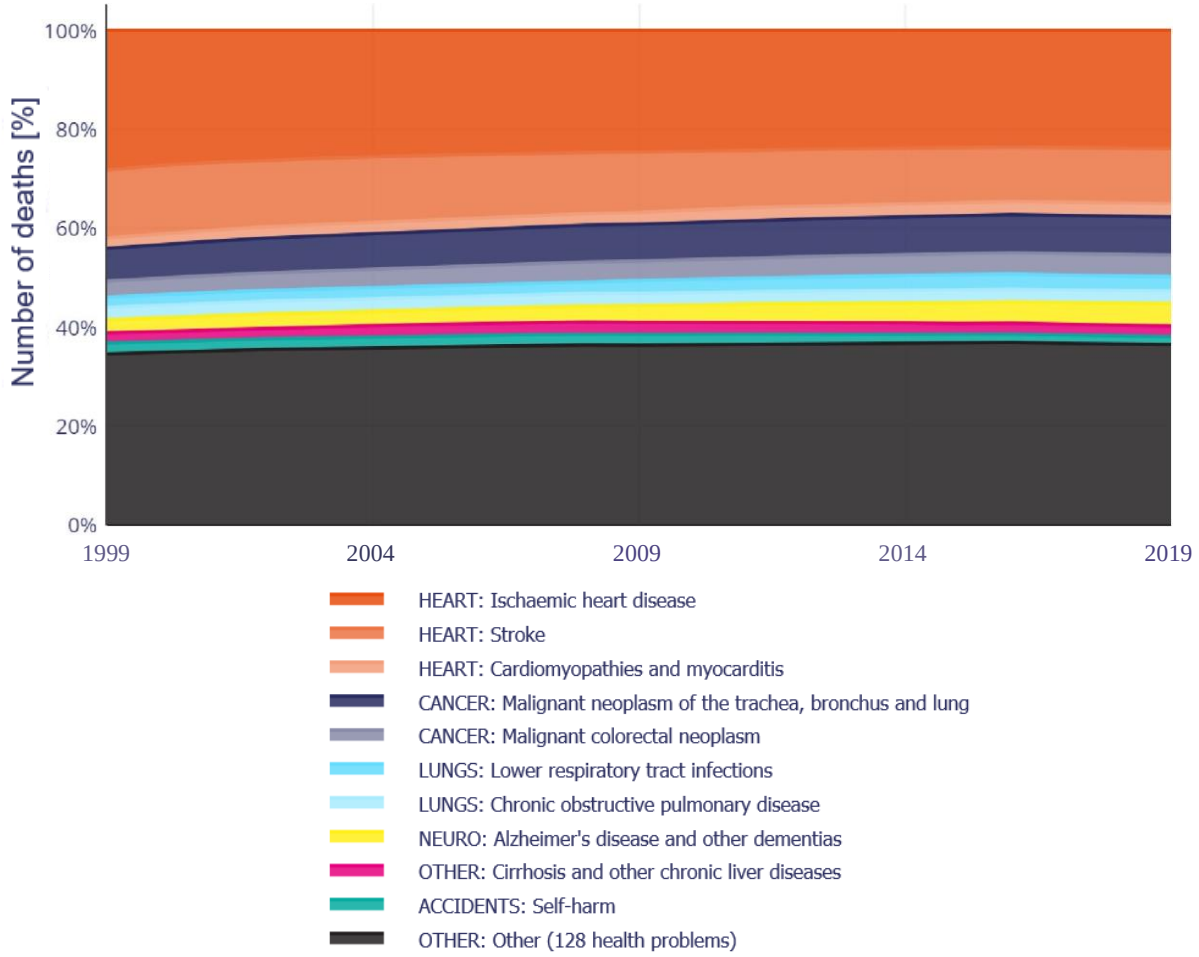
Significant causes of death in Poland

A detailed analysis of the health problems responsible for the greatest number of deaths[26] showed that over a 20-year period, cardiovascular diseases were the primary cause. Among them, three health problems had the greatest impact on the number of deaths: ischaemic heart disease (106,800 deaths in 1999, 97,200 in 2019), stroke (52,000 and 45,100 deaths, respectively) and cardiomyopathies and myocarditis (7,700 and 11,000 respectively). In 1999, the above-mentioned health problems accounted for approx. 44% of deaths, while in 2019 this percentage decreased to about 38%. Malignant tracheal, bronchial and lung neoplasm (31,200) and malignant colorectal neoplasm (17,800) together were the cause of approx. 12% of deaths in 2019. Since 1999, the index increased by about 2 percentage points. Alzheimer's disease and other dementia-related diseases were responsible for more than double the number of deaths in 2019 compared to 1999. A steady percentage of deaths (approx. 8.5%) was characteristic for respiratory diseases (chronic obstructive pulmonary disease – 10,200 deaths in 2019, and lower respiratory tract infections - 11,900 in 2019), cirrhosis and other chronic liver diseases (8,500 in 2019) and self-harm (6,600 in 2019).

[25] The first 10 health problems were considered the most significant according to the value of the YLD index for each analysed year separately.

[26] There were 10 health problems that accounted for the largest number of deaths between 1999 and 2019 included; the other health problems are aggregated into the category "other".

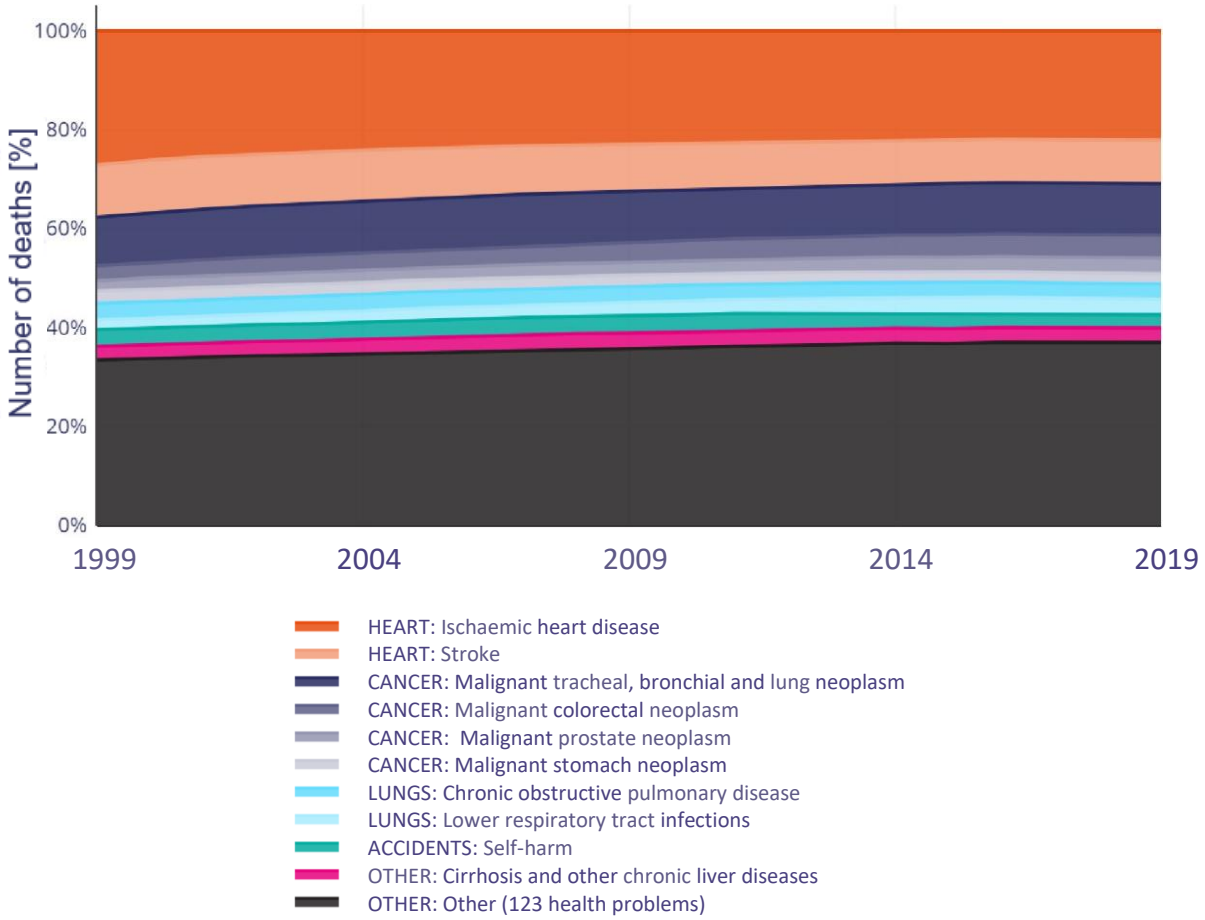
Figure 20. The percentage of death causes in Poland between 1999 and 2019, without distinctions by gender and age



Source: Ministry of Health study based on GBD IHME data

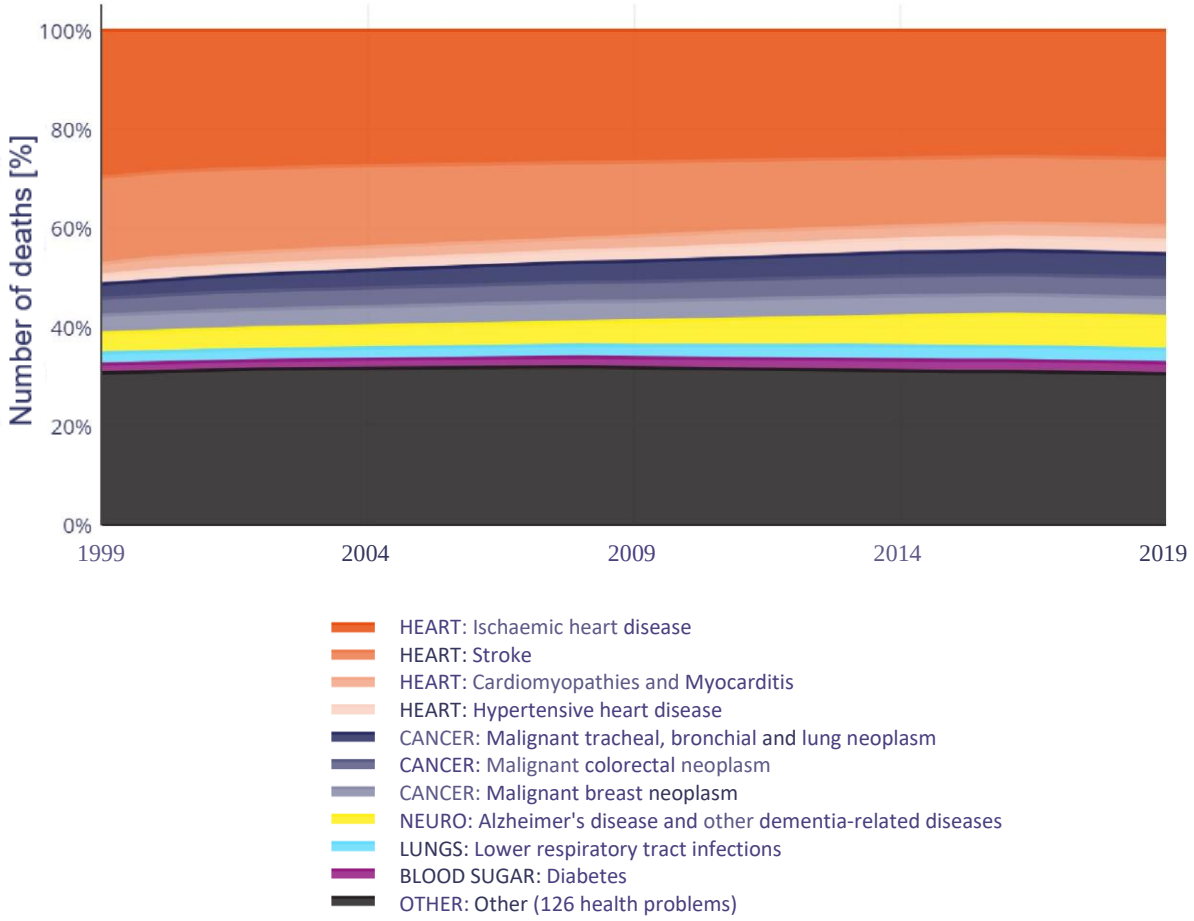
In the analysis of individual causes of death in Poland, clear differences were observed between genders. Over the past 20 years, cardiovascular diseases have been the leading cause of death, but in 2019 they accounted for 45% of deaths of women and 30% of deaths of men. In 2019, neoplasms accounted for 20% of deaths among men and 13% of deaths among women. In 2019, among malignant neoplasms, malignant tracheal, bronchial and lung neoplasms were the most common causes of death among men and women (117 deaths per 100,000 men, 48 deaths per 100,000 women) and malignant colorectal neoplasm (52 deaths per 100,000 men, 41 deaths per 100,000 women). In addition, among women, malignant breast neoplasm was a significant cause of death (38 deaths per 100,000 women), Alzheimer's disease and other dementia-related diseases (66 deaths per 100,000 women) and diabetes (22 deaths per 100,000 women). On the other hand, among men, malignant prostate neoplasm was responsible for a significant percentage of deaths (35 deaths per 100,000 men), self-harm (31 deaths per 100,000 men), chronic obstructive pulmonary disease (35 deaths per 100,000 men) and cirrhosis and other chronic liver diseases (33 deaths per 100,000 men).

Figure 21. The percentage of men death causes in Poland between 1999 and 2019, without distinctions by gender and age groups



Source: Ministry of Health study based on GBD IHME data

Figure 22. The percentage of women death causes in Poland between 1999 and 2019, without distinctions by gender and age groups



Source: Ministry of Health study based on GBD IHME data

2.2. Epidemiological forecasting in Poland

Epidemiological forecasting, which involves determining future values of health measures, is used to plan health care and prevent the occurrence of health problems in subsequent years.

The analysis of the changes of the three health measures - prevalence, incidence and number of deaths for the period 2020-2028 - was conducted for 22 subgroups of health problems, among which a subset was distinguished consisting only of those problems which, after standardisation to age, accounted for 80% of the total DALY value for the Republic of Poland per 100,000 population in 2019 The chapter concentrates on discussing the absolute and relative (percentage) differences in the values of individual health metrics between 2028 and 2019.

Each case was forecast individually on the basis of a single time series, with a division into age groups and gender taken into account. Due to the very large number

of forecasts and the different nature of the time series involved, there was a need to employ other modelling techniques.

The forecasting process consisted of the following stages, which were executed independently for each of the time series. In the first stage, models of two different classes were created (implying different assumptions as to the nature of the process generating the data): *exponential smoothing state space*(so-called ETS) and *autoregressive integrated moving average*(so-called ARIMA). In both cases, the hyperparameters of the models were selected automatically using the *forecast* package available in R (with the restriction that the degree of integration of the modelled stochastic process is at most equal to 1). Afterwards, in order to avoid model overfitting, a weighted averaging of forecasts from the models thus obtained was performed, whereby the model that generated forecasts with a higher *a posteriori* probability in relation to the naive forecast assumed as the *a priori* model was counted with twice the weight.

The first subsection compares projections for the Republic of Poland and the EU average, and for countries with similar SDI values. In order to ensure the reliability of comparisons, the values of age-standardised indicators per 100,000 of the population.

The following subsection presents a detailed analysis of the forecasted situation in Poland, also referring to the status in individual provinces.
In the comparisons within countries, the changes of indicators in values per 100,000 people were taken into account, which eliminated discrepancies resulting from the different internal structure of the compared populations and provided more reliable results.

Comparative analysis of forecasts in Poland and the EU and selected countries with similar SDI values

The forecast of health measures in Poland was compared to the EU and countries with similar SDI values, with the main focus on the comparison between 2019 and 2028. Both absolute differences per 100,000 population, reporting the quantitative change in the number of people affected by a health problem, and percentage differences, determining the degree of these changes, were substantial. In addition to the general analysis of subgroups of health problems, ischaemic heart disease, which was the most significant health problem in Poland between 1990 and 2019, was examined in detail.

Diabetes, kidney diseases and sensory organ diseases will record the largest increase in prevalence in Poland over the next nine years, with less dynamic growth in the EU. Diseases of the musculoskeletal system will be characterised by significant increases in prevalence in both the Republic of Poland and the EU. On the other hand, unintentional injuries are an example of a problem for which the increase in prevalence in the EU is projected to be higher than in Poland. Neoplasms appear to be a major challenge, which in EU countries

should record a decrease in prevalence (by about 24.62% in 2028 compared to 2019), while a slight increase in Poland (4.2%). A good forecast for our country can be noted, especially for respiratory tract infections and tuberculosis, whose prevalence will fall significantly (by 19.96%) faster than in EU countries (by 10.91%).

A significant difference in the rate of increase in prevalence between Poland and countries with similar SDI values can be observed for unintentional injuries. It will amount to 2.23% and 9.21% respectively in 2028 compared to 2019. The prevalence values for diabetes and kidney diseases will also increase faster in countries with similar SDI values (by 16.26%) than in Poland (14.86%). The increase in the number of people suffering from neoplasms in both cases will be at a similar level.

Both in comparison to the EU and countries with similar SDI values, the situation in Poland will be the most favourable for respiratory tract infections and tuberculosis - the country is projected to have the most significant decline in prevalence by 2028.

The analysis of the incidence rate shows that as regards the respiratory tract infections and tuberculosis, the situation in the Republic of Poland will be significantly better than in the EU (fewer new cases by 3,969.21 per 100,000 population in 2028 compared to 2019, by 1.97%, no change in the EU). The situation of the incidence due to Enterobacteriaceae infections will also be better in Poland (less by 6,458.58 per 100,000 population, 11.53%), i.e. the decrease will be considerably greater than in the EU (300.74 per 100,000 people, less by only 0.64%). Despite an upward trend in the case of diseases of the skin and subcutaneous tissue, the Republic of Poland will again do better than the EU (an increase of 1,476.99 per 100,000 population, 2.64%, compared to 2,751.08 per 100,000 population, 3.55% in the EU, respectively). The situation will be unfavourable for the country with regard to neoplasms (an increase of 115 per 100,000 people, 3.78%), while the EU will record a downward trend (by 1,118.71 per 100,000 population, 14.85% fewer cases in 2028 compared to 2019).

The situation will be comparable to countries with similar SDI values, where the incidence of neoplasms will decrease (by 330.08 per 100,000 population, 3.61%). The decrease in the incidence of Enterobacteriaceae infections will be 4.48%, which is higher than in the EU but still worse than in Poland.

Despite the upward trend with respect to skin and subcutaneous tissue diseases, the Republic of Poland will again score better than countries with a similar SDI value, where the increase will be 3,168.01 per 100,000 population, 4.55%.

Analysis of projected differences in deaths per 100,000 population reveals that the rate of growth in the EU will be the highest in the case of cardiovascular diseases (at the level of 13.5%). At the same time, in Poland, the variations over the years will not be noticeable. The number of deaths in our country significantly exceeds the number of deaths in the EU and, irrespective of the described dynamics, will still be higher in 2028.

As far as neoplasms are concerned, there will be a faster increase in the number of deaths in Poland than in the EU (the difference between 2028 and 2019, and 2019 equals 29.86 per 100,000 population, corresponding to an increase of 9.4%, analogically for the EU - 16.29 per 100,000 population, an increase of 5.4%).

The overall differences in the number of deaths between 2019 and 2028 will be smaller between Poland and countries with a similar SDI value than between Poland and the EU. This is particularly noticeable in the case of cardiovascular diseases, where for countries with a similar SDI value, the increase will be at the level of 2.91 cases per 100,000 population (by 0.53%), thus much slower than for the EU as a whole but still higher than in the Republic of Poland.

In the country, the rate of growth of mortality due to neoplasms will continue to be significantly higher, so whether compared to the EU as a whole or countries with similar SDI values, the situation in Poland will be worse in this respect.

As already discussed, the most important health problem in Poland in 1990-2019 was ischaemic heart disease. The projected prevalence value (per 100,000 population) for 2028 amounts to 4,212.08, which means an increase of 8.53% (331.18 per 100,000 population) compared to 2019. The increase in prevalence in the EU between years will be slightly higher than in Poland and will amount to 10.15% (406.02 per 100,000 population). However, comparing the situation in Poland with countries with similar SDI values, it is projected that the value of prevalence per 100,000 population in these countries will increase over the years by 813.72 per 100,000 population, i.e. by 13.64%. In 2028, it will be equal to 6,780.61, which is 37.88% higher than in the corresponding period. In conclusion, the rate of growth of the prevalence of ischaemic heart disease in Poland will be slower than in countries with similar SDI values and than the EU average.

Over the projected years, the number of deaths per 100,000 population due to ischaemic heart disease will increase. The fastest growth will be observed in the EU (25.04 per 100,000 population, by 13.24% more deaths in 2028), smaller in Poland (10.33 per 100,000 people, by 4.08%), and the smallest in countries with a similar SDI value (0.56 per 100,000 population, or 0.18%). Despite these dynamics, in 2028, the number of deaths in Poland will still be higher than in the EU (by 22.92%), but lower than in countries with a similar SDI value.

These analyses indicate that ischaemic heart disease is a significant health problem and will be a future challenge both in Poland and in the EU in general.

Analysis of the forecast for Poland

The analysis of the projected situation in Poland focused on identifying subgroups of health problems for which changes in values per 100,000 population of three epidemiological indicators (prevalence, incidence, and number of deaths) will be the greatest between 2028 and 2019, The provinces in which the situation in this respect will be better or worse in relation to the average for the country are also specified.

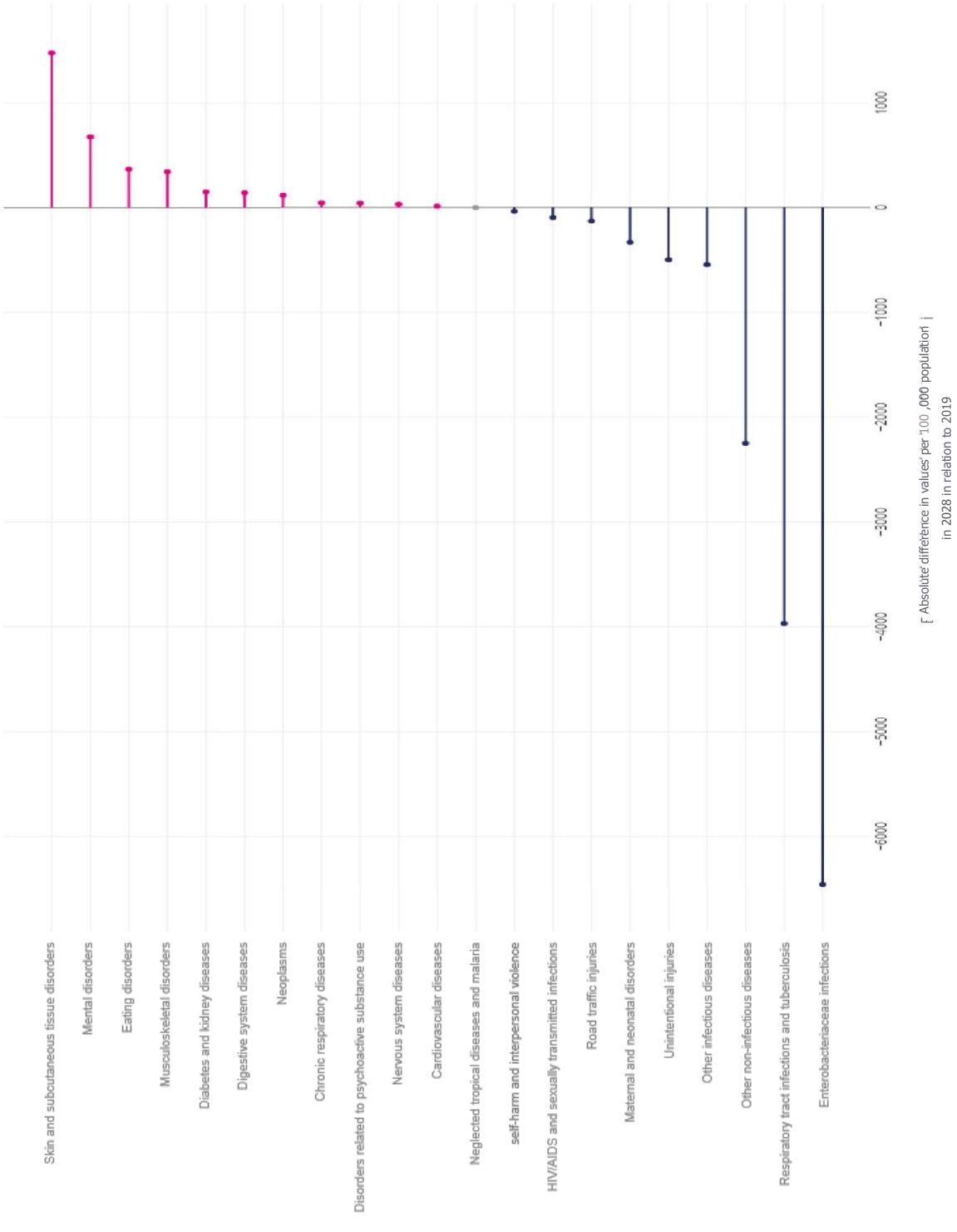
The epidemiological forecast for Poland indicates that the prevalence value is expected to increase the most in 2028 as compared to 2019 for diseases of the sensory organs (by more than 2,874.08 per 100,000 population, i.e. 9.98%), including mainly age-related hearing loss and other causes, where the percentage increase is recorded at 10.24%. The second subgroup with an increase will be diabetes and kidney diseases (an increase of approximately 2,631.95 per 100,000 population, i.e. 14.86%), with a leading prevalence of diabetes (23.74%). Musculoskeletal diseases ranked third (1,878.05 per 100,000 population in 2028 compared to 2019, an increase of 8.25%). Although no increase in prevalence will be observed for mental disorders in Poland, an increase of 17.46% is expected for depressive disorders (495.14 per 100,000 population more in 2028 than in 2019). This will particularly affect men (30.13% increase) and to a lesser extent women (12.18%).

Analysing regional variations, the increase in prevalence over the studied years for diseases of the sensory organs will range from 7.86% (2,246.65 per 100,000 population more in 2028) in the Mazowieckie Province to 11.93% (3,598.31 per 100,000 population) in the Opolskie Province. In the case of diabetes and kidney diseases, the most significant increase will be observed in Warmińsko-Mazurskie (3,354.69 per 100,000 population, i.e. 17.9%) and the least in the Mazowieckie Province (2,194.52 per 100,000 population, i.e. 12.74%). In contrast, the highest increase in the rate for musculoskeletal diseases will be in the Warmińsko-Mazurskie Province (2,045.24 per 100,000 population, i.e. 9.37%). In Łódzkie and Mazowieckie provinces, the lowest increase in prevalence is forecast for this subgroup of health problems among all the provinces (by 7.16% and 7.2%, respectively).

The projected decrease in prevalence per 100,000 population in Poland will be most noticeable in the case of respiratory tract infections and tuberculosis (a decrease of 4,075,570 per 100,000 population, or 19.96%). Differences in value decreases in individual provinces will range from 17.75% in the Mazowieckie Province to 20.37% in the Kujawsko-Pomorskie Province.

Taking into account the ageing population in Poland, attention was drawn to the problems of people over 70 years of age. Similarly to the general population, the prevalence of diabetes and kidney diseases will increase most significantly in the elderly, with the prevalence of diabetes alone rising by 20.64% (5,256.91 per 100,000 population). The increase in neoplasms in this age group is also worth pointing out (by 18.92%, accounting for 1,834.62 per 100,000 population), including mainly malignant colorectal neoplasm (by 16.32% in 2028 compared to 2019) and malignant prostate neoplasm (14.17%).

Figure 23. Absolute differences in incidence per 100,000 population between different subgroups of health problems in Poland in 2028 with reference to 2019.



Source: Ministry of Health study based on GBD IHME data

When analysing the incidence in Poland, the projection for 2028 presents a significant numerical increase in the value of this indicator for skin and subcutaneous tissue diseases (by

. population, i.e. 2.64%). Whereas a significant percentage increase will concern mental disorders (20.81%, 676.35 per 100,000 population more in 2028 than in 2019), which will be mostly influenced by depressive disorders (increase at 23.78%, 575.53 per 100,000 population). This problem will particularly affect women (increase of 30.3%), with a slightly smaller, but still significant, increase in men (21.22%). Nutritional deficiencies are also important in the analysis of the general incidence of the population; they predominate in the percentage increase (by 41.78%, which corresponds to 367.38 per 100,000 population). In the regional comparison, the percentage increase of incidence for mental disorders will be the highest in the Dolnośląskie Province (30.26%) and the lowest in the Warmińsko-Mazurskie Province (17.81%). As for nutrition deficiencies, differences in the increase of incidence will vary from 24.87% (211.08 per 100 000 population) in the Świętokrzyskie Province to 45.91% (400.34 per 100,000 population) in the Zachodniopomorskie Province.

The projection shows that a considerable decrease in incidence values in Poland will be seen for respiratory tract infections and tuberculosis (by 3,969.21 per 100,000 population, or 1.97%), which further supports the conclusion from the prevalence analysis that this subgroup will be of less concern in the future than it is today.

In the Opolskie Province, the decrease in incidence value will be the greatest (at the level of 2.98%, 5,950.97 per 100,000 population less in 2028). The smallest decline will occur in the Lubelskie Province (1.26%, i.e. 2,538.83 per 100,000 population less in 2028).

Neoplasm will be responsible for one of the largest increases in the value of deaths in Poland in 2028 as compared to 2019 (the difference in value between the years is 29.86 per 100,000 population, an increase of 9.4%). In this group, malignant tracheal cancer, bronchi and lungs, and malignant colorectal neoplasm represent a significant proportion. The second subgroup of health problems for which a significant increase in the number of deaths is forecast is diseases of the nervous system (an increase of 13.84 per 100,000 population, that is, 22.22%). Alzheimer's disease and other dementia-related diseases are mainly responsible for this tendency (11.8 per 100,000 population more deaths in 2028, or 24.53%). Although there is no overall increase in deaths due to cardiovascular diseases, cardiomyopathy, myocarditis and ischaemic heart disease present a significant increase in values, by 4.45 and 10.33 per 100,000 population, respectively (15.56% and 4.08%), in comparison to 2019.

In regional comparison, the highest increase in deaths due to neoplasms will occur in the Opolskie Province (13.63%, or 45.31 per 100,000 population less in 2028 compared to 2019) and the lowest in the Małopolskie Province (6.25%, 16.84 per 100,000 population). Malignant tracheal, bronchial and lung neoplasm, as well as malignant colorectal neoplasm, will also be mainly responsible for these increasing trends within the country.

In the case of deaths due to diseases of the nervous system, the increase will vary from 15.64% (10.57 per 100,000 population) in the Łódzkie Province to 30.34% (19.48 per 100,000 population) in the Opolskie Province. As is the case for the country overall, Alzheimer's disease and other dementia-related diseases will be predominant in each province.

The Kujawsko-Pomorskie Province, in turn, will record the largest increase in the number of deaths due to ischemic heart disease (an increase of 32.06 per 100,000 population, accounting for 13.37% more deaths in 2028 compared to 2019). In the Wielkopolskie Province the greatest relative increase in deaths due to cardiomyopathy and myocarditis will be observed (6.22 per 100,000 population, accounting for 20.26% more deaths). Only the Wielkopolskie Province is expected to record a decline in the number of deaths due to neoplasms (1.77% less, 3.54 per 100,000 population).

The decrease in the number of deaths in Poland will be most noticeable in traffic injuries (by 25.09%, 2.81 per 100,000 population), including mainly road traffic injuries (by 25.5%). In a regional comparison of deaths caused by road traffic injuries, the situation in the Małopolskie Province will be most favourable (with a 46.27% drop, 3.84 per 100,000 population, and the Świętokrzyskie Province will have the worst results (21.85% drop, 2.95 per 100,000 population).

Presentation of the most important health problems in Poland and the dynamics of their changes

This section analyses selected health problems for which the prevalence was highest in 2019 and remains at the same level in the 2028 projection. The dynamics of changes in prevalence over the years were also analysed, by making comparisons within the country.

The most important health problems that reached the highest prevalence values per 100,000 population in 2019 were identified, as well as the problems that will become important in the 2028 forecast. The focus was on the comparison between years to determine how the level of importance of a given health problem will change in the future. Only health problems that, when standardised to age in 2019, accounted for 80% of the total DALY value for Poland per 100,000 of the population.

Information on the ranking of the health problem in the year analysed is provided above each bar. Oral disorders were the most significant in terms of prevalence in 2019. Due to the apparent increase in the value of the indicator in the projection for 2028, this problem will remain the most important. Headache syndromes ranked second in the projection and will remain at this level according to the forecast. Hearing loss due to age and other causes ranks third and will remain at this level in the future. Fourth position will be occupied by exposure to mechanical forces. Falls were ranked 6th in 2019; in 2028 their importance will increase to 5th position. They will thus swap order with diseases of female reproductive organs, which will fall to 6th position in 2028. The 7th position in terms of relevance

in Poland will invariably be occupied by upper gastrointestinal diseases, followed by cirrhosis and other chronic liver diseases, and then lower back pain. The importance of blindness and visual impairment, which was ranked 11th in 2019, will increase over the years and will reach 10th position in 2028. The situation will be opposite for chronic kidney disease, whose level of importance will slightly decrease, from 10th to 11th position in 2028. However, it does not change the fact that this health problem will still be significant in the future.

2.3. Conclusions

When looking at the epidemiological situation in Poland, cardiovascular diseases and neoplasms clearly prevail. Health problems from these two subgroups account in total for 73% of all deaths and 44% of total DALY. Among them, several were observed to have a very high impact on the overall health situation in Poland. The analysis performed revealed that the health problems that burden society the most are:

– ischaemic heart disease (IHD),

– stroke,

– malignant tracheal, bronchial and lung neoplasm,

– malignant colorectal neoplasm,

– diabetes.

These five health problems account for approximately 30% of DALY value and cause nearly 50% of deaths. The first of them - ischaemic heart disease - has for years been the major health problem in Poland, both in terms of DALY value and the number of deaths resulting from it. Not only is it the biggest problem in Poland; in the EU, it is also considered the most severe, with the DALY value in Poland in 2019 being 1/3 higher than in the EU countries. Moreover, the number of patients and deaths due to it is projected to increase in the following years, and this increase will be higher than in the EU.

Unlike the next most important health problem, stroke, ischaemic heart disease is chronic. Therefore, it could be assumed that it generates an aggregately higher number of years of life in disability than strokes. However, the analysis demonstrated that this assumption has no basis in reality, as the YLD indicator for strokes was twice as high. Thus, strokes lead to significant disability among most patients and at the same time are the second most important cause of death in Poland. Projections show that this situation will not change in the next years (2020-2028).

Neoplasms is the second most common cause of death. Malignant tracheal, bronchial and lung neoplasm, and malignant colorectal

neoplasm constitute the largest proportion, accounting for approximately 12% of all deaths in Poland. It should be borne in mind that among women, malignant breast neoplasm is also an important cause of death, and among men, the increase in the number of deaths due to prostate neoplasm compared to 1999 is alarming. The projection analysis indicated that both the number of deaths, prevalence and incidence of neoplasms will increase until 2028. In contrast, in the EU, apart from the number of deaths, these indicators will have a decreasing trend.

Ischaemic heart disease, stroke and malignant tracheal, bronchial and lung neoplasm have significantly higher DALY values than the EU average. The situation of the Republic of Poland in this respect is, therefore, worse, and on the basis of the projections made, it can be assumed that it will not improve.

The last of the health problems mentioned is diabetes. It is a chronic disease, therefore it mainly affects the length of life of the population with disability, accounting for about 7% of the YLD. This value is almost three times higher than for strokes, which in turn cause five times more deaths than diabetes.

When considering the health problems responsible for the highest number of deaths in 2019, Alzheimer's disease and other dementia-related diseases cannot be omitted, as they account for 4.5% of deaths. Their numbers have been steadily increasing since 1999 and are projected to increase further over the period of 2020-2028.

The YLD is a constituent part of the DALY indicator, and the following health problems are responsible for 35% of its value in Poland:

– lower back pain,

– diabetes,

– falls,

– hearing loss due to age and other causes,

– headache syndromes.

The aforementioned problems together constitute nearly 15% of DALY and 25% of prevalence. The health problems that are the main reasons for living with disability in Poland in 2019 were lower back pain and diabetes - together, they account for 18.4% of the YLD value and 5% of the prevalence.

The most significant health problems in terms of prevalence value are those classified as diseases of the nervous system, diseases of the digestive system and diseases of the sensory organs, which account for 9.6%, 7.6% and 6.5% of the YLD value, respectively. Diseases of the musculoskeletal system have a distinctive status, which, despite having a smaller percentage of the total prevalence (about 5%), cause a large loss in ability, accounting for 17% of the YLD value. The projections suggest that the subgroups mentioned will significantly gain in importance by 2028. The above trend is visible in each province, which implies that these are nationwide problems.

2.4. Health care system challenges

Ischaemic heart disease has for years been the leading health problem in Poland and is the most common cause of death. The DALY for this disease accounted for about 11.5% of the DALY for the country and was almost twice as high as for another health problem - strokes. According to projections for 2020-2028, ischaemic heart disease will continue to be a challenge for Polish health care. The prevalence and number of deaths are estimated to increase. Despite a slower rate of growth in the number of patients in Poland compared to countries with a similar SDI value, it will be faster than the EU average.

Stroke causes significant disability among most patients. The YLD for this condition is twice as high as for ischaemic heart disease. Furthermore, stroke is the second most common cause of death and this situation is projected will remain unchanged until 2028.

Neoplastic diseases also constitute a significant problem due to the number of deaths it causes, which has increased by up to 25% since 1999. Projections indicate that this number will continue to increase, up to 10% by 2028 compared to 2019. Within this group of health problems, malignant tracheal, bronchial and lung neoplasms, and malignant colorectal neoplasms currently cause the most significant number of deaths (totalling 40%), and it is estimated that deaths from these diseases will increase by 2028 (by 11% and 14% respectively).
It is estimated that the number of patients diagnosed with neoplasm in Poland will increase by 4.2% up to 2028. The same applies to new cases, which are expected to increase by 3.8% compared to 2019. In contrast, increases will be at a lower level in the EU and SDI countries. In addition, new cases will decrease. In the EU, the average decrease in cases is estimated at 15%, and in countries with a similar SDI at 3.6%.

The increasing importance of Alzheimer's disease and other dementia-related diseases is alarming. Since 1999, the value of the DALY for these conditions has increased by more than half. A similar trend applies to the values of the other indicators - number of deaths, incidence and prevalence.
In 2019, they accounted for nearly 5% of deaths in Poland. Projections suggest that people will increasingly die from diseases of the nervous system (22.2% more deaths in 2028 compared to 2019), especially Alzheimer's disease and other dementia-related diseases (by 24.5%).

When analysing the burden of disability caused by chronic diseases, one of the most severe health problems is diabetes. This is evidenced by both the doubling of the YLD between 1999 and 2019 and the dynamic increase in the importance of diabetes in terms of the DALY value in Poland. According to forecasts, by 2028 diabetes will record the largest increase in prevalence of all health problems (by 23.7%).

Falls and lower back pain significantly worsen the quality of life of the population due to the disability they cause. Together, they account for about 17% of the YLD and 7.7% of the DALY. By the number of patients with osteoarthritis will increase significantly (by 16% compared to 2019).

Hearing loss due to age and other causes is an escalating burden on society, due to an increase in prevalence values by 30% in 2019 compared to 1999. and the rise in importance in terms of DALY.
The forecast indicates that this health problem will record the strongest increase in the number of patients among diseases of the sensory organs and will occupy one of the first places in terms of prevalence in Poland in 2028.

In Poland, injuries in road traffic incidents are becoming progressively less severe.
Since 1999, there has been a twofold decrease in fatalities within this type of injury. Moreover, according to estimates, the decreasing trend in the number of deaths will continue in the following years and will be the most noticeable among all health problems in Poland. In 2028, the number of deaths will decrease by 25.5% compared to the 2019 value, which will represent a more significant change than the EU average.

In 2019, respiratory tract infections and tuberculosis have a significantly lower prevalence value - by 30% compared to 1999. The projections reveal that by 2028 this number will decrease by a further 20%. This will be a faster decline than in the EU, where a change of 11% is estimated.

Oral disorders have been the most common health problem for years. This is evidenced by the highest prevalence rates observed since 1999.

3. Risk factors and prevention

One of the components of monitoring the health status of a population, as well as preventing diseases effectively, is to assess the impact of risk factors. The ability to eliminate or reduce exposure to a factor associated with a health problem reduces morbidity and consequently impacts on length and quality of life. Analysis of data by risk factors helps to guide health policy in primary and secondary prevention by identifying vulnerable individuals and groups, and enabling intervention at the earliest possible stage[27]. The key risk factors in Poland were analysed, presenting their empirical impact on DALYs and deaths, and the variation across the country was presented. The response to the negative impact of the factors are public health measures, including prevention programmes and screening, which have been subjected to detailed quantitative and qualitative analysis.

3.1. Risk factors

A risk factor is a condition, characteristic or behaviour that influences the likelihood of the occurrence of a particular health problem. Risk factors are often analysed individually, but in practice they often coexist and interact[28]. Research on risk factors has a vital role in the IHME's GBD study. To measure the health of the world's population more accurately, risk factors in the population are systematically analysed so that actions to manage the most burdensome health problems can be targeted more accurately[29]. Risk factors are divided into three main groups:

- behavioural - related to human behaviour and actions. These include, for example, tobacco, alcohol consumption and low physical activity;
- metabolic - result from human physiology. They can be influenced by genetic factors as well as lifestyle. These include, for example, high blood pressure, high BMI and high LDL cholesterol;
- environmental/occupational - cover a wide range of topics, such as social, economic, cultural factors, as well as physical, chemical
  and biological factors. Examples of factors in this group include polluted air and water, poor hygiene and lack of handwashing.

According to a survey conducted by NIZP-PZH-PIB in 2018, which concerned self-assessment of health status and prevalence of risk factors for

[27] R. Topór-Mądry, A. Gilis-Januszewska, *Szacowanie potrzeb zdrowotnych*, Kraków 2002, p. 47; 97.

[28] https://www.eupati.eu/pharmacoepidemiology/risk-factors-health-disease/, [accessed 05.05.2020].

[29] http://www.healthdata.org/risk-factors, [accessed 15.04.2020].

non-communicable diseases, as many as 40% of the people surveyed stated that they had not come across the term 'risk factor or factor that promotes disease (for example, heart attack, coronary heart disease, stroke, neoplasm)'. Respondents who were familiar with the term were mostly unaware of factors that increase the chance of developing a heart attack or stroke, and only half of the people surveyed (men and women at very similar rates) identified their own behaviour as the most important factor determining their health[30]. The results of this survey demonstrate the low level of public awareness of risk factors and their impact on health.

Major risk factors in the world and the European Union, 1990-2019[31]

Globally, the main group of risk factors affecting DALY values are behavioural determinants. In 2019, they caused the loss of about 11,000 healthy life years (per 100,000 population), i.e. approx. 2 times more than metabolic factors or environmental/occupational factors. In Poland, behavioural factors caused the loss of about 7,600 DALY (per 100,000 population), and in the EU about 5,600 DALY (per 100,000 population). Between 1990 and 2019, the share of behavioural factors in DALY values in the EU decreased by about 41% and globally by about 43%. Broadly speaking, favourable changes were also observed for the other groups of risk factors - the share of environmental/occupational factors decreased by about 51%, and metabolic factors by about 17%. In Poland, by comparison, the share of behavioural factors over the analysed period decreased by approximately 44%, environmental/occupational factors by approximately 56%, and metabolic factors by approximately 45%.

In a more specific approach, the risk factor that has for years caused the highest loss of healthy life years worldwide is maternal malnutrition during pregnancy. In 1990, this factor accounted for nearly twice as much of the DALY loss as air pollution, ranked second. By contrast, in 2019, it affected DALY values about 1.5 times more than high blood pressure, which was second in the ranking. It is important to note that this is a global approach, concerning countries at different levels of development. Looking through the lens of the Republic of Poland, the most burdensome risk factor is tobacco, ranked first since 1990. This factor has contributed to an approximately 19% greater loss of DALY in Poland than globally, and its share has decreased over the years by approximately 49% (globally by approximately 41%). Maternal malnutrition during pregnancy in Poland is not such a significant problem. In the ranking of the most aggravating risk factors, this factor was ranked only on the 10th place and caused almost 8 times lower loss of DALY values than in the world.

In 2019, in the EU, the risk factors with the highest impact on healthy life years lost were tobacco (about 2,400 DALY value per 100,000 population), high blood pressure (about 1,600

[30] B. Wojtyniak et al.,*Samoocena stanu zdrowia dorosłych Polaków - wyniki badania terenowego*, [in:] *Sytuacja zdrowotna ludności Rzeczypospolitej Polskiej i jej uwarunkowania*, NIZP-PZH, ed. B. Wojtyniak, P. Goryński, Warszawa 2018, p. 368-386.

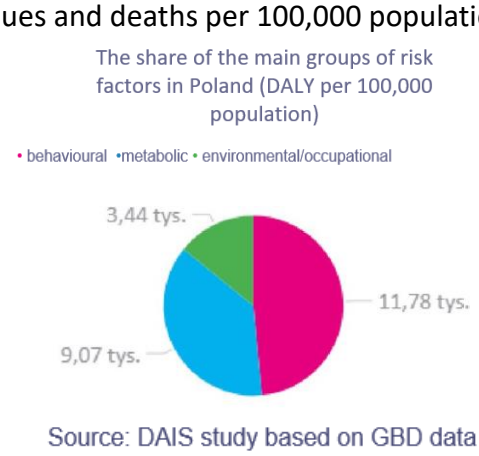
[31] For international comparisons, values standardized to the world population were used.

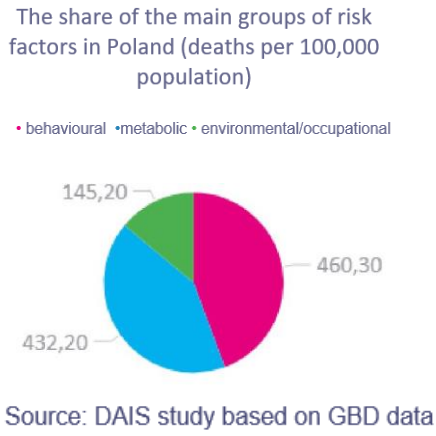
per 100,000 population) and high BMI (approximately 1,500 DALY value per 100,000 population). Comparatively, in Poland, the same risk factors had the most significant impact on DALY, but high BMI ranked second and high blood pressure third. Their values exceeded those for the EU by about 40% (tobacco), about 54% (high BMI), about 48% (high blood pressure), respectively. Between 1990 and 2019, the share of tobacco in the EU decreased by 46%[32].

Risk factors in Poland[33]

In Poland, the dominant group of risk factors influencing the loss of DALY and deaths were behavioural, or lifestyle-related factors. In 2019, They were responsible for the loss of approximately 49% of years lived in health and approx. 44% of deaths.

Figure 24. Share of main risk factor groups in Poland (women and men combined) (DALY values and deaths per 100,000 population)





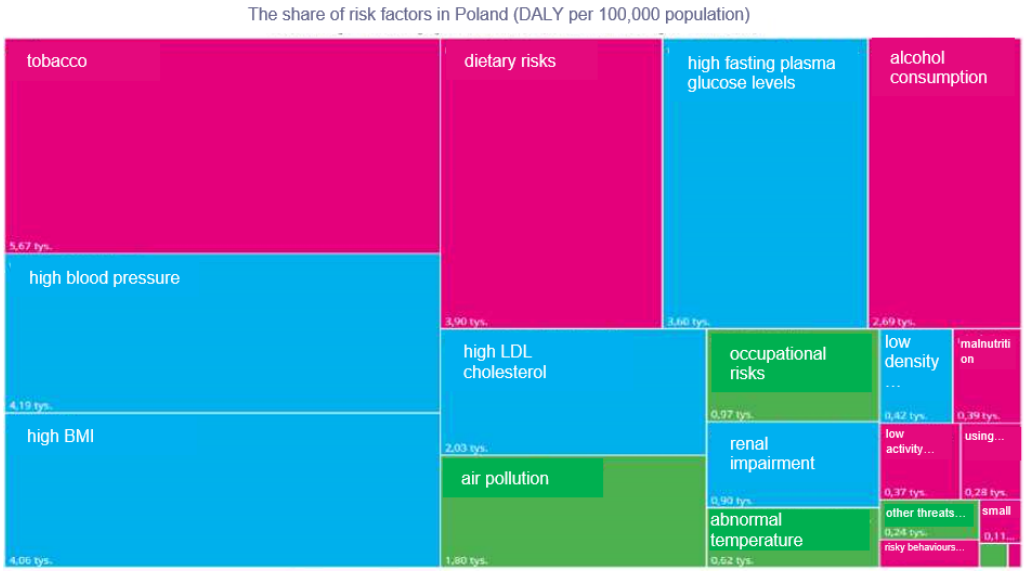
Source: Ministry of Health study based on GBD IHME data

The risk factors responsible for losing the greatest number of healthy life years in Poland for men and women combined are tobacco, high blood pressure and high BMI, respectively. It is worth noting that tobacco accounts for almost 50% of behavioural factors affecting DALY values. Deaths among both sexes are most influenced by high blood pressure, tobacco, and nutritional risks.

[32] https://vizhub.healthdata.org/gbd-compare/, [accessed 30.04.2020]..

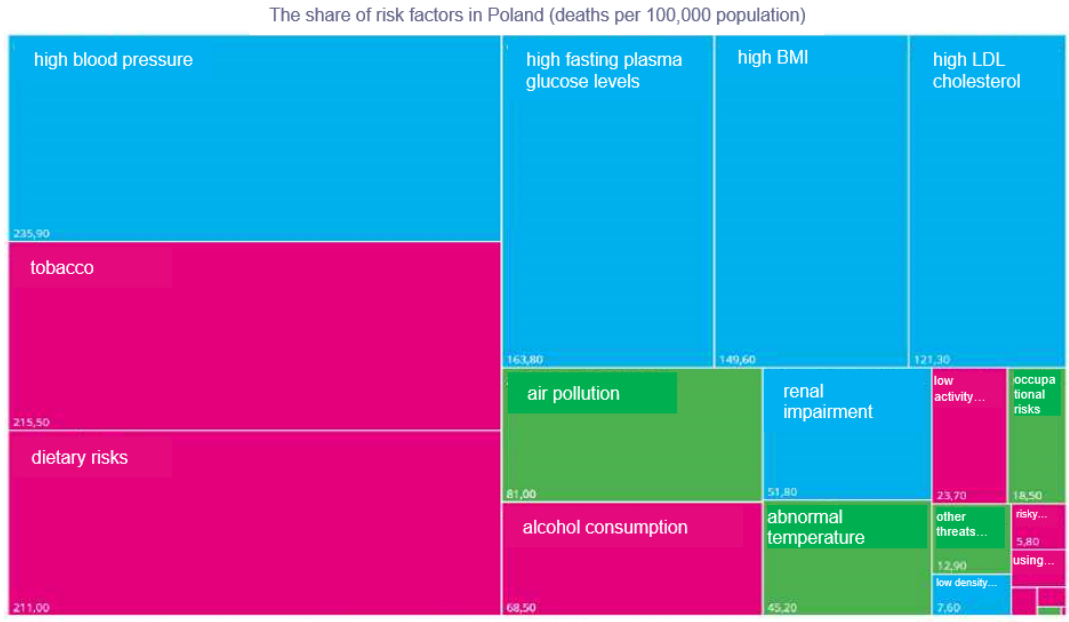
[33] Analyses were developed based on the crude rates.

Figure 25. Share of risk factors in Poland for men and women combined (DALYs per 100,000 population)



Source: Ministry of Health study based on GBD IHME data

Figure 26. Share of risk factors in Poland (deaths per 100,000 population)

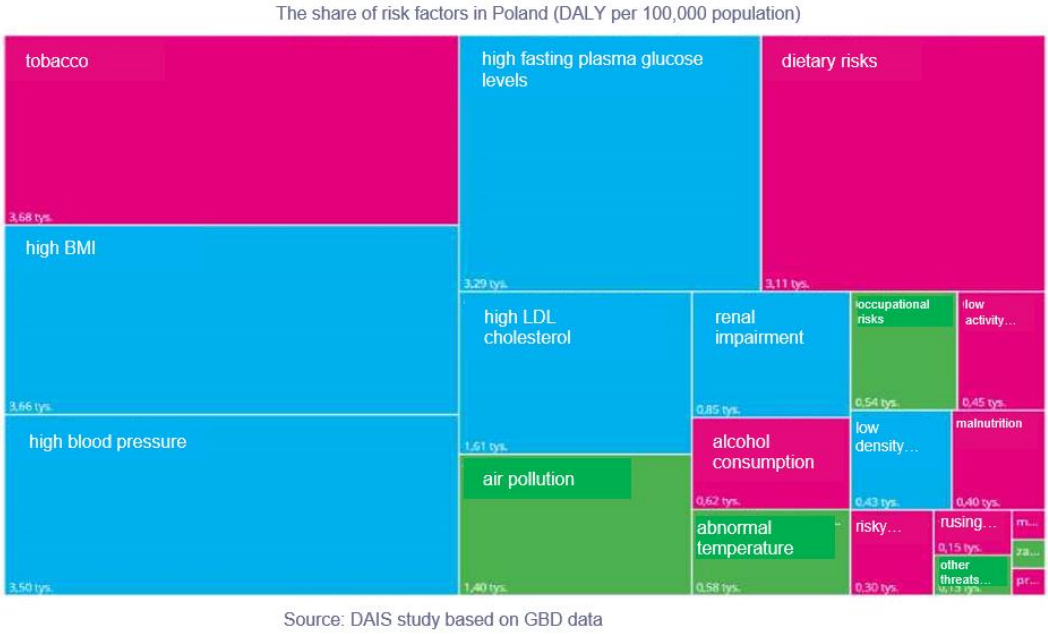


Source: Ministry of Health study based on data from GBD IHME

For men, tobacco has more than twice the impact on the loss of DALY and deaths than for women. The third dominant risk factor causing DALY loss, characteristic of the male gender, is alcohol consumption - exceeding the value

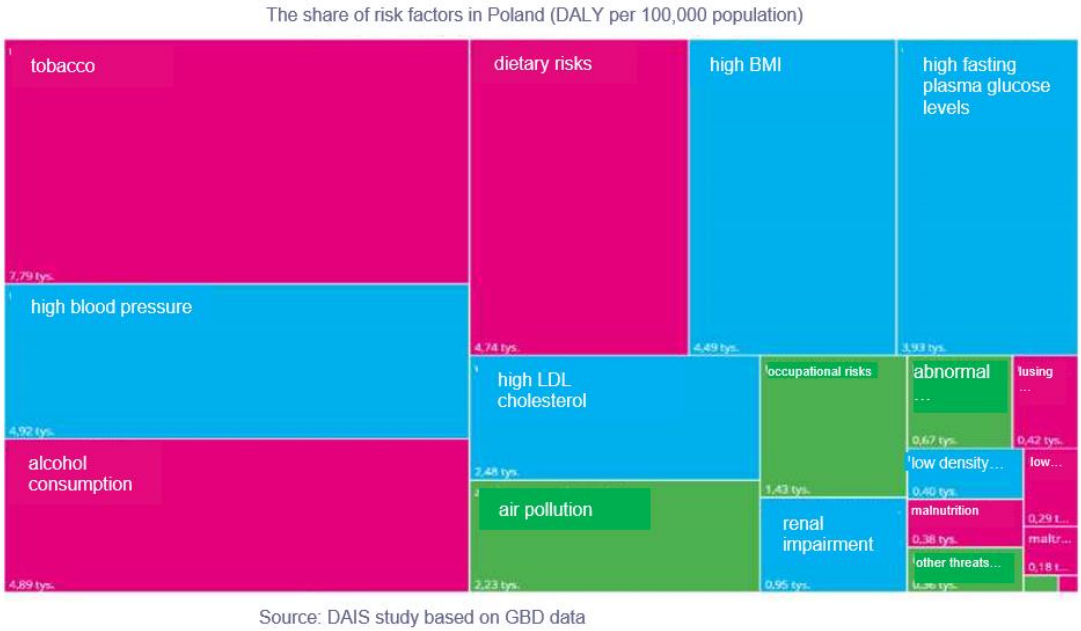
for women by almost 8 times. Therefore, it may be noted that substance abuse is a significant problem in Poland, particularly among men.

Figure 27. Share of risk factors in Poland for women (DALY per 100,000 population)



Source: Ministry of Health study based on GBD IHME data

Figure 28. Share of risk factors in Poland for men (DALY per 100,000 population)



Source: Ministry of Health study based on GBD IHME data

It is worth noting that some of the metabolic factors with a significant impact on health status, e.g. high blood pressure, high BMI or high fasting blood glucose levels, are related to behavioural factors, e.g. diet. Thus, dietary risks, which, according to the GBD methodology, rank as the third most

influential factor on deaths and the fourth most influential factor on DALY (having only slightly less impact on DALYs than high BMI, ranked third, which is also associated with diet), are of considerable importance. It is worth noting that dietary risks and high BMI contribute more to DALY in men than in women (by about 52% and about 23%, respectively).

Poor nutrition can cause many health problems. The most common mistakes include irregular meal consumption, too low intake of vegetables and fruit, as well as groats, fish, milk and dairy products, and too high consumption of meat, salt, sugar and sweets, sweetened drinks and alcohol. According to the 2016 updating of the recommendations for healthy eating in the form of the Pyramid of Healthy Eating and Physical Activity, the main recommendation is to reduce simple sugars and avoid excess salt and animal fats in the daily diet. Excessive intake of the above components has negative impact on health and causes increased risk of diet-related diseases, including cardiovascular diseases and obesity[34]. It is important to remember that poor nutrition is a modifiable factor that requires society to change its approach to diet. An adequate diet combined with physical activity, elimination of tobacco, alcohol and other psychoactive substances can reduce the influence of other risk factors.

Actions aimed at lifestyle modification seem to be of key importance; already in 1995, about 50% of mortality was attributed to this factor. Comparatively, the contribution of biological factors amounted to 20%, environmental and social factors to 20% and the health care system to 10%[35]. According to WHO, both tobacco and alcohol consumption, overweight and obesity are the leading public health problems in the WHO European Region, and they are the main risk factors for premature mortality due to the most common non-communicable diseases, i.e. cardiovascular diseases, neoplasm s, diabetes an d chronic respiratory diseases[36].

Changes in risk factor contribution over the years

In Poland, between 1990 and 2019 (for women and men combined), the impact of tobacco on the loss of DALY and deaths decreased (by approximately 24% and 18%, respectively)

[34] https://ncez.pzh.gov.pl/abc-zywienia-/fakty-i-mity/dieta-polakow-a-zalecenia ----za-tlusto--za-slono--za-slodko-/,[accessed 26.06.2020]

[35] B. Badura, *What is and What Determines Health*. [in:] *Scientific Foundations for Public Health Policy in Europe*, ed. U. Laaser, E. de Leeuw, Ch. Stock, Juventa Verlag, Munchen, 1995.

[36] A. Poznańska i in., *Wybrane czynniki ryzyka zdrowotnego związane ze stylem życia*, [in:] *Sytuacja zdrowotna ludności Rzeczypospolitej Polskiej i jej uwarunkowania*, NIZP-PZH , ed. B. Wojtyniak, P. Goryński, Warszawa 2018, p. 387-410.

Figure 29. Change in impact of tobacco on DALY values (left graph) and deaths (right graph) in Poland for men and women combined (values per 100,000 population)

Source: Ministry of Health study based on GBD IHME data

Significant changes occurred for men; the effect of tobacco on DALY over this time interval decreased by about 29%. In comparison, the percentage amounted to about 11% in women. A certain inhibition of the downward trend in recent years, i.e. since 2010, and sometimes even an increase in the contribution seems worrying. For women, there has been about a 13% increase in the impact of tobacco on deaths and about 9% on DALY since 2010.

High blood pressure between 1990 and 2019 reduced its contribution to DALY losses by approximately 30% and to deaths by approximately 15% (for women and men combined). No favourable changes were observed for high BMI - the contribution of this factor to DALY has increased since 1990 by about 2% and in deaths by about 7%. Considering that this is the third most influential risk factor for DALY loss, a decreasing trend would be desirable.

In addition, it is worth mentioning that in Poland over the last 30 years (for women and men combined) the impact of drug use on DALYs and deaths has significantly increased (by about 31% and about 51%, respectively). The contribution of maternal malnutrition during pregnancy has decreased significantly (by about 72% less impact on DALY and about 85% on deaths).

Regional variation of risk factors in Poland

The Łódzkie Province was the one where risk factors had the strongest impact on the loss of DALY and deaths. The lowest proportion of risk factors in deaths is observed in the Pomorskie Province, and in DALY in the Podkarpackie Province.

When analysing regional variation, it is important to examine the provinces in terms of the risk factors that contribute most to loss of healthy life years. In the case of tobacco, the highest impact on DALY loss (in women and men combined) occurs in the Łódzkie Province, and reaches a value of about 17% higher than the national value. The best situation in this respect is in the Podkarpackie Province, where about 20% less DALY is lost than in the whole country. High blood pressure has the highest contribution to the loss of DALY in the Łódzkie Province (about 21% higher than the national value), and the lowest in the Pomorskie Province (about 17% less than the Polish average). The highest number of healthy life years is lost due to high BMI in the Śląskie Province (about 14% more than the national value), and the lowest in the Podkarpackie Province (about 15% less than the national average).

When analysing regional variation of risk factors, it is worth taking into consideration alcohol consumption. The provinces where this factor has by far the greatest impact on DALY is the Łódzkie Province (about 32% higher than in Poland, and by about 17% higher than in the Śląskie Province, ranked second). The situation is similar in the case of deaths - the highest rate occurs in the Łódzkie Province, and is by about 35% higher than the national value. The smallest impact of alcohol consumption on DALYs and deaths is observed in the Małopolskie Province (about 22% and 28% lower, respectively, than the national value).

3.2. Public health activities to improve, promote, protect and restore the health of the population

The implementation of a coherent and effective state policy in the field of public health has an essential impact on the functioning of society. It is a field of science and practice which, in order to achieve the goal of prolonging and improving the quality of life of citizens, requires collective social effort and intersectoral cooperation. It is worth emphasising that curative medicine measures, i.e. ensuring access to the health care system by providing health care services, can contribute to the improvement of the health of the population to a limited extent. It is important to reduce the impact of major risk factors, to detect disease states at an early stage, to shape appropriate health-promoting behaviours, to create conditions allowing to maintain and improve health. Interventions in the field of public health are not only health policy programmes, health programmes and social campaigns, but also changes concerning the work, learning and rest environment, contributing to a health-promoting lifestyle. It is vital to encourage behaviours that improve health, reducing exposure to risk factors. In addition to education and health promotion, regulatory measures, that is, all prohibitions and orders as well as solutions of fiscal nature, have a significant impact. The key is the quality of these actions and monitoring their effectiveness in reducing

health, social and economic damage caused by the consequences of health problems.

As public health is an interdisciplinary field, it is necessary to conduct a dialogue and obtain a consensus among different environments and stakeholders in agreeing on health policies. For these reasons, public health activities have a broader and more complex character compared to health services provided by medical entities[37].

Monitoring of public health tasks

The Act of 11 September 2015 on Public Health (Dz. U. /Journal of Laws/ of 2021, item 183, as amended) imposed an obligation on public authorities to report public health activities to the Ministry of Health, which acts as the coordinator of the implementation of the NHP. The NHP is a basic document of public health. Its main strategic objectives are: prolonging the life of Poles, improving their health-related quality of life and reducing social inequalities in health. The strategic objectives can be achieved through the implementation of operational objectives in the field of prevention, health education, health promotion, etc. These actions are intended to reduce the greatest threats to community health[38].

According to the conducted monitoring of public health tasks in 2018 13,590 tasks were carried out by central entities, most of which were carried out by sanitary-epidemiological stations (about 92%). Most of the tasks were related to the operational objective of NHP no. 4, i.e. *Reduction of health risks resulting from physical, chemical and biological hazards in the external environment, place of work, residence, recreation and learning*(about 48%), most often they lasted one year (about 83%) and were mainly implemented at the level of a district or several districts (about 71%). This may result from the fact that the most frequent implementing entity were sanitary-epidemiological stations operating locally. The target group was most often people who can be classified as selected (approx. 45%), i.e. people with strictly defined characteristics, e.g. those exposed to the negative impact of the workplace. The activities undertaken, most often classified as 'other' (about 61%) were inspections, visits, inspections and legislative activities, but promotional and educational activities were also undertaken (about 44%). The financing entity was most often a public institution other than local self-government units (approx. 94%) (in this group, sanitary and epidemiological stations were the most frequent implementers) and the source of financing was the state budget (approx. 99%). The average amount of financing was slightly over 211,000 . Local government units were the most frequent co-financer (approx. 44%), and on average about

[37] Explanatory statement to the Law of 11 September 2015 on Public Health (Dz. U. /Journal of Laws/ of 2015, item 1916). http://orka.sejm.gov.pl/Druki7ka.nsf/Projekty/7-020-1415-2015/$file/7-020-1415-2015.pdf,[accessed 20.06.2020]

[38] https://www.gov.pl/web/zdrowie/narodowy-program-zdrowia-ogloszenia, [accessed 22.06.2020]

PLN 790,000 were allocated for the implementation of the tasks . The most frequently indicated source of financing was own financial resources (about 76%). The total amount of funds allocated for activities in the field of public health amounted to over PLN 3,100,000,000. The highest average costs were reported for operational objective no. 5, i.e. Promotion of healthy and active ageing, which amounted to nearly PLN 22,000,000. Local government units performed a total of 19,386 tasks, which mostly concerned NHP operational objective no. 2, i.e. *Prevention of and solutions to problems related to the use of psychoactive substances, behavioural addictions and other risky behaviours*. These were mostly prevention measures (about 65%), which most often lasted the whole year (about 49%). Actions taken by local authorities mostly concerned a single city (approx. 54%) and were targeted at young people, i.e. children and adolescents (approx. 26%). The financing entity were local government units (approx. 87%), and the source of financing were mainly own funds (approx. 95%). Non-governmental organisations were the most frequent co-financing entity (approx. 56%), also indicating own resources as the main source of funding (approx. 93%). The total amount spent in 2018 by local self-government units on public health measures is nearly PLN 2,500,000,000 (based on reported data), and the largest costs were incurred within the tasks implemented in relation to operational objective no. 1, i.e. *Improving the diet, nutritional status and physical activity of the population*.

In the first half of December 2019, NIZP-PZH-PIB conducted a survey within the framework of the NHP for the period 2016-2020. The survey was conducted among the implementers of tasks in the field of public health, that is, local government units, sanitary and epidemiological stations and central entities. The aim was, among other things, to identify difficulties in the implementation of public health tasks. The majority of respondents (48%) described these tasks as difficult to implement, most often due to limited financial resources, followed by limited human resources and lack of interest from the target group.

The process of monitoring and evaluation of the above-mentioned measures, for which the Ministry of Health is responsible, is performed with the use of indicators available within the system of public statistics, prepared on the basis of international documents. The NHP provides a list of universal indicators that are not assigned to a specific operational objective and those that are. Unfortunately, the possibility of using most of the indicators is limited because of the time required and the lack of data for analysis due to the cycle of research or data collection. In addition to the time necessary for the intervention itself, time is also needed for the effects of health promotion and health behaviour formation to become visible. Evaluation of the effectiveness of these interventions should take place at the end of the NHP or even after the end of the NHP. A comparative evaluation

of comparable measures in previous NHPs would also be useful to observe the long-term effects of public health actions[39].

Guidelines for implementation of health policy programmes

In order to make public health activities as effective as possible, it is reasonable to create precise instructions on the methods of their implementation. The guidelines for planning, implementation and execution of health policy programmes developed by AOTMiT can be used as an example for this purpose. It is recommended to begin the planning process with an analysis of health needs in a given region, the degree of their satisfaction and identification of areas where the application of specific interventions can generate the greatest health effects. Epidemiological data should be taken into account, which will indicate the prevalence of certain health problems in the region and present its situation in comparison with the country. It is necessary to identify the causes of the situation and then select the health problem on which to concentrate the programme. It is also important to predefine the target population so that it corresponds to the nature of the planned interventions and to determine the capacity of the unit implementing the programme. The following stage consists of the definition of objectives and indicators which make it possible to objectively and accurately assess the degree to which the objectives have been achieved. In addition to evaluation, ongoing monitoring of the process is crucial to ensure that the programme is proceeding as planned. A measure that determines the maintenance of health benefits after the programme implementation is the sustainability of health outcomes. An example would be regular prophylactic vaccination among children, covering the entire target population, to achieve sustained population immunity.

When designing health policy programmes, local government units should first of all take into account the local health needs of the population and, as a result, adjust the thematic scope of the programme accordingly[40].

The above principles should apply not only to programmes implemented by local governments, but also to other public health activities. In order to carry out a reliable evaluation and assessment of the effectiveness of the activities carried out, it would be helpful to clearly define the responsibilities and powers of public administration and local governments in the area of disease prevention and health promotion and to integrate the tools for data collection[41]. Evidence-based guidelines allow better planning of activities and more efficient spending of funds, ultimately leading to improved population health. Currently, the NIPH-PZH-PIB is building a system called

[39] E. Bandurska et al., *Prowadzenie monitoringu zadań z zakresu zdrowia publicznego 2018 report and comparison with 2016-2018*, NIZP-PZH, ed. A. Czerw, Warsaw 2019, pp. 8-85.

[40] http://www.aotm.gov.pl/www/wp-content/uploads/2016/08/Instrukcja PPZ.pdf , [accessed 22.06.2020]

[41] Recommendations for the public health system from the 2019 "Together for Health" Debate.

"Profibase" which from 2021 will collect data on public health interventions implemented in Poland, which will facilitate their planning, monitoring and evaluation.

3.3. Prevention programmes

One public health activity that contributes to reducing the impact of certain risk factors on health is prevention programmes. According to data reported by MZ in 2019, 3,764 prevention programmes were conducted. The largest number of programmes (909) in Poland dealt with prevention and solving of alcohol problems. They covered on average app. 154,000 [42].

Prevention programmes for the most burdening risk factors

Given the importance of behavioural risk factors, it is important to examine programmes aimed at reducing them. Activities including other, the diet, nutritional status and physical activity of the population, as well as preventing and solving problems related to psychoactive substance and behavioural addictions are defined in the operational objectives of the basic public health policy document, i.e. Poland's National Health Program for 2016-2020 [43]. The preventive actions presented below are the most important ones that affect lifestyle and minimize the impact of the most burdening health risk factors.

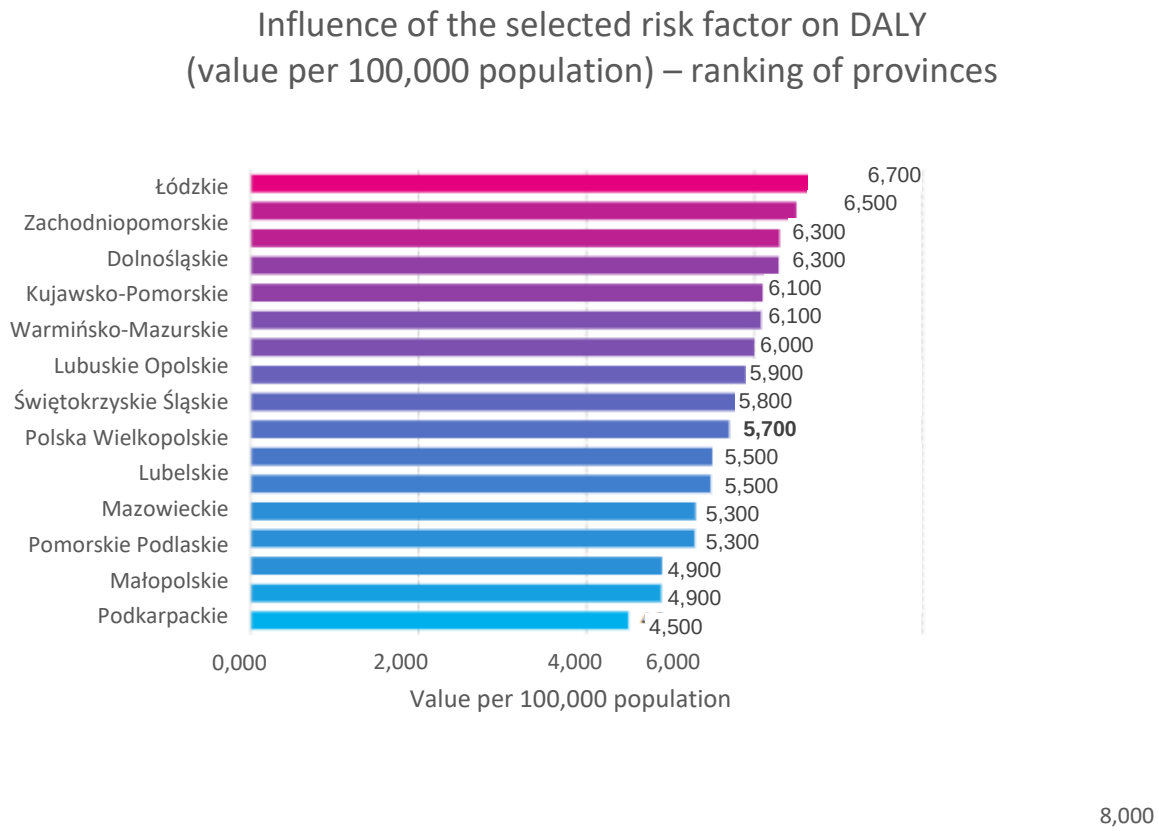
Tobacco is the risk factor responsible for the highest loss of healthy life years in Poland, which is why it is so important to take appropriate actions to deal with this problem. It is important to analyse how provinces have been protected, particularly those regions where tobacco's contribution to DALY and deaths is the highest.

In 2019, in the Podkarpackie Province, where the least DALY is lost due to smoking, 79 tobacco prevention programs were launched with an average of approx. 9,000 population place in Poland). Only one such programme has been launched in the Łódzkie Province, where most disability-adjusted life-years are lost due to smoking. The province in which the largest number of people was covered by tobacco prevention activities was the Dolnośląskie Province (approx. 25,000 population).

[42] It is a weighted average, where the weight is the number of programmes of the selected category divided by the number of programmes of all categories in the area. The weight was multiplied by the total number of people covered by a given prevention programme. This shows how much coverage a particular programme had relative to all programmes conducted in the area. This measure was used because one person could be covered by more than one programme in a given category and thus counted more than once.

[43] A. Poznańska i in., *Wybrane czynniki ryzyka zdrowotnego związane ze stylem życia*, [in:] *Sytuacja zdrowotna ludności Rzeczypospolitej Polskiej i jej uwarunkowania*, NIZP-PZH, ed. B. Wojtyniak, P. Goryński, Warszawa 2018, p. 388.

Figure 30. Impact of smoking on DALY in provinces (including both women and men) in 2019.



Source: Ministry of Health study based on GBD IHME data

Table 2. Number of people covered by tobacco prevention program in provinces in 2019

Province	Reach – average number of people
Dolnośląskie	24,563
Małopolskie	21,859
Mazowieckie	10,157
Podkarpackie	9,492
Lubelskie	5,080
Lubuskie	1,665
Wielkopolskie	637
Zachodniopomorskie	477
Świętokrzyskie	475
Podlaskie	382
Warmińsko-Mazurskie	140
Pomorskie	35
Opolskie	9
Kujawsko-Pomorskie	0
Śląskie	0
Łódzkie	0

Source: Ministry of Health study

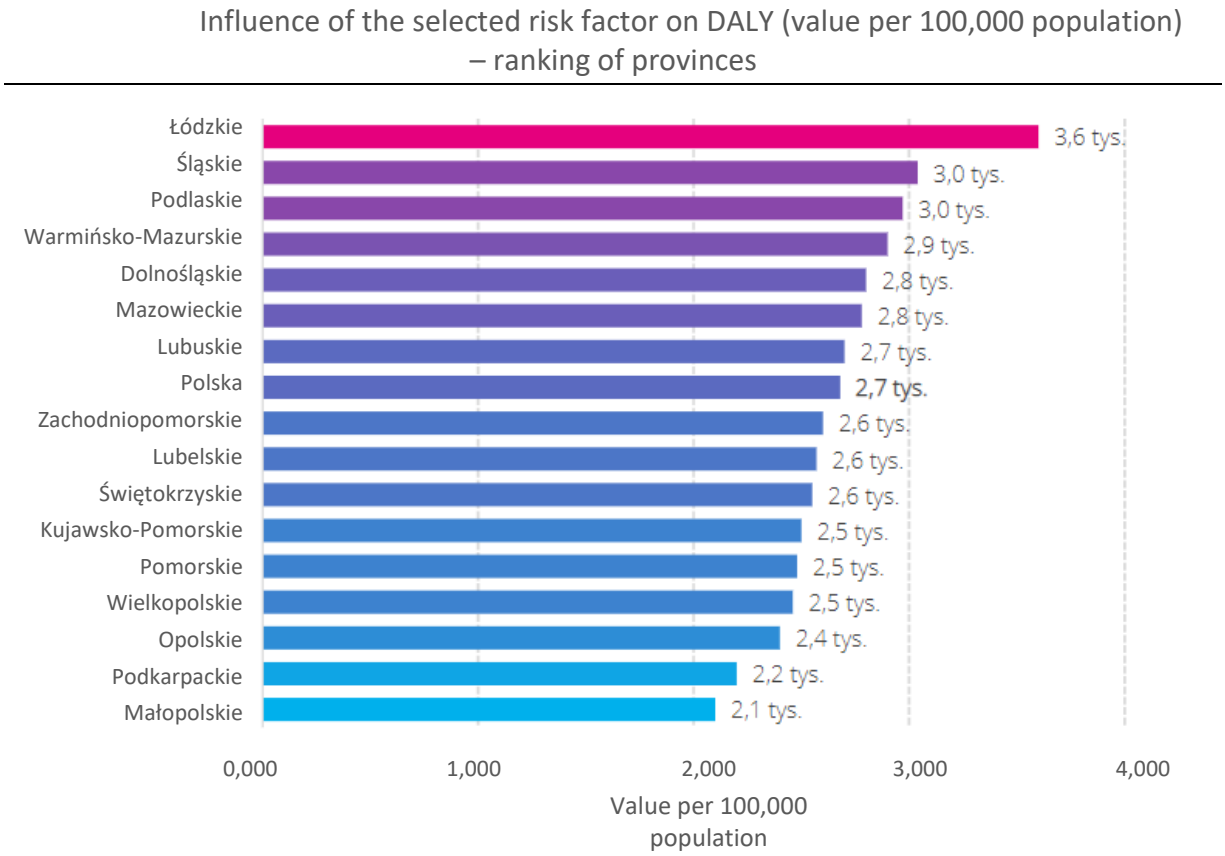
When discussing prevention programmes, attention should be paid to activities that contribute to reducing alcohol consumption, which is a significant problem in Poland. Throughout the country, 909 programmes were carried out in the category of alcohol prevention and anti-alcoholism programmes, the activities of which covered approx. 154,000 people. With respect to smoking and alcohol consumption, it is worth mentioning that 370 alcohol, tobacco and other drug prevention programs have been carried out in Poland, covering on approx. 119,000 people.

In the Małopolskie Province, where the share of alcohol consumption in DALY is the lowest, 48 programs targeted only at alcohol addiction and covering approx. 3,000 population (6th lowest rate in Poland) and 23 alcohol, tobacco and other drug abuse prevention programs. The programs covered approx. 2,000 population, which gives the 7th rate among all provinces.

In the Łódzkie Province, where the share of this rate in DALY is the highest, 100 programmes on alcohol prevention and alcoholic problem solving were carried out. They covered approx. 18,000 population and it is the third highest value in Poland. In the area of alcohol, tobacco and other psychoactive substances prevention, 26 preventive programmes were carried out, covering approx. 625 population, which ranks 11th in Poland.

The province in which the largest number of people were covered by alcohol prevention and problem-solving programmes was the Śląskie Province, and in relation to alcohol, tobacco and other psychoactive substances – Warmińsko-Mazurskie Province. The effect of alcohol on DALY and deaths in the Warmińsko-Mazurskie Province was higher than the average recorded in Poland by approx. 9% and 8%, respectively, and in the Śląskie Province by approx. 13% i 16%, respectively.

Figure 31. Impact of smoking on DALY in provinces (including both women and men) in 2019.



Source: Ministry of Health study based on GBD IHME data

Table 3. Number of people covered by alcohol prevention and alcoholic problem solving programmes in provinces in 2019

Province	Reach – average number of people
Śląskie	31,910
Mazowieckie	30,624
Łódzkie	15,566
Lubelskie	11,920
Warmińsko-Mazurskie	7,774
Wielkopolskie	7,377
Podlaskie	7,068
Podkarpackie	6,405
Opolskie	6,228
Pomorskie	6,026
Małopolskie	2,996
Świętokrzyskie	0,819
Dolnośląskie	0,792
Zachodniopomorskie	0,522
Lubuskie	468
Kujawsko-Pomorskie	127

Source: Ministry of Health study

Table 4. Number of people covered by alcohol, tobacco and other psychoactive substances prevention program in provinces in 2019.

Province	Reach – average number of people
Warmińsko-Mazurskie	246,838
Lubelskie	13,585
Pomorskie	8,583
Kujawsko-Pomorskie	7,429
Mazowieckie	4,201
Śląskie	3,856
Małopolskie	2,094
Podlaskie	1,960
Podkarpackie	1,801
Dolnośląskie	1,055
Łódzkie	625
Świętokrzyskie	498
Opolskie	411
Zachodniopomorskie	371
Lubuskie	288
Wielkopolskie	201

Source: Ministry of Health study

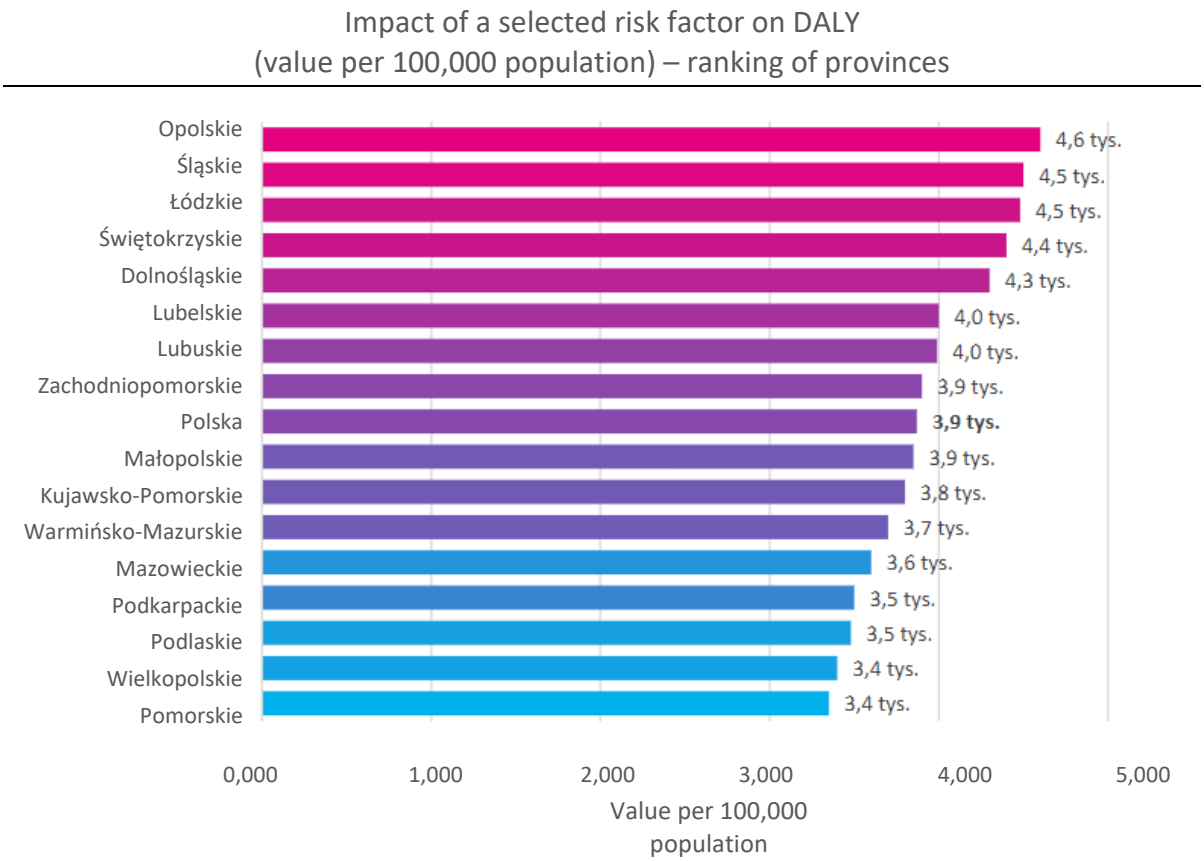
With dietary risks and a high BMI being very important factors, it is important to conduct activities aimed at healthy eating habits. In 2019, 251 overweight and obesity programmes were carried out in Poland, covering approx. 41,000 people.

In the Pomorskie Province, in which dietary risks have the smallest share in DALY among all provinces, overweight and obesity prevention activities covered approx. 14 population (the third worst ranked province in Poland). In Opolskie

provinces, in which the highest number of DALY is lost due to this reason, the activities covered approx. 2,800 population (ranked 6th in Poland).

The province in which the largest number of people was covered by overweight and obesity prevention activities was the Mazowieckie Province (approx. 11,400 population). It ranked 13th among the provinces with the lowest share of dietary risk to DALY loss.

Figure 32. Impact of dietary risk on DALY in provinces (including both women and men) in 2019.



Source: Ministry of Health study based on GBD IHME data

Table 5. Number of people covered by overweight and obesity prevention program in provinces in 2019

Province	Reach – average number of people
Mazowieckie	11,419
Podlaskie	9,934
Lubelskie	6,110
Małopolskie	4,500
Łódzkie	3,287
Opolskie	2,758
Podkarpackie	1,878
Śląskie	1,111
Dolnośląskie	553
Lubuskie	373
Zachodniopomorskie	215
Wielkopolskie	60
Świętokrzyskie	39
Pomorskie	14
Warmińsko-Mazurskie	12
Kujawsko-Pomorskie	11

Source: Ministry of Health study

Analysing the activities in the field of overweight and obesity prevention, it is worth mentioning the activities carried out within the framework of the National Centre for Nutrition Education, a project currently implemented by NIZP-PZH-PIB with funds from the NHP for 2016-2020. These include educational activities through an online portal, apps, culinary workshops for kids, and a free online Diet clinic so that patients across the country can benefit from

a professional dietary advice without leaving home, since the beginning of 2018[44]. It is worth emphasising that proper eating habits should be formed from the earliest years, therefore actions directed to children and adolescents are also very important.

Other preventive programs carried out in Poland include, for example, drug addiction prevention programs (114 programs covering approx. 2,600 population), as well as many other programs aiming at given health problems e.g.: neoplastic diseases, cardiovascular disease, viral hepatitis, lung disease, parasitic diseases, tick-borne diseases.

3.4. Screening examinations

A particularly important type of secondary prevention is screening, which involves early detection of diseases in order to stop them from developing. These include screenings for breast cancer (mammography) or cervical cancer (cytology), which are reviewed below[45].

Cytology

Cervical cancer is a disease that is a serious problem worldwide. Despite the knowledge of the aetiology of the disease, the dynamics of its development, risk factors, diagnostic and therapeutic methods, in too many cases, this neoplasm is detected at a late stage of clinical progression when the treatment is not very effective[46].
In Poland, the cervical cancer prevention programme is addressed to women aged 25-59 who have not had a cytological examination within the last 3 years. Among women with risk factors, i.e. HIV-infected, taking immunosuppressive drugs, high-risk type HPV-infected, the scanning examination is performed every 12 months [47].

In 2019, 17.3% of the population was screened for cervical cancer in Poland. As of 2017, this value decreased by approx. 5%. In 2019, four times more women were referred to the in-depth diagnostics than 2 years earlier (the values were: 128 per 100,000 women screened in 2017 and 524 per 100,000 women screened in 2019).

In 2019, the highest percentage of women screened was in the Świętokrzyskie Province (approx. 29,000 per 100,000 annual population to be screened) – it was approx. 65%

[44] https://ncez.pl/, [accessed 26.06.2020]

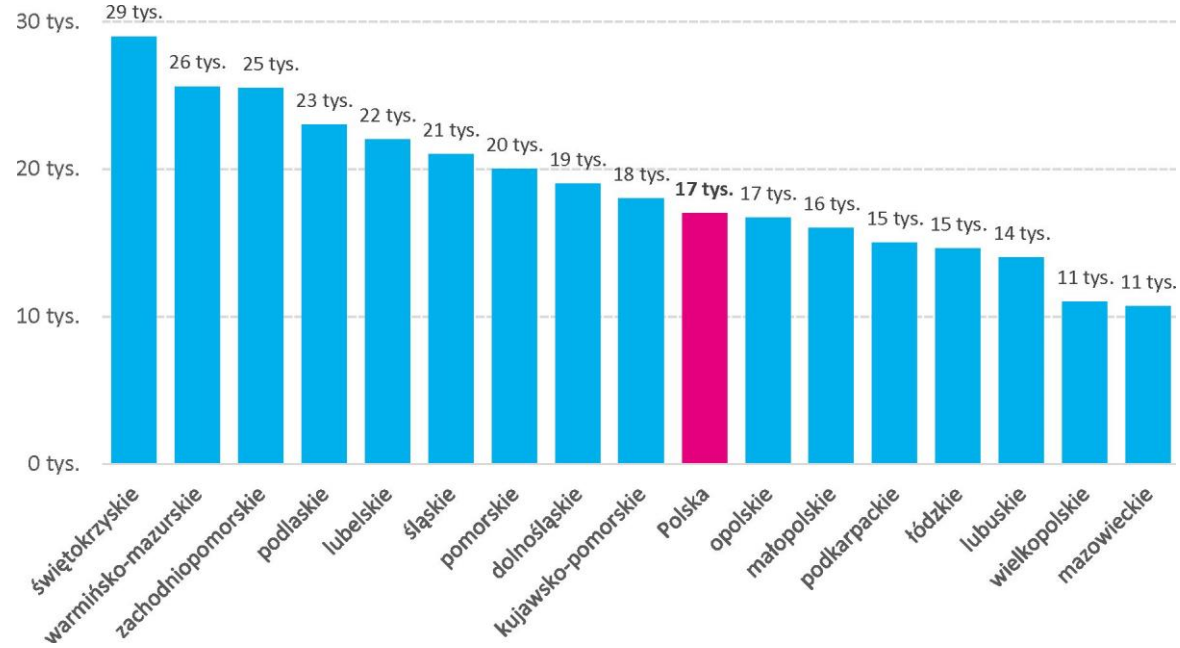
[45] https://www.pzh.gov.pl/profilaktyka-chorob-definicja/, [accessed 28.04.2020]

[46] O. Adamczyk-Gruszka et al, *Rola badań cytologicznych w profilaktyce raka szyjki macicy*, [in:] *Studia Medyczne*, Uniwersytet Jana Kochanowskiego, ed. S. Głuszka, Kielce 2012, pp. 31.

[47] http://www.nfz-warszawa.pl/dla-pacjenta/co-kazdy-pacjent-wiedziec-powinien/profilaktyczne-programy-zdrowotne/, [accessed 12.05.2020]

more than the national average. The smallest number of women was examined in the Mazowieckie Province - approx. 1.5 times less than in the Świętokrzyskie Province and approx. 55% less than the national average. The largest number of women was referred for in-depth diagnostics in the Śląskie Province (approx. 1,800 women per 100,000 women surveyed overall) and it was approx. 3.5 times more than the average number in Poland, and the least in the Podlaskie Province (approx. 5 women per 100,000 women surveyed overall)[48]. The analysis of epidemiological data shows that the highest incidence and mortality of cervical cancer in 2019 was observed in the Lubuskie Province (approx. 19.9 and 12.8 cases, respectively, per 100,000 women overall), and the lowest in the Podkarpackie Province (approx. 12.1 and 8.2 cases, respectively, per 100,000 women overall).

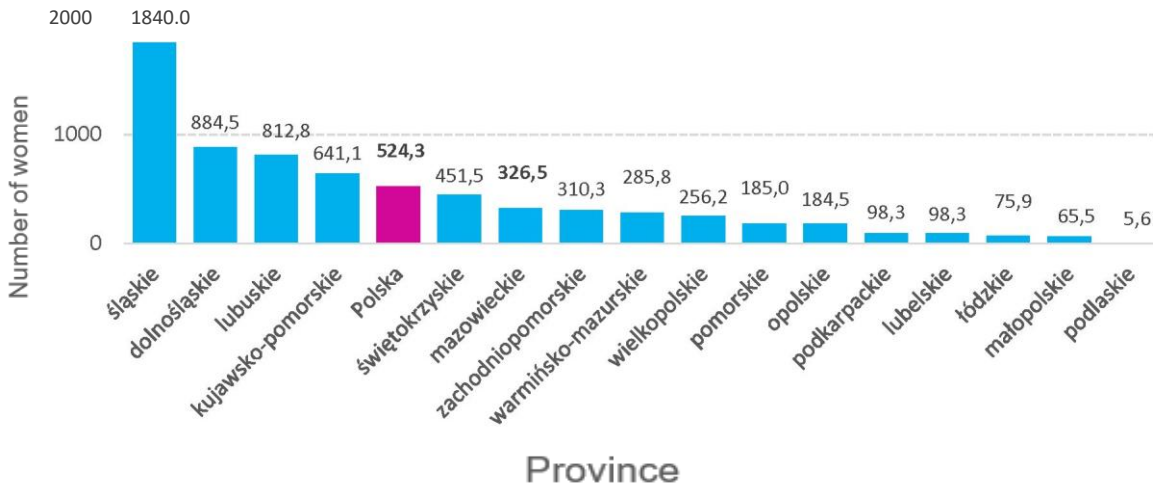
Figure 33. The number of women screened for cervical cancer in provinces in 2019.



Source: Ministry of Health study based on data from SIMP (Prevention Monitoring Information System)

[48] SIMP NFZ.

Figure 34. The number of women screened for cervical cancer in provinces in 2019.



Source: Ministry of Health study based on data from SIMP (Prevention Monitoring Information System)

MAMMOGRAPHY

Mammography is an examination aimed at identifying pathological changes in the breast, which allows neoplasm detection at an early stage. In Poland, there is a breast cancer screening programme that targets women aged 50-69 who have not benefited from the programme in the past 2 years. For women who have a family history of breast cancer (mother, sister, or daughter) and a BRCA 1 or BRCA gene mutation was detected, the examination is performed once a year. The program is implemented in two modes, i.e. in an outpatient mode and in a mobile mode (mammobuses)[49].

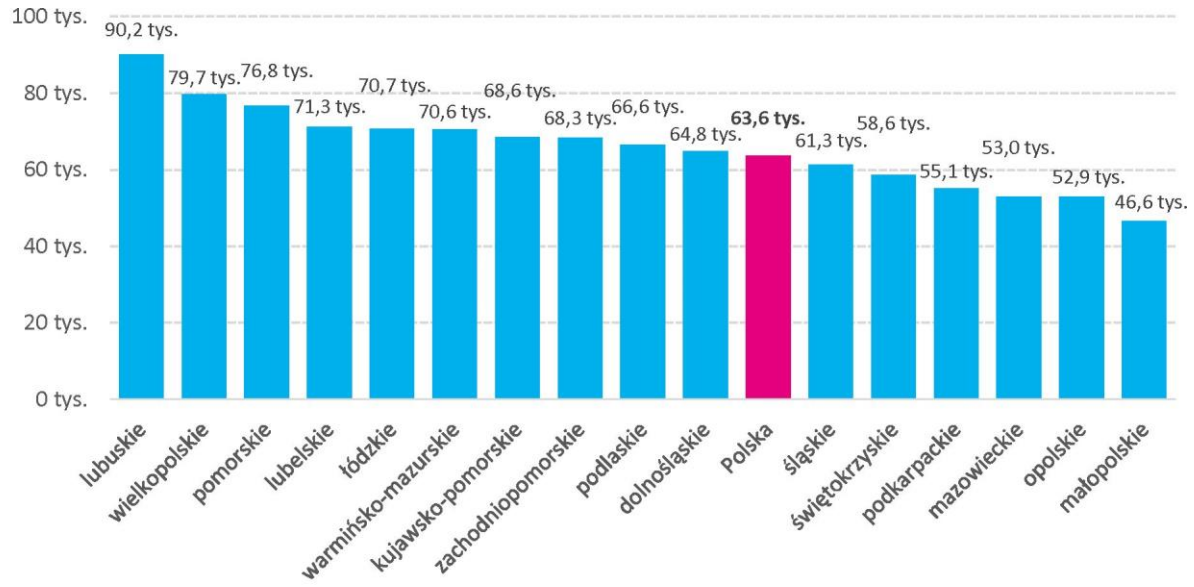
In 2019, nearly 64% of the annual classified for examination population was screened for breast neoplasm (a higher reporting rate than for cytology screenings). As of 2017, this value decreased by approx. 1%. In 2019, the number of patients referred for in-depth diagnostics was approx. 3% less than 2 years earlier (the values were: 3,300 women in 2017 per 100,000 women screened overall; 3,200 in 2019 per 100,000 women screened overall).

In 2019, according to the regional approach, the largest number of women being screened was in the Lubuskie Province (90,200 women per 100,000 of annual population to be screened) and it was approx. 42% higher value than the national average. The smallest number of women was screened in the Mazowieckie Province, i.e. approx. 27% less than the national average and approx. 48% less than in the Lubuskie Province. The largest number of women was referred for in-depth diagnostics

[49] http://www.nfz-warszawa.pl/dla-pacjenta/co-kazdy-pacjent-wiedziec-powinien/profilaktyczne-programy-zdrowotne/, [accessed 12.05.2020]

was in the Podkarpackie Province (approx. 5,100 women per 100,000 women surveyed overall) and it was approx. 60% more than the national average, and the least in the Zachodniopomorskie Province (approx. 2,000 women per 100,000 examined overall, which is approx. 36% less than the national average and almost 2.5 times less than in the Podkarpackie Province)[50]. Epidemiological data indicate that the highest incidence of breast neoplasm in 2019 was observed in the Łódzkie Province (approx. 111.8 cases per 100,000 population) and the lowest in the Podlaskie Province (approx. 72.6 cases per 100,000 population). The highest percentage of deaths occurred in the Kujawsko-Pomorskie Province (approx. 43.6 cases per 100,000 population), and the lowest, as in the case of incidence, in the Podlaskie Province (approx. 31.1 cases per 100,000 population). The forecasts show that in 2028 the incidence of malignant breast neoplasm in Poland will be by approx. 16% higher than in 2019, and the death rate will increase by approx. 9%.

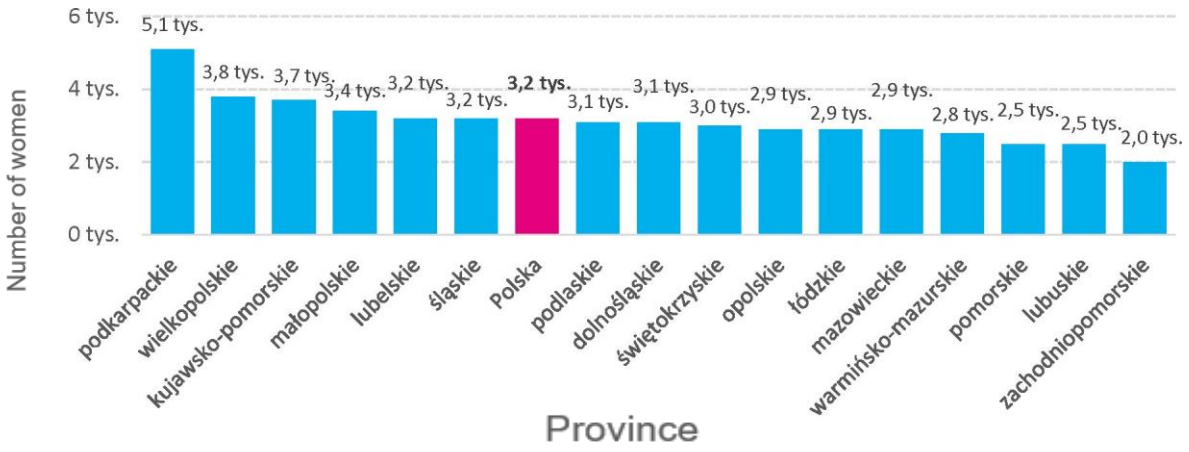
Figure 35. The number of women screened for breast cancer in provinces in 2019.



Źródło: opracowanie MZ na podstawie danych SIMP NFZ

[50] SIMP NFZ.

Figure 36. The number of women examined in the in-depth diagnostic stage by provinces in 2019.



Source: Ministry of Health study based on data from SIMP (Prevention Monitoring Information System)

3.5. Conclusions

When analysing risk factors, it is important to emphasise the importance of taking appropriate activities to reduce the contribution of behavioural factors to DALY and deaths. These activities should include: promoting healthy lifestyles, improving nutrition, increasing physical activity, and preventing and addressing addiction issues. Effective health education of the Polish society is an important factor. It is necessary to make people aware of the behaviours that can positively influence their health and which ones can increase the morbidity of a given health problem.

Other risk factors also have a very significant impact on health. There is a number of associations between different types of risk of factors, for example: high blood pressure, high BMI, or high fasting plasma glucose is associated with behavioural factors. Thus, actions targeting metabolic and environmental/occupational risk factors should be undertaken. In the detailed analyses, the main focus should be put on smoking. Despite its declining importance and the implementation of a significant number of prevention programmes, it is still the factor that accounts for the largest share of lost years of life in the health in Poland.

Alcohol use (especially by men) and poor nutrition are also significant problems and significantly affect the loss of healthy life years. This is why it is so important to counteract these problems. The answer to the negative influence of risk factors are activities in the field of public health, consisting in prevention and health promotion, the goals of which come down to prolonging life and healthy life of the Polish society. Prevention programmes, properly distributed and adjusted to health needs, are examples of such actions. As far as secondary

prevention is concerned, screening tests, which prevent the consequences of diseases through their early detection and treatment, are its essential element. With regard to cytology and mammography, the analysis indicated that it is necessary to take measures to raise the number of women reporting for examinations. This would allow more frequent diagnosis of breast and cervical neoplasms in the early stages and thus increase women's chances of recovery.

3.6. Health care system challenges

The dominant group of risk factors affecting DALY and deaths in Poland are behavioural factors, which are related to lifestyle. Their negative impact on health can be reduced by conscious human actions. The results of a survey conducted by NIZP-PZH-PIB in 2018 prove that society is not aware that one's own behaviour is the most important factor determining health status. In 2019, behavioural factors had about 26% less impact on DALY loss in the EU than in Poland. In contrast, in Poland in 2019, group of these factors accounted for the loss of approx. 49% of years lived in health and approx. 44% of deaths.

Since the effect of most risk factors can be described as multidimensional, it is important to limit the impact of the other two groups, i.e. metabolic and environmental/occupational factors.

Today, the problem of smoking is one of the most significant public health challenges. Tobacco is the risk factor with the greatest impact on DALY - its share is around 35% higher than that of high blood pressure which is in second place. It also contributes to a significant number of deaths (ranked second, but its share is slightly lower than that of high blood pressure which is ranked first). Compared to the EU, tobacco's share in DALY in 2017 was 50% higher. For men, tobacco contributes more than twice as much to DALY loss and deaths than for women. The contribution of this factor to the indicators in question has been increasing for women since 2010. In response to smoking, 381 smoking prevention programmes were implemented in the Republic of Poland in 2019.

Alcohol is the second predominant risk factor for DALY loss in men, with a proportion almost eight times higher than for women. In response to this factor, there were 1,279 prevention actions addressing the problem of excessive alcohol consumption. Unhealthy diet and high BMI are also key risk factors, which significantly contribute to the onset or exacerbation of many health problems.

Numerous initiatives in the field of public health are undertaken by many institutions of national and local government administration. Entities executing public health actions describe these tasks as difficult to implement, most often due to

limited financial resources, followed by limited human resources and lack of interest from the target group.

Gaps in prevention actions at the local level limit the objective of ensuring equal access to prevention. In some provinces, no preventive measures are available to respond to regional health needs. Reporting for screening tests is low, especially for cytological tests (about 17.3% in 2019). Between 2017 and 2019, reporting decreased by about 5%, and up to three times as many women were referred for in-depth diagnostics. The female reporting of mammography decreased to a lesser extent, by 1%. When comparing reporting rates for both tests, there is a large variation between provinces.

3.7. Recommended lines of actions

→ conducting evidence-based actions in the field of promoting healthy lifestyles, building health competencies in order to reduce the impact of behavioural risk factors, but also other groups of risk factors on the loss of healthy life years and deaths;

→ aiming at obtaining average values recorded for the EU, which are more favourable than for Poland;

→ adapting public health measures to the health needs of the region and monitoring the effectiveness of these measures through systematic analysis of health indicators and other defined effects of such measures; ensuring universal access to these measures;

→ adjusting preventive programmes to the risk factors that most severely burden the population of a given region;

→ undertaking effective actions in the field of:

1) prevention of smoking (some of these programmes should be aimed at women, among whom this problem is growing, and at young people),

2) prevention of excessive alcohol consumption (in particular among groups most at risk of negative impact of this factor),

3) promoting healthy diet and prevention of overweight and obesity (especially among men, children and adolescents);

→ conducting cyclic health surveys on a representative group of the population, which allows to evaluate epidemiological trends; in order to plan prevention well, it is worth observing how the population's health behaviour changes;

→ reinforcement of the actions of the State Sanitary Inspectorate and local government units through creation of coordinating units or

systemic mechanisms enabling coordination of health-promoting actions implemented in districts and communes;

→ ensuring coherence and continuity between health promotion and prevention actions and curative medicine actions. A very important function in prevention and coordination should be performed by units of PHC supplemented with specialists in the field of public health. The remit of these teams should include health promotion and health prevention;

→ provision of adequate financing for public health measures. A good solution would be a financing mechanism that would combine the existing, currently dispersed sources of financing of such actions;

→ Introduction of clear guidelines and identification of responsibilities for the entities implementing public health measures. It is essential to provide them with support in planning and executing activities, as well as to define rules for monitoring the processes and evaluating the results. Effective cooperation between government and self-government administration is essential. In particular, local self-government units require support (it would be helpful, for example, to provide ready-to-implement programmes (from different scopes of public health) based on scientific grounds and producing positive results on the basis of pilot studies);

→ taking measures to increase the number of people who report for screening tests. First and foremost, it is essential to improve women's attendance at the cytological screening, as well as at mammography. It is important that tests are performed regularly, which combined with the prevention of cervical cancer and breast cancer (healthy lifestyle), would have a positive impact on epidemiological indicators. This would also reduce the proportion of women referred for in-depth diagnostics.

4. Primary health care

The PHC is the first contact of the patient with the health care system, except when the patient is in a medical emergency or provided with services without the required medical referral, within which access to preventive, diagnostic, therapeutic and nursing health care services financed from public funds is provided. The primary health care medical practitioner is also responsible for referring the patient to a specialist or rehabilitation.

The purpose of PHC is:

- to provide health care for the patient and their family;
- to coordinate health care for the patient in the health care system;
- to assess the needs and to establish health priorities of the population under care and to implement preventive actions;
- to recognise, eliminate or reduce risks and problems of physical and mental health;
- to provide preventive health care and health promotion adapted to the needs of different groups of the population;
- to ensure education for the patient in the area of responsibility for their health, and to raise health-promoting awareness.

Every insured adult has the right to choose freely their primary care medical practitioner, nurse and midwife from among health insurance medical practitioners, nurses and midwives. They confirm their choice by submitting a declaration of choice of a primary care medical practitioner, a primary care nurse and a primary care midwife (the patient has the right to submit each declaration separately, also in different PHC units).

The primary care medical practitioner plans and executes medical care for the insured and coordinates the provision of services by cooperating medical personnel. If the patient's state of health requires further examination and treatment by a specialist or hospital treatment, the medical practitioner issues the necessary referrals. The medical practitioner's services can be provided in the medical practitioner's office, as well as at the patient's home.

The primary health care nurse plans and executes complex nursing care in the area of health promotion and disease prevention, as well as nursing, diagnostic, therapeutic and rehabilitation services for the healthy and ill. On the basis of medical practitioner's orders, she performs injections and medical procedures in the PHC nurse's office and at the patient's home, when indicated. Since 2014, the primary care nurse, having obtained the relevant qualifications, has had the right to prescribe medicines containing specific active substances, excluding medicines containing very potent substances, narcotics

and psychotropic substances, and foodstuffs for special nutritional purposes, including issuing prescriptions for them, and to prescribe specific medical devices, including issuing orders or prescriptions for them. These rights and possibilities significantly reduce the workload of PHC medical practitioners.

The primary care midwife provides comprehensive obstetrical-neonatological-gynaecological care covering care for a woman in every period of her life, i.e. education in the field of family planning, care during pregnancy, labour and postnatal period, care for a woman, a newborn and an infant, care in gynaecological diseases. The PHC midwife takes measures for the early detection and elimination of cancer risk factors.

The school nurse provides care for children and adolescents subjected to compulsory education, from preschool divisions in primary schools to the final grade of secondary school, excluding schools for adults, i.e. she performs and interprets screening tests, coordinates post-screening proceedings and takes care of students with positive test results; she provides active counselling for students with health problems and takes care of students with chronic diseases
and disabilities; she provides first aid in case of sudden illnesses, injuries and poisonings, advises the head teacher on safety conditions for students; she also provides education including oral health education, participates in planning, implementation and evaluation of health education.

In the event of deterioration of health at night and on public holidays, all insured persons are entitled to receive night and holiday health care free of charge. These services, provided by medical practitioners and nurses, are provided without a referral. Insured persons can use the services of any NHHC provider. The assistance of a medical practitioner and a nurse during nights, non-working days and public holidays can be obtained in the following circumstances:

- exacerbation of a diagnosed chronic illness (e.g. bronchial asthma attack with moderate dyspnoea),
- respiratory tract infections accompanied by a high fever (higher than 102.20 F (39°C)), especially in small children and the elderly,
- abdominal pains, which persist despite antispasmodic medication,
- headaches persisting despite analgesic medication,
- diarrhoea or vomiting, especially in children or the elderly,
- a retention of gases, faeces or urine,
- a sudden pain in the back, spine, joints, limbs, etc,
- mental disorders (except for aggression or suicide attempts; in such cases, an ambulance must be called.

If necessary, a sick note will be issued to the patient by the NHHC clinic. NHHC medical practitioners do not issue sick notes on the order of another medical practitioner, e.g. the ED medical practitioner. The patient receives a sick note from the medical practitioner who prescribed the treatment.

In certain specific situations, the patient is entitled to free or partly paid sanitary transport, e.g. when the patient needs to be treated for a specific condition in another medical care institution or to be transferred from the place of residence for inpatient care (to a hospital) or to be transferred from the place of residence for medical procedures resulting from the treatment provided by the primary care medical practitioner. In addition, in connection with the use of health care services outside the country for fortuitous reasons and in connection with treatment within the country, when for medically justified reasons the patient needs to use the services of a specific specialist clinic located more than 120 km away from the place of residence, the patient is entitled to 'distant' sanitary transport within the PHC. In order to use this possibility, the patient (or a family member or legal guardian) applies to the director of the regional branch of the NFZ for granting such transport.

The basis for the financing of PHC is the capitation annual rate, i.e. the so-called lump sum per person on the active patient list. From 1 October 2020, these rates are as follows:

1) for a primary care medical practitioner - PLN 171,
2) for a primary care nurse - PLN 41.76,
3) for a primary care midwife - PLN 27.60,
4) for a school nurse - PLN 90.12.

Additional sources of funding include the assigned budget (funds for the provision of coordinated care), the task-oriented fee (additional funds for the provision of preventive health care) and the incentive pay for the treatment effect and the quality of care.

The verification of the objectives of the Act of 27 October 2017 on primary health care (Dz. U. /Journal of Laws/ of 2021, item 1050), concerning in particular coordinated care, is the implementation of the pilot programme PHC PLUS[51]co-financed with EU funds under the Knowledge Education Development Operational Programme in the years 20142020. The project will be implemented until 31 December 2021. The objective of the model is to focus the activities of a unit of health professionals on the actual health needs of patients under the care of a primary health care medical practitioner, and their implementation in a comprehensive, planned, continuous and integrated manner. The provision of health services financed by the European funds under the project includes, among other things, performing medical condition assessments (comprehensive sets of prophylactic tests) for adults and conducting extensive educational activities in the field of preventive health care. The services financed from the funds of the relevant regional branch

[51]Full name of the project: Preparation, testing and implementation of coordinated care organisation (OOK) into the health acare sysytem Stage II Pilot phase - PHC PLUS model.

of the NFZ include a disease management programme concerning 11 chronic diseases, i. e. asthma, back pain and diabetes, which are the most frequently treated diseases in Poland.

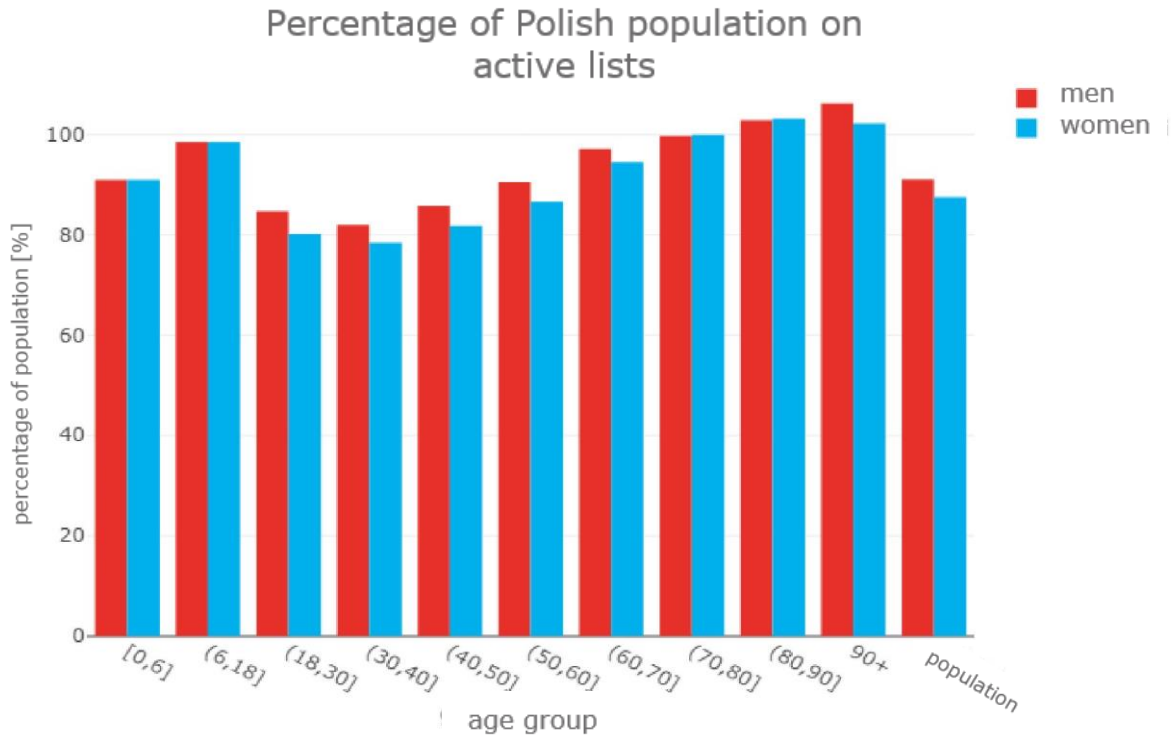
It is extremely difficult to make international comparisons regarding primary health care, as each country organises it independently. Based on the status of primary health care and its relationship with specialised care, EU countries can be divided into two groups: those where primary health care is the foundation of the entire system and its position is well established, such as the United Kingdom, Finland, Denmark, Sweden and the Netherlands, and those where there is no clear division between primary and specialised health care and the role of primary care is distinctly less significant, such as Germany, Austria, France and Belgium.

4.1. Analysis results

Active lists

In recent years, the number of people registered in the PHC has slightly increased. In 2019, 34,290,000 Poles were on the active lists, representing 89.35% of the country's population. In comparison, 34,240,000 people (89.10% of the country's population) were registered in PHC in 2016. The percentage distribution of registered patients in relation to age and gender is not uniform. Only 78.42% of men in the 30-40 age group appear on the active list (similarly, 81.95% of women). On the other hand, for women aged 60-70 years, the value reaches 97.13%.

Figure 37. Percentage of population on active lists by gender and age groups in 2019.

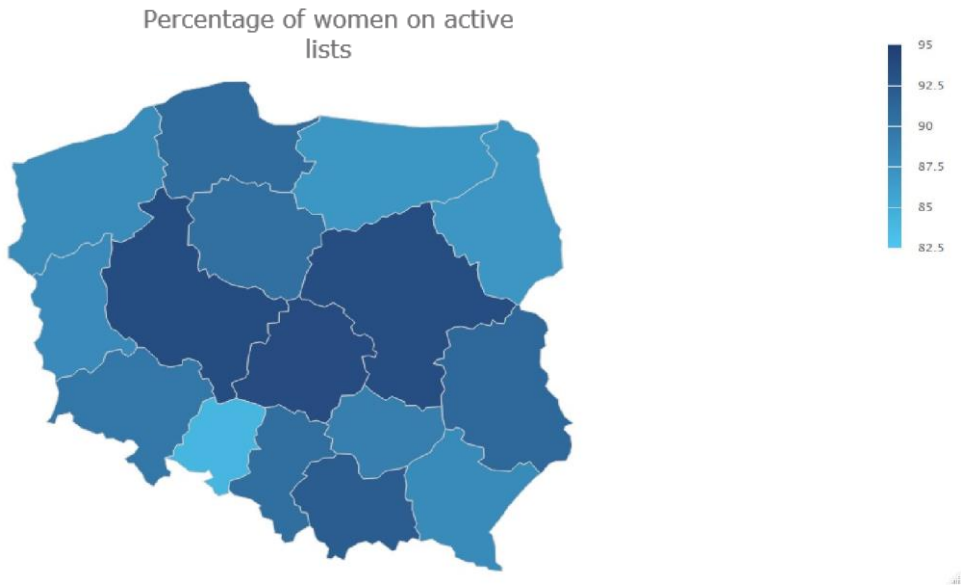


Source: Ministry of Health study based on active lists from NFZ and demographic data from GUS

In the case of the population registered in PHC by rural and urban areas, there are noticeable differences. 91.47% of the urban population and 86.16% of the rural population were on the PHC active lists.

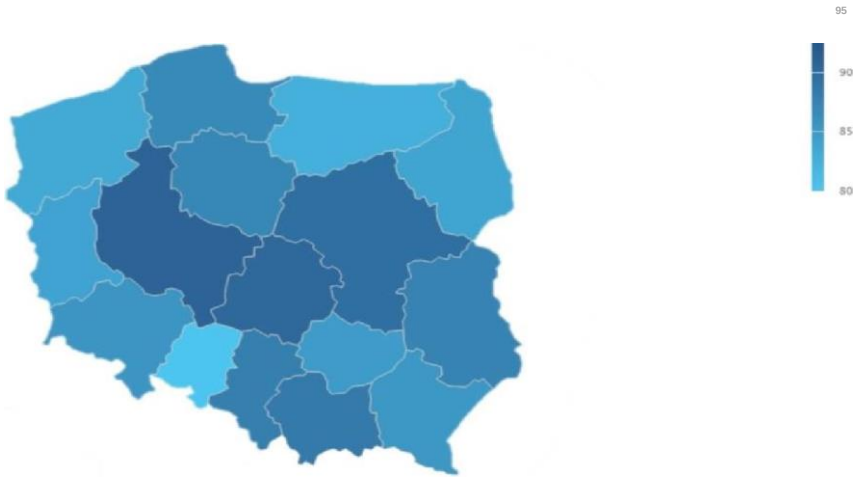
Analysing the distribution by provinces, the values vary with respect to women from 84.39% in the Opolskie Province to 93.82% in the Łódzkie Province, and with respect to men from 80.58% in the Opolskie Province to 91.29% in the Wielkopolskie Province.

Figure 38. Percentage of women on active lists relative to total population by provinces in 2019.



Source: Ministry of Health study based on active lists from NFZ and demographic data from GUS.

Figure 39. Percentage of men on active lists relative to total population by provinces in 2019.



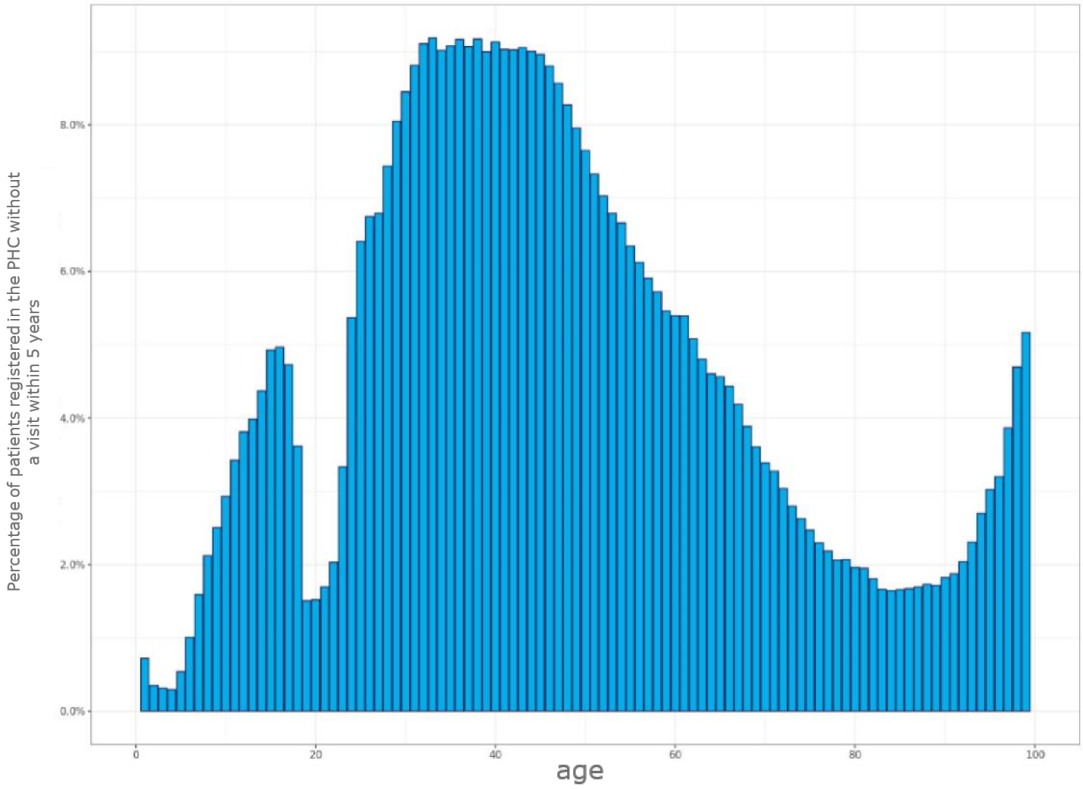
Source: Ministry of Health study based on active lists from NFZ and demographic data from GUS.

Patients in PHC

The services of the PHC should be provided not only when a patient suffers from a sudden deterioration of health condition or feels unwell due to the chronic disease, but also for preventive and educational purposes. Therefore, it is essential to verify indicators for patients who do not use the PHC services or use them very rarely (*out-of-care* patients).

Data from the NFZ indicate that in the entire population of the country, 5.38% of patients (6.81% of men and 4.09% of women) registered in the PHC in 2019 did not attend any appointments under the general health insurance between 2015 and 2019. In terms of age, the percentage of patients registered in the PHC but did not use its services within 5 years.

Figure 40. Number of *out-of-care* patients by age of patients.



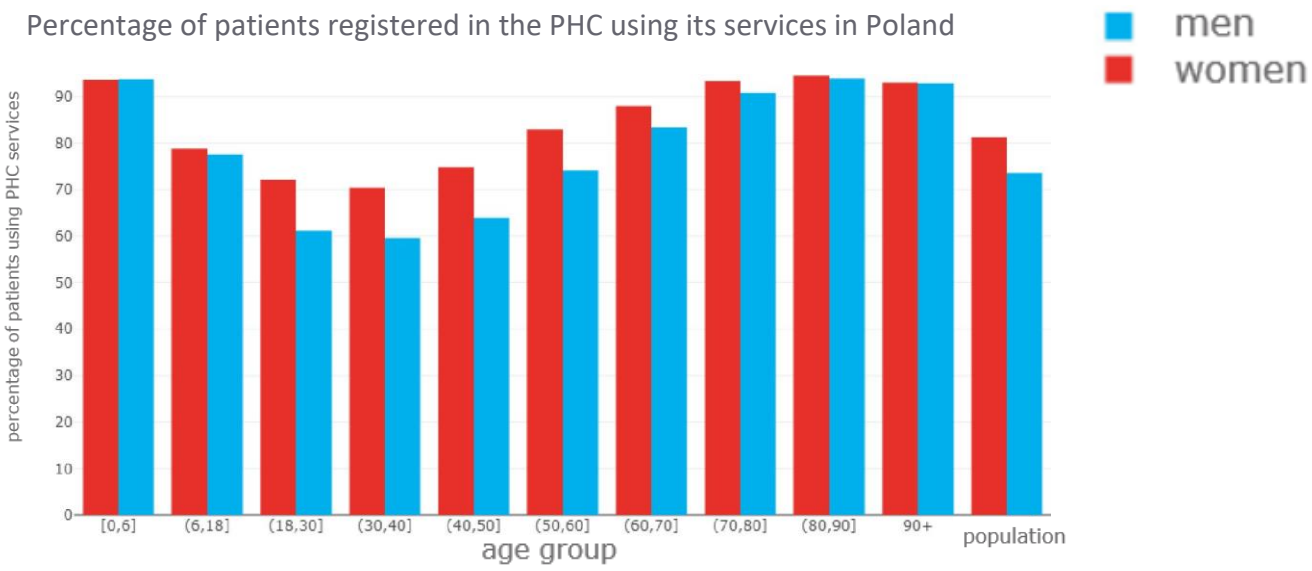
Source: Ministry of Health study based on NFZ data

A very small percentage of children up to the age of 5 have never sought medical consultation within the PHC (less than 1%). Then the percentage of those who have not sought medical advice under the PHC in the previous 5 years increases up to the age of about 30 years (with a point decrease around the age of 20 years). The percentage remains stable at around 8-9% for people aged around 30-50 years before gradually decreasing again to below 2% for those at the age of 80 years. Among older patients (over 90), there is again an increase in the percentage of people who do not use PHC services. In summary, the largest group of people not using the PHC services in the last 5 years are people aged 30-50

years. Therefore, there is a risk that this group of people is not sufficiently covered by health care and preventive measures. On the other hand, the results obtained can be justified by the fact that these people largely use health services within the private sector.

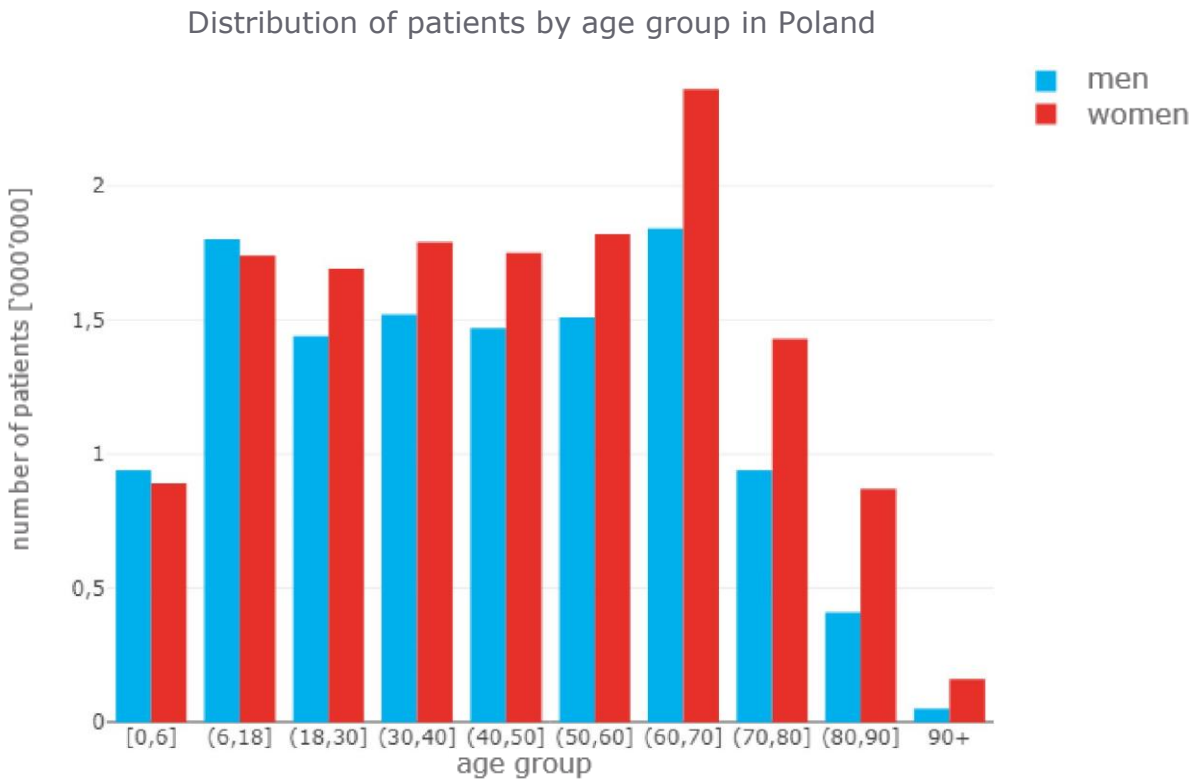
Analysing the 2019 data, from among the 34,290,000 Poles registered in the PHC, 77.63% had at least one appointment at the PHC unit, while 22.37% of those registered did not attend a PHC consultation even once. Women and men aged 80-90 tend to use the PHC services the most frequently, with 94.53% of all registered women in this age group and 93.93% of men making at least one appointment at the PHC unit in a given year. Patients least likely to visit a PHC unit were men aged 30-40 (59.98%) and men aged 18-30 (61.21%).

Figure 41. Percentage of patients using PHC services by gender and age groups in 2019.



Source: Ministry of Health study based on active lists and the NFZ services database

Figure 42. Distribution of PHC patients by gender and age groups in 2019.



Source: Ministry of Health study based on the NFZ services database

As regards the value of this indicator by province, the lowest percentage of women was observed in the Mazowieckie Province (75.86%), while the highest in the Lubelskie Province (84.89%). This contrasts with men, for whom the highest value was recorded in the Podlaskie Province (76.29%), and the lowest in the Mazowieckie Province (68.28%).

In terms of the place of residence of Poles, 77.16% of those registered in the PHC residing in urban areas made at least one PHC appointment in 2019, while for those in rural areas the rate was slightly higher, i.e. 78.38%.

Basic statistics and seasonality

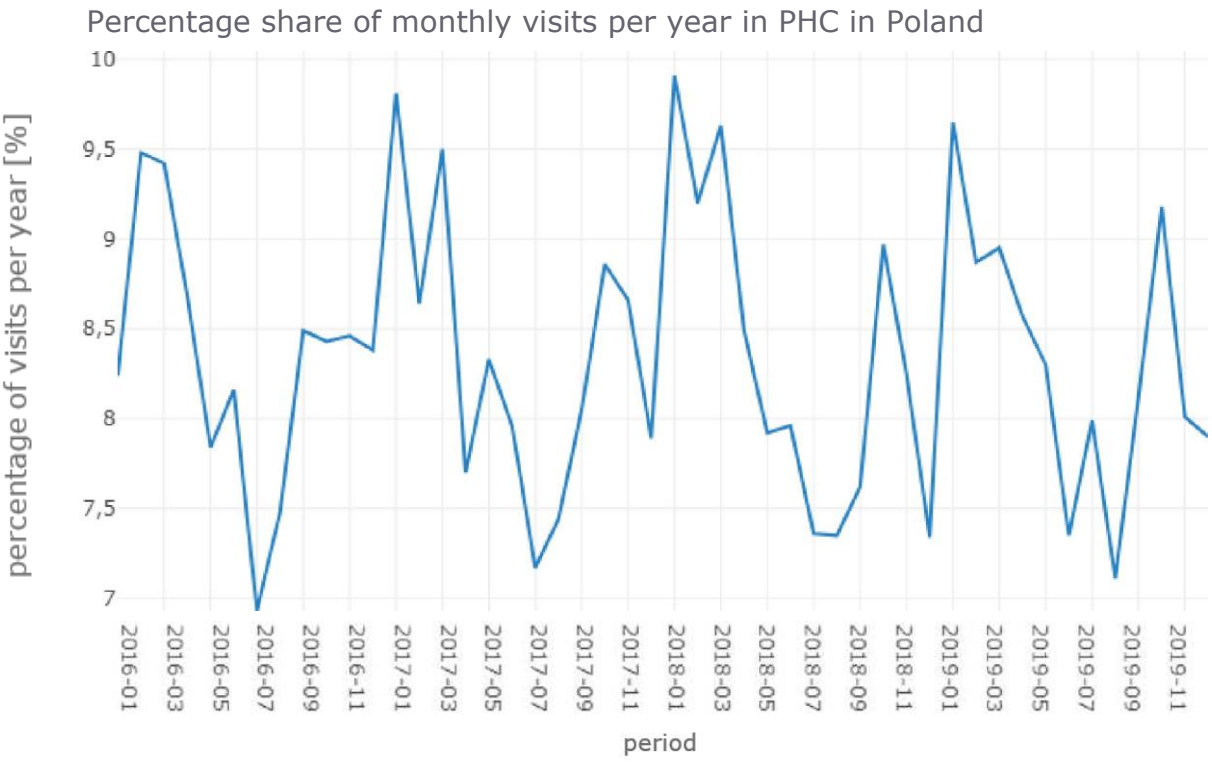
In 2019, more than 156,000,000 appointments were made in the PHC. The largest number of appointments per 1 resident was made in the Łódzkie Province (4.49) and the smallest in the Mazowieckie Province (3.59). In the case of appointments within the NHHC, there are also differences at the level of provinces. The highest number of appointments per 1 resident was recorded in the Warmińsko-Mazurskie Province (0.61) and the lowest in the Dolnośląskie Province (0.38).

On average, there were 4.56 visits per patient registered on the PHC active list in Poland. This indicator varies among provinces, with the lowest value being observed

in the Mazowieckie Province (3.9) and the highest in the Zachodniopomorskie Province (5.14).

In parallel, the seasonality of the use of health care services during the year can be observed. The lowest number of appointments is recorded in August (7.11% of all visits), the highest in January (9.65% of all visits). This is related to the decrease in temperature and immunity in

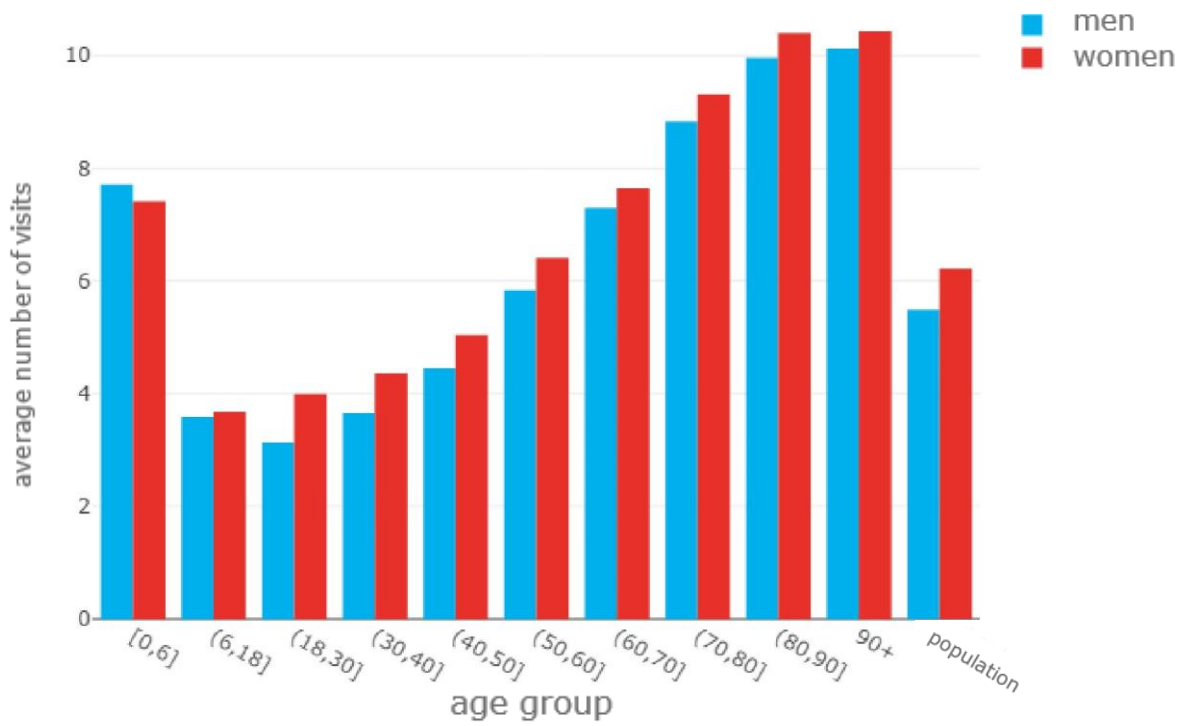
Figure 43. Distribution of appointments per year between 2016 and 2019.



Source: Ministry of Health study based on the NFZ services database

There are also large discrepancies in the number of appointments in relation to age and gender. The most frequent appointments at the PHC units are made by women over 70 years of age (30.19% made more than 1 appointment per month) and men over 80 years of age. (54.81% made more than 1 appointment per month).

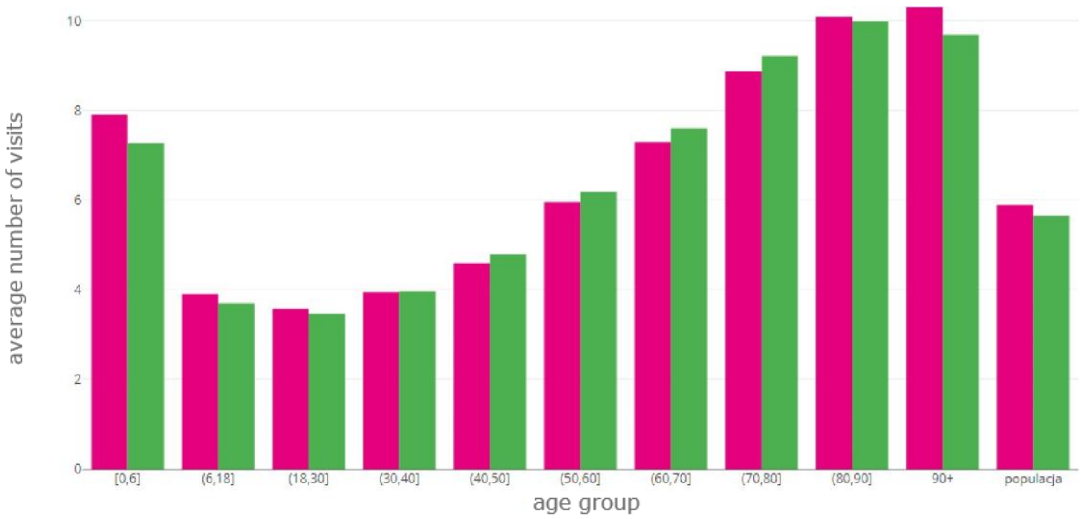
Figure 44. Distribution of the average number of appointments in age groups by gender in 2019.



Source: Ministry of Health study based on the NFZ services database

Moreover, 70.58% of the urban population attended the PHC unit at least once a year, while the figure was 67.53% for rural areas.

Figure 45. Distribution of the average number of appointments in age groups by urban and



Source: Ministry of Health study based on the NFZ services database

Reported health problems

In 2019, consultations performed in PHC units were most often reported using the ICD10 code with *Z*-block extensions; this applies to as many as 32% of all PHC appointments. These codes mostly account for repeat prescription issuance and other unspecified peri-medical activities. This statistic could be the basis for a recommendation to improve the quality of reporting within the PHC.

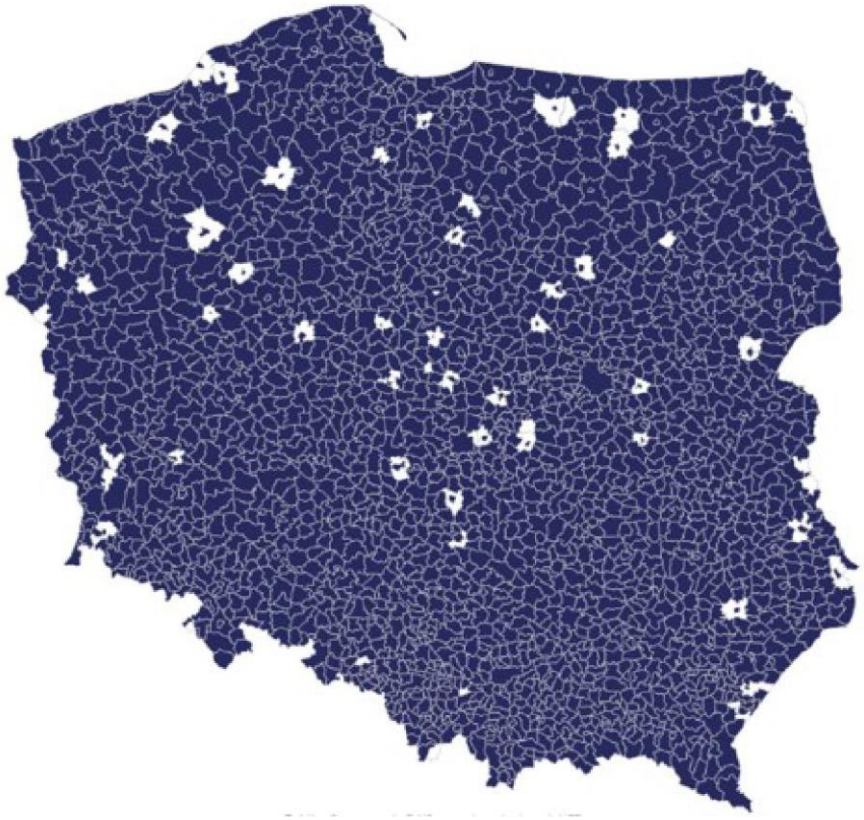
Analysing data on consultations other than those with *Z*-range code, the most frequent diagnoses include essential (primary) hypertension (12,680,000 consultations, 7.64% of total consultations), acute upper respiratory infection (7,730,000 consultations, 4.66% of total consultations), and acute rhinopharyngitis (common cold) (6,500,000 consultations, 3.9% of total consultations).

These diagnoses vary according to age. In patients aged 0-6 and 6-18 for both genders, the most common diagnosis was acute rhinopharyngitis (common cold). In patients aged 18-30 and 30-40, also for both genders, the most common diagnosis was acute upper respiratory tract infection of multiple or indeterminate locations. In other age groups, the most common diagnosis was essential (primary) hypertension. The diagnoses for other age groups additionally depend on the gender of the patient.

Access to health care services

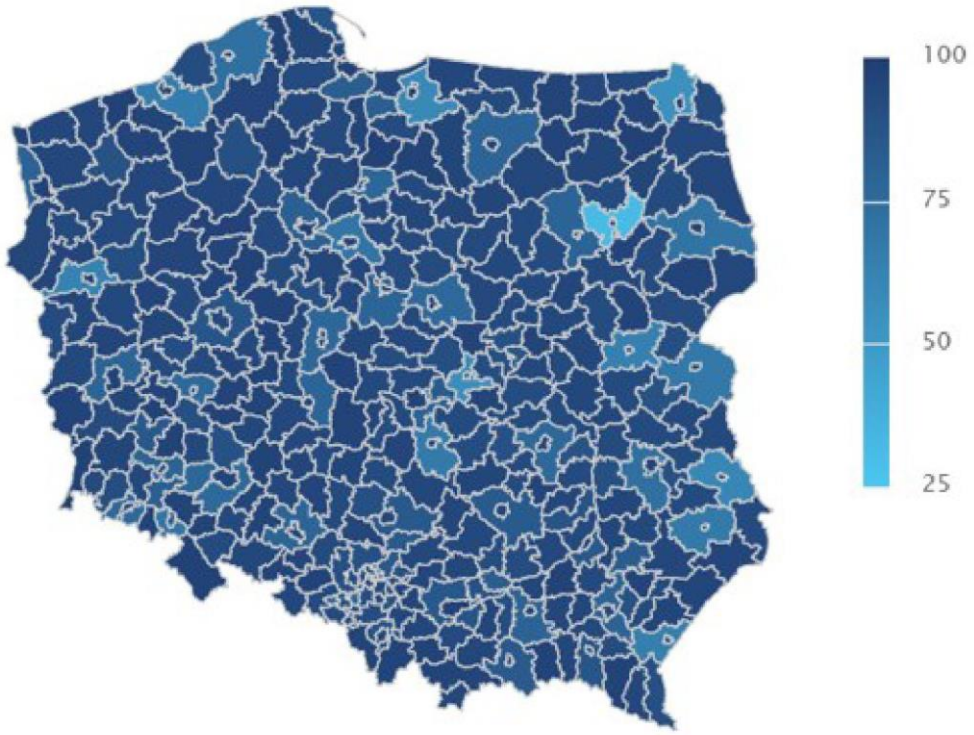
Considering that primary health care is the first stage of medical care for a patient, access to PHC units should not be limited. The analyses presented verify the statistics related to the accessibility of PHC in Poland from a regional perspective. The distribution of the percentage of people registered in the PHC in their place of residence at the district and the commune level indicates that there are 17 districts (4.47%) where 25% of people travel outside their district of residence to make an appointment at the PHC unit. In 56 communes (2.26% of the total), not a single PHC unit was functioning in 2019.

Figure 46. Communes without a PHC centre in 2019.



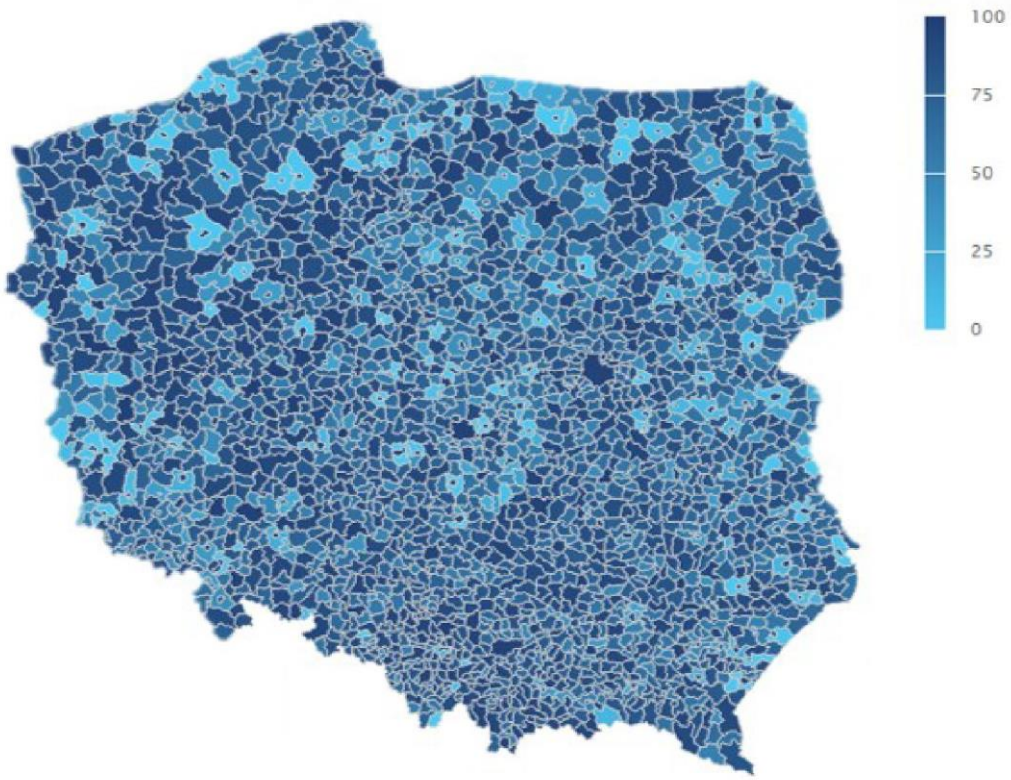
Source: Ministry of Health study based on data from NFZ and GUS

Figure 47. Percentage of patients registered in the district of residence in 2019.



Source: Ministry of Health study based on active lists from NFZ and GUS

Figure 48. Percentage of patients registered in the commune of residence in 2019.

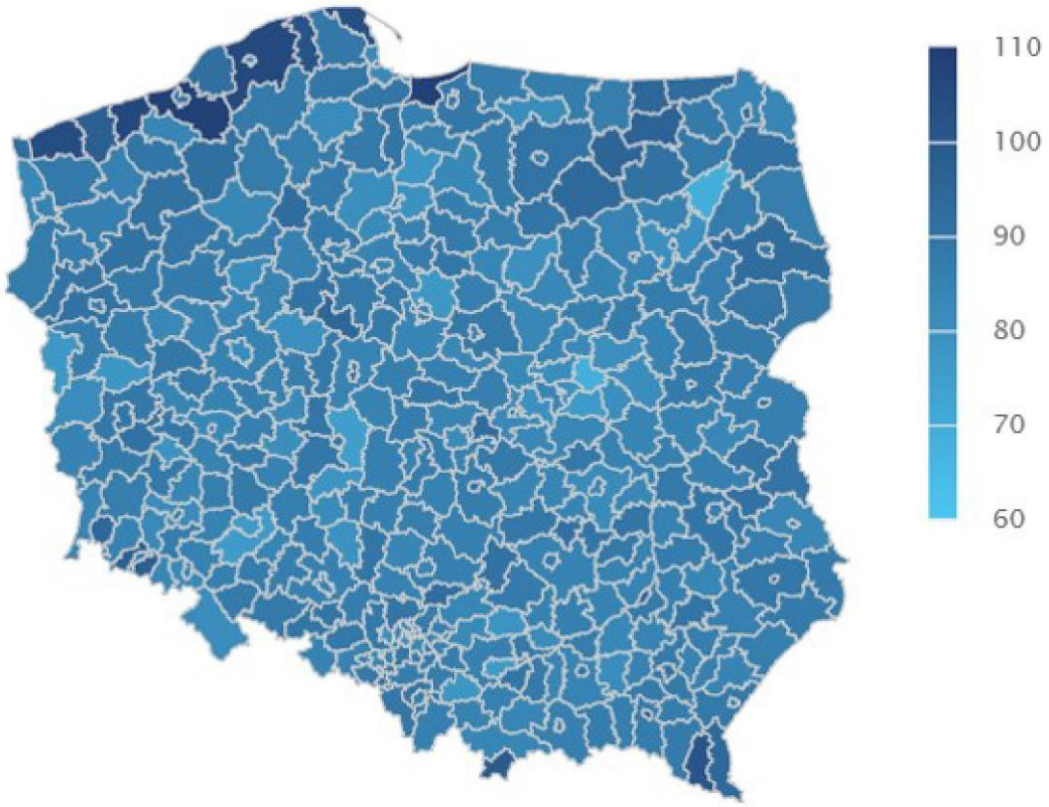


Source: Ministry of Health study based on active lists from NFZ and GUS

At the level of communes, it is noticeable the existence of so-called 'ring-shaped' communes (rural communes with their seats located in separate cities, in municipal communes adjacent), from which patients travel to larger cities to receive health care services offered by the PHC.

In the coastal districts, an increased number of non-recurrent appointments among patients who used the services of the PHC on a one-off basis can be observed - the actual number of patients in relation to those registered can exceed 100%. In a few mountainous districts, a

Figure 49. Number of actual patients vs. number of patients on active lists in 2019.



Source: Ministry of Health study based on active lists and the NFZ services database

Access to health care services for patients from communes without PHC

Considering the fact that the PHC is the patient's first point of contact with the health care system and its purpose is to assess needs and implement preventive measures, the analysis was conducted to determine whether, in communes not covered by a PHC medical practitioner, patients are less likely to use health care services under the general health insurance. For that purpose, the number of appointments in the PHC per patient in a given commune (by place of residence) in 2019 was calculated and it was verified whether the communes constituting the so-called 'white spots' (communes without PHC) differed from those communes where access to PHC was provided.

First, the number of appointments per 1 resident in "blank spot" communes was compared to the country as a whole.

Table 6. The number of appointments per 1 resident in "blank spot" communes and in the country as a whole.

		Communes without a primary care medical practitioner in 2019. (47 communes)	Communes in Poland (2 477)	Communes without a primary care medical practitioner / communes in Poland	P-value
PHC appointments per patient	Total	5.58	5.96	93.62%	< 0.05
	City	5.7	5.97	95.48%	-
	Village	5.57	5.76	96.70%	> 0.05
OSC appointments per patient	Total	4.32	4.79	90.19%	> 0.05
	City	4.54	5.15	88.16%	-
	Village	4.31	4.32	99.77%	> 0.05
Hospital visits per patient	Total	1.85	1.87	98.93%	> 0.05
	City	1.96	1.96	100.00%	-
	Village	1.85	1.84	100.54%	> 0.05
Hospitalisations per patient (excluding ED and admission room)	Total	1.22	1.26	96.83%	> 0.05
	City	0.91	1.28	71.09%	-
	Village	1.24	1.26	98.41%	> 0.05

Source: Ministry of Health study based on data from NFZ

A statistically significant difference is observed only with respect to the number of PHC appointments per 1 resident. However, it should be noted that this difference may be due to other factors, e.g. age and gender structure or residential density. No statistical test can be performed for cities because there is only one city without PHC.

In order to offset the influence of other factors, a pool of communes as similar as possible to the "blank spots" was determined in terms of the following factors:

- place of residence, i.e. city or village,

- share of women in the commune,

- the average age of the commune's residents,

- the standard deviation of the age of the commune's residents,

- population density.

With this objective, the above variables were calculated for each commune and then they were normalised to make each variable equally significant.

For each commune among the "blank spots", the similarity (the root of the sum of squares of the differences between the variables) to all the communes not being "blank spots" was calculated, and the most similar one was added to the group of "similar communes". Selection was done without return, i.e. each commune can be selected only once and is then removed from the pool. This generated a pool of similar communes with an equal count as the counts of "blank spot" communes.

Table 7. The number of appointments per 1 resident in "blank spot" communes and in the country as a whole.

	Communes without a primary care medical	Similar communes (47 communes)	Communes without a primary care medical practitioner /	P-value (t-test)
PHC appointments per patient	5.577	5.879	94.86%	> 0.05
OSC appointments per patient	4.324	4.254	101.65%	> 0.05
Hospital visits per patient	1.853	1.824	101.59%	> 0.05
Hospitalisations per patient (excluding ED and admission room)	1.224	1.216	100.66%	> 0.05

Source: Ministry of Health study based on data from NFZ

Based on the analysis, some differences can be observed in the number of appointments per patient in communes without a primary care medical practitioner and in communes similar to them, but they are not statistically significant.

In summary, the relationship between the lack of a primary care medical practitioner in a commune and the number of appointments at the PHC unit, OSC centre, hospital and the number of hospitalisations was not proven (with an acceptable type I error of 5%). Therefore, it can be presumed that such a dependency does not exist.

Child and youth care

On 12 April 2019, the Student Health Care Act was adopted (Dz. U. /Journal Of Laws/, item 1078), which specifies the issues necessary to provide comprehensive and systematic health care for children and adolescents.

The Act defines the coordinating role of the school nurse/hygienist and indicates the areas of cooperation of all entities and persons involved in providing care for students (school nurse/hygienist, dentist, primary care medical practitioner) and those responsible for creating organisational conditions for the provision of this care at school (headteacher, school authority), as well as parents, teachers and other school employees (school counsellor). This cooperation is based on the exchange of information and taking joint actions, with particular emphasis on health promotion and health education.

The authority in charge of the school shall provide students with the possibility to consult the preventive health care office at school. If there is no such office at school, the school nurse/hygienist provides services at the place resulting from the contract with the NFZ, i.e. at the primary health care clinic.

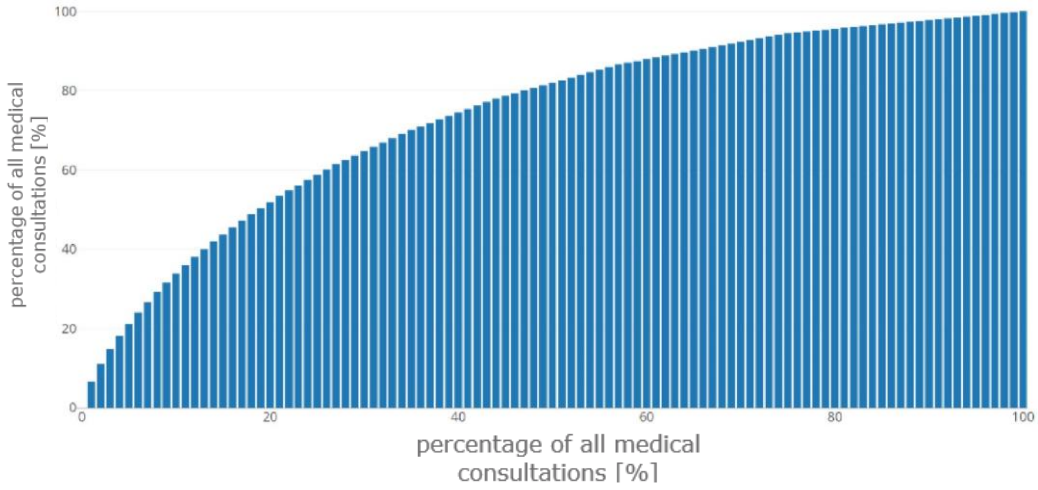
As regards dental care and the availability of dental offices for students, the Student Health Care Act stipulates that the school authority shall provide students with the possibility to consult a dental office. If there is no such office at school, the school authority concludes an agreement with a provider of publicly funded dental services for children, referred to as a cooperating entity, as the establishment of a dental office at school is not always the optimal solution.
Dental buses - one in each province - are a supplementary method of ensuring the availability of dental services.

Additionally, in order to improve the work of the school nurse/hygienist and cooperation with the primary health care medical practitioner, actions are planned in the area of computerisation of student care, including the introduction of electronic medical records.

PHC patients in hospital and under OSC

An important element of comprehensive patient care is the efficient cooperation of PHC with other forms of health care, in particular with OSC. 34% of medical advice provided by OSC is followed by 10% of PHC patients, about 52% of medical advice provided by OSC is followed by 20% of PHC patients, and about 75% of medical advice provided by OSC is followed by 40% of PHC patients. Most of the consultations provided by OSC is followed by only a small proportion of patients. In other words, there is a small proportion of PHC patients who frequently seek consultation in OSC and a large proportion of PHC patients who visit OSC infrequently.

Figure 50. Cumulative percentage of consultations in OSC in relation to the cumulative percentage of patients treated concurrently in PHC.



Source: Ministry of Health study based on data from NFZ

The analysis of five health problems [52] illustrates, among other things, patients' treatment pathways and transitions between particular levels of health care in 2017. The analysis covered chronic diseases: stroke, schizophrenia, diabetes, heart failure and chronic obstructive pulmonary disease. From among these diseases, heart failure was treated to the greatest extent in the PHC. The probability that the patient would have a subsequent appointment at the PHC unit amounted to 87.17%, while the probability of a subsequent appointment at the OSC centre was 4.24%. After the OSC appointment, the probability of a subsequent appointment amounted to 65.99%. As for type I diabetes, the probability of a subsequent appointment at the PHC unit was 56.89%, and the probability of a subsequent OSC appointment was 35.79%. If the patient has already consulted OSC, the probability of another appointment there was as high as 63.63%. For a patient with type II diabetes, there was an 81.18% probability that the subsequent appointment would be at the PHC unit and only a 17.68% probability of an OSC appointment. However, if they had already consulted OSC, the probability of a subsequent appointment amounted to 72.46%. Patients with each of the diseases mentioned frequently do not attend PHC in the next step, after the transition to OSC. This may be an indication of low cooperation between OSC and PHC with respect to the management of chronically ill patients in Poland.

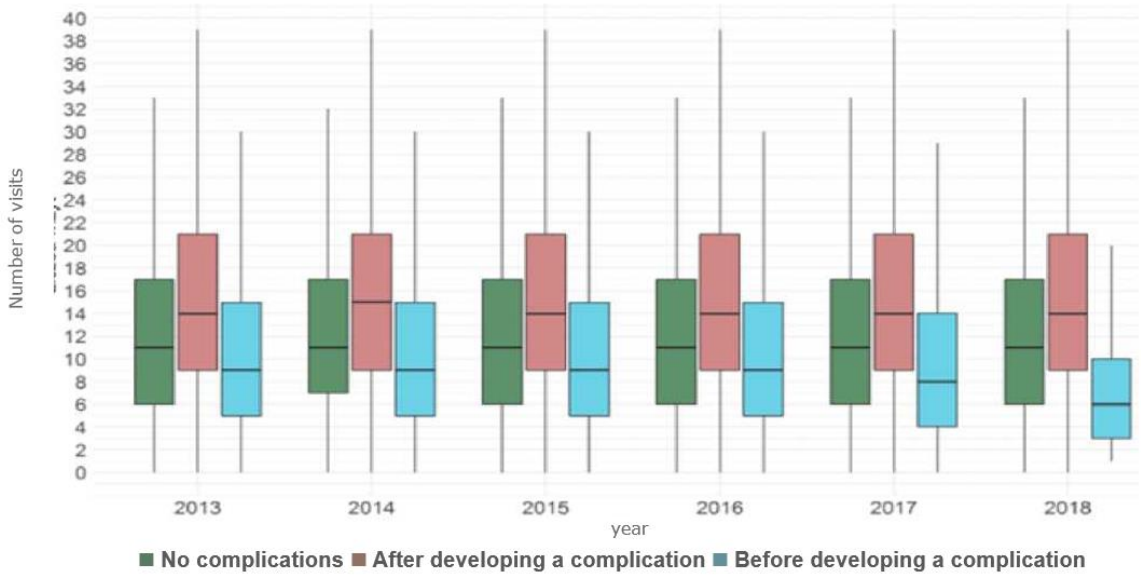
Care of the patient with diabetes

Diabetes is a chronic disease that requires regular monitoring. The frequency of medical appointments can have a major impact on the development of complications and hospitalisation due to deterioration of the patient's health condition. Therefore, the distribution of the number of medical appointments among patients with diabetes was analysed. In addition, the correlation between the number of PHC appointments and the number of cases was examined to identify areas in Poland with the poorer organisation of diabetes care.

[52] https://basiw.mz.gov.pl/index.html#/visualization?id=3157, [accessed 01.08.2021].

Analysis of the number of appointments among patients with diabetes between 2013 and 2018 revealed that patients who have developed a complication consult their medical practitioner more frequently than patients without complications. This correlation does not apply to the period of the disease when patients have not yet developed a complication - they consulted the medical practitioner less frequently than after developing a complication and less frequently than patients who did not develop a complication at all. Therefore, the frequency of appointments can be considered a proxy variable for diabetes control. Patients with complications are less likely to see a medical practitioner before they develop them, which may indirectly contribute to a deterioration of their health condition and thus to a greater burden on the health care system in the subsequent period.

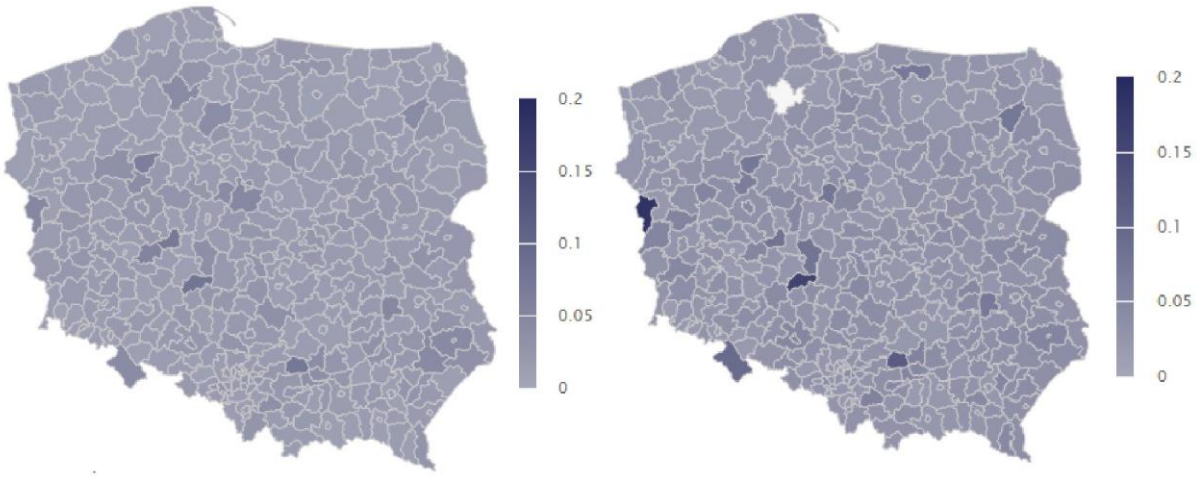
Figure 51. Number of total appointments made per year in relation to the occurrence of a complication among patients with diabetes



Source: Ministry of Health study based on data from NFZ

In order to verify whether there are areas in Poland where the care of patients with diabetes is better organised, an indicator was devised to determine the ratio of the number of hospitalisations for diabetes (referred to as a diabetic hospitalisations) to the total number of PHC appointments among patients with diabetes. Patients were assigned to a PHC unit according to active lists, and then the average value of the indicator within the PHC was determined and averaged for the district.

Figure 52. Ratio of hospitalisations to PHC appointments for patients without diabetic complications (map on the left) and for patients with diabetic complications (map on the right) in 2018.



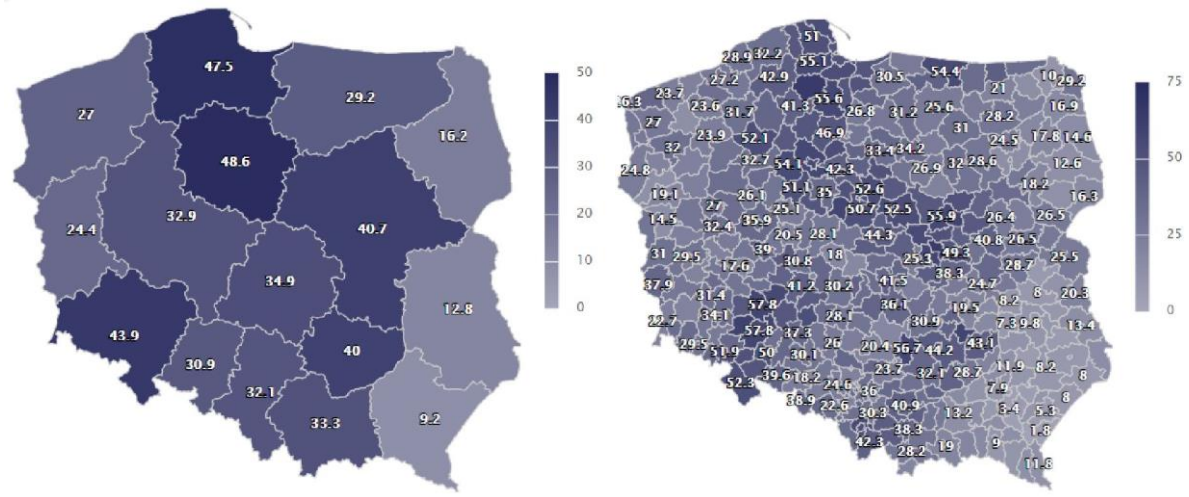
Source: Ministry of Health study based on data from NFZ

No significant differences in indicator values were observed between groups of patients categorised on the basis of the occurrence of complications. Districts with higher indicator values for patients without complications (e.g. Słubice District, Ostrzeszów District) were characterised by high indicator values also for patients with complications. On the map for patients with complications, there is one district (Chojnice) where there were no patients with complications in 2018.

The role of primary health care in cancer diagnosis

In 2015, an oncology package was introduced with the primary aim of reducing the time between suspicion of neoplastic disease to treatment initiation and providing comprehensive care at each stage of neoplastic disease. The key role in the implementation of the oncology package is to be played by the primary health care medical practitioner who, in the case of suspicion of neoplastic disease on the basis of the medical history, physical examination and basic diagnostics, has been authorised to issue an oncological diagnosis and treatment card (DiLO). In 2019, there was an almost thirteen-fold difference between provinces in the number of DiLO cards issued within the PHC per 100,000 patients on active lists. The highest value of the indicator was recorded in Pomorskie (528) and Kujawsko-Pomorskie (520) provinces, while the lowest value was recorded in Podkarpackie (41), Podlaskie (59) and Lubelskie (69) provinces, with a national average of 268. In 2019, 91,900 DiLO cards were issued within the PHC throughout Poland, which accounted for 35.5% of all cards issued that year. The percentage of DiLO cards issued by PHC medical practitioners varied among provinces, ranging from 9.2% in the Podkarpackie Province to 47.5% in the Pomorskie Province.

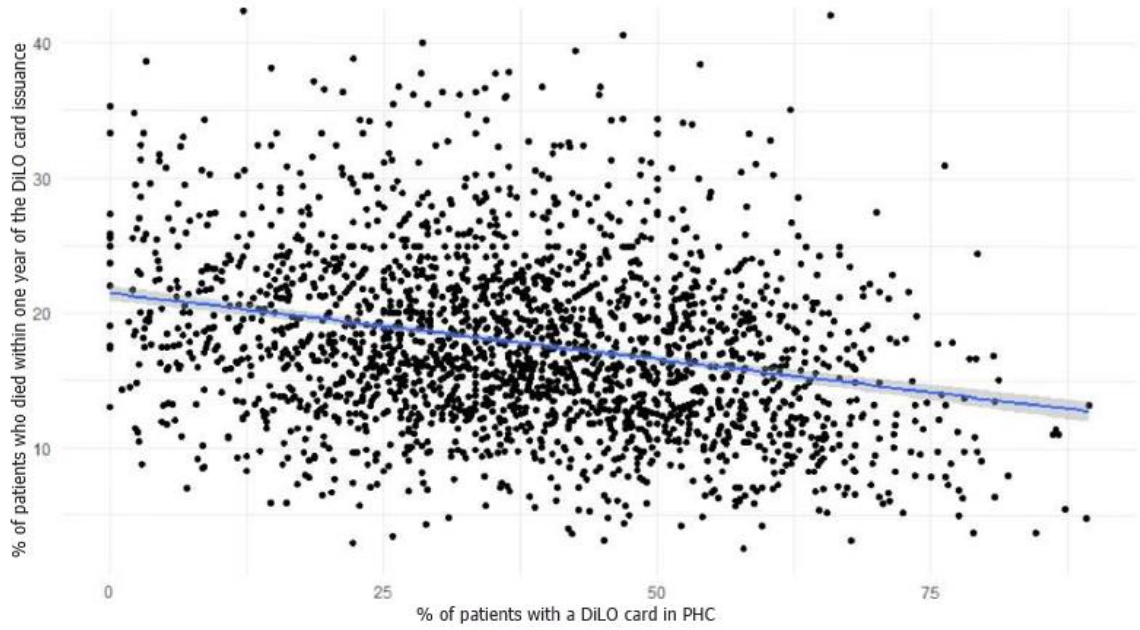
Figure 53. Percentage of DiLO cards issued within POZ in relation to all DiLO cards issued in 2019 by province (the left map) and by district according to active lists (the right map)



Source: Ministry of Health study based on data from NFZ and GUS

In order to verify whether a higher proportion of DiLO cards issued at the earliest possible stage, i.e. by PHC medical practitioners, affects the efficiency of the diagnostic and therapeutic process, the mortality rate within a year of DiLO card issuance was calculated. In 2019, 245,600 oncology patients received a DiLO card, of whom 17.8% died within a year of its issuance. The diagram presents the correlation between the percentage of patients on the active list who died within one year of the card being issued and the percentage of patients with a DiLO card issued within the PHC.

Figure 54. Correlation between the percentage of patients who died within one year after the card was issued and the percentage of patients with a DILO card issued within the PHC (only those providers with more than 30 patients on the active list were considered, and the outlier values were excluded)



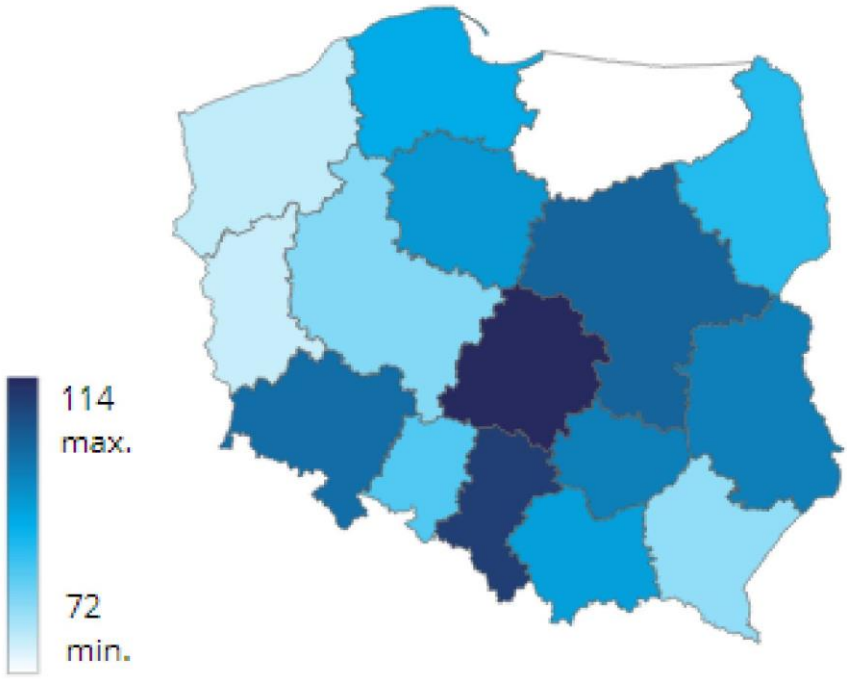
Source: Ministry of Health study based on data from NFZ

A statistically significant (p<0.0001) negative correlation between variables was observed - as the percentage of patients with a DiLO card issued in PHC increases by 1 percentage point, the percentage of patients who died within a year of card issue decreases by 0.09 percentage points. This may suggest that no effective action is undertaken to prevent or detect neoplastic lesions at an early stage and that PHC medical practitioners do not display sufficient oncological vigilance in the provinces with the lowest percentage of DiLO cards issued within the PHC.

Medical staff

In 2019, there were 36,094 medical practitioners, 37,129 nurses, 6,748 midwives working within the primary health care system.
The distribution of the number of medical practitioners per 100,000 population by provinces reveals large differences between provinces. The lowest number of medical practitioners worked in the Warmińsko-Mazurskie (72.4 per 100,000 population) and Lubuskie (76.8 per 100,000 population) provinces,
in contrast to the Łódzkie (114.3 per 100,000 population) and Śląskie (111.1 per 100,000 population) provinces, where the highest number of physicians was recorded.

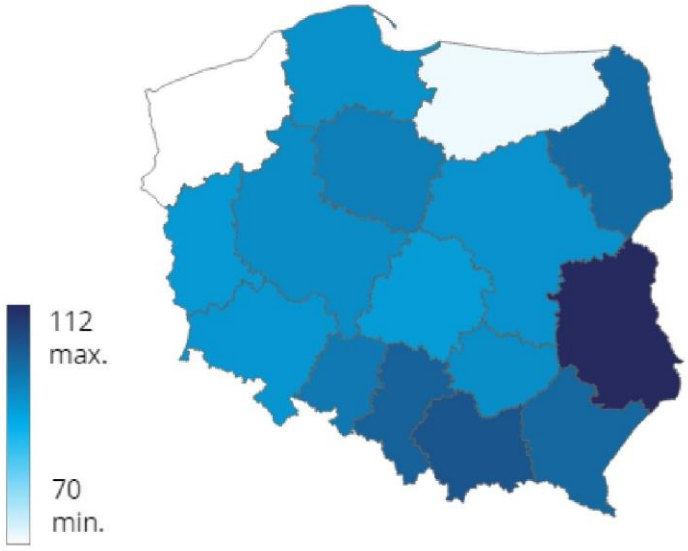
Figure 55. Number of primary care medical practitioners per 100,000 population by provinces in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

The number of nurses and midwives per 100,000 population also varied among provinces. The highest number of nurses worked in the Lubelskie Province (112 per 100,000 population) and the lowest in the Zachodniopomorskie Province (70 per 100,000

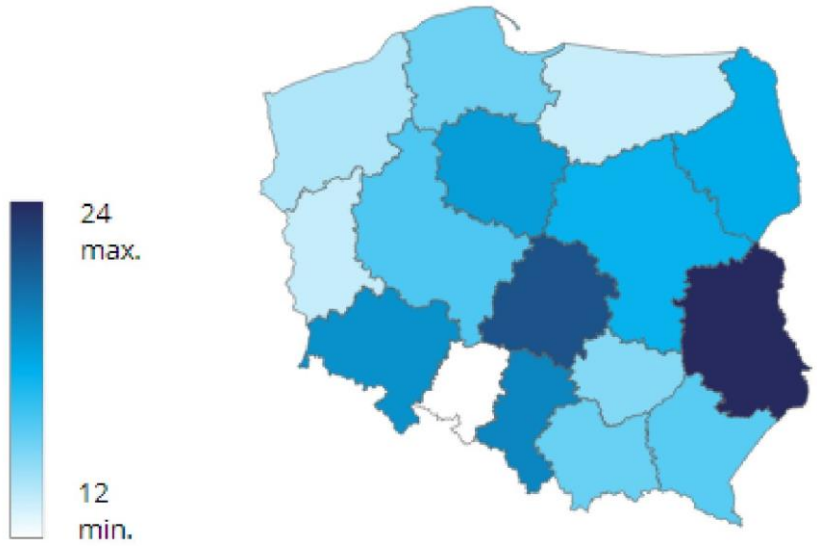
Figure 56. Number of primary health care nurses per 100,000 population by provinces in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

As regards the number of primary health care midwives, the highest number worked in the Lubelskie Province (24 per 100,000 population) and the lowest in the Opolskie Province (12 per 100,000 population).

Figure 57. Number of midwives per 100,000 population by provinces in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Communes without primary health care medical practitioners

Primary health care medical practitioners assume a fundamental role in the patient's treatment process. With easy access to a primary health care medical practitioner, a patient has a chance to start treatment more quickly. In most communes in Poland, residents have access to a PHC medical practitioner. The analysis below identifies communes in which no PHC medical practitioner was employed in 2019. Communes were also identified for which there is a risk of a shortage of PHC medical practitioners in 2024, assuming no influx of new

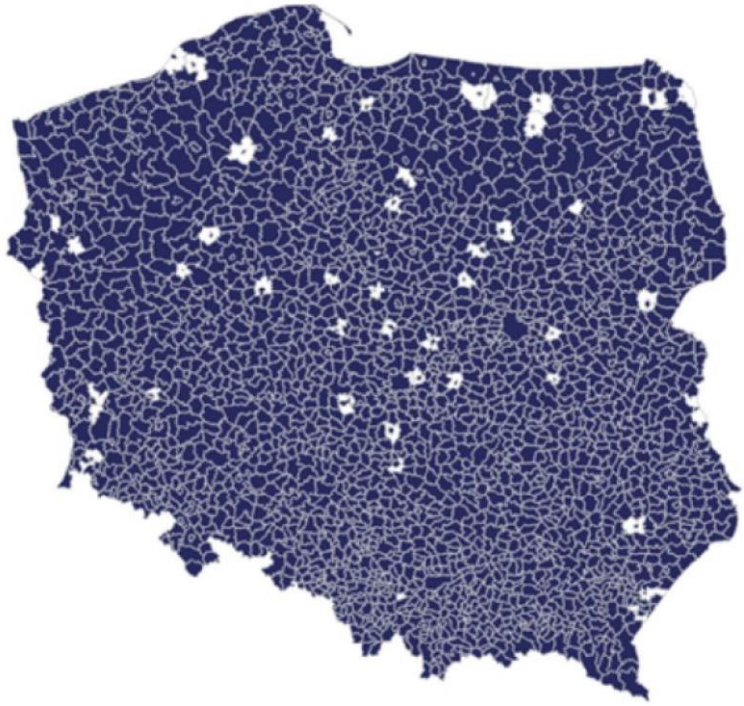
In the analyses below, age was based only on the medical practitioner's year of birth rather than full date of birth (retirement age for women is 60, for men is 65).

In 2019, in Poland, in 47 communes (1.9% of all communes in Poland), no medical practitioner worked under a PHC contract. In 124 communes (5% of all communes in Poland), there was no medical practitioner under contract for the provision of PHC services, or the medical practitioner with such a contract had already reached retirement age. This suggests a considerable risk of a sudden shortage of medical practitioners in 77 communes due to the high probability of medical practitioners withdrawing from the labour market owing to retirement age.

Adopting the simplified assumption that after reaching retirement age, PHC medical practitioners (medical practitioners who have concluded a contract to provide PHC services) will no longer perform their work and no other medical practitioners will be employed (there is no generational replacement), it is projected that in 2024 there will be 190 communes (7.7% of all communes in Poland) without a PHC medical practitioner who has not reached retirement age. Without an influx of young medical practitioners in 143

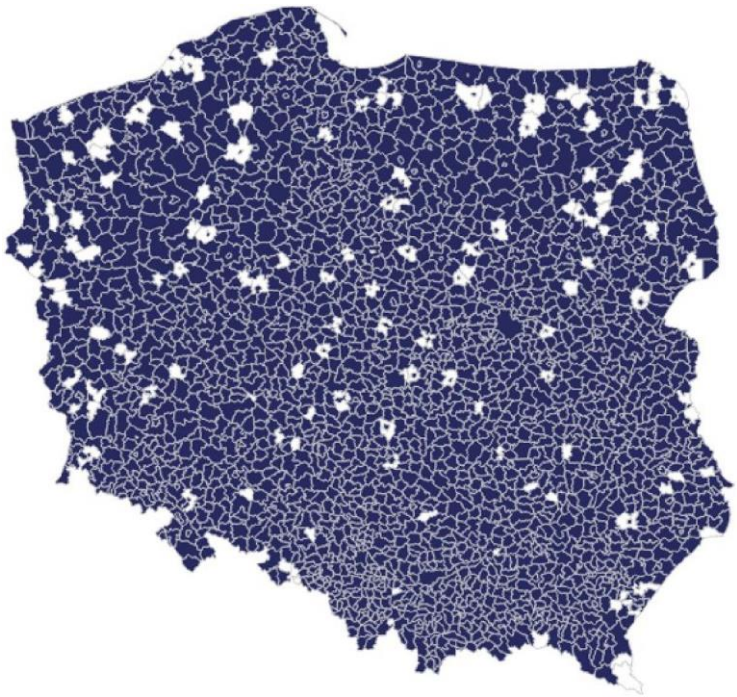
communes in Poland, this could lead to a serious reduction in access to services within the PHC by 2024.

Figure 58. Communes without a PHC medical practitioner (all, including those over retirement age) in 2019. (47 communes)



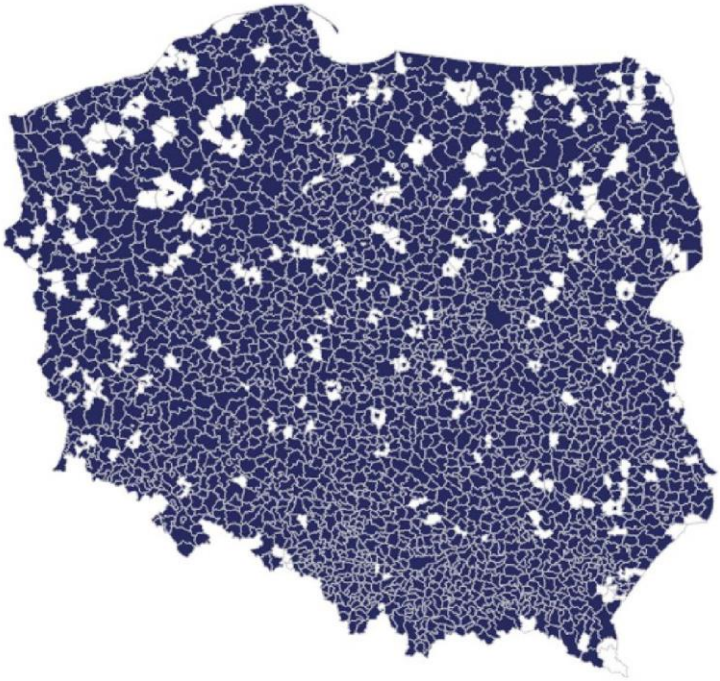
Source: Ministry of Health study based on data from NFZ and GUS

Figure 59. Communes without a PHC medical practitioner (up to the retirement age) in 2019. (124 communes)



Source: Ministry of Health study based on data from NFZ and GUS

Figure 60. Communes without a PHC medical practitioner (up to the retirement age) in 2024. (190 communes)

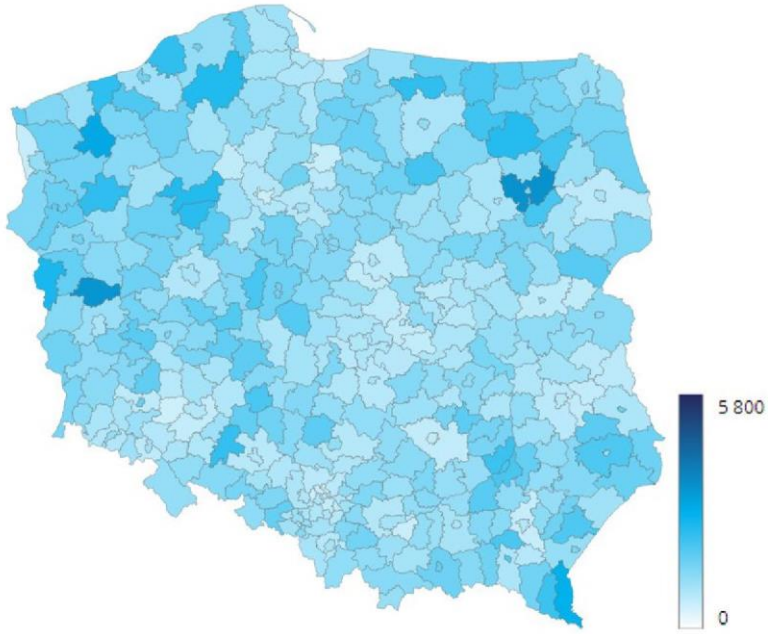


Source: Ministry of Health study based on data from NFZ and GUS

Variation in the number of patients per one medical practitioner in primary health care

Medical practitioners working in primary health care are burdened to a different extent by the number of patients assigned to them. A medical practitioner who has a higher number of patients under their care may be less accessible to those who need a medical appointment. The analysis below identifies the districts with the highest number of patients per medical practitioner under retirement age in 2019. Assuming that no new medical practitioners enter the labour market by 2024, the number of patients per medical practitioner in 2024 was estimated. It allowed the identification of areas with a severe risk of impeding access to a primary health care medical practitioner.

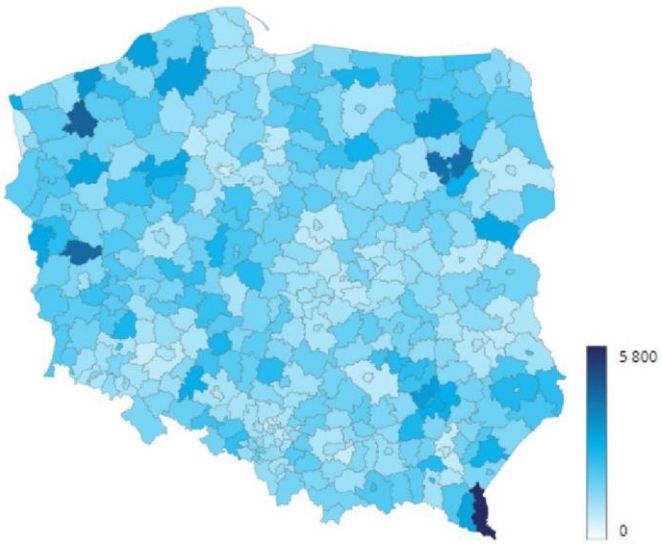
Figure 61. Number of patients per PHC medical practitioner in 2019. in districts (applies to medical practitioners under the retirement age)



Source: Ministry of Health study based on data from NFZ and GUS

The burden on medical practitioners with the number of patients varies strongly between districts. The smallest number of patients per PHC medical practitioner (a medical practitioner who has concluded a contract to provide the PHC services) in the pre-retirement age in 2019 was observed in such cities as Sopot (463), Piekary Śląskie (502) and Zabrze (585). In contrast, medical practitioners were most burdened in the districts of Łomża (3521), Świebodzin (3453) and Łobez (3046). The average value for the country is 1331.

Figure 62. Number of patients per PHC medical practitioner in 2024. in districts (applies to medical practitioners under the retirement age)



Source: Ministry of Health study based on data from NFZ and GUS

Adopting the simplified assumption that after reaching retirement age, PHC medical practitioners (medical practitioners who have concluded a contract to provide PHC services) will no longer perform their work and no other medical practitioners will be employed (there is no generational replacement), it was calculated that the smallest number of patients per PHC medical practitioner in the pre-retirement age in 2024 will be in such cities as Sopot (536), Piekary Śląskie (596) and Bydgoszcz (638), while the largest in the districts of Bieszczady (5,736), Łobez (4,569) and Świebodzin (4,395). The national average will be 1,580.

The highest percentage of medical practitioners who will reach the retirement age by 2024 among medical practitioners working in 2019 under the retirement age are medical practitioners in the districts of Bieszczady (50%), Stalowa Wola (39%) and Siemiatycze (39%).

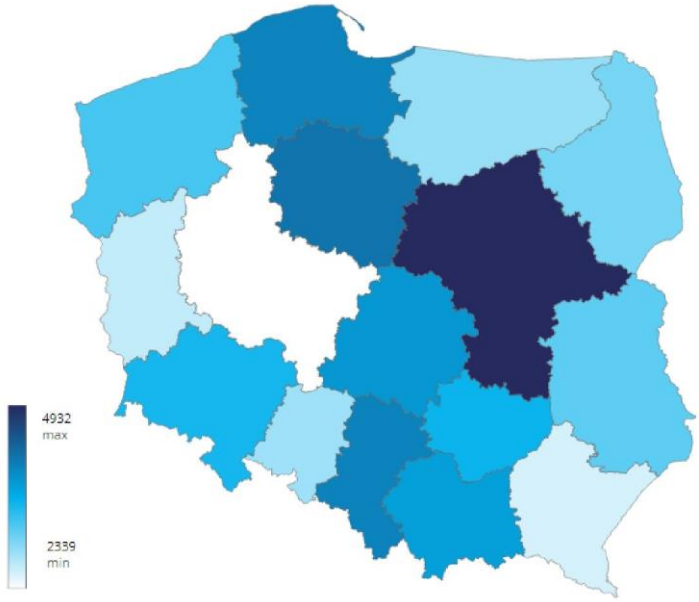
Numerically, the largest increase in patients per medical practitioner under retirement age in 2024 compared to 2019 (assuming that medical practitioners stop performing their work after reaching the retirement age and no other medical practitioners are employed) will occur in districts of Bieszczady (more by 2,868 patients per medical practitioner), Łobez (more by 1,523 patients per medical practitioner) and in Siemiatycze (more by 1,204 patients per medical practitioner).

As a percentage, the largest increase in patients per medical practitioner under retirement age in 2024 compared to 2019 in comparison to 2019 (assuming that medical practitioners stop performing their work after reaching the retirement age and no other medical practitioners are employed) will occur in districts of Bieszczady (100% more patients per medical practitioner), Stalowa Wola (65% more patients per medical practitioner) and Siemiatycze (64% more patients per medical practitioner).

Medical entities

In 2019, there were about 8,190 PHC entities in Poland, which translates into an average of 21.34 per 100,000 of the population. On average, there are 3,450 patients per one PHC unit in Poland; however, in fact, significant differences between provinces are observed. On average, the lowest number of patients per one medical entity is in the Wielkopolskie Province (2,340) and the highest in the Mazowieckie Province (4,930).

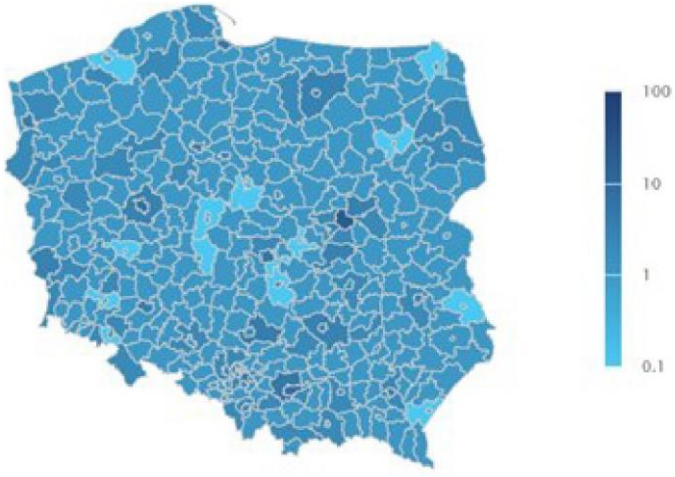
Figure 63. The average number of patients per one PHC entity by province in 2019.



Source: Ministry of Health study based on active lists from NFZ and GUS

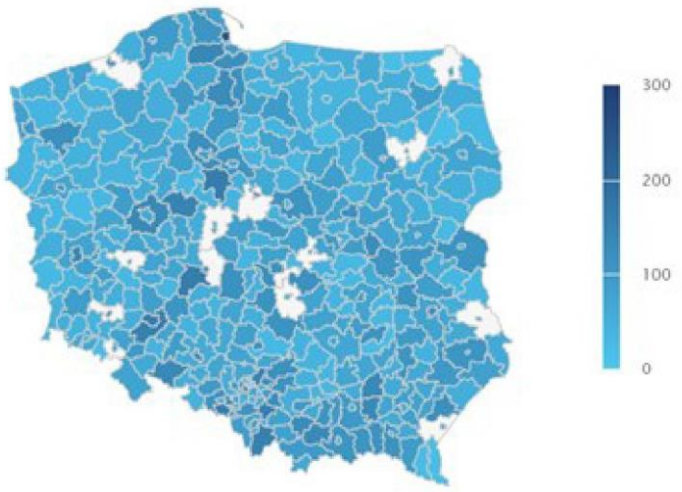
Between 6 p.m. and 8 a.m. and on non-working days, PHC health care services are provided as part of night and holiday health care. There was not a single medical entity providing NHHC services in 14 districts. All of them represent "torus-shaped" districts. There were 518 such medical entities throughout Poland, with the largest number of entities located in Warsaw - 22.

Figure 64. Number of NHHC entities in districts in 2019.



Source: Ministry of Health study based on services database from NFZ and GUS

Figure 65. Average population per 1 NHHC entity ['000] in 2019.



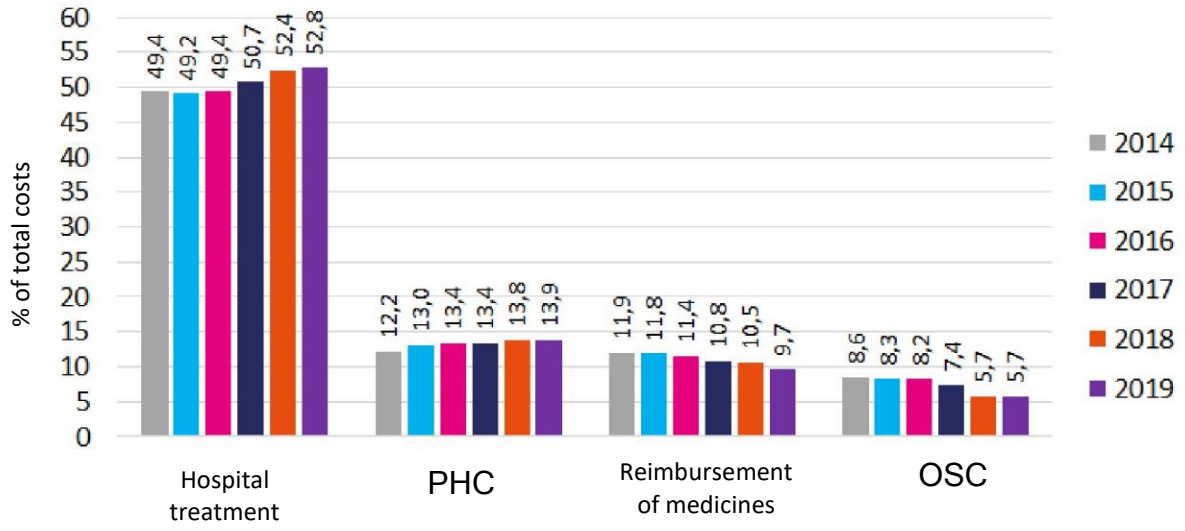
Source: Ministry of Health study based on services database from NFZ and GUS

Blank spots indicate districts without any NHHC entity (and without the possibility to determine the indicator). The largest population per 1 entity was recorded in Gdynia (246,348), while the smallest in Sejny District (Łódzkie Province, 19,914).

Expenditures

The expenditure on primary health care as a percentage of total expenditures on health services incurred by the NFZ increased slightly from 2014 to 2019, with a parallel increase in expenditure on hospital treatment. In 2014, the NFZ's expenditure on PHC accounted for 12.2% of all costs, and it reached 13.9% in 2019. The PHC budget increased by more than 61.03%, and by PLN 4,700,000,000 in monetary value. Expenditure on hospital treatment in the same period increased by 51.92%, and by PLN 16,200,000,000 in monetary value.

Figure 66. Costs of National Health Fund health care services in 2014-2019 - as a % of all costs for services



Źródło: opracowanie MZ na podstawie danych z NFZ

Challenges and prevention

Taking into account the conclusions arising from the epidemiology, the most important challenge now is to reinforce the role of primary health care in disease prevention and health promotion, so that Poles require specialist treatment at the latest possible stage of their lives. According to the available data, PHC focuses its attention on ill people, forgetting that one of the important objectives from the point of view of public health is the provision by PHC of preventive health care and health promotion adjusted to the needs of different groups of the population.

The main health problems of Poles are non-communicable, chronic diseases, which can be largely prevented by effective educational and preventive measures. It is true that PHC, within the scope of its competence, implements several preventive programmes, such as cardiovascular disease prevention, cervical cancer prevention and others. Still, over several years the number of such medical consultations has decreased. The analyses of the Supreme Audit Office show that in 2012-2014 (the first half of the year), the number of preventive consultations for cardiovascular diseases decreased by 26.5%, for tuberculosis prevention by 14.5% and for tobacco-related diseases by 23.0%.

In the field of prevention, primary health care units also administer preventive vaccinations, including mandatory vaccinations for children and adolescents and voluntary vaccinations, as in the case of influenza vaccination for seniors. For several years, the number of persons evading mandatory preventive vaccinations in Poland has been increasing, which, in the perspective of the coming years, poses a threat of the return of epidemics of diseases that have been successfully suppressed by vaccinations.

Regardless of the aforementioned, preventive activities of PHC are insufficient.
In the conducted inspections of the health care system, the NIK concluded that a small percentage of people were subjected to preventive screening tests, access to providers of preventive services was limited, and the NFZ, in the process of planning and purchasing of preventive services, did not take into account epidemiological data and health needs of eligible persons. The NIK assessed the actions of PHC medical practitioners as insufficient in terms of providing and documenting services in the area of health care prevention, with particular emphasis on cardiovascular diseases and neoplastic diseases.
Another NIK inspection even revealed that failure on the part of PHC medical practitioners to perform and document medical examinations for early diagnosis of civilisation diseases, with particular emphasis on cardiovascular and neoplastic diseases were not compliant with the regulations in force.

Coordination and cooperation

Another challenge for the primary health care system is the coordination of health care for the patient. This coordination consists of integrating the provision of health care services covering all stages and elements of the process of their implementation and can be performed within PHC and with other elements of the health care system - OSC and hospital treatment, rehabilitation, spa treatment, etc.

Coordination within PHC is provided by a PHC medical practitioner in cooperation with a PHC nurse and a PHC midwife. The implementation of coordinated care in PHC according to the new provisions specified in the Act of 27 October 2017 on Primary Health Care is performed as a part of the PHC PLUS project. The essence of care coordinated and implemented within the PHC PLUS model is that the provider actively cares for the patient in health and disease. The patient becomes an active partner in joint decision-making concerning proceedings in health and disease on the basis of an individual medical care plan developed together with the patient. In the implementation of the care plan, the patient is supported by a team of medical professionals, which, in addition to a medical practitioner
and a nurse, also includes dieticians and health educators and physiotherapists. Due to the fact that the project is in progress, its effects will be known after its completion.

Another responsibility of primary care medical practitioners is to refer patients to other components of the health care system, i.e. to specialist medical care, hospital care, spa care and others. An equally important role of PHC is the monitoring and management of chronically ill patients with stable disease. Coordination of the system in the context of the operation of PHC and OSC is an integral element of the efficient functioning of the entire health care system. The role of PHC in this aspect should consist of periodic examination of these patients and management of stabilised patients according to the recommendations of medical specialists. This mechanism allows control of the patient's health condition so as to avoid its drastic deterioration, which frequently involves the initiation of hospital treatment.

At present, the provision of care for chronically ill patients is limited in the PHC mainly to issuing prescriptions. According to the results of the analysis, the reasons why patients most frequently attend the PHC unit were requests for prescriptions. The average number of PHC visits was for active users (i.e. at least 1 visit in a given year) and increased for patients aged 20 to 86. More than 10 visits per year were made by patients aged 83 or more. This is a worrying fact as medical practitioners can issue prescriptions for 12 months. In addition, more and more nurses are gaining the right to write prescriptions, which should relieve medical practitioners of administrative work so that they can focus their attention on patient health and its monitoring.

Another challenge related to the cooperation of PHC with other components of the health care system is providing care for working people. Cooperation between primary care medical practitioners and occupational medicine practically does not exist.

Computerisation

For several years, the process of computerisation of health care, including PHC, has been noticeable. Online services are being introduced, including online registration, teleconsultations, telemedicine. In 2016, electronic sick leave notes were introduced (in the form of a pilot study), then also in the form of a pilot study from 2018, e-referrals and e-prescriptions.

The process of digitization of health care was accelerated in connection with the COVID-19 pandemic. Among other things, the possibility of providing health care services in outpatient settings in a distance using ICT systems or communication systems, i.e. teleconsultations and telehealth appointments, was introduced. However, further development in this area is required, especially in terms of accelerating and supporting the implementation of electronic medical records in PHC practices, and their exchange between different levels of the health care system, as well as allowing patients full access to their medical records.

Modern telemedicine is a relatively young branch of medicine, at least in Poland, and at present it is practically not in use in Polish primary health care. The problems encountered by the health system include the lack of legal regulations, financial solutions and appropriate infrastructure. Insufficient knowledge and skills of medical personnel in using this kind of new generation solutions constitute a limitation in this matter as well. Not so long ago, both medical practitioners and nurses were not educated on the application of telemedicine procedures.

The action of the NFZ, which made it possible to co-finance the computerisation of PHC units in 2020, is a positive sign. As part of this allocation, they can benefit from 80% co-financing for the purchase of equipment, software or services needed to keep electronic medical records.

Night and holiday health care

For many years there have been claims that emergency departments are overburdened with managing patients who have suffered a sudden health deterioration but do not require life-saving intervention. These patients should be primarily provided with services by PHC and OSC during their working hours and by NHHC during nights and holidays.

The results of the NIK audit of the functioning of the emergency medical services revealed that a significant number of patients who reported to an ED or ERT did not have a health emergency. Yet only this group of patients qualifies for emergency services. The scale of this phenomenon was assessed as very large. According to analyses conducted by NIK on EDs, in extreme cases, it concerned up to 80% of all reporting patients and in relation to ERTs - 30%. These people should be provided with health care services within PHC, specialist outpatient clinics or NHHC.

Another issue concerns patients reporting to NHHC with ailments that did not originate at the time when other forms of medical assistance were unavailable and existed for a long time. The main reason for such behaviour of patients is the inability to receive health care services in PHC or OSC due to long queues. And yet, patients should use the services of NHHC in the case of a sudden deterioration of health or sudden illness.

The NIK inspection referred to the results of questionnaires filled in by patients who used this kind of health care services. A part of the surveyed patients (27.7%) reported to an NHHC entity for reasons not related to an emergency, ailments persisted frequently for more than a week and could be treated by a primary health care medical practitioner during a normal working day.

School nurses

The health status of children and adolescents in Poland is not satisfactory. Unfortunately, the system of school medicine which functions in Poland does not guarantee full health security for this segment of the population. The results of another NIK inspection indicated that the health care system for children and adolescents of school age, especially in the area of preventive care, is not adapted to the needs of this group of recipients. It was emphasised that students are not provided with coherent and comprehensive health care, both due to insufficient cooperation of entities operating in the health care system and lack of coordination in that scope, as well as inadequate cooperation of medical practitioners and nurses with parents in terms of taking care of children's health. There was a lack of information flow between the primary health care medical practitioner and a nurse or school hygienist providing health care services in different entities, e.g. in the scope of performed medical condition assessments, obligatory preventive vaccinations and feedback on positive screening tests.

The dispersion of health care for students, which is provided by different entities, as well as the lack of medical and dental care in most schools, makes it impossible to provide comprehensive care for students. Moreover, access to offices of school health prevention and first-aid and dental offices was limited, as a significant number of schools did not have them. In the opinion of the NIK, a large number of accidents on school grounds, in particular among children in primary schools, requires the presence of a school nurse so that professional medical assistance can be provided quickly during classes.

In addition, the availability of appropriate educational activities for prevention and health promotion at school was limited. Providing children and adolescents with access to health care consisting primarily of health care services (so-called curative medicine) can only make a small contribution to improving the general health of the population. In the current health care system, the main responsibility for preventive health care for schoolchildren should be assumed by the school nurse or school hygienist, as she provides care for schoolchildren while working on the school grounds. In most schools, she is the only person with medical training. One of the measures aimed at improving care for children and adolescents was the purchase of medical vehicles in which services are to be provided (known as dental buses). The vehicles purchased are intended to enable the provision of dental care to children from smaller towns where there is no dental office at the school or in the closest vicinity.

4.2. Conclusions

Due to its function, PHC should occupy the most important position in the health care system in Poland. The Declaration of Alma-Ata of 1978 systematised and emphasised for the first time its importance as the most important segment of the health care system and the first level of the continuous health care process. It stems from the function of the PHC to provide care for the patient throughout their life. PHC should not only take care of the organisation of treatment, but also have a supporting function in the form of health education and prevention, because PHC has very diverse objectives to attain.

Apart from the main objective of providing health care for the patient and their family, which in Poland is accomplished at a fairly high level, the others in practice are not an equally important aspect of the functioning of the PHC. Focusing actions on prevention and disease management, as well as coordinating care for the patient and accompanying the patient through the health care system, cooperation of all levels of health care is not performed at a high level.

Despite the fact that changes have been introduced in the functioning of PHC, as well as in overall health care, for several years now, and various measures have been undertaken to improve basic patient care, it seems that these measures should be reinforced and accelerated so that Poland

could become equal to developed countries in health care, especially in terms of prevention and coordination of patient care.

4.3. Health care system challenges

According to data from GUS (as of 31 December 2019), just under 90% of the country's population was on active lists of PHC. 67.5% of the population used PHC services at least once a year, although this depends on age. In the age groups over 70, around 80% of the population receive PHC services at least once a year. The highest average number of appointments is for for people over 80 years of age - more than one appointment per month.

In each province, more than 97% of the people on PHC active lists live in the same province where the medical entity is located, while the situation in districts and communes is very different. 92% of patients were registered with a unit in their district, while the corresponding figure for communes was 83.1%. In 132 communes (5.3% of all communes) there was no PHC provider. Typically, in torus-shaped districts and communes, the percentage of patients registered with the entity in the area was lower than in the other types of administrative units. However, in the cities with district status that constitute the seat of a 'ring-shaped' district, there is a very large number of patients on the active lists, in extreme cases even more than 25% more than the population of a particular city.

Patients are predominantly female to a greater extent than demographics would suggest. For men, the average number of appointments is lower in almost all age groups. Juxtaposing these data with epidemiological data, for example on life expectancy or healthy life expectancy, suggests that women are more concerned about their health. Therefore, it is necessary to reinforce actions aimed at health education of men, which is the task of PHC, as well as actions overcoming barriers against active use of health care services by men before a health crisis emerges.

There are no significant differences nationally between urban and rural areas in terms of the percentage of registered patients receiving PHC services.

However, there are noticeable differences in the management of chronic diseases in PHC. Taking diabetes and heart failure as examples, it can be concluded that the management of patients with diabetes is not of a high standard in the PHC. As far as heart failure is concerned, the PHC has an established practice, the probability of the subsequent appointment taking place in the PHC amounted to more than 87%. In contrast, patients with diabetes were relatively often referred to a medical specialist. The probability of a subsequent appointment in PHC was less than 57%.

There were 37,000 PHC nurses, 36,000 PHC medical practitioners and 6,750 PHC midwives employed in PHC units. Despite the large number of PHC medical staff in Poland, there are significant differences between provinces.

Among visits to PHC, only 4.91% constituted visits within night and holiday health care. By juxtaposing this with data concerning the number of patients who received

assistance in the ED and an analysis of the groups of diagnoses with which patients present to the ED, it can be concluded that the NHHC is not an adequately used form of assistance.

A problem with the quality of reporting is observed in PHC. Out of 163,000,000 visits to the PHC, as many as 32% were reported with *Z*-block extensions (according to the ICD10 classification). Codes that, for the most part, do not explicitly refer to specific disease entities or conditions. This indicates the poor quality of reporting in PHC. In addition, poor reporting regarding preventive programmes in PHC is noticeable[53].

4.4. Recommended lines of actions

- → implementation of proactive care for patients in PHC, which implies that visits to the PHC outpatient clinic or PHC contacts should be initiated not only by the patient but also by the provider, reinforcement of care for healthy patients, increase in preventive measures, screening tests, care for patients from risk groups, enhancement of communication between the PHC and the patient, e.g. through a dedicated portal, a system of patient notifications regarding medical assessments,
- → development of an incentive system to increase the frequency of diagnostic tests ordered by primary care medical practitioners, expansion of diagnostics at the level of primary care and relieving OSC and diagnostic hospital treatment with possible adjustment of the mode of financing,
- → reinforcement of health education so that the patient can be an active participant in the decision-making process together with medical personnel regarding actions to be taken in disease and health, increase in the provision of health education in the teaching and upbringing environment by school nurses, further cooperation with the minister in charge of education regarding the introduction of the subject of Health in primary and secondary education,
- → improvement of coordination mechanisms in the field of cooperation of PHC with OSC and hospital treatment, NHHC, occupational medicine, exchange of (electronic) medical records, information about the patient's health condition and needs in relation to specialist treatment and hospitalisation, examinations for the employer's requirements, development and implementation of a system enabling reliable and effective cooperation between the PHC medical practitioner, school nurse or hygienist and dentist,
- → increase of the role of PHC in the care of chronically ill patients stabilised in OSC, who do not require ongoing specialist care, including cooperation with a psychiatrist, geriatric medical practitioner, school nurse over the patient at their place of residence, cooperation with the family of a chronically ill patient,

[53] https://www.nik.gov.pl/plik/id,13788,vp,16224.pdf, [accessed 01.10.2020]

→ reinforcement of the importance and increase in activity of the primary health care nurse and the primary health care midwife, further transfer of competencies of medical practitioners to auxiliary personnel, increase of the number of nurses and midwives increase of the number of nurses and midwives with completed specialist course 'Prescribing medicines and writing prescriptions for nurses and midwives',

→ promotion of telemedicine development, implementation of medical teleconsultation as a permanent element of medical consultations in PHC (resulting in a patient receiving recommendations, e-prescriptions, electronic sick leave notes),

→ enhance the role of NHHC in order to improve the reporting of patients to this form of medical assistance and relieve the emergency department of cases that do not require health and lifesaving intervention, thereby allowing the ED staff to focus their attention on those patients who need their assistance the most,

→ expansion and provision of quality improvement of PHC reporting, including enhancement of the NFZ reporting system through financial settlements and reporting of medical and epidemiological data, improvement of the quality of data entered and collected in the system.

5. Outpatient specialist care

OSC provides medical services, such as specialist medical consultation, diagnostic tests and surgical procedures, which are not available within the PHC. It thus responds to the health needs of patients who need to consult a specialist but do not require hospitalisation. The provision of health care services under specialist care can take place in hospital admission rooms, in the emergency ambulance service or in outpatient clinics. The scope of OSC is regulated by the Regulation of the Minister of Health of 6 November 2013 *on guaranteed services in outpatient specialist care* (Dz. U. /Journal of Laws/ of 2016, item 357, as amended).

In the majority of cases, a referral from a primary care medical practitioner is necessary to access OSC services.
A referral is not required for appointments with, among others, gynaecologists, obstetricians, venereologists, dentists, oncologists, psychiatrists, tuberculosis outpatients clinics and HIV outpatient clinics, as well as for other persons from specific groups. The referring medical practitioner determines only the type of outpatient clinic, the decision on the choice of institution is up to the patient. The referring medical practitioner qualifies the patient as an urgent or stable case (on the basis of the dynamics of the disease process), and the OSC unit determines the date of admission to the outpatient clinic by adding the patient to the appropriate waiting list. Patients requiring periodical treatment, at strictly determined dates of subsequent stages of the health care service, are admitted in accordance with the treatment programme[54].

The Polish health care system is characterised by an imbalance in the structure of health care services: patient treatment is excessively based on inpatient care instead of outpatient care. The rate of avoidable hospitalisations for chronic diseases, reflecting the availability and quality of primary and specialised health care in Poland, is one of the highest in Europe (3rd place among 24 EU countries in 2017)[55]. Increasing the share of OSC in the structure of health services is beneficial, both from an economic point of view
(due to the high costs of hospitalisation) and from a patient safety point of view (due to the presence of drug-resistant bacteria in the hospital environment[56]. OSC is also usually associated with a shorter duration of treatment and higher accessibility. It is worth noting that the number of diagnostic and surgical procedures that can be transferred from inpatient to outpatient care is increasing alongside technological progress.

There is also a significant problem of the lack of full coordination between OSC and PHC, which would allow the continuation of treatment of patients with stable forms

[54] NFZ, Outpatient specialist care, http://www.nfz-warszawa.pl/dla-pacjenta/co-kazdy-pacjent- wiedziec-powinien/ambulatoryjna-opieka-specjalistyczna/, [accessed 01.10.2020]

[55] *Country Health Profile 2019*, OECD and World Health Organization.

[56] *Report: Health care system in Poland - current state and desirable directions of changes,* NIK, Warsaw 2019 , https://www.nik.gov.pl/plik/id,20223,vp,22913.pdf, [accessed 01.10.2020]

of chronic diseases by PHC medical practitioners and thus reduce the burden on specialist outpatient clinics. What is lacking is, among other things, electronic patient records. Currently, a large proportion of medical advice in specialist clinics is given to patients who attend the clinic three or more times a year, and a large proportion of this advice is limited to medical consultation or prescription only[57]. The overload of specialist clinics by patients with chronic diseases can be observed when analysing their treatment pathways. In the case of type II diabetes, among patients who received health services in OSC between 2009 and 2018, 72.5% of patients received their next service in OSC as well, and only 27% of them in the PHC. For chronic obstructive pulmonary disease, these percentages are 74.7% and 22% respectively, and for heart failure, 66% and 25.2%[58].

For years, one of the most pressing problems of OSC is the long waiting time for medical services. This indicator can be influenced by many factors, both on the side of providers (inefficient organisation of work in a medical facility), the payer (low budget, valuation of health services), the organiser of health care (insufficient restructuring and investment actions, insufficient measures to increase the number of medical staff with specific specialties, lack of action to computerise the queue system, which would facilitate patient registration and cancellation of appointments), as well as the patients (unjustified use of health services, registering in many facilities and not cancelling appointments)[59]. Long waiting time for OSC services may cause postponement of treatment, and thus ultimately lead to deterioration of the patient's health status and consequently to hospitalisation or death.

The necessity of long waiting time for health care services provided under the NFZ also inclines patients with higher incomes to use private health care services, which in turn leads to a growing disparity in access to health care services and thus in health condition and life expectancy between people of different financial status. According to a public opinion poll conducted in 2018 by CBOS, respondents named the possibility of obtaining a quick appointment as the main reason for using health services outside the system of general social insurance (74%).

A major challenge for the entire health care system, including OSC, is the progressive ageing of the population. The projected changes in the age structure of the population of the Republic of Poland should be associated with changes in the OSC system, including

[57] Maps for 30 disease groups, Analysis and Strategy Department, Ministry of Health, Warsaw 2018.

[58] Analysis of selected health problems in Poland, Analysis and Strategy Department, Ministry of Health, Warsaw 2019.

[59] K. Nyczaj, D. Wasilewski, M. Dzięgielewski, *Problematics of Measuring Access to Hospital and Outpatient Specialist Care in Public Sector*, Management Sciences, Wroclaw University of Economics and Business, 2017.

an increase in the number of medical practitioners (especially geriatricians), the number of medical institutions (especially long-term care), and financial outlays as regards medical specialties dealing with the diseases of the elderly.

It is worth pointing out that for several years measures have been taken to improve accessibility to selected OSC specialties, with a particular emphasis on reducing waiting time. In 2015, an oncology package was introduced including, among other things, the DiLO card, which allows people with suspected or diagnosed neoplasm to access diagnostics and treatment outside of queues. In April 2019, limits on CT and MRI services were lifted. In March 2020, limits for first-time consultations in Cardiology, Endocrinology, Surgery and Trauma, and Neurology outpatient clinics were lifted.

5.1. OSC analysis in Poland

The subject of the analyses are health services provided under the contract concluded with the NFZ in the type of outpatient specialist care, based on data from the NFZ on health services reported in 2015-2019. Therefore, the statistics presented in these chapters do not take into account consultations provided outside the NFZ.

Patients

A progressive decline in the number of patients using OSC services can be observed over the last five years. In 2019, 17,100,000 patients were admitted for 81,100,000 appointments, compared to 17,900,000 patients for 86,200,000 appointments in 2015. A downward trend is also observed when taking into account the decline in the country's population. Between 2015 and 2019, the number of patients using OSC per 1 resident in Poland fell from 0.465 to 0.445 (-4.4%); thus, there was a loss of 20 patients using OSC services for every 1,000 residents during these five years. The number of appointments per country's population fell from 2.24 to 2.11 (-5.8%).

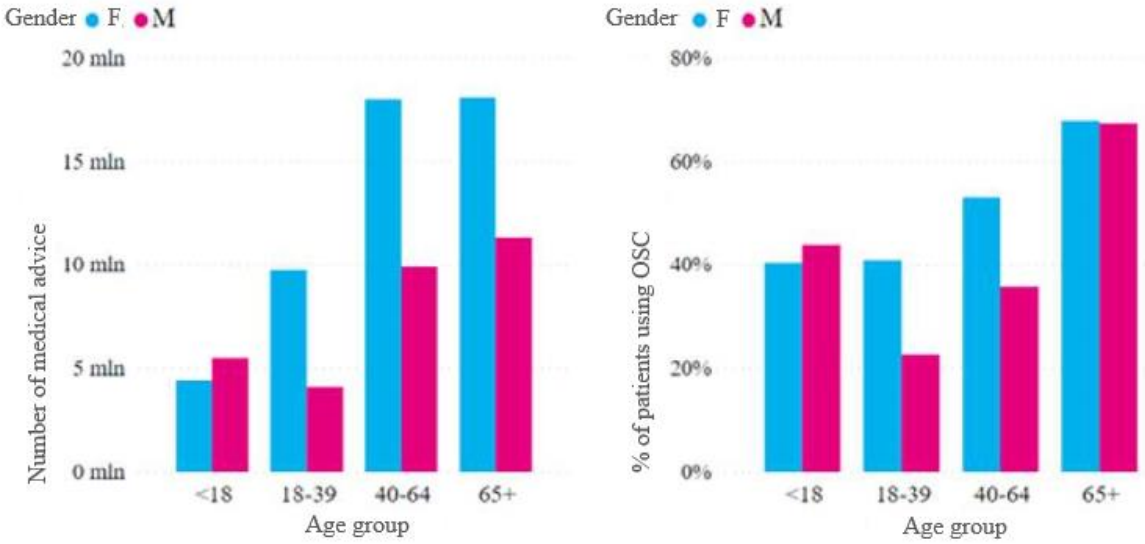
Table 8. Number of patients and number of visits to OSC from 2015 to 2019.

Year:	2015	2016	2017	2018	2019
Number of consultations ('000)	86 207	85 471	83 451	81 932	81 066
Difference in comparison with the previous year ('000)		-736	-2 020	-1 518	-866
Difference in comparison with the previous year (%)		-0.9	-2.4	-1.8	-1.1
Difference between 2015 and 2019 ('000)					-5 141
Difference between 2015 and 2019 (%)					-6.0
Number of patients ('000)	17 885	17 747	17 531	17 264	17 072
Difference in comparison with the previous year ('000)		-138	-216	-267	-191
Difference in comparison with the previous year (%)		-0.8	-1.2	-1.5	-1.1
Difference between 2015 and 2019 ('000)					-813
Difference between 2015 and 2019 (%)					-4.5
Consultations per 1 resident	2.243	2.224	2.171	2.133	2.112
Difference in comparison with the previous year (%)		-0.8	-2.4	-1.8	-1.0
Difference between 2015 and 2019 (%)					-5.8
Patients per 1 resident	0.465	0.462	0.456	0.449	0.445
Difference in comparison with the previous year (%)		-0.8	-1.2	-1.5	-1.0
Difference between 2015 and 2019 (%)					-4.4

Source: Ministry of Health study based on data from NFZ

The largest group of patients using OSC services are women aged 40-64, followed by women aged 65 and over and women aged 18-39. In terms of the number of inhabitants, taking into account their age and gender, women and men aged 65 and over use the OSC services the most (0.68 and 0.67 patients per one resident of the country from the same age-gender group, respectively), and men aged 18-39 use them the least (0.23 patients per one resident of the country from the same age-gender group).

Figure 67. Number of visits per number of people in the same age-gender group in 2019.



Source: Ministry of Health study based on data from NFZ (2019)

Table 9. Age and gender structure of patients using OSC services in 2019.

Age Group: / Gender:	<18		18-39		40-64		65 or more		
	W	M	W	M	W	M	W	M	Total
Number of patients (million)	1.37	1.56	2.30	1.31	3.52	2.30	2.84	1.87	17.07
% of all patients	8.01	9.16	13.48	7.70	20.62	13.48	16.61	10.93	100
Number of patients per 1 resident	0.41	0.44	0.41	0.23	0.53	0.36	0.68	0.67	0.45
Number of consultations (million)	4.44	5.50	9.75	4.10	17.99	9.91	18.07	11.31	81.93
% of all consultations	5.48	6.78	12.03	5.06	22.19	12.22	22.30	13.96	100
Number of visits per 1 resident	1.31	1.54	1.73	0.71	2.71	1.54	4.33	4.09	2.13
Average number of visits per patient	3.2	3.5	4.2	3.1	5.1	4.3	6.4	6.1	4.8

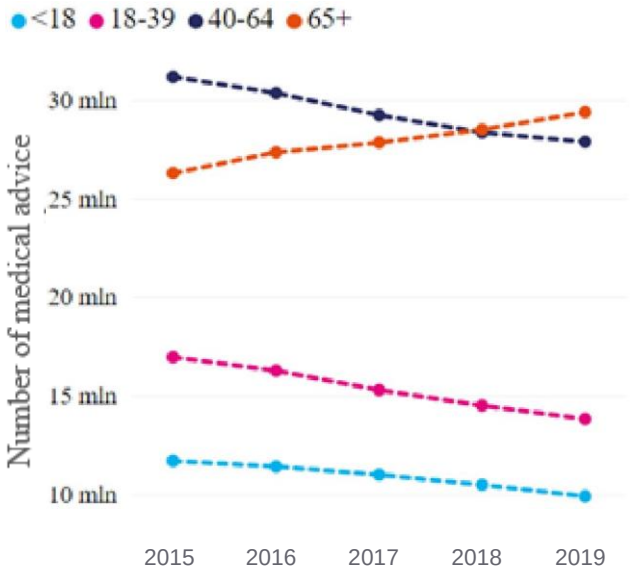
Source: Ministry of Health study based on data from NFZ

In recent years, there has been an increase in the number of patients aged 65 and over and the consultations provided to them, while at the same time the number of patients and the number of consultations provided to people under 65 has decreased. These tendencies are related to the ageing of the population and cease to be noticeable when taking into account the number of people in a particular age and gender group. It is worth noting, however, that people over 65 are the only age group in which there is no downward trend in the proportion of people attending OSC units.

The age and gender structure of patients varies considerably between outpatient clinics. In addition to the Geriatric clinic, where 96.5% of appointments are made by patients aged 65 and over, other clinics with a particularly high proportion of appointments in this age group

include Osteoporosis outpatient clinic (67.7% of appointments are made by patients aged 65 and over), Urology clinic (65.7%), Nephrology clinic (64.1%), Vascular surgery clinic (62.2%), Vascular disease clinic (61.2%) and Cardiology clinic (61.9%).

Figure 68. Number of consultations in 2015-2019 wit h respect to age of patients.



Source: Ministry of Health study based on data from NFZ (2019)

By contrast, the clinics attended mainly by the population aged 18-39 include: Ultrasound (91.7% of appointments are made by 18-39 year olds), Pregnancy pathology (75.5%), Infertility treatment (69.6%), Obstetrics-gynaecology (51.9%), Endocrinology-gynaecology (50.2%) and Gynaecology (48.7%).

This chapter discusses diseases, health problems and other reasons for contacting OSC according to the classification used in the GBD study. The ICD-10 principal diagnoses assigned to each consultation were translated into GBD health problems using a dictionary developed by IHME. The GBD classification has several levels of detail; levels 2 and 3 are included in the chapter.

The most common health problems leading to appointments at OSC units between 2015 and 2019 are musculoskeletal diseases (10.9% of all consultations), diseases of the sensory organs (10.8%, including blindness and visual impairment - 7.3% of all consultations) and neoplasms (9.2%).

Table 10. Health problems and other reasons for contacting OSC in 2015-2019 according to the GBD classification[60].

GBD health problem	Percentage of all appointments
Musculoskeletal disorders	10.9%
Diseases of sensory organs	10.8%
including blindness and visual impairment	7.3%
Neoplasms	9.2%
Chronic respiratory diseases	8.1%
including asthma	2.2%
Skin and subcutaneous tissue disorders	7.3%
Cardiovascular diseases	7.2%
Nervous system diseases	5.0%
Digestive system diseases	3.3%
Diabetes and kidney diseases	3.3%
including diabetes	2.8%
Other non-communicable diseases	13.9%
including:	
urinary tract diseases, infertility in men	7.7%
endocrine system diseases, metabolic disorders, blood and immune system diseases	3.6%
Maternal and neonatal conditions	2.8%
including maternal conditions	2.6%

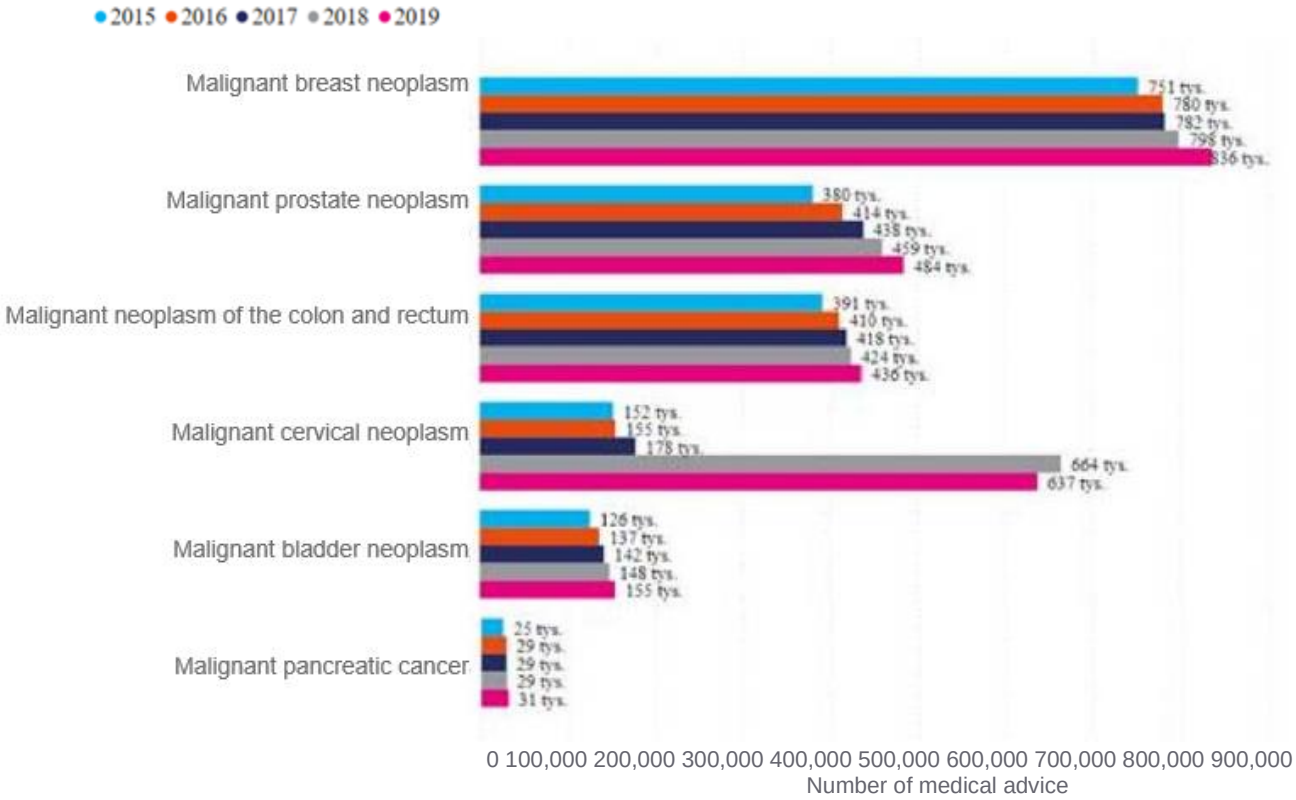
Source: Ministry of Health study based on data from NFZ

[60] Only problems leading to at least 2% of all consultations are included in the table; the presented problems account in total for about 85% of all consultations.

Between 2015 and 2019, there was a large increase in the number of consultations related to neoplasms, particularly for malignant neoplasms (malignant cervical neoplasm: 318.2% increase in consultations, prostate neoplasm: 27.3%, bladder neoplasm: 23%, pancreatic neoplasm: 22.3%). The spike in the number of consultations related to malignant cervical neoplasm in 2018 is due to the introduction of cytology screening in this regard. The progressive increase in consultations related to most other neoplasms is due to improvements in oncology diagnosis and treatment, including the introduction of the oncology package, as well as the lift of limits on CT and MRI services.

The increase in the number of consultations was also observed for autism spectrum disorders (37.2%), neglected tropical diseases (35.2%), aortic aneurysm (22.2%), as well as HIV and AIDS (22%). However, a large decrease in the number of consultations between 2015 and 2019, was observed for scabies (64.3%), sexually transmitted infections other than HIV (37.4%) and upper respiratory tract infections (36.3%).

Figure 69. Changes in the number of consultations related to selected neoplasms in OSC from 2015 to 2019.

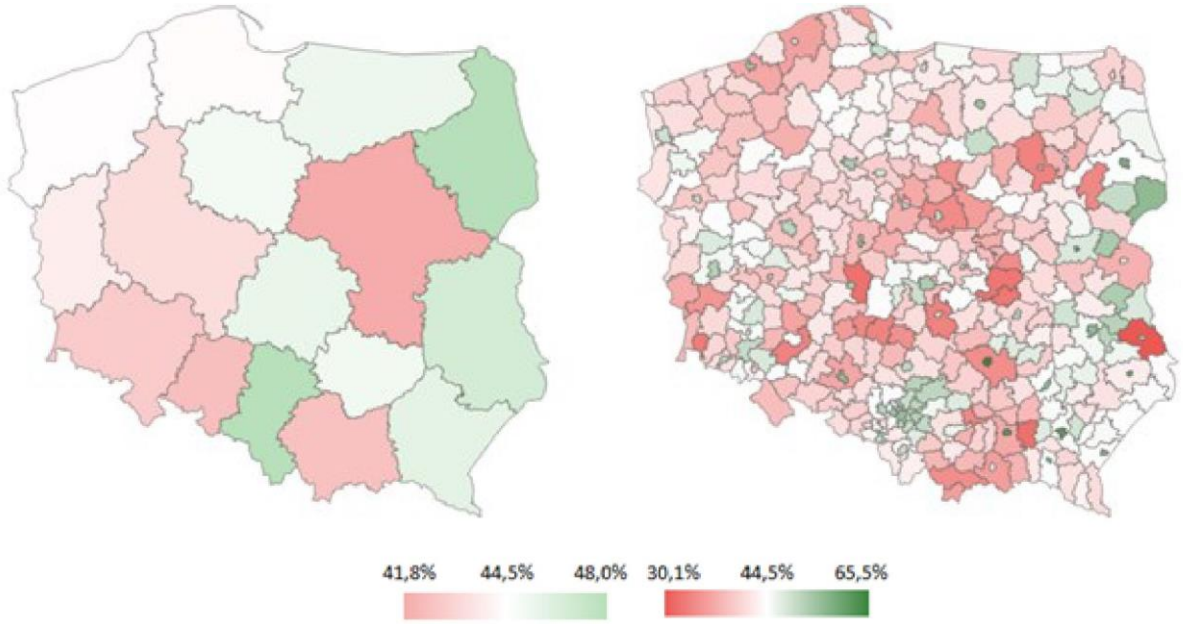


Source: Ministry of Health study based on data from NFZ

The residents of individual provinces and districts do not use OSC services similarly. The highest percentage of people consulting OSC is observed in Podlaskie and Śląskie provinces (48% and 47.9%, respectively), while the lowest is in the Mazowieckie Province (41.8%).

Differences in the percentage of people consulting OSC in different districts are sometimes even more than double: for every 100 inhabitants of Siedlce, Kielce, Tarnów and Rzeszów there are more than 60 people who have used OSC services in 2019, while for every 100 inhabitants of Chełm, Dębica, Kalisz, Grójec and Białobrzegi Districts there are 30-33 people.

Figure 70. Percentage of the population of the given province or district who consulted OSC in 2019. (regardless of where the medical advice was provided)



Source: Ministry of Health study based on data from NFZ (2019)

Table 11. Percentage of people using OSC and number of consultations per 1 resident in 2019. with breakdown by province.

Province	% of people consulting OSC	Number of consultations per 1 resident
Podlaskie	48.0%	2.43
Śląskie	47.9%	2.48
Lubelskie	46.6%	2.26
Podkarpackie	45.8%	2.19
Łódzkie	45.5%	2.17
Warmińsko-Mazurskie	45.4%	2.09
Świętokrzyskie	45.2%	2.08
Kujawsko-Pomorskie	45.1%	2.09
Zachodniopomorskie	44.5%	2.11
Pomorskie	44.4%	2.11
Lubuskie	44.0%	1.92
Wielkopolskie	43.4%	1.95
Dolnośląskie	42.8%	1.87
Małopolskie	42.5%	2.11
Opolskie	42.4%	1.86
Mazowieckie	41.8%	1.96

Source: Ministry of Health study based on data from NFZ

Table 12. Districts with the highest and lowest number of patients per population and number of consultations in 2019.

District	Province	% of people consulting OSC	Number of consultations per 1 resident
Chełm	Lubelskie	30.10%	1.22
Dębica	Podkarpackie	32.20%	1.34
Kalisz	Wielkopolskie	32.20%	1.37
Grójec	Mazowieckie	32.70%	1.22
Białobrzegi	Mazowieckie	32.80%	1.19
Lubań	Dolnośląskie	33.20%	1.2
Ostrołęka	Mazowieckie	33.70%	1.28
Piotrków Trybunalski	Łódzkie	33.80%	1.3
Wrocław	Dolnośląskie	33.80%	1.37
Wieluń	Łódzkie	33.80%	1.27
Wysokie Mazowieckie	Podlaskie	34.20%	1.46
Wieruszów	Łódzkie	34.30%	1.3
[...]			
city of Opole	Opolskie	55.30%	2.76
Hajnówka	Podlaskie	56.10%	3.04
city of Lublin	Lubelskie	56.30%	3.36
city of Tarnobrzeg	Podkarpackie	56.30%	3.29
city of Przemyśl	Podkarpackie	56.90%	3.06
city of Zamość	Lubelskie	58.10%	3.03
city of Krosno	Podkarpackie	58.20%	2.96
city of Białystok	Podlaskie	58.50%	3.3
city of Siedlce	Mazowieckie	61.90%	3.53

city of Rzeszów	Podkarpackie	62.00%	3.37
city of Tarnów	Małopolskie	62.50%	3.46
city of Kielce	Świętokrzyskie	65.50%	3.32

Source: Ministry of Health study based on data from NFZ (2019)

A decline in the number of patients and consultations between 2015 and 2019 occurred in all provinces - the largest in the Lubuskie Province, the smallest in the Lubelskie Province.

Table 13. Change in the number of patients and consultations per population between 2015 and 2019 in provinces.

Province:	% of people consulting OSC				Number of consultations per 1 resident			
	2015	2018	2019	2015 vs. 2019	2015	2018	2019	2015 vs. 2019
Lubuskie	47.3%	44.6%	44.0%	-3.3%	2.2	1.96	1.92	-0.28
Dolnośląskie	45.5%	43.4%	42.8%	-2.7%	2.01	1.89	1.87	-0.14
Wielkopolskie	45.8%	43.9%	43.4%	-2.4%	2.07	1.96	1.95	-0.12
Kujawsko-Pomorskie	47.5%	45.7%	45.1%	-2.4%	2.23	2.12	2.09	-0.14
Mazowieckie	44.1%	42.3%	41.8%	-2.3%	2.1	1.97	1.96	-0.14
Warmińsko-Mazurskie	47.7%	46.0%	45.4%	-2.3%	2.23	2.13	2.09	-0.14
Śląskie	50.1%	48.5%	47.9%	-2.2%	2.63	2.51	2.48	-0.15
Małopolskie	44.6%	43.1%	42.5%	-2.1%	2.3	2.16	2.11	-0.19
Pomorskie	46.3%	45.0%	44.4%	-1.9%	2.22	2.13	2.11	-0.11
Zachodniopomorskie	46.4%	44.7%	44.5%	-1.9%	2.22	2.11	2.11	-0.11
Opolskie	44.2%	42.9%	42.4%	-1.8%	1.95	1.86	1.86	-0.09
Podlaskie	49.8%	48.2%	48.0%	-1.8%	2.56	2.45	2.43	-0.13
Podkarpackie	47.2%	46.2%	45.8%	-1.4%	2.27	2.21	2.19	-0.08
Łódzkie	46.8%	45.9%	45.5%	-1.3%	2.23	2.18	2.17	-0.06
Świętokrzyskie	46.1%	45.2%	45.2%	-0.9%	2.22	2.09	2.08	-0.14
Lubelskie	47.1%	46.7%	46.6%	-0.5%	2.31	2.27	2.26	-0.05

Source: Ministry of Health study based on data from NFZ

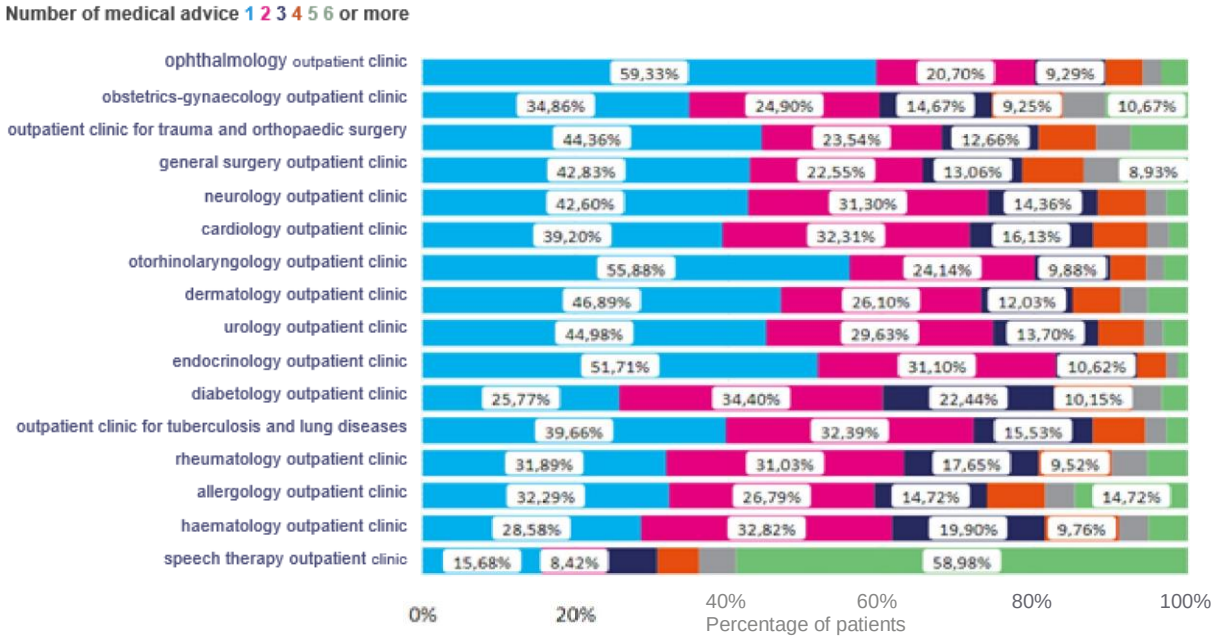
Health services

Between 2015 and 2018, the number of outpatient clinics providing services within the NFZ decreased by 2.4% (from 23,991 to 23,404), but in 2019 there were already 23,406 clinics providing such services. The highest number of outpatient clinics providing services within the NFZ per 10,000 inhabitants was in Śląskie (7.99) and Świętokrzyskie (7.10) provinces, and the lowest in Pomorskie (4.76) and Małopolskie (5.00) provinces.

A decline in the number of outpatient clinics of particular types between 2015 and 2019 was registered for most types of clinics, with the exception of endoscopy clinics, computed tomography clinics, magnetic resonance imaging clinics and oncology clinics. A large decrease occurred for Ophthalmology (7% decrease between 2015 and 2019), Rheumatology (7.6%) and Allergy (7.5%) clinics.

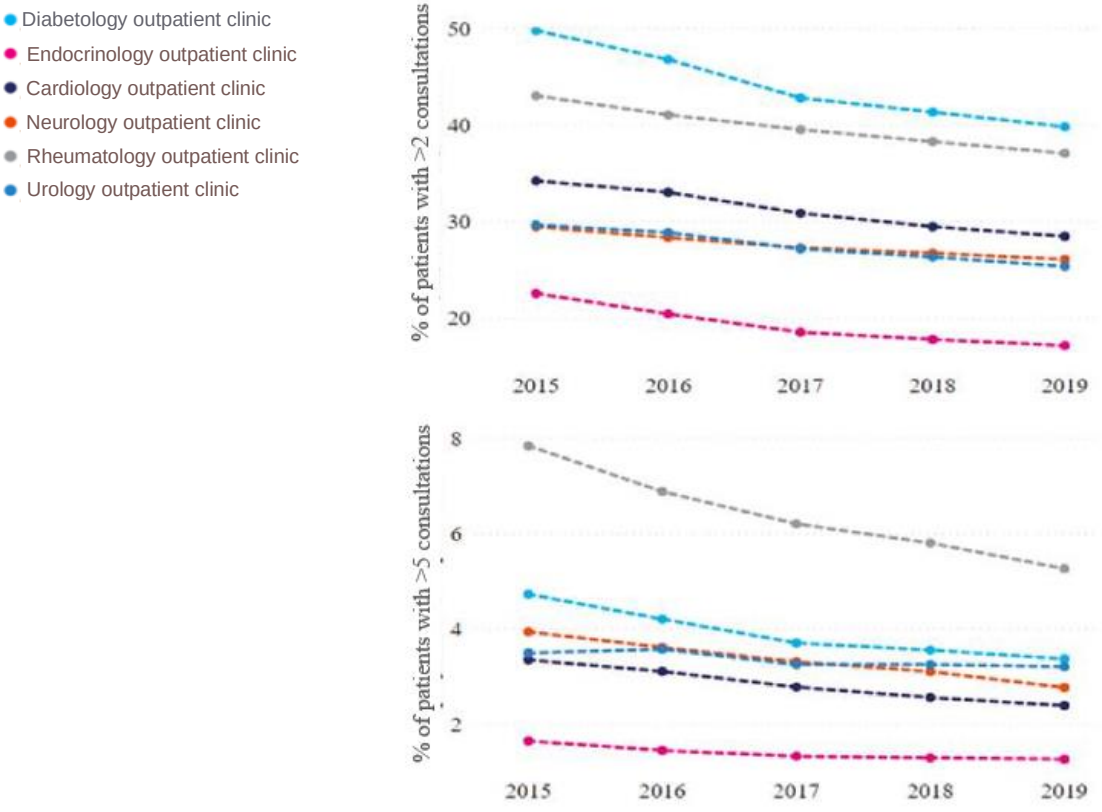
Most patients had 1 or 2 consultations in a particular type of clinic during the year. Outpatient clinics with an exceptionally high percentage of patients who received medical consultations more than twice a year include speech therapy, diabetology, allergology, obstetrics and gynaecology, rheumatology and haematology. Differences in the number of consultations provided to individual patients are related to the specificity of treatment of the diseases which the patients report. However, for some outpatient clinics, a large proportion of patients are people with chronic diseases whose treatment can be safely and effectively continued by primary health care medical practitioners. The high proportion of medical consultations provided to patients who attended the outpatient clinic three or more times in a given year may reflect the insufficient contribution of PHC to the management of patients with chronic diseases. This percentage has decreased over the past few years for most outpatient clinics.

Figure 71. Percentage of patients by number of medical advice provided to them in a particular type of outpatient clinic in 2019.



Source: Ministry of Health study based on data from NFZ

Figure 72. Percentage of patients who attended a particular type of outpatient clinic more than twice (top graph) or more than five times (bottom graph) during the year.



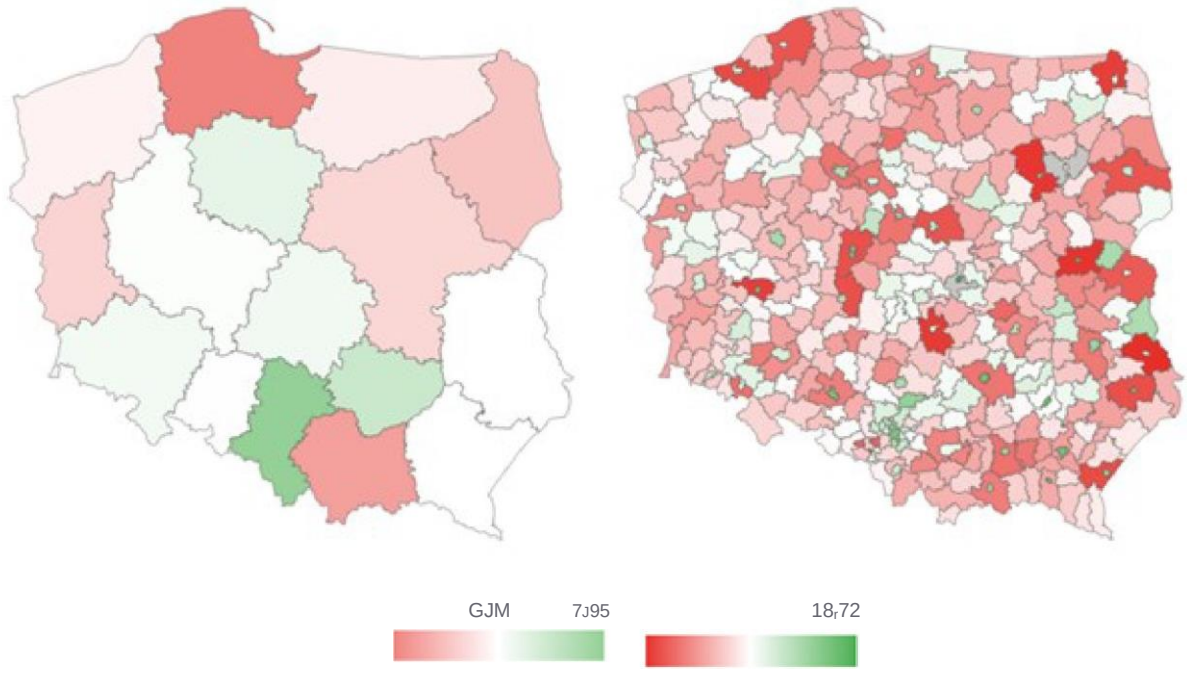
Source: Ministry of Health study based on data from NFZ

The highest number of outpatient clinics per 10,000 inhabitants is observed in Śląskie (8.0) and Świętokrzyskie (7.0) provinces, while the lowest is in Pomorskie (4.7) and Małopolskie (5.0) provinces.

Taking into account the division into districts, the highest density of outpatient clinics per 10,000 population is concentrated mainly in cities with the rights of a district: Skierniewice (18.7), Krosno (17.5), Tarnobrzeg (16.7), Siedlce (16.0), Kielce (15.9). Apart from cities with district rights, also the following districts are characterised by a high value of this indicator: Myszków (13.4; Śląskie Province), Łosice (12.0; Mazowieckie Province) and Włodawa (11.7; Lubelskie Province).

The lowest number of outpatient clinics per 10,000 population is found in the districts of Chełm (0.1), Siedlce (0.3), Ostrołęka (0.3), Piotrków Trybunalski (0.4) and Leszno (0.5). For two districts - Skierniewice and Łomża - there were no outpatient clinics providing OSC services under contract with the NFZ in 2015-2018. Among the 20 districts with the lowest number of outpatient clinics (or no outpatient clinics) per population, 18 are the so-called 'ring-shaped' districts surrounding cities with district rights, where the number of outpatient clinics is much higher.

Figure 73. Total number of outpatient clinics per 10,000 population in a given province or district in 2019



Source: Ministry of Health study based on data from NFZ and GUS

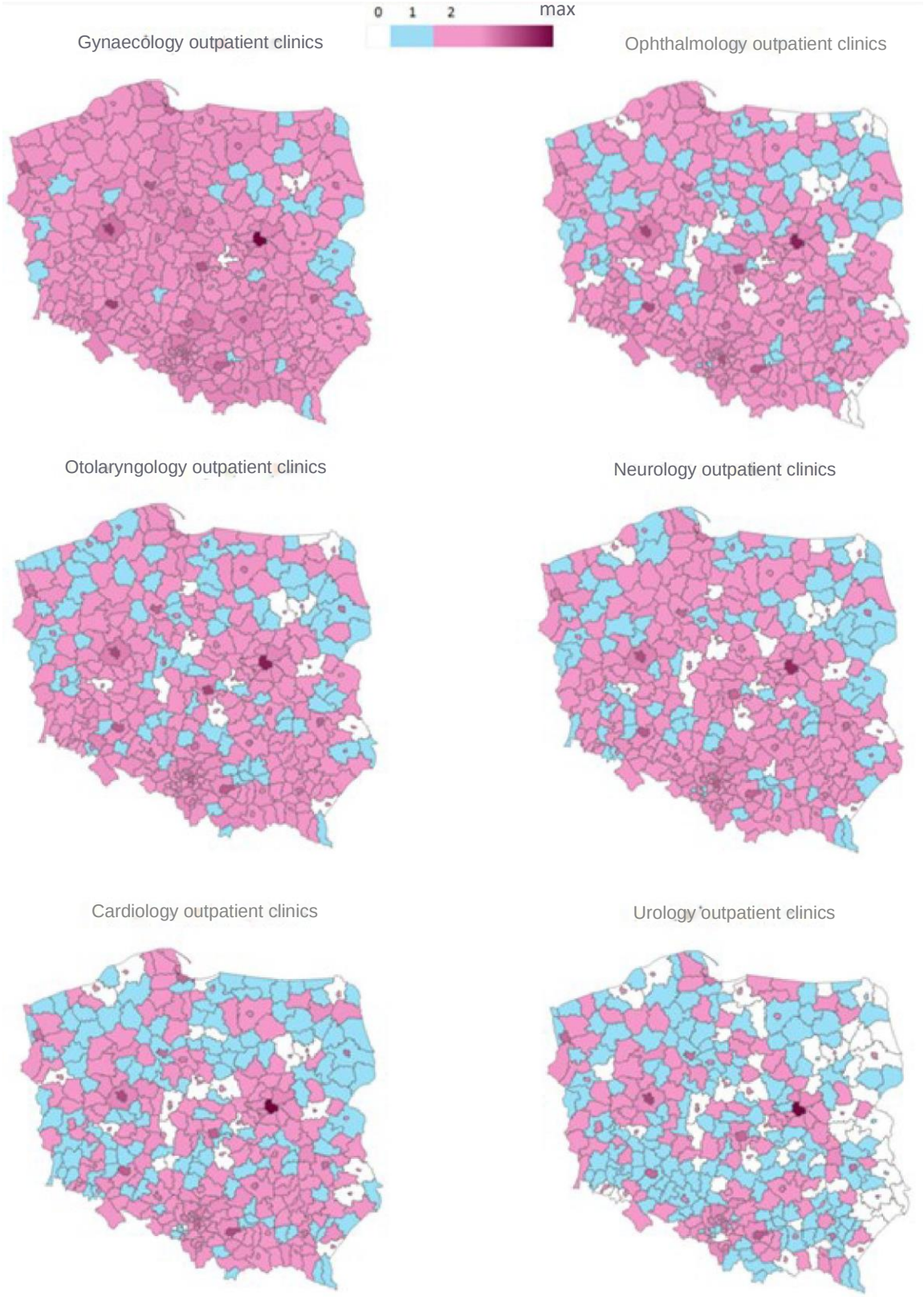
Table 14. The ten districts with the highest and lowest number of outpatient clinics per 10,000 inhabitants in 2019

District	Province	Number of outpatient clinics	Number of outpatient clinics per 100,000 of the residents.
city of Skierniewice	Łódzkie	90	18.7
city of Krosno	Podkarpackie	81	17.5
city of Tarnobrzeg	Podkarpackie	78	16.7
city of Siedlce	Mazowieckie	125	16.0
city of Kielce	Świętokrzyskie	309	15.9
city of Rzeszów	Podkarpackie	308	15.7
city of Opole	Opolskie	198	15.5
city of Katowice	Śląskie	447	15.3
city of Konin	Wielkopolskie	110	15.0
city of Zamość	Lubelskie	94	14.8
[...]			
Konin	Wielkopolskie	14	1.1
Zamość	Lubelskie	11	1
Koszalin	Zachodniopomorskie	6	0.9
Przemyśl	Podkarpackie	7	0.9
Suwałki	Podlaskie	2	0.6
Leszno	Wielkopolskie	3	0.5
Piotrków Trybunalski	Łódzkie	4	0.4
Ostrołęka	Mazowieckie	3	0.3
Siedlce	Mazowieckie	2	0.2
Chełm	Lubelskie	1	0.1

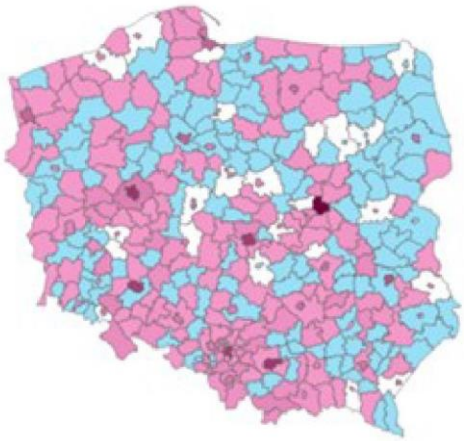
Source: Ministry of Health study based on data from NFZ

In the case of Gynaecology-obstetrics outpatient clinics (including Gynaecology-obstetrics for girls, Gynaecological oncology, Pregnancy pathology, Menopause, Prevention of breast diseases and Family planning) there is at least one outpatient clinic in each of 378 districts. As regards Ophthalmology, Otorhinolaryngology, Neurology, Cardiology, Trauma and Orthopaedic surgery and Dermatology outpatient clinics, several districts do not have even one outpatient clinic on their territory, and these are mainly 'ring-shaped' districts. There is also a number of districts near the eastern border of the country, in Podlaskie and Lubelskie provinces, which lack Urology outpatient clinics. There is a shortage of Diabetology outpatient clinics in the districts of Podlaskie and Warmińsko-Mazurskie provinces. Endocrinology and Allergology outpatient clinics are lacking in about half of the districts throughout the country. Geriatric outpatient clinics are present in only 41 districts, with the largest number of outpatient clinics in Kraków (8) and Warszawa (9).

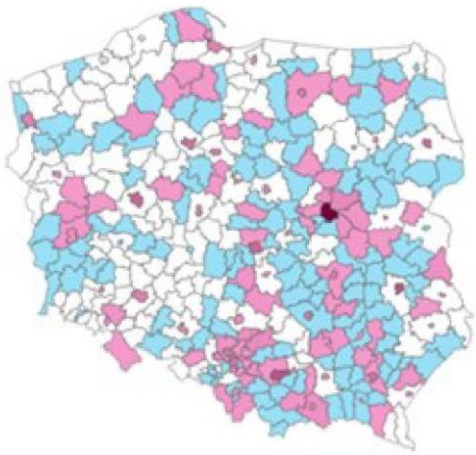
Figure 74. Number of outpatient clinics of selected specialties in 2019.



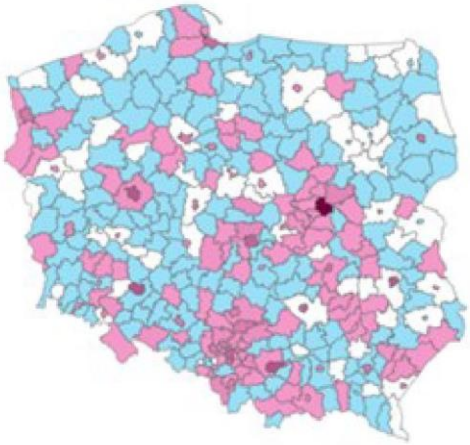
Outpatient clinics for trauma and orthopaedic surgery



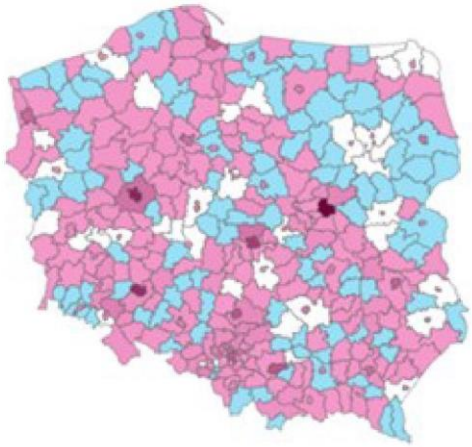
Endocrinology outpatient clinics



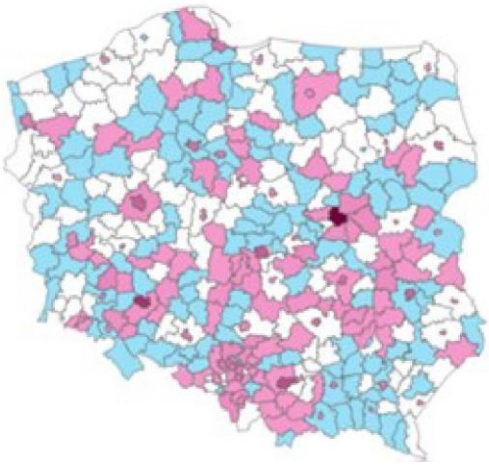
Diabetology outpatient clinics



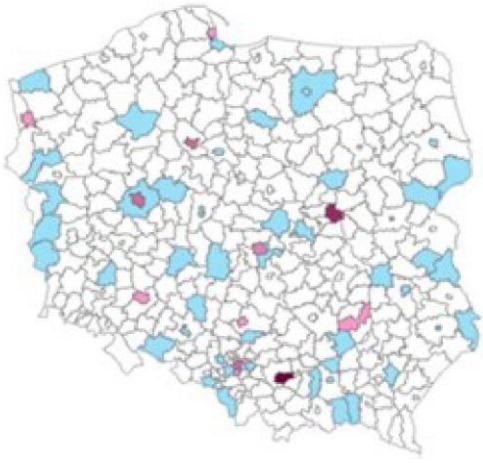
Dermatology outpatient clinics



Allergology outpatient clinics



Geriatric outpatient clinics



Source: Ministry of Health study based on data from NFZ (2019)

Waiting time for health care service

The waiting time for health services is one of the most frequently used indicators to assess the availability of health care. Long waiting times for health care services are unfavourable, both in terms of the patient's health status and public finances. It may be associated with delayed diagnosis, and thus with delayed treatment initiation when the chances of curing the patient are much lower and the cost of treatment higher. In the case of OSC, a long waiting time may result in the necessity to hospitalise the patient, which could be avoided if waiting time was shorter.

The analysis compared the waiting time for individual health services and visits to outpatient clinics across Poland in individual provinces based on average waiting times reported by providers, weighted by the number of people waiting.

Table 15. Average waiting time and number of people waiting for an appointment at a particular outpatient clinic/for OSC service, as of February 2020.

Outpatient clinic / service	Cat.*	Number of people waiting ('000)**	Average waiting times reported by providers, weighted by the number of persons waiting (expressed in days		
			Poland	Province with the longest waiting time	Province with the shortest waiting time
Obstetrics and gynaecology outpatient clinic	P	1.3	9	Łódzkie (21)	Lubelskie (0)
	S	98.0	38	Śląskie (58)	Świętokrzyskie (23)
Ophthalmology outpatient clinic	P	10.1	68	Świętokrzyskie (93)	Lubelskie (8)
	S	342.4	139	Warminsko-Mazurskie (245)	Lubelskie (81)
Otolaryngology outpatient clinic	P	5.3	48	Mazowieckie (81)	Świętokrzyskie (4)
	S	120.8	67	Mazowieckie (143)	Lubelskie (27)
Neurology outpatient clinic	P	16.8	76	Mazowieckie (109)	Podkarpackie (20)
	S	195.6	96	Mazowieckie (148)	Świętokrzyskie (38)
Dermatology Outpatient Clinic	P	2.5	35	Śląskie (65)	Podkarpackie (2)
	S	112.6	58	Mazowieckie (87)	Świętokrzyskie (26)
Cardiology services in a cardiology outpatient clinic	P	18.1	89	Mazowieckie (115)	Lubelskie (20)
	S	176.3	151	Opolskie (267)	Lubelskie (73)

Urology outpatient clinic	P	5.6	59	Opolskie (96)	Świętokrzyskie (11)
	S	94.5	105	Podlaskie (145)	Podkarpackie (54)
Diabetology outpatient clinic	P	2.0	96	Mazowieckie (172)	Świętokrzyskie (8)
	S	51.9	89	Mazowieckie (170)	Lubuskie (45)
Orthopaedics and traumatology services in the outpatient clinic for trauma and orthopaedic surgery	P	19.1	49	Świętokrzyskie (116)	Warmińsko-Mazurskie (15)
	S	177.3	76	Mazowieckie (122)	Łódzkie (49)
Endocrinology services in an Endocrinology outpatient clinic	P	10.6	142	Dolnośląskie (218)	Świętokrzyskie (32)
	S	116.2	311	Dolnośląskie (817)	Podkarpackie (91)

*Cat. - medical category (P - urgent case, S - stable case), ** Total waiting persons for February 2020.

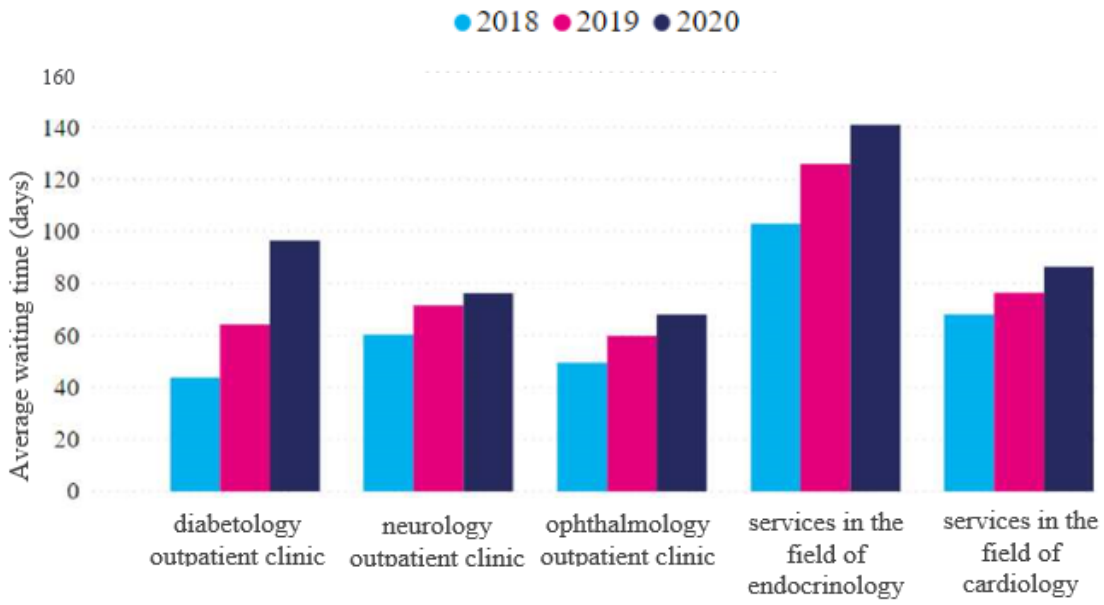
Source: Ministry of Health study based on data from NFZ

On average, patients with a stable condition requesting an appointment in Endocrinology (311 days), Cardiology (151 days), Ophthalmology (139 days), Urology (105 days) and Neurology (96 days) outpatient clinics had to wait more than three months in February 2020. Patients classified as urgent cases for the Endocrinology (142 days), Diabetology (96 days), Cardiology (89 days), Neurology (76 days) and Ophthalmology (68 days) outpatient clinics had to wait more than two months.

For the Diabetes outpatient clinic in February 2020, the average waiting time for patients classified as urgent cases was longer than for patients classified as stable cases, which is related to an increase in the average waiting time for urgent cases of about 50 days over the last 2 years. The waiting time for urgent patients for neurology and

ophthalmology outpatient clinics, while the waiting time for endocrinology and cardiology services also increased. Waiting times for patients classified as stable cases have not changed much over this time.

Figure 75. Average waiting times in January 20 18, 2019 and 2020 for urgent cases[61]



Source: Ministry of Health study based on data from NFZ

When considering waiting time for health care services in order to estimate accessibility, its significant limitations should be borne in mind. Most importantly, waiting time for the same health care service can vary considerably between different medical facilities, even those located in the same city. In many cases, patients decide to wait longer despite the availability of an institution requiring a shorter waiting time, based on the reputation of the institution, the opinion about the medical practitioner or the distance from their place of residence. Moreover, the information used for the analysis above is based on data reported by medical institutions directly and partially automatically, without additional verification.

Relieving hospital treatment by OSC

One of the problems of the Polish health care system is the excessive use of hospital treatment and the insufficient role of outpatient therapy. Poland belongs to the EU countries with the highest share of hospital treatment in the structure of health care expenditures, with a high number of hospital beds per 1 resident and over-developed infrastructure in the hospital sector[62]. Transfer of some

[61] The chart only shows clinics for which the waiting time exceeded in 2020 60 days.

[62] *Poland: Country Health Profile*, European Commission, 2019.

services not requiring hospitalisation to OSC would result in a reduction of the burden on hospital wards, and thus also financial outlays, as well as increase patient safety due to lack of contact with drug-resistant bacterial strains. This includes minor procedures that do not require 24-hour monitoring of the patient, as well as services related to diagnostics, including preoperative diagnostics performed in hospital outpatient clinics. The following analysis, aimed at identification and estimation of the number of such services, concentrates on medical procedures which are reported to the NFZ by medical centres together with services using ICD-9 codes.

The first group of procedures that could potentially be delivered to a greater extent in OSC are those that are performed as minor and short procedures, and thus are usually settled together with the DRG products belonging to the surgical procedure category, and are also performed in hospital care much more often as one-day hospitalisations (in more than 70%) than multiday hospitalisations, being frequently performed in OSC (in more than 40%) as well. In addition, the selection was narrowed down to procedures of which more than 20% are also performed in the hospital and with at least 500 total reported contacts in 2019.

The selected preliminary procedures were consulted with external experts - national consultants in relevant medical fields. The limitations they mentioned included the form of anaesthesia (procedures: destruction or excision of the tongue lesion, excision of the buccal vestibular lesion, ligament release - wrist, and ligament release - hand and fingers), the general condition of the patient (core-needle breast biopsies), the occurrence of complications, and equipment problems (transurethral cytoscopy). They also pointed out that a new appraisal of some procedures is necessary (taking into account the method of performance; some procedures may be conducted by different methods, which should imply a difference in pricing). In some cases also the development of new standards would be essential.

Table 16. Procedures that could be performed to a greater extent in OSC

Code ICD-9	Procedure	Total contacts	% OSC	% Procedures	% Procedures per 1 day
57.32	Transurethral cystoscopy	76,741	79.41	20.59	73.28
60.111	Transrectal multiplace prostate biopsy	40,584	57.08	42.92	72.31
85.131	Core-needle vacuum assisted ultrasound-guided breast biopsy	18,483	73.96	26.04	95.99
80.453	Ligament release - wrist	11,494	67.84	32.16	59.79
80.454	Ligament release - hand and fingers	5,087	75.96	24.04	77.02
85.132	Core-needle vacuum assisted stereotactic biopsy	4,652	77.92	22.08	94.74
58.22	Other urethroscopy	1,946	71.22	28.78	65.89
70.24	Vaginal biopsy	1,536	44.14	55.86	69.00
25.1	Destruction or excision of the tongue lesion	961	53.9	46.1	65.01
27.491	Excision of the buccal vestibular lesion	790	79.49	20.51	65.43

Source: Ministry of Health study based on data from NFZ

The second group of procedures that may potentially be performed to a greater extent in OSC are procedures conducted as part of diagnostics, thus usually settled together with DRG products of non-invasive treatment categories, and also frequently performed in OSC (more than 40%). Due to the fact that within one hospitalisation both surgical and non-invasive treatment products can be settled, the procedures selected were those that are predominantly performed within hospitalisations settled only with non-invasive treatment products (>95% of hospitalisations). In addition, the selection was narrowed down to procedures of which more than 20% are also performed in the hospital and with at least 500 total reported contacts in 2019.

Table 17. Procedures that could be performed to a greater extent in OSC

ICD-9 code	Procedure	Total contacts	% OSC	% Procedures	% Procedures per 1 day	% non-invasive-treatment-only hospitalisations
88.714	Ultrasound of the carotid vessels - Doppler	388,137	79.81	20.19	0.05	95.63
88.912	MRI of the brain and the brainstem without and with contrast enhancement	74,147	65.53	34.47	0.58	98.44
87.033	CT scan of the head and neck arteries	47,945	74.93	25.07	0.14	95.02
88.911	MRI of the brain and the brainstem without contrast enhancement	27,063	63.98	36.02	0.63	95.4
92.011	Scintigraphy radioisotopic examination of thyroid function with the application of iodine-131	5,597	61.01	38.99	0	99.61
07.199	Dynamic function tests, others	4,123	54.55	45.45	8.16	99.41
93.94	Nebulisation	2,005	40.1	59.9	0	98.76
90.33	Microscopic examination of ear, nose and larynx specimens - culture test and antibiogram	879	79.64	20.36	3.35	95.14

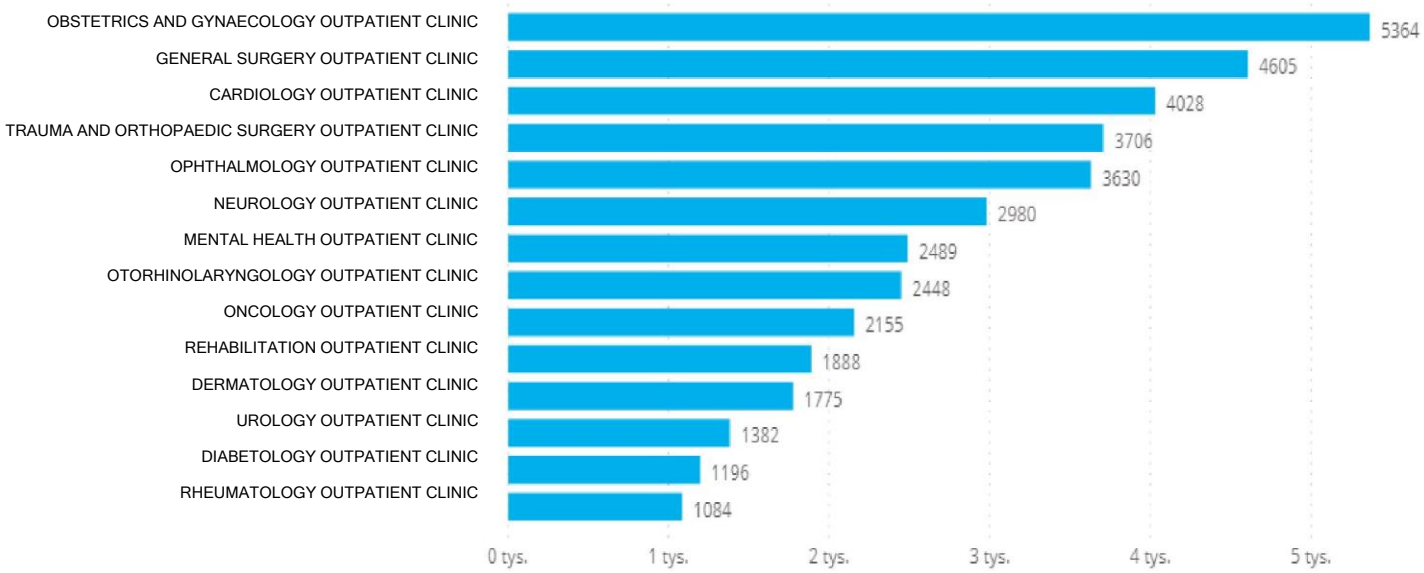
Source: Ministry of Health study based on data from NFZ

The above analysis results indicate that there is a group of procedures to be considered for performance to a greater extent as part of OSC services. The preparation of a more detailed list of such procedures, together with the establishment of an exact percentage of those that can be transferred, would require a wider consultation of the medical community due to the necessity to assess the capacity of the equipment and the frequency of complications in each medical field.

Medical staff

In 2019, the largest number of medical practitioners signed a contract to provide health care services under the NFZ in obstetrics and gynaecology outpatient clinics (over 5,000). In general, the number of medical practitioners in individual outpatient clinics correlates with the number of consultations provided, although in some clinics the number of consultations per 1 medical practitioner is exceptionally high: such is the case for dermatology, allergy, endocrinology and urology outpatient clinics. This result may be associated with the specificity of a given medical speciality, the type of employment of medical practitioners in a given speciality, but it can also indirectly indicate an excessive burden on medical practitioners due to staff shortages at high demand.

Figure 76. Number of medical practitioners with contract for the provision of services under the NFZ in selected outpatient clinics in 2019.



Source: Ministry of Health study based on data from NFZ

Table 18. The number of medical practitioners with contracts for the provision of health care services under the NFZ in selected outpatient clinics, the number of consultations and the average number of consultations per one medical practitioner in 2019.

Outpatient clinic	Number of doctors	Number of consultations	Number of consultations per one medical practitioner
Obstetrics-gynaecology outpatient clinic	5,364	8,666,364	1,615.6
Cardiology outpatient clinic	4,028	4,975,128	1,235.1
Outpatient clinic for trauma and orthopaedic surgery	3,706	6,852,258	1,848.9
Ophthalmology outpatient clinic	3,630	6,658,790	1,834.4
Neurology outpatient clinic	2,980	4,936,537	1,656.6
Otorhinolaryngology outpatient clinic	2,448	4,339,496	1,772.7
Dermatology outpatient clinic	1,775	4,880,236	2,749.4
Urology outpatient clinic	1,382	2,686,942	1,944.2
Diabetology outpatient clinic	1,196	2,248,227	1,879.8
Endocrinology outpatient clinic	1,018	2,199,046	2,160.2
Allergology outpatient clinic	886	2,060,731	2,325.9
Geriatric outpatient clinic	181	69,696	385.1

Source: Ministry of Health study based on data from NFZ

To verify to what extent the long waiting time for a medical service may be related to the lack of medical practitioners of a specific speciality, the average waiting time for endocrinology health services was compared with the number of medical practitioners in endocrinology outpatient clinics. The longest waiting time for health services in the field of endocrinology in May 2018 was recorded for patients in the Dolnośląskie Province, which was also characterised by the lowest number of medical practitioners per 100,000 inhabitants. On the other hand, long waiting time also applied to Mazowieckie and Łódzkie provinces, both with the highest number of medical practitioners per 100,000 inhabitants. The three provinces with the shortest waiting time were characterised by a relatively high number of medical practitioners per 100,000 inhabitants.

Table 19. Waiting times for endocrinology services in May 2018 and the number of medical practitioners with a contract for the provision of health care services under the NFZ in an endocrinology outpatient clinic in 2018.

Province	Waiting time (expressed in days)	Number of medical practitioners per 100,000 of the residents.
Dolnośląskie	738	1.4
Opolskie	509	2.6
Pomorskie	387	2.1
Mazowieckie	334	3.4
Wielkopolskie	332	1.9
Śląskie	311	2.4
Zachodniopomorskie	291	2.1
Łódzkie	285	3.5
Warmińsko-Mazurskie	266	3.1
Małopolskie	258	3.1
Świętokrzyskie	255	2.7
Lubuskie	248	2.5
Kujawsko-Pomorskie	234	2.8
Podlaskie	213	3.3
Lubelskie	163	3.3
Podkarpackie	101	2.9

Source: Ministry of Health study based on data from NFZ

A similar analysis was performed for health services in the field of cardiology. The highest number of medical practitioners per 100,000 inhabitants was noted in Mazowieckie and Śląskie provinces, which were also the provinces with the longest waiting times. The next three provinces with a large number of medical practitioners: Lubelskie, Podlaskie and Małopolskie province, were characterised by short waiting times.

Table 20. Waiting times for cardiology services in May 2018 and the number of medical practitioners with a contract for the provision of health care services under the NFZ in the cardiology outpatient clinic in 2018.

Province	Waiting time (expressed in days)	Number of medical practitioners per 100,000 of the residents.
Opolskie	296	8.8
Mazowieckie	217	14.2
Śląskie	192	13.4
Dolnośląskie	186	7.4
Wielkopolskie	183	7.0
Warmińsko-Mazurskie	183	6.2
Kujawsko-Pomorskie	178	9.9
Pomorskie	157	9.4
Lubuskie	153	8.0
Małopolskie	149	11.5
Zachodniopomorskie	149	8.3
Podlaskie	125	11.0
Podkarpackie	121	9.2
Łódzkie	109	9.3
Świętokrzyskie	100	9.4
Lubelskie	82	12.3

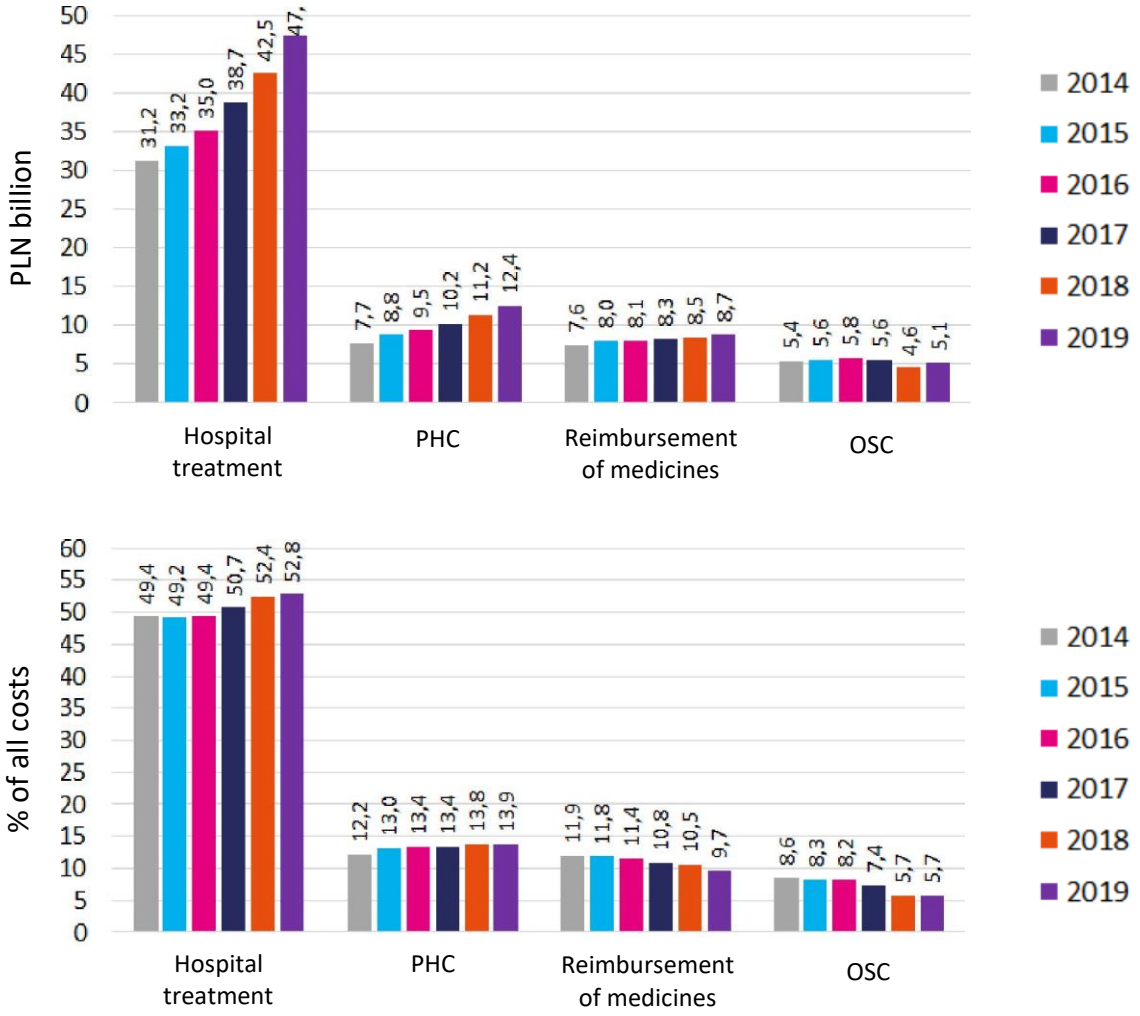
Source: Ministry of Health study based on data from NFZ

The weak correlation between waiting times and the number of medical practitioners may result from the fact that waiting times are also influenced by other factors, such as work organisation in medical care institutions, as well as the fact that both these indicators have certain important limitations. The number of medical practitioners with contracts to provide health care services under the NFZ in a given outpatient clinic is not always closely related to the number of health care services provided due to different types of employment of medical practitioners.

Expenditures

Expenditure on OSC as a percentage of total expenditure on health care services incurred by the National Health Fund decreased consistently from 2014 to 2018, with a parallel increase in expenditure on hospital treatment[63]. In 2014, NFZ expenditure on OSC accounted for 8.6% of total costs, and in 2018 and 2019 it accounted for 5.7%.

Figure 77. Costs of NFZ health care services between 2014 and 2019 - in absolute numbers (top graph) and as % of total costs of services (bottom graph).



Source: Ministry of Health study based on data from NFZ (2014-2019)

[63] National Health Fund Financial statements 2014-2019,https://www.nfz.gov.pl/bip/finanse-nfz/, [accessed 01.10.2020].

5.2. Non-NFZ financed medical care in selected medical specialties

Problems with access to public health care services may induce citizens to choose paid medical services outside the NFZ. The percentage of consultations provided outside the NFZ in a given area or in a given medical speciality may reflect the difficulty of access to services provided within the NFZ, and thus may be a potentially useful indicator to assess the performance of OSC. However, it is worth noting that this indicator also encompasses the availability and attractiveness of private health care in a given area or within a given speciality, as well as the level of citizens' wealth and their willingness to invest in their health (or their employer's ability to cover the costs of private health care). It is not easy to estimate the number of non-NFZ medical services due to the fact that private specialist clinics are not subject to the same reporting obligations as those provided within the NFZ. In the present analysis, in order to estimate this number, data from the ZD-3 reports submitted to the GUS were employed. The number of consultations provided outside the NFZ was calculated by subtracting the number of consultations reported to the NFZ (according to data from the database of NFZ health care services) from the number of all consultations reported in ZD-3, separately for each type of outpatient clinic (according to classification in the ZD-3 report) and district. If the total number of consultations was lower than the number of consultations reported to the NFZ, it was assumed that the number of private consultations for a given district, type of clinic in a given year was 0. The analysis was conducted for nine medical specialties: eight were selected because they are the most frequently chosen specialties within the NFZ and additionally Endocrinology outpatient clinic because of the exceptionally long waiting time for services in this clinic within the NFZ, which can potentially cause an 'outflow' of patients to private health care.

However, it should be clearly emphasized that the calculated number of private consultations is, in most cases, underestimated due to the fact that not all medical entities are obliged to submit ZD-3 report. Such reports are obliged to be submitted by "medical entities/companies in which the medical entity performs therapeutic activity within the scope of outpatient primary or specialist care. In the case of professional practices, only individual medical practitioners and individual specialised practitioners as well as group practices providing health services financed from public funds'[64]. Therefore, these data do not include medical practices performing therapeutic activity paid exclusively from private funds.

[64] Outpatient specialist care report, http://form.stat.gov.pl/formularze/2016/passive/ZD-3.pdf , accessed 01.10.2020

Table 21 The number of NFZ and non-NFZ advice in 2019 in selected medical specialties. The number of non-NFZ advice was calculated by subtracting the number of NFZ advice from the total number of advice of ZD-3 reports.

Medical speciality	Number of advice in total	Number of NFZ advice	Number of non-NFZ advice	% of non-NFZ advice
Ophthalmology	11,266,039	7,243,356	4,086,799	36.28
Endocrinology	3,576,899	2,404,030	1,188,086	33.22
Obstetrics and Gynaecology	13,226,104	9,380,484	3,988,943	30.16
Trauma and Orthopaedic Surgery	9,813,244	7,183,451	2,677,901	27.29
Dermatology	6,688,257	4,957,434	1,787,164	26.72
Urology	3,508,775	2,737,944	785,043	22.37
Cardiology	7,109,941	5,574,865	1,577,402	22.19
Otolaryngology	7,308,214	6,222,360	1,570,102	21.48
Neurology	7,171,352	5,875,450	1,392,438	19.42

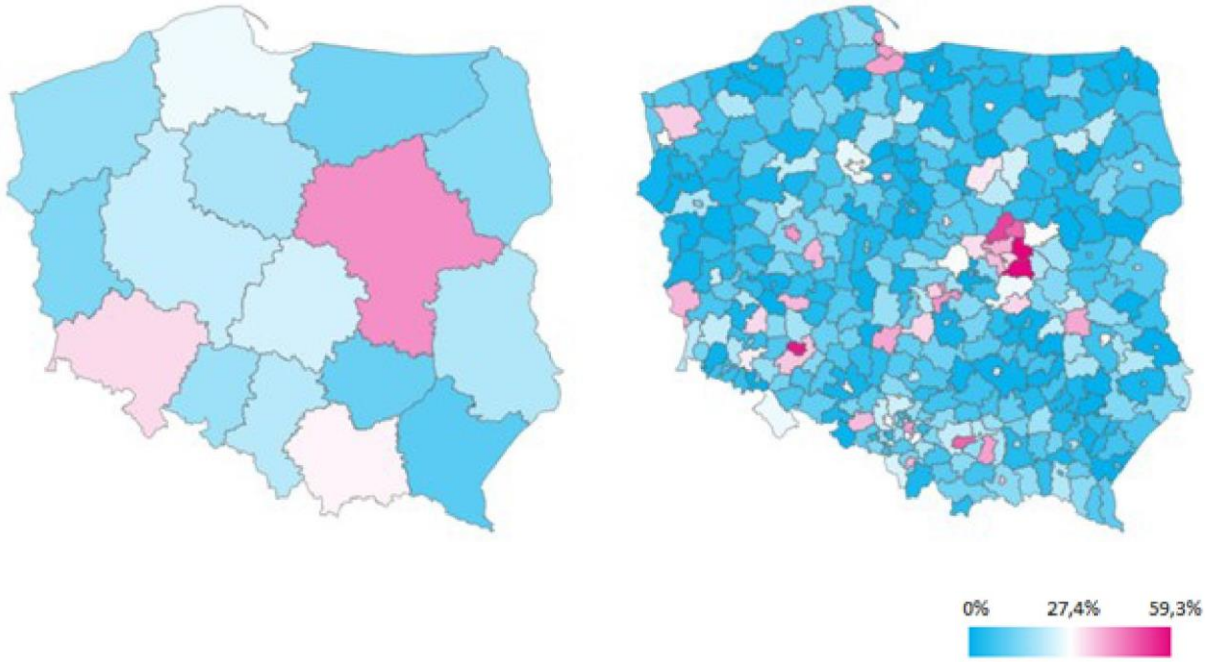
Source: Ministry of Health study based on data from NFZ

Non-NFZ consultations accounted for more than 30% of all ophthalmic, endocrinological, gynaecological and obstetric, trauma and orthopaedic surgery consultations.

The percentage of non-NFZ consultations in the Mazowieckie (45.8%), Dolnośląskie (35.6%), Małopolskie (32.0%) and Pomorskie (28.4%) provinces was higher than the national average (27.4%) The lowest percentage of non-NFZ consultations was observed in the Podkarpackie Province (10.7%).

Taking into account the districts, the highest percentage of non-NFZ consultations was observed in the following districts: the City of Warszawa (59.3%), Piaseczno (58.9), the City of Wrocław (56.2%), Nowy Dwór Mazowiecki (51.2%), the City of Kraków (46.5%), Legionowo (46.3%), Łódź Wschodnia (40.3%) and Poznań (39.9%).

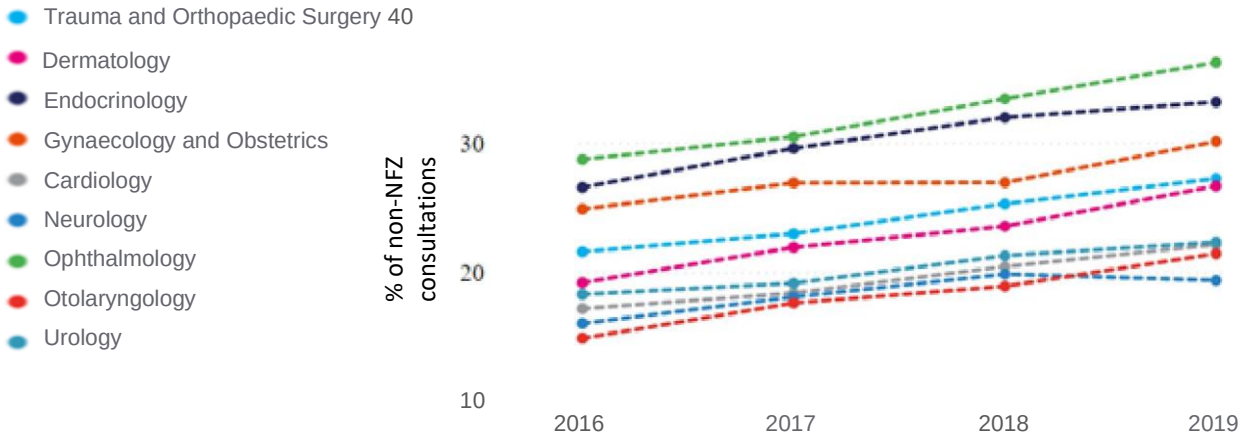
Figure 78. Percentage of non-NFZ advice in nine selected medical specialties (listed in the table) in Poland in 2019



Source: Ministry of Health study based on data from GUS and NFZ (2019)

The number of non-NFZ advice increased between 2016 and 2019, for all specialties analysed except Neurology outpatient clinics.

Figure 79. The percentage of non-NFZ advice among total number of advice between 2016 and 2019for nine selected specialties.



Source: Ministry of Health study based on data from NFZ

The number of NFZ and non-NFZ advice between 2016 and 2019 in selected medical specialties is available on the BASiW database [65].

5.3. Conclusions

OSC plays an important role in the health care system by allowing patients to receive specialist treatment that is not available in the PHC, but does not involve the large financial outlays that accompany hospital treatment. Strengthening OSC and at the same time relieving the burden of hospital treatment has been indicated for years as a priority in the reform of the Polish health care system. Despite this, spendings on outpatient specialist care have been declining for several years (from 8.6% in 2014 to 5.7% in 2018 and 2019) while hospital spendings increased (from 31.1% in 2014 to 47.4% in 2019). The number of OSC advice is also decreasing, as well as the number of patients receiving outpatient specialist care in the NFZ: between 2015 and 2019, the number of advice per population decreased by 5.8% and the number of people per population decreased by 4.4%.

5.4. Health care system challenges

The decrease in the number of NFZ consultations resulted in an increase in private health care consultations. In cardiology and endocrinology, the increase in the number of non-NFZ advice between 2016 and 2019 exceeded significantly the decrease in the number of NFZ advice. This indicates that the public health care system is not meeting the growing needs of patients in these medical specialties. A particularly high percentage of non-NFZ consultations is also observed in ophthalmology.

One of the main reasons why patients choose private services is the long waiting time for health services in the NFZ. In February 2020, in four medical specialties (cardiology, endocrinology, urology, and ophthalmology), average waiting time for health care services was one of the longest, exceeding 100 days for stable cases and 50 days for urgent cases. For urgent cases, an average waiting time of more than 50 days is also observed in Neurology and Diabetes outpatient clinics. Endocrinologic patients had to wait particularly long – those classified as stable cases had to wait 316 days (832 days in the Dolnośląskie Province), and urgent cases – 141 days.

Long waiting time for health care services in a given speciality is not always related to the number of medical practitioners of that speciality providing NFZ service in a given province. For example, the Mazowieckie Province has one of the highest number of endocrinology and cardiology specialists.

[65] https://basiw.mz.gov.pl/index.html#/visualization?id=3409, [accessed 01.08.2021]

calculated per 100,000 population, but waiting time for endocrinology and cardiology services in this province was also among the highest. On the other hand, however, the exceptionally high waiting time for endocrinology services in the Dolnośląskie Province seems to be related to the very small number of endocrinology medical practitioners per 100,000 inhabitants.

Changes in the age and gender structure of OSC patients reflect the ageing process of the population. The number of medical consultations provided to people aged 65 or more increased by 8.4% from 2015 to 2018, with a decrease in visits of the patients from other age groups. However, the increase disappears when accounting for changes in the population of each age group.

Over the past five years, there has been a significant increase in the number of medical advice related to
malignant neoplasms. In addition, despite an overall decrease in the number of advice provided in most medical specialties, there was an increase in the number of advice in diagnostic laboratories, i.e. magnetic resonance and computed tomography, as well as oncology. It is a result of changes in oncology treatment introduced in the recent years (concerning mainly faster oncological diagnosis) and the removal of limits on CT and MRI services. The results of the analyses indicate that there is a group of procedures that could be successfully performed to a greater extent within OSC.

5.5. Recommended lines of actions

- → providing conditions for greater coordination of primary and specialist care of patients with chronic diseases (including the introduction of electronic medical records), which will increase the role of PHC in the treatment of chronic diseases and ease the pressure on specialist clinics,
- → preparing a detailed list of treatments that could be performed on a larger scale within OSC with the exact percentage that could be achieved using wider consultation with the medical community to assess equipment capacity and complication rates in specific medical areas,
- → financing a system of services that motivates the OSC to provide treatment that does not require hospitalisation, but is often the basis for referral to hospital treatment (this applies particularly to in-depth diagnostics and less complex treatments),
- → monitoring changes in waiting time for health care services in clinics where there aren't limits on first-time visits (cardiology,

endocrinology, trauma and orthopaedic surgery, and neurology) to evaluate the effectiveness of the treatment,

→ ensuring greater access to outpatient clinics in other specialties with extremely high waiting time for health care services (e.g. urology, ophthalmology, diabetology) and in those specialties for which the demand is expected to increase due to the ageing of the population and which are most popular among the elderly, e.g. cardiology,

→ equalising the access to specialist clinics, in particular by extending the number of the contracted clinics in the districts of the eastern part of the Podlaskie and Lubelskie provinces,

→ continuous development of tools to facilitate the enrolment and discharge of patients from queues and introducing the system for patients to inform about cancelling the appointment,

→ more extensive reporting of non-NFZ health care institutions by health care entities to provide the fullest possible view of limitations in access to publicly funded services.

6. Hospital treatment

The hospital health care system in Poland has undergone a number of reforms over the years. The last very important one was in 2017 when an act that implemented a primary health care provider system [66], commonly referred to as the "hospital network "[67] was passed. The creation of the PHCPS was intended to improve specialist health care for patients and provide better conditions in hospitals. Hospitals that are critical for ensuring the access to health care services by the patients are included in the network.[68]

Under current regulations, the hospital network is made up of hospitals divided into six security levels. The first, second, and third levels include local or regional hospitals. The fourth level is made up of specialised cancer and pulmonary hospitals, and the fifth level is made up of paediatric hospitals. The final, sixth level, is made up by clinical hospitals and research institutes. A hospital can only qualify for one level.

The role of the first three levels of the hospital network is to provide basic health care, while the next three levels provide specialistic health care. The qualification of hospitals for each level is made by the criteria specified in the act [69].

Hospitals that are not qualified for the network also provide services under contract with the National Health Fund in Poland. They may apply for a contract when the director of a given province NFZ department announces the proceedings for the conclusion of contracts for the provision of health care services, taking into account the identified health care needs in a given area on the basis of a service plan for a given year.

Hospital care is an integral and necessary part of any health care system in Europe and around the world. However, as demonstrated in the *Health at a Glance: Europe 2018* report, titled *State of Health in the EU Cycle* [70], hospital care is not effective in all countries. Efficiency, according to the report, can be

[66] The primary hospital care provision system was introduced on 1 October 2017 by the Act of 23 March 2017 on the amendment to the Act on health care services financed from public funds (Dz.U. /Journal of Laws/ 2017, item 844).

[67] In this map, the primary hospital care provision system is interchangeably referred to as the "hospital network" or the acronym "PHCPS".

[68] Hospital Network, FAQ, http://maloPolska.uw.gov.pl/doc/Q&A.pdf, [accessed on 01.10.2020]

[69] E. Hellich, A. Wierzowiecka, *Nowy model finansowania szpitali w Polsce - szanse i zagrożenia,* Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach, nr 333/2017.

[70] OECD/EU, *Health at a Glance: Europe 2018: State of Health in the EU Cycle*, OECD Publishing, Paris 2018, https://doi.org/10.1787/health glance eur-2018-en, [accessed on 01.10.2020]

improved, among other things, by reducing the number of hospital services in favour of OSC services.

The introduction of the PHC was mainly supposed to solve the aforementioned problem, which Polish hospitals have also been struggling with for years. Other most common problems are:

– lack of comprehensiveness and continuity of the provision of health care services;

– lack of coordination between inpatient and outpatient services;

– unstable financial situation of hospitals;

– high cost of investment in medical infrastructure;

– the need to ensure a stable hospital base in the country and in individual regions;

– the need to ensure that the health needs of the population are met and resources are used optimally [71];

– medical staff shortages and uneven distribution of medical professionals

The implementation of the PHCPS has not eliminated all of the problems that hospitals continue to face. The most significant challenges in the access to hospital care services are:

- optimisation of human and financial resources – hospitals which are the proprety of many public entities (local governments, ministries, universities) often operate in one area [72];
- transferring part of the services to OSC in order to ease the pressure on hospital treatment;
- reducing queues for hospital treatments;
- increasing the quality of services provided by introducing quality service indicators as a standard for hospitalisation;
- reducing the number of hospital-acquired infections.

[71] *Funkcjonowanie systemu podstawowego szpitalnego zabezpieczenia świadczeń opieki zdrowotnej*, NIK, Warszawa 2019, p. 6.

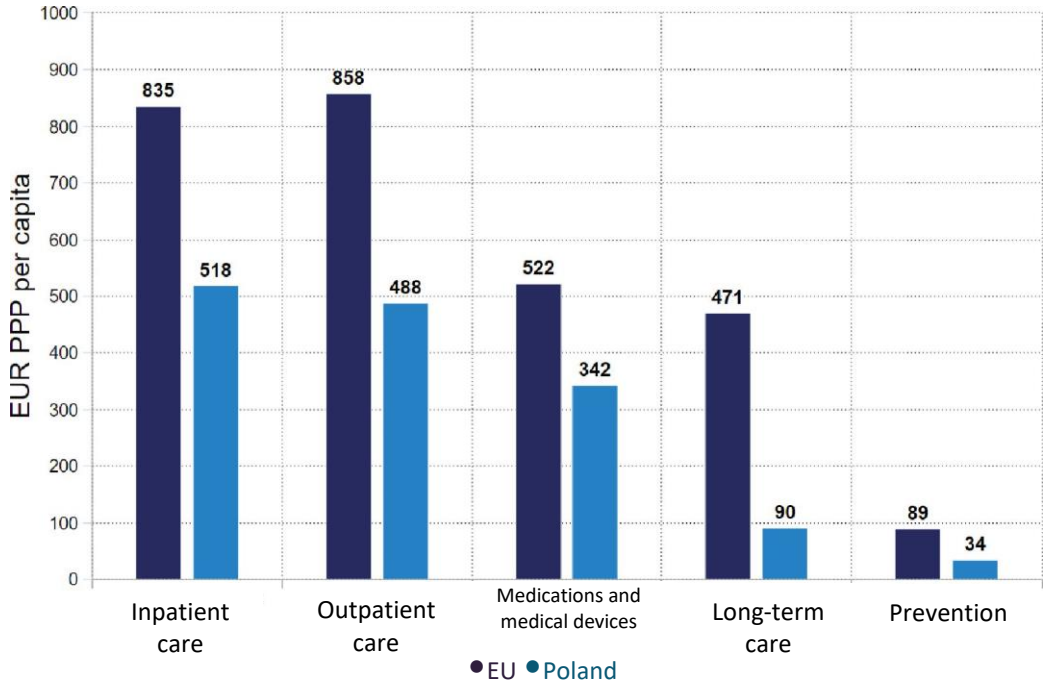
[72] *Strategic directions of health care system development in Poland. Results of a national debate on the direction of change in health care,* Ministry of Health, Warsaw 2019, http://oipip.elblag.pl/wp- content/uploads/2019/07/Wsp%C3%B3lnie-dla-zdrowia dokument-podsumowuj%C4%85cy.pdf , [accessed 01.10.2020]

Expenditures on hospital care in Poland and the EU

Expenditures on inpatient care represent a significant part of health budget. According to the *State of Health in the EU* report, in 2017, More than a third of public health expenditures in our country was made up of inpatient care, which was the third-highest share in the EU (the EU average is 29%). The two countries with higher share are Greece and Romania having 42% share. Compared to other European countries that have a similar SDI (Slovakia 28%, Italy 32%[73]), in Poland significantly more funds are allocated to hospital care. Expenditures on inpatient care per 1 resident in Poland are EUR 518 compared to the EU average of EUR 835 per 1 resident [74].

Austria, France and Greece had the highest percentages of GDP spent on hospital care and rehabilitation in the EU in total health expenditures, while Luxembourg, Latvia and Estonia had the lowest ones. Poland is in the middle of the ranking, as well as Spain. It is worth noting in Poland there has been an increase in expenditures on inpatient care between 2014 and 2019, which is the opposite trend to other EU countries where the expenditures have been decreasing year by year.

Figure 80. Expenditures on hospital treatment and other types of services in 2017.



Source: Ministry of Health study based on data from OECD

[73] *Health at a Glance* 2019 OECD INDICATORS, p. 161.

[74] Health System Profile, OECD, 2019.

Due to the introduction of the PHCPS, the way hospitals in Poland are financed has changed. Financing is primarily based on a lump sum paid by the NFZ. The amount of the lump sum depends mainly on the type and number of services provided by a particular medical institution in the previous accounting period.

In 2016, before the implementation of the hospital network, according to the NFZ report, the expenditures on hospital care accounted for approx. 49.38% of the total health budget. Compared to 2017, there was an increase in the expenditures to 50.67% (1.29 percentage point growth), in 2018 it was 52.39% (1.72 percentage point growth), and in 2019 as much as 52.8% (0.4 percentage point growth).

Under the PHC system, the value of services, in 2019, was PLN 40,303,000,000. Compared to 2017, there was an increase in the network expenditures of approx. 8%. Thus, the change in the financing model of health care in the hospitals of the "hospital network" and the introduction of a lump sum resulted in an increase in the share of hospital treatment in the costs of health care services.

Table 22. The provision of services under the PHC system in 2019 compared to the provision of these services in 2018 by PHC levels (in PLN)

Security level	Value of services 2018	Value of services 2019	Change %
First-level hospital	6,614,658,959	7,089,181,542	7%
Second-level hospital	6,719,134,075	7,327,281,522	9%
Third-level hospital	8,608,767,078	8,955,369,489	4%
National hospital	12,489,890,547	13,127,421,522	5%
Cancer hospital	2,189,609,317	2,473,968,596	13%
Paediatric hospital	479,518,841	522,129,158	9%
Pulmonary hospital	738,916,643	807,829,039	9%
IN	**37,840,495,460**	**40,303,180,867**	**7%**

Source: Ministry of Health study based on data from NFZ

An analysis of the expenditures under the PHC system shows that the most financial resources were allocated by the NFZ to national hospitals, i.e. approx. 33% of the total budget, and the least for paediatric hospitals. The largest increase in expenditures compared to 2018 was reported for cancer hospitals (13%).

6.1. Patient analysis

In 2019, hospital services were provided to over 4,600,000 women and over 4,100,000 men. The age distribution of patients by gender shows differences between men and women benefiting from the services.

Women and men differed in incidence on the basis of the GBD classification of disease groups. Women were the most frequently hospitalised for (per 1,000,000 population):

- maternal conditions – 11,425;
- urinary tract infections – 7,966;
- other neoplasms – 6,291;
- contusions of a body part – 6,105;
- cataract – 5,886;
- muscle and tendon injuries, including sprains and strains – 5,584;
- other musculoskeletal diseases – 5,441;
- non-communicable diseases – 5,401;
- pain or hypersensitivity in the abdominal area – 4,956;
- superficial injuries to a body part – 3,932;
- open wounds – 3,803;
- other cardiovascular and circulatory diseases – 3,436.

In contrast, men were most often hospitalised for the following groups of diseases (per 1,000,000 population):

- open wounds – 8,722;
- contusions of a body part – 7,040;
- muscle and tendon injuries, including sprains and strains – 6,585;
- urinary tract diseases, infertility – 5,640;
- non-communicable diseases – 5,429;
- superficial injuries to a body part – 4,685;
- other musculoskeletal diseases – 4,584;
- other chronic respiratory diseases – 4,181;
- ischaemic heart disease – 3,580;
- eye injuries – 3,460;
- other neoplasms – 3,450;
- cataract – 3,428.

In addition, among women, patients over 75 constituted the largest group (27,998 patients per 1,000,000 population). The groups of women which were hospitalised the most often were the women at the age of 26-35

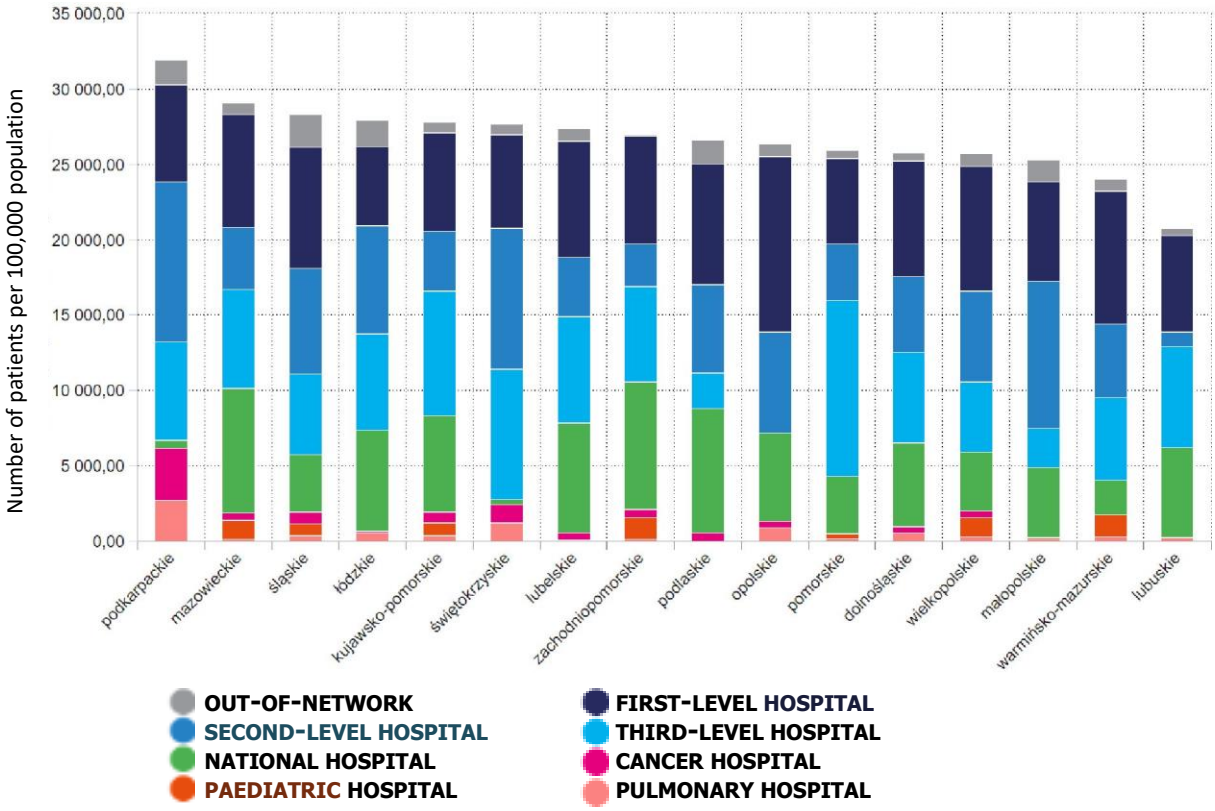
hospitalised due to maternal conditions (7,308 patients per 1,000,000 population), patients under 18 with a diagnosis of a noncommunicable disease (2,907 patients per 1,000,000 population), and patients over 75 due to cataracts (2,708 patients per 1,000,000 population).

Among men, patients under 18 constituted the largest hospitalised group (33,452 patients per 1,000,000 population). In this age group, the most frequently hospitalised patients were those diagnosed with non-communicable diseases (2,981 patients per 1,000,000 population), contusions of a body part (2,414 patients per 1,000,000 population), and neonatal conditions (2,273 patients per 1,000,000 population).

The age distribution indicates that the largest group of patients among women are those hospitalised as a result of complications in the perinatal period. In contrast, injuries constitute the largest group among men.

The patients were treated mainly in the Mazowieckie and Śląskie provinces, but when taking into account the number of inhabitants, the Podkarpackie (5,126 per 100,000 population), Mazowieckie (4,893 per 100,000 population) and Śląskie (4,876 per 100,000 population) provinces were the leaders.
In contrast, the lowest number of patients, both in absolute numbers and per 100,000 population, were hospitalised in the Lubuskie Province (3,798 per 100,000 population).

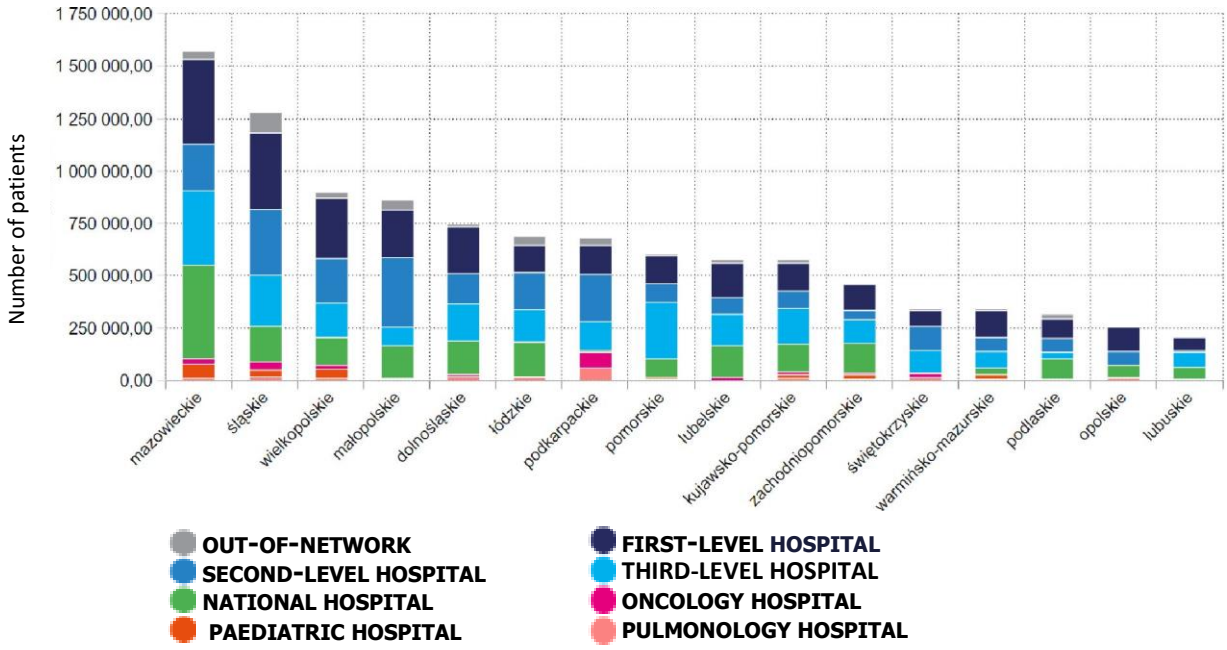
Figure 81. The number of patients per 100,000 population treated in a given province by PHC levels in 2019.



Source: Ministry of Health study based on data from NFZ

The differences in the number of patient groups was also observed in the distribution by province and PHC levels. In first-level hospitals, the largest patient groups, both in absolute numbers and per 100,000 population, were hospitalised in 7 provinces (Śląskie, Mazowieckie, Dolnośląskie, Lubelskie, Opolskie, Warmińsko-Mazurskie and Wielkopolskie). In second-level hospitals, the largest group of patients was hospitalised in 4 provinces (Łódzkie, Małopolskie, Podkarpackie and Świętokrzyskie), in third-level hospitals these were the Kujawsko-Pomorskie, Lubuskie and Pomorskie provinces, while in national hospitals: Podlaskie and Zachodniopomorskie provinces.

Figure 82. The number of patients, in absolute numbers, treated in a given province by PHCPS level in 2019.



Source: Ministry of Health study based on data from NFZ

One of the important indicators of accessibility to health care services is that of the quality of comprehensive care, particularly among those patients who constitute the largest groups by disease entity. The comparison shows significant differences in the use of hospital treatment services between provinces, especially in specialist hospitals (oncology, paediatrics and pulmonology).

Low number of patients treated in oncology, paediatric or pulmonology hospitals may be due to the sheer availability of hospitals at this level of PHC in the provinces. In this case, the provision of health care services is successfully taken over by hospitals at other levels of the PHCPS. More information on the number of services provided by coverage can be found in the following subsections regarding hospital treatment.

Table 23. Number of patients by residence by PHC level per 100,000 of population in 2019

Province	Out-of-network	First-level	Second-level	Third-level	National	Cancer	Paediatric	Pulmonary	In total
Dolnośląskie	0,522	7,729	5,206	5,906	5,241	369	21	506	**25,500**
Kujawsko-Pomorskie	697	6,440	4,164	8,012	6,337	583	815	380	**27,429**
Lubelskie	842	7,947	4,365	6,959	7,366	556	46	89	**28,169**
Lubuskie	517	6,505	1,376	6,163	6,705	159	93	258	**21,777**
Łódzkie	1,644	5,434	7,343	6,536	6,743	152	30	557	**28,439**
Małopolskie	1,559	6,364	9,140	2,761	4,419	97	189	109	**24,639**
Mazowieckie	827	7,358	4,157	6,590	7,172	430	1,229	154	**27,917**
Opolskie	840	11,021	6,783	410	6,371	431	20	929	**26,804**
Podkarpackie	1,620	6,369	10,311	6,593	1,186	3,379	16	2,591	**32,065**
Podlaskie	1,485	7,818	5,591	2,503	8,260	513	42	9	**26,221**
Pomorskie	556	5,696	3,854	11,481	3,817	51	330	165	**25,949**
Śląskie	2,046	8,106	7,086	5,263	3,742	751	751	355	**28,101**
Świętokrzyskie	772	6,339	8,787	8,347	1,328	1,138	39	1,178	**27,928**
Warmińsko-Mazurskie	824	8,673	4,776	5,294	3,028	72	1,334	326	**24,327**
Wielkopolskie	835	8,069	5,861	4,749	4,140	453	1,244	290	**25,641**
Zachodnio-pomorskie	189	6,976	2,617	6,597	8,143	512	1,386	172	**26,593**
In total	**15,776**	**116,845**	**91,417**	**94,165**	**83,999**	**9,644**	**7,587**	**8,067**	**427,499**

Source: Ministry of Health study based on data from NFZ

The largest group of patients per 100,000 of the population, hospitalised outside their place of residence were treated in the Mazowieckie Province, in national hospitals. On the other hand, lower values (<1 patient per 100,000 population) were reported in paediatric hospitals in 8 provinces and in cancer hospitals in 4 provinces, but these values are related to the small absolute number of patients hospitalised in paediatric and oncology hospitals.

Table 24. Number of patients treated outside their place of residence (province), by the hospital province and PHC per 100,000 population in 2019

Province	Out-of-network	First-level	Second-level	Third-level	National	Cancer	Paediatric Ward	Pulmonary	In total
Dolnośląskie	38	380	172	438	693	55	-	52	**1,827**
Kujawsko-Pomorskie	89	430	191	636	514	164	58	23	**2,105**
Lubelskie	107	299	121	450	550	40	-	1	**1,567**
Lubuskie	50	692	108	952	353	-	-	27	**2,182**
Łódzkie	152	399	317	280	526	20	-	14	**1,709**
Małopolskie	93	462	978	176	602	-	15	26	**2,353**
Mazowieckie	55	482	347	373	1,418	61	64	12	**2,812**
Opolskie	129	1,095	435	-	361	18	-	63	**2,100**
Podkarpackie	77	394	664	265	13	128	-	108	**1,649**
Podlaskie	150	573	477	198	623	43	-	-	**2,065**
Pomorskie	26	341	247	1,015	365	-	19	38	**2,051**
Śląskie	194	277	330	294	433	58	41	22	**1,649**
Świętokrzyskie	89	520	1,409	645	14	142	-	84	**2,904**
Warmińsko-Mazurskie	96	631	553	863	216	-	147	18	**2,523**
Wielkopolskie	75	586	396	249	388	47	43	33	**1,816**
Zachodnio-pomorskie	35	520	415	493	707	49	72	8	**2,299**
In total	**1,454**	**8,081**	**7,160**	**7,328**	**7,776**	**826**	**458**	**527**	**33,610**

Source: Ministry of Health study based on data from NFZ

The table shows discrepancies in the number of people from other provinces in the hospitals depending on the PHC level, e.g. in Małopolskie Province only 15 patients from other provinces per 100,000 population were treated in paediatric hospitals, while 978 patients per 100,000 population came from other provinces to second-level hospitals.

The greatest variation in the number of patients from other provinces was observed in national hospitals (between 13 patients in the Podkarpackie Province and 1,418 patients in the Mazowieckie Province).

6.2. Service analysis

Services are interpreted in this document as a single health care contact. They may be a package of several units provided within a single health care contact. A single health care contact is less general than a single hospitalisation, during which a package of services may be delivered across multiple contacts. It is worth noting, however, that in hospital treatment, especially for individual benefits, the scope of services is the same as service.

Contact with health care

In 2019, most services were provided in national first-level and third-level hospitals. On the other hand, taking into account the scope of services, the highest number of them was provided in third-level hospitals in the scope of "Services in the emergency department" (7.08% of all scope of services and 32.38% of the scope of third-level hospitals), as well as in second-level hospitals (6.29% of all scope of services and 31.89% of the scope of second-level hospitals). Apart from the services resulting from admissions to ED and admission room, the highest number of services was provided in the field of hospitalisation resulting from internal diseases (2.31% of all services; 11.15% in first-level hospitals) and hospitalisation resulting from general surgery (1.82% of all services; 8.76% in first-level hospitals), as well as "Ophthalmology - same-day surgery b18g, b19g" in out-of-network hospitals (1.32% of all services and 25.03% in out-of-network hospitals).

Table 25. Percentage of services provided by PHC levels in 2019.

PHCPS level	Percentage of services provided
First-level hospital	22.82%
Third-level hospital	22.03%
National hospital	21.65%
Second-level hospital	20.46%
Out-of-network	5.34%
Cancer hospital	3.8%
Pulmonary hospital	1.8%
Paediatric hospital	1.8%

Source: Ministry of Health study based on data from NFZ

The largest number of services was provided in Mazowieckie Province (15.4% of all services), most of which were contracts as part of hospitalisations in national hospitals (33.61% of the services in the province). On the other hand, the lowest number of services was provided in the Lubuskie Province.

Table 26. Percentage of service in provinces provided in 2019. by PHC levels

Province	Out-of-network	First-level	Second-level	Third-level	National	Cancer	Paediatric Ward	Pulmonary	In total
Dolnośląskie	4.28%	24.33%	19.65%	23.25%	21.65%	4.55%	0.00%	2.29%	**1,271,006**
Kujawsko-Pomorskie	3.69%	19.22%	12.93%	28.93%	24.05%	7.18%	2.45%	1.56%	**969,348**
Lubelskie	5.02%	23.99%	12.68%	25.70%	27.71%	4.79%	0.00%	0.11%	**955,827**
Lubuskie	4.71%	26.40%	3.66%	33.93%	30.12%	0.00%	0.00%	1.18%	**342,476**
Łódzkie	7.77%	16.23%	24.10%	25.09%	23.79%	1.16%	0.00%	1.87%	**1,123,152**
Małopolskie	7.50%	22.38%	38.09%	10.36%	20.73%	0.00%	0.59%	0.35%	**1,355,240**
Mazowieckie	3.82%	21.17%	12.27%	21.69%	33.61%	3.55%	3.45%	0.45%	**2,617,486**
Opolskie	3.16%	41.85%	25.02%	0.00%	22.33%	3.79%	0.00%	3.85%	**387,173**
Podkarpackie	5.65%	17.19%	33.89%	19.29%	1.31%	13.02%	0.00%	9.66%	**1,105,825**
Podlaskie	6.32%	25.33%	19.22%	8.18%	35.24%	5.72%	0.00%	0.00%	**505,551**
Pomorskie	3.07%	18.28%	13.17%	46.85%	17.03%	0.00%	0.91%	0.68%	**998.258**
Śląskie	8.66%	25.63%	22.73%	17.86%	17.22%	4.42%	2.23%	1.26%	**2,038,095**
Świętokrzyskie	3.96%	18.84%	34.56%	26.91%	0.88%	10.79%	0.00%	4.07%	**575,805**
Warmińsko-Mazurskie	4.51%	32.57%	18.54%	24.92%	12.64%	0.00%	5.16%	1.66%	**527,994**
Wielkopolskie	6.07%	27.00%	22.60%	17.95%	17.25%	3.71%	3.89%	1.52%	**1,460,234**
Zachodnio-pomorskie	1.84%	21.42%	9.06%	23.84%	33.36%	5.10%	4.82%	0.57%	**746,272**

Source: Ministry of Health study based on data from NFZ

Compared to 2018, in 2019 there was a slight increase of 0.69% in the number of services provided under the PHC and an increase of 6.11% in the value of services. This means that there is an increase in the value of services.

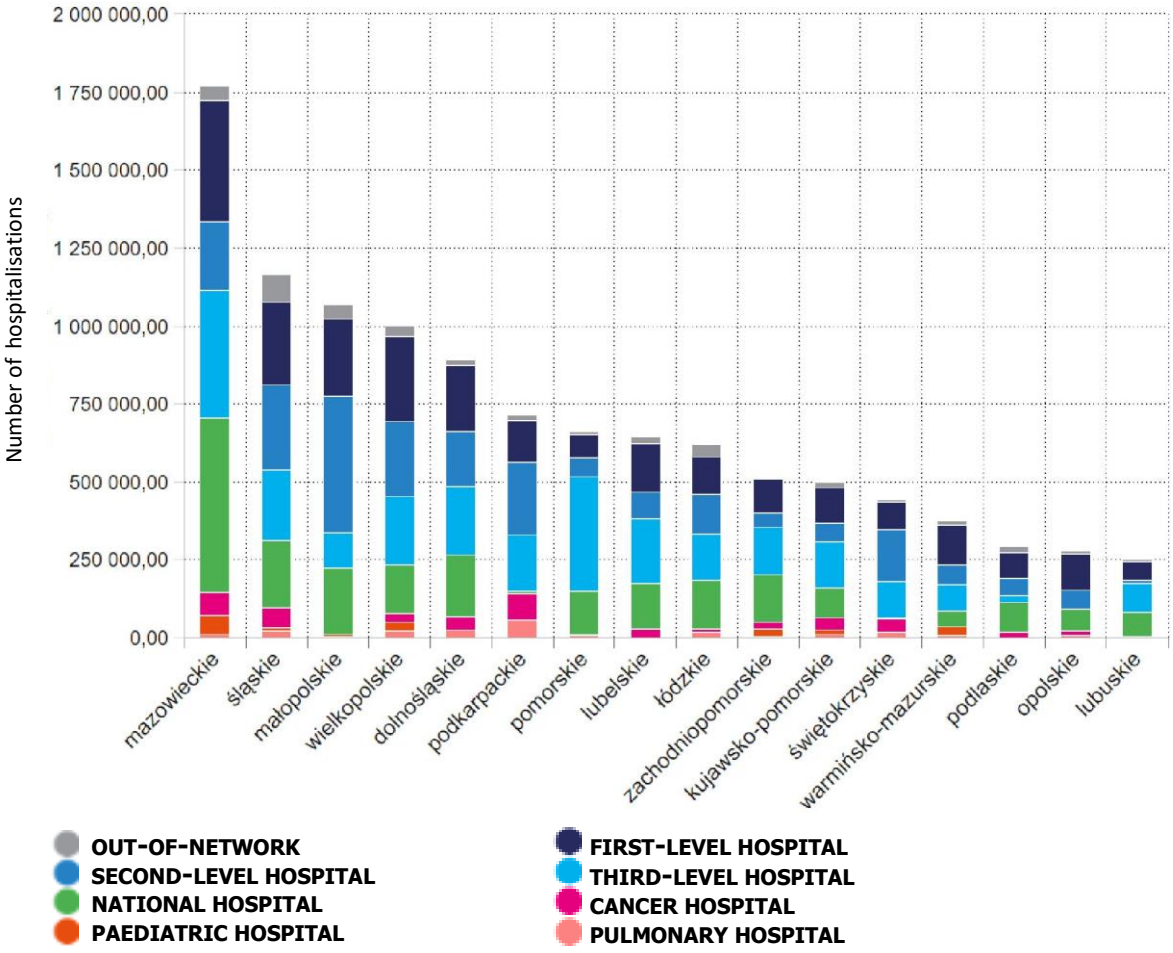
According to the latest report of the NFZ, the largest increase in services in 2019 was reported for cancer hospitals (8.46%). Cancer hospitals also had the largest increase in the value of services (by 11.49%). This may indicate an increase in the availability of oncology services, which is a result of changes in DRG settling as a result of the regulations of the Minister of Health on hospital oncology treatment, including changes in the DiLO card regulations, leading to optimisation of the diagnostic process.

Hospitalisations

In hospital care, in many cases, hospitalisation is understood as a service. Nonetheless, hospitalisation consists of various services provided during contracts. This distinction is important because, during one hospitalisation, a patient on a pass does not have services provided despite the duration of the hospitalisation. The analysis of the number and structure of hospitalisations by the scope of services or in terms of part VII of the Ministry of Health codes is an important element of assessing hospital treatment, while the observed changes in the structure of hospitalisation services provided between 2016 and 2019, i.e. before the introduction of the PHCPS, and two years after the implementation of the system, allow determining the change in demand for hospital treatment.

The largest number of hospitalisations was provided in the Mazowieckie (1,770,292) and Śląskie (1,165,913) provinces. However, per 100,000 population, the largest number of hospitalisations was provided in the Świętokrzyskie Province (35,874 per 100,000 population), and the least in the Podlaskie Province (23, 147 per 100,000 population).

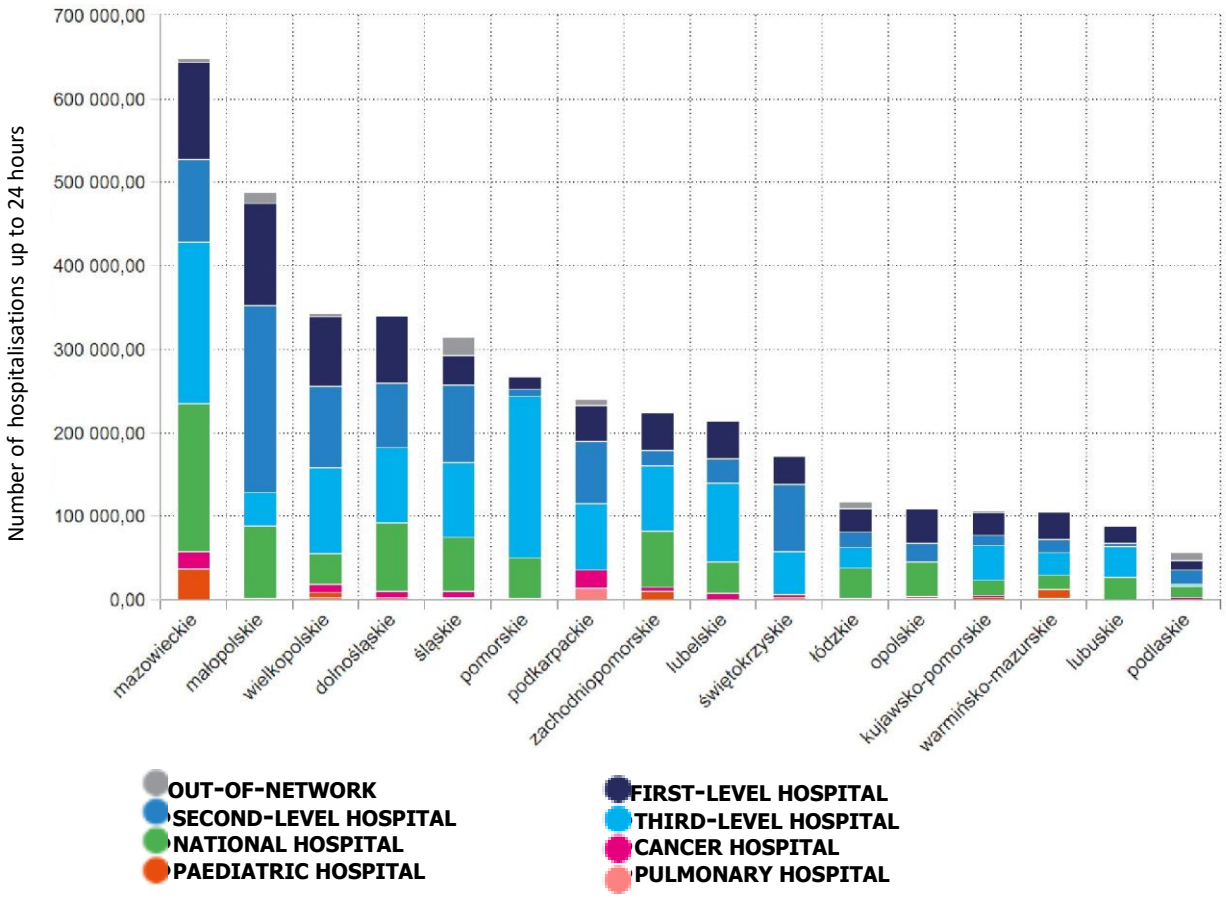
Figure 83. Hospitalisations in 2019.



Source: Ministry of Health study based on data from NFZ

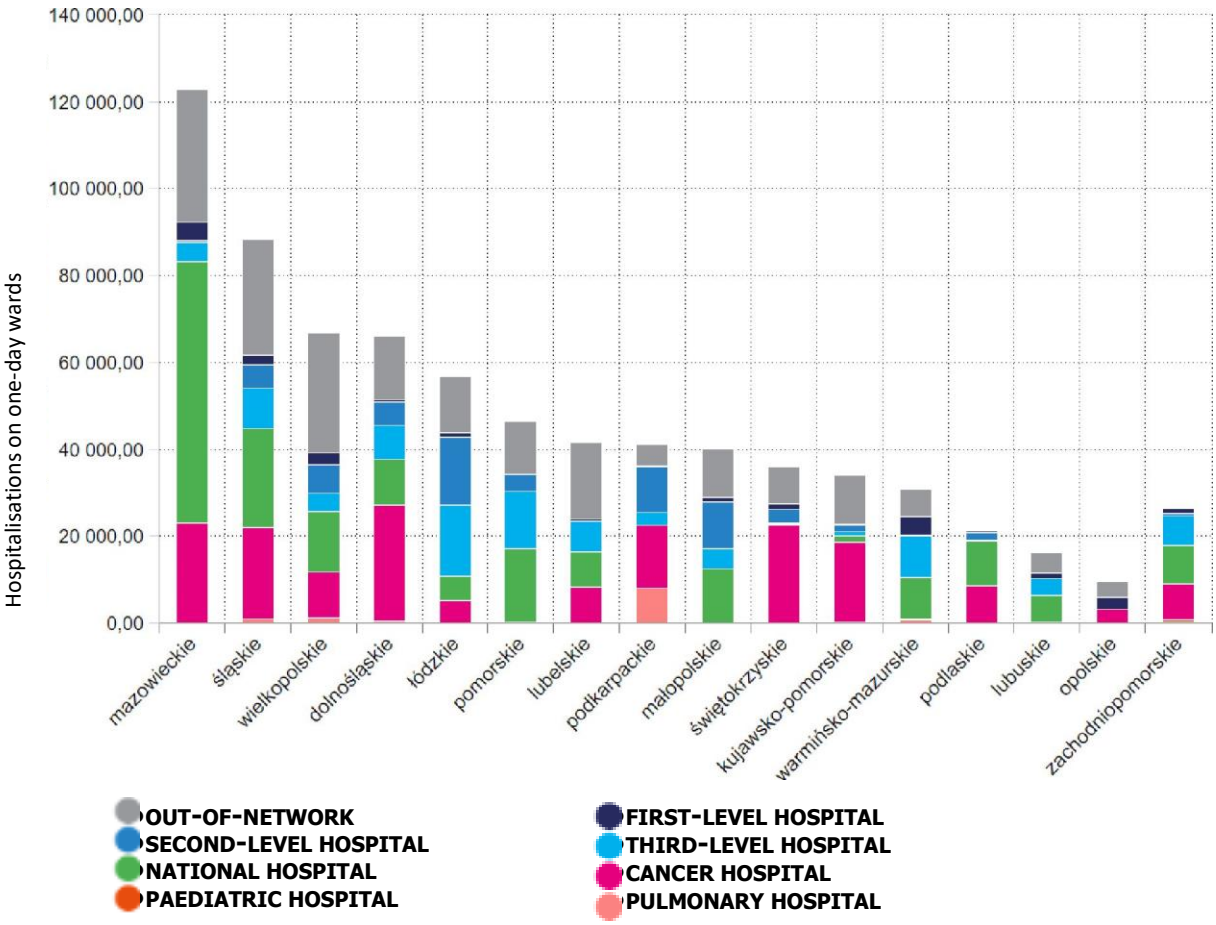
The majority of hospitalisations were performed in the Mazowieckie, Śląskie and Małopolskie provinces, in national hospitals and in third-level hospitals. However, there is quite a clear diversity in the number of hospitalisations in the above-mentioned provinces. The largest number of hospitalisations in the Mazowieckie Province was carried out in national hospitals (562,000) and third-level hospitals (409,000), while in the Małopolskie Province almost twice as many hospitalisations (440,000 compared to the remaining two provinces) were carried out in second-level hospitals. In the Śląskie Province, the number of hospitalisations is distributed proportionally between first-, second- and third-level hospitals and national hospitals (215,000-271,000).

Figure 84. One-day hospitalisations in 2019



Source: Ministry of Health study based on data from NFZ

Figure 85. One-day hospitalisations on one-day wards by PHC level and provinces in 2019

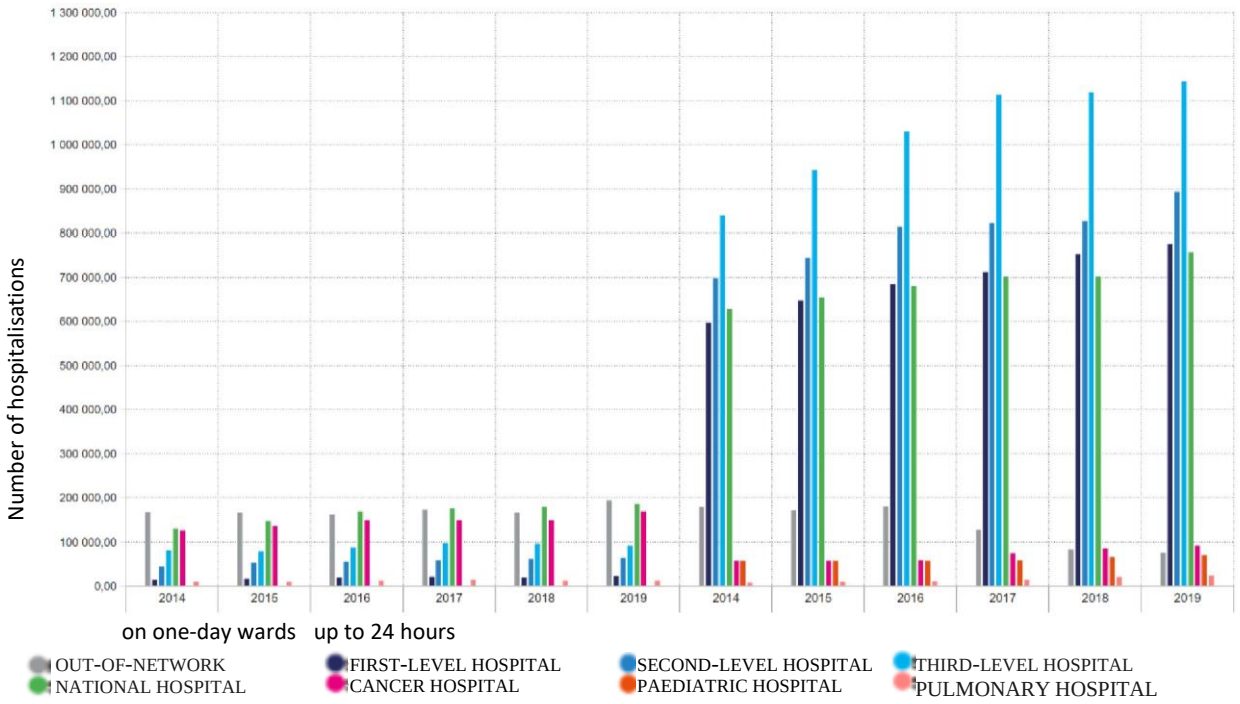


Source: Ministry of Health study based on data from NFZ

The number of hospitalisations on one-day wards and one-day hospitalisations between 2014 and 2016, i.e. before the introduction of the PHC system are present in these hospitals that have belonged to a certain level since 2017.

After the introduction of the PHCPS, in the case of out-of-network hospitals, the number of hospitalisations on one-day wards increased, while the number of one-day hospitalisations decreased. In contrast, in the case of hospitals in the PHCPS, the opposite trend is observed – hospitalisations provided in one-day wards and one-day hospitalisations increased. The decrease in hospitalisations on one-day wards and the increase in one-day hospitalisations is the most visible in oncological hospitals (which have also the highest percentage of hospitalisations on one-day wards among PHCPS hospitals).

Figure 86. Hospitalisations on one-day wards and one-day hospitalisations between 2014 to 2019



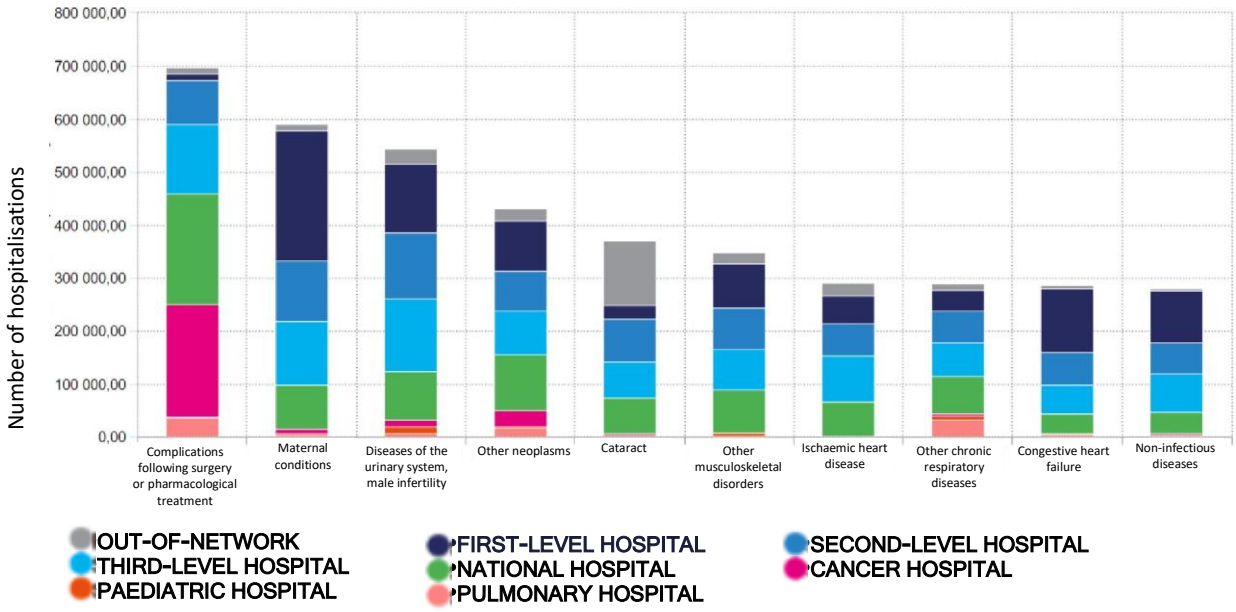
Source: Ministry of Health study based on data from NFZ

The comparison of the number of hospitalisations by PHCPS levels shows the discrepancies in the total number of hospitalisations between hospitals on different PHCPS levels and out-of-network hospitals, as well as in the number of hospitalisations by disease groups according to GBD. By far the largest number of hospitalisations was performed in third-level hospitals (24.16%; 1.32% increase), first-level hospitals (22.94%; 3.34% decrease), national hospitals (20.90%, 0.06 decrease. A large increase in the number of services was also reported in cancer hospitals (4.25%; 2.23% increase).

For disease groups in total, the largest number of hospitalisations was connected with treating the complications caused as a result of surgery or pharmacological treatment (5.99%), while the lowest – with untreated tropical diseases (one case each).

On the other hand, the highest number of hospitalisations by PHCPS levels was connected with treating the following group of diseases: maternal conditions in first-level hospitals (9.49% of all hospitalisations in hospitals at this level) and in third-level hospitals (4.41%); complications caused as a result of surgery or pharmacological treatment in cancer hospitals (44.36%), national hospitals (8.82%) and third-level hospitals (4.83%); urinary tract diseases, male infertility in third-level hospitals (5.02%) and second-level hospitals (5.35%); cataracts in out-of-network hospitals (30%); and congestive heart failure in first-level hospitals (4.60%).

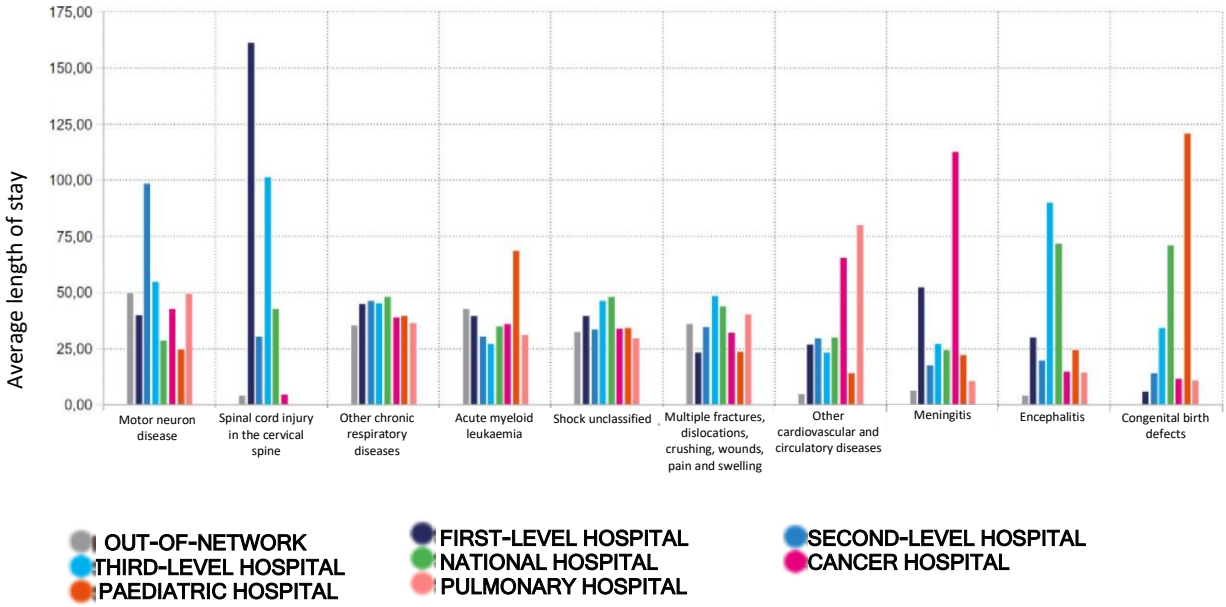
Figure 87. Disease groups with the highest number of hospitalisations in 2019 by PHC levels



Source: Ministry of Health study based on data from NFZ

Hospitals outside PHCPS (shown in the chart as the OUT-OF-NETWORK group) do not provide services for all of the disease groups listed. However, when comparing the groups that are hospitalised in both out-of-network and PHCPS hospitals, it can be seen that amyotrophic lateral sclerosis reaches the highest value of the average number of days of hospitalisation in third-level hospitals, while it reaches the lowest value in national and paediatric hospitals. On the other hand, in the case of acute myeloid leukaemia, the longest average length of hospitalisation was found in paediatric hospitals, while in oncological hospitals, the average hospitalisation is almost half as long (69 and 36 days, respectively).

Figure 88. Disease groups with the longest average hospitalisation in 2019 by PHCPS level



Source: Ministry of Health study based on data from NFZ

Queues to hospital services

This subsection presents the results of analyses of wait time for services and the number of people waiting for the services. The characteristics listed are the indicators that reflect the access to hospital services. The analysis was performed from two perspectives – on the basis of waiting lists and services provided as planned. The results of each perspective were compiled with data from various sources, which are listed in the following sections.

Waiting lists prepared by health service providers are updated monthly. They are an indicator to assess real access to services. The current waiting time for services illustrate both the limitations of the system and the demand for a given service. Moreover, the presentation of waiting lists in the context of a hospital network allows for a systemic assessment of the efficiency of service provision.

Average values of expectation time were included in the analysis, which has limitations caused by errors in reporting unit data. The lack of verifiability of this type of data makes it impossible to eliminate the so-called outliers, i.e., the values that deviate significantly from the others and affect the results obtained. The next section of the paper focuses on the analysis of stable cases that do not require the most urgent intervention.

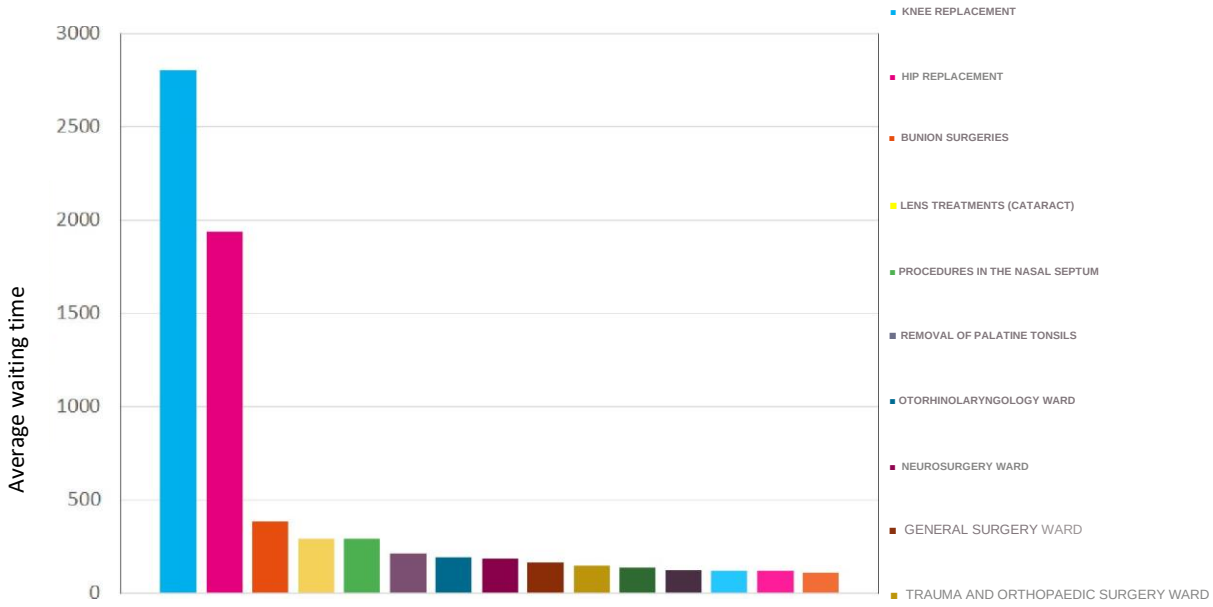
The analysis of waiting time showed that the longest queues (highest average number of days) in 2018 occurred in PHCPS second-level hospitals and were maintained over

months, with the only change in September when the highest average number of days occurred in first-level hospitals. In the second-level hospitals, the average waiting time ranged from 0 days (less than 24 hours, mainly oncology and cardiology services) to 2,100 days (rehabilitation, neurological rehabilitation and knee replacement services).

The shortest average waiting time was observed in cancer hospitals, averaging between 0 and 317 days. The services that required longer waiting time than 7 days accounted for 10% of all hospital services.

In 2020, (as of 30 March 2020), the longest average waiting time was observed for knee (2,803 days) and hip replacement (1,937 days), followed by bunion and cataract surgeries (an average of 386 and 290 days, respectively).

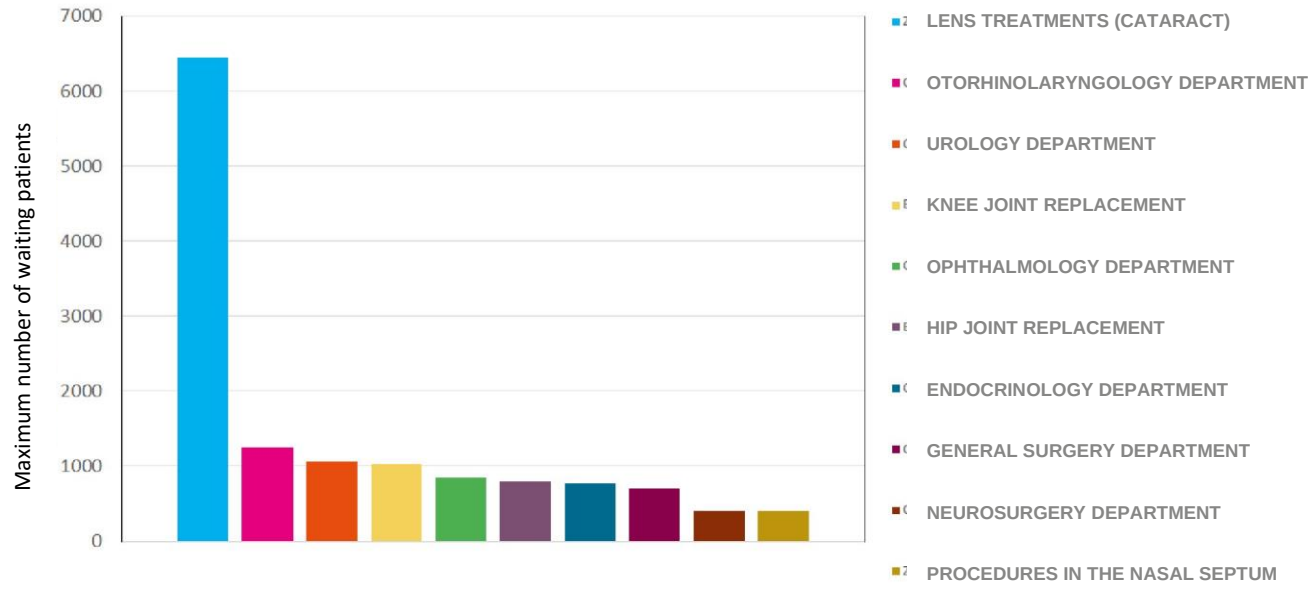
Figure 89. Average waiting time for hospital admission in 2020



Source: Ministry of Health study based on data from NFZ

When analysing the number of patients waiting for hospital admission in 2020, the largest number of patients waited for cataract surgery (6,455 people), as well as for admission to the otolaryngology ward (1,241 people) and the urology ward (1,062 people).

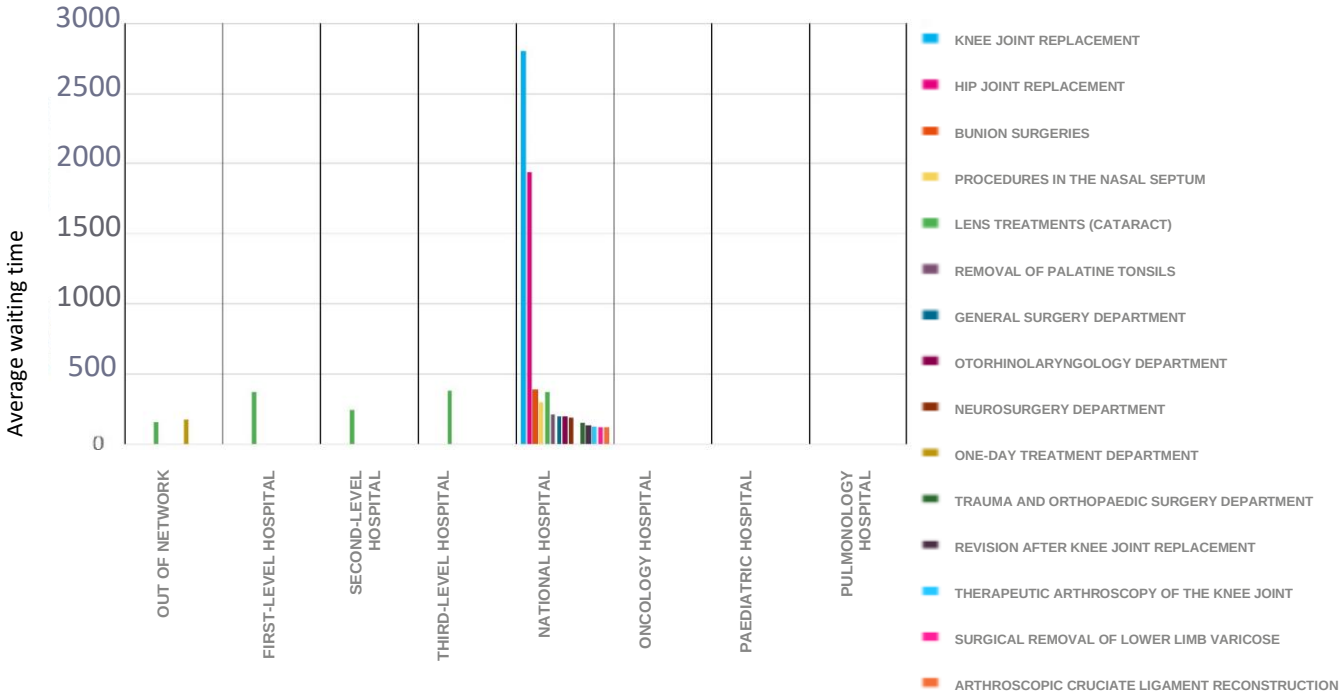
Figure 90. The maximum number of patients waiting for hospital admission in 2020.



Source: Ministry of Health study based on data from NFZ

By PHCPS levels, the longest average waiting time for stable cases was shown in national hospitals for knee (2,803 days) and hip (1,937 days) replacement. The longest waiting time for cataract surgery was observed in third-level hospitals (average of 380 days) and in national and out-of-network hospitals (average of 371 days).

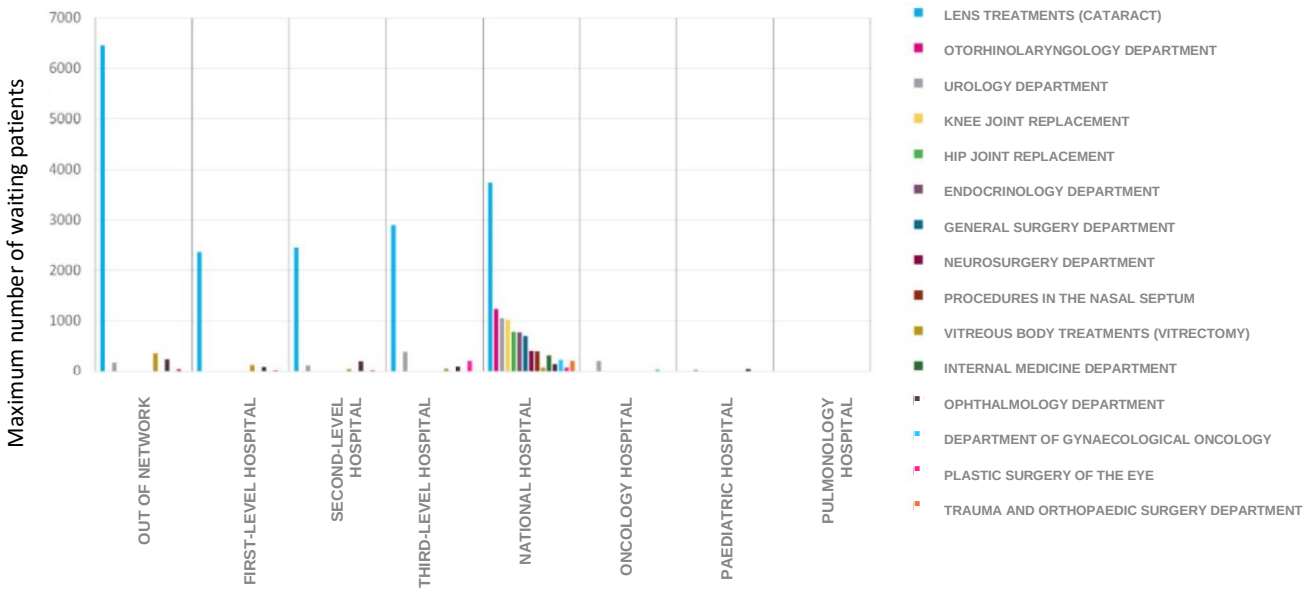
Figure 91. Average waiting time for hospital admission in 2020 by PHCPS levels



Source: Ministry of Health study based on data from NFZ

Waiting lists for cataract surgery were the longest, with the highest maximum number at out-of-network hospitals, i.e. nearly 6,500 patients.
Long waiting lists were also reported among those waiting to be admitted to the otorhinolaryngology ward in national hospitals.

Rysunek 92. Maksymalna liczba osób oczekujących na przyjęcie do szpitala w 2020 r.



Source: Ministry of Health study based on data from NFZ

The analyses showed that long waiting time for stable cases was mainly observed for replacement and cataract procedures. The main change that occurred between 2018 and 2020, are reduced waiting time for cataract surgery and longer wait lists for other procedures, i.e. bunion surgery, removal of palatine tonsils and procedures In a nasal septum.

As explained at the beginning of the chapter, queues for hospital services were analysed by two methods, i.e. on the basis of waiting lists and scheduled services provided. Such an approach provides a better understanding of the service availability problem. The results presented below are based on the hospitalisations provided due to the referrals for elective hospital admissions. Real waiting time determined for the unit billing data of the NFZ for 2019 was analysed and was related to hospitalisations. Therefore, the results presented here are affected by the outliers.

Apart from the analysis of basic statistics, two additional measures were applied to determine the efficiency of the elective hospitalisations: the efficiency ratio (hereafter referred to as "efficiency") and the inefficiency ratio (hereafter referred to as "inefficiency"). It is necessary to remember that the efficiency and inefficiency ratios are two different measures that take into account different parts of the waiting time distribution. Therefore, they cannot be treated as their complements.

It should also be emphasised that the understanding of the average waiting time is diverse, i.e. in the case of waiting lists, it was understood as the average waiting time weighted by

number of patients waiting, while in the case of elective hospitalisations the median waiting time was taken into account. In addition, in the case of elective hospitalisations, there is no distinction between the referrals issued for stable and urgent cases, which may result in slightly lower numerical values of the ratios.[75]

The services performed as elective hospitalisations can be divided into two groups: non-invasive treatment and surgical, which can also be divided into categories. Surgical treatments can be divided into: small, medium, large, diagnostic, comprehensive, and other[76], while non-invasive treatment services can be: comprehensive, specialistic, basic, and other[77]. In 2019, the median waiting time for elective hospitalisation was 29 days, while the average waiting time was 76 days.

Table 27. Median and average hospitalisation waiting time and the number of elective hospitalisations by service group in Poland in 2019.

Service	Median waiting time [days]	Average waiting time [days]	Number of hospitalisations
Surgical	36	92	2.25
Non-invasive treatment	18	47	1.20

Source: Ministry of Health study based on data from NFZ

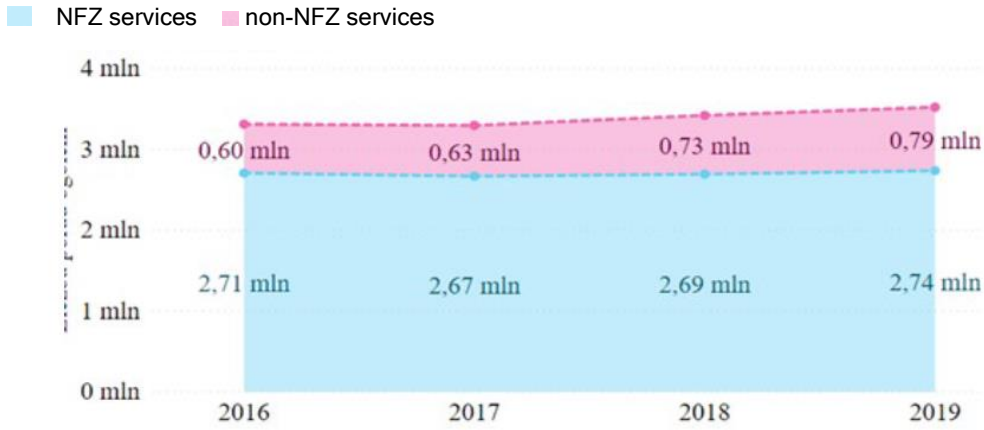
Elective hospitalisations providing non-invasive treatment services had twice as high median and average waiting times, and twice as low number of completed hospitalisations as those of surgical services.

[75] Because it is assumed that urgent cases should be provided much faster

[76] These are the treatments that have not been assigned to any of the previously mentioned

[77] These are the treatments that have not been assigned to any of the previously mentioned

Figure 93. Average waiting time (median) for elective hospitalisation by the groups of NFZ and non-NFZ services

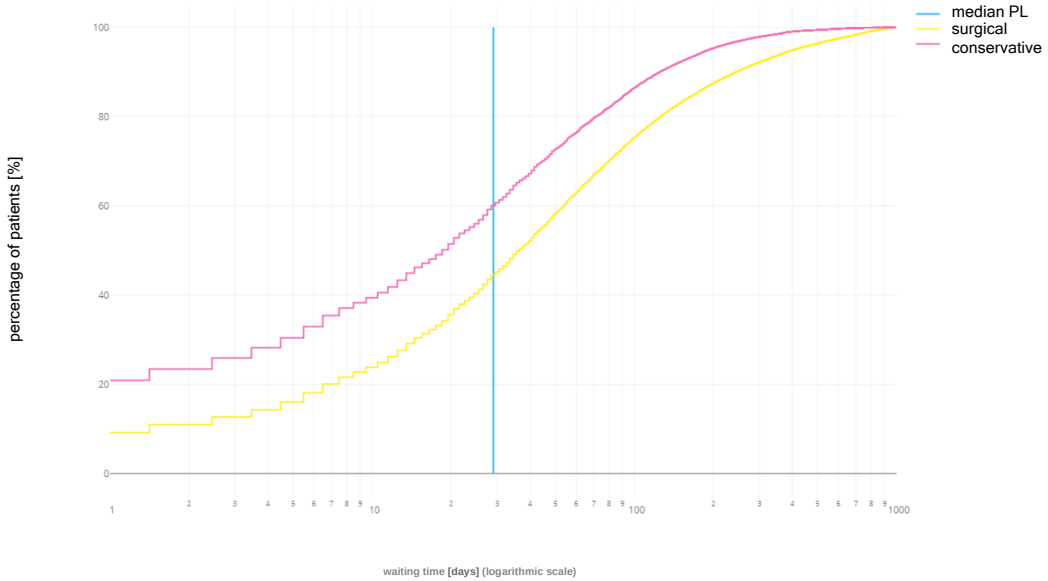


Source: Ministry of Health study based on data from NFZ and GUS

In 2019, the longest average waiting time for surgical services was observed in the Kujawsko-Pomorskie Province – 131 days, while the lowest in the Małopolskie Province – 33 days. For non-invasive treatment services, on the other hand, the longest average waiting time in 2019 was observed in the Śląskie Province – 35 days, while the lowest in the Lubuskie Province – 7 days.

In the case of surgical services, 42% of hospitalisations were provided in less than 29 days (i.e. earlier than the average waiting time in Poland), while in the case of the non-invasive treatment group, this value was 58%. This means that in 2019 non-invasive treatment services were provided faster than surgical ones.

Figure 94. Average waiting time for elective hospitalisation by the service groups

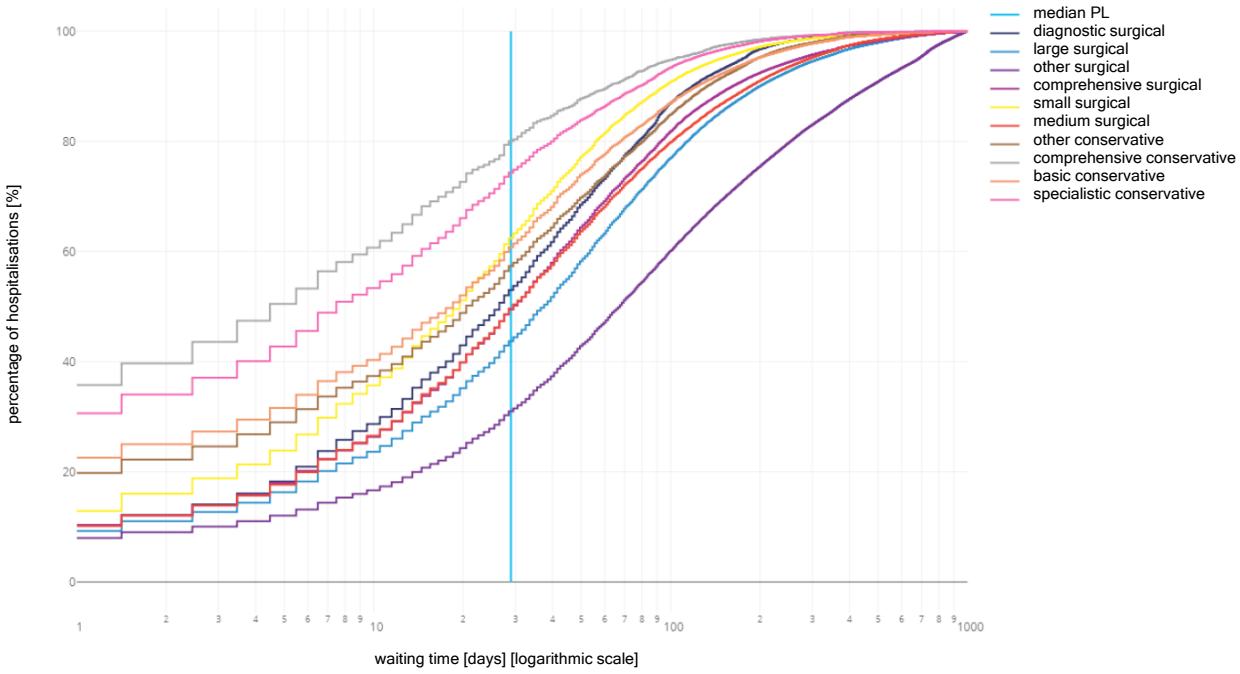


Source: Ministry of Health study based on data from NFZ

As mentioned at the beginning of the section, services can be divided into two groups, which can also be divided into categories. The analysis of waiting time and efficiency ratios of services provided by each category allows for better understanding of the problem of long waiting time for elective hospitalisations in Poland.

The longest average waiting time for hospitalisation in 2019 was observed for the other surgical category (68 days), whose share in the total number of hospitalisations was almost 18%. In addition, the analysis of the distribution of the waiting time in this category showed that only 31% of hospitalisations were provided in faster than the average waiting time for hospitalisations in Poland.

Figure 95. Hospitalisation waiting time by service category in 2019



Source: Ministry of Health study based on data from NFZ

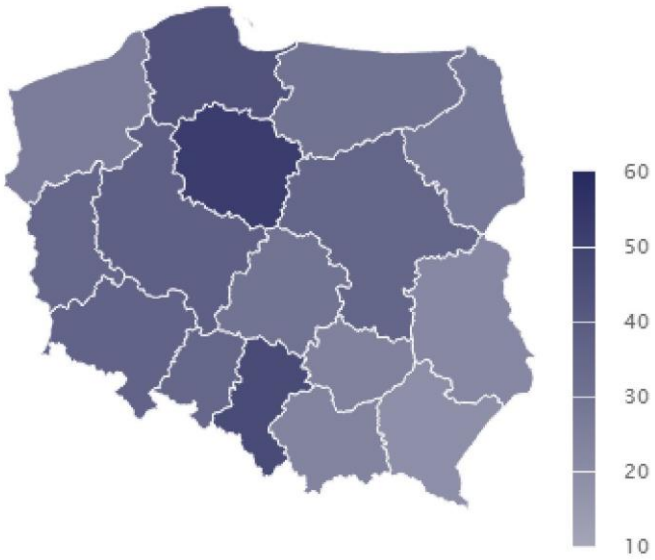
The categories of comprehensive and specialistic non-invasive treatment services accounted for only about 3.3% of all scheduled hospitalisations in 2019, while having the shortest median waiting time for hospital admission – 5 and 8 days, respectively.
These categories had the highest percentages of hospitalisations provided in less than the median waiting time for hospitalisations in Poland, i.e. 80% for comprehensive non-invasive treatment services and 74% for specialistic non-invasive treatment services.

The distribution of hospitalisation waiting time correlates with the efficiency and inefficiency of hospitalisation delivery. These ratios were determined for each category, and then general efficiency and inefficiency were calculated by determining a weighted average, with the share of total hospitalisations of each category adopted as weights.

The average waiting time allows us to determine the efficiency of hospitalisation provision in Poland; but the efficiency and inefficiency ratios presented below are more sensitive to the changes of time distribution for each category.

The shortest general average waiting time for elective hospitalisation in 2019 was about 20 days from the date of issuing the referral and was observed in the south-east of Poland (Lubelskie, Podkarpackie and Małopolskie provinces). Kujawsko-Pomorskie (52 days) and Śląskie (46 days) were the provinces with the longest average waiting time.

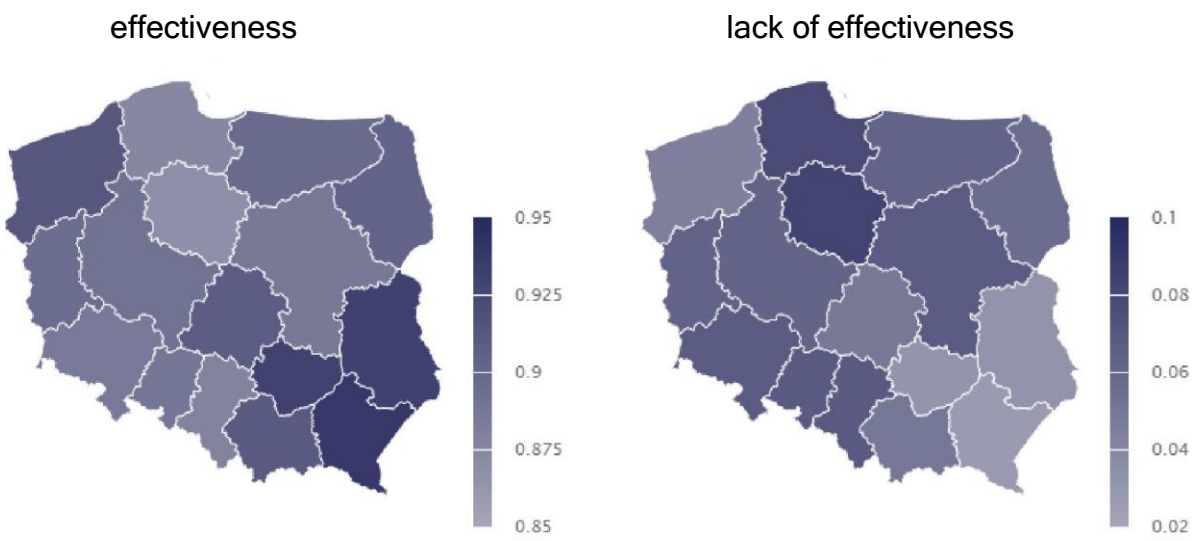
Figure 96. General average waiting time for elective hospitalisation in Poland in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

The analysis of the general efficiency showed diversity in the provision of hospitalisation between provinces. In 2019, the highest efficiency values were observed in the provinces located in the south-eastern part of Poland (Podkarpackie, Lubelskie and Świętokrzyskie provinces). In contrast, in 2019, the provinces with the highest values of the general inefficiency were the Kujawsko-Pomorskie and Pomorskie provinces.

Figure 97. General efficiency and inefficiency of elective hospitalisation delivery in Poland in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Due to treating general ratios as a weighted average, the partial efficiencies for each category had a direct impact on the above-presented results. For example, south-eastern provinces were the ones with the highest efficiency in most categories (all surgical and other non-invasive treatment services). On the other hand, in the analysis of the provinces according to the service categories in terms of inefficiency, the Kujawsko-Pomorskie Province had the worst results (the highest values of the ratio) in the largest number of categories, which included: other surgical, large surgical and other non-invasive treatments[78].

The DRG service codes are the most diverse set of services (treatments), which are divided into sections based on the human physiological system. Seventeen sections among adult patients were distinguished. Each of them had the following ratios determined: the average waiting time (the mean and median), the number of DRGs provided within a given section, the number of hospitalisations and its share in the total number of elective hospitalisations in Poland.

Treatments related to eye diseases were a group that, in 2019, had the highest median waiting time for elective hospitalisation – 75 days, and the average waiting time was more than double – 177 days. In addition, it was the second largest treatment group compared to total hospitalisations in 2019 – 12.4%, second only to musculoskeletal treatments (12.5%).

[78] Ministry of Health study based on data from NFZ

For the second of the groups listed, the average waiting time, in 2019, was 47 days, and it was the third longest average waiting time for hospitalisation in Poland.

Facial, oral, pharyngeal, laryngeal, nasal, and ear procedures also ranked among the DRG groups with the second longest average waiting time in 2019 (58 days). However, this group's share in total hospitalisations was much lower compared to the groups discussed above – only 5.2%.

Table 28 Average waiting time for elective hospitalisation by DRG groups in Poland in 2019.[79]

DRG group	Median waiting time [days]	Average waiting time [days]	Number of DRGs provided within the group	Number of hospitalisations	Share in total number of hospitalisations [%]
Eye diseases	75	177	30	426,730	12.4
Facial, oral, pharyngeal, laryngeal, nasal, and ear diseases	58	129	31	179,392	5.2
Musculoskeletal diseases	47	110	58	430,091	12.5

Source: Ministry of Health study based on data from NFZ

The DRG group analysis provides a broader perspective of queues to elective hospitalisations. However, from the patient's perspective, the most important information is the waiting time for the given services (treatments). In 2019, the services with the longest average waiting time for hospitalisation concerned mainly the treatments of facial, oral, pharyngeal, laryngeal, nasal, and ear diseases, as well as paediatric diseases, and they were of the other non-invasive treatment service group.

The treatments with the longest waiting time in 2019, were connected with the replacement of the speech processor of middle ear implant (C07H), and cochlear and brainstem implant (C07G), which were 414 and 270 days, respectively.

[79] Excluding the DRG section of paediatric diseases

It should be noted, however, that these treatments were performed relatively infrequently compared to large rhinoplasties (C42), which ranked sixth in terms of median waiting time for elective hospitalisation. Long waiting time for the replacement of the speech processor of middle ear implant (C07H), and cochlear and brainstem implant (C07G) may be due to the fact that they are highly specialistic treatments performed at only a few locations in Poland.

Table 29. Services with the longest average waiting time for hospitalisation in 2019 in Poland

DRG name	Median waiting time [days]	Number of hospitalisations	Category	DRG group
The replacement of the speech processor of middle ear implant (C07H)	414	19	other surgical	Facial, oral, pharyngeal, laryngeal, nasal, and ear diseases
C07G The replacement of the speech processor of cochlear and brainstem implant	270	431	other surgical	Facial, oral, pharyngeal, laryngeal, nasal, and ear diseases
Pzc09 complex corrective surgeries for birth defects of face, oral cavity and throat < 18 years of age	220	38	other surgical	Paediatric diseases – non-invasive treatment
C05G treatment of hearing disorders with cochlear implants	167	600	other surgical	Facial, oral, pharyngeal, laryngeal, nasal, and ear diseases
Pzc10 complex corrective surgeries for birth defects face, oral cavity and throat < 18 years of age	160	446	comprehensive surgical	Paediatric diseases – non-invasive treatment
C42 complex rhinoplasty	158	26,099	large surgical	Facial, oral, pharyngeal, laryngeal, nasal, and ear diseases

Source: Ministry of Health study based on data from NFZ

The average waiting time for services which were provided in the number of 20,000 or more was also analysed. In this group, the treatments of musculoskeletal diseases and facial, oral, pharyngeal, laryngeal, nasal, and ear diseases had the longest waiting time in 2019.

Table 30. The services provided with the number of 20,000 or more with the longest average waiting time for hospitalisation. in 2019 in Poland

Service	Median waiting time [days]	Number of hospitalisations	Category	DRG group
C42 complex rhinoplasty	158	26,099	large surgical	Facial, oral, pharyngeal, laryngeal, nasal, and ear diseases
H15 primary total knee replacement*	124	25,781	other surgical	Musculoskeletal diseases
H14 primary total hip replacement with bone reconstruction, hip replacement with metaphysial shank, hip capoplasty*	106	29,453	other surgical	Musculoskeletal diseases
B19G cataract surgery – category II*	99	324,598	other surgical	Eye diseases
C14 medium oral, pharyngeal, laryngeal and procedures	80	46,795	medium surgical	Facial, oral, pharyngeal, laryngeal, nasal, and ear diseases

Source: Ministry of Health study based on data from NFZ

The longest average waiting time was observed for large nasal procedures (C42) – 158 days, which in 2019 were ranked sixth in longest waiting times in total. Knee and hip replacement (H15, H14) were ranked second and third with an average waiting of 124 and 106 days, respectively. Cataract surgery of category II with an average waiting time of 99 days is also worth mentioning as it was the most commonly performed procedure in 2019.

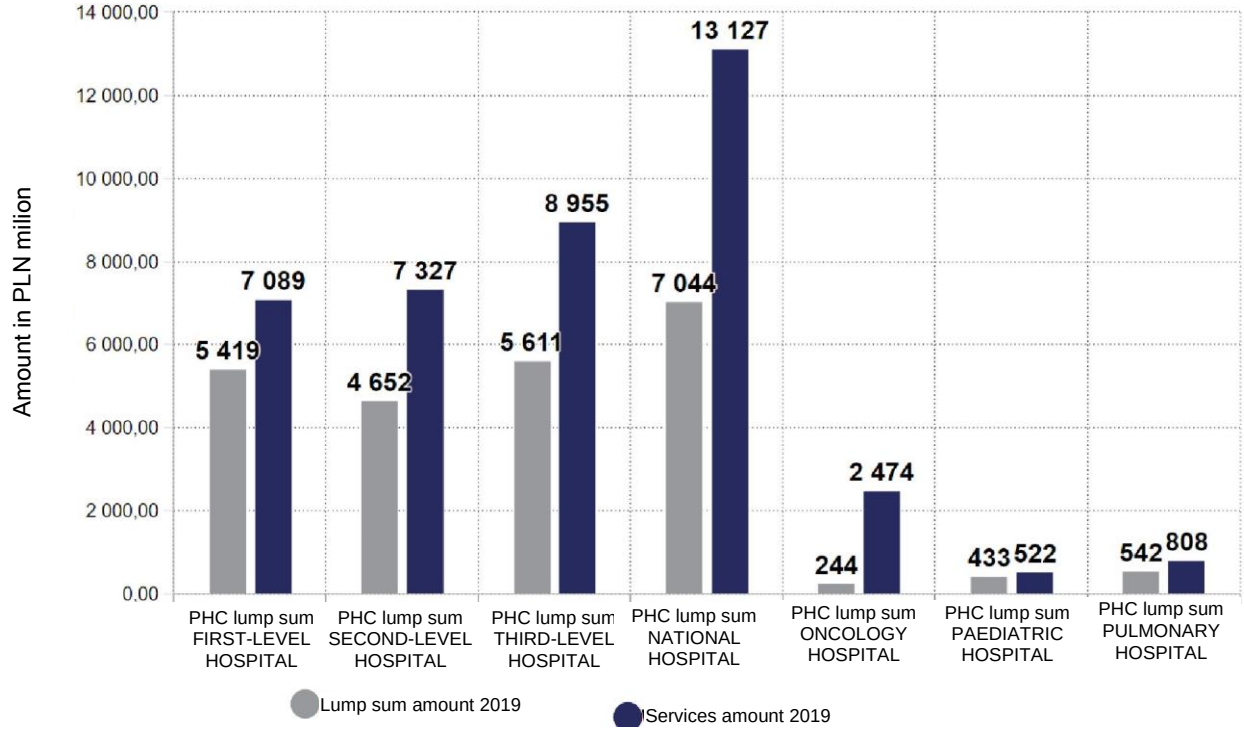
Contracts

Due to the change in the system of funding health care services, new solutions to secure funds in hospitals that were qualified to one of the PHCPS levels were introduced. Contract amounts largely depend on demand and execution of services. They may also be adjusted on the basis of the quality of services provided. The highest contract amounts are due to PHCPS lump sums of national hospitals, followed by first-, second- and third-level hospitals.

There is a 90-day reference period for lump sum contract billing. The lump sum amount is calculated on the basis of the services billed correctly in a prior reference period. The exact formula to determine the lump sum amount is determined in the Regulation of the Minister of Health of 22 September 2017 on determining the lump sum of the primary hospital health care provider system.

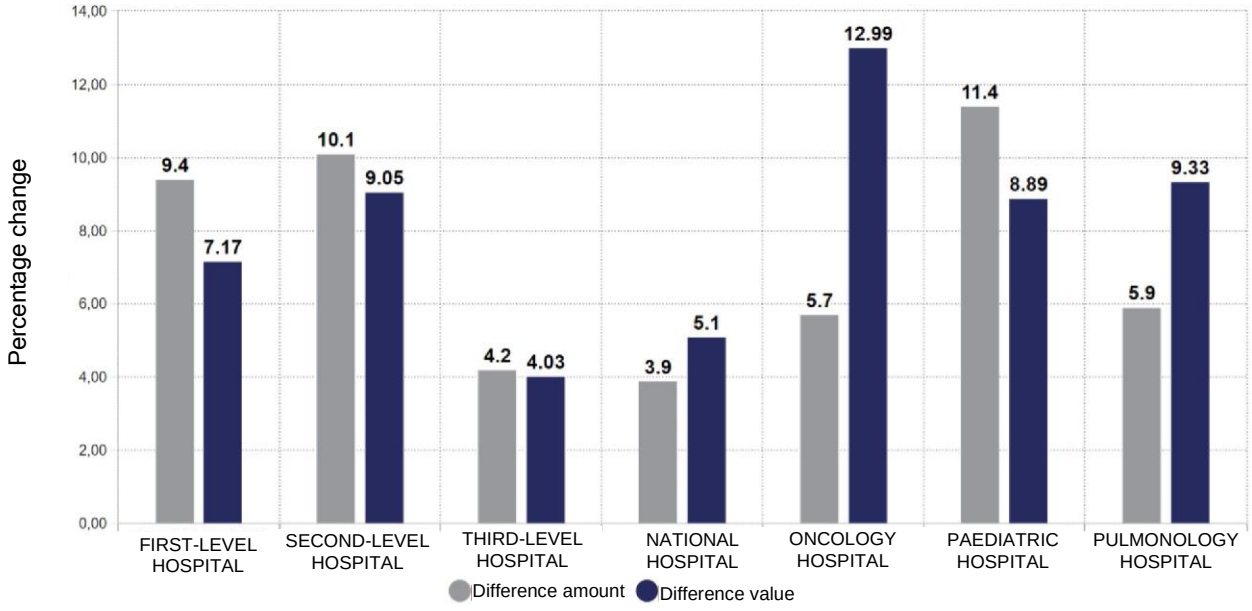
It shows that the contract amounts billed as lump sums may be adjusted and calculated based on the number of services reported, as well as on the projected prices of the products (services).

Figure 98. Contract amounts billed as lump sums in 2019



Source: Ministry of Health study based on data from NFZ

Figure 99. Change in percentage of services values and lump sum amounts in 2019 compared to 2018.



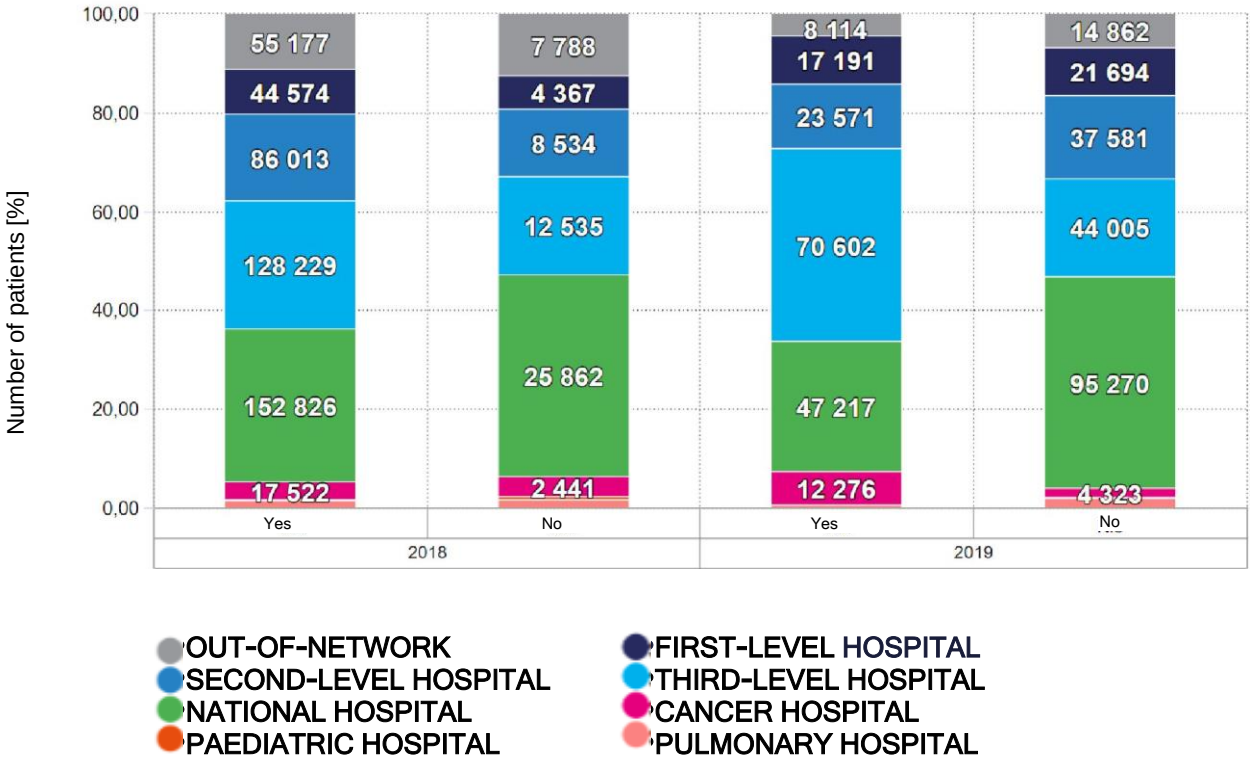
Source: Ministry of Health study based on data from NFZ

In 2019, more than 16,000,000 hospital services were provided in Poland (an increase of 6.7% compared to 2014). The number of services provided as part of hospital treatment has been steadily increasing (by about 200,000 on average per year since 2014), while the number of hospitals with a contract with the NFZ is declining by 1.34% between

2014 and 2019, (from 979 in 2014. to 966 in 2019). However, the number of hospitals in close proximity to the patient's place of residence seems not to be the key, but it is the access to hospitals that provide services that correspond with the needs of a growing number of patients. The number of patients treated within the comprehensive service category in 2019 decreased by about 28% compared to 2018. In contrast, the largest decrease in the number of patients was observed in national hospitals among the patients treated in their district of residence (by 69% in 2019). At the same time, there was an increase in the number of the patients of national hospital commuting for treatment (69,408 more patients). There was a decrease in national hospitals (2,975 fewer patients than in 2018) and paediatric hospitals (1,419 fewer patients than in 2018), while there was an increase in pulmonary hospitals (1,102 more patients than in 2018) and cancer hospitals (538 more patients than in 2018).

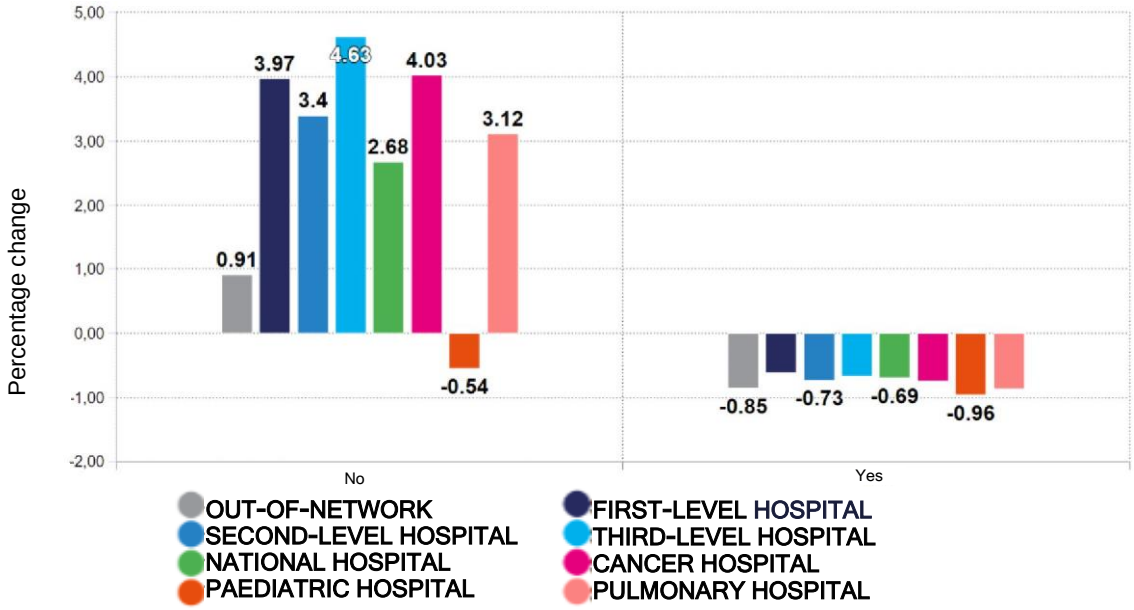
The number of patients treated within the comprehensive service category for 2018-2019 is shown below. The chart shows the number of patients who were treated in the district where they live or has to commute. The results indicate that the number of comprehensive treatments declined in 2019 compared to 2018, with the smallest change in first-level hospitals (11%) and the largest decrease for out-of-network hospitals (40%). Paediatric hospitals, on the other hand, had a 31% increase (but it's worth noting that these hospitals had a small number of patient, i.e. 1,156).

Figure 100. Number of patients receiving comprehensive treatments in the place (district) of residence (Yes) and outside the place (No) of residence in 2018 and 2019"



Source: Ministry of Health study based on data from NFZ

Figure 101. Percentage difference in the number of patients receiving comprehensive treatments at their place of residence (district) (Yes) and commuting (No) in 2019 compared to 2018.



Source: Ministry of Health study based on data from NFZ

6.3. Health service provider analysis

This chapter presents data describing the number of providers who have concluded contracts for hospital treatment. In Poland, almost 9,000,000 patients (23.14% of the population) will benefit from hospital treatment services in 2019. This is 0.92% more compared to 2014. In contrast, the number of hospitals with a contract with the NFZ has changed only slightly - in 2014 there were 979 hospitals that provided services at the same time in a given year, while in 2019 their number reached 966.

Treatment effectiveness for selected health problems

One way to determine treatment effectiveness is to concentrate on the outcome of the hospitalisation in retrospect, the so-called endpoint[80]. It may determine, among other things, whether the patient was rehospitalised, whether the patient died within a certain period of time after hospitalisation, or whether the hospitalisation was longer than the standard one. The occurrence of an endpoint is determined by a variety of factors that can be divided into patient characteristics (age, gender, place of residence), the patient's medical history (comorbidities, or so-called multimorbidity), and the conditions under which the patient was treated.

[80] C. McLeod, R. Norman, E. Litton, B. R. Saville, S. Webb, T. L. Snelling, *Choosing primary endpoints for clinical trials of health care intervention,* Contemp Clin Trials Commun., 2019, 16:100486.

As part of the analyses taking into account the multimorbidity of patients, models were developed for selected health problems. These models, taking into account information on all the groups of factors mentioned above (demographic data of patients, their medical history[81], profiles of health care centres), indicated which characteristics are important from the perspective of the 'endpoint' defined on the basis of the subject literature review and the opinion of a medical expert in the selected field. Three categories of endpoints were identified:

1) prolonged hospitalisation,
2) rehospitalisations within a specified time horizon,
3) death within a specified time horizon after hospitalisation.

The multimorbidity approach makes it possible to distinguish the influence of patients' personal characteristics and other factors independent of the patients' condition. It allows not only to answer the question, which of the patient´s characteristics affect the chances of an endpoint and how but also which other factors impact this phenomenon and in what manner.

The analysis identified differences in the values of percentages of cases completed with the endpoint between individual provinces and Poland. The cumulative impact of patient characteristics (the impact of patient structure) and the impact related to other characteristics influenced by the circumstances of hospitalisation, including hospital conditions, were distinguished. The latter can be identified with the effectiveness of treatment, and it is on the effectiveness of treatment that the analysis focuses. In the following sections, the impact of factors not directly related to the patient will be referred to as the impact of other factors or the impact of treatment effectiveness[82]. It should be borne in mind that this group is a resultant of many elements, not only those directly determining effectiveness (e.g. whether the patient was admitted at the weekend). The analysis covered selected patient characteristics indicated by the literature and medical experts. This implies that the influence of other factors may also entail the influence of patient characteristics not included in the multimorbidity models.

[81] Diagnosis of a selected condition within 365 days prior to hospitalisation related to the health problem under study.

[82] Assessing the impact of patient structure and treatment effectiveness involves comparing the empirical value of endpoint prevalence in the unit (province, hospital), with values standardised by patient structure and treatment effectiveness. Standardisation by structure consists in determining what would be the level of endpoint rates if the structure of patients according to multimorbidity groups was consistent with the national structure, simultaneously blocking the empirical endpoint rates within the group. In contrast, efficiency standardisation is the determination of the overall level of the endpoint by assuming the empirical patient structure of the unit, while adopting the overall rates of endpoint prevalence within these groups.

The analysis of each of the endpoints specified consists of two stages.
Due to the specificity of each problem, the results for the same endpoint may vary significantly. The main objectives of the analysis are:

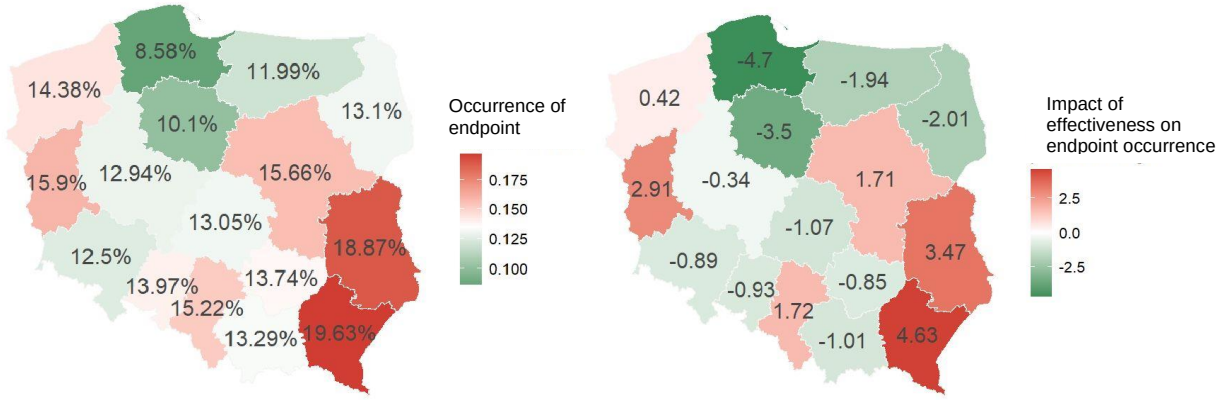
1) to indicate what effect patient structure and other factors (including treatment effectiveness) had on the frequency of the endpoint in each province,

2) to determine the differences of selected characteristics between hospitals in terms of the frequency of endpoints observed there.

Prolonged hospitalisation

An example of a health problem for which it is important to study the rate of prolonged hospital stay includes hospitalisations related to cholecystectomy. The procedure involves the surgical removal of the gallbladder. A prolonged stay for this type of hospitalisation was defined by a medical expert as a stay exceeding 5 days[83]. The highest percentage of prolonged hospitalisations after cholecystectomy was observed in the south-eastern provinces of Poland. It was more than twice as high there as in Pomorskie Province with the lowest percentage of hospitalisations exceeding 5 days.

Figure 102. Spatial distributions of the frequency of prolonged hospitalisation (left side) and the impact of treatment effectiveness on the frequency of prolonged hospitalisation (right side) in 2019.

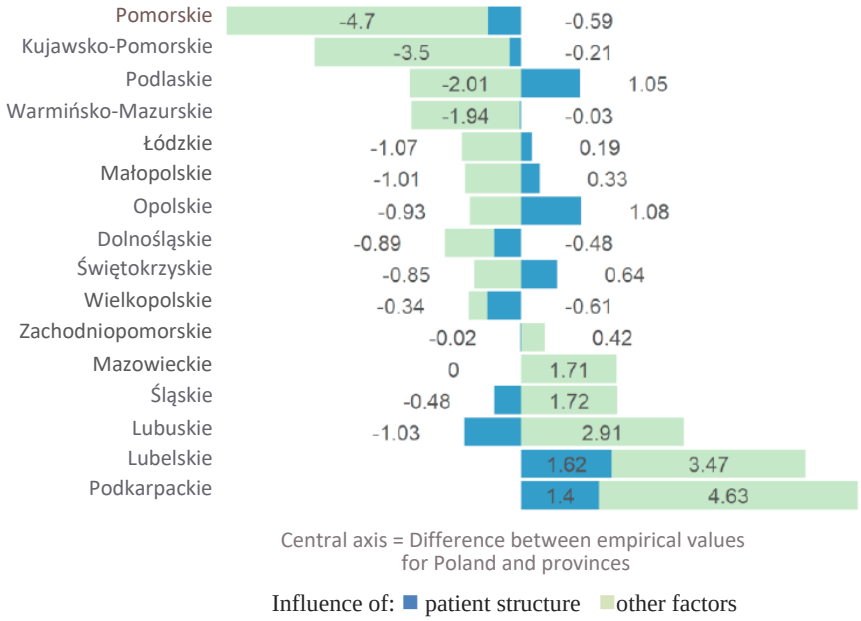


Source: Ministry of Health study based on data from NFZ and GUS

[83] The literature of the subject indicates up to 5 days as the standard period of hospitalisation.
J. Leo, G. Filipovic, J. Krementsova et al., *Open cholecystectomy for all patients in the era of laparoscopic surgery - a prospective cohort study.* BMC Surg 6, 5 (2006).

The influence of two groups of factors - the structure of patients' morbidity and other factors including effectiveness of treatment - on the difference in the observed rates of prolonged hospitalisation in Poland and in each province is presented below.

Figure 103. Influence of patient structure and other factors on the proportion of cholecystectomy-related hospitalisations with prolonged hospitalisation by province



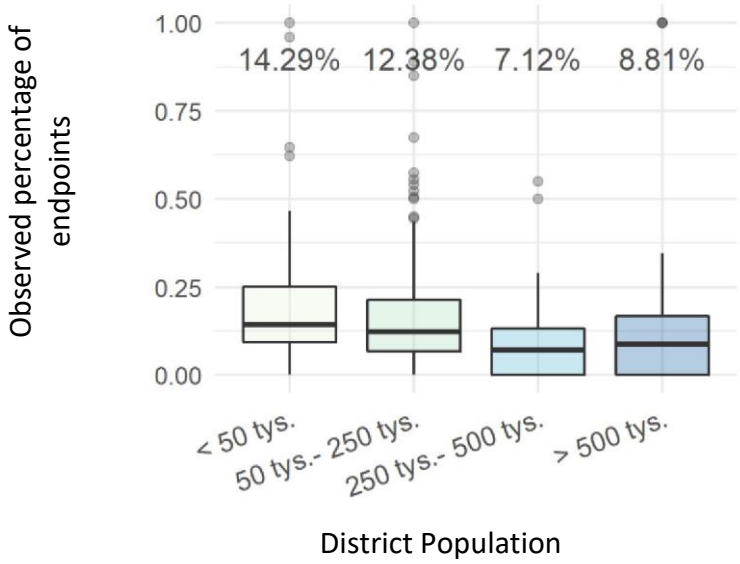
Source: Ministry of Health study based on data from NFZ

In all provinces, except for the Wielkopolskie and Opolskie, other factors including treatment effectiveness were most responsible for the difference in the frequency of prolonged hospitalisation after cholecystectomy. In the Wielkopolskie Province both treatment effectiveness and patient structure had a slightly lower effect on the prevalence of prolonged hospitalisation, although a higher effect was observed in relation to patient structure. The highest effectiveness was observed in Pomorskie Province, where the structure of patients was more favourable than the Polish average. The most unfavourable impact of treatment effectiveness was observed in the Podkarpackie Province, and patients of this province were characterised by higher multimorbidity than the Polish average. The percentage of hospitalisations was the closest to the national value in the Zachodniopomorskie Province.

The size of the district in which the hospital was located had a noticeable effect on the frequency of prolonged stays after cholecystectomy. Prolonged hospitalisations were less frequent in hospitals located in districts with a higher number of population. This is evidenced by the lower value of the median for districts in this group.

Other factors regrouping hospitals, such as the clinicity of the centre, were not statistically significant when considering the probability of prolonged stay.

Figure 104. Distribution of rates of prolonged stays after cholecystectomy-related hospitalisation by the size of hospital district



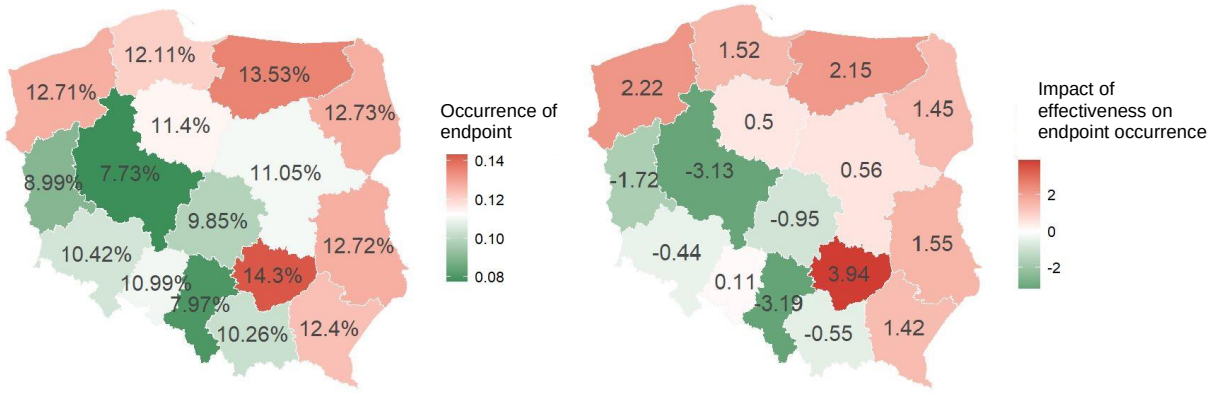
Source: Ministry of Health study based on data from NFZ

Rehospitalisation

When analysing certain health problems, medical experts indicate the relevance of studying the frequency of rehospitalisations. An example of such a problem is asthma, for which the medical expert identified rehospitalisations within 90 days of discharge as an endpoint[84].

[84] The literature of the subject indicates the relevance of studying asthma-related rehospitalisation. C. Ardura-Garcia, M. Stolbrink, S. Zaidi, P. J. Cooper, J. D. Blakey. *Predictors of repeated acute hospital attendance for asthma in children: A systematic review and meta-analysis.* Pediatr Pulmonol., 2018; S. Y. Liu, D. N. Pearlman, *Hospital readmissions for childhood asthma: the role of individual and neighborhood factors.* Public Health

Figure 105. Spatial distributions of rehospitalisation rates (left side) and the effect of treatment effectiveness on the prevalence of asthma-related rehospitalisations (right side) in 2019.

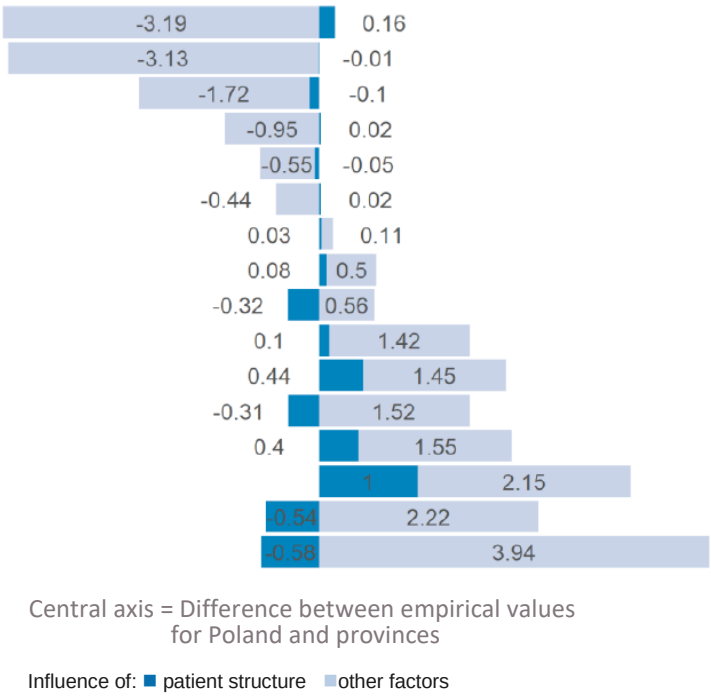


Source: Ministry of Health study based on data from NFZ and GUS

The highest proportion of rehospitalisations related to asthma diagnosis was in the Świętokrzyskie Province and it amounted to 14.3%. At the other extreme, Wielkopolskie and Śląskie provinces were distinguished.

As with the previously discussed endpoint, the difference between the rates of rehospitalisation within 90 days observed in the provinces and in Poland was decisively influenced by treatment effectiveness in all provinces in 2019. The highest treatment effectiveness compared to the estimate for the Republic of Poland was observed in Śląskie and Wielkopolskie provinces. The percentage of hospitalisations was in each of them lower by more than 3 percentage points than in the whole country. Effectiveness of treatment most strongly increased the rate of hospitalisations in relation to the Republic of Poland in the Świętokrzyskie Province. The least significant difference, on the other hand, was observed in the Opolskie Province, where the percentage of hospitalisations was similar to the national value. Both the patient structure and treatment efficiency were comparable there to the national values. The structure of patients was most distinctive in the Warmińsko-Mazurskie Province.

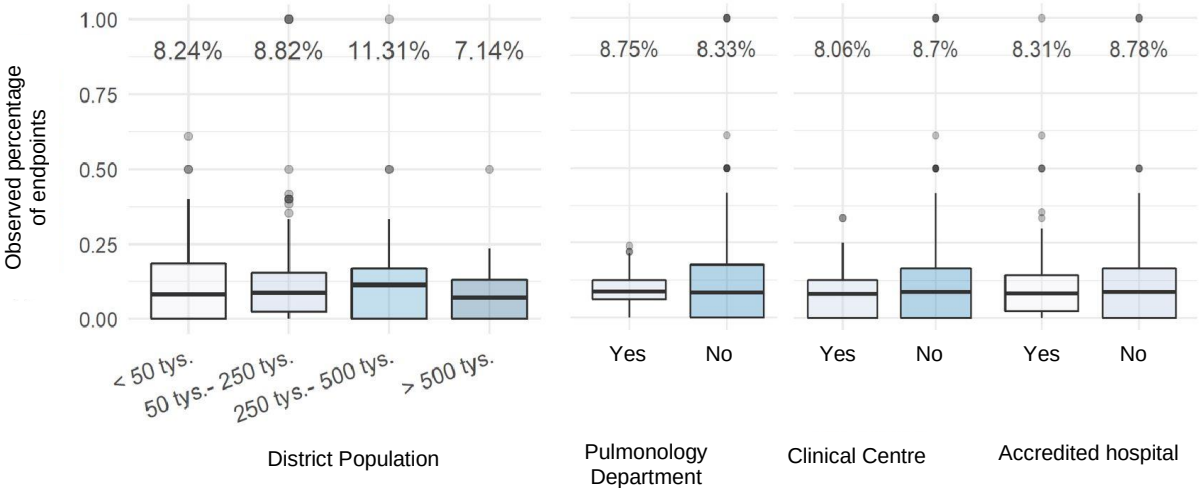
Figure 106. Influence of patient structure and other factors on the percentage of 90-day rehospitalisations related to asthma by province



Source: Ministry of Health study based on data from NFZ

The diversification of rehospitalisation rates in hospitals by district size was low. When assessing the median values in these groups, that is, the values reported by half of the hospitals in each group, it should be noted that in hospitals located in the largest districts, the median was the lowest. The medians in the groups of hospitals with and without a pulmonology ward and of clinical and non-clinical hospitals were also similar. The distributions in these groups differed more markedly. The percentage of rehospitalisations in hospitals with a pulmonology ward was less diversified. Clinical hospitals also recorded slightly lower diversity than non-clinical hospitals. Similar tendencies are noticeable when assessing hospitals in terms of whether they have CMJ accreditation. Hospitals with accreditation had slightly lower median values and were more uniform.

Figure 107. Distributions of the rates of asthma-related rehospitalisations within 90 days of discharge by: the size of the hospital district, pulmonology ward in the hospital, clinical profile of the hospital and possession of CMJ accreditation

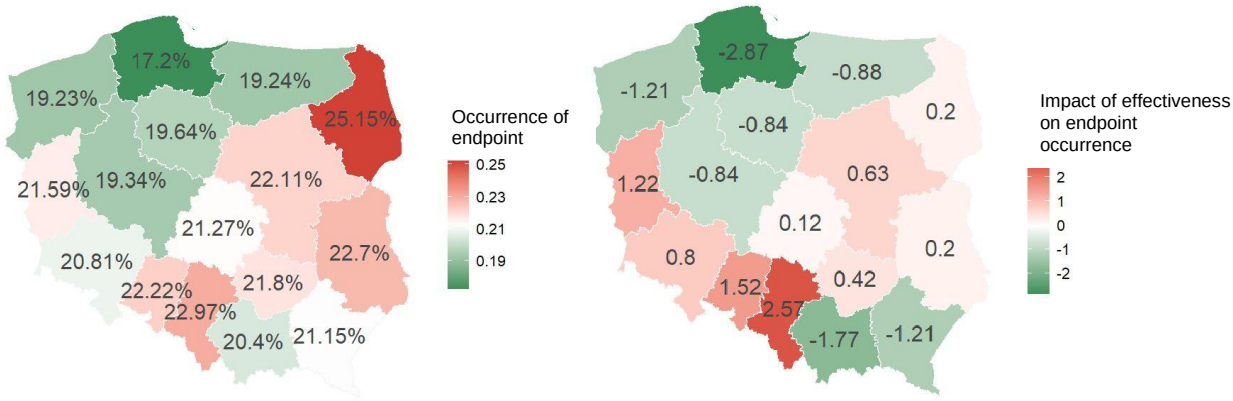


Source: Ministry of Health study based on data from NFZ

Death occurring within a specified period after hospitalisation

An important endpoint, often identified by medical experts, was death occurring within a certain time after hospitalisation. The example provided below refers to stroke-related hospitalisations and deaths occurring within 90 days of hospital admission.

Figure 108. Spatial distributions of 90-day death rates (left side) and the effect of treatment effectiveness on 90-day death rates (right side) for stroke-related hospitalisations in 2019.



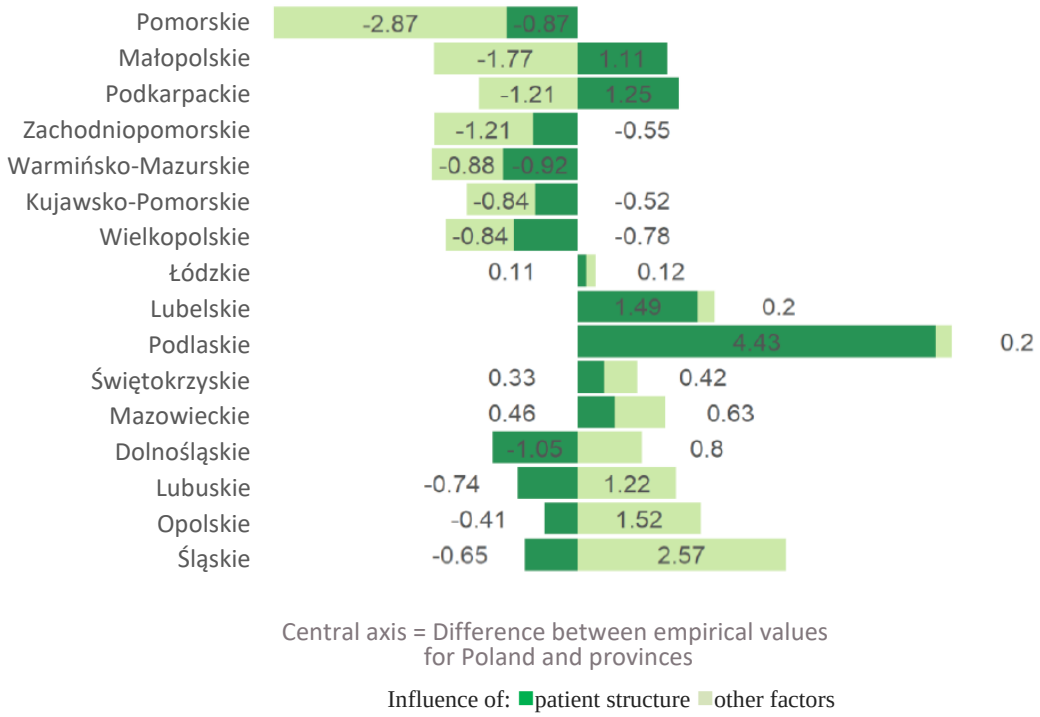
Source: Ministry of Health study based on data from NFZ and GUS

The highest proportion of deaths after stroke-related hospitalisation occurred in the Podlaskie Province. It was more than 8 percentage points higher than in the Pomorskie Province, where the lowest mortality rate was recorded. Deaths occurred

more frequently in the south-eastern provinces. Małopolskie and Podkarpackie provinces constituted exceptions. The effectiveness of treatment reduced the percentage of deaths usually in those provinces where this percentage was one of the lowest in the country, with the exception of the Dolnośląskie Province.

As in the case of the previously discussed endpoints, the difference between the rates of hospitalisations terminating with an endpoint (death within 90 days) observed in the provinces and in the country was also more influenced by the effectiveness of treatment in most provinces. The highest value of the indicator was observed in the Pomorskie Province, where the percentage of deaths was significantly lower than the average value for Poland. The structure of patients also had an effect on reducing the percentage of deaths, but this impact was much smaller than the impact of treatment effectiveness. The worst situation was in the Śląskie Province, for which the effectiveness of treatment increased the death rate by 2.57 percentage points compared to the Polish average, with the structure of patients being more favourable than the national average. Noticeably less favourable structure of patients was noted in two provinces - Lubelskie and Podlaskie.

Figure 109. Impact of patient structure and other factors on the mortality rate within 90 days after initiation of stroke-related hospitalisation by province

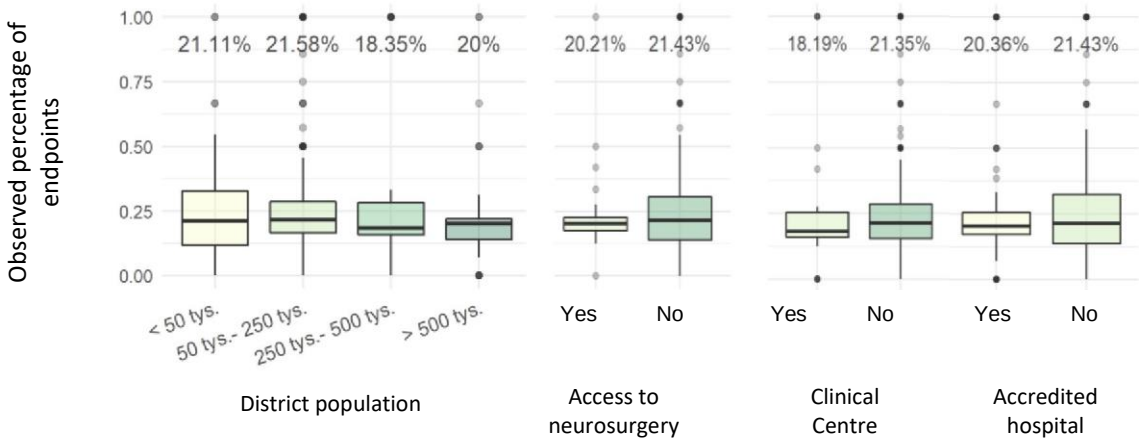


Source: Ministry of Health study based on data from NFZ

When considering the percentage of deaths within 90 days of admission after stroke-related hospitalisation, it is noticeable that the median values for hospitals by district size did not differ markedly. Slightly lower median percentages of deaths were observed in hospitals of districts with populations above 250,000 of the population. However, it is clearly visible that

in districts with a larger population (over 50,000) were characterised by lower diversification of mortality rates. Hospitals in larger districts are more uniform with respect to the percentage of 90-day deaths. Noticeably lower diversification in the percentage of deaths was characteristic of hospitals that had access to neurosurgery. The median death rate was lower in these hospitals compared to hospitals without access to neurosurgery. This means that half of these hospitals reported a lower post-hospitalisation death rate than half of the hospitals without access to neurosurgery. Slightly lower median values characterised clinical hospitals compared with non-clinical hospitals. Hospitals with this profile were at the same time less diversified between each other. Hospitals with CMJ accreditation presented higher uniformity and slightly lower percentage of deaths as well.

Figure 110. Distributions of 90-day mortality rates following stroke-related hospitalisation by district size of hospital, access to neurosurgery, clinical profile of hospital and possession of CMJ accreditation



Source: Ministry of Health study based on data from NFZ

For all endpoint types examined, the structure had less influence than other factors, including treatment effectiveness, on how a province differed compared to Poland in terms of endpoint occurrence. This means that regardless of the endpoint considered, factors largely related to treatment effectiveness are responsible for how the occurrence of the endpoint in each province differed from that of the entire country.

The evaluation of treatment effectiveness in provinces is not a uniform measure. Significant differences are observed between regional results for different endpoints. However, the characteristics of the selected health problems have the greatest impact. This means that a selected province, when considering two different health problems and endpoints, may have a high positive impact of treatment effectiveness for one problem and a low treatment effectiveness for the other.

Factors such as the number of inhabitants of the district where the hospitals are located, the clinical profile of the hospitals, access to selected technologies and availability of specific wards exhibited varied effects for the endpoints and health problems considered. Most commonly, hospitals in larger districts, clinical hospitals and hospitals with either wards relevant to the health problem or with access to selected treatment technologies presented lower diversification and a slightly lower median rate of endpoints.

The groups of CMJ-accredited hospitals presented more stable endpoints occurrence for asthma and stroke. The rate of endpoints was also slightly lower.

6.4. Beds and bed occupancy rate

Data on the number of hospital beds and wards are the fundamental indicators on the basis of which it is possible to assess the effectiveness of the activities of individual health care institutions.

The occupancy rate is an essential piece of information directly related to the number of hospital beds. This indicator allows to assess what is the average use of beds on a given ward. According to the studies, an effective occupancy rate would be 80%, which indicates high utilisation of available beds, while keeping some beds vacant in anticipation of new hospital admissions. In the analyses presented in this chapter, a range of 75% to 85% was considered.

The analysis of the number of beds and their occupancy rate may be an important element when taking decisions on optimising the distribution of wards in Poland.

International comparison

According to OECD data from 2018, the Republic of Poland is characterised by a high number of beds per 1,000 people[85]. It amounts to 6.5 beds, which is the fifth highest rate in the EU. The number of hospital beds per 100,000 population for EU countries decreased year by year between 2007 and 2018, while the number of hospital beds per 100,000 population for the Republic of Poland did not show a strong decreasing trend.

The table below summarises the number of beds per 100,000 population in 2018 and presents the change in the number of beds per 100,000 population between 2007 and 2018. in selected European countries.

[85] OECD (2020), *Hospital beds (indicator)*. DOI: 10.1787/0191328e-en, [accessed 09.06.2020]

Table 31. Number of beds per 100,000 population and percentage change between 2007 and 2018.

Country	Number of beds per 100,000 population in 2018*	% change in number of beds per 100,000 population between 2018 and 2007*.
Germany	800.23	-2.87%
Bulgaria	756.91	17.15%
Austria	727.16	-6.20%
Hungary	701.29	-2.41%
Romania	696.83	6.57%
Czech Republic	661.82	-9.72%
Poland	653.69	1.76%
Lithuania	643.40	-10.51%
France	590.85	-16.31%
Slovakia	569.62	-16.01%
Belgium	562.24	-10.28%
Croatia	561.25	-0.60%
Latvia	549.35	-29.86%
Estonia	456.35	-16.56%
Luxembourg	450.70	-20.49%
Slovenia	442.79	-5.44%
Malta	430.84	-45.10%
Greece	419.77	-13.94%
Finland	361.18	-46.36%
Portugal	344.51	0.28%
Cyprus	330.09	-13.16%

The Netherlands	316.55	-27.06%
Italy	314.05	-19.61%
Ireland	297.39	-41.65%
Spain	297.15	-8.48%
Denmark	242.97	-34.18%
Sweden	213.79	-25.34%

Data concerning Germany is from 2017 while the percentage change presented occurred between 2007 and 2017

Source: Ministry of Health study based on Eurostat data code: TPS00046

What may be observed is that Poland is one of the countries with the highest bed density coefficient. Moreover, Poland is one of the 4 countries (alongside with Bulgaria, Romania and Portugal) where the bed density in 2018 was higher than in 2007.

Basic statistics

The present chapter outlines the basic statistics on the number of hospital beds in Poland. It also includes data on the number of intensive care beds and the number of incubators, according to provinces.

The table below summarises the number of beds expressed in absolute values and calculated per 100,000 population in each province (the number of beds was calculated as the average number of beds during the year, taking into account the fact that an institution may have suspended, initiated or terminated its operation within the year). The data were elaborated on the basis of REPMA for 2019 and present statistics for total hospital beds, taking into account only hospital wards and other units of hospital care (all data presented refer to all wards listed in section ''4. Hospital wards and other units of hospital care" from Appendix 2 of the Notice of the Minister of Health of 9 January 2019)[86].

It can be noted that the density of beds in provinces is at a similar level - the province with the lowest density (Małopolskie) deviates by 59 beds from the average (which is approximately 11%), while the province with the highest density of hospital beds (Śląskie) exceeds the national average by 54 (which is about 10%). In addition, there is significant diversification of the average occupancy rate in particular provinces - the highest was recorded in the Świętokrzyskie Province, while the lowest in the Podlaskie Province.

[86] Notice of the Minister of Health of 9 January 2019 on the declaration of the consolidated text of the Regulation of the Minister of Health on the system of departmental identification codes and the detailed manner of assigning them.

Table 32. Number of beds expressed in absolute values and per 100,000 population by provinces

Province	Number of beds	Number of beds per 100,000 population	Number of wards	Number of beds per ward	Average occupancy
Dolnośląskie	15,721	542.07	823	19.10	82.25%
Kujawsko-Pomorskie	10,538	508.50	534	19.73	71.74%
Lubelskie	11,648	552.49	544	21.41	85.29%
Lubuskie	5,399	533.71	250	21.60	77.37%
Łódzkie	13,713	558.62	692	19.82	71.71%
Małopolskie	16,168	474.01	752	21.50	102.14%
Mazowieckie	29,167	537.82	1,619	18.02	88.24%
Opolskie	5,190	528.18	248	20.93	91.98%
Podkarpackie	10,788	507.15	513	21.03	84.34%
Podlaskie	6,377	541.18	314	20.31	69.39%
Pomorskie	12,114	516.82	586	20.67	75.23%
Śląskie	26,555	587.81	1,292	20.55	79.20%
Świętokrzyskie	6,938	562.25	313	22.17	106.56%
Warmińsko-Mazurskie	7,198	505.93	381	18.89	78.04%
Wielkopolskie	17,686	505.50	865	20.45	81.57%
Zachodnio-pomorskie	9,395	553.89	468	20.07	76.98%
Poland	**204,595**	**533.04**	**10,194**	**20.07**	**82.63%**

Source: Ministry of Health study based on data from REPMA for 2019

Table 33. Number of beds expressed in absolute values and percentage of beds per PHC level

PHCPS level	Number of beds	% share of beds
National hospital	33,423	16%
Third-level hospital	31,684	16%
First-level hospital	45,970	23%
Second-level hospital	32,860	16%
Cancer hospital	3,898	2%
Out-of-network	47,845	23%
Pulmonary hospital	6,048	3%
Paediatric hospital	2,867	1%
Total amount	**204,595**	**100%**

Source: Ministry of Health study based on data from REPMA for 2019

Another important aspect when analysing hospital beds includes intensive care beds. These are beds compliant with certain requirements specified in the Regulation of the Minister of Health of 15 September 2011 amending the Regulation on the guaranteed services in the scope of hospital treatment, which were differentiated from specialist ward beds as beds intended for patients requiring increased medical supervision and who do not meet the medical criteria for admission to the Anaesthesiology and Intensive Care Ward[87].

Due to the changing age structure of the population and increasing prevalence of multimorbidity, the need for intensive care beds will increase in the future[88].

[87] http://prawo.sejm.gov.p1/isap.nsf/download.xsp/WDU20112021191/O/D20111191.pdf, [accessed 09.06.2020]

[88] A. Rhodes, P. Ferdinande, H. Flaatten et al., *The variability of critical care bed numbers in Europe* , DOI: 10.1007/s00134-012-2627-8, 2012, https://pubmed.ncbi.nlm.nih.gov/22777516/, [accessed 09.06.2020]

Table 34. Number of intensive care beds expressed in absolute values and per 100,000 population by provinces

Province	Number of beds	Number of beds per 100,000 population
Dolnośląskie	703	24.24
Kujawsko-Pomorskie	551	26.59
Lubelskie	554	26.28
Lubuskie	250	24.71
Łódzkie	678	27.62
Małopolskie	577	16.92
Mazowieckie	1,708	31.49
Opolskie	270	27.48
Podkarpackie	597	28.07
Podlaskie	264	22.40
Pomorskie	618	26.37
Śląskie	1,140	25.23
Świętokrzyskie	259	20.99
Warmińsko-Mazurskie	239	16.80
Wielkopolskie	875	25.01
Zachodniopomorskie	627	36.96
Poland	**9,910**	**25.82**

Source: Ministry of Health study based on data from REPMA for 2019

As regards the density of intensive care beds it can be observed that the differences are more significant than in the case of total hospital beds. The province with the lowest rate of intensive care beds per 100,000 population (Warmińsko-Mazurskie) has less than 46% of the intensive care beds per 100,000 population, which are available in the province with the highest rate (Zachodniopomorskie).

Incubators represent another important element of the hospital infrastructure. According to the WHO guidelines, they are one of the basic tools in the care of premature babies[89].

Table 35. Number of incubators expressed in absolute values and per 100,000 population by provinces

Province	Number of incubators	Number of incubators per 100,000 population
Dolnośląskie	158	5.34
Kujawsko-Pomorskie	105	5.02
Lubelskie	141	6.69
Lubuskie	60	5.93
Łódzkie	194	7.90
Małopolskie	165	4.84
Mazowieckie	354	6.53
Opolskie	56	5.70
Podkarpackie	151	7.10
Podlaskie	70	5.94
Pomorskie	123	5.25
Śląskie	302	6.68
Świętokrzyskie	60	4.86
Warmińsko-Mazurskie	85	5.97
Wielkopolskie	235	6.72
Zachodniopomorskie	146	8.19
Poland	**2,394**	**6.27**

Source: Ministry of Health study based on data from REPMA for 2019

[89] https://www.who.int/docs/default-source/reproductive-health/stillbirth/who-mca-17-07-eng.pdf?sfvrsn=bf769add 2, [accessed 09.06.2020]

A diversification between provinces can also be observed with regard to the density of incubators. The lowest rate of the number of incubators per 100,000 population was registered in the Małopolskie Province (4.84), while the highest in the Zachodniopomorskie Province (8.19). The difference between these two provinces is almost twofold.

Table 36. Number of beds for 10 wards with the highest number of beds, together with the percentage share in the total number of beds and the cumulative share

Ward	Number of beds	% share	% cumulative share	Average occupancy
Internal Medicine Ward	20,602	10%	10%	76%
Obstetrics and Gynaecology Ward	13,873	7%	17%	58%
General Surgery Ward	13,636	7%	24%	65%
General Psychiatric Ward	12,971	6%	30%	91%
Rehabilitation Ward	12,914	6%	36%	84%
Trauma and Orthopedic Surgery Ward	8,849	4%	40%	63%
Neonatology Ward	8,273	4%	44%	56%
Paediatric Ward	7,357	4%	48%	49%
Cardiology Ward	7,348	4%	52%	80%
Neurology Ward	4,846	2%	54%	124%

Source: Ministry of Health study based on data from REPMA for 2019

It is noticeable that the 10 wards with the highest number of beds account for more than 50% of the total number of beds in the country. There is a considerable diversification in occupancy rates for individual wards.

The analysis of the occupancy rate indicates that for some wards it exceeds the range of 75%-85%. These wards can be divided into two groups:

- below the given range: Internal Medicine Ward, Obstetrics and Gynaecology Ward, General Surgery Ward, Trauma and Orthopedic Surgery Ward, Neonatology Ward and Paediatric Ward;

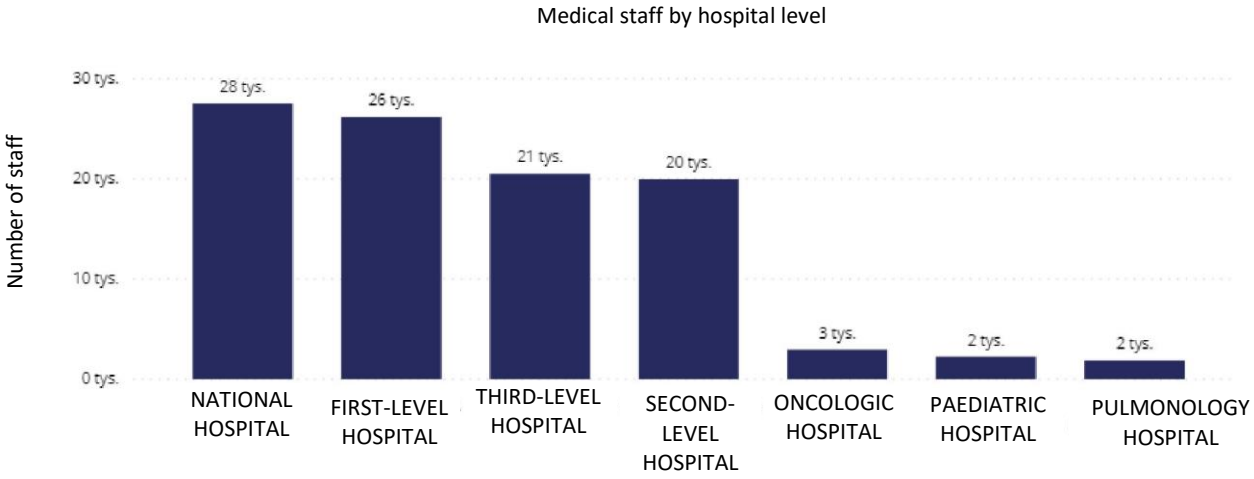
- above the given range: general psychiatric ward and neurology ward. It should be borne in mind that when assessing the efficiency of a particular ward on the basis of information on beds and occupancy rates, the specific nature of treatment provided on the ward should be taken into account as well as other factors which may affect the current situation

6.5. Medical staff

There are 76,600 medical practitioners employed in health care units with a contract concluded with the NFZ, who provide services in the scope of hospital treatment. This group of medical practitioners was most often employed in an admission room (15,900), emergency department (14,500) or an internal medicine ward (9,200).

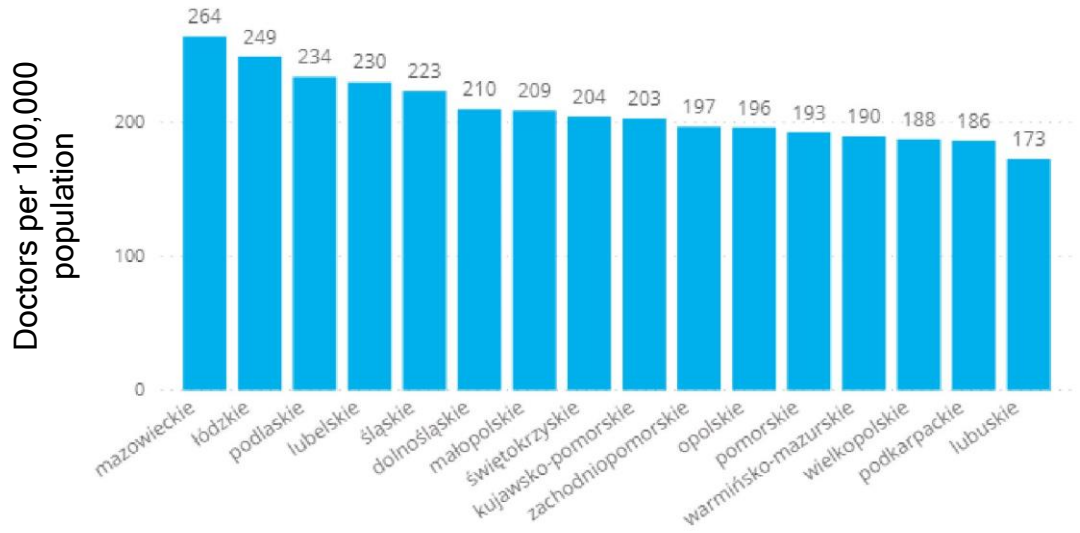
The hospital network employs 78,500 medical practitioners worked in long-term home-based care teams. Most of them work in national hospitals (27,500) and first-level hospitals (26,200). The number of medical practitioners employed in health care units that are under contract with the NFZ for hospital treatment varies regionally. Calculated per 100,000 people, the lowest number of medical practitioners is employed in the Lubuskie Province (173) and the highest number in the Mazowieckie Province (264) - more by 53%.

Figure 111. Number of medical practitioners according to the hospital network level



Source: Ministry of Health study based on data from NFZ

Figure 112. Number of medical practitioners employed in the scope of hospital treatment within the NFZ, by provinces



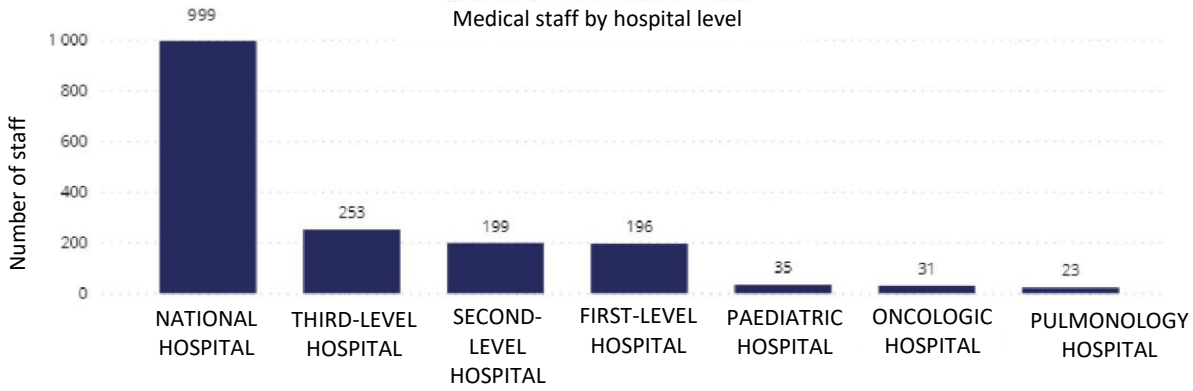
Source: Ministry of Health study based on data from NFZ

There are 786 dental practitioners employed in health care units, under contract with the NFZ, and providing services in hospital treatment. Most frequently they work at Maxillofacial Surgery Wards (490 dentists).

The number of dentists employed in hospital networks is higher than the number of dentists employed in the scope of hospital treatment, and amounts to 1,570. The highest number of dentists work in national hospitals (999).

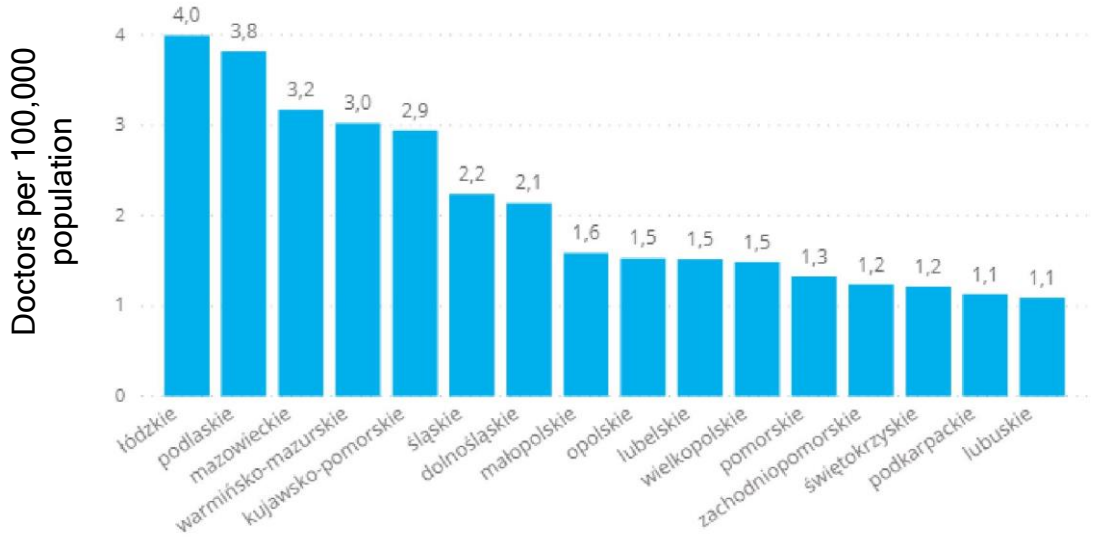
The number of dentists employed in health care units, under contract with the NFZ with regard to hospital treatment, is highly varied regionally. The value per 100,000 population in the scope of hospital treatment in the NFZ is the lowest in the Lubuskie and Podkarpackie provinces (1.1) and the highest in the Łódzkie Province (4.0) - more by 264%.

Figure 113. Number of dentists according to the hospital network level



Source: Ministry of Health study based on data from NFZ

Figure 114. Number of dentists employed in the scope of hospital treatment in the NFZ, by provinces



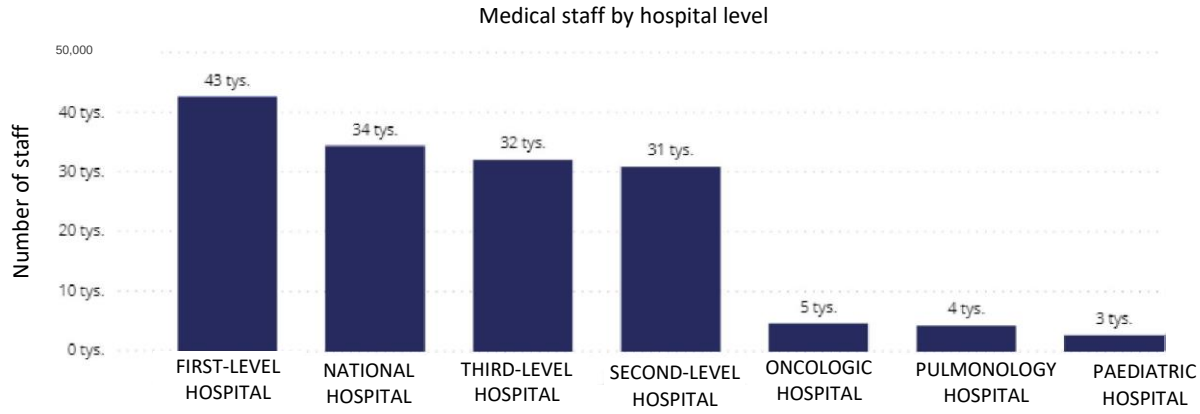
Source: Ministry of Health study based on data from NFZ

Nurses are the largest analysed group of the medical staff. There are 131,000 nurses employed in health care units with contracts with the NFZ. They provide hospital treatment services and they are most often employed on the following wards: internal medicine (15,800), anesthesiology and intensive care (15,500) and general surgery (14,000).

The hospital network employs 137,000 nurses. Most of them (42,600) work in first-level hospitals, which are usually district hospitals. The number of nurses in national hospitals and first- and second-level hospitals is similar, i.e. 30,000-34,000.

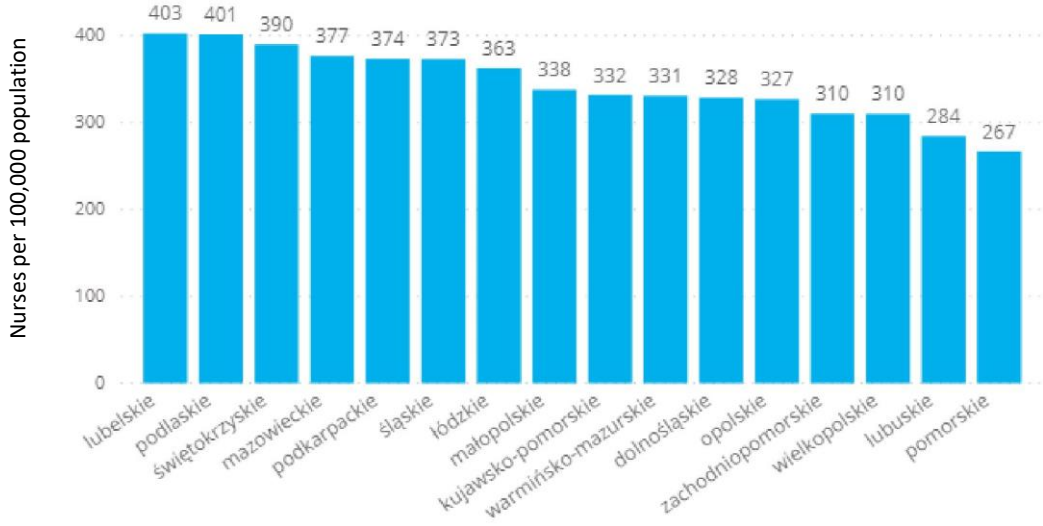
Significantly higher ratio of the number of nurses per 100,000 population is observed in eastern provinces. The smallest number of nurses employed in health care units with contracts with the NFZ is observed in the Pomorskie Province (267), while the largest number in the Lubelskie Province (403) – an increase of 51%.

Figure 115. Number of nurses according to the hospital network level



Source: Ministry of Health study based on data from NFZ

Figure 116. Number of nurses employed for hospital treatment within the NFZ by provinces



Source: Ministry of Health study based on data from NFZ

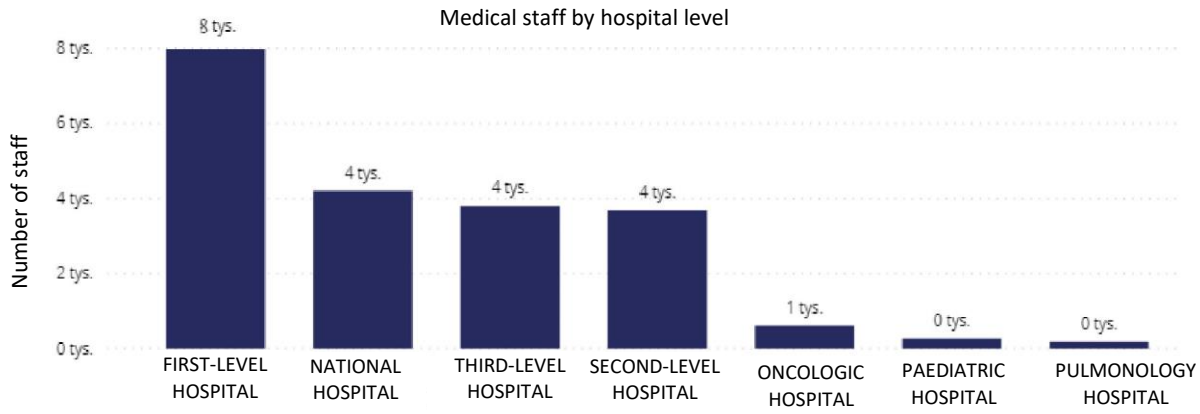
The number of midwives who work within the NFZ is 18,800. The highest number was seen on obstetrics and gynaecology (13,200) and neonatology (3,800) wards.

The hospital network employs 19,000 midwives. Most midwives (almost 8,000) work in first-level hospitals, which are mostly district hospitals, and significantly less of them (4,200) work in national hospitals, which are the highest level of the hospital network.

As in other health professions, there is also wide regional diversification in the number of midwives per 100,000 population in hospital treatment within the NFZ The smallest number of midwives per 100,000 population is in the Pomorskie Province (40), and the highest

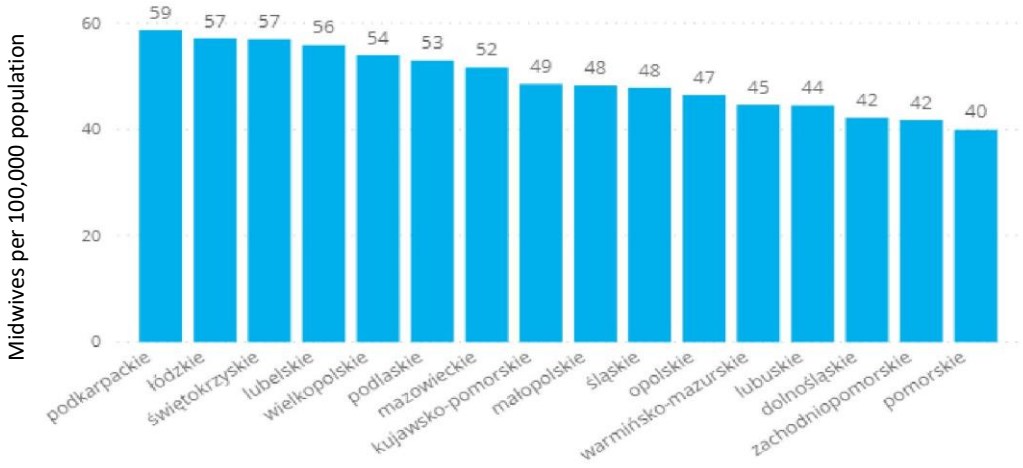
in the Podkarpackie Province (59) – by 47% more. However, the difference is less than in the case of nurses.

Figure 117. Number of midwives by PHC levels



Source: Ministry of Health study based on data from NFZ

Figure 118. Number of midwives employed for hospital treatment within the NFZ by provinces



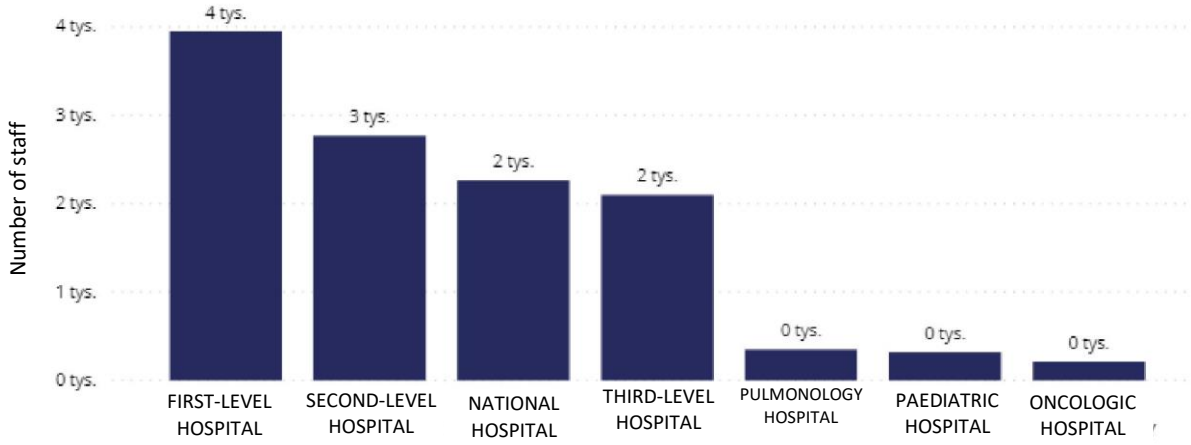
Source: Ministry of Health study based on data from NFZ

The number of physiotherapists who work within the NFZ is 8,200. They were most often employed in a day rehabilitation facility/centre (2,200), a rehabilitation ward (2,000) and in a neurological rehabilitation ward (1,400).

The hospital network employs 11,700 physiotherapists. Many of them work in first-level hospitals (3,900), significantly less in second-level hospitals (2,800), national and third-level hospitals (2,300 and 2,100, respectively).
The number of physiotherapists employed in health care units and for hospital treatment within the NFZ differs regionally.

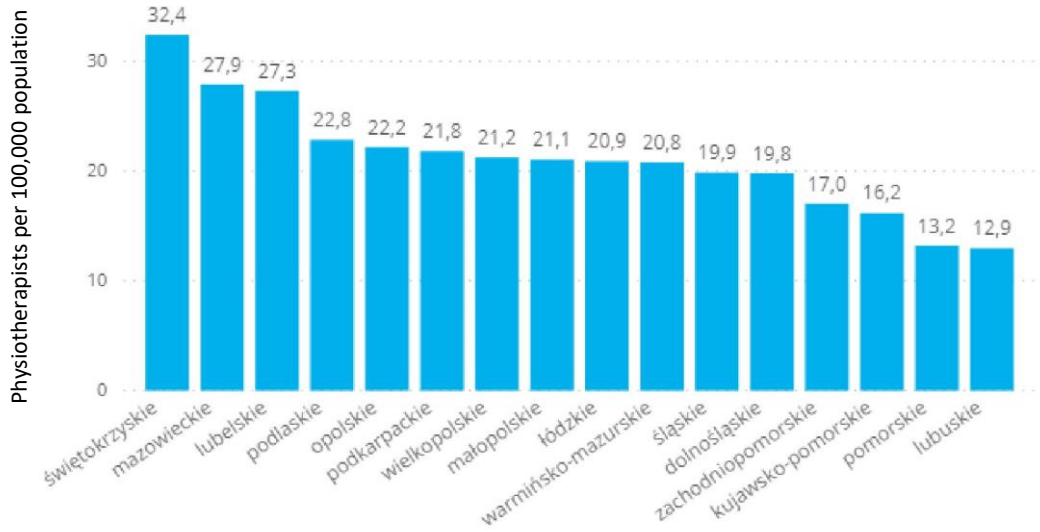
The least physiotherapists per 100,000 population is observed in the Lubuskie Province (12.9) and the largest in the Świętokrzyskie Province (32.4) – an increase of 151%.

Figure 119. Number of physiotherapists in the hospital network



Source: Ministry of Health study based on data from NFZ

Figure 120. Number of physiotherapists employed for hospital treatment within the NFZ by provinces



Source: Ministry of Health study based on data from NFZ

Hospital treatment plays a significant role in the employment of medical staff. The data show strong regional diversification with respect to the number of medical staff of each profession within the NFZ. Such inequities can be dangerous to the health of Poles.

6.6. Drug programmes

Drug programmes are health programmes as defined in Art. 5 par. 30 of the Act of 27 August 2004 on health care services financed from public funds[90]. They are health programmes that include a drug technology in which the active substance for a given indication and population is not a cost component of other guaranteed services or a foodstuff for particular uses that is not a cost component of other guaranteed benefits within the meaning of Art. 5 par. 1 of the Act. On the one hand, they generate high treatment costs, but on the other hand, they are the only possibility of access to innovative therapies for patients suffering from specific disease groups (included in the annexes describing the scope of each drug programme).

According to the diagnoses, drug programmes were divided into oncological and non-oncological.

In 2019, 178 drug programmes were implemented in the following disease groups (according to the GBD classification):

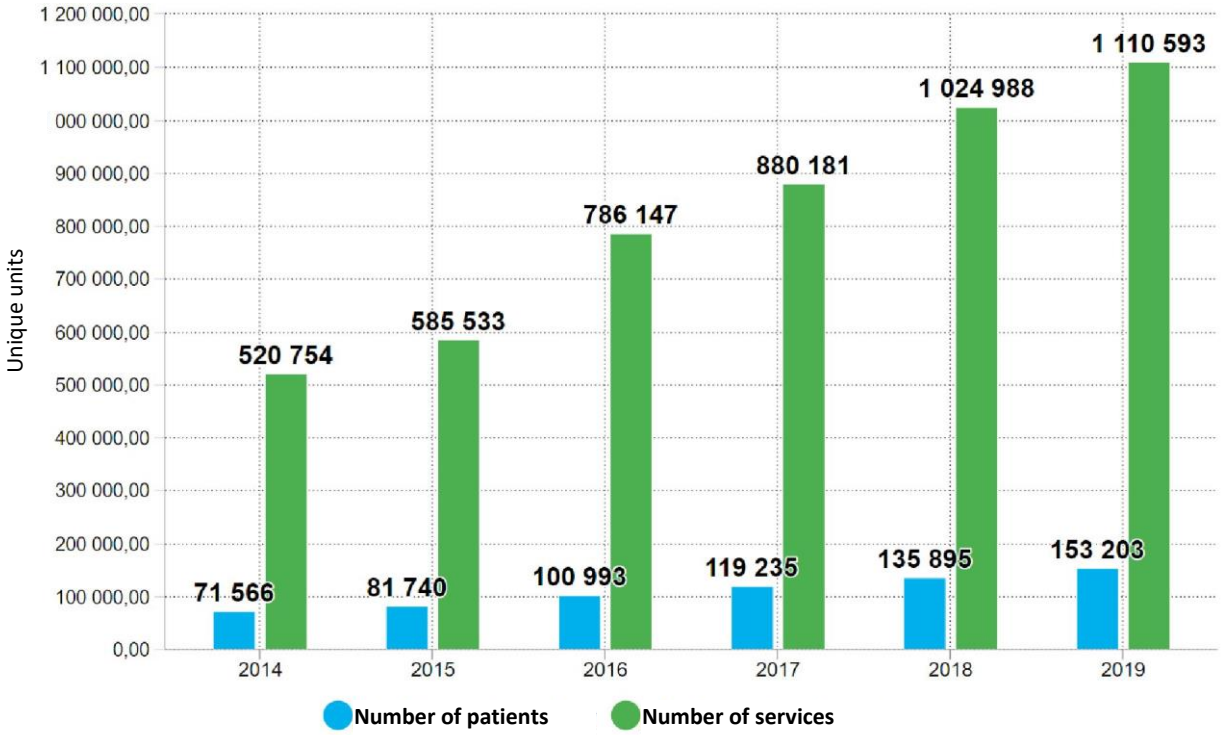
1) oncological
    - malignant neoplasm of the gallbladder and bile ducts, malignant neoplasm of the uterine cervix, malignant neoplasm of bone, mesothelioma, neuroblastoma and other neoplasms of the peripheral nervous system, Hodgkin lymphoma, malignant neoplasm of the oral cavity and lip, non-melanoma skin cancer, malignant neoplasm of the oesophagus, malignant neoplasm of the nasopharyngeal cavity, malignant neoplasm of the uterus, soft tissue sarcomas and other extracapsular sarcomas, melanoma of the skin, malignant neoplasm of the kidney, malignant neoplasm of the colon and rectum, malignant neoplasm of the trachea, bronchi and lungs, malignant neoplasm of the breast, multiple myeloma, malignant neoplasm of the stomach, malignant neoplasm of the liver, malignant neoplasm of the nasopharynx, malignant neoplasm of the pancreas, malignant neoplasm of the ovary, malignant neoplasm of the brain and central nervous system, non-Hodgkin lymphoma, malignant neoplasm of the prostate gland, other malignant neoplasms, other tumours.
2) non-oncological
    - Endocrine diseases, metabolic, blood and immune system diseases, diabetes, protein-calorie malnutrition, dietary iron deficiency, other nutritional deficiencies;

[90] Act of 12 May 2011 on the reimbursement of drugs, foodstuffs intended for particular nutritional uses and medical devices, (art. 2 point 18).

- ischaemic heart disease, endocarditis, peripheral artery disease, atrial fibrillation and flutter, other cardiovascular and cardiovascular diseases;
- stroke, multiple sclerosis, Parkinson's disease, Alzheimer's disease and other dementia diseases, motor neuron disease, epilepsy, encephalitis, headache syndromes, other nervous system diseases;
- diseases of the urinary tract and male infertility
- neonatal conditions;
- asthma, lower and upper respiratory tract infections, chronic obstructive pulmonary disease, interstitial pulmonary disease and sarcoidosis, other chronic respiratory diseases;
- psoriasis, urticaria, dermatitis, other skin and subcutaneous tissue infections;
- congenital birth defects, idiopathic intellectual disability;
– inflammatory bowel disease, diarrheal diseases, gastritis and duodenitis, pancreatitis, paralytic obstruction and intestinal obstruction, gallbladder and bile duct diseases, gastroesophageal reflux, acute hepatitis, cirrhosis and other chronic liver diseases, other digestive diseases;
– rheumatoid arthritis, cardiac rheumatic disease, other musculoskeletal diseases, osteoarthritis
– cervical spine pain, lower back pain;
– acute glomerulonephritis, chronic kidney disease;
– haemoglobinopathies and haemolytic anaemias;
– bipolar disorder, alcohol use disorder, other psychiatric disorders;
– HIV/AIDS, chickenpox and shingles, other untreated tropical diseases, sexually transmitted diseases excluding HIV, other infectious diseases;
– oral disorders
– otitis media.

The number of services under drug programmes is steadily increasing. In 2014, there were 520,000 services, while in 2019 as many as 1,011,000 of them (increase by 112%).

Figure 121. Annual change in the number of services and hospitalisations under the "DRUG PROGRAMMES" or "DRUGS IN DRUG PROGRAMMES" from 2014 to 2019



Source: Ministry of Health study based on data from NFZ

Most services were provided for patients under drug programmes with the following diseases: multiple sclerosis, acute hepatitis, malignant neoplasm of breast, rheumatoid arthritis, endocrine diseases, metabolic, blood and immune system diseases, other musculoskeletal diseases, other nervous system diseases, malignant neoplasm of the colon and rectum, malignant neoplasm of the kidney and psoriasis.

The largest number of drug programme services for the 10 most common diseases was observed at national hospitals and third-level hospitals, and the smallest at paediatric hospitals.

In 2019, 6 new drug programmes were introduced, but only one of them was implemented[91]:

3) Drug programme – treatment of spinal muscular atrophy;
4) Drug programme – treatment of patients with advanced Basal-cell carcinoma with vismodegib;

[91] Once a drug programme is implemented to the reimbursement lists, it is contracted by the payer. Subsequently, once the contracts are signed, the implementation of the programme begins.

5) Drug programme – preoperative treatment of breast cancer with pertuzumab and trastuzumab

6) Drug programme - treatment of Fabry disease;

7) Drug programme – treatment of patients with chronic lymphocytic leukaemia with venetoclax or venetoclax with rituximab;

8) Drug programme – treatment of uveitis – intermediate uveitis, posterior uveitis or entire uveitis.

86 patients were hospitalised under the drug programme, 74% of whom were treated in the province of their residence.

Table 37. Number of patients treated in and outside the place (province) of residence

	Second-level	Third-level	National	Cancer	Pulmonary	In total
In the place of residence	1	4	50	8	1	64
Dolnośląskie	0	0	0	1	0	1
Kujawsko-Pomorskie	0	0	0	2	0	2
Lubuskie	0	0	2	0	0	2
Łódzkie	0	3	0	0	0	3
Małopolskie	0	0	5	0	0	5
Mazowieckie	0	0	19	0	0	19
Podkarpackie	1	1	0	2	1	5
Podlaskie	0	0	2	2	0	4
Pomorskie	0	0	3	0	0	3
Śląskie	0	0	7	0	0	7
Warmińsko-Mazurskie	0	0	1	0	0	1
Wielkopolskie	0	0	8	0	0	8
Zachodniopomorskie	0	0	3	1	0	4
Outside the place of residence	0	3	16	3	0	22
Dolnośląskie	0	0	0	1	0	1
Kujawsko-Pomorskie	0	0	0	1	0	1
Łódzkie	0	3	0	0	0	3
Małopolskie	0	0	3	0	0	3
Mazowieckie	0	0	7	0	0	7
Wielkopolskie	0	0	5	0	0	5
Zachodniopomorskie	0	0	1	1	0	2

Source: Ministry of Health study based on data from NFZ

6.7. Quality of hospital care

Providing high-quality services is a challenge for medical entities that want to operate in an increasingly competitive health care market. This requires continuous improvement and adaptation to the needs and requirements of patients. Accreditations, procedures or certificates are implemented all around the world to ensure,

that a particular medical facility provides medical services of the highest quality[92].

According to WHO the quality of health care is "a degree to which health services for individuals and populations increase the likelihood of meeting the expectations of treatment outcomes and demonstrate compliance with current and professional knowledge."[93]

High quality health care requires a comprehensive approach that encompasses every stage of a medical service provision. Providing services of the highest quality should take into account not only the quality of services provided, but also human, medical and infrastructure resources, as well as appropriate financial management. It also includes the areas such as prevention, health promotion, early diagnosis or medical rehabilitation.

The quality of health care consists of many factors that can be assessed, such as effectiveness (provision of medical services based on current scientific evidence) and efficiency, safety, accessibility of services and adaptation of the services to the current needs of patients and ensuring equal access to services for all patients[94].

In Poland, two quality systems are distinguished - external (ISO certificates and accreditation granted by the Minister of Health) and internal (patients' expectations measured by periodic satisfaction surveys in medical centres).

Eurostat conducts a systematic survey (European Health Interview Survey, EHIS) in which the populations of EU countries present their subjective opinions of health care quality. The data collected is used to set the determinants of health and ratios that demonstrate the effectiveness of health care in these countries. The results of Poland show that in 2017, there was a decrease in the number of people reporting the problems listed in Figure[95].

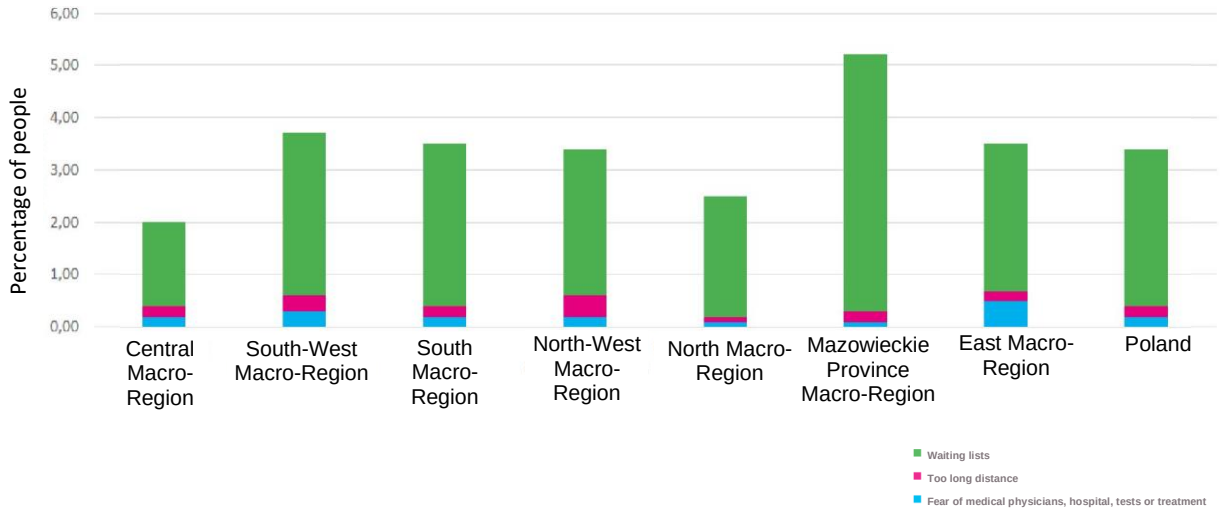
[92] G. Nowak-Starz, M. Siwek, A. Salwa i in., Jakość usług medycznych ich charakterystyka, rola w procesie zarządzania jakością.

[93] M. Bembnowska, J. Jośko-Ochojska, Zarządzanie jakością w ochronie zdrowia, Hygeia Public Health 2015, 50(3): 457-462. http://www.h-ph.pl/pdf/hyg-2015/hyg-2015-3-457.pdf [accessed 09.06.2020]

[94] A. Czerw, U. Religioni, D. Olejniczak, Metody pomiaru oraz oceny jakości świadczonych usług w podmiotach leczniczych, red. A. Czerw i wsp., Probl Hig Epidemiol 2012, 93(2):269- 273.

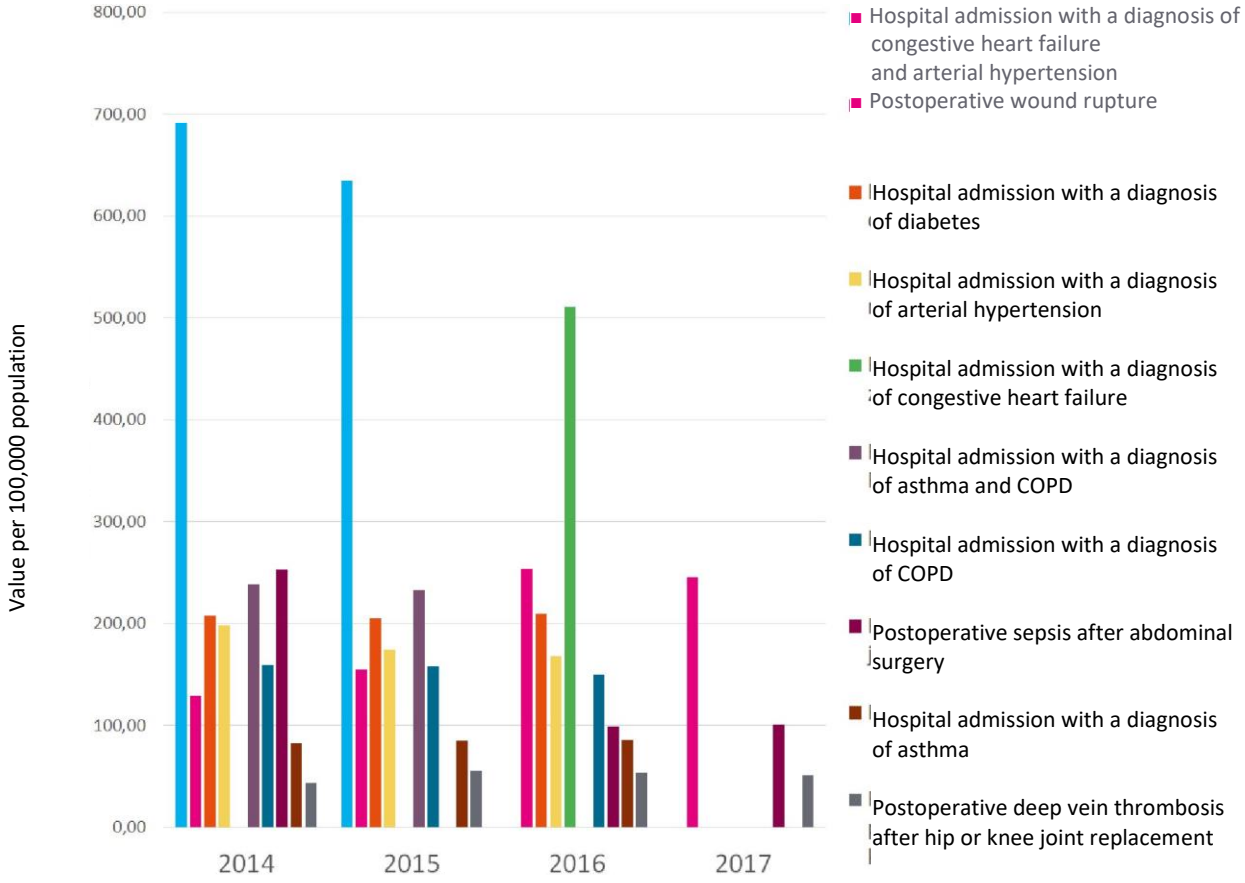
[95] Eurostat (2018), European Health Interview Survey (EHIS wave 3) - Methodological manual, https://ec.europa.eu/eurostat/documents/3859598/8762193/KS-02-18-240-EN-N.pdf/5fa53ed4-4367-41c4-b3f5-260ced9ff2f6 [accessed 09.06.2020]

Figure 122. Percentage of people reporting unmet medical needs in 2017 by macro-regions and in total



Source: Ministry of Health study based on data from Eurostat

Figure 123. Selected indicators of the quality of medical care in Poland between 2014 and 2017



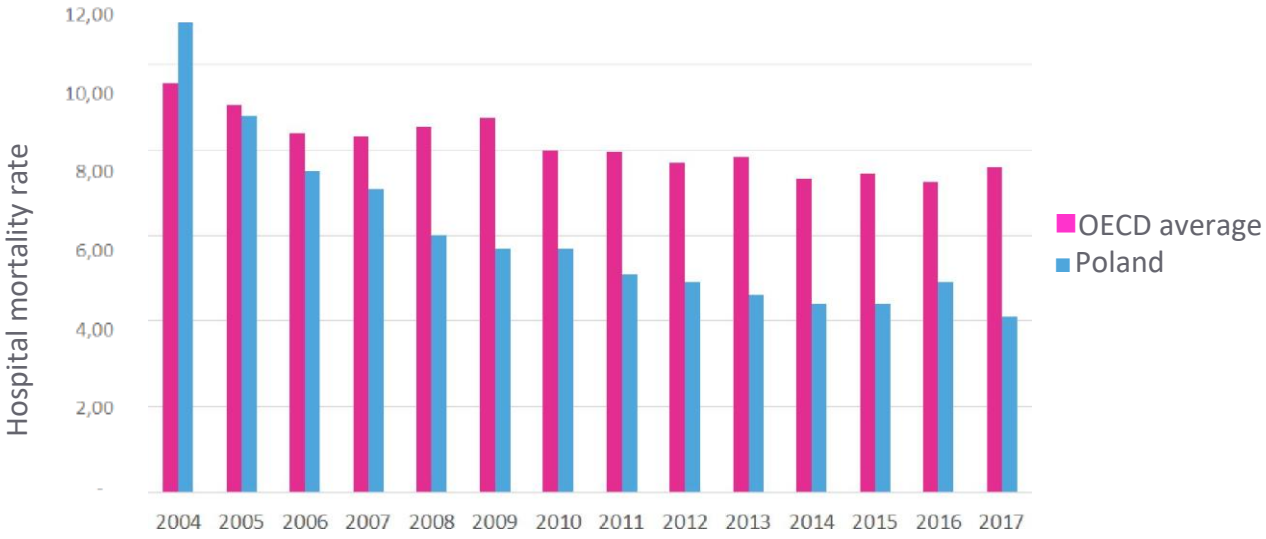
Source: Ministry of Health study based on data from OECD

One of the indicators of the effectiveness of hospital treatment is a ratio developed by OECD from the data collected from member countries over many years. It is based on hospital mortality, i.e. in less than 30 days from the beginning of hospitalisation among

patients with acute myocardial infarction, acute myocardial infarction), standardised for age, gender, and comorbidities (including prior diagnosis of *myocardial* infarction) and reflects the number of myocardial infarction per 100,000 population. It allows evaluating the operation of the medical care system at various stages, including the time of arrival to the hospital, the admission procedure, and the quality of health care and procedures performed during the hospitalisation. All stages require rapid intervention for effective in-hospital care and thus reduced risk of complications, which ultimately reduces the risk of death.

The results of the analysis indicate a change in the ratio for Poland and in the average for OECD countries. Hospital mortality in Poland is declining, while average mortality in OECD countries is increasing. In addition, the change (decrease) in Poland in 2017 compared to 2016 is the largest in 11 years. It is worth noting that in 2017, the health care system underwent a number of transformations, including the implementation of the POLKARD (Cardiovascular Disease Prevention and Treatment Programme) for 2017-2020 *(*one of its was to retrofit laboratories with high-quality diagnostic equipment)[96]and the PHC system.

Figure 124. Annual change in hospital mortality in Poland and OECD countries (mean value) per 100,000 population between 2004 and 2017



Source: Ministry of Health study based on data from OECD

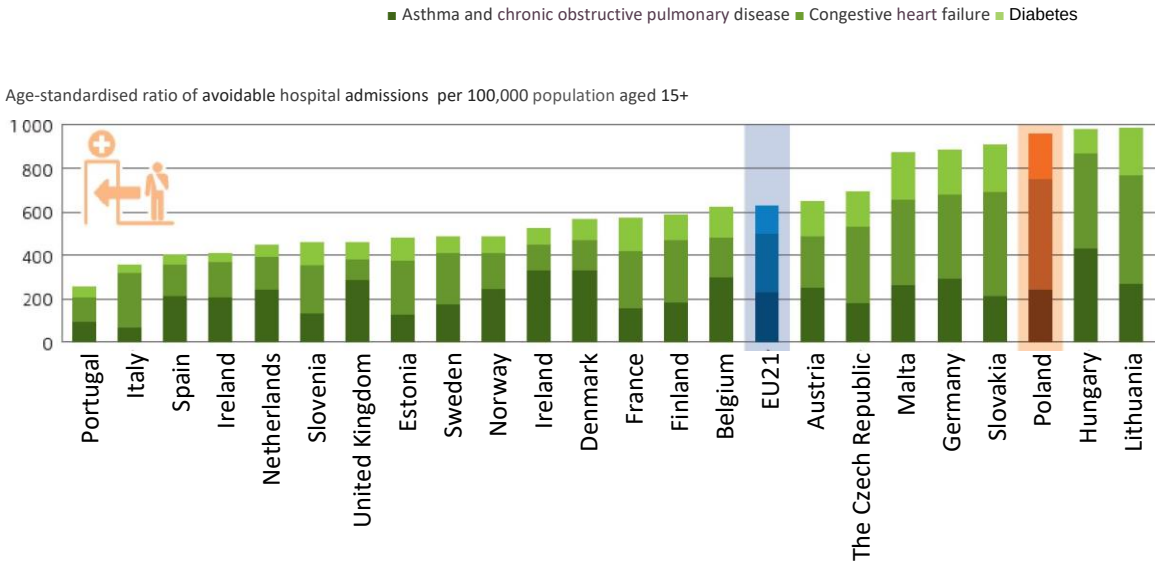
The avoidable hospitalisation ratio[97] can be treated as a part of an internal quality assessment system in hospitals. It is an indicator

[96] Program Profilaktyki i Leczenia Chorób Układu Sercowo-Naczyniowego POLKARD na lata 2017-2020, Ministerstwo Zdrowia, Warszawa 2018.

[97] L. C. Thygesen, T. Christiansen, S. Garcia-Armesto, E. Angulo-Pueyo, N. Martmez-Lizaga, E. Bernal-Delgado, on behalf of ECHO Consortium, *Potentially avoidable hospitalisations in five European countries in 2009 and time*

of the availability and effectiveness of the services provided. It is generally defined as the number of avoidable hospital admissions for selected health problems. In 2017, in Poland, that number was one the highest in Europe, following Lithuania and Hungary.

Figure 125. Number of avoidable hospitalisations for three selected health problems in EU countries in 2017



Source: 2019 OECD statistics on health (data for 2017 or the closest year)

To create a ratio of avoidable hospitalisations, diseases that met the following criteria were included in the analyses:

1) they are chronic diseases,
2) they require both outpatient and hospital care (in the more severe course, in case of an intensification of the symptoms),
3) patients suffer from them up to the old age,
4) they are diseases of affluence, which means that the symptoms of these diseases can become less severe due to prevention.

In the next step, 15 chronic diseases were identified, including: bronchial asthma (J45), chronic obstructive pulmonary disease (J44), insulin-dependent diabetes mellitus (E10), noninsulin-dependent diabetes mellitus (E11), acute myocardial infarction (I21), myocardial reinfarction (I22), some complications of acute myocardial infarction (I23), other acute ischaemic heart diseases (I24), chronic ischaemic heart disease (I25), obesity (E66), other rheumatoid arthritis (M06), other forms of hypothyroidism (E03), ischaemic stroke (I63), phlebitis and thrombophlebitis (I80), Alzheimer's disease (G30) including its subtypes. They correspond to 10 disease groups according to the GBD classification:

trends from 2002 to 2009 based on administrative data, European Journal of Public Health, Volume 25, Issue suppl_1, 01.02.2015, p. 35-43, https://doi.org/10.1093/eurpub/cku227, [accessed 09.06.2020].

– diseases of the endocrine, metabolic, cardiovascular and immune systems,

– diabetes,

– chronic kidney disease,

– Alzheimer's disease and other dementias,

– ischaemic heart disease (IHD),

– other cardiovascular and circulatory diseases,

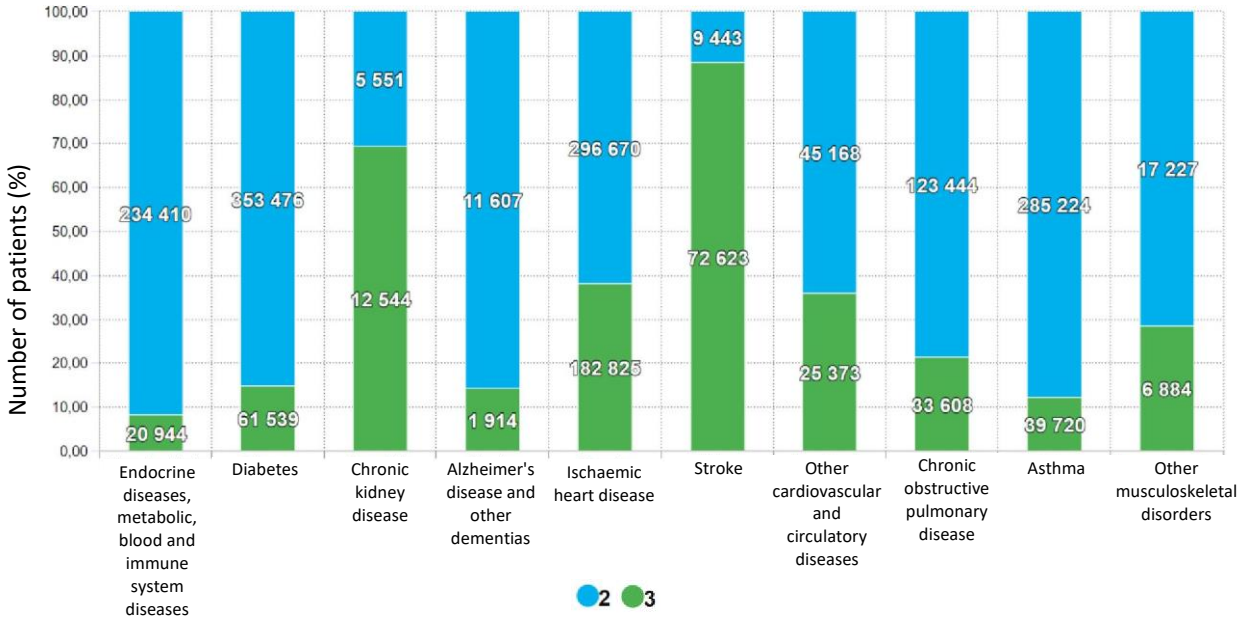
– chronic obstructive pulmonary disease,

– asthma

– other musculoskeletal diseases

– stroke.

Figure 126. The ratio of patients of OSC (2) and hospital treatment (3) for 10 selected disease groups



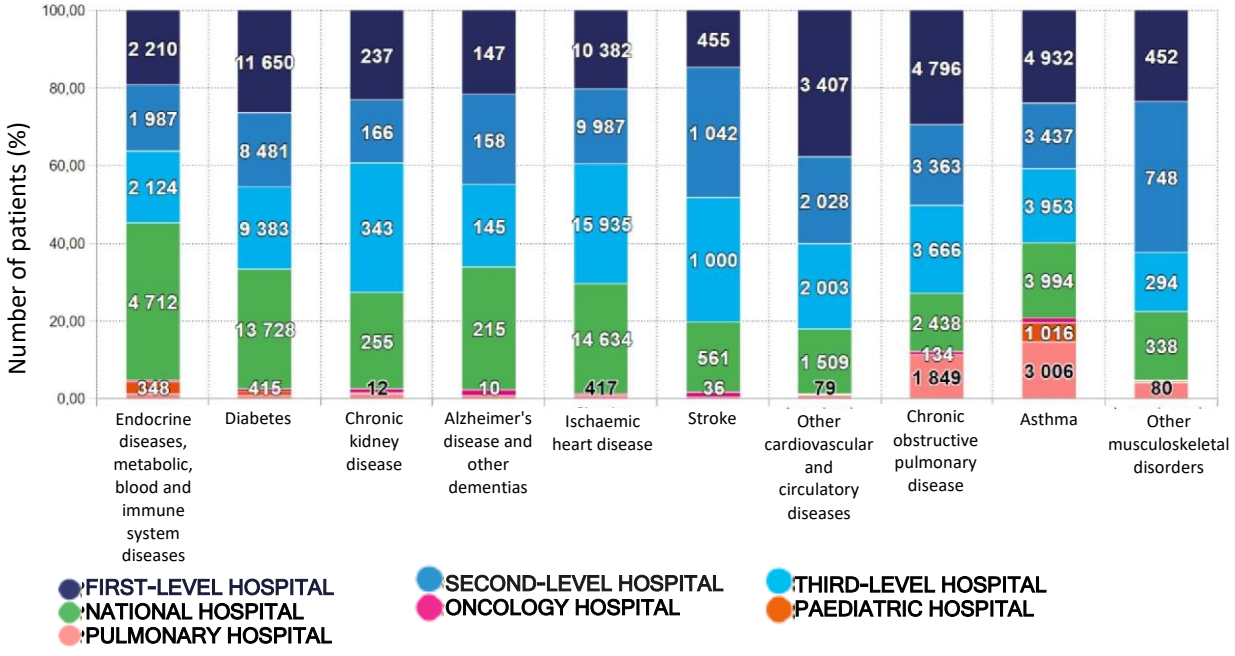
Source: Ministry of Health study based on data from NFZ

The ratio of patients of OSC and hospital treatment has fluctuated only slightly since 2018. In 2019, an alarmingly high percentage of patients with other musculoskeletal diseases (rheumatoid arthritis including its subtypes) were hospitalised. Cardiovascular diseases (chronic ischaemic heart disease) also had a high percentage, with 54% of patients receiving hospital treatment. The percentage was almost the same as for ischaemic heart disease (acute myocardial infarction, myocardial reinfarction, and root cause with complications, i.e. 60%).
The percentage for diabetes (insulin-dependent and noninsulin-dependent) was also higher.

In the next step, the number of person-days for each of these diseases was calculated as well as the average length of hospitalisation.

The largest number of outpatients and inpatients in the same year was observed for ischaemic heart disease for the patients treated in third-level hospitals (15,935 patients; a decline by 12% from 2018). In contrast, people with diabetes were hospitalised in national hospitals (13,728; an increase by 71%). In contrast, the patients who should be treated in the outpatient care because of the aetiology and course of the disease were those with chronic obstructive pulmonary disease and asthma and were most often hospitalised in first-level hospitals. Patients with other cardiovascular and circulatory diseases were also most often hospitalised in first-level hospitals, where the diseases included lower limb varices without inflammation or ulceration. Among all patients hospitalised for this disease, 37% of the hospitalisations are conducted in first-level hospitals, while 26% of them are conducted in the out-of-network hospitals.

Figure 127. Number of patients of hospital and AOS care treated in 2019 by PHCPS levels



Source: Ministry of Health study based on data from NFZ

Hospital infections are one of many important health care problems in Poland. Monitoring infections, the diseases caused by them and their clinical consequences is important not only to be able to assess the quality of epidemiological and sanitary standards in medical institutions, but also for clinical reasons,

considering treatment possibilities and the spread of drug-resistant microorganisms[98].

The basis of the analyses is the data on the reported cases of hospital infections in the national hospital activity report (MZ-29). They allow of a regional analysis of the incidence of hospital infections and mortality due to the infections. However, the way infections are reported does not allow for the analysis of individual infection types or individual patients. The consequence of the above is the use of individual data reported to the NFZ. The research methodology applied allows for a more thorough analysis of hospital infections.

According to the data, hospital infections are increasing. Between 2015 and 2019, the number of infected patients increased by approximately 12,600, reaching over 90,000 infected patients in 2019.
A similar trend was observed in the number of deaths. The number of deaths has nearly doubled in four years, and, hence, more than 1,500 patients died in 2019.

The report of the European Centre for Disease Prevention and Control shows the results of hospital infections in 33 European countries. The data shows a variation in the incidence of hospital infections between 2.3 and 10.8% (about 6% in Poland). The lowest values were observed mainly in Bulgaria and Romania, and the highest in Portugal and Iceland[99].

Clostridium difficile infections (CDI)[100] was chosen as an infectious agent that accurately illustrates the problem of hospital infections. *Clostridium difficile* is an anaerobic, Gram-positive bacterium that causes pseudomembranous enterocolitis under certain conditions[101]. In recent years, there has been an increasing number of patients with CDI and death due to it. This problem in Poland was discussed as early as in 2016 by ECDC, which classified Poland as a country with the highest incidence of CDI in Europe[102].

[98] W. Bartnik, Zakażenie Clostridium difficile, 2014, https://www.mp.pl/pacjent/gastrologia/choroby/jelitogrube/80812,zakazenie-clostridium-difficile, [accessed 09.06.2020]

[99] European Centre for Disease Prevention and Control. Point prevalence survey of health care associated infections and antimicrobial use in European acute care hospitals. Stockholm: ECDC, 2013.

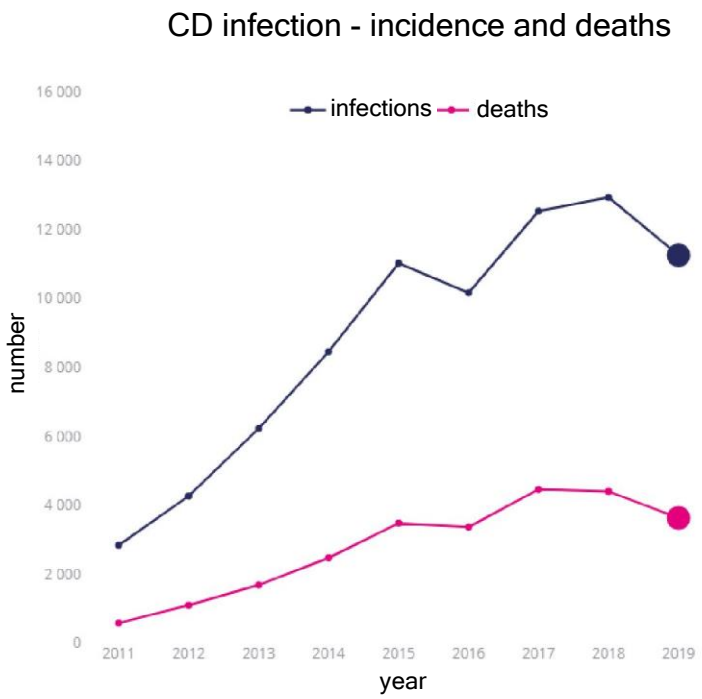
[100] CDI – Clostridium difficile infection defined by A04.7 code according to ICD-10 (International Statistical Classification of Diseases and Related Health Problems).

[101] European Centre for Disease Prevention and Control. Clostridium difficile infections. In: ECDC. Annual epidemiological report for 2016. Stockholm: ECDC, 2018.

[102] R. E. Ooijevaar, Y. H. van Beurden, E. M. Terveer, et al. Update of treatment algorithms for Clostridium difficile infection. Clin Microbiol Infect. 2018;24(5):452-462. DOI: 10.1016/j.cmi.2017.12.022.

An important aspect of CDI is its link with health care, as it is one of the most common hospital infections[103]. One of the main risk factors is poor quality of sanitary-epidemiological standards in hospitals and the transmission of infection between patients. Therefore, the number of *Clostridium difficile* infections indirectly demonstrates sanitary standards in Polish hospitals, including the need for strict patient isolation.

Figure 128. Number of CDI infections and deaths within 90 days of CDI diagnosis from 2011 to 2019



Source: Ministry of Health study based on data from NFZ

According to the data, the number of *Clostridium difficile* infections increased nearly four times between 2011 and 2019, reaching more than 11,000 infections in 2019. The number of *Clostridium difficile* hospital infections also increased nearly four times to almost 7,000 in 2019 during the period analysed.

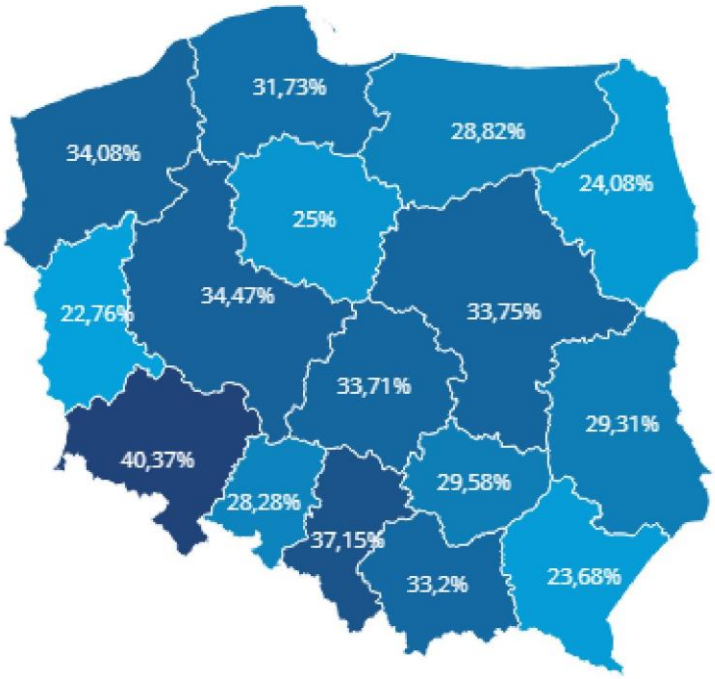
The CDI incidence varies between provinces. Although the highest number of CDI incidences was reported in the Mazowieckie Province, the highest incidence per population was observed in the Łódzkie Province in terms of a total number of infections and hospital infections.

[103] Hospital CDI – hospitalisations with a diagnosis of CDI that began with a diagnosis other than CDI and CDI was diagnosed at least 3 days after admission or it is the closest hospitalisation preceding the one during which CDI was diagnosed less than 3 days after admission. The closest hospitalisation is one that began at least 3 days before the hospitalisation with a diagnosis of CDI and lasted maximally 8 weeks before the hospitalisation with a diagnosis of CDI.

The highest number of hospital infections (regardless of year) was reported on the internal medicine ward. Many of them also occurred in emergency departments, general surgery wards and admission rooms.

The number of the deaths related to CDI (the death within 90 days of the beginning of a hospitalisation that occurred due to CDI infection) was also increasing. During the 9 years of the period analysed, the deaths due to CDI increased more than six times to almost 4,000 cases in 2019 (including more than 2,400 hospital infections). This means that 32% of hospitalisations due to CDI ended with death within 90 days.

Figure 129. Distribution of the share of deaths within 90 days after CDI diagnosis in 2019.



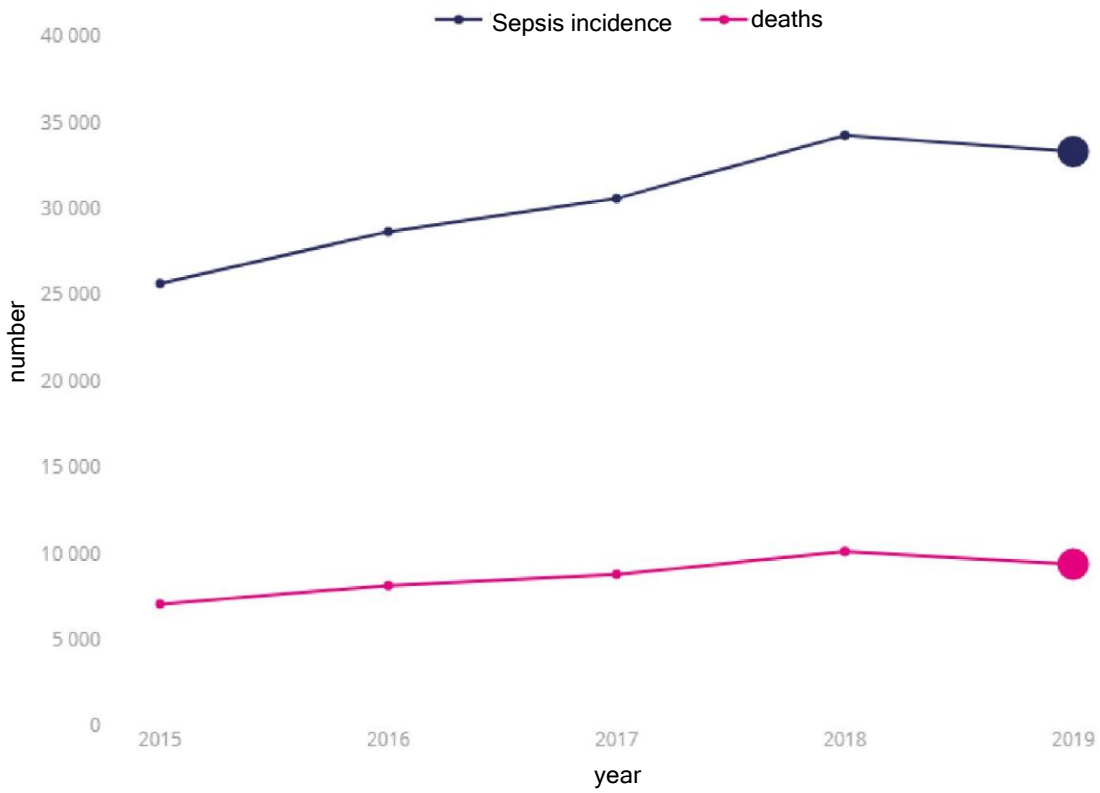
Source: Ministry of Health study based on data from NFZ and GUS

In 2019, the share of deaths within 90 days after *Clostridium difficile* infection diagnosis differs significantly by provinces (from 25.8% to 40.4%). The highest share was observed in the Dolnośląskie Province and the lowest in the Lubuskie Province.

The analysis of risk factors of the deaths due to CDI was based on comorbidities and demographic factors as well as the centre where the patient was hospitalised. The age above 84 was found to be the most important factor, which increases the risk by more than twenty-five times. Other factors that significantly worsen the prognosis include: HIV infection, malignancy (both metastatic and nonmetastatic ones), and malnutrition or abnormal weight loss.

Another disease worth noting in the context of hospital infections is sepsis[104]. Many infections can lead to sepsis regardless of etiology [105]. Sepsis is a set of symptoms that must be treated quickly and intensely. The analysis of the incidence and mortality of sepsis that occurs in hospitals[106] allows us to assess the quality of treatment provided in health care centres since the most common causes are surgery errors or hygienic negligence.

Figure 130. The incidence and mortality of sepsis within 28 days of the diagnosis between 2015 and 2019



Source: Ministry of Health study based on data from NFZ

The number of sepsis cases increased steadily up to 2018 and then declined slightly in 2019 to more than 33,000, with more than 8,000 of hospital-acquired sepsis. About 30% of patients with sepsis died within 28 days of the diagnosis.

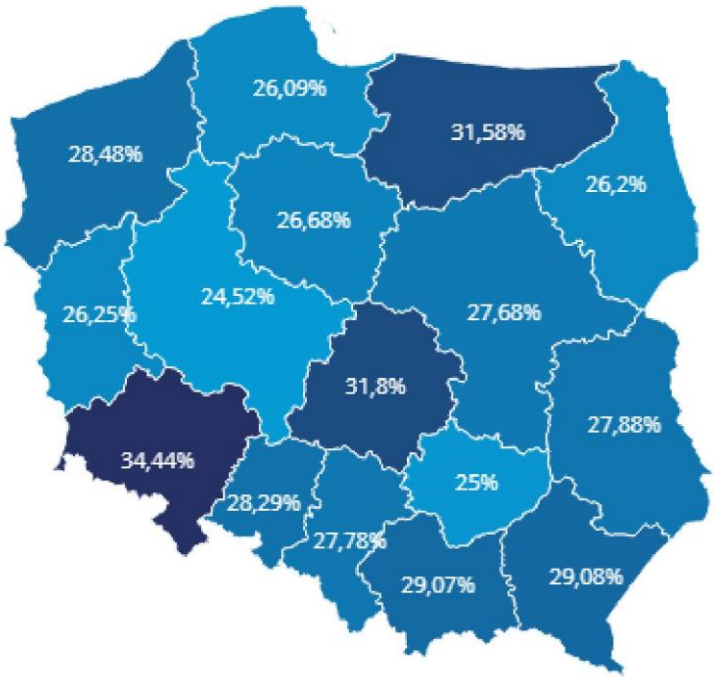
[104] Sepsis was defined by an A40-A41 code of ICD-10 (including extensions).

[105] E. Kuchar, *Sepsa i wstrząs septyczny,* https://www.mp.pl/pacjent/choroby-zakazne/choroby/zakazenia-bakteryjne/160129,sepsa-i-wstrzas-septyczny, [accessed 09.06.2020]

[106] Hospital-aquired sepsis is a hospitalisation with a diagnosis of sepsis that began with a diagnosis of a different disease
and sepsis was diagnosed at least 2 days after admission or a hospitalisation during which a blood culture test (defined by 90.51, 90.52, or 90.53 codes of ICD-9) was made at least 2 days after admission and at least 7 days

This share varies depending on the province (from 24.5% in the Wielkopolskie Province to 34.4% in the Dolnośląskie Province).

Figure 131. Distribution of the share of deaths within 28 days after sepsis diagnosis in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

In 2019, most cases of hospital-acquired sepsis were observed in the Mazowieckie Province (1,543 patients), which gives 28.45 patients per 100,000 population.

In the further analysis, risk factors of death from sepsis within 28 days of the diagnosis were examined. Age higher than 84 increases the risk of death by more than 9 times compared to patients younger than 50. Risk factors unrelated to age include: catheter, metastatic cancer, alcoholism, malnutrition and pathological weight loss.

To ensure high quality of health care, it is necessary to increase the awareness of medical and support staff in hospitals and hospital infection control teams about the epidemiology of CDI and the spread of the disease, as indicated by the increasing number of total and hospital-acquired infections disproportions between provinces. It is also important to take extra precautions to prevent sepsis (including better hand hygiene, disinfecting rooms with sanitisers, changing medical outfits daily), use more intense CDI treatment in populations at high risk of infection and death (especially elderly oncology patients treated on internal medicine wards), and ensure high perioperative hygiene standards, especially for elderly patients with central venous catheters hospitalised in intensive care wards.

6.8. Conclusions

Hospital treatment is important in meeting the health needs of patients whose medical conditions do not allow them to receive adequate health care in outpatient setting. Since 2017, the hospital health care system has undergone extensive reform with the introduction of the PHCPS, commonly referred to as the "hospital network." So far, the health care system had imbalances in the characteristics of the services provided, which was due to historical background. Insufficient coordination between different types of services resulted in patients being referred for hospital treatment, even in cases where outpatient care would be sufficient. Providing a better quality of outpatient care could help reduce patient waiting time for treatments/procedures. Additionally, continuous medical observation within OSC and PHC would result in a lower risk of complications related to the diagnosis. Easing the pressure on hospitals would lead to improvements in the quality of services and better availability because of shorter waiting lists and efficient use of hospital beds.

6.9. Health care system challenges

In comparison with other European countries, Poland is characterised by high financial outlays on hospital treatment. They account for 34% of the total expenditure on medical care (the EU average is 29%). Expenditure on hospital treatment exceeds expenditure on other types of services. This is particularly important in comparison to the expenditure on OSC, which receives better financing in other European countries than in Poland. Due to the increase in expenditures on OSC in other countries, reduction (when possible) of the number of hospital services in favour of services provided in OSC is observed, which in turn releases resources required during necessary hospitalisation without detriment to the quality of services provided.

The Republic of Poland has one of the highest rates of hospital beds per 100,000 inhabitants. In other countries, the number of beds per 100,000 inhabitants is decreasing every year, which causes the disparity between Poland and other countries to widen.

Hospitals, especially first- and second-level ones, have a significant number of wards exceeding those provided for those levels in the Act. Their existence and further formation may lead to pressure towards inefficient contracting of services and deterioration of their quality.

OECD and Eurostat data indicate improvement in at least some aspects of the quality of hospital care. Hospital mortality among patients diagnosed with myocardial infarction (standardised AMI indicator) in Poland presents a downward trend. However, this improvement is not unequivocal, as evidenced by, among other things, an increase in the number of hospital-acquired infections.

The number of hospitalisations due to some chronic diseases is much higher than the aetiology of the disease would indicate. Among patients with chronic diseases, such as ischaemic heart disease, diabetes, asthma or rheumatoid arthritis, a high rate of hospitalisation has been observed, which has not changed significantly since 2014. In the case of chronic ischaemic heart disease, up to 54% of OSC patients were also hospitalised in the same year, which represents rate that is too high. Most of these patients could have avoided hospitalisation with more efficient OSC and PHC care.

Regardless of the analysis adopted, i.e. perceiving the queues through the lens of the waiting lists or real waiting time, it was observed that cataract surgery was one of the most popular services for which waiting time was relatively long. Moreover, the longest average waiting time concerned endoprosthetics of the knee joint and the hip joint.

As part of the analyses, comparisons were made at the level of provinces. Considering both indicators describing the effectiveness of services, as well as the average waiting time, inequalities were observed between regions of the Republic of Poland. The most favourable results were recorded in provinces located in the south-eastern part of the country (Lubelskie, Podkarpackie and Małopolskie). The worst results were observed in Kujawsko-Pomorskie and Śląskie.

6.10. Recommended lines of actions

→ in order to reduce the excessive number of hospitalisations, which generates unsubstantiated costs, it is recommended to increase the availability of diagnostic tests in outpatient settings, in particular through regulations favouring the provision of these services in OSC (e.g. adequate valuation of services, quality indicators);

→ with the aim of minimising the duration of patients' hospitalisation, it is necessary to change - where possible - multi-day hospitalisations into one-day stays;

→ together with an increase in the number of patients treated in OSC there will be a decrease in the occupancy rate of beds on hospital wards; therefore, the number of beds on hospital wards should be rationalised or converted into long-term care beds according to demographic forecasts;

→ the units providing hospital treatment at the district level should also take over the function of other types of inpatient care, which should be delivered in proximity to the patient (long-term care, palliative and hospice care). These hospitals should be developed around a network of emergency departments, ensuring as equal an availability as possible throughout the country;

→ the formation and contracting of wards providing services beyond the basic profile resulting from the affiliated level of hospital network (particularly in first- and second-level hospitals) should be limited. Their creation may lead to unsustainable development of medical entities - incompatible with the function assigned to them in the health care system.
It is necessary to diversify the scope of services provided in individual hospitals through their further profiling;

→ further centralisation and concentration of services in centres with appropriate facilities and expertise for rare diseases and other diseases requiring complex and comprehensive treatment is necessary;

→ coordination of treatment pathways for patients treated in different centres should be continued in order to ensure a high standard of care, especially for patients undergoing long-term treatment or requiring complex care. Therefore, it is necessary to support the competent networking of medical entities, e.g. by creating specialised units, introducing reference levels and creating appropriate conditions for supervision and cooperation within such networking. This applies in particular to wards with a diversified range of services provided, where not all wards perform a given type of procedure (e.g. stroke wards);

→ more extensive use of indicators of the quality of services provided. These indicators should be analogous to those used for comparisons with other countries. It is also advisable to introduce indicators based on declarative measures from patient questionnaires (PROM), assessing the procedures performed and the overall quality of services. The increase in the quality of services provided within the scope of hospital treatment should be further supported, among other things, by emphasising the role of accreditation in health care while ensuring that its standards are kept up to date, implementing a system of reporting adverse events not based on blame, as well as attributing greater importance to the quality indicator in the algorithm for calculating contract amounts, and consequently increasing the role of paying for the quality of services.

7. Psychiatric care and addiction treatment

Mental disorders are one of the main causes of disability degree certificates or disability certificates, reduced wellbeing of the individual and their loved ones, and shorter life expectancy, for example as a result of suicide or neglect of treatment for comorbidities. The demand for health and social care services and the readiness to undertake treatment has been increasing in recent years, which, with improved availability of the above services, may result in a better quality of life of Poles with a diagnosis of mental disorders in the family, social and professional spheres.

Mental health is one of the fundamental personal rights of a human being[107]. The National Programme for Mental Health Protection[108] includes a strategy of operation to provide citizens with diagnosed mental disorders with comprehensive, multilateral and widely available health care and other forms of care and assistance necessary for living in a family and social environment. The programme also addresses issues concerning the formation of appropriate social attitudes towards people with mental disorders, in particular understanding, tolerance, kindness and counteracting their discrimination. To make it possible, a reform of the psychiatric care system in Poland has been initiated. For the treatment of adults, the pilot study of CMH[109] was introduced in 2018, while for the treatment of children and adolescents, the implementation of a new model for the treatment of patients under 18 years of age was launched at the end of 2019[110]. Due to the different specificities of the treatment of children and adolescents and adults, the mental health care system of the groups mentioned above was considered separately. Health care services within the 'Psychiatric Care and Addiction Treatment', including also those within the CMH pilot programme, can be divided into the forms of assistance provided: outpatient (mental health clinics, community treatment teams), indirect (day wards) and inpatient (hospital wards).

According to Eurostat estimates[111], the average duration of psychiatric hospitalisation in Poland increased for all groups of mental disorders between

[107] Act of 19 August 1994 on Mental Health Protection (Dz. U. /Journal of Laws/ of 2020, item 685).

[108] Regulation of the Council of Ministers of 8 February 2017 on the National Programme for Mental Health Protection for 2017-2022 (Dz. U. /Journal Of Laws/, item 458).

[109] Regulation of the Minister of Health of 27 April 2018 on the Pilot Programme in Centres for Mental Health (Dz. U. /Journal Of Laws/, item 852, as amended).

[110] Ordinance of the Executive of the National Health Fund of 16 January 2020 on defining the conditions for concluding and performing contracts for providing health care services of the psychiatric care and addiction treatment, https://www.nfz.gov.pl/zarzadzenia-prezesa/zarzadzenia-prezesa- nfz/zarzadzenie-nr-72020dsoz,7116.html, [accessed 01.06.2020]

[111] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:In-patient average length of stay for mental and behavioural disorders and Alzheimer%27s disease, 2013 and 2018 (days) Health20.png,[accessed 01.06.2020]

2013-2018. The most notable change was observed for mental and behavioural disorders caused by the consumption of psychoactive substances (an increase of 43%). The Republic of Poland, with a score of 31.4 days, ranks 25th out of 27 EU countries. The countries with the best results in this category are the Netherlands (3.2 days), Belgium (6.1 days) and Sweden (6.6 days).

An analysis of the rate of hospital discharges for patients with mental disorders per 100,000 population for 2018 reveals that, among OECD countries[112], the Republic of Poland ranks 15th with a figure of 680. The highest rate is found in Germany (1,650), Romania (1,315) and Austria (1,275).

Poland is one of the five EU countries where the number of beds on psychiatric wards per 100,000 population increased between 2012and2017, and the 16th in terms of their number (65.14 - with an EU average of 68.82)[113]. The highest number of beds per 100,000 population in 2018 among EU[114] countries was reported in Belgium (135.22), Latvia (122.46) and Norway (105.35), while the lowest in Italy (8.87), Cyprus (17.81) and Ireland (33.57).

In terms of the number of medical practitioners specialising in psychiatry in 2015,[115] Poland was well below average compared to EU countries, ranking penultimate, i.e. 27th place with the number of 90 psychiatric medical practitioners per 1,000,000 population. The situation was worse only in Bulgaria (76), while the best results were observed in Finland (236), Sweden (232) and the Netherlands (230).

Challenges in psychiatric care:

- low share (3.05% according to 2019 financial plans[116]) of public expenditure allocated to psychiatric care compared to the EU average(6%),
- for adult treatment: disproportion of services provided in inpatient care compared to inpatient and day care (higher financing costs for the former) and difficult access to comprehensive and coordinated care,
- for treatment of children and adolescents: very low number of providers allowing treatment in each of the forms, difficult access to comprehensive and coordinated care.

[112] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Hospital discharge rates for in-patients with mental and behavioural disorders, 2018 (per 100 000 inhabitants) Health20.png, [accessed 01.06.2020]

[113] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Hospital beds %E2%80%94 psychiatric care beds, 2012 and 2017 (per 100 000 inhabitants) Health2019.png, [accessed 01.06.2020]

[114] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do, [accessed 01.06.2020]

[115] https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/EDN-20171010-1, [accessed 01.06.2020]

[116] https://www.politykazdrowotna.com/33851, plan-nfz-na-2019-r-ile-dokladnie-wyda-na-swiadczenia, [accessed 01.06.2020]

- Low number of psychiatrists (4,256 psychiatrists and 435 child and adolescent psychiatrists in 2019) in relation to demand - hindered access to services.
- High share of own expenditure on treatment in the private sector (about PLN 500,000,000 per year[117]).

7.1. Adult psychiatric care analysis

Patient characteristics

The total number of patients over 18 who received psychiatric care and addiction treatment services as well as CMH services in 2019 is 1,510,000, of which 32.7% (492,600) were aged 60 or more, and 56.8% (854,700) were women (aged 60 or more, the proportion of women is higher and amounts to 65.1%). 33% of patients lived in a large city (more than 100,000 residents), 32% in a rural area, 21.7% in a medium-sized city (20,000-100,000 residents) and 13.3% in a small town. The number of patients in relation to the population over 18 was 5.6% in a large city, 5.4% in a medium-sized city, 4.8% in a small town and 3.9% in a rural area.

The most common among adult patients were anxiety disorders (528,100 patients), and this was the most common group of disorders in each province. The second most common in the Republic of Poland were mood disorders (305,800 patients). In this case, there were differences between the provinces - it was organic disorders in the Dolnośląskie and Łódzkie provinces, and addictions in the Lubuskie, Świętokrzyskie, Warmińsko-Mazurskie and Zachodniopomorskie provinces, which ranked second.

The direction of migration of patients for treatment may indicate the availability and quality of mental health care in a given area. The lowest percentage of patients residing and treated in the same province was recorded in the Warmińsko-Mazurskie Province (92%), which may indicate shortages in access to care in this area. This is also the area with the lowest absolute[118] (-1,416 patients) and relative[119] (0.97) surplus, meaning that many more patients migrated to seek treatment than migrated from other provinces to be treated in this province. The lowest percentage of patients from outside the province treated in a given region was in the Podkarpackie Province (3.07%). The percentage of patients residing and treated in this area was relatively high (96.33%) and the relative excess

[117] https://pulsmedycyny.pl/problem-opieki-psychiatrycznej-w-polsce-analiza-rynkowa-968254, [accessed 01.06.2020]

[118] Absolute patient surplus is the difference between the number of patients treated in an area and the number of patients residing in an area.

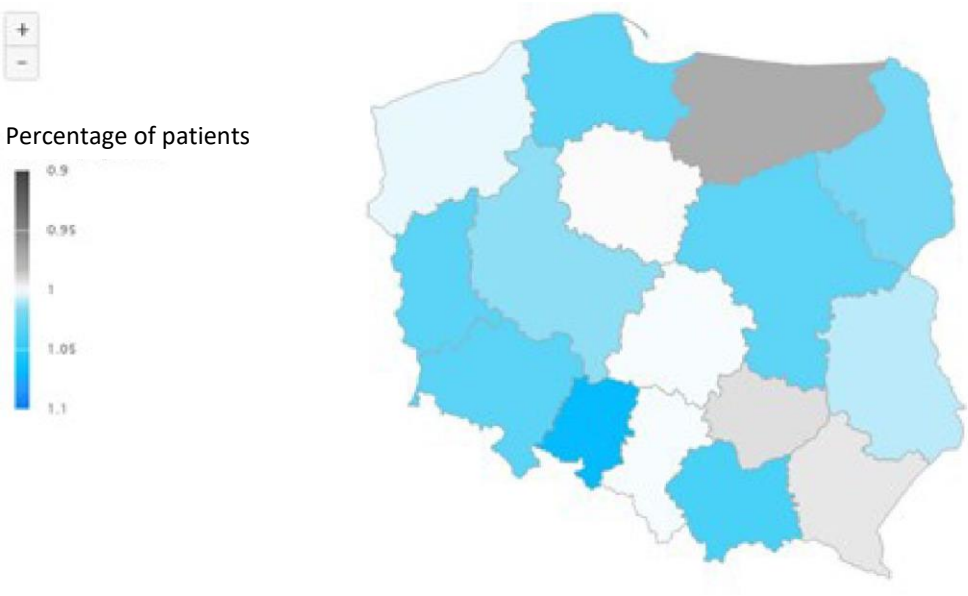
[119] Relative patient surplus is the quotient of the number of patients treated in the area and the number of patients residing in the area.

was close to one (0.994), so it can be concluded that there was low both-way migration in the Podkarpackie Province.

The highest percentage of patients from outside the province treated in a given province was registered in the Opolskie Province (11.5%); the relative excess was the highest there as well. This means that in relation to the number of patients residing in the province, the highest number of patients from other provinces migrated thereto. The highest absolute surplus of patients occurred in the Mazowieckie Province (5,901 patients), which means that many patients from outside the province were treated there, which is also related to the size of the province.

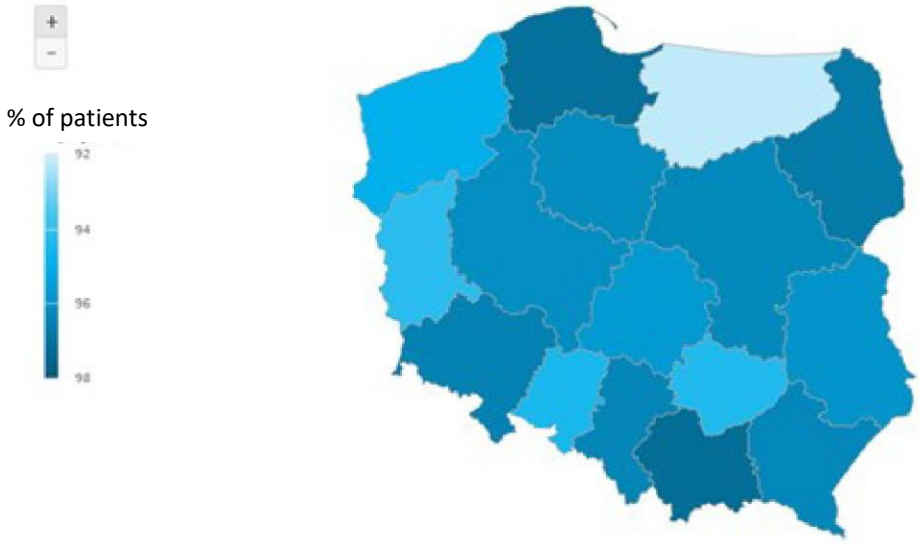
When broken down by district, it can be observed that the highest percentage of patients treated in their area of residence was in the larger cities. A low percentage of patients were treated in their area of residence in districts located on the outskirts of large cities. In these districts, the absolute number of patients receiving treatment outside their area of residence was also high. It can be inferred that they were receiving care in neighbouring cities. However, this does not mean that there is no access to any form of care in these areas - the percentage of out-of-area patients treated in these areas was sometimes high. The lack of any providers within the district occurred in some areas of the country
- both the percentage of resident patients treated and the percentage of out-of-area patients treated equalled zero in several districts.

Figure 132. Relative surplus of patients in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Figure 133. Percentage of patients residing and treated in the area of the same province in 2019.

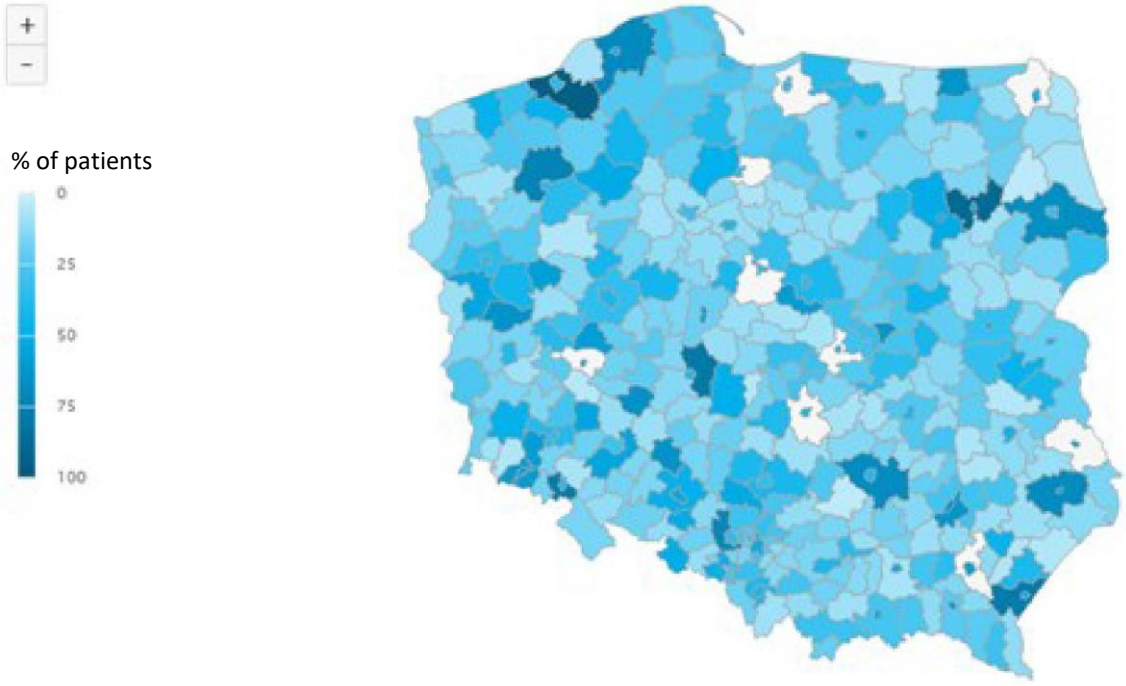


Source: Ministry of Health study based on data from NFZ and GUS

Figure 134. Percentage of patients residing and treated in the area of the same commune in 2019.

Source: Ministry of Health study based on data from NFZ and GUS

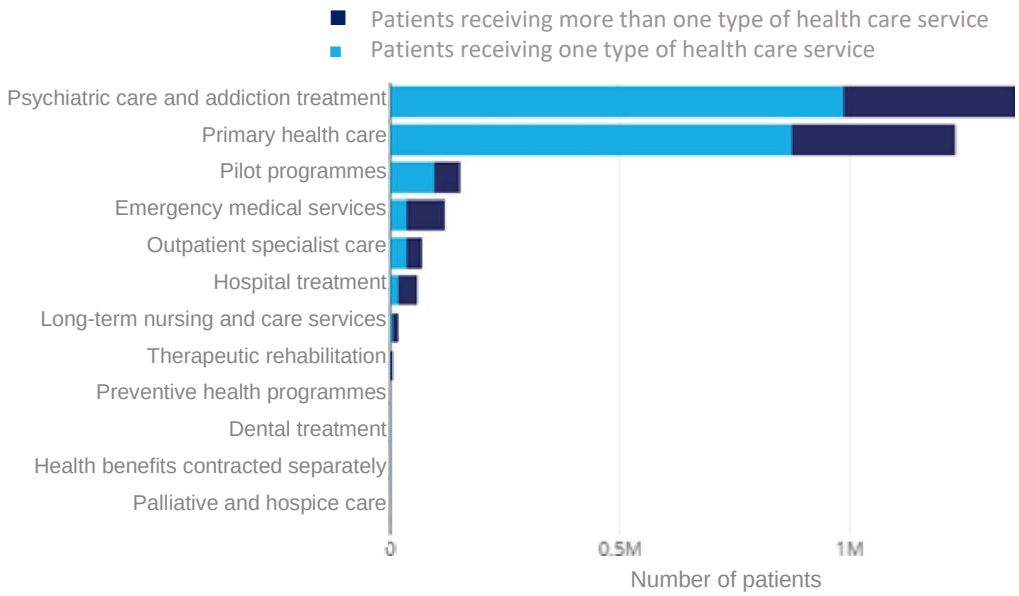
Figure 135. Percentage of patients from outside the commune area treated in the commune in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

The appropriate care of patients with mental disorders is possible through the services of 'psychiatric care and addiction treatment' or under the CMH pilot programme. Nevertheless, a large number of patients receive other types of health services with a major diagnosis of mental disorders (ICD-10 in the range F00-F99) and do not receive psychiatric care services, but only services provided by PHC. 874,800 patients with a diagnosis of mental disorders used only PHC services under the NFZ health insurance, which means that these patients did not receive appropriate specialist care.

Figure 136. Number of patients by type of health services, 2019. (only services with an ICD-10 principal diagnosis in the range F00-F99)



Source: Ministry of Health study based on data from NFZ

Health services in psychiatric care and CMH

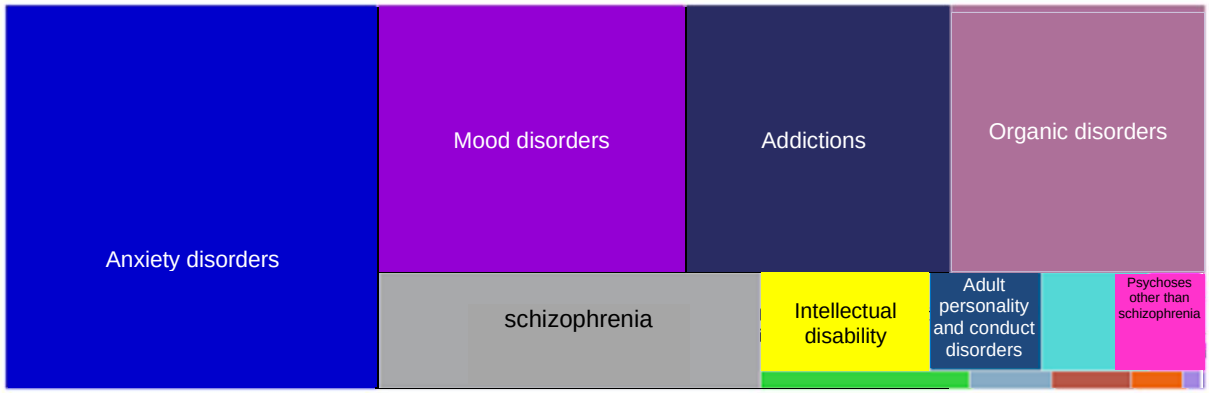
In 2019, patients over 18 received a total of 8,780,000 pieces of advice, including 12,500,000 person/days of inpatient and day care for psychiatric care and addiction treatment services and CMH. When comparing all forms of services available for psychiatric care and addiction treatment, the largest number of adult patients (1,160,000, i.e. 77% of patients, some of whom received more than one form of treatment) benefited from adult psychiatric/psychological clinics. Adult addiction treatment/therapy clinics came in second (224,900 patients), and the adult psychiatric ward came in third (129,000 patients).

Figure 137. Number of patients by form of treatment, 2019.

Source: Ministry of Health study based on data from NFZ

Anxiety disorders were the most common diseases (528,100 patients, i.e. 35.1% of all patients, with some patients having been reported with more than one diagnosis in a year), but mood disorders (305,800 patients), addictions (264,500 patients) and mental disorders due to brain damage (253,600 patients) also constituted large groups.

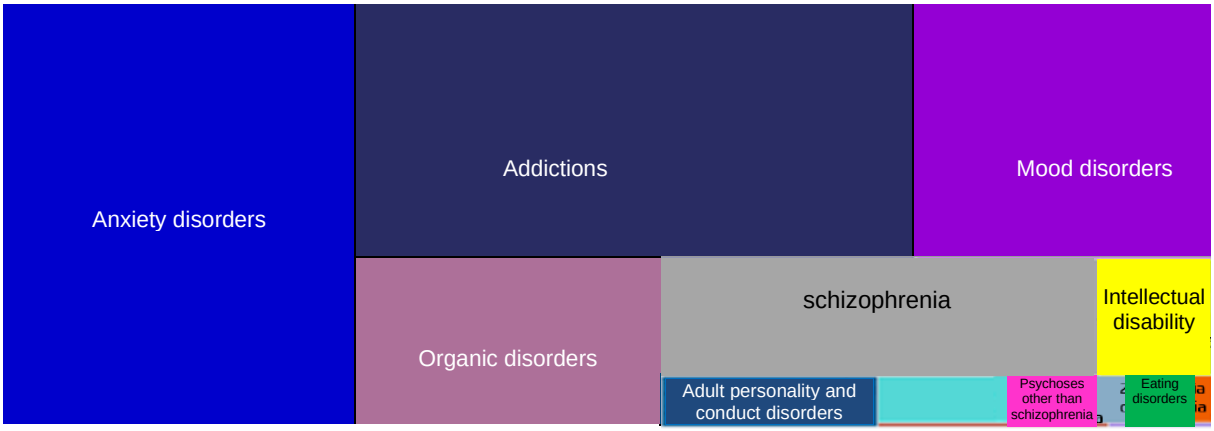
Figure 138. Number of patients by form of treatment in 2019.



Source: Ministry of Health study based on data from NFZ

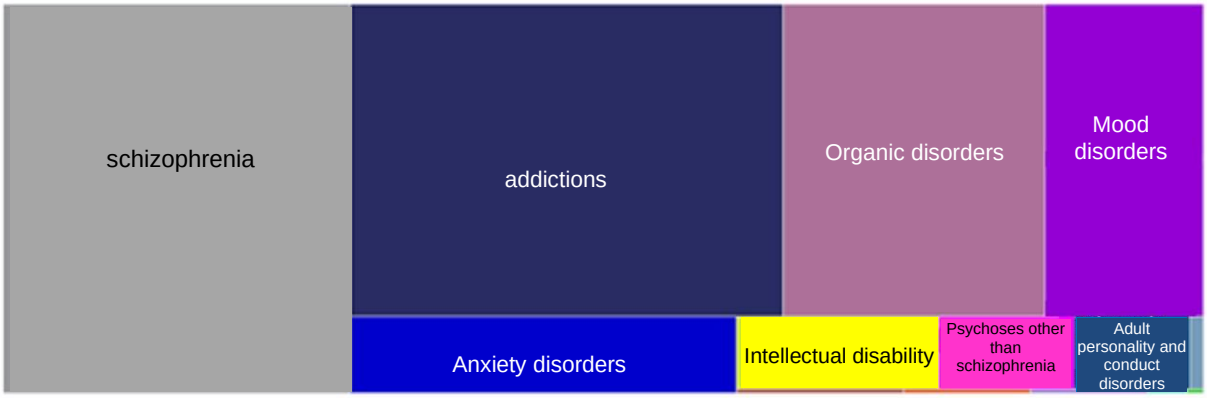
The highest number of consultations was given for anxiety disorders (2,550,000), followed by addictions (2,450,000). Schizophrenia, which was the fifth most common disorder in terms of the number of patients (163,500), generated the highest number of person-days (3,620,000). This means that the patients with a diagnosis of schizophrenia spent a longer time in hospital and day wards compared to other diagnoses. Addiction was ranked second in terms of person-days (3,616,000), which, as the third biggest group of diagnoses, generated a significant number of both consultations and person-days. Anxiety disorders, which constituted the largest group of diagnoses, generated a significant number of consultations, but the number of person-days (793,100) was relatively low compared to the number of diagnoses.

Figure 139. Number of advice by type of disorders in 2019.



Source: Ministry of Health study based on data from NFZ

Figure 140. Number of person-days by type of disorders in 2019.



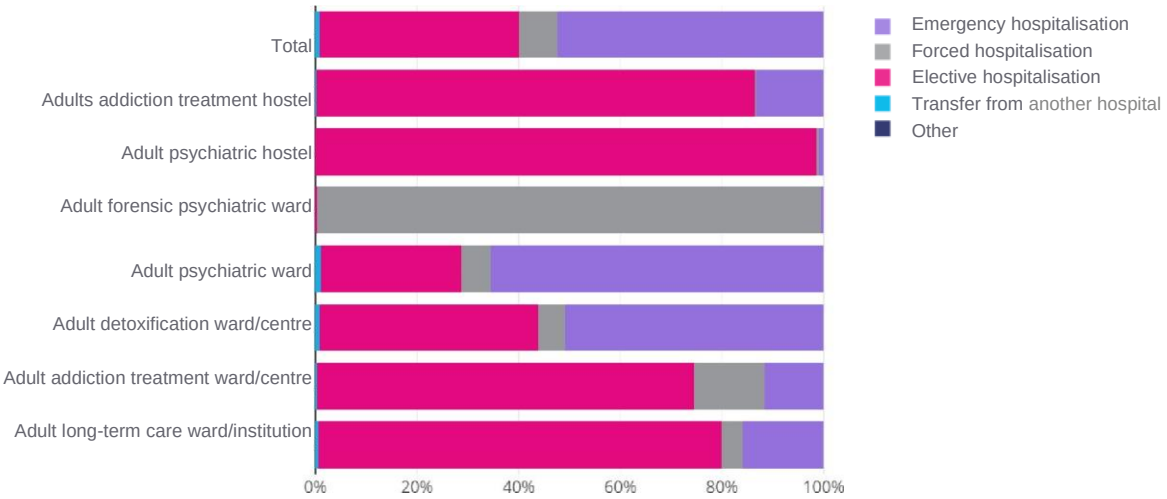
Source: Ministry of Health study based on data from NFZ

The characteristics of diagnoses vary across services. In adult psychiatry wards, the most common diagnoses were addiction and schizophrenia; in hospital admission rooms, it was addiction and anxiety disorders; and in long-term care facilities/wards, it was schizophrenia and mental disorders due to brain damage. The characteristics of patients of psychiatric/psychological clinics are similar to the overall characteristics of diagnoses, except for addictions, which are primarily treated in specialistic clinics.

52.4% of hospitalisations of patients over 18 on adult inpatient wards were emergency. In the case of psychiatric wards, as many as 65.5% of patients were hospitalised. The highest share of elective hospitalisations was observed in adult psychiatric hostels (98.6% of all elective hospitalisations) and addiction treatment hostels (86.5%). These forms of treatment also recorded the highest treatment completion share for discharges (61% and 52.3%, respectively).

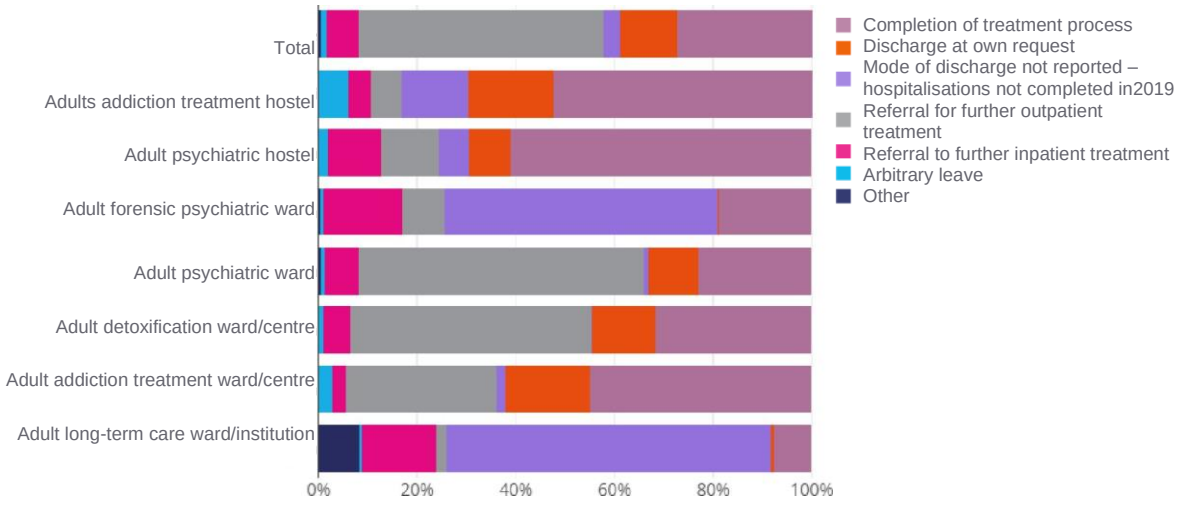
The characteristics of modes of admissions and discharges vary considerably between provinces, e.g. in the Podkarpackie Province, only 28.7% of admissions were emergency admissions, while in the Mazowieckie Province, this share was 69.4%.

Figure 141. Percentage of hospitalisations by hospitalisation mode in 2019.



Source: Ministry of Health study based on data from NFZ

Figure 142. Percentage of hospitalisations by hospitalisation mode in 2019.



Source: Ministry of Health study based on data from NFZ

The vast majority (68.9%) of consultations in adult psychiatric/psychological outpatient clinics are medical consultations. Individual psychotherapy, psychological advice, or group/family services are provided to a small extent.

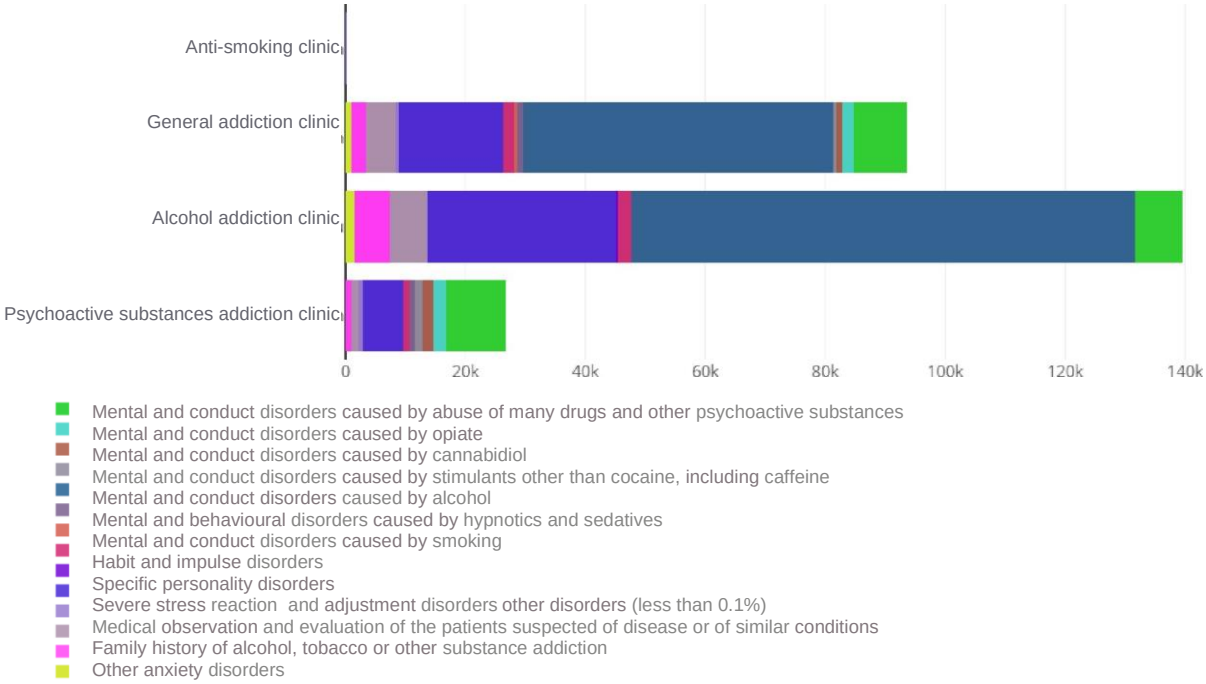
269,900 patients received addiction treatment services. The total number of person-days in inpatient and day care centres was 2,940,000, and the number of consultations given was 2,880,000. Addiction treatment services was primarily received by men, only 35.3% of the patients were women. Women were primarily treated at addiction treatment clinics

(39.8% of all patients), in addiction treatment wards/centres women accounted for 17.1% of the patients, and in detoxification wards/centres, for 12.2%.

Among patients with addictions, the largest group were mental and conduct disorders caused by alcohol (206,300 patients), followed by mental and conduct disorders caused by drugs and other psychoactive substances (40,500 patients).

The majority of consultations were carried out in alcohol addiction outpatient clinics (46.8%), but also in general addiction treatment outpatient clinics, the majority of consultations were carried out for patients with diagnosed alcohol addiction disorders (68.5%). Non-addiction mental disorders were also diagnosed in addiction treatment facilities, mainly in clinics. In adult addiction treatment/therapy clinics, a significant group of diagnoses was severe stress reaction and adjustment disorders (16.5% of all clinics).

Figure 143. Number of consultations by disorders in 2019.

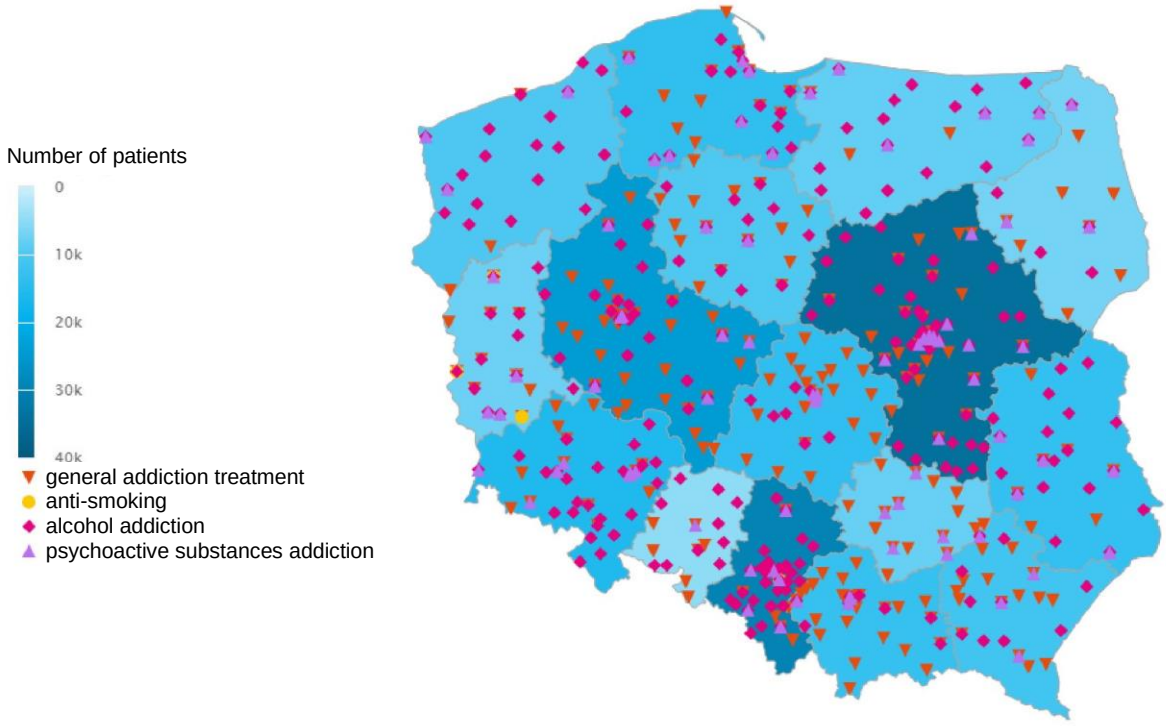


Source: Ministry of Health study based on data from NFZ

Similarly to psychiatric care, the most popular form of addiction treatment are clinics. General, smoking, alcohol and drug addiction outpatient clinics are available. Despite this division, other types of addiction were also treated in the clinics dedicated to particular addictions, e.g. 60,700 patients (4.5%) with mental and conduct disorders due to drugs and other psychoactive substances

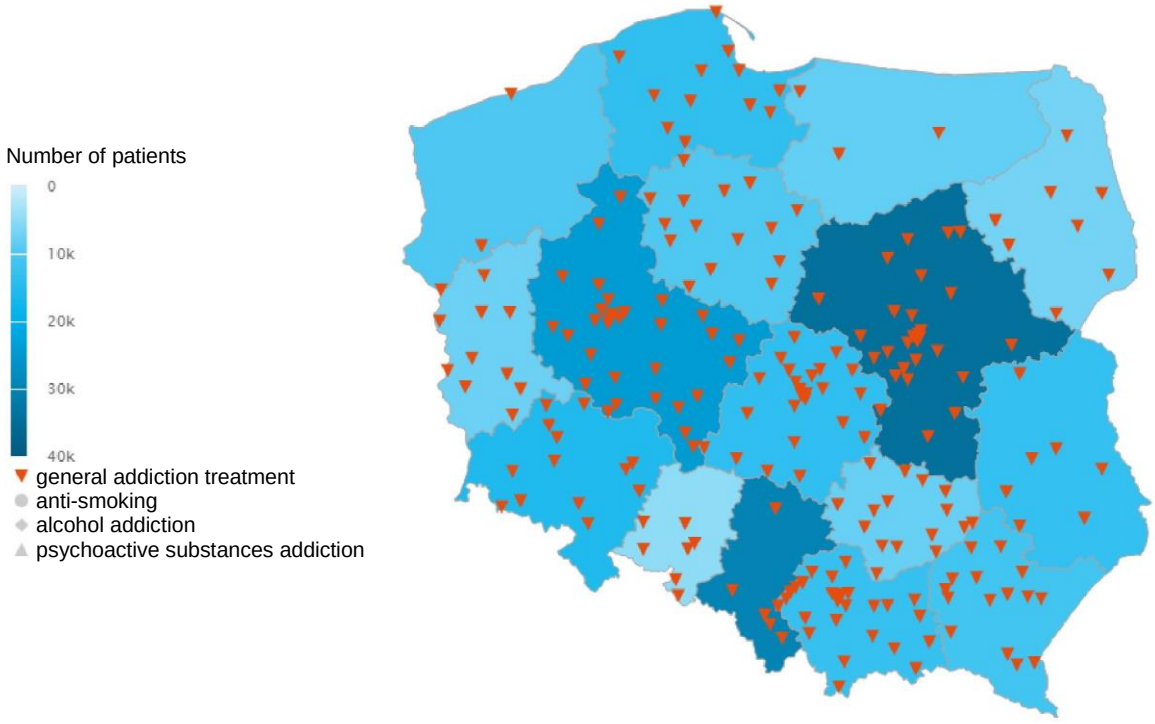
were treated in alcohol addiction clinics. This may result from the fact that access to clinics is limited, and in some areas there is no access to general addiction treatment clinics at all. Day wards, addiction treatment wards/centres, detoxification wards/centres, and hostels also have separate alcohol and drug addiction units that treat patients with other addictions (e.g. drug addiction in an alcohol treatment centre).

Figure 144. Number of patients treated in general, anti-smoking, alcohol and drug addiction treatment clinics and their location by municipalities in 2019



Source: Ministry of Health study based on data from NFZ and GUS

Figure 145. Location of municipalities with drug treatment clinics (general) 2019.

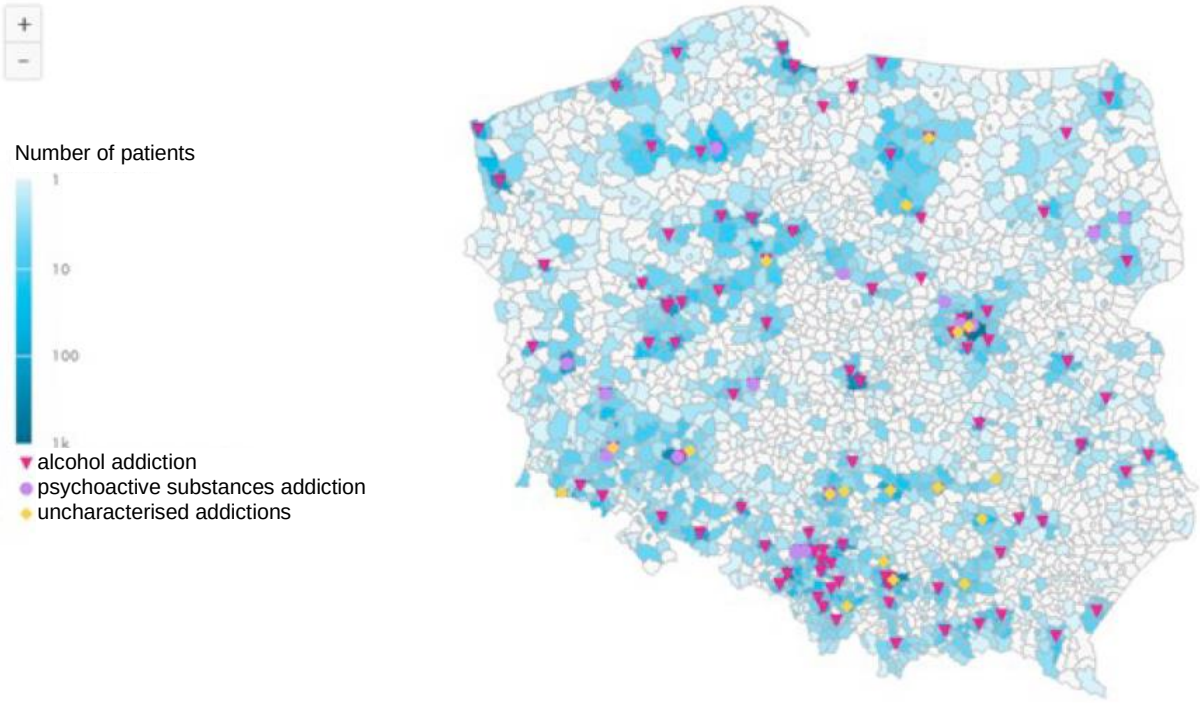


Source: Ministry of Health study based on data from NFZ and GUS

The number of patients receiving a given treatment seems to be mostly based on the distance from home for day wards.

It was very frequently the case that no one used day care in the communes where the distance to a day ward was long. For example, in the Lubelskie Province, where day wards are located in Lublin and in only four other municipalities, most municipalities have no patients receiving day care treatment. In the case of drug treatment wards/centres or detoxification wards/centres, such a correlation occurs less often or does not occur at all.

Figure 146. Number of patients treated in day care wards for adult addiction treatment and their location by communes in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

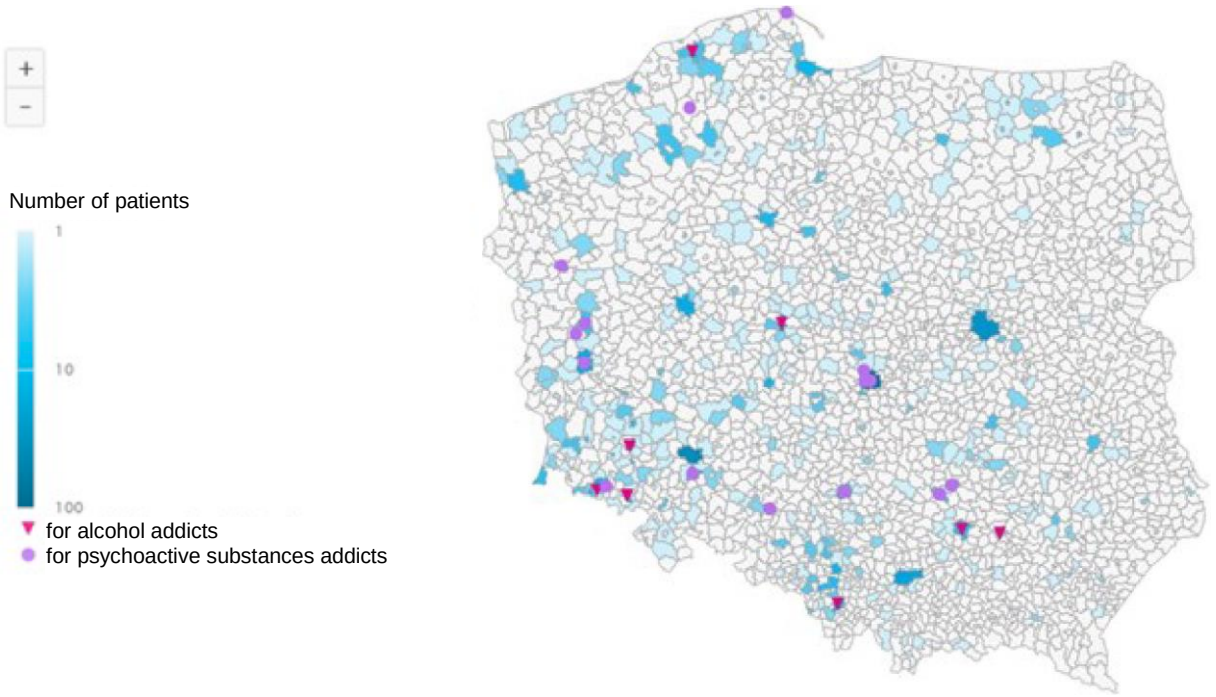
The least accessible form of addiction treatment are hostels[120] (including those for alcohol and drug addiction). In some provinces (Kujawsko-Pomorskie, Lubelskie, Małopolskie, Mazowieckie, Podkarpackie, Podlaskie, Warmińsko-Mazurskie, Zachodniopomorskie), there are no hostels. It is crucial to maintain a positive treatment outcome to support those who complete the treatment by enabling them to participate in post-rehabilitation programmes[121]. Developing and supporting a network of hostels and readaptive apartments for people during or after addiction treatment is one of the objectives of the 2016-2020 National Health Programme[122].

[120] VIII part of the Ministry of Health code: 2724 and 2726.

[121] https://pozytywnaprofilaktyka.org/wp-content/uploads/2020/04/AJaniszewska Psychologiczne i spo%C5%82eczne formy pomocy.pdf, [accessed 01.06.2020]

[122] http://dziennikustaw.gov.pl/D2016000149201.pdf, [accessed 01.06.2020]

Figure 147. Number of patients treated in addiction treatment hostels and their location of by municipalities in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Service availability

The range of the forms of treatment differs. According to the analysis, Poland has the largest number of mental health clinics, and the patients residing in 98% of all municipalities in the country benefit from them. The number of psychiatric wards is much smaller, but the treatment range also covers 98% of all municipalities. Day wards are used by patients who live close to the facilities providing this form of treatment.

The situation is similar in CTT. It is worth noting that some of the services of CTT are provided at the patients' place of residence. Nevertheless, most of the country is not covered by this type of care. Both the CTT and day wards allow patients to receive comprehensive treatment (according to 2017-2022 National Mental Health Programme, comprehensive care consists of outpatient, mobile/community, day and 24-hour care) to prevent exacerbations of certain disorders (e.g. schizophrenia [123,124,125]) and significantly reduce the likelihood of hospitalisation [124,125].

Figure 148. Location of mental health clinics along with the place of residence of their patients in 2019.

Figure 149. Location of hospital wards along with the place of residence of their patients in 2019.

[123] Health problem analysis: schizophrenia, http://analizy.mz.gov.pl:8080/app/schiz/, [accessed 01.03.2021]

[124] http://psychiatriaRzeczypospolitaPolska.pl/uploads/images/PP 1 2018/143LisieckaBielanowicz PsychiatrPol2018v52i1.pdf, [accessed 01.03.2021]

[125] http://www.psychoterapiaptp.pl/uploads/PT2009n3s43Cechnicki.pdf, [accessed 01.03.2021]

Figure 150. Location of day wards along with the place of residence of their patients in 2019.

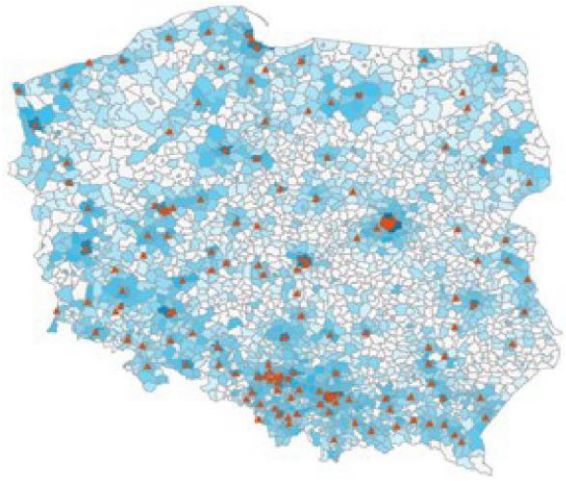
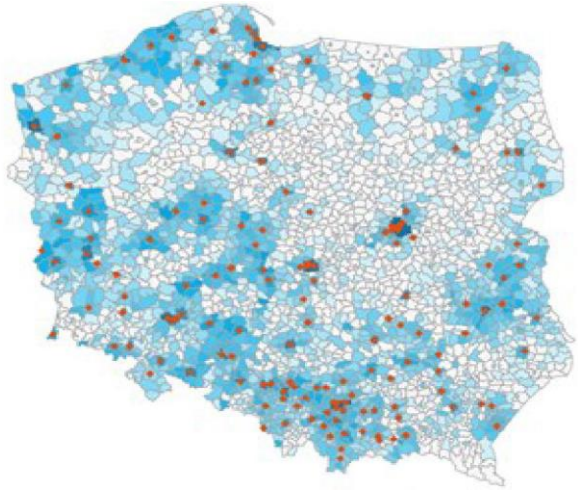


Figure 151. Location of community treatment teams, along with the place of residence of their patients in 2019.

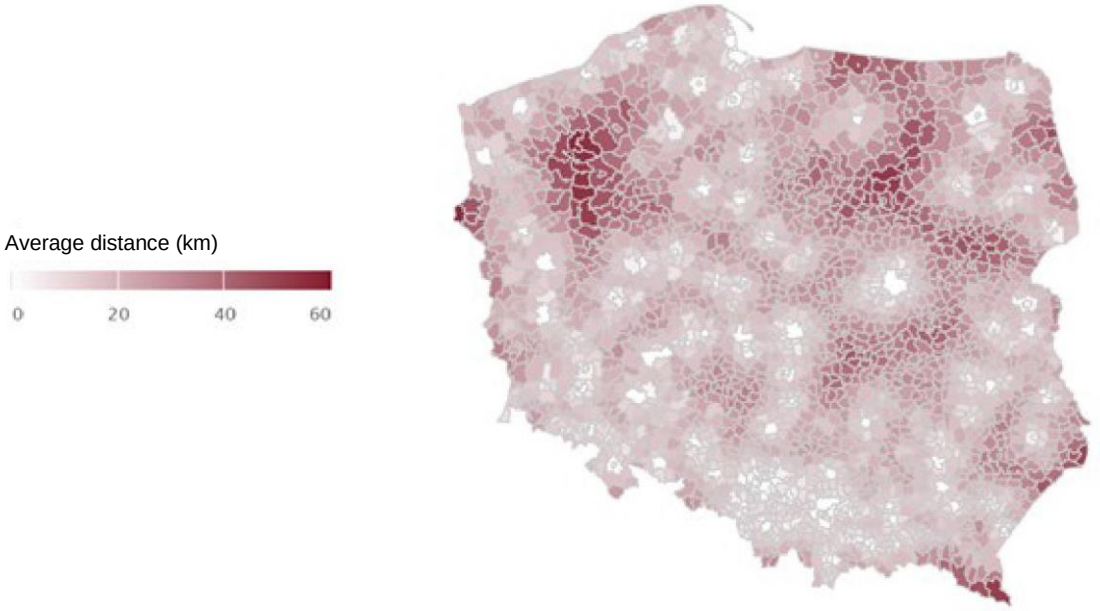


Source: Ministry of Health study based on data from NFZ and GUS

Changing the proportion of hospital and outpatient forms of services is possible by opening new facilities close to the patients' place of residence.

A community-based, comprehensive treatment model that enables the recovery and social inclusion is available to the patients across the country to various degree. In 2019, in 391 municipalities, the average distance to municipalities where such services are available is more than 30 km. The longest distance, i.e. more than 50 km, was observed in the case of the following municipalities: Cedynia (Zachodniopomorskie Province), Lutowiska (Podkarpackie Province), Dołhobyczów (Lubelskie Province), Cisna (Podkarpackie Province), Ulhówek (Lubelskie Province) and Nowy Dwór (Podlaskie Province). The map below shows the degree of difficulty in accessing outpatient and indirect (day wards) services.

Figure 152. The average distance from the place of residence to communes where outpatient or intermediate care services (CTT, outpatient clinics and day wards) are available in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Centres for Mental Health

In CMH, an increased accessibility to services enables quick and positive intervention. Some services may be provided by other specialists in addition to medical practitioners. An individual approach to the patient increases the chances that the patient will continue the treatment and follow to recommendations. Patients' relatives can benefit from psychological help and psychoeducation.

The three-year CMH pilot programme launched in 2018 is expected to cover 34 districts or urban areas in 2020. Other 54 districts or urban areas fully or substantially meet the requirements to open more CMHs. The programme provides for creating 300 CMHs, which will cover the entire country with the areas of responsibility. CMH assumptions:

– better service availability

– integration of the forms of health care,

– assistance coordination,

– specialists of various fields,

– individual approach to the patient,

– collaboration with social workers and PHC,

– changing hospital care to a supportive intervention,

– integrated lump sum payment per population.

In Poland, there are counties with a population of over 100,000 inhabitants, which provide sufficient forms of treatment necessary to open a CMH on their area, according to the Regulation of the Minister of Health of 27 April 2018 on the Pilot Programme in Centres for Mental Health (Dz. U. /Journal of Laws/ of 2020, item 2086). Comparing the area of the country in terms of the distribution of different forms of health care with the map of CMH areas provides a detailed indication of the possibility to open a CMH and the forms of care lacking in this area. For example, in the Dolnośląskie Province, the city of Wrocław and the district of Kłodzko are the areas with four forms of treatment and a population of over 100,000 inhabitants. In the urban area, including the city of Jelenia Góra and Jelenia Góra District, there is a population of more than 100,000 residents but no community treatment team.

Figure 153. Population and location of municipalities with selected forms of treatment in 2019 in the Dolnośląskie Province

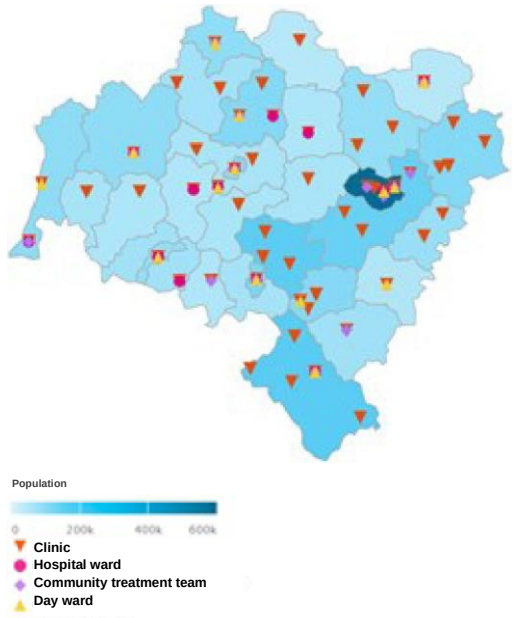
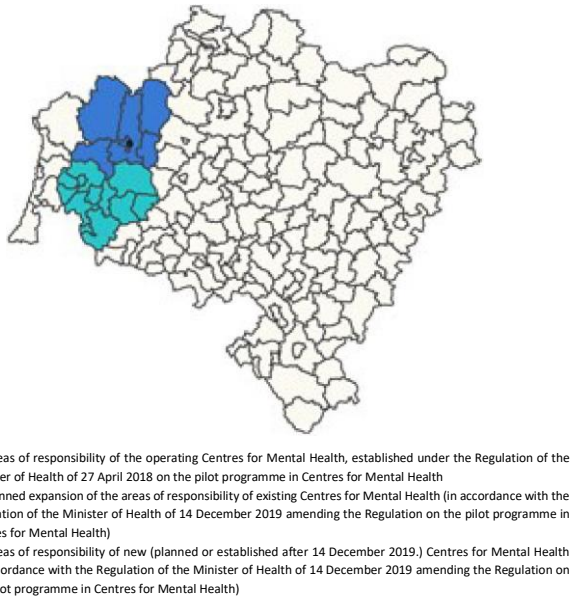


Figure 154. Centres for Mental Health in 2020, the Dolnośląskie Province



Source: Ministry of Health study based on data from GUS

The assumptions regarding meeting the conditions to open more CMHs by the areas were based on the following criteria:

– territorial division including agglomerations around the cities,

– population (over/under 100,000 inhabitants) of the district/agglomeration,

– number of the forms of treatment available,

– counties/agglomerations with four forms of treatment: CNN, clinic, day ward, and hospital,

– counties/agglomerations with three forms of treatment: CNN, clinic, and day ward.

The requirement of a hospital ward at the same place was excluded due to the fact that the hospital ward of CMH may be at close distance.

A degree to which each area meets the conditions is as follows:

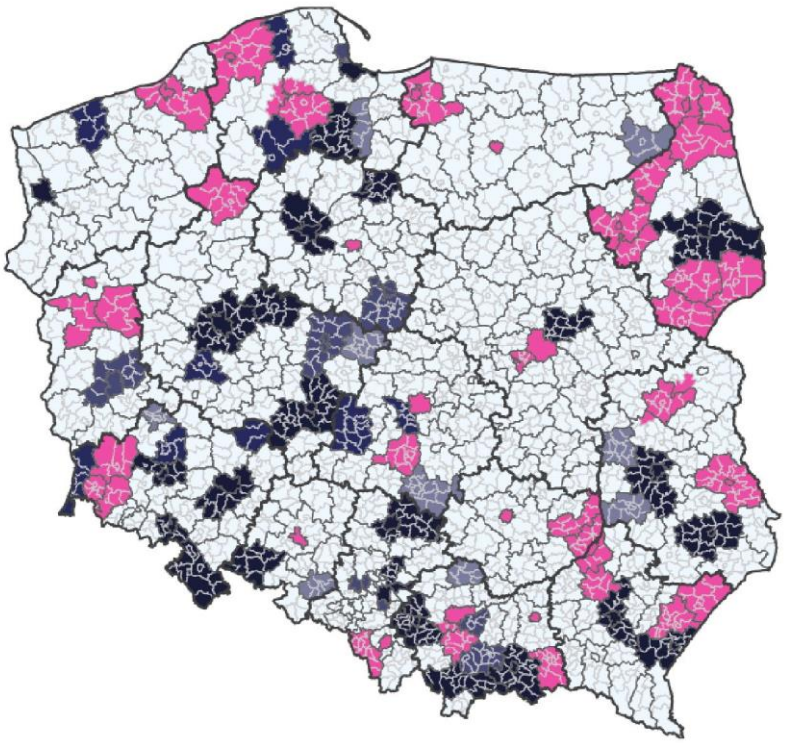
– population of more than 100,000 inhabitants and there are four forms of treatment,

– population of less than 100,000 inhabitants and there are four forms of treatment,

– population of more than 100,000 inhabitants and there are three forms of treatment (CNN, clinic, and day ward),

– population of less than 100,000 inhabitants and there are three forms of treatment (CNN, clinic, and day ward).

Figure 155. Readiness to open new CMHs by population over 18 and the forms of mental health care treatment available in 2019.



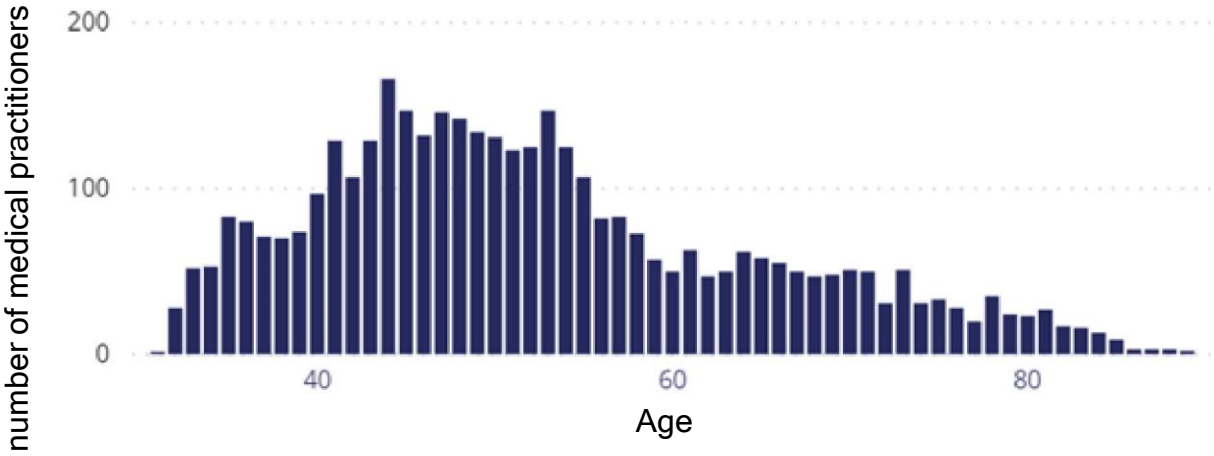
■ Areas of responsibility of currently operating or soon to be established Centres for Mental Health (according to the Regulation of the Minister of Health of 14 December 2019 amending the Regulation on the pilot programme in Centres for Mental Health)
■ A district or agglomeration with four forms of treatment (clinic, CTT, day ward, hospital ward) with a population aged 18 and over higher than or equal to 100,000.
■ A district or agglomeration with four forms of treatment (clinic, CTT, day ward, hospital ward) with a population aged 18 and over lower than 100,000.
■ A district or agglomeration with three forms of treatment (clinic, CTT, day ward) with a population aged 18 and over higher than or equal to 100,000.
■ A district or agglomeration with three forms of treatment (clinic, CTT, day ward) with a population aged 18 and over lower than 100,000.

Source: Ministry of Health study based on data from GUS

Medical specialists

A total number of medical practitioners specialising in psychiatry in 2019 was 3,904 (62.09% of women). The average age of psychiatrists is relatively high, i.e. 52. There are diverse numbers of medical practitioners per 100,000 population across the country by provinces (the highest number is in the Mazowieckie Province – 18.0, and the lowest in the Warmińsko-Mazurskie Province – 8.0). The number for Poland is 10.2, while the number recommended by the national consultant is 20.0.

Figure 156. Age pyramid for medical practitioners specialising in psychiatry in 2019.



Source: Ministry of Health study based on data from NFZ

Queues

There was diverse waiting time for admission depending on the type of ward/clinic in terms of the forms of adult psychiatric and drug treatment. In some cases, average waiting time was relatively short, but in many cases it was long.

Average waiting time[126]for stable cases in a general psychiatric ward in 2019 was 106.9 days in January, 97.2 days in June, and 75.6 days in December.
In June, the longest average waiting time was observed in the Łódzkie Province – 208.9 days, and the shortest in the Zachodniopomorskie Province – 2.7 days. The average waiting time for urgent cases in June 2019 was 23.5 days. The number of patients waiting and classified as urgent cases was 62 in June, compared to 969 patients waiting and classified as stable cases.

The average waiting time for stable cases in a mental health clinic was 53.1 days in January, 56.9 in June, and 51.6 days in December 2019. The differences in average waiting time between provinces were not as significant as for psychiatric wards. In June 2019, the longest waiting time was recorded in the Śląskie Province – 75.3 days, and the lowest in the Świętokrzyskie Province – 17.1 days. The average waiting time for urgent cases was 15.5 days in January, 22.7 days in June, and 20.9 days in December 2019. In June, the number of patients waiting and classified as stable cases was just under 30,000, and 184 in terms of the patients classified as urgent cases.

[126] Average waiting time reported by health service providers, weighted by the number of patients waiting The average waiting time reported by a health service provider is the average waiting time for the patients removed from the waiting queue due to the provision of the service within the last 3 months.

The average waiting time in the general psychiatric day ward for stable cases was 48.7 days in January, 72.4 days in June, and 43.4 days in December 2019. For the community (home-based) treatment, these values were 25.4, 63.8, and 38.8 days, respectively. Long waiting time for the admission to adult psychiatric wards was observed in the psychogeriatric ward, i.e. in January 2019 the average waiting time was 194.5 days, in June it was 154.4 days, and in December – 155.2 days. Very long waiting times were reported by long-term psychiatric care facilities. The average waiting time for nursing and care centres was 240.7 days in January, 515.8 in June and 374.8 in December 2019. For nursing and care centres, these values were lower, i.e. 104.7, 152.3 and 103.1 days, respectively. There was one available community (home-based) treatment team for autistic people (in the Mazowieckie Province), and the average waiting time for stable patients was as high as 718 days in January, 726 in June, and 580 in December 2019.

Waiting time for addiction treatment varied depending on the type of ward. In the addiction treatment ward, the average waiting time for stable cases was 45.7 days in January, 45 days in June, and 57.5 days in December 2019. In some types of addiction treatment wards, waiting time was short. In June 2019, the average waiting time for stable cases for drug rehabilitation and treatment wards/centres, ranged from 13 to 30 days. The longest waiting time was observed for alcohol treatment wards – in June 2019, for stable cases it was 117.3 days. Addiction treatment clinics also appeared to have the worst situation, with the waiting time for of 652.1 days for stable cases in June 2019. In contrast, the same ratio for addiction treatment clinics was 28.2 days and for drug treatment clinics was 13.5 days.

Beds

In 2019, the total number of the beds in psychiatric hospitals[127], long-term psychiatric care[128], and drug treatment/detoxification wards/centres[129]

[127] Including General Psychiatric Ward, Forensic Psychiatry Ward, Maximum Security Forensic Psychiatry Ward, High Security Forensic Psychiatric Ward, Psychiatric Ward for Tuberculosis Patients, Psychiatric Ward for Somatic Patients, Psychiatric Ward for Chronically Ill Patients, Psychogeriatric Ward, Psychiatric Rehabilitation Ward.

[128] including Psychiatric Nursing and Care Centre/Ward, Psychiatric Care and Treatment Centre/Ward.

[129] Including Addiction Treatment Ward/Centre, Drug Addiction Rehabilitation Ward/Centre for patients with coexisting psychotic disorders, Drug Addiction Rehabilitation Centre, Drug Addiction Rehabilitation Ward/Centre for patients with coexisting psychotic disorders, Alcohol Addiction Treatment Ward/Centre, Drug Addiction Treatment Ward/Centre, Addiction treatment Centre

was 31,844. In addition, 146 beds were available for adult patients in psychiatric hostels and 650 beds in alcohol and drug addiction hostels.

MZ-15 Reports

MZ-15 reports submitted by mental health and addiction treatment outpatient clinics, funded by the NFZ or private, include patients of all age groups. According to the reports, the entities are divided in terms of the main source of funding, i.e. the NFZ or other (mainly commercial entities).

In 2019, 36% of clinics reported that their main source of funding was other than the NFZ. According to the number of consultations provided by non-NFZ-funded outpatient clinics, it can be seen that their share in all services offered is much lower than their share in all clinics. This means that non-NFZ-funded clinics provide, on average, fewer consultations than NFZ-founded outpatient clinics. Consultations provided by non-NFZ-funded facilities were the following: 12% of all medical consultations, 15% of all psychologist consultations, 2% of all other therapist consultations, 3% of home visits and 5% of telephone consultations. The share varies by clinic type. In psychological outpatient clinics, especially paediatric ones, the share of consultations provided by non-NFZ-founded facilities is high (37% and 51% of all consultations/visits, respectively). In the addiction, drug, alcohol and co-addiction treatment outpatient clinics, the share is very low (3%, 1% and 1% of all consultations/visits, respectively). According to age groups, the highest number of patients of non-NFZ-founded clinics was in the 19-29 age group (24%) and the lowest in the +65 age group. (9%).

The distribution of opening days of clinics per week varies according to the main source of funding – for NFZ-founded clinics the median number of opening days per week is 5; for other clinics it is 2.

7.2. Paediatric psychiatric care analysis

Patient characteristics

The total number of patients under 18 who received psychiatric care services in 2019 is 148,800, of which 38% are girls.

uncharacterised, Inpatient Drug Treatment Centre, Inpatient Drug Addiction Rehabilitation Centre, Inpatient Drug Treatment Centre for patients with coexisting psychotic disorders, Alcohol Addiction Treatment Ward/Centre, Drug Addiction Treatment Ward/Centre.

There were 17,300 patients in the group aged 0-5, of which 30.1% were girls. Most patients in this age group were reported with a diagnosis of pervasive developmental disorders (43.8% of all patients received this diagnosis at least once). There were 56,200 patients in the group aged 6-11, of whom 28.8% were girls. The most common disorder in this group was also pervasive developmental disorders, but it included a smaller proportion of patients (29.3%), the second most common diagnosis was hyperkinetic disorders (25.9%). The group aged 12-17 comprised the largest number of patients (75,400), 46.6% of whom were girls. The most common group of diagnoses were neurotic disorders associated with stress and somatoform (26.7%), as well as behavioural disorders and combined behavioural and emotional disorders (19.6%). 36% of the patients lived in a large city (more than 100,000 inhabitants), 32.2% in a rural area, 20.3% in a medium-sized city (20,000-100,000 inhabitants) and 11.5% in a small town. The number of patients in relation to the population under 18 years of age amounted to 3% in a large city, 2.4% in a medium-sized city, 2% in a small town and 1.6% in a rural area.

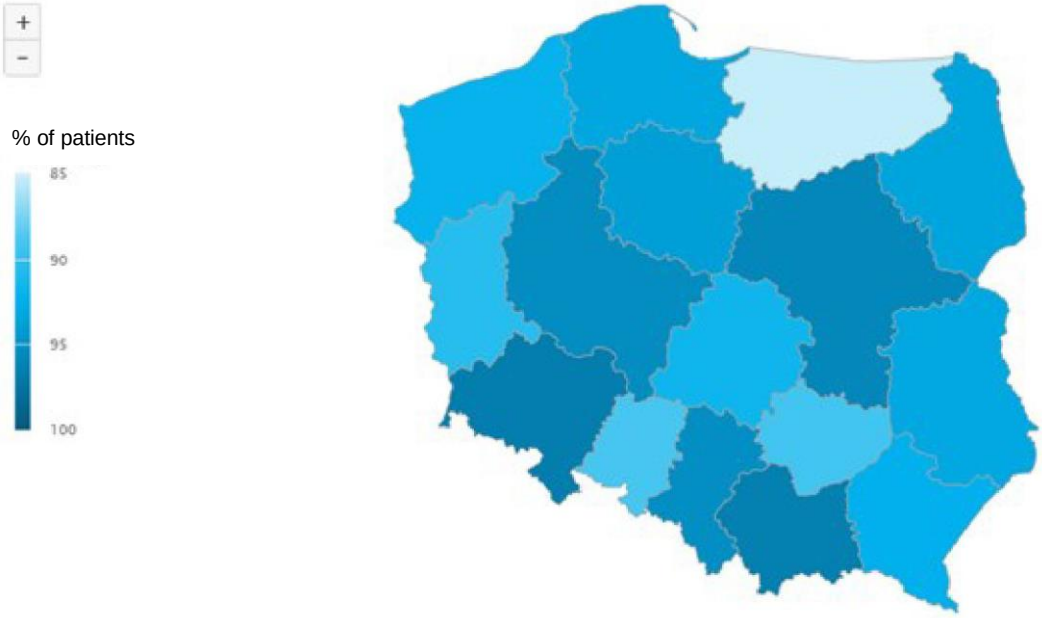
Migration

The lowest percentage of underage patients residing and treated in the same province was recorded in Warmińsko-Mazurskie Province (85.3%). In all the provinces the percentage of patients residing and treated in the same province reached the rounded values from 85% to 97%. Comparatively, in the group of adult patients, the percentage ranged from 92% to 97%. It indicates greater shortages in the availability of care in the field of paediatric psychiatry, although it does not apply to all provinces, e.g. Mazowieckie and Dolnośląskie provinces reached values similar to those for the adult population.

The lowest surpluses (relative and absolute) were observed in the following provinces: Warmińsko-Mazurskie, Opolskie and Podkarpackie. Consequently, in these provinces the number of patients residing and treated outside the province was much higher than the number of patients from other provinces treated in that particular province.

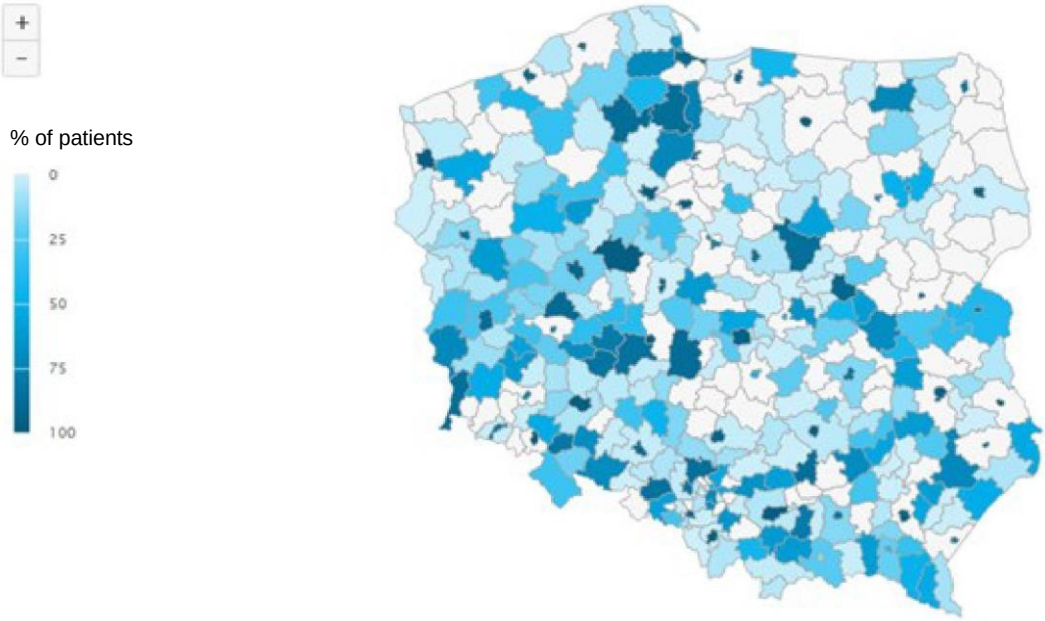
The analysis of maps with division into districts reveals that in many districts there was no psychiatric care provider. Both the percentage of resident patients treated and the percentage of patients treated outside the area equalled 0. It is also evident that the percentage of patients treated in the district of residence was generally low - in the vast majority of districts it accounted for less than 50% of patients.

Figure 157. Percentage of patients residing and treated in the same area in 2019 (by province).



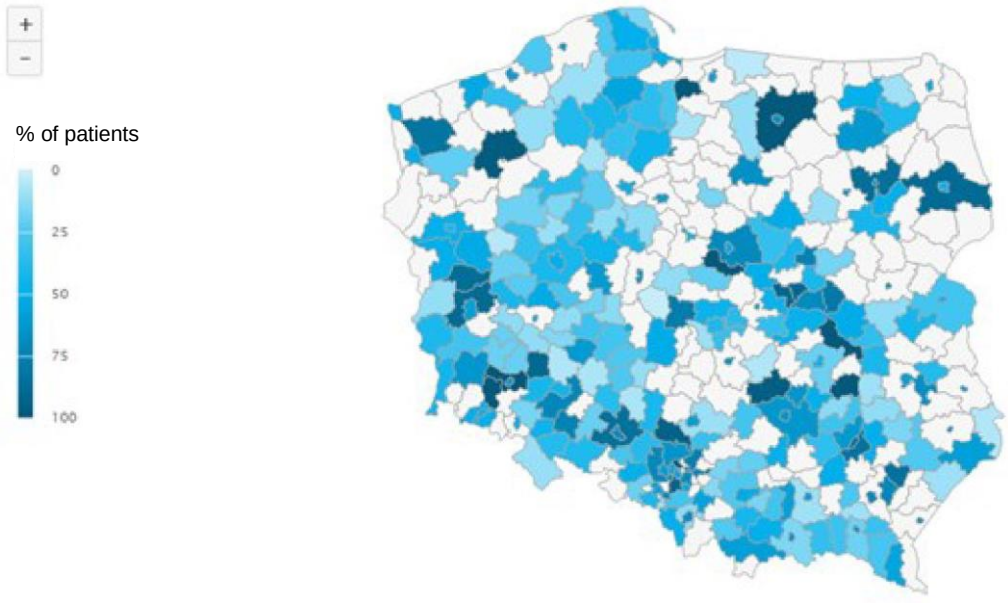
Source: Ministry of Health study based on data from NFZ and GUS

Figure 158. Percentage of patients residing and treated in the same area in 2019 (by province).



Source: Ministry of Health study based on data from NFZ and GUS

Figure 159. The percentage of patients from outside the area treated in the area in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Types of health services

Patients under 18 years of age not only largely use forms of psychiatric care and addiction treatment intended for adults[130] but also receive health care in other types of services. The number of patients with a major diagnosis of mental disorder (ICD-10 in the range F00-F99) on paediatric wards (4,100 patients) was equal to almost half the number of patients on paediatric psychiatric wards. In the age groups 0-5 years and 6-11 years, more patients received care under OSC services than under psychiatric care and addiction treatment (considering only services with a major diagnosis of mental disorders).

Forms of psychiatric care

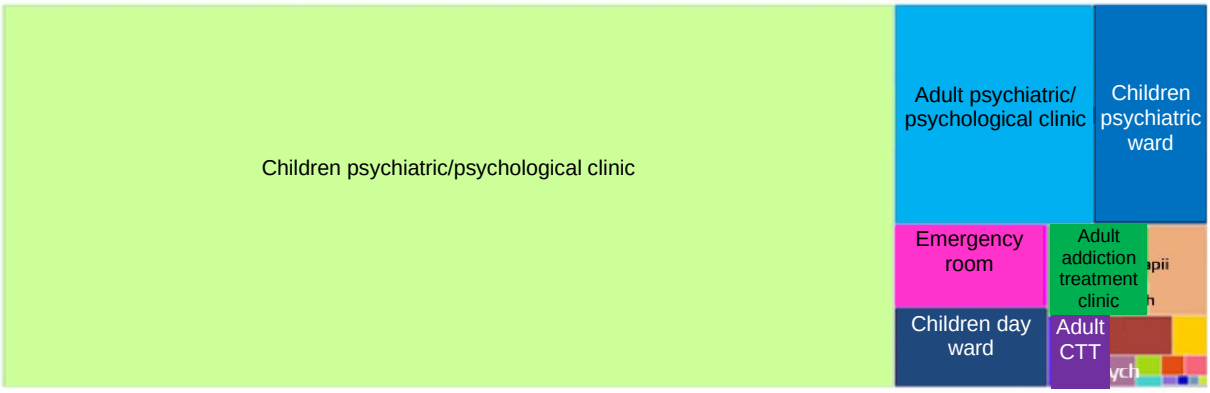
In 2019, a total of 917,800 consultations were provided to patients under 18 years of age, they spent a total of 765,800 days in inpatient care and day care for psychiatric care and addiction treatment services.

The largest number of patients under 18 years of age attended paediatric psychiatric/psychological outpatient clinics in 2019 (122,900 patients - 82.6%, but some patients used more than one form of care). Adult psychiatric/psychological clinics ranked second (15,700 patients), which

[130] Services provided in medical units included in the service category of psychiatric care and addiction treatment, not dedicated to the treatment of children and adolescents, according to part VIII of the Health Ministry code: 4736, 2742, 2752, 4740, 4744, 4746, 4750, 2718, 4752, 4754, 4756, 2756, 2746, 4742, 2748, 4748, 2750, 4700, 4702, 4704, 4710, 4712, 4714, 4716, 4730, 4732, 4734, 5172, 5162, 2720, 2724, 2726, 1700, 1702, 1704, 1706, 1710, 1750, 1790, 2730, 2732, 2734, 2700, 2702, 2704, 2706, 2710, 1780, 1740, 1742, 1744,

probably results from the limited availability of children clinics - a high proportion of patients attending adult clinics was observed for every age group, including the group of children aged 0-5 years.

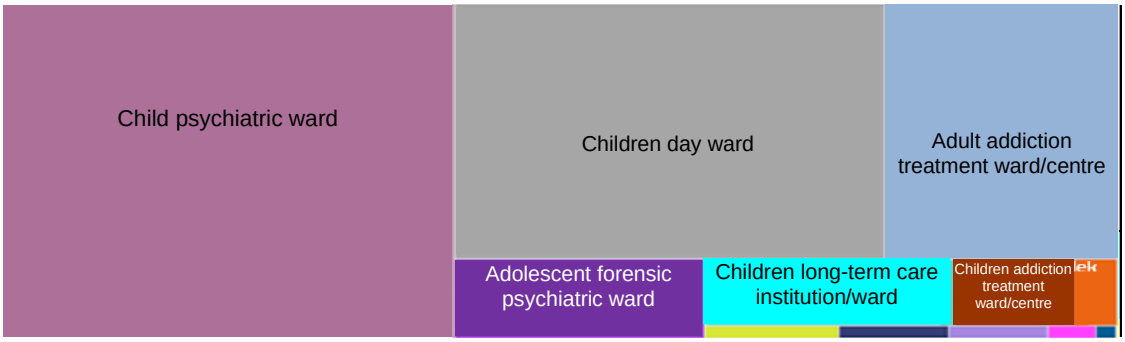
Figure 160. Number of patients by form of treatment in 2019.



Source: Ministry of Health study based on data from NFZ

The highest number of person-days was noted for paediatric psychiatry wards (338,100 person/days - 44.2%), followed by children day wards (212,200 - 27.7%), and the third in terms of the number of person/days was the ward/centre for addiction treatment for adults (114,200 - 14.9%). Up to 2019, in the NFZ system, psychoactive substance abuse rehabilitation wards/centres for adults and adolescents functioned under a single Health Ministry code (part VIII of the Ministry of Health code: 4750). Due to the impossibility of separating institutions intended for adolescents and due to the fact that most of them served both patients below and above the age of 18 (e.g. patients aged 14-21), they were categorised as addiction treatment wards/centres for adults. It implies that at least part of the number of person/days in substance abuse rehabilitation wards/centres (73,700 person/days) were actually spent on wards intended for adolescents, while the remaining 40,500 person-days were spent on wards intended for adults. Almost all patients in adult addiction treatment wards/centres were 12-17 years old. The high number of person/days in addiction treatment units/centres coincided with the number of person/days with respect to the type of disorder - the highest number of person/days concerned mental and behavioural disorders caused by the use of psychoactive substances (142,100 person/days - 18.6%). The number of person/days related to the treatment of patients diagnosed with addictions was relatively high when considering the number of patients diagnosed with disorders included in this group (3,700 patients - 2.5%). As regards children and adolescents, unlike adults, the most frequently treated addiction group was mental and behavioural disorders caused by the use of multiple drugs and other psychoactive substances (2,400 patients, 133,200 person/days).

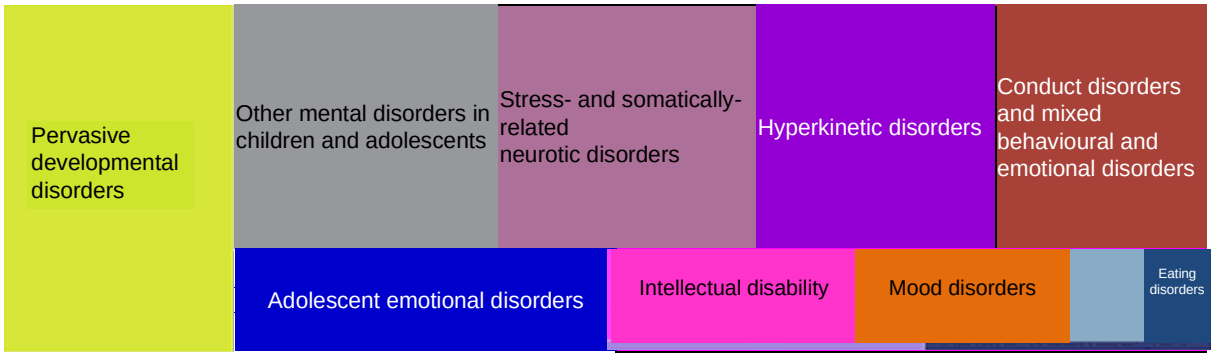
Figure 161. The number of person-days by the form of treatment in 2019.



Source: Ministry of Health study based on data from NFZ

The most common diagnosis among children in 2019 were *pervasive developmental disorders* (35,400 patients, i.e. 23.8% of all patients, but one patient may get more than one diagnosis during the year). More than 20,000 diagnoses also included: other psychiatric disorders in children and adolescents, stress- and somatically-related neurotic disorders, hyperkinetic disorders, conduct disorders and mixed behavioural and emotional disorders.

Figure 162. Number of patients by form of treatment in 2019.



Source: Ministry of Health study based on data from NFZ

Consultations

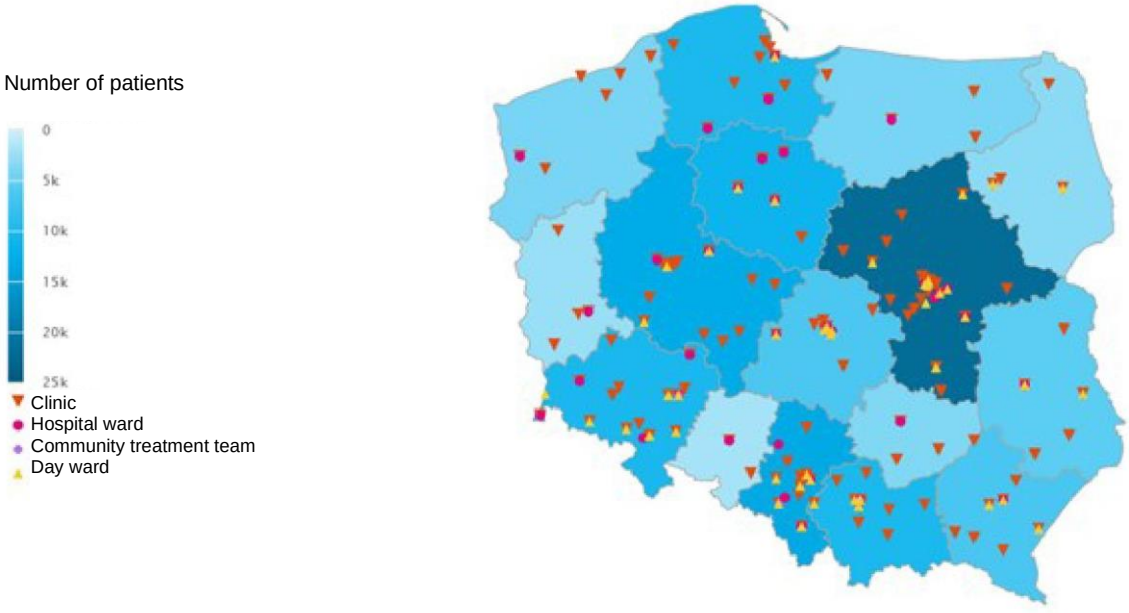
The majority (62.4%) of consultations provided in paediatric psychiatry/psychology outpatient clinics were medical. Individual psychotherapy, psychological consultations or group/family services were provided to a small extent, although to a relatively slightly greater extent than adult consultations. In some districts, consultations were provided less frequently than from Monday to Friday (e.g. in Garwolin District – on Wednesdays and Thursdays, in Proszowice District – on Tuesdays, Thursdays and Fridays), in some, the range of consultations provided was very narrow (e.g. Biała Podlaska and Strzelin districts – medical consultations only). It means

that even if there are clinics in a district, there may be limited access to the treatment provided by them.

Access to health care services

There was a very limited access to every form of treatment in the case of child and adolescent psychiatric treatment in 2019.

Figure 163. Population under 18 years of age and the location of each form of treatment in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

In 2019, in Poland, there were only three community treatment teams for children (in Wrocław, Kraków and Żory). There was not a single hospital ward of this type in the Podlaskie Province. Low availability of inpatient services for children may have influenced the number of hospitalisations of children with mental disorders (ICD-10 F00 to F99) in wards for somatic diseases (39.16% of all patients) or adult mental disorders (7.5% of all patients). Treating psychiatric disorders in children requires a specialised approach. Lack of quick diagnosis and medical and psychotherapeutic treatment can prolong the duration of the disease, in some cases making recovery impossible.

None of the forms of treatment was available all patients from the entire Poland. It can be assumed that the availability of services is so limited that some children could not be hospitalised in paediatric wards. 67.31% of the patients with mental disorders between the age of 6 and 11 were not hospitalised in a centre tailored to their needs. It is possible that not all psychiatric wards are tailored to provide services to young patients[131].

Similarly to adults, services in day wards and community treatment teams were provided to patients living close to their location. The patients of community treatment teams for children lived in only 85 (3.4%) communes in Poland.

Figure 164. Number of patients treated in paediatric psychiatric wards and the location of municipalities with such wards in 2019.

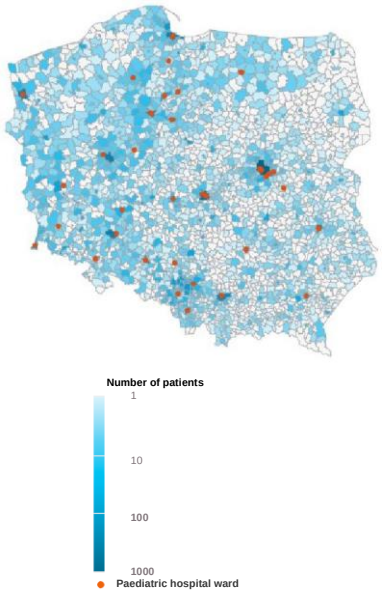


Figure 165. Number of patients treated in paediatric day wards and the location of municipalities with such wards in 2019.

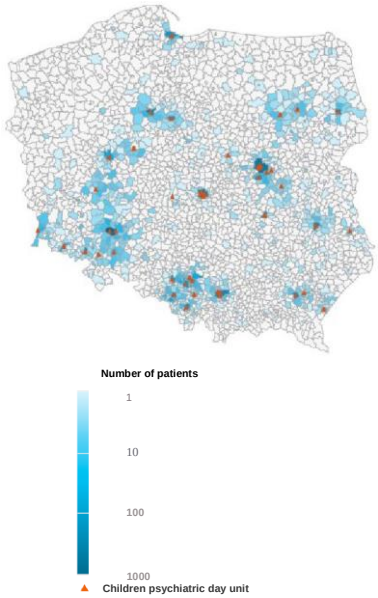
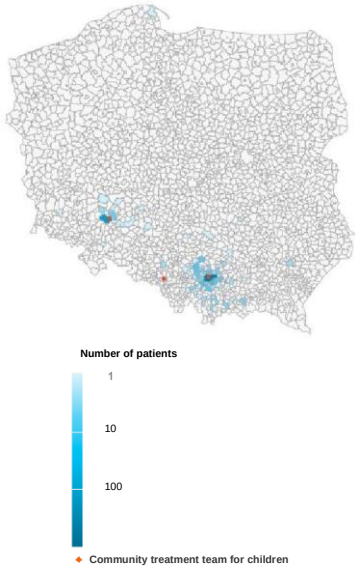


Figure 166. Number of patients treated in community treatment teams for children and the location of children CTTs in 2019



Source: Ministry of Health study based on data from NFZ and GUS

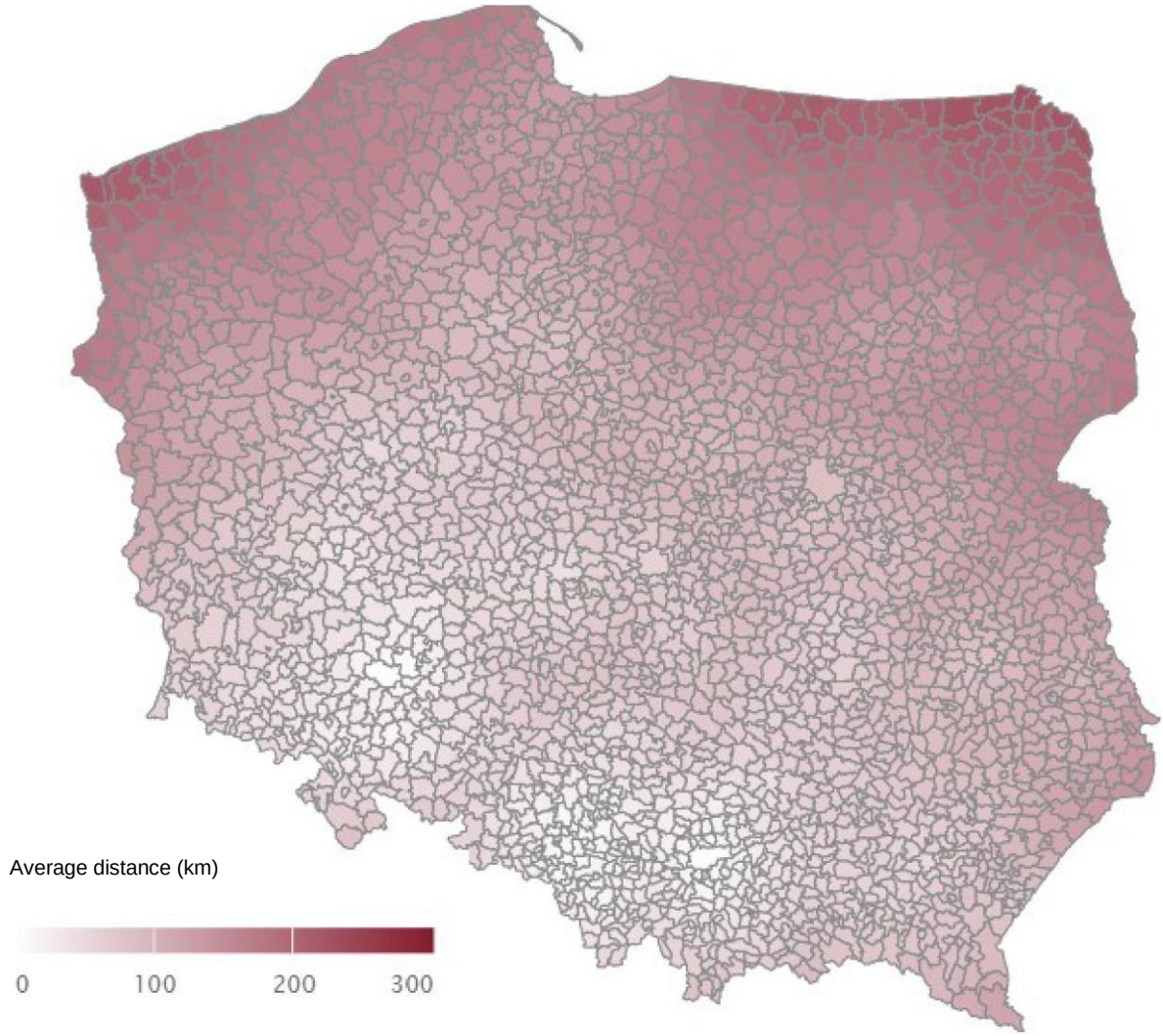
Because of low access to services, some young patients receive services provided for adults in psychiatric wards, community treatment teams, and mental health clinics. The Ministry of Health recommends that such situations only apply to patients over the age of 16 and for the shortest possible time.

Access to comprehensive treatment that includes three forms of treatment, i.e. day ward, outpatient clinic and CTT, varies by distance for patients in different parts of the country, including children and adolescents. 2,253 municipalities are more than 30 kilometres away from the facility where comprehensive treatment is available, for 882 of which

[131] https://www.termedia.pl/Psychiatria-dzieci-i-mlodziezy-w-Polsce,12,38418,0,0.html, [accessed 01.03.2021]

this distance is more than 100 km. The most distant (more than 220 km) are the following communes: Wiżajny (Podlaskie Province), Rutka-Tartak (Podlaskie Province), Dubeninki (Warmińsko-Mazurskie Province) and Gołdap (Warmińsko-Mazurskie Province).

Figure 167. Average distance from patients' place of residence to the facilities where comprehensive treatment with three forms of care is available in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

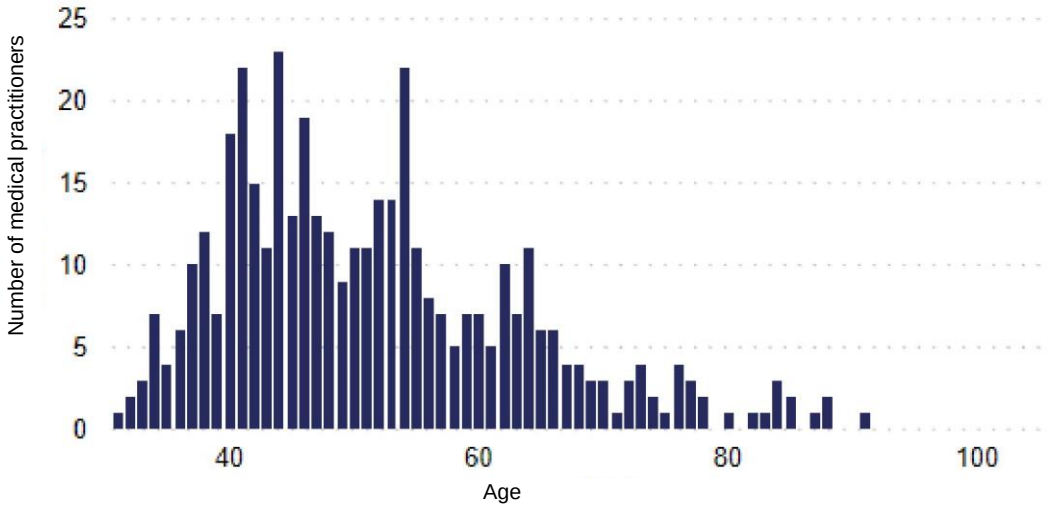
Medical specialists

The staffing situation in paediatric psychiatric care is worth highlighting. In 2019, in Poland, there were 426 paediatric psychiatrists (7.7 per 100,000 population aged 0-14). The median in EU countries in 2016 was 10 medical practitioners specialising in paediatric psychiatry per 100,000 population aged 0-14,[132] In the Opolskie, Lubuskie, Świętokrzyskie, Podlaskie, Warmińsko-Mazurskie

[132] https://gateway.euro.who.int/en/indicators/cahb survey 39-rate-of-practicing-child-psychiatrist-per-100000-population-aged-0-14-years/visualizations/#id=34022&tab=graph,[accessed 01.08.2021]

and Podkarpackie provinces) the absolute number of such medical practitioners did not exceed 15. The number of child psychiatrists per 100,000 population recommended by national consultants 2.0, while the actual number in Poland was 1.1.

Figure 168. Age pyramid of child and adolescent psychiatrists



Source: Ministry of Health study based on data from NFZ

In 2019, most psychiatrists were between 40 and 55 years of age and the average age was 51. The age pyramid of paediatric psychiatrists indicates the ageing of these specialists.

Queues

In clinics and child psychiatric wards, waiting time for admission was relatively high, even for urgent cases. Some types of treatments dedicated to children are so scarce across Poland that it is difficult to analyse waiting time. The queues for child addiction treatment or community treatment teams have only been reported in some months for individual facilities.

The average waiting time for stable cases in paediatric psychiatry wards varied over the year. In 2019, the longest average waiting time was observed in September – 121.7 days and the lowest in November – 60.7 days. For urgent cases, waiting time was also relatively high, with the lowest waiting time observed in December – 49.6 days and the highest in May – 99.8 days.

In paediatric psychiatric day wards, the average waiting time for stable cases was 78.3 days in January, 102.6 days in June, and 64.6 days in December 2019. In paediatric psychiatry rehabilitation day wards, waiting times were longer, i.e. 474.7 days in January, 85 days in June and 198 days in December 2019.

Waiting time for stable cases in the child mental health clinic was 77.2 days in January 2019, 84.6 days in June, and 91.3 days in December. Waiting time in child mental health clinics were therefore longer than in adult mental health clinics. Waiting time was high even for urgent cases, i.e. 64 days in January, 65.2 in June and 74 days in December.

Beds

In 2019, the total number of hospital psychiatric[133] and long-term psychiatric treatment[134] beds in paediatric wards was 1,283. In the case of paediatric drug addiction inpatient care, in 2019, there was a total of 20 beds available in child drug addiction treatment wards/centres, and 1,891 beds drug addiction rehabilitation wards/centres, which include centres for both adolescents and adults. As far as hostels are concerned, 50 beds were available in hostels for children with mental disorders.

7.3. Conclusions

When analysing psychiatric care and addiction treatment, it is worth taking into account the following aspects: the estimated health needs, the need to increase the pace of reforms, the challenges in implementing the system's assumptions, the indicators deviating from EU standards, and the difficulties in estimating the real state of mental health of Poles.

In 2019, a total of 1,700,000 patients (91% of which were adults) received services in psychiatric care and addiction treatment. Patients from rural areas were the second largest group in terms of the place of residence (large/medium/small city or rural area).

Adults receiving the treatment were predominantly women (57%). The forms of treatment that were provided varied according to the diagnoses. In hospitals, the most frequently treated disorders were schizophrenia and addiction; in admission rooms, these were addiction and anxiety disorders; in long-term care centres/wards – schizophrenia and mental disorders due to brain damage; and in psychological/psychiatric outpatient clinics – anxiety, mood and mental disorders due to brain damage. Inpatient care had a significant percentage of emergency admissions at 52% (general adult psychiatric wards at 66%). The longest average waiting time was observed in long-term psychiatric care facilities, care and treatment facilities, community (home-based) treatment teams for persons with autism, psychogeriatric wards and outpatient clinics for alcohol addiction and co-addiction treatment. There was variation across the country in

[133] Including General Paediatric Psychiatric Ward, High Security Forensic Paediatric Psychiatric Ward.

[134] Including Paediatric Psychiatric Nursing and Care Centre/Ward, Paediatric Psychiatric Care and Treatment Centre/Ward.

terms of migration (the highest share in the Warmińsko-Mazurskie Province, the lowest in the Małopolskie Province), modes of inpatient admissions (emergency admissions: 29% in the Podkarpackie Province, 69% in the Mazowieckie Province) and the average waiting time for hospital admission (in June, for stable cases, the highest value was recorded in the Łódzkie Province – 208.9 days, and the lowest in the Zachodniopomorskie Province – 2.7 days)**,** as well as mental health clinics, CTT.

Young patients receiving the treatment were predominantly boys (62%). There was variation within the country in terms of migration (the largest in the Warmińsko-Mazurskie Province, the smallest in the Dolnośląskie Province). The access to services was significantly limited and because of it, the community (home-based) treatment model was not feasible (3 community treatment teams for children nationwide). A high number of patients with mental health diagnoses did not receive specialistic treatment. 148,810 patients with mental disorders were treated in psychiatric care, a large number of such patients received only AOS (85,750 patients) or POZ services (53,070 patients). Many young patients were treated in wards and clinics for adults.

In terms of staffing, there is a significant need for more medical practitioners specialising in psychiatry and paediatric psychiatry. In both cases, their number per 100,000 population diverges from the EU average. Psychiatric care involves various specialists. In 2018, according to the reports of the entities providing inpatient psychiatric care (MZ-30), the staff of the basic health care, apart from medical practitioners, also includes nurses (6,900), psychologists (1,200), addiction therapy specialists (900), occupational therapy instructors (200), occupational therapists (200), social workers (200) and certified psychotherapists (400).

In the case of mental health care and addiction treatment, the private sector has a significant share[135]. Social stigma may also influence the lack of reporting or continuing treatment within public health care. Therefore, the values of public health care hospitals may differ from actual values, and the epidemiology in terms of mental disorders remains further in the research stage.

7.4. Health care system challenges - adults

The analysis identified global mental health problems among Poles. In 2019, the most common diagnosis among adults were anxiety disorders. Patients with schizophrenia, despite a relatively low proportion among all mental disorders, generated

[135] https://pulsmedycyny.pl/problem-opieki-psychiatrycznej-w-polsce-analiza-rynkowa-968254, [accessed 01.08.2021]

the highest number of person/days in psychiatric care. With only slightly higher numbers of patients, addictions generated both high numbers of person-days and consultations provided. In 2019, the health care system was oriented on hospital treatment without sufficient emphasis on community treatment. Because of the situation described above, it is impossible to provide the services to patients due to their medical needs. In terms of psychiatric care, one of the main objectives of the reforms based on deinstitutionalisation is the transition from institutional care to community-based care for day and outpatient services. Reducing the provision of services at large institutions in favour of hospital services provides the opportunity to better coordinate the services and maximise therapeutic outcomes.

The system assumptions are not fully implemented for adult patients with mental health disorders within psychiatric care. There was a high share of inpatients in all patients in 2019. There was an inverse relationship between the types of consultations provided and recommended – the most reported ones were medical consultations, and the number of individual psychotherapy, psychological consultations or group/family services was low. In addition, there is a high number of patients with mental health disorders who have not received specialistic treatment (875,000 patients in PHC only with approx. 1,500,000 patients receiving specialistic treatment in total).

Due to population structure, demographic projections, and the ageing process, the need for psychogeriatric care will increase.
In 2019, psychogeriatric wards were available in only 13 provinces.

There is a very low number of medical practitioners specialising in psychiatry per 100,000 population in Poland. In 2019, psychiatry was the 3rd speciality in terms of the difference recommended by the national consultant in the ratio of the number of medical practitioners per 100,000 population (20) and its actual value (10). Poland was ranked 27th among EU countries. The average age of medical practitioners in this speciality is high and in 2019 it was 52.

Changes are underway in the system of psychiatric care for adult patients. The three-year CMH pilot programme launched in 2018 is expected to cover 34 districts or urban areas in 2020. Other 54 districts or urban areas fully or substantially meet the requirements to open more CMHs. The programme provides for creating 300 CMHs, which will cover the entire country with the areas of responsibility.

There is limited access to specialistic treatment for the addictions among the behavioural risk factors that most affect DALY. Some provinces do not have general, smoking, alcohol, drug addiction outpatient clinics or hostels for addicts.

7.5. Health care system challenges - children and adolescents

Pervasive developmental disorders were the most commonly diagnosed globally among mental health disorders in 2019. The largest number of person-days was generated by a relatively small group of patients with drug addiction disorders. The highest number of hospitalisations was reported for conduct and emotional disorders. The most common groups of diagnoses vary by age. In the case of the youngest patients of 0-11 years of age, pervasive developmental disorders were most common. Patients require all forms of treatment. There was very limited access to each of them (e.g. three community treatment teams for children across the country – in Wrocław, Kraków and Żory).

The goals of the system are not met for young patients with mental health disorders within psychiatric care to the extent that they meet physical health needs. None of the forms of treatment covered all the patients across the country. It can be assumed that in the case of children, difficult access (in terms of distance) to each of the four forms of treatment resulted in number of patients not receiving a given form of treatment. Access to comprehensive psychiatric treatment is significantly more difficult for children than for adults (the average distance from each of the four forms of treatment providing comprehensive care was more than 30 km in more than 2,000 municipalities). Even with the outpatient clinics in a given district, the access to treatment offered by the clinic in some areas was limited – services were not open on all days of the week, or the range of services provided was very narrow (covering only one type of consultations).

In 2018, the number of beds for paediatric inpatient care was much lower per the number of patients than in the case of adults (10 versus 23.7). The worst situation was observed in the case of addiction treatment (41 beds nationwide). This resulted in a high number of patients treated for mental disorders in wards or clinics other than the designated ones, which was observed mainly among the youngest patients (0-11 years of age) in paediatric wards and in adult psychiatric wards and clinics (adult clinics are the second most common form of treatment for children and adolescents). The lack of hospitalisation of patients aged 0-11 may reflect the lack of adjustment of hospital wards to such young patients. There is a need to open the following treatment centres at three reference levels in accordance with the reform of child and adolescent psychiatry initiated in 2020:

- community psychological and psychotherapeutic treatment centres at the first reference level in every district or group of districts,
- child and adolescent mental health centres at the second reference level with psychiatric care available, including a day ward,

one centre is to cover several contiguous districts,

– highly specialistic centres of 24-hour psychiatric care at the third reference level, at least one in each province.

Poland has a very low number of paediatric psychiatry specialists, with a high average age of 51. In 2019, there were 424 paediatric psychiatrists (7.7 per 100,000 population aged 0-14). This is below the median value of EU countries in 2016, which is 10.

7.6. Recommended lines of actions

→ for several years, the weakness of the system with regard to both adult and paediatric psychiatric care has initiated changes that need to continue, with an increasing their pace. It is recommended to open more CMHs and to implement the lines of the reform of child and adolescent psychiatry with the need of open new treatment facilities of all forms;

→ It is necessary to set standards for the services provided in order to implement the changes of the system for the patients with mental disorders within the psychiatric care to the extent that their health needs are met;

→ educating medical practitioners specialising in adult and paediatric psychiatry should be promoted;

→ due to the need to continue the reform of psychiatry, the demand for specialist psychiatrists and to increase the availability of services, it is recommended to increase the share of funding psychiatric health care in the total spendings on health care.

8. Medical Rehabilitation

According to the WHO, rehabilitation is a set of interventions needed when a person is experiencing or is likely to experience limitations in daily functioning due to ageing or health conditions, including chronic diseases and disorders or injuries. Examples of limitations in daily functioning include mental, visual, hearing, communicating and moving difficulties, and the difficulties in maintaining relationships or keeping a job. Rehabilitation enables people of all ages to maintain or return to daily activities, perform meaningful life roles and maximise their well-being.

Not only is it profitable for a patient, but it also eases the pressure on Social Insurance Institution (ZUS) (earlier end of sick leave) and increases GDP (earlier return to work or higher productivity of the employee).

The AOTMiT analysis shows that in outpatient rehabilitation, the proportion between physiotherapy (71%) and kinesitherapy (21%)[136] is distorted – the share of the latter, according to the AOTMiT, should be much higher. At the same time, 56.8% of the patients who commenced physiotherapy in the first half of 2019 did not receive kinesitherapy treatments.

The demand for hospital physiotherapy is projected to increase due to demographic changes, i.e. an increasing population of post-working age (over 60/65). This will result in an increased demand for health care services.

The ageing of medical staff is another challenge. At present, the average age of specialists is about 55 and there are not enough medical practitioners taking up this speciality as residents, which does not bode well[137].

There is a long waiting time for rehabilitation, which is especially important for patients after acute medical incidents or injuries. Because of their condition, such patients should receive rehabilitation services as soon as possible to ensure the effectiveness of previously performed surgical procedures.

A limitation of the following analysis is the lack of data on the number of patients and the number of services in the private sector, so it is based mainly on data from the NFZ. ZD-3 report is to be filled in by medical entities/facilities, which provide consultations by only medical practitioners, dentists and psychologists. Therefore, the treatments provided by physiotherapists, which are the predominant group of outpatient rehabilitation services in the public sector (98%) are not included in the reports.

[136] AOTMiT study on the NFZ data from the first half of 2019.

[137] Report of the National Consultant on Medical Rehabilitation of 30 March 2019.

The national consultant on medical rehabilitation indicates that there is currently a lack of hospital rehabilitation services for patients with cancer. The patients with this diagnosis wait for hospital rehabilitation services along with other patients because there isn't a separate oncology rehabilitation treatment. In turn, the AOTMiT study[138] shows that there are no specific conditions for the provision of rehabilitation services for children – the conditions of services do not differ within the general rehabilitation in day and inpatient wards due to the specificity of services provided to children and adults. In the current practice, healthcare providers who declare to provide services for children must meet the same requirements as for services provided to adults[139].

Rehabilitation is important in the treatment of many conditions. According to the first point of the guidelines for rehabilitation of patients with RA and ankylosing spondylitis (AS) of the National Institute of Geriatrics, Rheumatology and Rehabilitation, the main principle of rehabilitation of patients with RA and AS is a comprehensive treatment, i.e. the combination of physiotherapy, kinesitherapy, orthopaedic treatment, education and psychological care. The *European Stroke Initiative* recommends early rehabilitation after stroke as a key component of treatment on a stroke ward. The guidelines of the Expert Groups of the Section of Vascular Diseases of the Polish Neurological Society state that every patient with stroke should be hospitalised in a stroke ward providing comprehensive treatment and rehabilitation. The *American College of Physicians* (2017) recommends that when treating sacroiliac pain, non-pharmacological treatment should be the first choice. Multidisciplinary rehabilitation, motor control exercises, yoga, and relaxation exercises are recommended. In turn, the Ministry of Health analysis of five health problems shows that rehabilitation plays a vital role in treating cardiovascular diseases such as heart failure. It was observed that the patients with heart failure receiving hospital rehabilitation have a higher probability of 5-year survival (83.9%) compared to patients who did not receive rehabilitation services (59.4%).

Rehabilitation in the health care system, under public health insurance, is provided in day, inpatient, home-based and outpatient settings. For day and inpatient settings, it is billed in person-days, while for home-based and outpatient settings, the following services are distinguished:

[138] *Koncepcja zmian organizacji i funkcjonowania rehabilitacji leczniczej w systemie ochrony zdrowia w Polsce*, AOTMiT, Wydział Świadczeń Opieki Zdrowotnej, nr AOTMiT-WS.434.1.2016.

[139] Ibid.

– Rehabilitation medical advice[140],

– Physiotherapy visit [141],

– Physiotherapy treatment[142].

The eligibility conditions and the maximum duration of rehabilitation are defined in the Regulation of the Minister of Health of 6 November 2013 on guaranteed services within physical rehabilitation (Dz. U. /Journal of Laws/ of 2021, item 265). For outpatient rehabilitation services, a patient needs only a referral from any health insurance medical practitioner.

Rehabilitation in a home-based setting is a guaranteed service provided to patients with motor dysfunctions caused by focal brain injury, severe central and peripheral nervous system damage, spinal cord damage, chronic progressive diseases (in particular myopathies, Parkinson's disease, polymyositis, spinal muscular atrophy, brain tumours, demyelinating disorders, connective tissue disease, chronic extrapyramidal syndromes, rheumatoid arthritis), degenerative joint or hip diseases, fractures, injuries and amputations of the lower limbs and after joint replacement surgery, as well as patients in a persistent vegetative state.

Rehabilitation in a day centre/ward is available to a patient whose health condition does not allow rehabilitation in outpatient settings and does not require 24-hour medical supervision.

The following types of inpatient rehabilitation are distinguished:

– systemic (lasting up to 6 weeks; 6 days a week; an average of 5 treatments per day),

[140] Rehabilitation medical consultation –a guaranteed service provided in outpatient or home-based settings by a specialist medical practitioner, a medical practitioner with the first degree of speciality or a medical practitioner undergoing speciality training
in the field of medical rehabilitation or balneotherapy and physical medicine. The following product codes

[141] Physiotherapy visit – a guaranteed service which includes assessment and description of the condition of a patient before starting physiotherapy, functional examination of the motor organ or other examination necessary to establish the physiotherapy plan, final assessment and description of the functional condition of a patient after the completion of physiotherapy and the recommendations for a patient for further physiotherapy treatment. The following product codes were included: 5.11.00.0000003, 5.11.00.0000004.

[142] Physiotherapy treatment – a guaranteed service provided in cycles that meet the health needs of the patients undergoing rehabilitation or physiotherapy treatment. All other product codes were included.

– pulmonary (lasting up to up to 3 weeks per one patient; 6 days a week in the morning and afternoon; an average of
5 treatments per day),

– cardiological (lasting continually 2 to 5 weeks, depending on the patient's condition, 6 days a week),

- cardiological, after myocarditis (lasting up to 35 days in an inpatient rehabilitation ward with a possibility to provide a part of person/days in a rehabilitation centre or day ward or telerehabilitation, but the completion of rehabilitation shall not exceed 90 calendar days),

– neurological (conditions vary depending on the type of condition),

– treatment of children and adults in coma.

A referral for inpatient rehabilitation is issued by a medical practitioner of the outpatient clinic or ward with the appropriate speciality.

Services similar to rehabilitation are spa treatments, which is a continuation of hospital or outpatient care to help a patient recover from an illness or an accident. It benefits from the properties of natural healing resources, climate and microclimate. Such treatment is also accompanied by physiotherapy. Only hospital rehabilitation services without spa treatment are included in this document.

In Poland, rehabilitation services are funded from the following sources:

– NFZ (National Health Fund),

– ZUS,

– KRUS (Agricultural Social Insurance Fund),

– PFRON (State Fund for Rehabilitation of Disabled People),

– local government units

- private patient funds.

91.8% of the total public spendings on rehabilitation in 2016 (including NFZ, ZUS and KRUS) were financed by NFZ, 7.1% by ZUS and 1.1% by KRUS[143]. The spendings of ZUS are financed under the

[143] *Koncepcji zmian organizacji i funkcjonowania rehabilitacji leczniczej w systemie ochrony zdrowia w Polsce*, AOTMiT, Wydział Świadczeń Opieki Zdrowotnej, nr AOTMiT-WS.434.1.2016.

disability prevention programme – in 2017, it covered 88,800 insured patients (by 3,400 patients more than in 2016)[144].

This document is based on data reported to the NFZ, so it does not include rehabilitation financed from other sources. According to the financial plan of the NFZ, spendings on rehabilitation are expected to increase from PLN 2,520,000,000 in 2018 to PLN 2,860,000,000 in 2019. (+13.7% YoY) and PLN 2,880,000,000 in 2020 (+0.5% YoY). At the same time, the share of rehabilitation costs in the total cost of health care services does not change and remains at the level of 3.1-3.2%. The spendings on outpatient rehabilitation are approximately PLN 900,000,000 per year[145].

According to the financial plan of the NFZ, spendings on rehabilitation are expected to increase from PLN 2,200,000,000 in 2015 to PLN 2,990,000,000 in 2019[146] and PLN 3,050,000,000 in 2020[147] [148], with the largest increase observed in 2019. Despite this, there was no significant change in the number of patients rehabilitated, the number of physiotherapy treatments or the structure of treatments. However, the number of physiotherapy visits has increased sharply due to the expansion of the credentials physiotherapists.

Table 38. Spendings on rehabilitation according to the financial plans of the NFZ.

	2015	2016	2017	2018	2019	2020
Amount [PLN '000'000]	2,203	2,236	2,384	2,498	2,987	3,052
Change [Y/Y].	-	+1.50%	+6.62%	+4.78%	+19.58%	+2.18%

Source: Ministry of Health study based on data from NFZ

According to OECD148 data on medical and hospital rehabilitation spendings, in Poland, the total spendings (private and public) on this sector have been steadily increasing – in 2010, it was PLN 821 per 1 resident, and in 2017 – PLN 1,170. On the other hand, if we look at total spendings at national level compared to GDP, they were on a steady level between 2.1% and 2.2% over these years. This ratio is equal to the median of all OECD countries (excluding Israel, Australia and Japan – no data). The lowest spendings on inpatient rehabilitation in GDP are in

[144] *Insured patients undergoing therapeutic rehabilitation as part of the disability prevention programme of the ZUS in 2017, 12 months after the rehabilitation*, ZUS, Department of Statistics and Actuarial Projections,

[145] AOTMiT

[146] Data for 2015-2019 based on the financial reports of the NFZ.

[147] Data for 2020 based on the financial plan of the NFZ (Regulation of the President of the NFZ No. 130/2020/DEF of 25 August 2020).

[148] https://stats.oecd.org/Index.aspx?ThemeTreeId=9#, [accessed 01.06.2020]

Lithuania (1.1%), Luxembourg (1.4%), and Estonia (1.5%), while the highest in Austria (3.4%), Greece (3.3%), and France (3.1%).

OECD also collects data on expenditures on hospital and outpatient rehabilitation, and these are also increasing in Poland from PLN 526 per 1 resident in 2010 to PLN 969 in 2017. Total outpatient rehabilitation spendings in GDP remained at the level of 1.4% from 2010 to 2014, 1.5% from 2015 to 2016, and 1.8% in 2018. The median for this ratio among OECD countries (excluding Israel, Australia, and Japan - no data) in 2018 was 2.2%, i.e. 0.4 percentage points higher than in Poland. The lowest value was in Lithuania (1.3%), Ireland (1.4%) and Greece (1.5%), while the highest in Switzerland (3.5%), Portugal (3.7%) and the USA (7.7%).

According to Eurostat data for 2017,[149] there were 385 licensed physiotherapists per 100,000 population in Poland. Iceland has the values in this regard (752) and Romania the worst (284). In countries with the closest to Poland SDI value, the are the following countries: Estonia – 506, Latvia – 618, Malta – 513, Slovakia – no data, Hungary – 568, Italy – 655. Data on the mean and median value of this ratio across the EU are not available because there is no data for many countries.

8.1. Rehabilitation analysis

Patient characteristics

In 2019, in Poland, 3,340,000 patients were rehabilitated under the NFZ. Among them, the vast majority were women (64.8%) and people living in urban areas (69.3%). In addition, 10% of the patients were aged 0-17, 51.9% were aged 18-64, and 38.1% – 65 or over. 76.6% of all rehabilitated patients did not have a disability certificate, 5% had mild disabilities, 11.2% – moderate disabilities, 5.5% – severe disabilities, and 1.7% had disabilities up to 16 years of age.

[149] https://ec.europa.eu/eurostat/databrowser/view/tps00167/default/table?lang=en, [access 01/06/2020]

Table 39. Demographic structure of patients.

Age	Number of patients: receiving day care ['000].	receiving inpatient care ['000].	receiving home-based care ['000].	receiving outpatient care ['000]	Total ['000].
0-17	119.36	19.36	0.61	231.35	334.27
18-64	118.24	81.10	12.86	2,622.95	1,730.68
65 and over	93.00	124.08	35.03	1,137.70	1,272.54

Source: Ministry of Health study based on data from NFZ and GUS

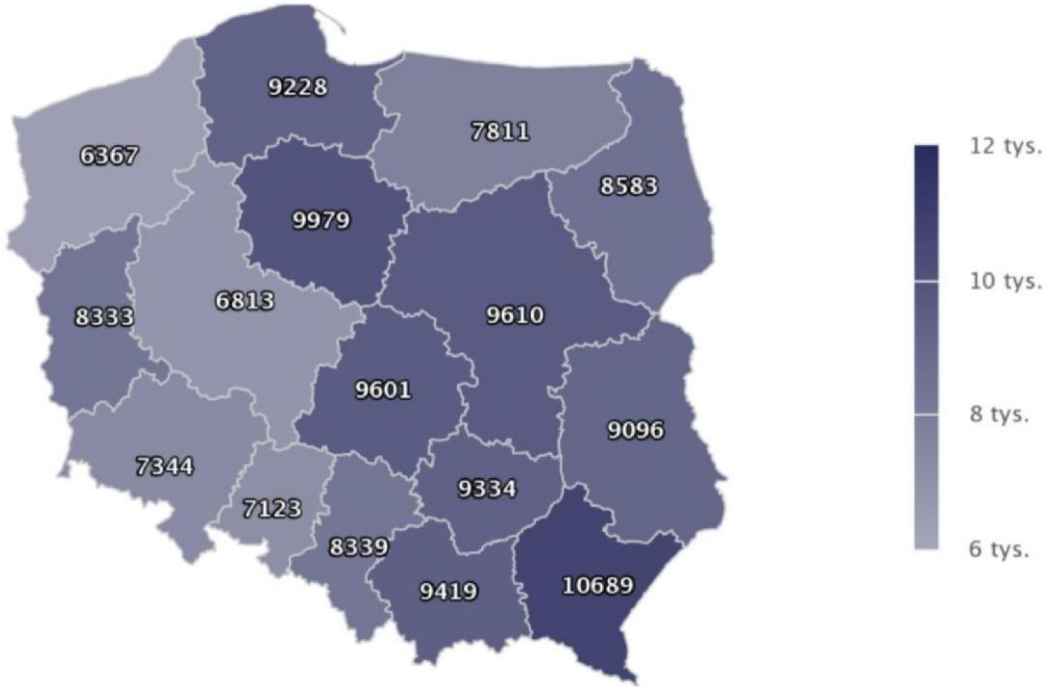
According to the 2019 report of the national consultant on medical rehabilitation, diseases and injuries of the nervous and musculoskeletal system will dominate in the ageing population. Another element that will increase disability in Poland will be cancer. According to the National Cancer Registry, the incidence of malignant neoplasms is increasing every year. In 2017, 164,900 people were diagnosed with malignant neoplasms (82,500 men and 82,400 women). It is estimated that the psychophysical consequences of cancer treatment are responsible for reduced quality of life in approximately 70% of patients[150]. Physiotherapy is the most effective way to prevent functional disorders or to restore psychophysical functions after malignant neoplasm treatment. According to the recommendations of the Polish Society of Clinical Oncology, rehabilitation should be an integral part of oncological therapy available to all patients treated for malignant neoplasms (regardless of its type, stage, method and stage of therapy). Additionally, rehabilitation should be provided before active oncologic treatment begins rather than after it is completed, which significantly reduces the risk of complications and disorders and increases the chance that patients will return to full activity quicker. As pointed out by the Polish Society of Clinical Oncology, oncological rehabilitation should be continuous, which means that it should be continued even throughout the whole life of the patient and should include the hospital,

[150] M. Woźniewski, *Fizjoterapia w onkologii*, Wydawnictwo Lekarskie PZWL, Warszawa, 2012.

early post-hospital (sanatorium) and late (outpatient) periods of treatment, which reduces the risk of recurrence of functional disorders that is dangerous even many years after the end of treatment[151].

There were very significant differences in the number of rehabilitated patients per 100,000 population between provinces, i.e. the highest number was observed in Podkarpackie (10,689), Kujawsko-Pomorskie (9,979) and Mazowieckie (9,610) provinces, and the lowest in Zachodniopomorskie (6,367, i.e. 40% less than in Podkarpackie Province), Wielkopolskie (6,813) and Opolskie (7,123) provinces. In addition, a higher number of rehabilitated patients per 100,000 population is observed in cities with district rights than outside them, e.g. the city of Wrocław – 8,939, Wrocław district – 4,673; the city of Toruń – 11,311, Toruń district – 6,823, etc. This means that patients living in large cities are more likely to be rehabilitated.

Figure 169. The number of patients per 100,000 population in provinces in 2019



Source: Ministry of Health study based on data from NFZ and GUS

The most common diagnoses with which patients in Poland were rehabilitated included[152]: musculoskeletal diseases (78%), nervous system diseases (15.3%), cardiovascular diseases (1.5%), other non-communicable diseases (0.9%), cancer (0.7%) and chronic respiratory diseases (0.6%). It is worth noting that very few patients with cardiovascular diseases and with cancer were

[151] Recommendations of the Polish Society of Clinical Oncology for rehabilitation. http://onkologia.zalecenia.med.pl/pdf/zalecenia PTOK toml 19 Rehabilitacja chorych na nowotwory 2014 0807.pdf, [accessed 01.06.2020]

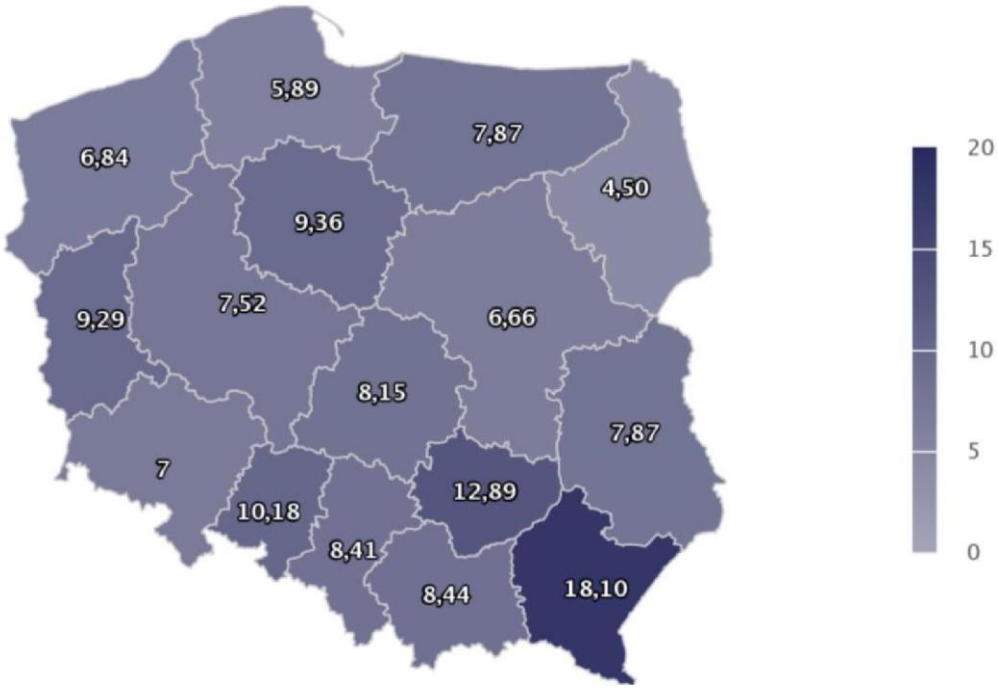
[152] Categories of diagnoses based on GBD.

rehabilitated (compared to the number of patients), in 2019 It was 44,200 and 21,900, respectively.

Health service provider analysis

In 2019, there were 3,212 facilities which provided medical rehabilitation services. According to the data, 440 facilities provided services in inpatient settings, 529 in home-based settings, 839 in day wards and 2,629 in outpatient settings.

Figure 170. Number of centres providing rehabilitation services per 100,000 population – any type of service.



Source: Ministry of Health study based on data from NFZ and GUS

Between 2016 and 2019, the number of centres providing rehabilitation services increased from 2,897 to 3,212 (+11%). Increases were seen in all types of rehabilitation: home-based (from 63 to 529, an increase of more than 8 times), outpatient (from 2,536 to 2,629; +3.7%), day (from 751 to 839; +11.7%), and inpatient (from 386 to 440; +14%).

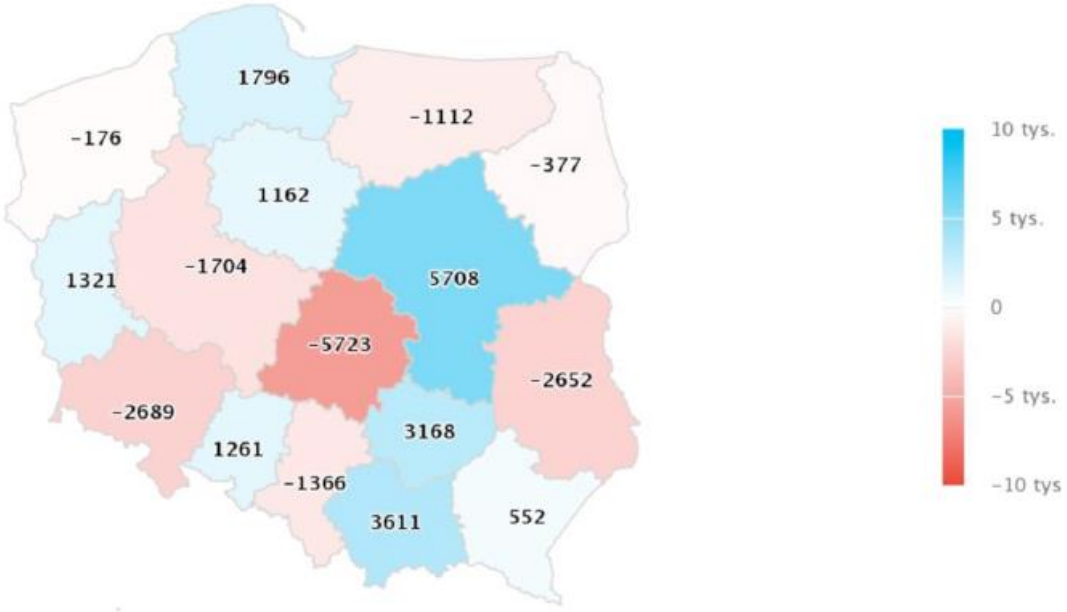
Patient migrations

Migration balance in a given area is a difference between the number of patients from other areas treated in a given area and the number of patients from a given area treated in another area. A migration balance higher than zero means that there are more patients residing in other areas treated in this area than residing in this area treated outside it. Low migration balance may indicate poor accessibility to rehabilitation.

In 2019, The migration balance was the highest in the Mazowieckie (+5,708), Małopolskie (+3,611) and Świętokrzyskie (+3,168) provinces, and the lowest in the Łódzkie (-5,723), Dolnośląskie (-2,689) and Lubelskie (-2,652) provinces. It is worth noting that the number of rehabilitated patients per 100,000 population does not always coincide with the migration balance, in particular among patients from the Łódzkie Province, there is a relatively high number of rehabilitated patients (fourth result in Poland), and the migration balance is the lowest there.

The migration of patients to cities with district rights from the outskirts is observed, e.g. the migration balance for the city of Wrocław was +5,118, and -4,197 for the Wrocław District; the city of Toruń +3,289, and -3,341 for the Toruń District, etc. This shows the centralisation of the centres in large cities.

Figure 171. Migration balance – any type of service.



Source: Ministry of Health study based on data from NFZ and GUS

Number of patients and services forecasts

Both in Poland and worldwide, a the process of the ageing of society is observed. Health policy must be prepared for all the consequences resulting from these disturbing demographic forecasts also in the field of medical rehabilitation. In 2019, 6.3% of the working-age population (1,440,000 people) and 18.6% of the post-working age population (1,560,000 people) received rehabilitation under the NFZ. Among all those receiving rehabilitation, working-age people accounted for 43.2% and post-working age people for 46.8%.

The forecast was prepared on the basis of changes in population with respect to gender and age groups estimated by the Statistics Poland and it assumes that the current level of services will be maintained

at the national level by 2050. The number of rehabilitated patients due to demographic changes is projected to increase by 4.5% by 2025, by 6.4% by 2030 and by 7.1% by 2040 compared to 2019. After this period, the number of patients is projected to stabilise – the number of people over 60 will continue to increase, but the number of people under 60 will decrease (particularly the 40-59 age group), which also represents a significant proportion of all rehabilitated patients. In case of inpatient rehabilitation, the number of patients is projected to grow steadily, and in 2050 it will reach more than 25% compared to 2019. This is due to the fact that there is a predominance of elderly people in this form of treatment.

Table 40. Forecast of change in number of rehabilitated patients

Forecast of change in number of rehabilitated patients compared to 2019	2025	2030	2040	2050
Total	+4.5%	+6.4%	+7.1%	+7.0%
Outpatient care	+4.6%	+6.4%	+7.0%	+6.5%
Inpatient care	+8.3%	+13.0%	+18.6%	+25.3%
Day care	+1.7%	+0.6%	-1.9%	-2.7%

Source: Ministry of Health study based on data from NFZ and GUS

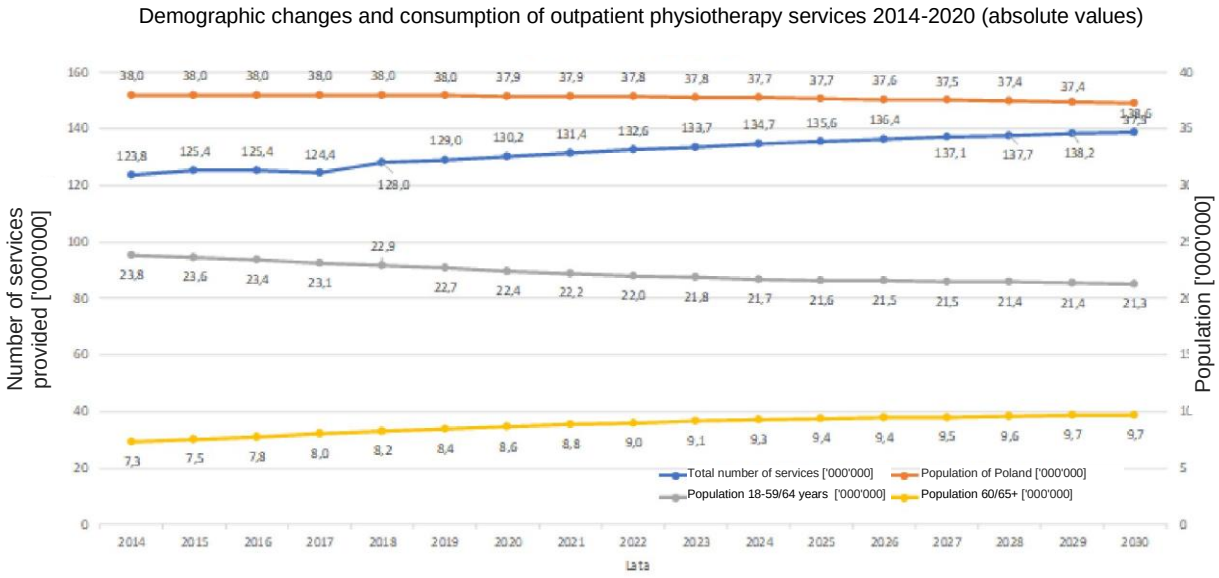
Methodological limitations of patient number forecasts

No prognosis was made for home-based rehabilitation because it is currently developing dynamically, and the impact of demographic changes alone on the future number of patients is very small compared to the ongoing structural changes. The forecast assumes that the share of people rehabilitated by age group and gender will remain constant, and therefore it does not account for changes made after 2019 or planned to be introduced in the rehabilitation system in Poland in the next years. In addition, the forecasts of the number of patients in the next years which assume that the current number of services (from 2019) is maintained does not take into account the unmet needs of the patients waiting for rehabilitation.

According to AOTMiT analyses, the demand on outpatient physiotherapy services is projected to increase due to demographic changes, i.e. an increasing post-working age population (over 60/65) by 800,000 by 2025 and by 1,100,000 by 2030. This will result in an increase in demand for outpatient physical therapy by 5,400,000 and 8,400,000 services, respectively. If no action is taken,

then by 2030, it will be necessary to increase the number of outpatient rehabilitation services by 8.3% compared to 2019.[153].

Figure 172. Number of outpatient physiotherapy services and population – historical (2014-2018) and forecast (2019-2030) data.



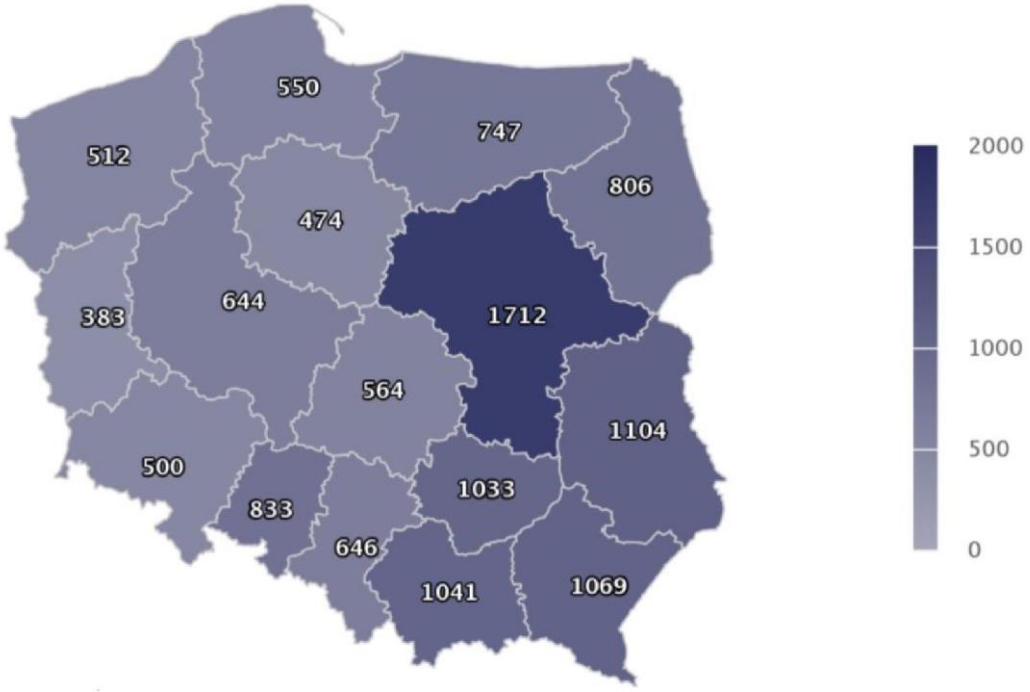
Source: Ministry of Health study based on data from

8.1.1. Day services

330,610 patients received rehabilitation in day conditions under the NFZ. The number of patients receiving the analysed services per 100,000 population was 861. Most patients per 100,000 population was observed in the Mazowieckie (1,712), Lubelskie (1,104) and Małopolskie (1,041) provinces, while the lowest in the Lubuskie (383), Kujawsko-Pomorskie (474) and Dolnośląskie (500) provinces.

153 AOTMiT study based on data from NFZ and GUS

Figure 173. The number of patients who received day rehabilitation services compared to the patient's place of residence per 100,000 population.



Source: Ministry of Health study based on data from NFZ and GUS

36.1% of patients receiving day rehabilitation were under 18 years of age, 35.8% were between 18 and 64, and 28.1% were 65 or more. Women accounted for 57.1%, while urban residents accounted for 75.4% of all patients. 69% of the patients did not have a disability certificate, 4.3% had mild disabilities, 11.6% – moderate disabilities, and 5.1% – severe disabilities, while 9.9% were children with disabilities up to 16 years of age. For each group, there were significant differences in the number of services provided between provinces, in particular:

– relatively high number of day rehabilitation services in cardiology was provided in Śląskie Province (twice as much as the national average) and relatively low number in Wielkopolskie, Opolskie, Podkarpackie and Mazowieckie provinces (about 2-3 times less than the national average),

– very few day rehabilitation services for hearing and speech disorders were provided in the Łódzkie, Małopolskie, Dolnośląskie and Warmińsko-Mazurskie provinces,

– no day rehabilitation services for visual disorders were provided in the Lubuskie, Opolskie, Podlaskie, Pomorskie and Zachodniopomorskie provinces, and very few in the Lubelskie and Kujawsko-Pomorskie provinces,

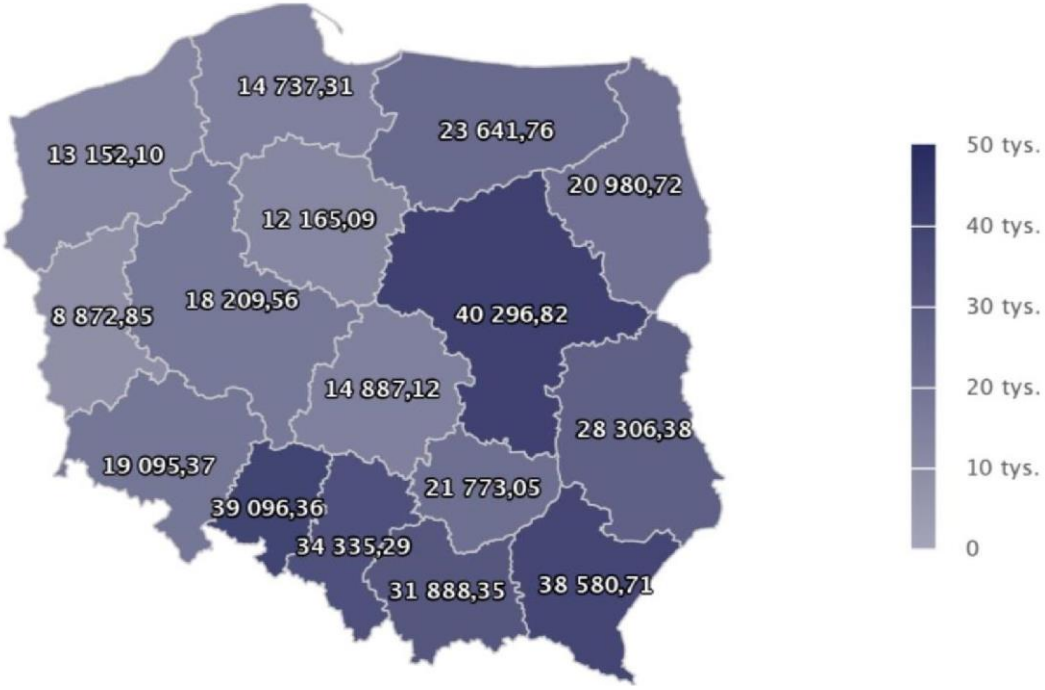
– day rehabilitation services in pulmonology were provided only in the Małopolskie Province.

The most common diagnoses with which patients in Poland received day rehabilitation included[154]: musculoskeletal diseases (45.5%), nervous system diseases (14.5%), cardiovascular diseases (5.7%), mental disorders (4.8%), sensory organ diseases (4.8%), other non-communicable diseases (3%), maternal and neonatal diseases (2.2%), cancer (1.6%) and chronic respiratory diseases (0.8%).

Service analysis

9,940,000 person/days were reported for day rehabilitation. The number of person-days per 100,000 population in Poland was 25,910. The highest value of this ratio was characteristic for the following provinces: Mazowieckie (40,297), Opolskie (39,096) and Podkarpackie (38,581), while the lowest for: Lubuskie (8,873), Kujawsko-Pomorskie (12,165) and Zachodniopomorskie (13,152) provinces.

Figure 174. The number of person-days in day rehabilitation per 100,000 population by the place of service provision.



Source: Ministry of Health study based on data from NFZ and GUS

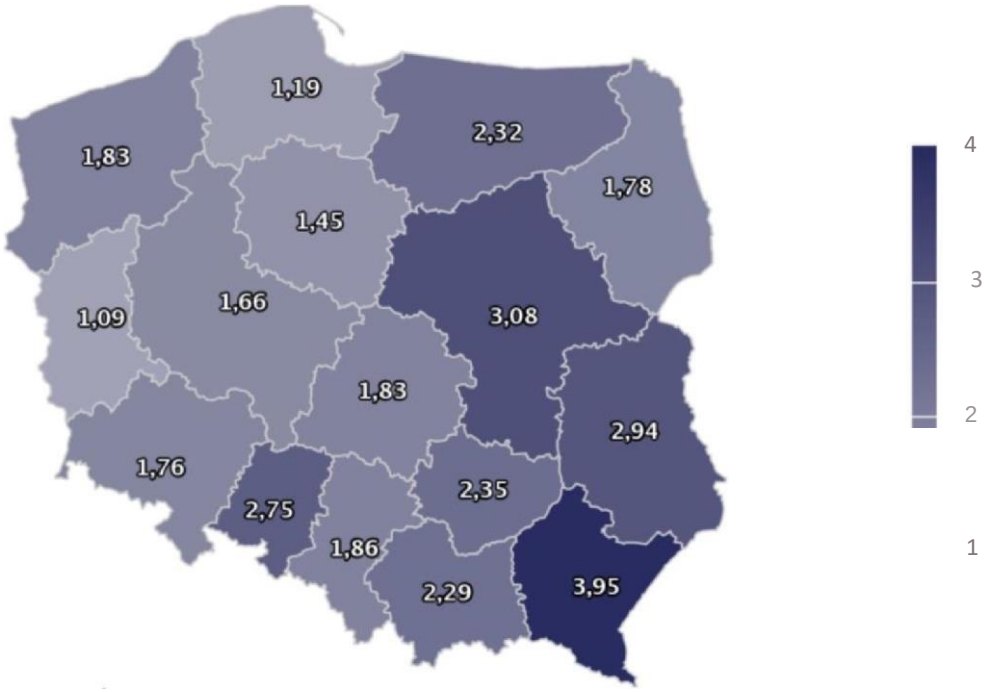
Health service provider analysis

Most centres per 100,000 population providing day rehabilitation services in 2019 was located in Podkarpackie (3.95), Mazowieckie (3.08)

[154] Categories of diagnoses based on GBD.

and Lubelskie (2.94) provinces, and the least in Lubuskie (1.09), Pomorskie (1.19) and Kujawsko-Pomorskie (1.45) provinces. The value for the entire country was 2.19.

Figure 175. Number of centres providing day rehabilitation services per 100,000 population.

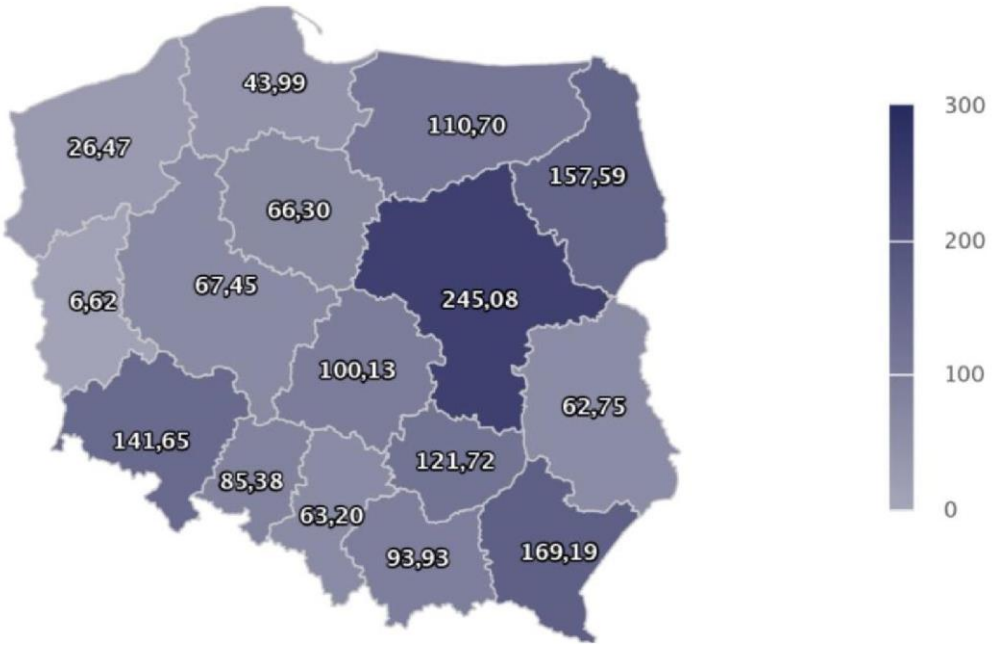


Source: Ministry of Health study based on data from NFZ and GUS

Most day care beds per 100,000 population was located in the Mazowieckie (245), Podkarpackie (169) and Podlaskie (158) provinces, and the lowest in the Lubuskie (7), Zachodniopomorskie (26) and Pomorskie (44) provinces[155]. At the end of 2019, in Poland there were 41,892 day care beds (109 per 100,000 population).

[155] Data on the number of day care beds come from REPMA to which all providers are required to report. Therefore, the data also includes non-NFZ day care beds, particularly those in the private sector.

Figure 176. Number of day care beds per 100,000 population at the end of 2019.

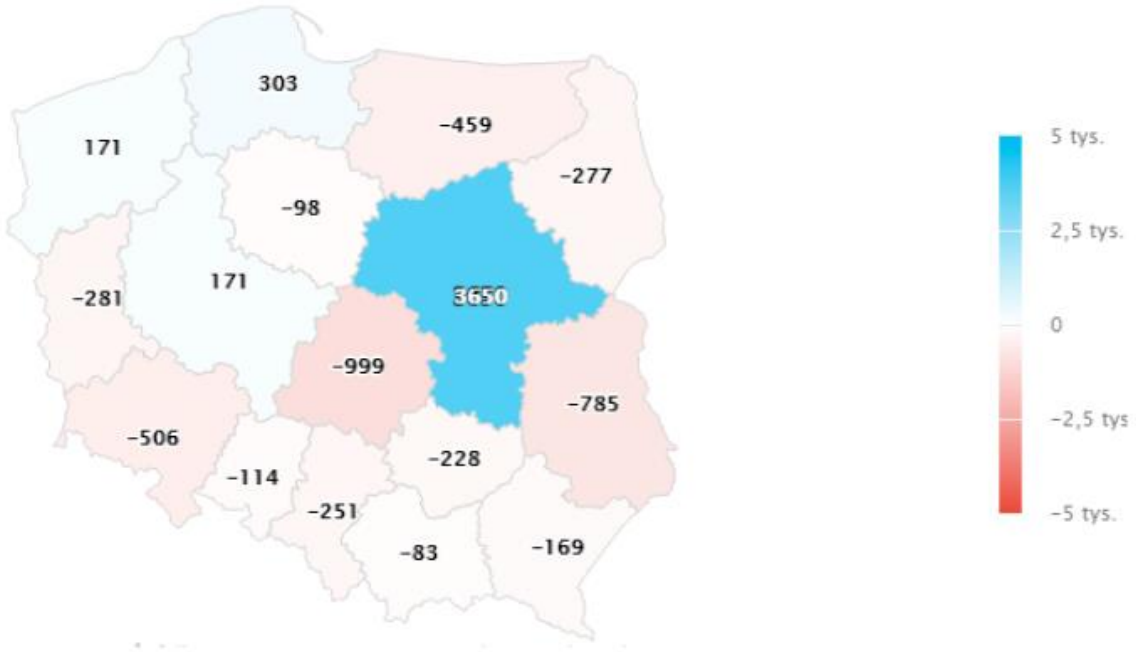


Source: Ministry of Health study based on data from NFZ, GUS and REPMA

Patient migrations

In 2019, migration balance in day rehabilitation treatment was the highest in Mazowieckie (+3,650), Pomorskie (+303), Wielkopolskie (+171) and Zachodniopomorskie (+171) provinces and lowest in Łódzkie (-999), Lubelskie (-785) and Dolnośląskie (-506) provinces. Negative migration balance was observed in 12 provinces.

Figure 177. Migration balance in day rehabilitation treatment.

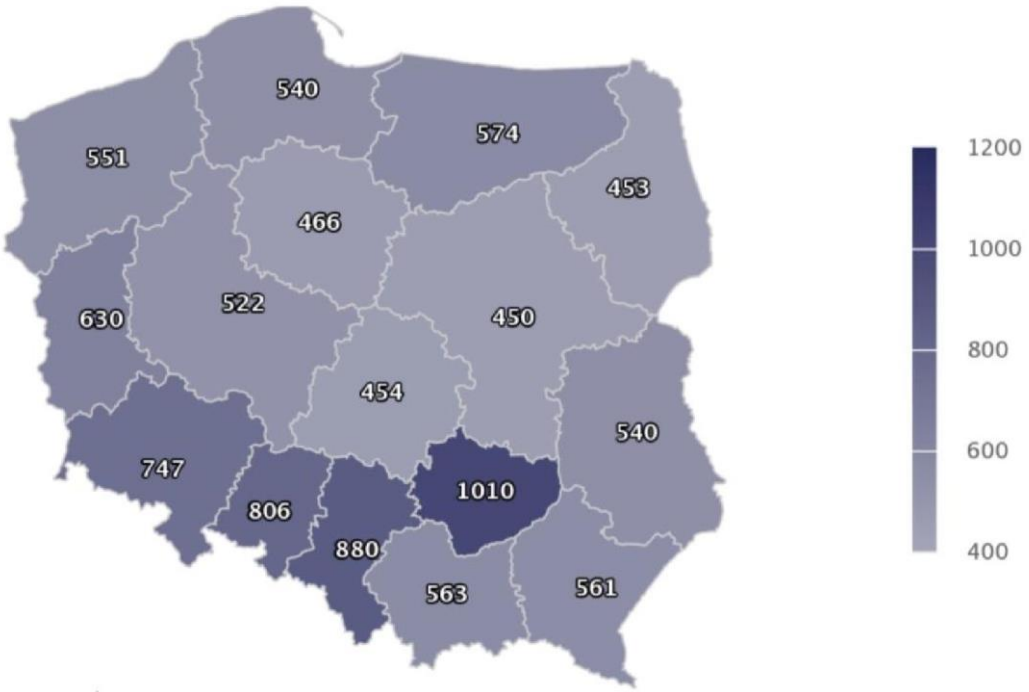


Source: Ministry of Health study based on data from NFZ and GUS

8.1.2. Inpatient services

225,000 patients received inpatient rehabilitation. The number of patients receiving the analysed services per 100,000 population was 585. Most patients per 100,000 population was reported in Świętokrzyskie (1,010), Śląskie (880) and Opolskie (806) provinces, and the lowest in Mazowieckie (450), Podlaskie (453) and Łódzkie (454) provinces.

Figure 178. The number of patients per 100,000 population who received inpatient rehabilitation compared to the patient's place of residence per 100,000 population.



Source: Ministry of Health study based on data from NFZ and GUS

8.6% of patients receiving inpatient rehabilitation were under 18 years of age, 36.1% were between 18 and 64, and 55.3% were 65 or over. Women accounted for 54.4%, while urban residents accounted for 64.1% of all patients. 54.7% of the patients did not have a disability certificate, 4.7% had mild disabilities, 19% – moderate disabilities, and 19.1% – severe disabilities, while 2.5% were children with disabilities up to 16 years of age.

For each group, there were significant differences in the number of services provided between provinces, in particular:

– very few inpatient rehabilitation services were provided in cardiology in the Mazowieckie, Łódzkie and Kujawsko-Pomorskie provinces,

– very few inpatient rehabilitation services were provided in neurology in the Łódzkie and Podlaskie provinces,

– no inpatient rehabilitation services in pulmonology were provided in Podlaskie, Świętokrzyskie and Zachodniopomorskie provinces and not many of them were provided in Lubelskie, Mazowieckie and Pomorskie provinces,

– inpatient rehabilitation services for coma were provided only in the Warmińsko-Mazurskie, Mazowieckie and Małopolskie provinces.

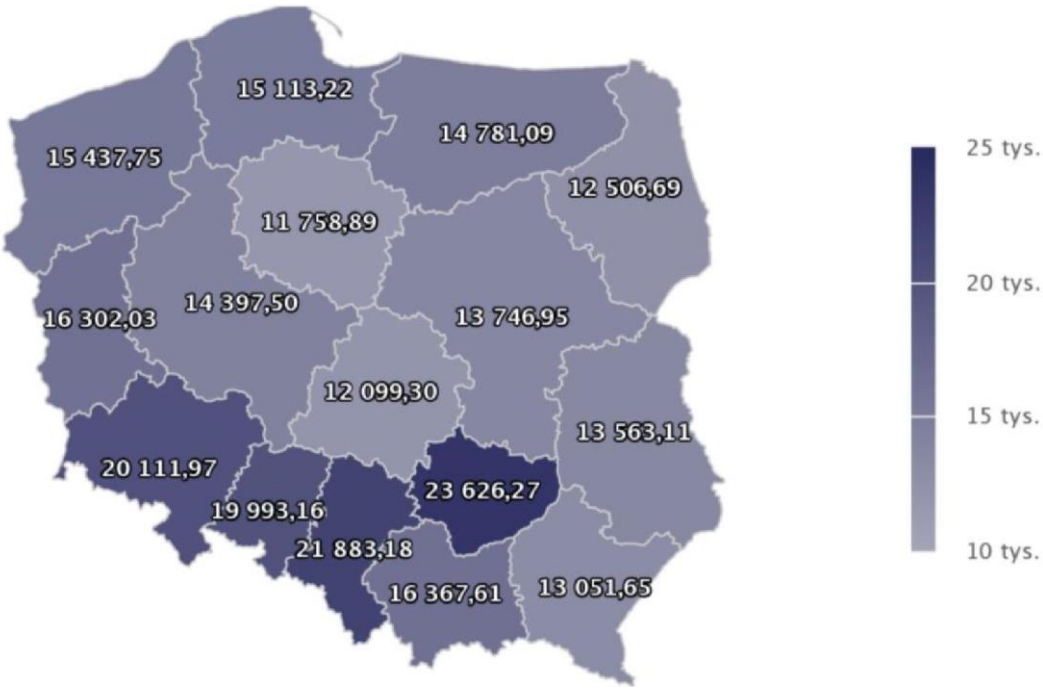
The most common diagnoses with which patients in Poland received inpatient rehabilitation were: musculoskeletal diseases (42%),

cardiovascular diseases (20.5%), nervous system diseases (18.6%), chronic respiratory diseases (4.9%), other non-communicable diseases (4.7%) and cancer (0.6%).

Service analysis

6,110,000 person/days were reported for inpatient rehabilitation. It amounts to 15,920 person/days per 100,000 population. The highest value of this ratio was observed in the following provinces: Świętokrzyskie (23,626), Śląskie (21,883) and Dolnośląskie (20,112), and the lowest for: Kujawsko-pomorskie (11,759), Łódzkie (12,099) and Podlaskie (12,507) provinces.

Figure 179. The number of person-days in inpatient rehabilitation per 100,000 population by the place of service provision.

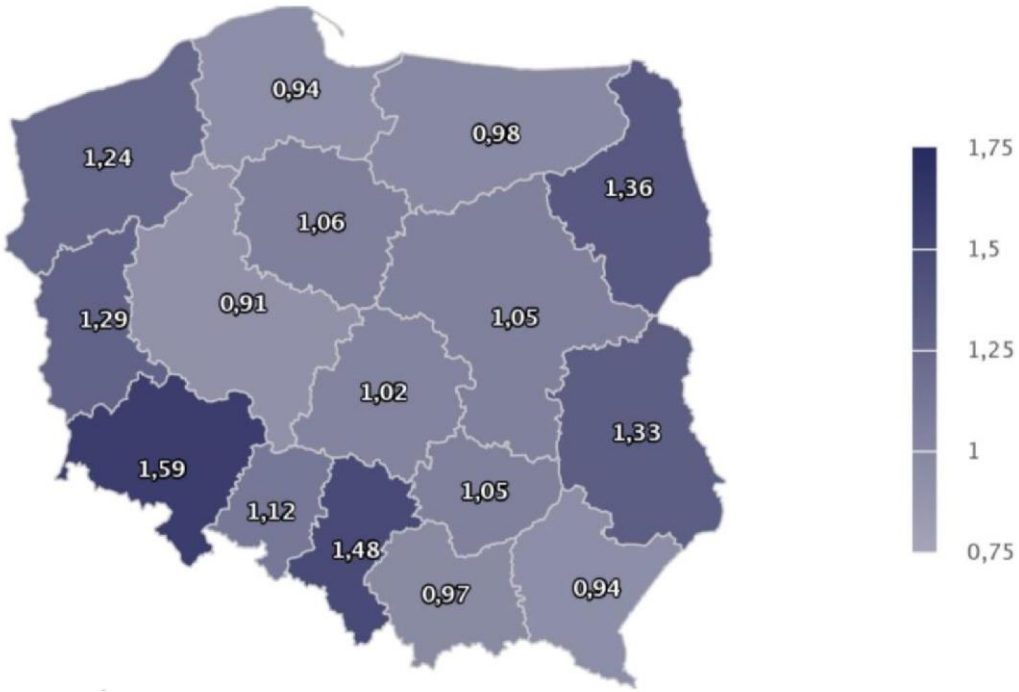


Source: Ministry of Health study based on data from NFZ and GUS

Health service provider analysis

Most centres providing inpatient rehabilitation services per 100,000 population were in Dolnośląskie (1.59), Śląskie (1.48) and Podlaskie (1.36) provinces and the lowest in Wielkopolskie (0.91), Pomorskie (0.94) and Podkarpackie (0.94) provinces. The ratio for Poland was 1.15.

Figure 180. Number of centres providing inpatient rehabilitation services per 100,000 population.

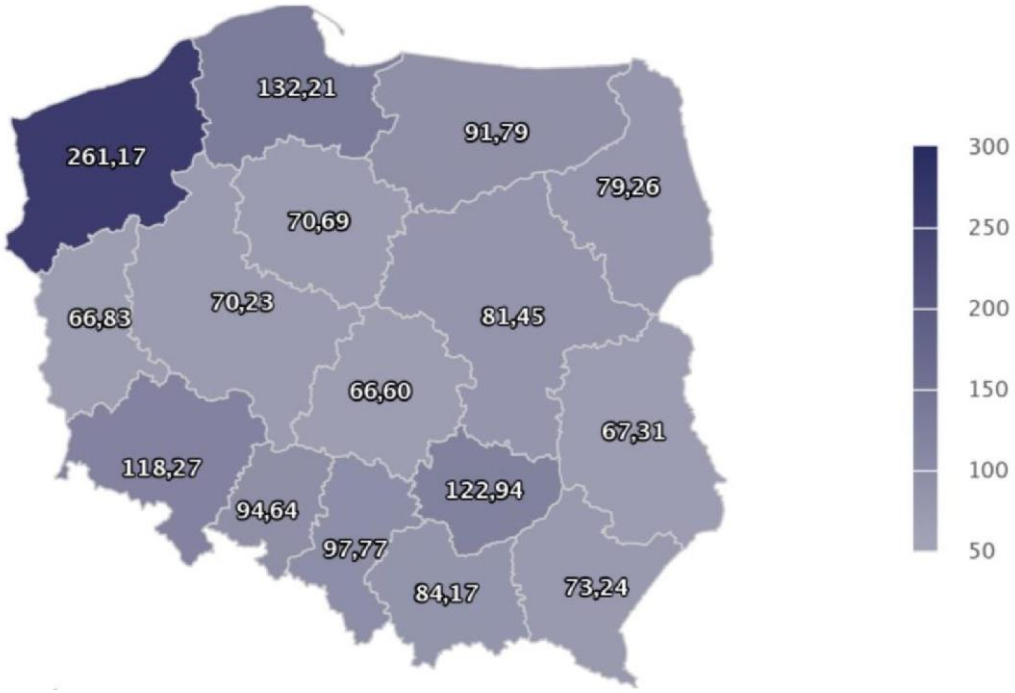


Source: Ministry of Health study based on data from NFZ and GUS

Most inpatient rehabilitation beds per 100,000 population were located in Zachodniopomorskie (261), Pomorskie (132) and Świętokrzyskie (123) provinces, and the least in Łódzkie, Lubuskie, Lubelskie (67 each) and Kujawsko-Pomorskie (71) provinces[156]. At the end of 2019, in Poland, there were 36,561 rehabilitation beds in total (95 per 100,000

[156] Data on the number of beds come from REPMA to which all providers are required to report. Therefore, the data also includes non-NFZ beds, particularly those in a private sector.

Figure 181 The number of beds in inpatient rehabilitation per 100,000 population at the end of 2019.

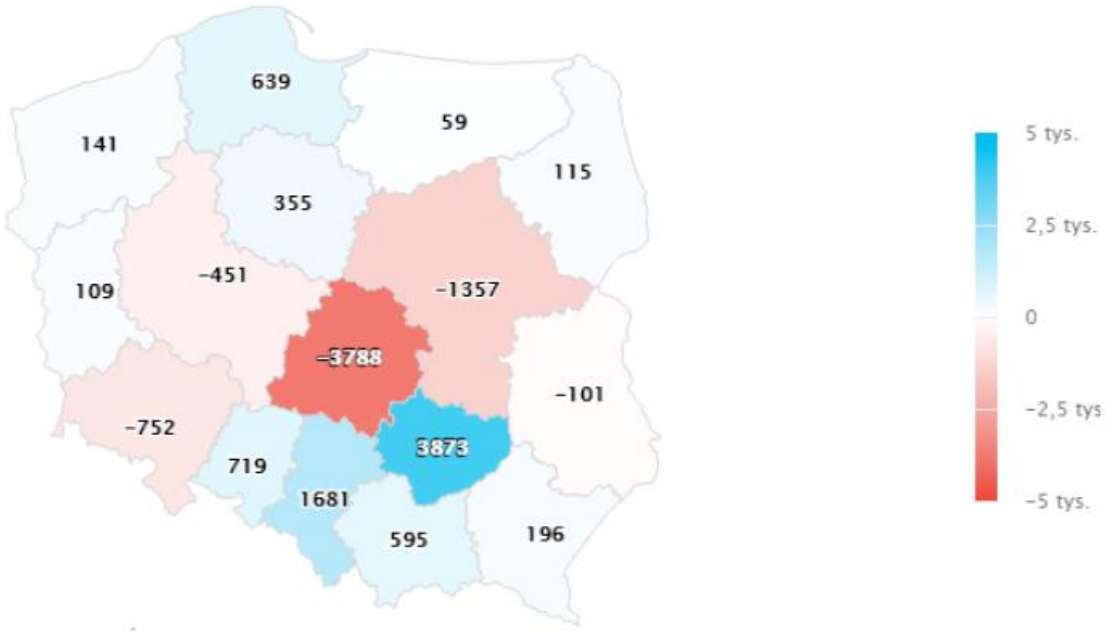


Source: Ministry of Health study based on data from NFZ, GUS and REPMA

Patient migrations

Migration balance in inpatient rehabilitation was the highest in Świętokrzyskie (+3,873), Śląskie (+1,681) and Opolskie (+719) provinces and the lowest in Łódzkie (-3,788), Mazowieckie (-1,357) and Dolnośląskie (-752) provinces. Negative migration balance was observed in 5 provinces.

Figure 182. Migration balance in inpatient rehabilitation.



Source: Ministry of Health study based on data from NFZ

8.1.3. Home-based services

48,500 people received home-based rehabilitation respectively. The number of patients receiving the analysed services per 100,000 population was 126. Most patients per 100,000 population were observed in Podkarpackie (282), Świętokrzyskie (269) and Mazowieckie (155) provinces, while the lowest in Pomorskie (42), Zachodniopomorskie (48) and Kujawsko-Pomorskie (70) provinces. In addition, there was a significant increase in the number of patients in home-based rehabilitation over the years

– from 4,706 in 2016 to 48,494 in 2019. 1.2% of patients receiving home-based rehabilitation were under 18 years of age, 26.5% were between 18 and 64, and 72.2% were 65 or over. Women accounted for 59.7%, while urban residents accounted for 68.6% of all patients. 31.9% of the patients did not have a disability certificate, 0.8% had mild disabilities, 6.6% – moderate disabilities, and 59.8% – severe disabilities, while 0.9% were children with disabilities up to 16 years of age. years of age.

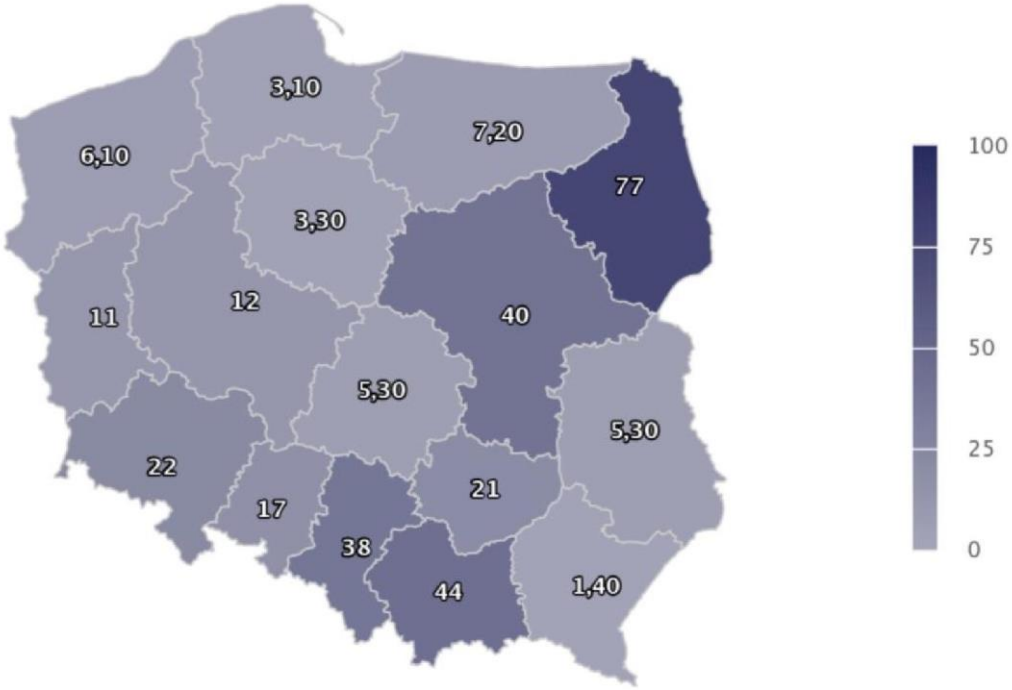
The most common diagnoses with which patients in Poland received hospital rehabilitation were[157]: nervous system diseases (44.6%), musculoskeletal diseases (26.2%), cardiovascular diseases (22.4%), other non-communicable diseases (1.5%), cancer (0.8%), and mental disorders (0.5%).

[157] Categories of diagnoses based on GBD.

Service analysis

8,500 pieces of medical consultations were reported in home-based rehabilitation. The number of pieces of medical consultations per 100,000 population was 22 nationwide. The highest value of this ratio was found in Podlaskie (77), Małopolskie (44) and Mazowieckie (40) provinces, while the lowest value was found in Podkarpackie (1), Pomorskie (3) and Kujawsko-Pomorskie (3) provinces.

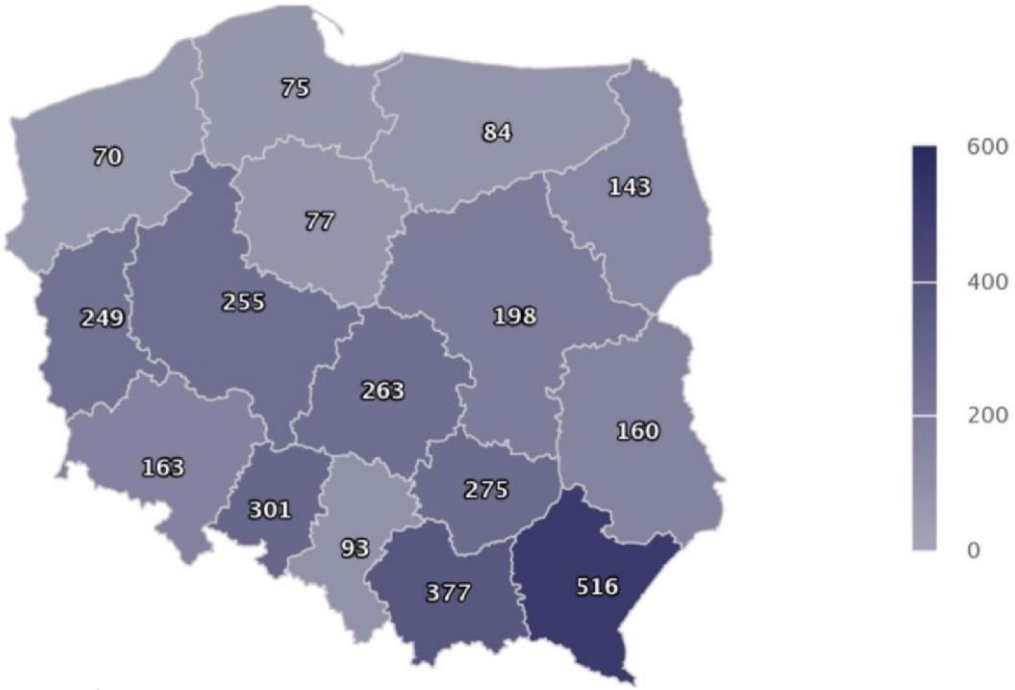
Figure 183. Number of medical consultations in home-based rehabilitation per 100,000 population compared to patients' place of residence.



Source: Ministry of Health study based on data from NFZ and GUS

There were 78,600 physiotherapy consultations reported in home-based care. There were 205 physiotherapy visits per 100,000 population. The highest value of this ratio was found in the following provinces: Podkarpackie (516), Małopolskie (377) and Opolskie (301) provinces, while the lowest in Zachodniopomorskie (70), Pomorskie (75) and Kujawsko-Pomorskie (77) provinces.

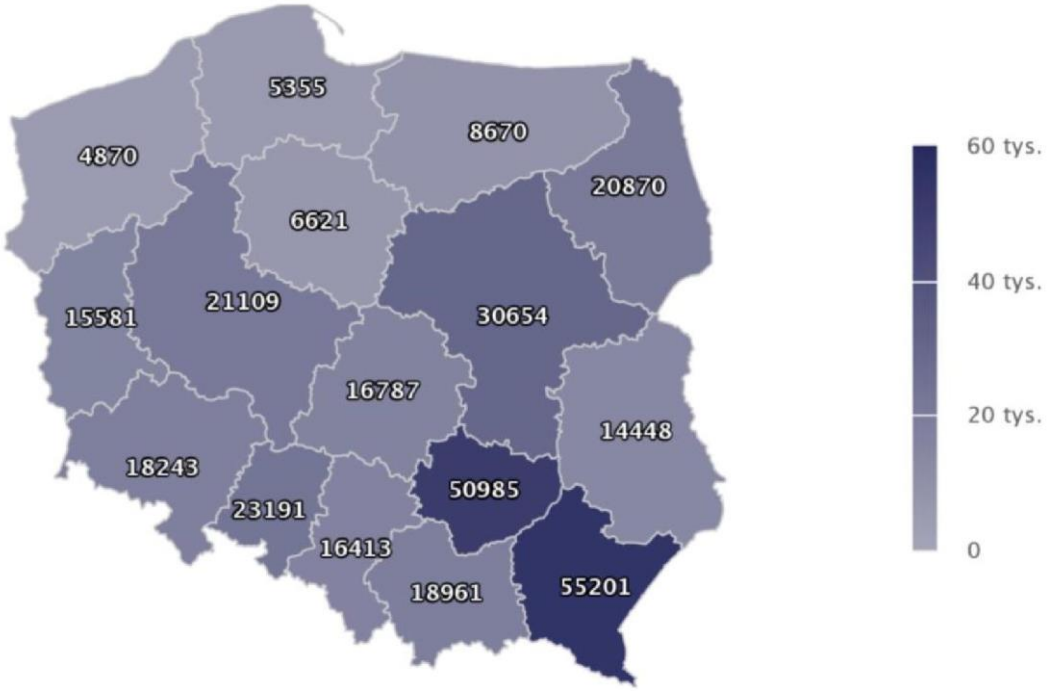
Figure 184. The number of physiotherapy visits in home-based rehabilitation per 100,000 population compared to patients' place of residence.



Source: Ministry of Health study based on data from NFZ and GUS

There were 7,940,000 physiotherapy treatments reported in home-based rehabilitation. It amounts to 20,682 person/days per 100,000 population. The highest value of this ratio was observed in: the Podkarpackie (55,201), Świętokrzyskie (50,985) and Mazowieckie (30,654) provinces, while the lowest in Zachodniopomorskie (4,870), Pomorskie (5,355) and Kujawsko-Pomorskie (6,621) provinces.

Figure 185. The number of physiotherapy treatments in home-based rehabilitation per 100,000 population compared to patients' place of residence.



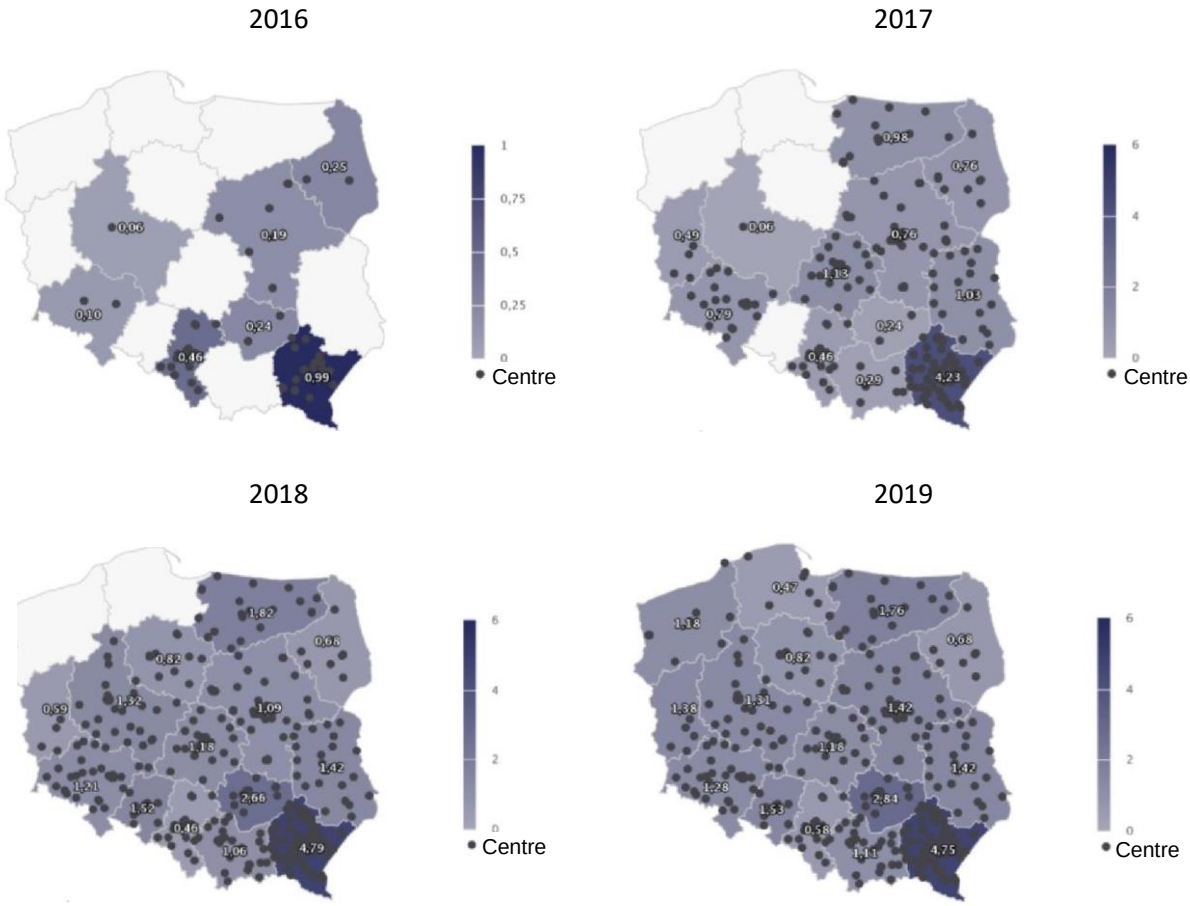
Source: Ministry of Health study based on data from NFZ and GUS

Health service provider analysis

Most centres per 100,000 population providing home-based rehabilitation services were in Podkarpackie (4.75), Świętokrzyskie (2.84) and Warmińsko-Mazurskie (1.76) provinces, while the smallest number was in Pomorskie (0.47), Śląskie (0.58) and Podlaskie (0.68) provinces. The nationwide value was 1.38.

There was a rapid growth in the number of home-based rehabilitation centres between 2016 and 2019.

Figure 186. The number of centres providing home-based rehabilitation services per 100,000 population.

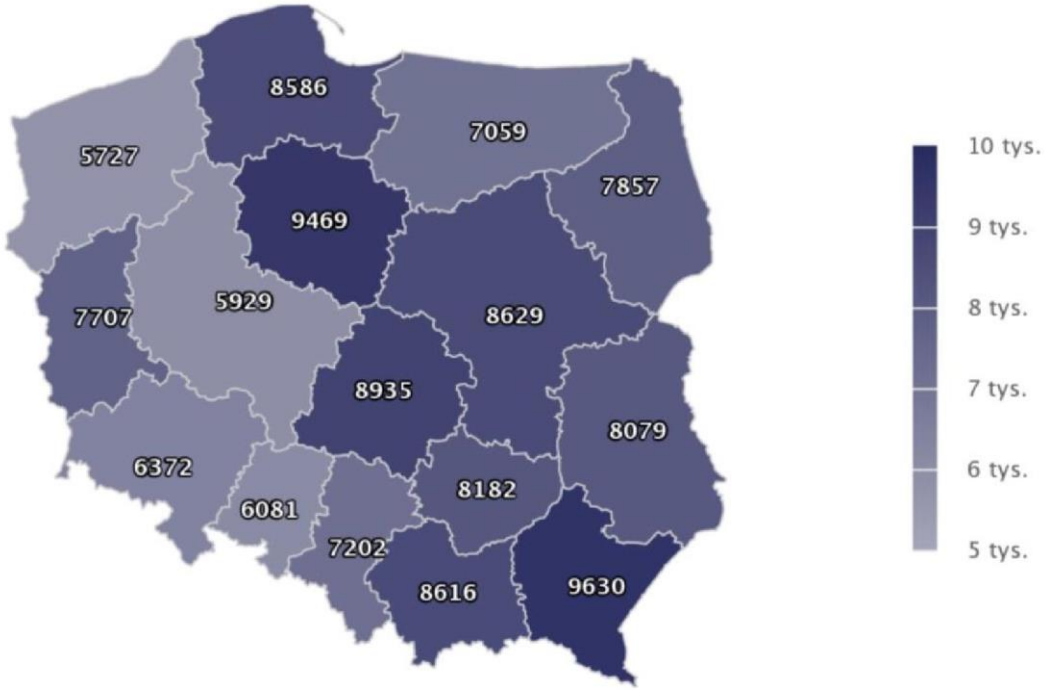


Source: Ministry of Health study based on data from NFZ and GUS

8.1.4. Outpatient services

2,990,000 patients received outpatient rehabilitation services. The number of patients receiving the analysed services per 100,000 population was 7,795. Most patients per 100,000 population were reported in the Podkarpackie (9,630), Kujawsko-Pomorskie (9,469) and Łódzkie (8,935) provinces, and the least in Zachodniopomorskie (5,727), Wielkopolskie (5,929) and Opolskie (6,081) provinces.

Figure 187. The number of patients per 100,000 population who received outpatient rehabilitation compared to the patient's place of residence per 100,000 population.



Source: Ministry of Health study based on data from NFZ and GUS

7.7% of patients receiving home-based rehabilitation were under 18 years of age, 54.2% were between 18 and 64, and 38% were 65 or over. Women accounted for 66.4%, while urban residents for 69.3% of all patients. 78% of the patients did not have a disability certificate, 5.2% had mild disabilities, 11.2% – moderate disabilities, and 4.6% – severe disabilities, while 0.9% were children with disabilities up to 16 years of age.

The most common diagnoses with which patients in Poland received hospital rehabilitation were: musculoskeletal diseases (78%), nervous system diseases (15.3%), cardiovascular diseases (1.5%), other non-communicable diseases (0.9%), cancer (0.7%) and chronic respiratory diseases (0.6%)[158].

[158] Categories of diagnoses based on GBD.

Service analysis

Based on the consultations with medical experts and the analysis of literature, AOTMiT claims that there is an abnormal structure of services provided in outpatient rehabilitation in Poland. Too many physical therapy treatments compared to kinesiotherapy are the biggest problem. At the same time, 56.8% of the patients who commenced physiotherapy in the first half of 2019 did not receive kinesitherapy treatments. AOTMiT declares that scientific evidence and clinical guidelines primarily recommend kinesiotherapy and only selected physical therapy treatments for specific health problems, such as heat and *TENS* treatments (osteoarthritis), electrostimulation and cryotherapy (back pain), and hydrotherapy (cell transplantation into the knee joint).

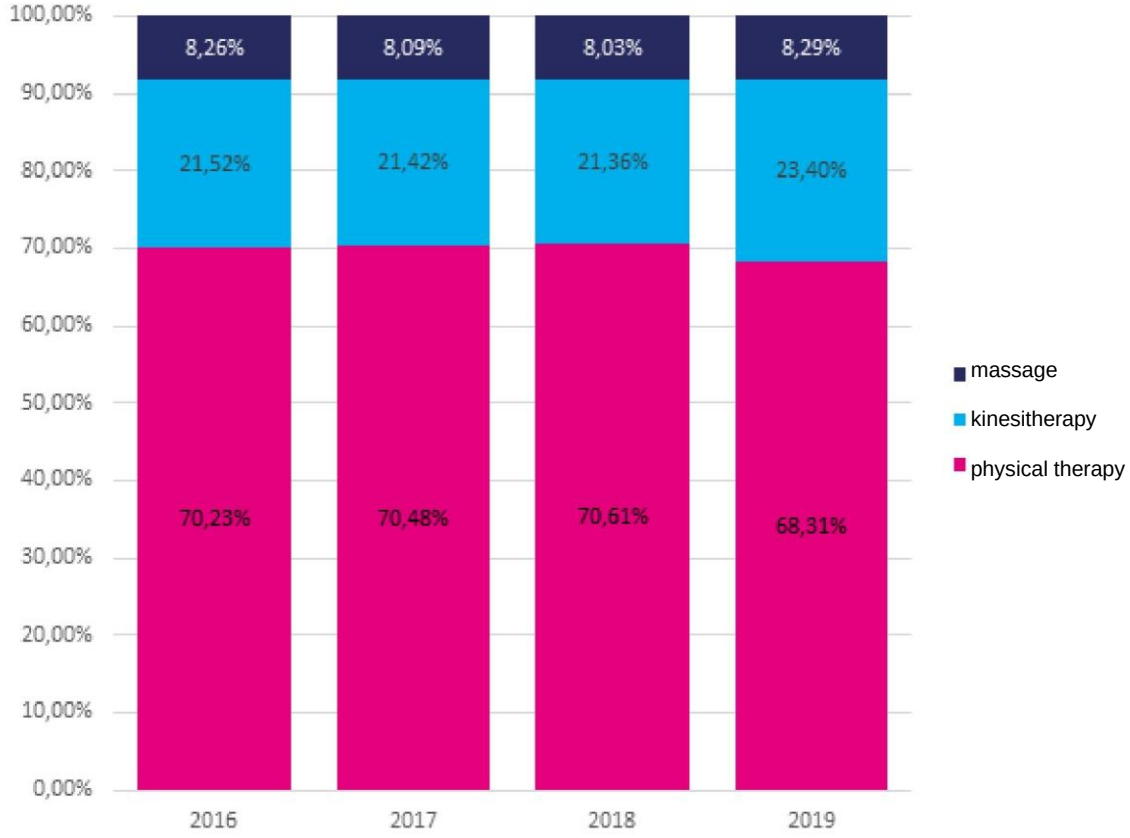
Currently, outpatient physiotherapy is primarily based on physical therapy, which accounts for 68.3% of total treatments. The remainder was kinesitherapy accounting for 23.4%, and massage therapy accounting for 8.3% of total treatments. In 2019, physiotherapists were authorised to set the therapy plan during physiotherapy visits. However, despite the increase in physiotherapy visits from about 37,000 in 2018, to 2,200,000 in 2019, the structure of the procedures performed changed only slightly. The number of physical therapy treatments decreased by approximately 2.3 percentage points, kinesitherapy treatments increased by approx. 2 percentage points, and massages increased by approx. 0.3 percentage points.

Table 41. Outpatient physiotherapy service structure between 2016 and 2019.

	Outpatient rehabilitation in total				Treatments only			
Treatment group	2016	2017	2018	2019	2016	2017	2018	2019
Massage	8.11%	7.95%	7.90%	8.02%	8.26%	8.09%	8.03%	8.29%
Kinesiotherapy	21.14%	21.06%	21.01%	22.63%	21.52%	21.42%	21.36%	23.40%
Physical Therapy	68.99%	69.28%	69.47%	66.08%	70.23%	70.48%	70.61%	68.31%
Consultation	1.75%	1.69%	1.59%	1.56%	-	-	-	-
Visit	0.01%	0.02%	0.03%	1.72%	-	-	-	-

Source: Ministry of Health study based on data from NFZ

Rysunek 188. Struktura świadczeń w fizjoterapii ambulatoryjnej w latach 2016-2019.



Source: Ministry of Health study based on data from NFZ

63% of the patients who received outpatient physiotherapy services in the first half of 2019, received them also in 2017 or 2018 (for patients with a disabilities, this value was 74%). While this is reasoned for patients with disabilities, in the case of other patients it may indicate insufficient effectiveness of outpatient physiotherapy or physiotherapy for chronic conditions[159].

In terms of duration of treatment (patient time) – individual physiotherapy accounted for 41% and group physiotherapy for 59% of the total time. Group physical therapy has a higher proportion (44%) than all individual services (41%). Due to the physiotherapists' working time, individual services accounted for 68%, individual physical therapy for 29%, and individual kinesiotherapy for 24% of total time. Due to the number of services, 45% of them are all individual services[160].

[159] AOTMiT study based on data from NFZ.

[160] AOTMiT study based on data from NFZ and GUS, without the time of visits.

Table 42. Distribution of time and number of services in outpatient physiotherapy.

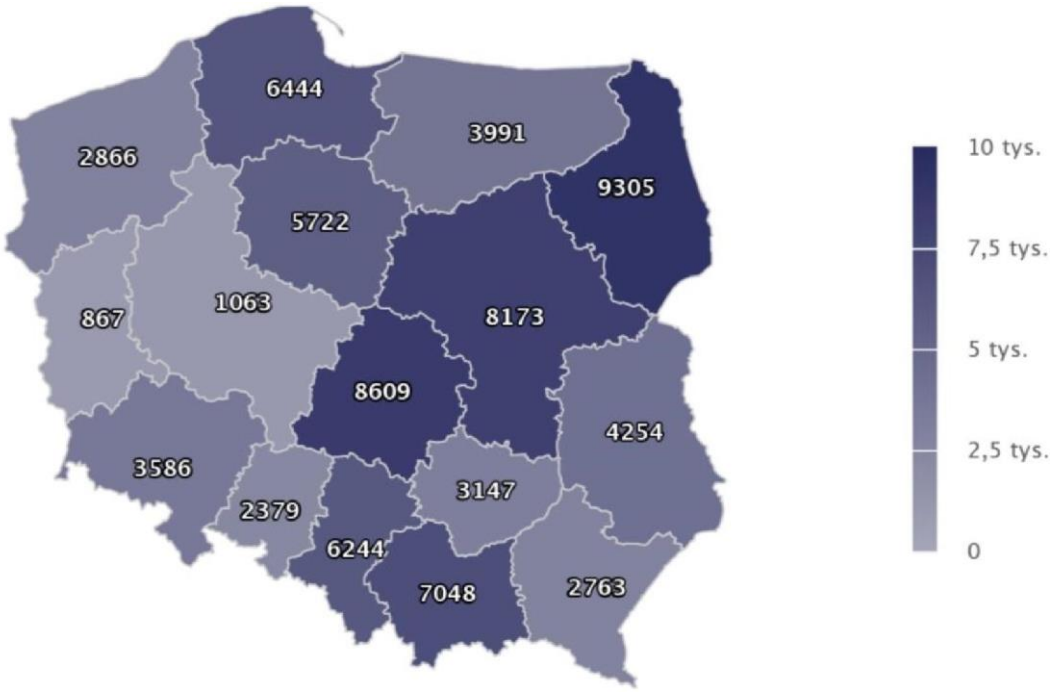
Dimension of	Perspective of	Service category	Service therapy group: Physical therapy	kinesitherapy	massage	Total	Visit
Time	a physiotherapist	Individual	29%	24%	15%	68%	3%
		Group	17%	14%	1%	32%	x
		Total	46%	38%	16%	100%	100%
	a patient	Individual	17%	16%	7%	41%	2%
		Group	44%	14%	2%	59%	x
		Total	61%	30%	9%	100%	100%
the number of services		Individual	30%	8%	7%	45%	1%
		Group	41%	13%	1%	55%	x
		Total	71%	21%	8%	100%	100%
Point value		Individual	27%	27%	9%	63%	2%
		Group	25%	11%	1%	37%	x
		Total	52%	38%	10%	100%	0%

Source: Ministry of Health study based on data from NFZ

2,020,000 medical consultations were reported In outpatient rehabilitation.

Calculated per 100,000 population was 5,269. The highest value of this ratio was observed in: Podlaskie (9 305), Łódzkie (8 609) and Mazowieckie (8,173) provinces, and the smallest in Lubuskie (867), Wielkopolskie (1,063) and Opolskie (2,379) provinces.

Figure 189. The number of medical consultations in outpatient rehabilitation per 100,000 population by the place of service provision.

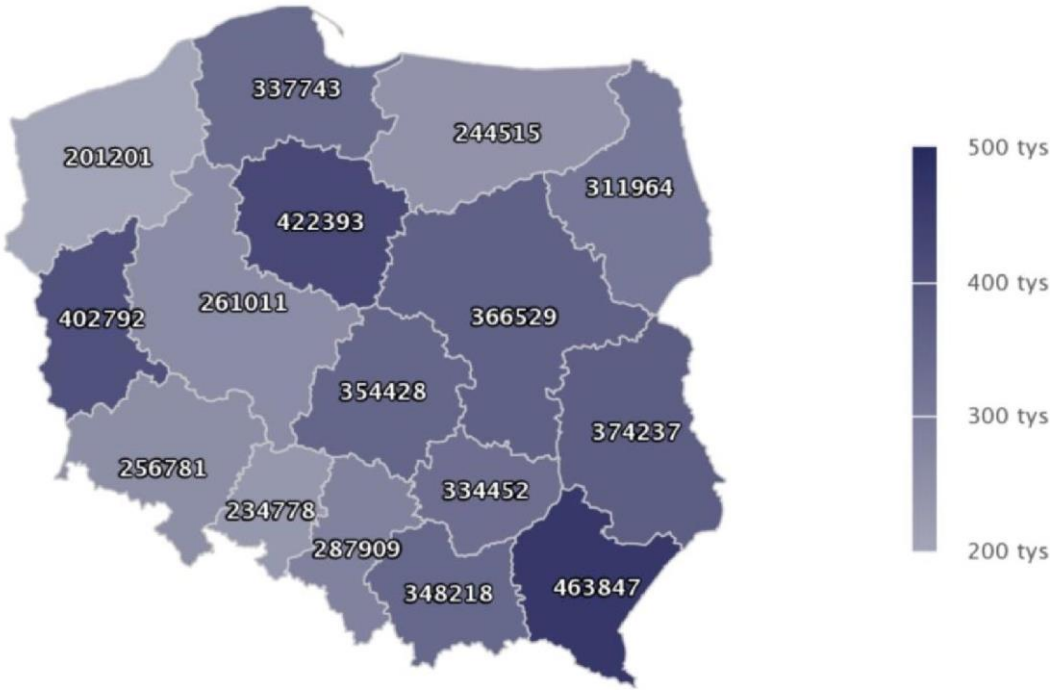


Source: Ministry of Health study based on data from NFZ and GUS

2,230,000 physiotherapy visits were reported in outpatient rehabilitation. There were 5,806 physiotherapy visits per 100,000 population. The highest value of this ratio was observed in: the Podkarpackie (9,840), Lubuskie (9,716) and Świętokrzyskie (9,392) provinces, while the lowest in the Zachodniopomorskie (1,486), Podlaskie (1,622) and Warmińsko-Mazurskie (2,376) provinces.

Since 2019, there has been a sharp increase in the number of physiotherapy visits, which is related to new credentials of physiotherapists to set the therapy plan during such visits. 125,500,000 physiotherapy treatments were reported in outpatient rehabilitation. There were 327,086 physiotherapy treatments per 100,000 population in Poland. The highest value of this ratio was observed for: the Podkarpackie (463 847), Kujawsko-Pomorskie (422 393) and Lubuskie (402 792) provinces, and the lowest for: the Zachodniopomorskie (201 201), Opolskie (234 778) and Warmińsko-Mazurskie (244 515) provinces.

Figure 190. The number of physiotherapy treatments in outpatient rehabilitation per 100,000 population by the place of service provision.

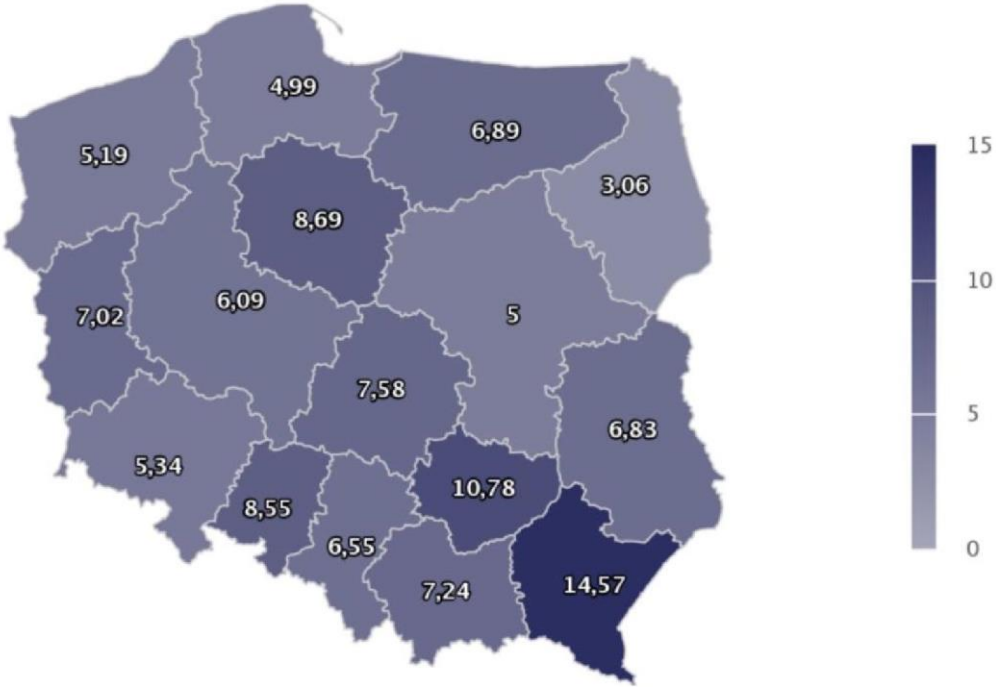


Source: Ministry of Health study based on data from NFZ and GUS

Health service provider analysis

Most centres per 100,000 population providing outpatient rehabilitation services were in the Podkarpackie (14.57), Świętokrzyskie (10.78) and Kujawsko-Pomorskie (8.69) provinces, and the least in the Podlaskie (3.06), Pomorskie (4.99) and Mazowieckie (5) provinces. The ratio for Poland was 6.85.

Figure 191. Number of centres providing outpatient rehabilitation services per 100,000 population.

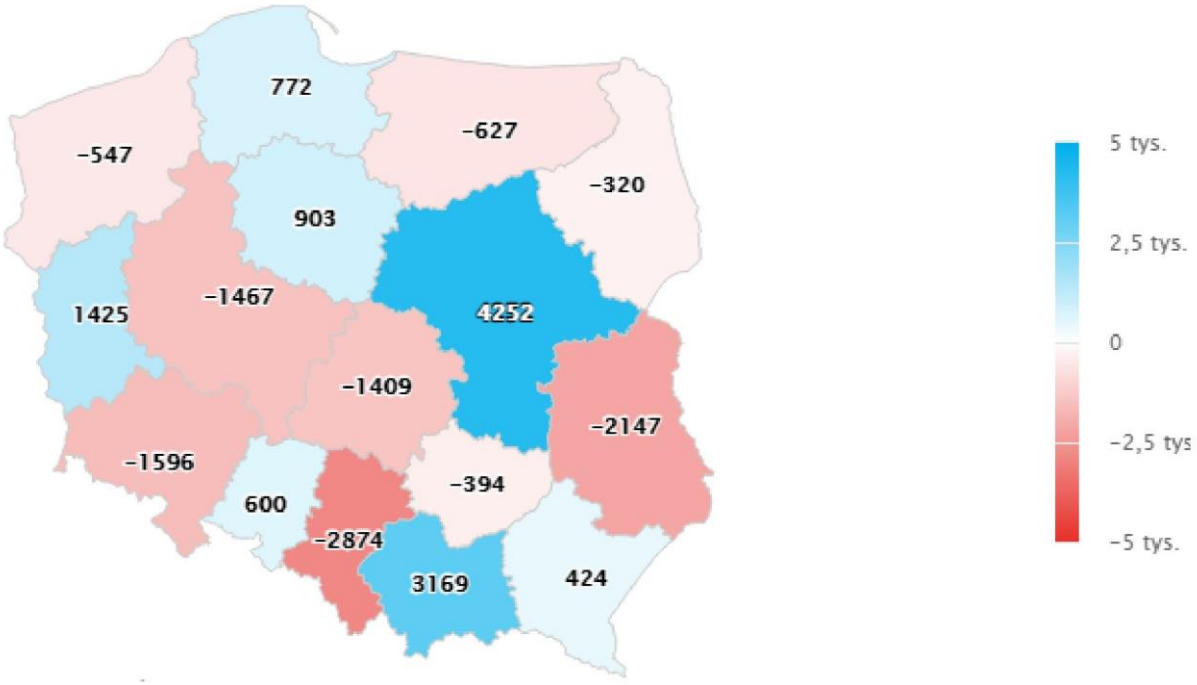


Source: Ministry of Health study based on data from NFZ and GUS

Patient migrations

Migration balance in outpatient rehabilitation was the highest in the Mazowieckie (+4,252), Małopolskie (+3,169) and Lubuskie (+1,425) provinces and lowest in Śląskie (-2,874), Lubelskie (-2,147) and Dolnośląskie (-1,596) provinces. Negative migration balance was observed in 9 provinces.

Figure 192. Migration balance in outpatient rehabilitation.



Source: Ministry of Health study based on data from NFZ and GUS

8.2. Medical staff

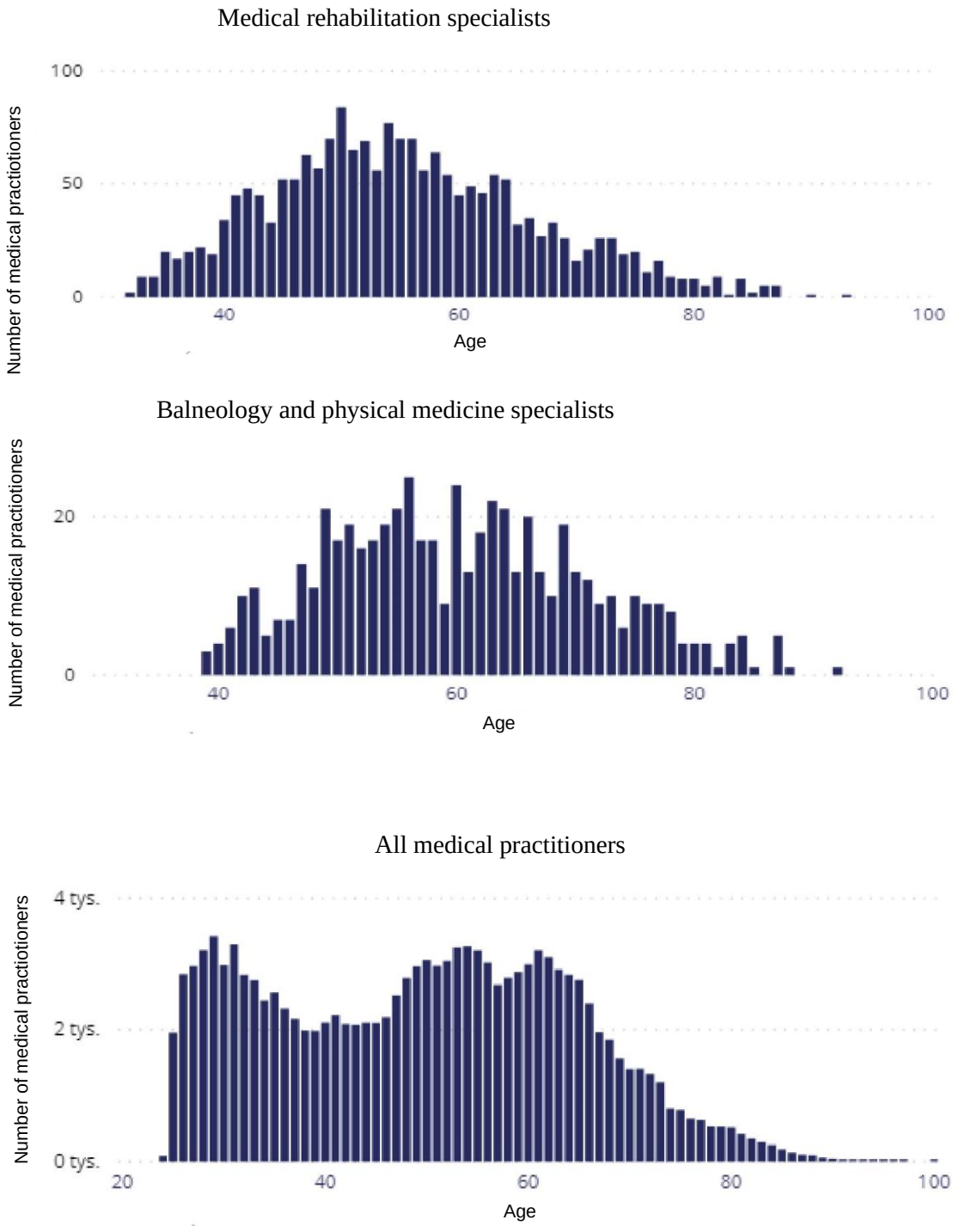
There were 1,855 medical rehabilitation specialists included in the NFZ contract database in 2019, and 1,645 of them provided hospital rehabilitation services. There were 555 balneology and physical medicine specialists included in the NFZ contract database in 2019, and 338 of them provided hospital rehabilitation services. A total of 4,248 medical practitioners (of any speciality) and 3,351 nurses worked in rehabilitation services in Poland.[161]

The age of the medical practitioners specialising in medical rehabilitation and balneology and physical medicine is higher than the average age of all medical practitioners specialising in any field (the average age of 55, 60, and 49, respectively). The age distribution is presented in the following charts[161] [162].

[161] Based on the NFZ contract database.

[162] Central Register of Medical Practitioners and Dental

Figure 193. Age distribution of medical rehabilitation specialists and all medical practitioners.



Source: Ministry of Health study based on data from CRP, NFZ and GUS

The independence of a physiotherapist profession has inhibited the choice of medical rehabilitation as a medical speciality by medical practitioners after medical studies. This was due to insufficient transparency in defining the responsibilities of a medical

in the process of treating the patient and depreciating him to the role of a medical practitioner commissioning physiotherapy treatments[163].

At the end of 2019, in Poland, there were 332 medical practitioners who will reach retirement age within 6 years and only 241 medical practitioners undergoing speciality training. This means that 91 more medical practitioners may retire in the coming years than will complete their speciality training[164].

A specific group of medical personnel for rehabilitation are physiotherapists. Since 1 June 2019, this profession can be exercised only by people who have a permit to practice a profession of a physiotherapist. In May 2020, in Poland, there were 66,250 people with a permit to practice a profession of a physiotherapist[165]. However, there were 27,557 physiotherapists reported to the NFZ at the end of 2019.

The most physiotherapists reported to the NFZ under rehabilitation services as of 31 December 2019 were found in the Mazowieckie (4,619), Śląskie (3,048) and Małopolskie (2,713) provinces, while the least in the Lubuskie (584), Warmińsko-Mazurskie (647) and Podlaskie (686) provinces. The number of patients rehabilitated under the NFZ in 2019 per one physiotherapist reported to the NFZ at the end of 2019 nationwide was 121. The best situation in this respect was in the Podkarpackie (85), Dolnośląskie (97) and Opolskie (98) provinces, and the worst in the Warmińsko-Mazurskie (172), Kujawsko-Pomorskie (154) and Pomorskie (154) provinces. The number of population per one physiotherapist is the lowest in the Podkarpackie (788), Świętokrzyskie (1 044) and Mazowieckie (1 174) provinces and the highest in the Warmińsko-Mazurskie (2 199), Zachodniopomorskie (2 046) and Wielkopolskie (1 735) provinces, with the nationwide total of 1 393. There are large discrepancies between the best and the worst provinces in terms of the number of patients and population per physiotherapist - +102% and +179% respectively.

[163] Report of the National Consultant on Medical Rehabilitation of 30 March 2019.

[164] Central Register of Medical Practitioners and Dental Practitioners

[165] Data from the Polish Chamber of Physiotherapists (PChP).

Table 43. Number of physiotherapists, patients per physiotherapist, and population per physiotherapist.

Province	Number of physiotherapists KIF[166]	Number of physiotherapists (NFZ)[167]	Patients [168] per physiotherapist (NFZ)	Population per physiotherapist (NFZ)	Treatments under the NFZ per physiotherapist (NFZ)
Dolnośląskie	5,562	2,194	97	1,322	3,636
Kujawsko-Pomorskie	3,224	1,354	154	1,531	6,562
Lubelskie	3,669	1,742	109	1,210	4,696
Lubuskie	1,269	584	148	1,732	7,243
Łódzkie	3,662	1,567	148	1,567	5,811
Małopolskie	7,056	2,713	121	1,257	4,617
Mazowieckie	9,459	4,619	115	1,174	4,672
Opolskie	1,804	736	98	1,335	3,446
Podkarpackie	4,605	2,701	85	788	4,088
Podlaskie	1,568	686	148	1,718	5,712
Pomorskie	3,139	1,425	154	1,645	5,641

[166] Data from the Polish Chamber of Physiotherapists (PChP), as of May 2020.

[167] Physiotherapists reported to the NFZ under rehabilitation, as of 31/12/2019.

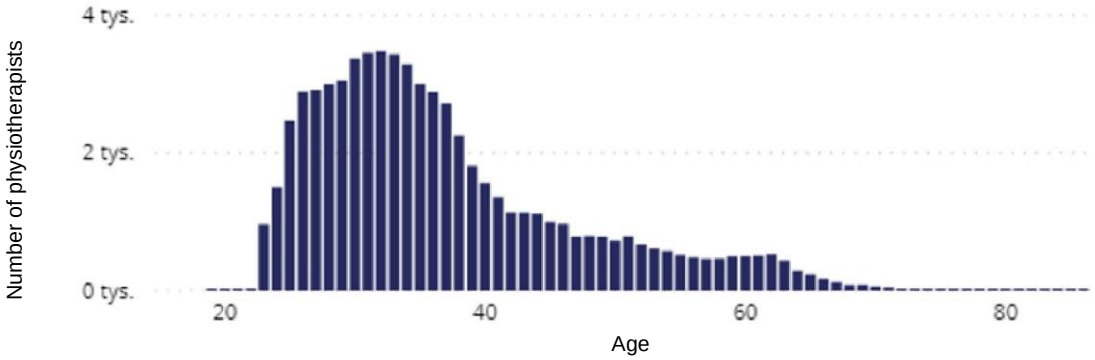
[168] Number of patients who received at least one NFZ rehabilitation service in 2019.

Śląskie	7,693	3,048	124	1,482	4,508
Świętokrzyskie	2,848	1,182	101	1,044	4,025
Warmińsko-Mazurskie	1,874	647	172	2,199	5,562
Wielkopolskie	5,761	2,017	118	1,735	4,896
Zachodniopomorskie	3,057	829	131	2,046	4,212
In total	**66,250**	**27,557**	**121**	**1,393**	**4,844**

Source: Ministry of Health study based on data from the Polish Chamber of Physiotherapists (PChP)

According to the data from PChP, there is a large number of young physiotherapists in Poland. In May 2020, the average age of physiotherapists in Poland was 37 (compared to the average age of medical practitioners in 2019, which was 49.) The age structure of physiotherapists is shown in Figure 194.

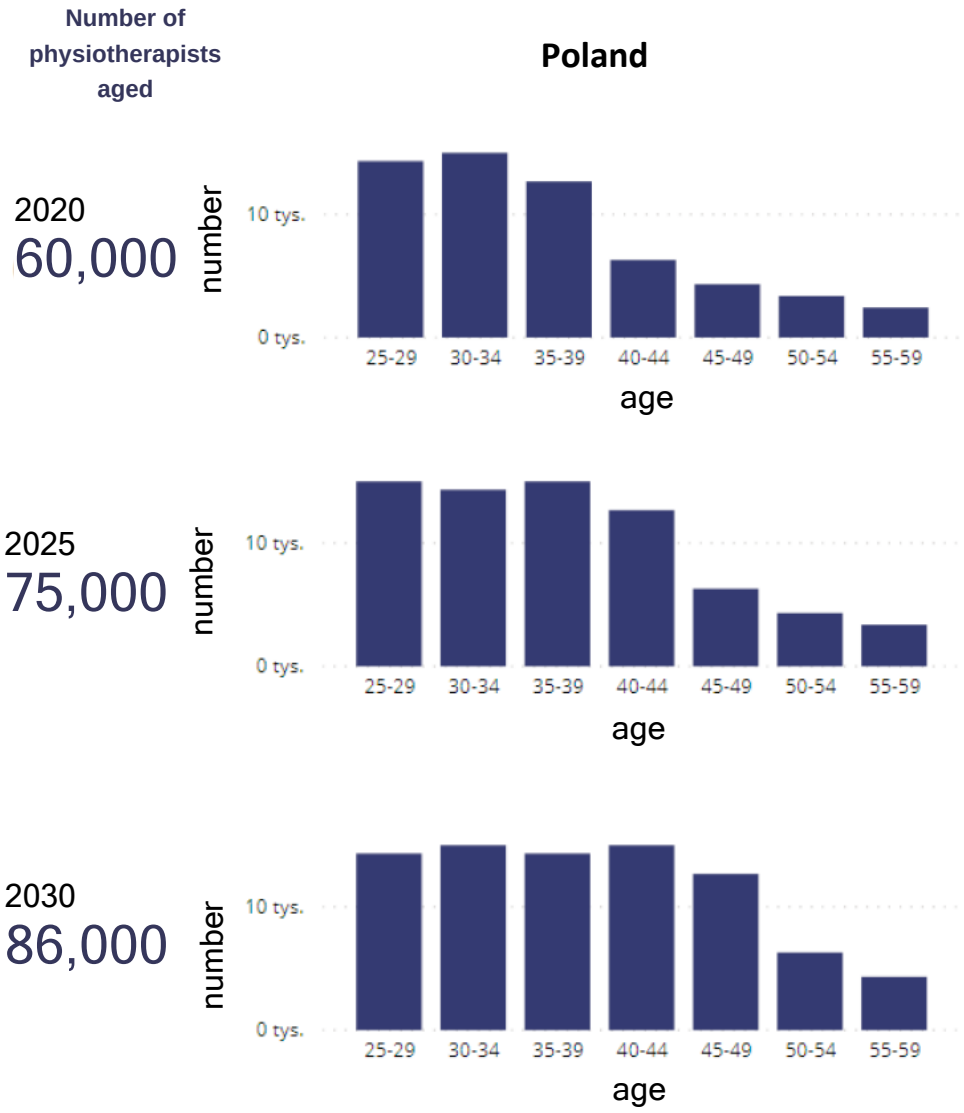
Figure 194. Age structure of physiotherapists.



Source: Ministry of Health study based on data from PChP

In order to estimate the number of physiotherapists in 2025 and 2030 5-10 years were added to the age of physiotherapists, respectively, and the number of physiotherapists under 35 in 2030 was assumed to be equal to the number of physiotherapists reaching the same age in 2020, respectively. For the purpose of the analysis, it was assumed that physiotherapists do not retire until 59 years of age.

Figure 195. Forecast of the number and age of physiotherapists in 2024 and 2029.



Source: Ministry of Health study based on data from the Polish Chamber of Physiotherapists (PChP)

However, it should be kept in mind that the above forecast is based only on figures and does not take into account changes in the education system. The credentials to become a physiotherapist included [169]:

- after 31 December 1997, – higher education studies in physiotherapy according to educational standards specified in separate regulations and obtaining a bachelor's or master's degree in this field,
- after 30 September 2012 and before 1 October 2017. – higher education studies in physiotherapy, comprising at least 180 ECTS credit points, including at least 100 ECTS credit points in physiotherapy, and a bachelor's degree, or additionally

[169] According to the date of the commencement of studies, determined by Art. 13 of the Act of 25 September 2015 on the Profession of Physiotherapy.

higher education of at least 120 ECTS credit points, including at least 60 ECTS credit points in physiotherapy, and a master's degree,

- after 1 October 2017. – long-cycle 5-year higher education studies in physiotherapy which includes at least 300 ECTS credit points as referred to in Art. 67 of the Act of 20 July 2018 – Law on Higher Education and Science (Dz. U. /Journal of Laws/ of 2021, item 265 as amended), hereinafter referred to as "ECTS points", including at least 160 ECTS credit points in physiotherapy, completion of a 6-month apprenticeship,
  master's degree and passing the National Physiotherapy Examination,
- after the 2018/2019 academic year – physiotherapy degree studies conducted in accordance with the regulations of
  Art. 68 sec. 3 item 1 of the Act of 20 July 2018 - Law on Higher Education and passing the National Physiotherapy Examination.

The changes in the process of physiotherapist education are so profound that the actual number of physiotherapists entering the market may differ significantly from the above forecast created by the technical analysis method.

8.3. Queues

Patients are registered on a waiting list for the provision of rehabilitation services according to general rules. Placement of a patient on the waiting list is determined by the following criteria:

- health condition;
- prognosis for the future course of the disease,
- comorbidities that affect the disease covered by the treatment,
- the risk of disability onset or worsening.

A medical facility classifies the patient into one of the following medical categories when enrolling in rehabilitation:

1) urgent case – if there is a need for urgent provision of services due to the course of a disease, the possibility of rapid deterioration of health or a significant reduction in the chances of recovery,
2) stable case – in a non-emergency or urgent case.

The waiting time analysis was prepared using data from AP-KOLCE (as of February 2020, as reporting has been suspended since March). The average waiting time was defined as the average of waiting time in individual centres, weighted by the number of waiting patients. The purpose of such an analysis is to determine how long the average patient waits for services.

Table 44. Queues by type of rehabilitation centre.

	Urgent case				Stable case		
Day	Number of providers	Number of waiting patients	Average waiting time	Longest waiting time	Number of waiting patients	Average waiting time	Longest waiting time
Day cardiological rehabilitation centre	30	30	10	13	568	71	231
Day rehabilitation centre	476	17,969	176	998	74,028	310	1,533
Child day rehabilitation centre	246	1,737	65	321	10,094	128	671
Inpatient							
Cardiological hybrid telerehabilitation in inpatient settings	12	18	6	6	5	10	21
Inpatient cardiological rehabilitation	80	424	20	120	1,984	30	167
Inpatient neurological rehabilitation	191	1,722	84	848	12,173	601	2,348
Inpatient systemic rehabilitation	283	20,862	160	940	148,455	1,193	4,657
Pulmonary rehabilitation	27	746	518	712	7,525	501	1,603

inpatient care							
Cardiological rehabilitation centre	52	25	30	70	748	63	228
Rehabilitation centre	3	441	502	502	829	1,030	1,030
Pulmonary rehabilitation centre	1	0	0	0	1,146	108	108
Home-based							
Home-based	686	1,586	37	321	7,868	53	491
Outpatient							
Outpatient physiotherapy	1,989	115,876	102	437	788,945	151	1,514
Musculoskeletal rehabilitation clinic	3	43	40	42	395	80	136
Rehabilitation clinic	950	13,027	69	223	120,676	98	558
Child rehabilitation clinic	36	457	92	211	4,938	108	331

Source: Ministry of Health study based on data from NFZ

The average waiting time for rehabilitation was very long (e.g. 160 days for inpatient systemic rehabilitation, 176 days for day rehabilitation centre). A total of 1,040,000 patients waited for outpatient rehabilitation in February 2020, which, compared to 2,990,000 outpatient rehabilitation patients for all of 2019, shows the number of the unmet service needs. The average waiting time for outpatient rehabilitation for urgent cases was 99 days and for stable cases – 144 days.

Long waiting time is a particularly significant problem, especially for patients after injuries and after surgeries who, in order for the treatment to be efficient and effective, should have access to rehabilitation right after the incident. Patients are guaranteed rehabilitation[170]:

[170] Regulation of the Minister of Health of 6 November 2013 on guaranteed therapeutic rehabilitation services.

– right after discharge or within 14 days of discharge from a centre where an acute injury of a central nervous system injury was treated, if the case of comorbidities;

– right after discharge or within 30 days of discharge from a centre where an acute injury of a central nervous system injury was treated, if the case of no comorbidities.

However, the average waiting time for emergency neurological inpatient rehabilitation centres was 84 days.

Prolonged waiting time has a negative effect not only on patients' health, but also on the state economy and the NFZ budget (slower recovery of the patient or the occurrence of other, more serious health problems due to insufficient health care).

8.4. Conclusions

In Poland, medical rehabilitation is founded from different sources: NFZ, ZUS, KRUS, PFRON, local government units and private funds of patients. The private sector plays an important role in the rehabilitation, but we lack data to estimate its scale.

In the health care system, rehabilitation services are provided in day, inpatient, home-based and outpatient settings, with outpatient services accounting for the largest share, with 3,000,000 people (nearly 90% of all rehabilitated patients) receiving 125,500,000 physiotherapy treatments in 2019.

Rehabilitation services are very important because they speed patients' recovery or improve their life quality and condition after surviving illnesses, injuries or medical procedures. Due to rehabilitation, people of all age have the opportunity to maintain or return to daily activities, perform meaningful life roles, and maximise their well-being.

The current health care system for hospital rehabilitation does not function properly and is not aligned with the real needs of patients. Patients with diverse rehabilitation needs stay on the same wards
and are billed with the same billing products. There is also a lack of treatment coordination with the full treatment process (between "levels" of rehabilitation) and a lack of specific objective tools to define the clinical and functional status of the patient.

Changes in inpatient and day rehabilitation may result in patients migrating to outpatient physiotherapy; therefore, their successful implementation requires, first or fall, transformations in outpatient physiotherapy, which the largest group of patients receives (90%).

8.5. Health care system challenges

There are significant reservations concerning the performance of rehabilitation procedures, especially on an outpatient basis. In particular, too many physical therapy procedures are performed (68.3%) compared to kinesitherapy (23.4%), while the effectiveness of kinesitherapy is more thoroughly documented.

Despite physiotherapists gaining the ability to set a treatment plan, there has been little change in the structure of services provided. The increasing number of physiotherapy sessions from 37,000 in 2018, to 2,230,000 in 2019 has only slightly translated into adjusting services to individual patients' needs.

A malfunctioning health care system in the field of medical rehabilitation leads to queues for providers of rehabilitation services. Patients are registered on a waiting list for the provision of services according to general rules. The lack of detailed regulations for objective assessment of the patient's health condition and determination of the purpose of the rehabilitation undertaken causes demand to exceed supply and contributes to long waiting times for services. In February 2020, 905,000 people waited for outpatient physiotherapy services, 169,000 people for inpatient general rehabilitation and 134,000 people for rehabilitation outpatient people. Long waiting times result in rehabilitation being undertaken late, which has a negative impact on the health of patients.

In 2019, 6.3% of the working-age population (1,440,000 people) and 18.6% of the post-working age population (1,560,000 people) used rehabilitation services under the NFZ. Among all those receiving rehabilitation, people of working age accounted for 43.2% and people in post-working age for 46.8%. The change in the demographic structure as such (without taking into account other factors such as changes introduced after 2019 or planned to be introduced in upcoming years) forecasts an increase in the number of rehabilitated patients by 4.5% by 2025, by 6.4% by 2030 and by 7.1% by 2040 comparing to 2019.

There are significant differences between provinces in terms of how often patients undergo rehabilitation. One reason for this may be the varying availability of services across the country, as indicated by significant migration of patients from one province to another. The data also indicate that patients living in cities with district rights are rehabilitated more frequently than patients living on the outskirts of these cities.

In 2016-2019, there was a development of rehabilitation services in home-based settings. In 2016, medical rehabilitation services were provided in 7 provinces (Dolnośląskie, Mazowieckie, Podkarpackie, Podlaskie, Śląskie, Świętokrzyskie and Wielkopolskie). Within 3 years, all provinces were involved. However, despite the dynamic development of home-based rehabilitation, there are still very significant differences between provinces.

There are differences in the number of physiotherapists and patients per one physiotherapist among provinces. There are large discrepancies between the best and the worst provinces in terms of the number of patients and population per physiotherapist - +102% and +179% respectively.

Patients are most frequently referred to rehabilitation for musculoskeletal diseases (78%), nervous system diseases (15.3%), cardiovascular diseases (1.5%), other non-communicable diseases (0.9%), neoplasms (0.7%) and chronic respiratory diseases (0.6%). In 2016-2018, rehabilitation services provided to 25,000 patients with a neoplasm diagnosis were reported each year.

There is no uniform database containing information on the number of patients and on the services provided under care financed from different sources.
In particular, there is a lack of information on the private sector, which is a significant complication for a more complete analysis of the availability of rehabilitation in Poland.

8.6. Recommended lines of actions

- → it is necessary to extend rehabilitation provision to patients within those disease groups for which clinical guidelines indicate rehabilitation as one of the basic elements of therapy and who are currently not adequately covered with regard to rehabilitation. An example is oncology, where only about 3% of patients underwent rehabilitation treatment in 2018;
- → the course of rehabilitation should be adapted to the specific clinical guidelines for the disease entities concerned in order to support the treatment process, psychological and physical recovery and to achieve maximum independence and self-reliance. In order to qualify for therapy adapted to the patient's condition and to assess the effectiveness of therapy on the basis of a scale of disability before and after therapy, a scale for assessing patients' disability should be introduced;
- → it is important to limit the number of physical therapy procedures and popularise kinesitherapy through a modification of the financing method, e.g. introduction of a coefficient correcting the valuation of services for individual providers with the effectiveness of treatment understood as improvement on the disability scale;
- → changing only the structure of treatments will not shorten queues, and may even contribute to their lengthening. Due to the long waiting times for services, the accessibility of services should be improved, especially in the field of outpatient physiotherapy, inpatient general rehabilitation and in rehabilitation clinics. In addition, demographic changes resulting in an increase in the number of elderly people should be taken into account, which may predict an increase in the number of patients undergoing rehabilitation procedures in the following years;

→ further propagation of rehabilitation in home-based settings is important, especially in the provinces where its current provision is insignificant;

→ education of patients on self-care at home should be promoted, which is also an effective and affordable part of rehabilitation;

→ recently, many countries, including Germany, France, Great Britain and the Netherlands, have begun to emphasise the importance of telerehabilitation development, i.e. exercises performed by patients at home under the supervision of a physiotherapist via video calls. Such a solution is particularly beneficial for patients whose health condition makes it difficult to travel to the place where the standard services are provided, and it also reduces the risk of spreading infectious diseases. Therefore, it is recommended to further popularise telerehabilitation also in Poland;

→ it is recommended to introduce an obligation to report information on the number of patients and provided services by all rehabilitation service providers to the Ministry of Health.

9. Long-term care

Both in the world and in Poland, a continuous and progressive ageing of society has been observed. The Polish society is one of the fastest ageing among the EU countries. According to the forecasts of the GUS, the share of people aged 65 and over in the total population increased by almost 10 percentage points, i.e. from 14.7% in 1989 to 25% in 2018 (during this time, the proportion of children and young people decreased by about 12 percentage points). By 2050, the share of people at the retirement age will increase to 40%[171]. The ageing society usually corresponds to an increase in the number of chronically ill people and people requiring support in everyday functioning, which poses new challenges for the Polish health care system related, among others, to the provision of nursing and care services in the framework of long-term care.

Taking into account various definitions (e.g. by the WHO and the OECD), long-term care can be understood as the totality of medical and social activities consisting in the provision of long-term nursing care, rehabilitation, therapeutic services and nursing and care services, as well as the continuation of pharmacological and dietary treatment of chronically ill people and those requiring support in everyday functioning, who do not require hospitalisation in a hospital ward. Nursing and care services are addressed both to adults and to children[172]. Long-term care is also provided informally by relatives.

In the Republic of Poland, the public long-term care system is based on two independent pillars. Due to the necessity of securing various needs of persons requiring support in everyday functioning, long-term care is implemented both within the health care system and within the social policy[173]. The social assistance system includes care services and specialist care services provided at the place of residence of a person who needs such care (including also non-medical support). A distinction is made between day services provided in support centres, 24-hour services provided in social welfare homes and family homes, and 24-hour services provided in 24-hours facilities for people with disabilities, chronic illnesses or the elderly. In order to ensure support in cases of temporary care of a sick or disabled family member, the person cared for and their carer may also be entitled to monetary benefits. The health care system, on the other hand, offers assistance through home care provided by nursing staff,

[171] *Information on the situation of elderly people based on research by Statistics Poland*, GUS, Warsaw 2018, p. 4.

[172] *Actual state and prospects of long-term care development in Poland*, Ministry of Health, 2012, http://oipip.opole.pl/wp-content/uploads/2014/04/pod strategia.pdf,[accessed 02.06.2020]

[173] Ibid.

However, the health care system offers assistance within the framework of home-based care provided by nursing staff, long-term care or long-term care team for mechanically ventilated patients, and 24-hour inpatient care in care and treatment centres and nursing and care centres. A pilot programme of day care centres (DCC) funded by the European Social Fund was conducted in 2015-2019.

The observed growing number of elderly, chronically ill people and people requiring support in everyday functioning entails a number of challenges related to the provision of nursing and care services for an increasing number of people. The most significant problems in access to long-term care services are:

- a steady increase in the demand for nursing and care services associated with a population ageing and an increase in the number of elderly people, and thus the need for increased financing,
- a shortage of sufficient numbers of staff to provide medical and nursing care, including a shortage of qualified carers for elderly people and people with disabilities,
- an ageing nursing staff in the long-term care system, over 45-50 years of age, resulting in gradual redundancy due to reaching retirement age or due to a health condition caused by strenuous physical work, as well as unsatisfactory salaries in relation to responsibilities and duties[174],
- queues for long-term care services due to the limited number of available beds in care institutions and their uneven distribution.

According to the OECD report (*Health at a Glance*, 2019)[175] in 2017. The Republic of Poland had the lowest value among the 25 OECD countries of the indicator "Share of people aged 65 or more covered by long-term care" (0.9%). This value is more than ten times lower than the average in the 25 OECD countries (10.8%). The highest proportion of the population aged 65 or more is covered by long-term care in Switzerland and Israel (22.4% and 20.2%, respectively). The large differences in the values of the indicators between OECD countries depend on several aspects that may render direct comparisons impossible, i.e. the demographic structure of the population of individual countries, the adopted definition of long-term

[174] L. Kimber-Dziwisz, *Report of the Provincial Consultant on the Chronic Illness and Disability Nursing for 2014,* 2015, https://docplayer.pl/7788421-Raport-konsultanta-wojewodzkiego-w- field-nursing-the-chronic-sick-and-disabled-for-year-2014.html , [accessed 02.06.2020].

[175] *Health at a Glance 2019 OECD Indicators,* OECD, 2019, https://www.oecd-ilibrary.org/docserver/4dd50c09-en.pdf?expires=1588682016&id=id&accname=guest&checksum=E7EC6091B7BCEC3E15659CC2DC4C8

care[176] and errors in reporting. According to the OECD, on average, 67.5% of people aged 65 or more receive long-term home-based care. The highest share of home-based care was reported in Israel (92%) and the lowest in Portugal (32%). In Poland in 2017, 62.8% of people (61.2% in 2019) aged 65 or more were covered by long-term home-based care[177]. Compared to 33 OECD countries, the Republic of Poland has also one of the lowest rates of long-term care beds per 1,000 population aged 65 or more (11.9). This is more than four times lower than the average of the 33 countries surveyed. Only Greece (4.5) and Turkey (8.7) have worse rates. The highest values are found in Luxembourg (82.8) and the Netherlands (76.4).

The OECD report also included infections associated with staying in health care institutions. The proportion of people in long-term care with at least one health care-associated infection was 3.9%, which was similar to the average for the 19 OECD countries surveyed (3.8%). The lowest results were observed in Spain (8.5%) and Greece (6.3%), while the highest in Lithuania (0.9%) and Hungary (1%)[178]. For antibiotic-resistant bacterial infections, the percentage of bacterial infections in Poland is 1.6 times higher than the average for the 10 OECD countries[179].

In terms of the percentage of residents in long-term care centres with pressure sores, the results in the Republic of Poland were also slightly worse compared to OECD countries. The value of the indicator in Poland amounted to 8.4% and was by 58.5% higher than the average for the 18 OECD countries examined (5.3%). The situation was worse only in Portugal (13.1%), Italy (9.9%) and Spain (9.7%). On the other hand, the lowest values were reported in Lithuania (0.9%) and Hungary (1.9%).

According to the OECD, long-term care expenditure has increased the most in recent years compared to other health care sectors. A population ageing leads to the need to provide ongoing health and social care to more people, and rising incomes also increase expectations for quality of life in old age. As the population ages, the capacity to provide informal care will also decline. All these factors exert pressure to increase

[176] As regards the value for the Republic of Poland (0.9%), long-term home-based care has not been taken into account. Detailed description of data sources for particular countries: http://stats.oecd.org/wbos/fileview2.aspx?IDFile=be9656b8-7f61-4a03-a1fc-bc503f459749, [accessed 02.06.2020], http://stats.oecd.org/wbos/fileview2.aspx?IDFile=4b1884af-0b8b-4f3f-994a-7cc4b30d73a0, [accessed 02.06.2020]

[177] Ministry of Health study based on data from the NFZ. For the purposes of the OECD report, services provided in home-based settings were not reported for 2017.

[178] The OECD report indicated limited representativeness of the sample in countries.

[179] Based on the composite antibiotic resistance index developed by the ECDC. Only countries with more than 15 bacterial isolates were included.

long-term care spending in OECD countries for the upcoming years.
In the Republic of Poland in 2017, the expenditure on long-term care (health and social) by government and compulsory insurance schemes was one of the lowest (0.4% of GDP). The highest spending on long-term care was in the Netherlands (3.7% of GDP) and in Scandinavian countries (between 2.2 and 3.3% of GDP). The average across the 17 OECD countries amounted to 1.7%.

There is an increasing trend in EU countries towards the development of home-based care services and day support forms, while institutional care is being reduced. Care, particularly in patients' homes, aims to promote or protect the ability to live independently and provide self-care. In general, home-based care consists of day care centres that offer a complete package of services for those in need during the day - such as meal provision, daily care, educational and rehabilitation services and integration of elderly people[180].

According to data from the National Health Account, in 2017, out of the total health expenditure on long-term care (HC.3 in the ICHA-HC[181]classification), PLN 7,780,000,000 was allocated, of which PLN 660,000,000 to hospitals, PLN 1,110,000,000 to inpatient long-term care centres, PLN 830,000,000 to OSC providers and PLN 5,200,000,000 to other units within the economic sectors. The total expenditure on inpatient long-term care centres (HP.2 in the ICHA-HP classification) amounted to PLN 1,400,000,000, of which PLN 1,180,000,000 was public expenditure, PLN 200,000,000 private expenditure and PLN 20,000,000 direct charges from households[182]. According to the financial reports of the NFZ[183], the costs of nursing and care services in long-term care amounted to PLN 1,630,000,000 in 2018, and PLN 1,875,000,000 in 2019, which constitutes 2% of the costs allocated to health care services. According to the August 2020 financial plans,

[180] B. Lipszyc, E. Sail, A. Xavier, *Long-term care: need, use and expenditure in the EU-27*, EUROPEAN ECONOMY, 2012, https://ec.europa.eu/economy finance/publications/economic paper/2012/pdf/ecp469 en.pdf, [accessed 02.06.2020]

[181] *International Classification for Health Accounts (ICHA)* allows health care to be analysed from different points of view: sources of financing (*ICHA-FH - Classification of Sources of Funding*), providers of health services and goods
of health care (*ICHA-HP - Classification of Health Care Providers*) and health care functions (*ICHA-HC - Classification of Health Care Functions*).

[182] *Health and Health Care in 2018*, GUS, 2018, https://stat.gov.pl/download/gfx/portalinformacyjny/pl/defaultaktualnosci/5513/1/9/1/zdr owie i ochrona zdrowia w 2018.pdf,[accessed 02.06.2020]

[183] Financial statements of the NFZ, https://www.nfz.gov.pl/bip/finanse-nfz/, [accessed 21.09.2020]

in 2020, the NFZ is going to allocate PLN 2,038,000,000[184] for long-term care. This is 25% more compared to 2018 and 8.7% more than in 2019.

Table 45. Long-term care spending in 2016-2019 and plan for 2020 according to NFZ reports

	2016	2017	2018	2019	2020 (plan)
Amount [PLN '000'000]	1,296	1,481	1,630	1,875	2,038
Change [y/y]	-	+14.3%	+10.1%	+15.0%	+8.7%

Source: Ministry of Health study based on data from NFZ

Long-term care in the health care system

Long-term care in the health insurance health care system is provided in inpatient setting (Care and Treatment Centres and Nursing and Care Centres) and at home (by long-term home-based care teams for mechanically ventilated patients and long-term care nurses). Home-based care is provided by long-term care nursing staff in the patient's home. Long-term nursing care covers patients who do not require inpatient care. However, due to the existing health problems they require systematic and intensive care delivered in cooperation with a primary care medical practitioner. The eligibility criterion for long-term care is the patient's health condition, which determines the demand for a given type of services.

Both in inpatient and home-based care, guaranteed benefits within the scope of nursing and care services within the framework of long-term care will be provided to beneficiaries who have scored from 0 to 40 points in the assessment of the level of independence (the so-called *Barthel scale*). The patient's condition in most cases is also assessed using the *Glasgow scale*, which allows quantitative assessment of the patient's state of consciousness[185].

In the case of home-based care, the basis for a patient's inclusion in long-term nursing care includes a referral issued by a health insurance medical practitioner, a nursing qualification for involvement in long-term nursing care and the patient's written consent. In the case of inpatient care, an assessment by a medical practitioner and a health insurance nurse is necessary before the patient is admitted to the unit, as well as

[184] Financial Plan of the NFZ for 2020, https://www.gov.pl/web/zdrowie/planv-finansowe-nfz, [accessed 10.09.2020]

[185] Notice of the Minister of Health of 22 September 2015 on the announcement of the consolidated text of the Regulation of the Minister of Health on guaranteed services in the field of nursing and care services in long-term care.

an assessment by a medical practitioner and a nurse of the nursing centre on the day of admission. In 2020, the provision of appointments with the use of ICT or other communication systems was recognised as an additional means of providing home care, provided that this method does not pose a risk of worsening the health of the beneficiary. The changes were introduced as a result of the COVID-19 outbreak[186].

One of the forms of long-term care developed in Poland since 2015 has been Day Care Centres (DCC). They are addressed to people who require support in daily functioning, in particular to people aged 65 or more, whose health condition does not allow them to remain exclusively under the care of PHC and OSC, and at the same time, they do not require 24-hour medical and nursing supervision in an inpatient setting. Services in a Day Care Centre are provided to patients who, due to their health condition, require nursing, caring and rehabilitation services as well as the continuation of treatment, and who do not require hospitalisation in a hospital ward and who received 40-65 points in the *Barthel* scale assessment.

The services in DCC are not guaranteed. As part of the pilot programme, 53 centres were operating between 2015 and 2019. They are also being established under Regional Operational Programmes, resulting in 78 day homes[187]by August 2019.

Long-term care as part of social policy

In addition to entities financed by the NFZ, persons in need could take advantage of services in social welfare homes (SWH)[188] and facilities providing 24-hour care for persons with disabilities, the chronically ill or the elderly.

As a matter of social policy, social welfare homes accounted for nearly 48% of all inpatient social assistance centres. At the end of 2019, there were 875 social welfare homes and 385 facilities providing 24-hour care to people with disabilities, the chronically ill or the elderly under economic or statutory activity in the territory of the Republic of Poland. These centres had a total of 96,600 beds available (of which 82,800 beds were provided in social welfare homes and 13,800 beds in facilities providing 24-hour care for the disabled, chronically ill or elderly). Increased compared to 2018 the number of social welfare homes did not change, while the number of facilities providing 24-hour care

[186] Regulation of the Minister of Health of 16 March 2020 amending the regulation on guaranteed services within nursing and care services in long-term care.

[187] Dzienny dom opieki medycznej organizacja i zadania, Ministerstwo Zdrowia, 2015, p. 5, https://www.funduszeeuropejskie.gov.pl/media/6854/Zalacznik 1 Day care home med.pdf, [accessed 02.06.2020].

[188] The residents pay for their stay in social welfare homes but depending on their income and legal situation, the relatives and the municipality may also cover the costs (Art. 61 of the Act of 12 March 2004 on social assistance (Dz. U. /Journal of Laws/ of 2004, nr 64, item 593)).

for disabled, chronically ill or elderly persons increased by 22 centres. At the end of 2019, 112,500 people stayed in inpatient social assistance centres, of which 73% were residents of social welfare homes and 11.8% were residents of facilities providing 24-hour care to people with disabilities, chronic illnesses or the elderly. The majority of residents in these institutions were elderly people over 60 years of age (72,500), while the smallest group were people under 17 years of age (1,900)[189].

Informal long-term care

Informal care is of significant importance in the overall long-term care system both in Europe and in Poland. The caregivers of a person requiring support in daily living are mostly family members, friends or immediate neighbours, who receive little or no remuneration for their care directly from the person cared for. However, as a result of changes in the traditional family model and in the lifestyle of society, informal care is expected to become a less significant form of care in the future than it is today. Such changes are projected to translate into increased demand for publicly funded long-term care services[190].

The study *In-depth study of care services for elderly people. Formal and informal community treatment*[191] identified characteristic features of informal care in Poland. Main conclusions resulting from the study:

- in the area of support for dependent persons the phenomenon of feminisation of the role of informal caregiver is noticeable (67% of carers are women),
- informal caregivers are most often in middle and late adulthood, 70% of caregivers are between 41 and 70 years of age (74.8% women, 72.9% men),
- informal caregivers are most often members of the same family (83.1%),
- the person to whom informal care is provided is most often a parent (50.8%), another family member (16%) and a spouse (13.4%). In less than half

[189] *Residential institutions of social assistance in 2018*GUS, 2018, https://stat.gov.pl/obszary-tematyczne/warunki-zycia/ubostwo-pomoc-spoleczna/zaklady-stacjonarne-pomocy-spolecznej-w-2018- roku,18,3.html,[accessed 02.06.2020]

[190] *Current state and future of long-term care in ageing Poland*, World Bank, 2015, http://www.niesamodzielnym.pl/uploads/Bank%20%C5%9Awiatowy%20Opieka dlugoterminowa.pdf, [accessed 02.06.2020]

[191] *In-depth study of care services for elderly people. Formal and informal community care,* Observatory for Social Integration, 2017, https://rops.poznan.pl/wp-content/uploads/2018/06/raport Pog%C5%82%C4%99bione-studium-us%C5%82ug-opieku%C5%84czych- skierowanych-do-os%C3%B3b-starszych.-%C5%9Arodowiskowa-opieka-formalna-i-nieformalna wersja- ko%C5%84cowa.pdf, [accessed 02.06.2020]

of the cases (48.9%), the person requiring support in daily living resides with the caregiver, most often with his or her child. The person most often living with a caregiver is a severely disabled senior (44.7%). In 67% of cases the informal care lasts more than 2 years, and in one in three cases more than 5 years,

- in the surveyed group of informal caregivers, taking care of an elderly person, in the opinion of 74% of them, usually does not negatively affect the financial situation of the family. This may be due to the fact that 52% of caregivers are professionally active, while among those not working, as many as 66% receive a pension,
- informal caregivers may be at risk of experiencing negative phenomena resulting from an excessive burden of responsibilities, such as caregiver burnout (caregiver syndrome), which may consequently lead to deterioration of their health.

In addition, according to a 2015 study by the World Bank, it is projected that by 2050, the proportion of 11 healthy people per 1 person requiring substantial support in daily living will change to 5 healthy people per 1 person requiring substantial support in daily living[192]. Such an unfavourable projected ratio of potential informal caregivers to people requiring care indicates the need for further development of formal care services.

9.1. Long-term care analysis

The subject of the analyses are the services provided under the contract covering nursing and care services based on data from the NFZ on services reported for 2019.

Patient characteristics

The majority of long-term care in the health system is provided to people aged 65 or more, who account for 85% of patients. On the other hand, patients aged over 80 years account for 56%. Looking at the gender distribution, there is a predominance of women, who account for 67% of all patients. However, the proportion of women varies by age group, with 41% of patients aged under 65 and 79% of patients aged over 80. 65% of patients are urban residents.

[192] *Current state and future of long-term care in ageing Poland*, World Bank, 2015, http://www.niesamodzielnym.pl/uploads/Bank%20%C5%9Awiatowy%20Opieka dlugoterminowa.pdf, [accessed 02.06.2020]

Table 46. The demographic structure of patients in 2019.

Age	Number of patients under long-term care ['000].	Number of inpatient care patients ['000]	Number of long-term home-based care patients ['000]
<18	1.2	0.5	0.8
18-39	2.9	0.5	2.4
40-64	12.5	4.3	8.3
65-79	31.1	12.1	19.4
80 or more	62.1	25.2	37.7

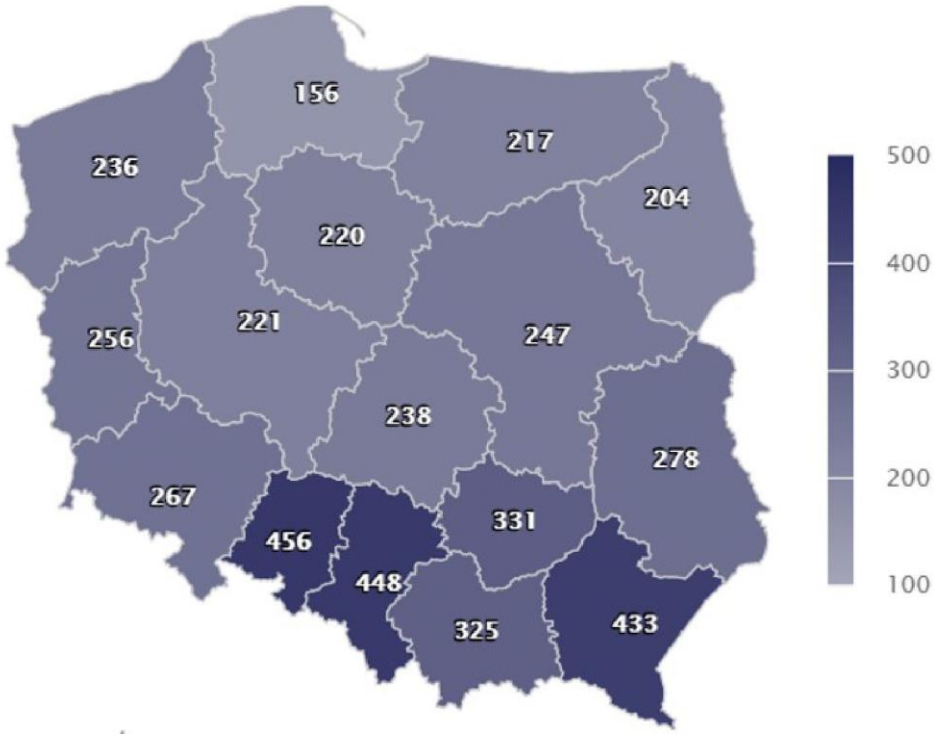
Source: Ministry of Health study based on data from NFZ

In 2019, 109,800 patients benefited from nursing and care services under long-term care financed respectively. 1,200 were under 18 years of age, while 93,000 were patients aged 65 and over, which is 1.34%[193] of all people of this age. There were 62,100 patients aged 80 or more, representing 3.7% of people of this age. According to the OECD report[194] , this is the lowest value among the 25 OECD countries (average for the countries studied is 10.8%). The number of patients who received long-term care services per 100,000 population was also diversified among provinces. The highest value of this indicator was characteristic for the following provinces: Opolskie (456), Śląskie (448), Podkarpackie (433), while the lowest indicators were noted in the following provinces: Pomorskie (156), Podlaskie (204) and Warmińsko-Mazurskie (217). The average for the country amounted to (286). A value below the average was recorded in 11 provinces.

[193] According to the OECD *Health at a Glance* 2019 report, the share of long-term care patients in Poland among patients over 65 reaches 0.9%. The report does not take into account home-based care. http://stats.oecd.org/wbos/fileview2.aspx?IDFile=4b1884af-0b8b-4f3f-994a-7cc4b30d73a0, [accessed 02.06.2020]

[194] *Health at a Glance 2019: OECD Indicators,* http://www.oecd.org/health/health-at-a-glance-19991312.htm, [accessed 02.06.2020]

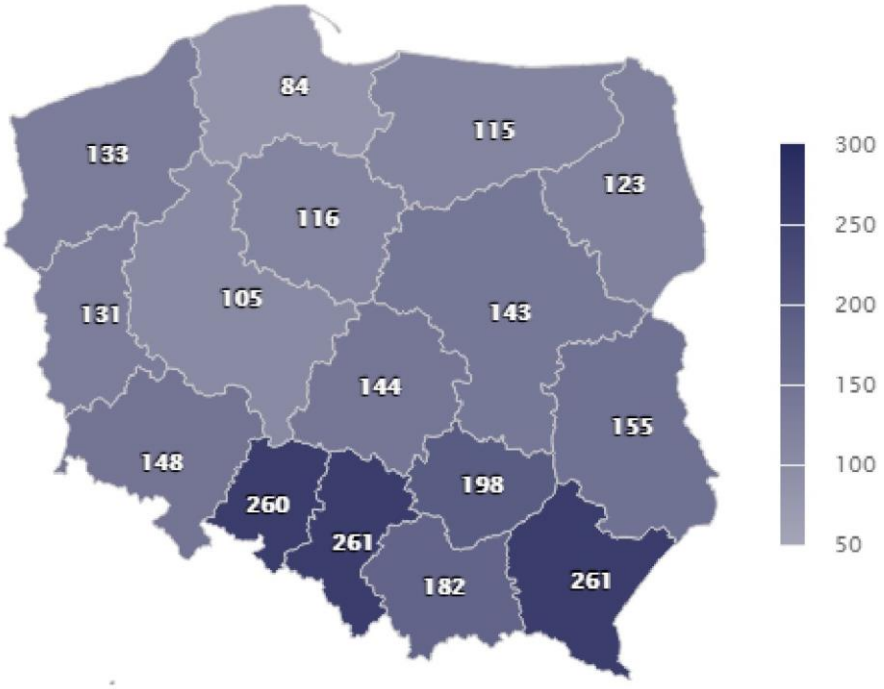
Figure 196. The number of patients per 100,000 population by place of service provision in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

The highest number of patients aged 80 or more per 100,000 population treated under long-term care was recorded in the following provinces: Śląskie (261), Podkarpackie (261) and Opolskie (260), and the lowest in the following provinces: Pomorskie (84), Wielkopolskie (105), Warmińsko-Mazurskie (115) and Kujawsko-Pomorskie (116).

Figure 197. Number of patients aged 80 years and over per 100,000 population treated under long-term care in 2019.



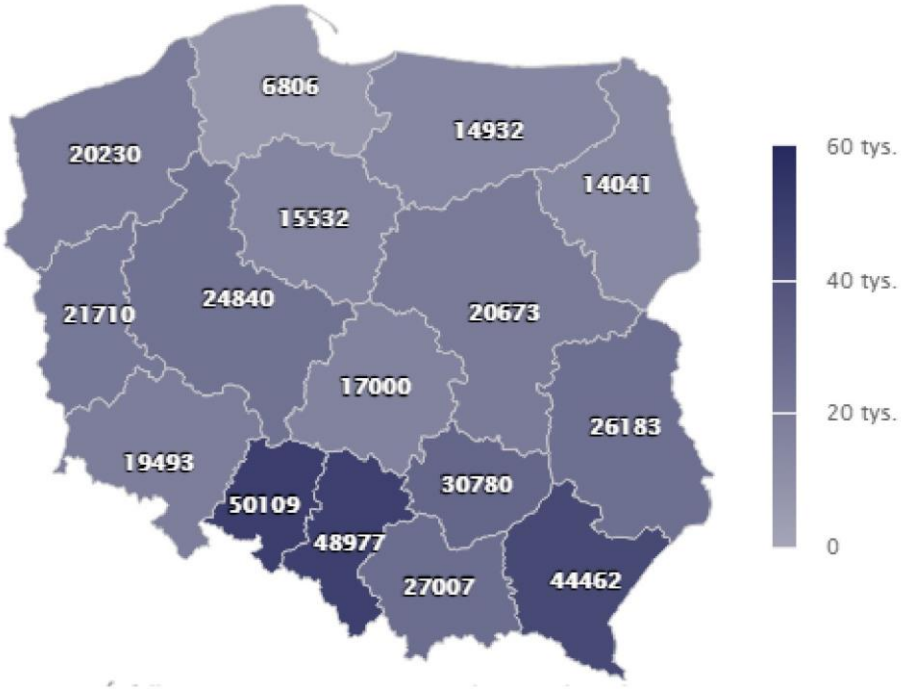
Source: Ministry of Health study based on data from NFZ and GUS

Analysis of the number of services

In 2019, there were 9,900,000 visits for nursing and care services[195]. The highest number was delivered to patients aged 80 or more (5,680,000 visits). The distribution of visits per 100,000 population in relation to the place of service provision was not uniform in all provinces. The highest value of this indicator was observed in the following provinces: Opolskie (50,109), Śląskie (48,977) and Podkarpackie (44,462), while the lowest value was observed in the following provinces: Pomorskie (6,806), Podlaskie (14,041) and Warmińsko-Mazurskie (14,932). The average for Poland equals 25,789. A value below the average was recorded in 10 provinces.

[195] A visit by a long-term care nurse or physiotherapist with an individual product code was considered a visit.

Figure 198. Number of visits per 100,000 population by place of service provision in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Analysis of diagnoses

The most common diagnoses that patients are referred to long-term care are a history of stroke (18% of patients), Alzheimer's disease (15% of patients) and cardiovascular and circulatory diseases (11% of patients). People under 40 years of age most often are referred to long-term care with diseases of the nervous and respiratory systems, intellectual disabilities or congenital defects.

Table 47. Distribution of the most common diagnoses with which patients are referred to long-term care in 2019 in the Republic of Poland

Disease subgroup	Number of patients	% of patients
Stroke	19,460	17.7
Alzheimer's disease and other dementias	16,223	14.8
Other diseases	15,101	13.8
Other cardiovascular diseases	12,042	11
Other nervous system diseases	7,097	6.5
Peripheral artery disease	7,043	6.4
Other chronic respiratory diseases	6,702	6.1
Other musculoskeletal disorders	3,825	3.5
Diabetes	3,518	3.2
Pressure sore	2,633	2.4

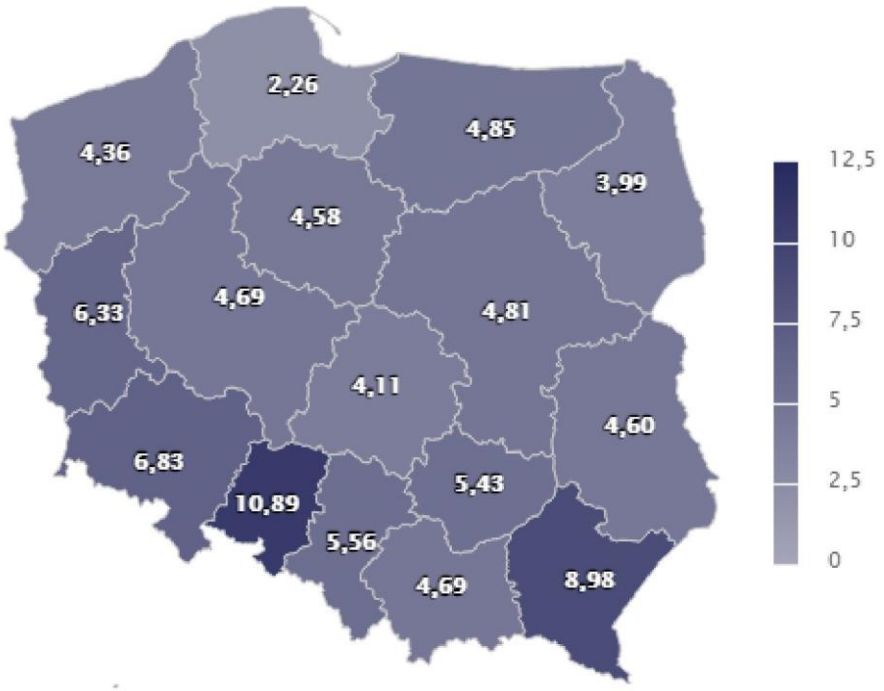
Source: Ministry of Health study based on data from NFZ

Financing

In the Republic of Poland, within the health care system financed by the NFZ, there are 1,999 entities providing long-term care, including 466 providing inpatient care and 1,614 providing home-based care (some centres offer services in inpatient and home-based settings). These institutions are mainly located in and around large cities. Many districts have only one centre providing home-based care without an inpatient centre. Home-based care services were not provided in 3 districts, of which 2 include cities with district rights, where access to this scope of services was provided.

The distribution of the number of centres per 100,000 population was not equal among the provinces. The highest value of this indicator was characteristic for the following provinces: Opolskie (10.89), Podkarpackie (8.98), Dolnośląskie (6.83), while the lowest value was noted for Pomorskie (2.26), Podlaskie (3.99) and Łódzkie (4.11). The national average amounted to 5.2. A value below the average was recorded in 10 provinces.

Figure 199. Number of long-term care centres per 100,000 population in 2019



Source: Ministry of Health study based on data from NFZ and GUS

Medical staff

Unfavourable demographic changes leading to population ageing contribute to an increase in the demand for medical staff in health care and care staff in long-term care. In 2019, 33,700 employees provided services in the scope of long-term care financed by the NFZ, of which 4,200 were medical staff, 5,000 physiotherapists and 24,300 nursing staff. The majority of medical practitioners (3,100) provided inpatient care services (in a Care and Treatment Centre or in a Nursing and Care Centre), while 1,200 medical practitioners worked in long-term home-based care teams.

Table 48. Number of employees in long-term care under contracts with the NFZ in 2019.

Type of care		Medical Staff	Nursing staff.	Physiotherapists
Home-based care	Nursing Home-Based Long-Term Care	0	13,851	12
	Long-term home-based care team	1,210	1,752	1,990
	Home-based care - total	1,210	15,450	2,001
Inpatient care	Care and Treatment Centre or Nursing and Care Centre	3,132	10,008	3,205
Total		**4,194**	**24,300**	**5,031**

Source: Ministry of Health study based on data from NFZ

There were 10,000 nursing staff employed in Care and Treatment Centres or Nursing and Care Centres, while 15,400 were employed in home-based care, of which 13,800 in nursing home-based care and 1,700 in long-term home care teams.

Taking into account the speciality of long-term care medical practitioners, the largest number of medical practitioners specialised in internal medicine (1,382), anaesthesiology and intensive care (964), and neurology (576).

Table 49. Most common specialities among long-term care medical practitioners in 2019.

Field of speciality	Medical Staff
Internal diseases	1,382
Anaesthesiology and Intensive Care	964
Neurology	576
Psychiatry	448
Lung Diseases	338

Source: Ministry of Health study based on data from NFZ

In terms of territorial distribution, the highest number of medical practitioners work in Śląskie (569), Mazowieckie (527) and Małopolskie provinces (409), while the lowest number of medical practitioners work in Lubuskie (106), Opolskie (151) and Zachodniopomorskie (154) provinces. Considering nursing long-term care, the largest number of nurses provided services in Śląskie (4,939), Mazowieckie (2,742) and Podkarpackie (2,480) provinces and the smallest in Warmińsko-Mazurskie (559), Podlaskie (589) and Lubuskie (606) provinces.

Table 50. Number of medical staff nationwide in long-term care in 2019.

Province	Medical Staff	Nursing staff.	Physiotherapists
Dolnośląskie	371	1,825	482
Kujawsko-Pomorskie	231	835	201
Lubelskie	255	1,264	261
Lubuskie	106	606	135
Łódzkie	256	1,294	268
Małopolskie	409	2,264	643
Mazowieckie	530	2,742	636
Opolskie	151	1,114	174
Podkarpackie	316	2,480	373
Podlaskie	190	589	154
Pomorskie	237	675	199
Śląskie	569	4,939	665
Świętokrzyskie	180	1,102	186
Warmińsko-Mazurskie	189	559	159
Wielkopolskie	304	1,526	419
Zachodniopomorskie	154	788	183
Total	**4,197**	**24,300**	**5,031**

Source: Ministry of Health study based on data from NFZ

Queues of patients

According to the Act of 27 August 2004 on health care services financed from public funds (Dz.U. /Journal of Laws/ of 2019, item 1373, as amended), as of 1 January 2020 Nursing and Care Centres, Care and Care Treatment Centres and teams of long-term home-based care and nursing long-term home-based care are obliged to maintain schedules and waiting lists.

In February 2020, the largest number of patients were waiting for a place in inpatient centres. There were 8,600 patients waiting for a place in Care and Treatment Centres and 3,000 patients in Nursing and Care respectively. The waiting time depending on the medical category ranged from 144 to 293 days. In nursing home care, 5,300 patients had to wait, with an average waiting time of 107 days in the urgent caseand 85 days in the stable case[196].

Table 51. Queues for long-term care units by type and medical category in 2020.

Queue	Medical category	Number of waiting patients		Average waiting time		Number of providers	
Home-based care		01/2020	02/2020	01/2020	02/2020	01/2020	02/2020
Nursing Home-Based Long-Term Care	stabile case	697	1339	92.9	106.5	84	160
	stabile case	2,205	4,005	87.8	84.5	244	427
Long-term home-based care team	stabile case	0	1	0.0	0.0	0	1
	stabile case	29	44	4.3	4.0	7	12
Long-term home care team for children	stabile case	0	0	0.0	0.0	0	0
	stabile case	11	9	5.8	7.0	5	7
Inpatient care		01/2020	02/2020	01/2020	02/2020	01/2020	02/2020

[196] Queue application: https://basiw.mz.gov.pl/index.html#/visualization?id=3406

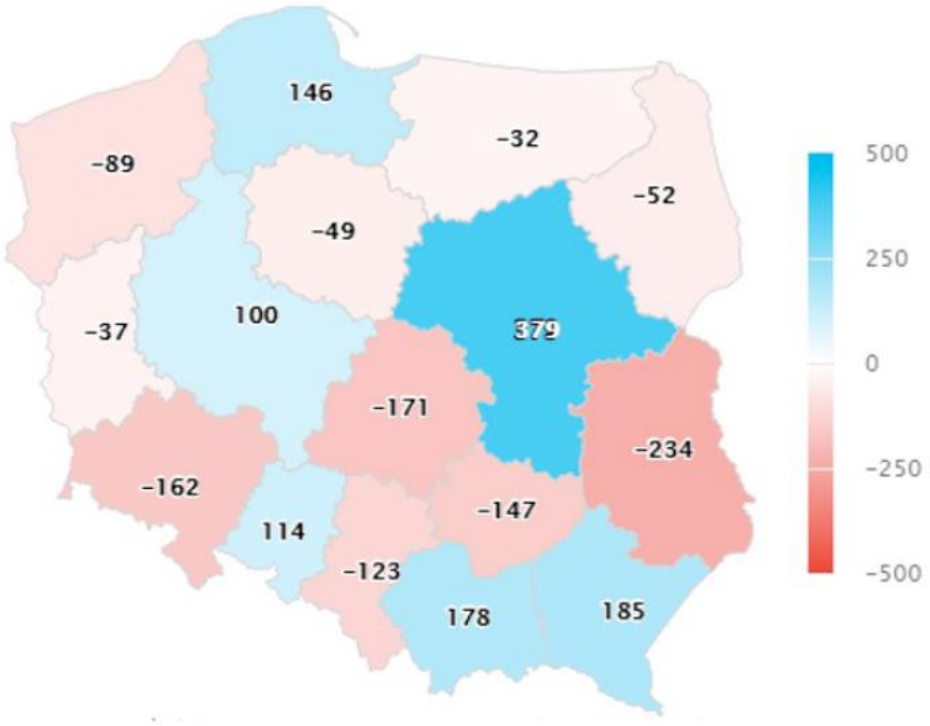
Care and Treatment Centre/Ward	urgent case	722	945	94.9	152.1	54	81
	stabile case	3,962	7,729	141.0	293.5	123	203
Care and Treatment Centre/Ward for children	urgent case	0	0	0.0	0.0	0	0
	stabile case	5	6	11.2	7.5	2	2
Nursing and Care Centre/Ward	urgent case	158	329	56.6	172.3	20	29
	stabile case	1,742	2,686	114	143.8	48	75
Nursing and Care Centre/Ward for children	urgent case	0	0	0.0	0.0	0	0
	stabile case	0	0	0.0	0.0	0	0

Source: Ministry of Health study based on data from NFZ

Patient migrations

An important indicator of access to health care services is the migration balance (the difference between the number of patients from other areas treated in a given area and the number of patients from this area treated in another area). A negative migration balance may indicate poor access to services in a given area. The lowest migration balance was noted in the following provinces: Lubelskie (-234), Łódzkie (-171) and Dolnośląskie (-162), whereas the highest in the following provinces: Mazowieckie (379), Podkarpackie (185) and Małopolskie (178). A negative migration balance was recorded in 10 provinces. Different migration rates in provinces indicate inequalities in the provision of adequate care.

Figure 200. Migration balance between provinces in 2019



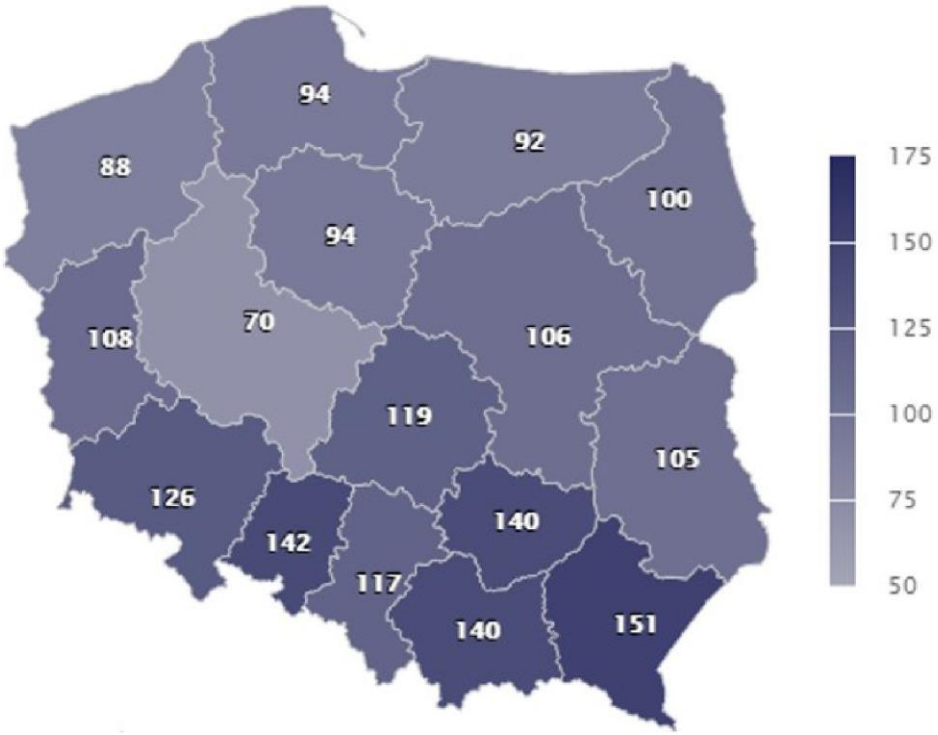
Source: Ministry of Health study based on data from NFZ and GUS

9.2. Inpatient care

Patient characteristics

In 2019, long-term care services in inpatient setting were provided to 42,600 patients respectively. The number of patients receiving the analysed services per 100,000 population was 111. The highest number of patients was recorded in the following provinces: Podkarpackie (151), Opolskie (142), Małopolskie (140) and Świętokrzyskie (140), while the lowest number was recorded in the provinces as follows: Wielkopolskie (70), Zachodniopomorskie (88) and Warmińsko-Mazurskie (92). A value below the average was recorded in 9 provinces.

Figure 201. Distribution of reported patients who received inpatient care services per 100,000 population by place of service in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

As regards inpatient care, people aged 80 or more represent 59% of patients, the 65-79 age group accounts for 28% of patients, 10% are in the 40-64 age group and 2% of patients are under 40. 68% of all patients are women and 65% are urban residents. According to the analysis, 34% of patients have a severe disability and 6% a moderate or light disability.

Analysis of diagnoses

The most common diagnoses with which patients are admitted to inpatient care (among both men and women) are those with a history of stroke (23% of all patients), peripheral artery disease (15%), Alzheimer's disease and other dementia-related diseases (14%). Approximately 30% of patients between 40 and 79 years of age are referred to inpatient care after a stroke. After the age of 80, the most common diagnoses requiring inpatient care are peripheral artery disease (20%) and a history of stroke (18%).

Table 52. Distribution of the most common diagnoses with which patients are admitted to long-term inpatient care in 2019.

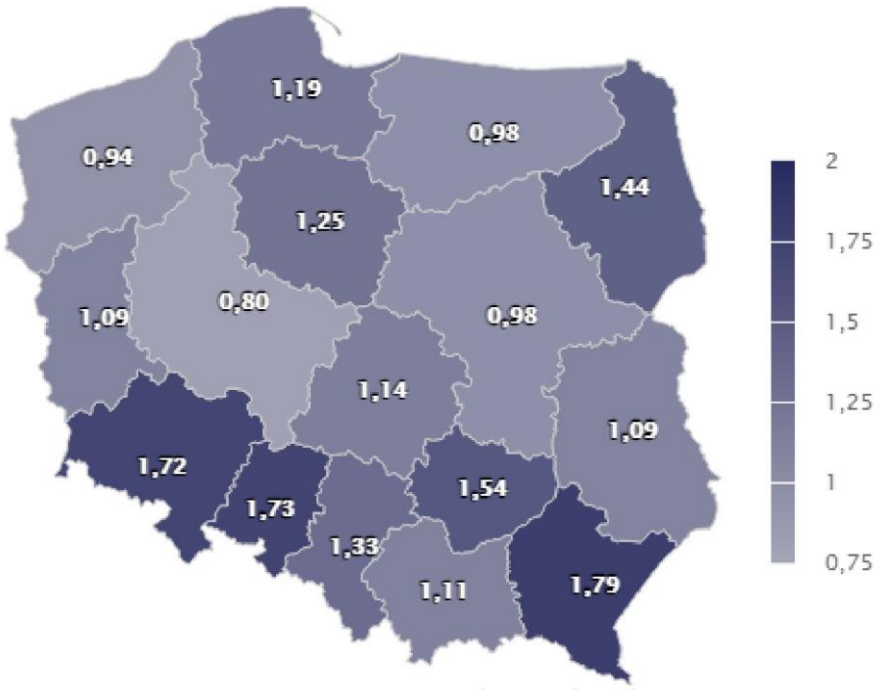
Disease subgroup	Number of patients	% of patients
Stroke	9,658	22.7
Other diseases	6,581	15.4
Peripheral artery disease	6,455	15.1
Alzheimer's disease and other dementias	5,894	13.8
Other cardiovascular diseases	4,183	9.8
Other nervous system diseases	2,218	5.2
Other chronic respiratory diseases	1,434	3.4
Other musculoskeletal disorders	809	1.9
Ischaemic heart disease	709	1.7
Diabetes	694	1.6

Source: Ministry of Health study based on data from NFZ

Health service provider analysis

In 2019, under contracts with the NFZ, services were provided in 466 inpatient care institutions. The highest number of long-term inpatient care centres is located in the following provinces: Śląskie (60), Mazowieckie (53), Dolnośląskie (50), while the lowest number is located in Lubuskie (11), Warmińsko-Mazurskie (14) and Zachodniopomorskie (16) provinces. The number of centres per 100,000 population was 1.2. The highest value of this indicator was observed in Podkarpackie (1.79), Opolskie (1.73) and Dolnośląskie (1.72) provinces, while the lowest value was found in Wielkopolskie (0.8), Zachodniopomorskie (0.94) and Warmińsko-Mazurskie (0.98). A value below the average was recorded in 9 provinces.

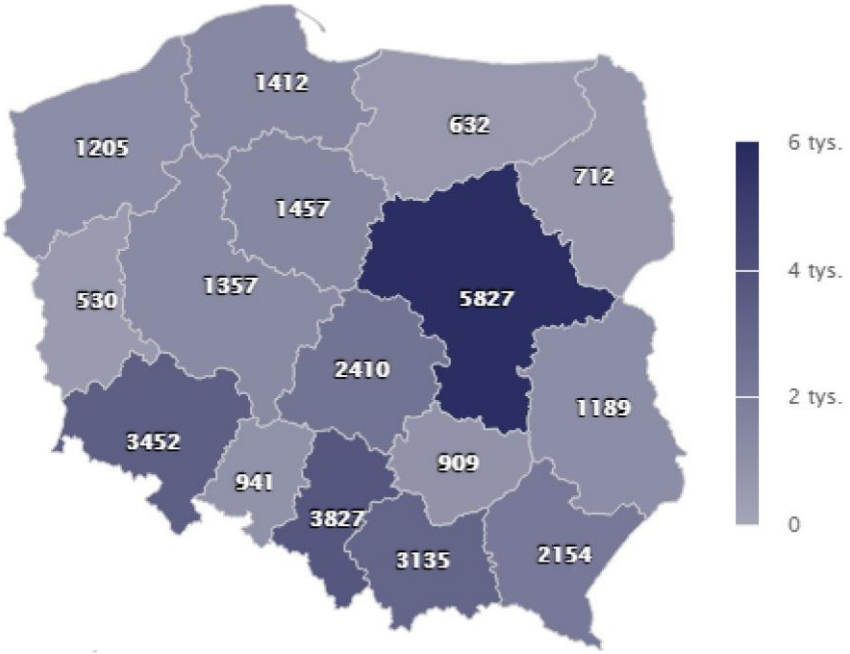
Figure 202. The number of centres per 100,000 population - inpatient care in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Number of beds in 2019. in inpatient long-term care centres was 31,149. The highest number of beds was in the following provinces: Mazowieckie (5,827), Śląskie (3,827) and Dolnośląskie (3,452), and the lowest in the following provinces: Lubuskie (530), Warmińsko-Mazurskie (632) and Podlaskie (712).

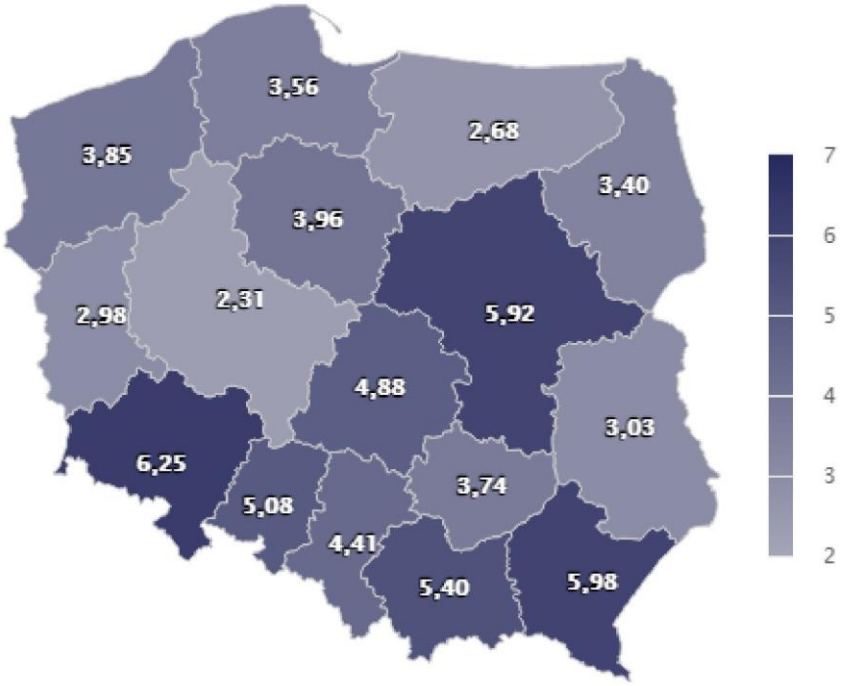
Figure 203. Number of inpatient care beds in 2019.



Source: Ministry of Health study based on data from NFZ, GUS and REPMA

The distribution of the number of beds per 1,000 population aged 65 or more was not uniform across all provinces. The highest value of this indicator was characteristic for the following provinces: Mazowieckie (5.92), Podkarpackie (5.98) and Dolnośląskie (6.25), and the lowest for: Wielkopolskie (2.31), Warmińsko-Mazurskie (2.68) and Lubuskie (2.98). The average for Poland was 4.48[197]. A value below the average was recorded in 10 provinces[198].

Figure 204. Number of inpatient beds per 1,000 population aged 65 and over in 2019.



Source: Ministry of Health study based on data from NFZ, GUS and REPMA

[197] According to the OECD *Health at a Glance* 2019 report, on average there were 11.9 beds in the population aged 65 or more. The number of long-term care beds in the OECD report includes, among other things: beds in wards for chronically ill patients in general, specialist and psychiatric hospitals, beds in prison hospitals. http://stats.oecd.org/wbos/fileview2.aspx?IDFile=e12f2893-2cdc-460f-aba5-6b087278cdca, [accessed 02.06.2020]

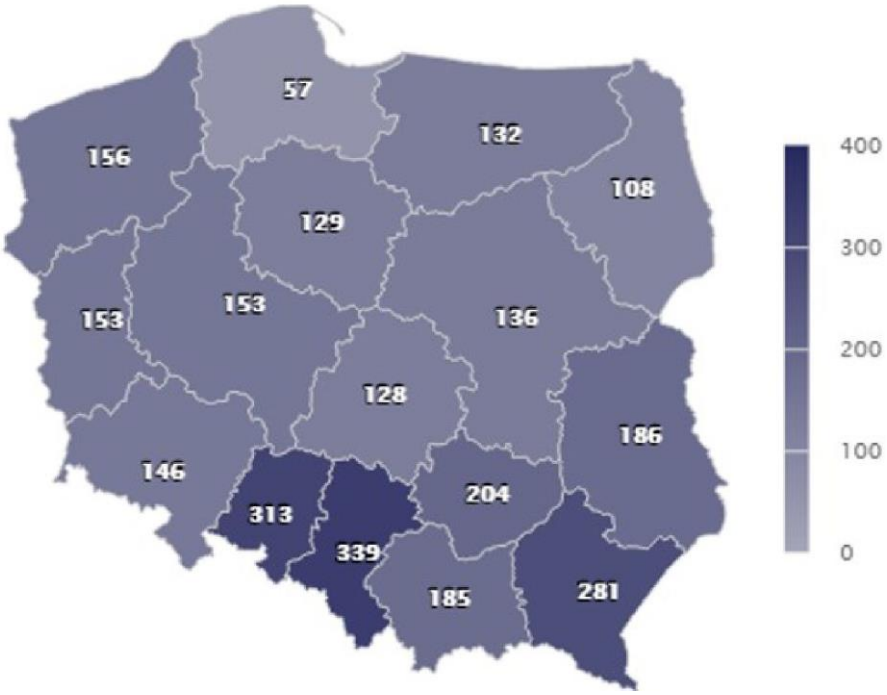
[198] Data on the number of day care beds come from REPMA to which all providers are required to report. Therefore, the data also includes non-NFZ day care beds, particularly those in the private sector.

9.3. Home-based care

Patient characteristics

The services under long-term care in home conditions in 2019 were provided to a total of over 68,000 respectively. The number of patients receiving the analysed services per 100,000 population was 179. The highest value of this indicator was in the following provinces: Śląskie (339), Opolskie (313), Podkarpackie (281), while the lowest value was in the provinces that include: Pomorskie (57), Podlaskie (108) and Łódzkie (128). A value below the average was recorded in 10 provinces.

Figure 205. Distribution of reported patients who received home care services per 100,000 population by place of service in 2019.



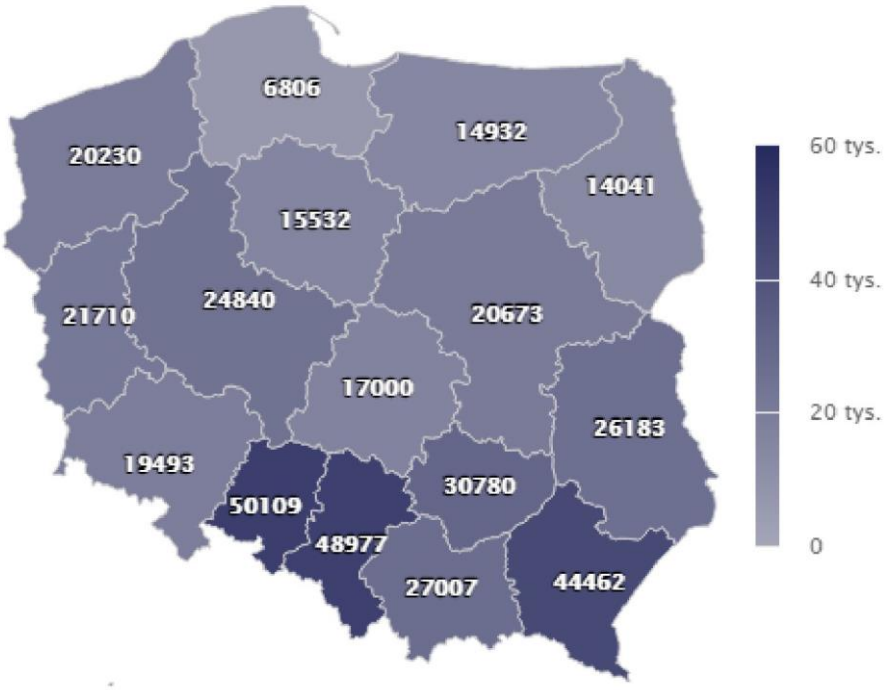
Source: Ministry of Health study based on data from NFZ and GUS

As with inpatient care, home-based care is also predominantly provided to people over the age of 80, who account for 55% of patients, the 65-79 age group accounts for 28% of patients, 12% are in the 40-64 age group, while 5% of patients are under 40 years of age. 67% of the total patients are women and 66% are urban residents. According to the data, 45% of the patients have a severe disability and 6% a moderate or light disability.

Analysis of the number of services

Within the scope of home-based care, over 9,900,000 nursing and care visits were provided. The number of visits per 100,000 population in relation to the place of providing the service amounted in Poland to 25,800. The highest value of this indicator was recorded in the provinces: Opolskie (50,100), Śląskie (49,000) and Podkarpackie (44,500), while the lowest value was recorded in the provinces: Pomorskie (6,800), Podlaskie (14,000) and Warmińsko-Mazurskie (14,900). A value below the average was recorded in 10 provinces.

Figure 206. The number of visits per 100,000 population by place of service - home-based care in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

Analysis of diagnoses

The most common diagnoses with which patients enter home-based care are Alzheimer's disease (15%), a history of stroke (15%), cardiovascular and circulatory diseases (12%). Among women, Alzheimer's disease (17%) and stroke (14%) are the most common causes, while in men, stroke (16%), other chronic nervous system diseases (12%) and cardiovascular diseases (11%) and Alzheimer's disease (11%) are the most common causes.

Among people in the 18-39 age group, the most common diagnosis requiring home care (among both men and women) is other nervous system diseases (40%),

while in the 40-64 age group, other chronic respiratory diseases (20%).

Among older people (aged 65-79), the most common diagnosis requiring home-based care is stroke (18%), while for people aged 80 or more, Alzheimer's disease and other dementia-related diseases (21%).

Table 53. Distribution of the most common diagnoses with which patients enter home-based long-term care in 2019 in Poland.

Disease subgroup	Number of patients	% of patients
Alzheimer's disease and other dementias	10,419	15.2
Stroke	9,939	14.5
Other diseases	8,575	12.5
Other cardiovascular diseases	7,893	11.5
Other chronic respiratory diseases	5,312	7.7
Other nervous system diseases	4,906	7.2
Other musculoskeletal disorders	3,019	4.4
Diabetes	2,830	4.1
Pressure sore	2,505	3.7
Bacterial skin infection	2,321	3.4
Parkinson's disease	1,698	2.5

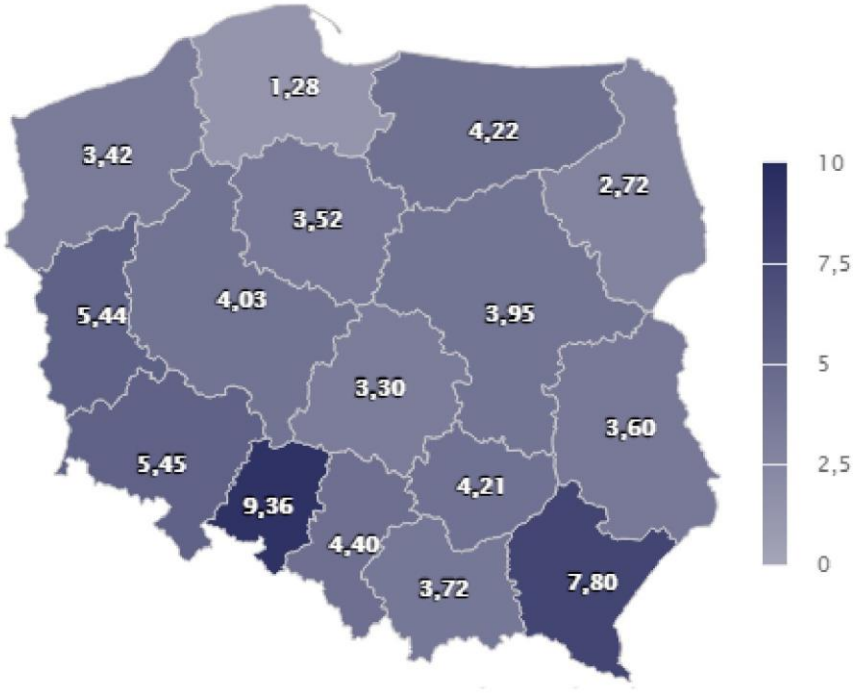
Source: Ministry of Health study based on data from NFZ

Health service provider analysis

In 2019, 1,614 centres offered their services as part of long-term home-based care. The highest number of institutions providing home-based care is located in the provinces of Mazowieckie (214), Śląskie (199) and Podkarpackie (166), while the lowest number is located in Pomorskie (30), Podlaskie (32) and Świętokrzyskie (52). The distribution of the number of centres per 100,000 population was not evenly distributed among the provinces. The highest value of this indicator was found in the following provinces: Opolskie (9.36), Podkarpackie (7.8) and Dolnośląskie (5.45), whereas the lowest value was found in the following provinces: Pomorskie (1.28), Podlaskie (2.72)

and Łódzkie (3.3). The national average amounted to (4.21). A value below the average was recorded in 9 provinces.

Figure 207. The number of centres per 100,000 population - home care in 2019.



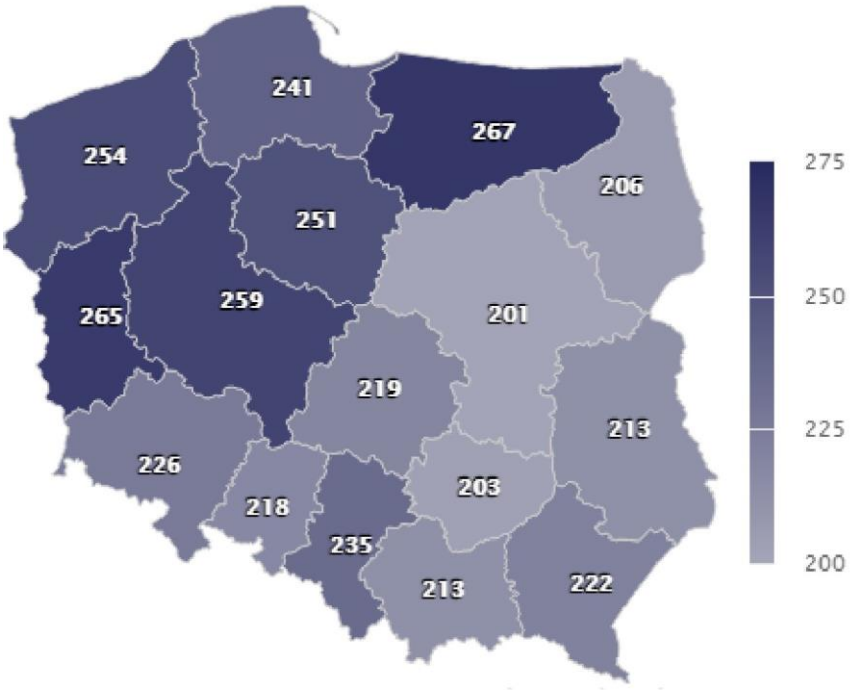
Source: Ministry of Health study based on data from NFZ and GUS

9.4. Care coefficient

The ageing of the population results in a decrease in the family's care capacity due to an increase in the number of people requiring support and a decrease in the number of people able to provide this support. The decreasing care coefficient[199]contributes to a decrease in informal care potential and the need to increase the importance of institutions providing care. The highest Care Coefficient in Poland in 2019 was recorded in the provinces: Warmińsko-Mazurskie (267), Lubuskie (265), and Wielkopolskie (259), and the lowest in the provinces: Mazowieckie (201), Świętokrzyskie (203), and Podlaskie (206). The coefficient for the Republic of Poland reached 227. A value below the average was recorded in 9 provinces.

[199] The care coefficient is calculated by dividing the number of women aged 50-64 (i.e. potential caregivers) by the population aged 80 or more per 100 people.

Figure 208. Distribution of Care Coefficient in provinces in 2019.

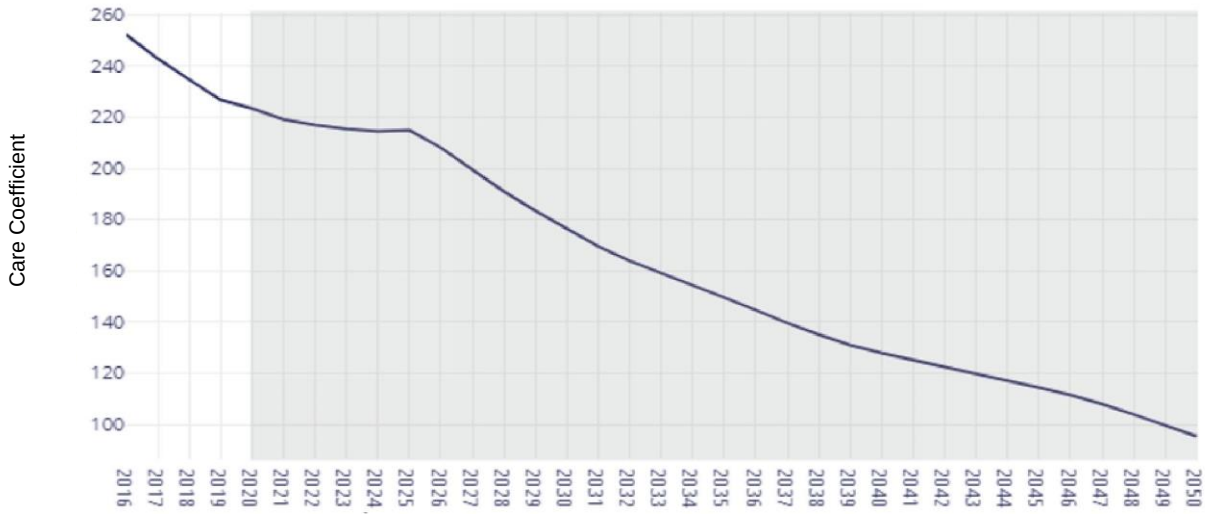


Source: Ministry of Health study based on data from NFZ and GUS

According to the forecasts of GUS, the value of the Care Coefficient will decrease considerably from year to year, from around 227 in 2019 to less than 177 in 2030 (the care coefficient will drop below 200 as early as 2027). The decrease of this coefficient will be one of the reasons generating demand for care and treatment services[200].

[200] B. Zasępa, *The population projections for Poland to 2050 — analysis of selected aspects of the population ageing*, Studia Politicae Universitatis Silesiensis, 2015, p. 98.

Figure 209. Care coefficient in Poland for 2016-2019 and projection to 2050



Source: Ministry of Health study based on data from NFZ and GUS

9.5. Health needs forecasting

Ageing of the population is an irreversible consequence of the great achievements and progress of civilisation, resulting in a significant increase in life expectancy and a reduction the mortality rate. Health policy must be prepared for all the consequences, both positive and negative, of the changes resulting from demographic forecasts. Nevertheless, the current and future demographic state of the country must be recognised as inevitable and treated as a challenge. In 2019, the share of people aged 65 and over in Poland will amount to 18.1% of the total population. According to GUS forecasts[201], the share of this age group will increase in 2030 to 23.3% and in 2050 it will exceed 30%.

In 2019, 109.8 thousand patients received assistance under nursing and care services, including 68,500 patients under home care and 42,600 patients under inpatient care. The majority of long-term care services are provided to people over 65 years of age - in this age group, about 1.34% of the population received assistance within long-term care.

[201] Population projection for the years 2014-2050, GUS, 2014, https://stat.gov.pl/obszary-tematyczne/ludnosc/prognoza- ludnosci/prognoza-ludnosci-na-lata-2014-2050-opracowana-2014-r-,1,5.html,

Table 54. The proportion of long-term care patient age groups in the population in 2019.

Age group	Number of patients	Percentage of patients in the population
<18	1,240	0.02%
18-39	2,869	0.03%
40-64	12,499	0.10%
65-79	31,094	0.59%
80 or more	62,066	3.67%
Total for patients 65 or more	93,160	1.34%
Total	**109,768**	**0.29%**

Source: Ministry of Health study based on data from NFZ and GUS

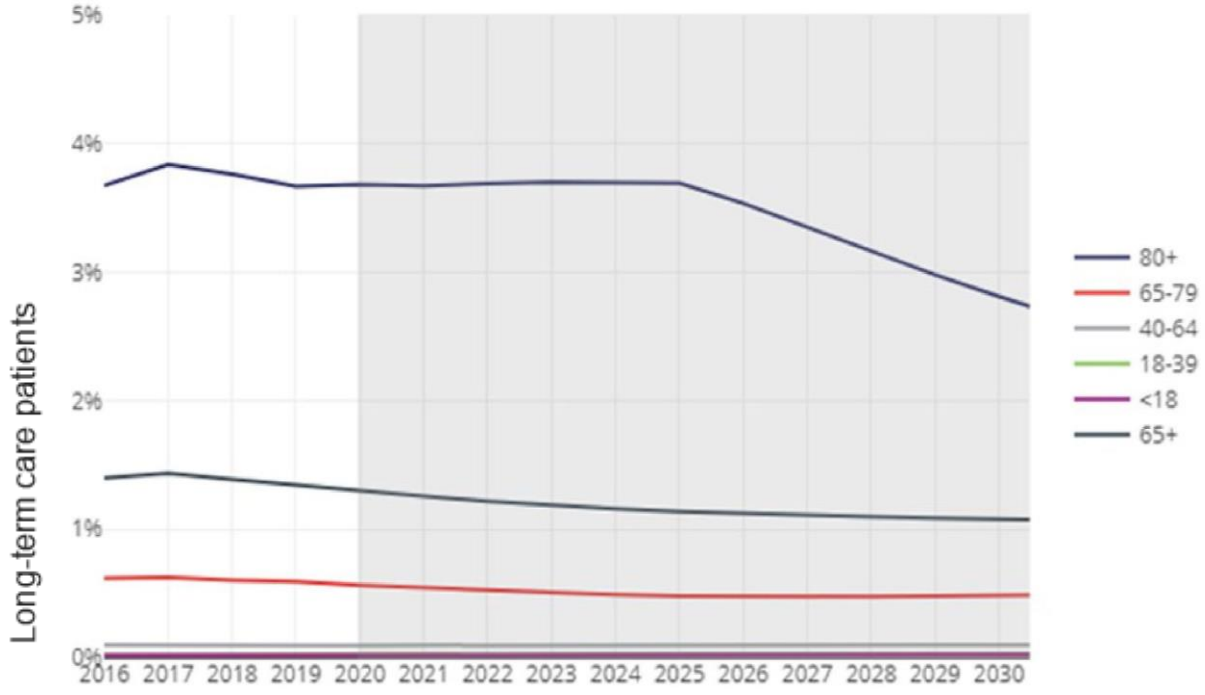
If the upcoming demographic changes in the population of the Republic of Poland are not taken into account and the base of care for the elderly is not increased, the share of dependent people over 65 years of age covered by long-term care will decline to about 1% of the population of that age in 2030.

Table 55. The proportion of long-term care patient age groups in the population in 2030 in the absence of an increase in available long-term care beds

Age group	Number of patients	Percentage of patients in the population
<18	1,240	0.02%
18-39	2,869	0.03%
40-64	12,499	0.09%
65-79	31,094	0.48%
80 or more	62,066	2.81%
Total for patients 65 or more	93,160	1.08%
Total	109,768	0.30%

Source: Ministry of Health study based on data from NFZ and GUS

Figure 210. The proportion of patients in age groups to the population of these groups over the years if the number of patients who receive long-term care services does not change.



Source: Ministry of Health study based on data from NFZ and GUS

The methodology for estimating the future number of patients under long-term care was developed on the basis of the GUS population forecast for 2020-2050 and the current number of patients in long-term care. Patients were divided into age groups <18, 18-39, 40-64, 65-79, 80 or more to observe the share of patients of a given age group in the population.

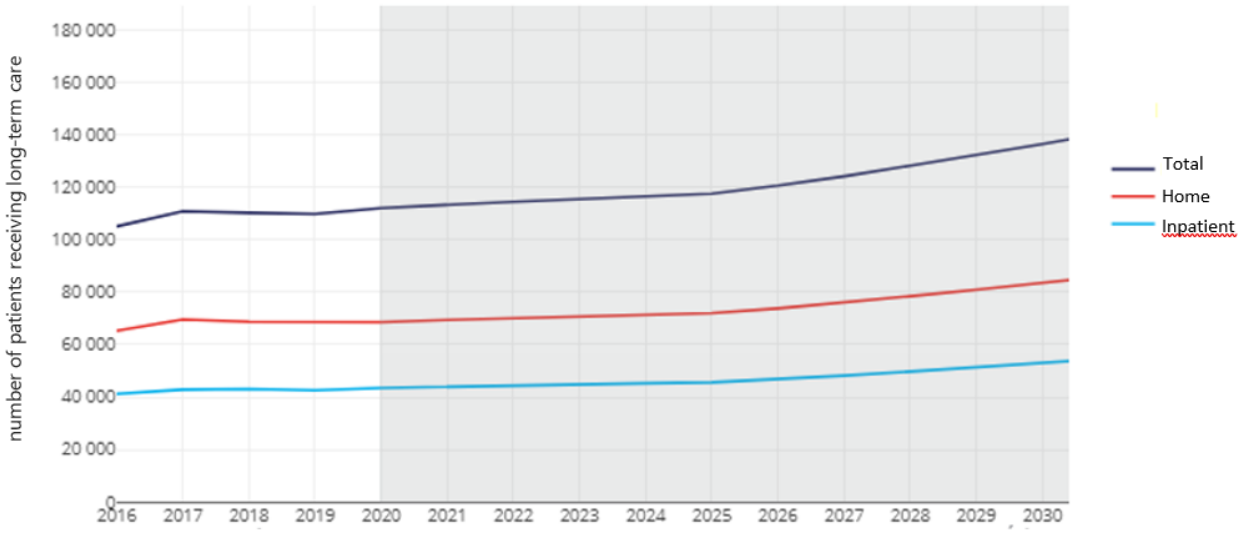
To provide the same level of services nationally in 2030 as in 2019, 25% more patients would need to be covered by long-term care, i.e. up to approximately 135,400 people. Maintaining the current share of inpatient care to home care (38.8%), this would mean assisting 82,800 patients at their place of residence and 52,600 patients in inpatient setting. Due to the phenomenon of double ageing of the Polish society, characterized by an increase in the number of people in the post-working age with a simultaneous faster increase in the share of people over 80 years of age, the elderly population in these age groups will constitute the largest number of patients. It should be expected that in 2030 these two groups of patients will become more numerous than the sum of the current number of patients.

Table 56. Projected number of long-term care patients in the population in 2030 if the 2019 shares in each age group are maintained.

Age group	Number of patients	Percentage of patients in the population
<18	1,059	0.02%
18-39	2,254	0.03%
40-64	13,044	0.10%
65-79	38,107	0.59%
80 or more	80,936	3.67%
Total for patients 65 or more	119,043	1.37%
Total	135,400	0.29%

Source: Ministry of Health study based on data from NFZ and GUS

Figure 211. Projected number of patients between 2020 and 2030 by type of care



Source: Ministry of Health study based on data from NFZ and GUS

One of the strategies implemented in many developed countries is the deinstitutionalisation of long-term care, i.e. the transformation of long-term care from a predominance of institutional care to a predominance of community care, including home-based care. Deinstitutionalisation is the process of developing community-based services to eliminate the need for care[202]. There is evidence that institutional care tends to result in a poorer quality of life for people (compared to community-based care), leading to social exclusion and isolation until the end of life. The direction of action for deinstitutionalisation should be to increase the proportion of patients receiving care at their place of residence. Loved ones and family are often the most desired and valued caregivers by the patient, and the patient's home is often the most appropriate and preferable care environment for the patient, so it is important that home-based care services are widely available. Research indicates that a shift from formal institutional care to formal care provided at home or at the community level is associated with an improvement in the quality of life of those cared for[203]. With the objective of maintaining current levels of service provision together with an increase in the proportion of home-based care in 2030 to the average for OECD countries, by assisting 135,400 patients the current base of assistance in inpatient care of 44,000 patients could be maintained (+1,500 patients in inpatient care compared to 2019).

[202] European Expert Group on the Transition from Institutional to Community-Based Care, *Pan-European guidelines for the transition from institutional to community-based care*, 2012, p. 28.

[203] *Current state and future of long-term care in ageing Poland*, World Bank, 2015, p. 21, http://www.niesamodzielnym.pl/uploads/Bank%20%C5%9Awiatowy%20Opieka dlugoterminowa.pdf, [accessed 02.06.2020]

In this scenario, approximately 91,400 patients would receive home care respectively.

Table 57. Projected number of long-term care patients by type of care in 2030, taking into account the change in the share of inpatient care to 32.5%.

Type of care	Number of patients
Home-based care	91,395
Inpatient care	44,005
Total	**135,400**

Source: Ministry of Health study based on data from NFZ and GUS

The above analysis is based on a maintenance of the current level of services over the years. If the share of long-term care among people aged 65 and over was to be increased so as to provide care for 2% of people of this age (as compared to the current 1.34%), 189,500 patients should receive long-term care respectively.

Table 58. Projected number of long-term care patients by age group in population in 2030 if care for people aged 65 or more is provided at 2%.

Age group	Number of patients	Percentage of patients in the population
<18	1,240	0.02%
18-39	2,869	0.02%
40-64	12,499	0.10%
Total for patients 65 or more	172,935	2.00%
Total	**189,543**	**0.47%**

Source: Ministry of Health study based on data from NFZ and GUS

Assuming a strategy of reducing the share of inpatient care to the level of OECD countries (32.5%) from the current 189,500 patients, there would be 127,900 patients receiving care at home, whereas inpatient care would cover 61,600 respectively.

When considering deinstitutionalisation strategies in Poland, the difference in the share of inpatient care at the level of provinces should be taken into account. In the Śląskie Province, the share of patients covered by long-term inpatient care amounted to 26%, while in the Pomorskie Province it reached 62%.

Table 59. Share of patients covered by long-term inpatient care in 2019 in provinces and in Poland

Province	Share of patients
Dolnośląskie	46.5%
Kujawsko-Pomorskie	42.6%
Lubelskie	36.6%
Lubuskie	41.7%
Łódzkie	48.7%
Małopolskie	43.6%
Mazowieckie	44.2%
Opolskie	32.0%
Podkarpackie	35.7%
Podlaskie	48.1%
Pomorskie	62.2%
Śląskie	25.9%
Świętokrzyskie	41.0%
Warmińsko-Mazurskie	42.1%
Wielkopolskie	32.3%
Zachodniopomorskie	36.5%
Poland	38.8%

Source: Ministry of Health study based on data from NFZ

Assumptions and methodological limitations of the forecast of the number of patients

The forecast is based on the number of patients under the care of the health system in 2019 and the share of this number in the relevant age groups of the population of the Republic of Poland. The aim is to show how the number of patients may develop in the future if the current level of services is attempted to be maintained, the share of patients in the age group over 65 is increased, and to show how the share of patients will develop if the number of patients assisted does not rise. The forecast does not take into account changes introduced after 2019 or planned to be introduced in the long-term care system in the years to come. Furthermore, it does not take into account the unmet needs of people waiting for nursing and care services.

9.6. Conclusions

The Polish long-term care system, which serves to meet the needs of elderly people and those requiring support in daily life, is based on two independent pillars (the health care system and the social assistance system). Long-term care in the health care system is provided in inpatient and home-based settings. The eligibility criterion for long-term health care is the health status of the patient, which determines the need for a given type of services. The growing number of elderly, chronically ill people and people requiring support in everyday functioning, observed in the country, entails a number of challenges related to the provision of nursing and care services in the scope of long-term care for an increasing number of people. Most long-term care services are based on informal care provided by the family. As a result of changes in the traditional family model, society's lifestyle and the decreasing value of the Care Coefficient, informal care will become a less important form of care in the future for people requiring support in daily activities than it is today. The basic indicators concerning the number of beds and the number of people aged 65 and over covered by long-term care in the Republic of Poland are among the lowest in comparison to other developed countries.

9.7. Health care system challenges

The progressive ageing of the population inevitably results in the need to provide long-term care and nursing services to an increasing number of people. Currently, 18% of the population is over 65, and by 2050 this share will increase to 32.7%. According to GUS projections, the care potential coefficient will decrease from around 227 in 2018 to less than 169 in 2030 (the care coefficient will drop below 200 as early as 2027).

Not all patients who needed long-term care were provided with it. Some patients accessed services in private nursing homes.

The average waiting time in February 2020 for long-term care ranged from 84 to 293 days, depending on the type of care and the patient's medical category.

The current infrastructure is insufficient and inadequate to meet the current and future needs of people requiring long-term care. The number of people receiving long-term care in the health care system among the population aged 65 or more is 1.34%, while the average for the 25 OECD countries is 10.8%. The availability of long-term care beds in Poland among the population aged 65 and over, according to the OECD report, is 11.9 per 1,000 people (4.7 in the health care system), while the average availability of beds in this age group for 33 OECD countries is 47.2. For these reasons, there are currently no plans to reduce the number of beds in inpatient care. Compared to OECD countries, where a decrease in the number of beds was observed between 2007 and 2017, the decline occurred from a level much higher than that currently observed in Poland, e.g. in Sweden the number of long-term care beds per 1,000 people decreased by 17.7 to 71.5[204]. At the same time, the percentage of people over 65 years of age who received institutional care in Sweden in 2017 remained at 16%[204] [205].

Home is the care setting most frequently chosen and most requested by patients. Most long-term care services are based on home-based care or informal care provided by the family. The share of formal home-based care in total long-term care is too low. At the level of the entire country, it is 61.2%, and among patients over 65 years of age it is already 60%, while the average for 20 OECD countries is 67.5%. In countries such as Norway, Sweden, Denmark, Germany, Spain and the Czech Republic, the proportion ranges between 70% and 80%.

There is a large diversity in the number of patients receiving long-term care services among provinces. In the Pomorskie Province, only 156 patients were treated per 100,000 population, and in the Opolskie Province - 456.

There is a limited number of available forms of care and support within the long-term care system. The Polish health care system still lacks long-term day services tailored to the individual needs of patients and their relatives, combining specific features of institutional and home-based care. Day care has been implemented for

[204] *Health at a Glance 2019: OECD Indicators, p. 237,* http://www.oecd.org/health/health-at-a-glance-19991312.html, [accessed 02.06.2020]

[205] *Health at a Glance 2019: OECD Indicators,* p. 231, http://www.oecd.org/health/health-at-a-glance-19991312.html, [accessed 02.06.2020]

several years within the scope of DCC. Between 2014 and 2020, 158 DCCs were opened, financed from the European Social Fund and Regional Operational Programmes. In addition, there is a lack of innovative forms of assistance in the field of telemedicine and within the policy of respite care for informal caregivers. The experience of the COVID-19 epidemic shows that modern forms of assistance are crucial.

9.8. Recommended lines of actions

→ Preparation of the health care system for the inevitable increase in the number of people in need due to the ageing of the country's population. It is recommended to at least maintain the current level of coverage of patients requiring long-term care in the perspective of the growing number of elderly people and those requiring support in everyday functioning;

→ equalisation of differences in access to long-term care in provinces with lower than the national average number of persons covered per 100,000 population, with particular emphasis on the population over 65 years of age. Ensuring in each province adequate access to long-term home and inpatient care for population over 65 years of age;

→ increasing the share of formal health care provided in the vicinity of patient's place of residence in relation to institutional care by increasing the number of services provided under home-based or day care settings in the provinces with a low share of these forms of care in relation to the national level;

→ development of forms of long-term day care, e.g., through inclusion of health care services provided in DCC into the system of guaranteed services in the scope of long-term care;

→ increasing the availability of modern forms of services in the field of telemedicine, telecare and e-Health, in particular for the elderly and other persons requiring support in everyday activities;

→ creation of multidirectional forms of support and assistance for informal caregivers of persons requiring support in everyday functioning, i. a. through informational and educational activities aimed at improving knowledge and caregiving competences of these persons in the scope of proper care at home and provision of psychological support and counselling for these persons. The above-mentioned areas of support are of particular importance due to the fact that informal caregivers are highly involved in the care of the elderly and those requiring support in daily functioning, which also has an impact on the health of the caregivers (among whom the majority are women).

10. Palliative and hospice care

In developed countries, chronic diseases are the leading cause of death. According to the GBD survey, in the Republic of Poland in 2019, chronic diseases were responsible for 91% of deaths (371,000), of which cardiovascular diseases accounted for 47%, neoplasms 33% and diseases of the nervous system 6.5%. Some people need care in the terminal phase of their illness.

Palliative care is the comprehensive care of people with incurable, non-causally treatable, progressive and life-limiting diseases. Palliative care aims to improve the quality of life of patients, to prevent or relieve pain and other somatic symptoms and to alleviate psychological, spiritual and social suffering. The WHO has defined palliative care very broadly, aiming not only to improve the quality of life of patients, but also to provide support for their families[206].

In Poland, the hospice movement developed dynamically already in the 1990s, and since 2009, it has been a separate, guaranteed health service financed from public funds.

According to the Regulation of the Minister of Health of 29 October 2013 on guaranteed benefits in the field of palliative and hospice care (Dz. U. /Journal of Laws/ of 2018 item 742, as amended), these benefits are available to people suffering from incurable neoplastic and non-neoplastic diseases. For adults, 8 disease entities are eligible for treatment: diseases caused by the human immunodeficiency virus (HIV), multiple sclerosis, neoplasms, sequelae of inflammatory diseases of the central nervous system, systemic primary atrophy involving the central nervous system, cardiomyopathies, respiratory failure and decubitus ulcer. The list of diseases eligible for treatment of persons under 18 is much broader and includes atypical viral infections of the central nervous system, disease caused by human immunodeficiency virus (HIV), sequelae of infectious and parasitic diseases, neoplasms, metabolic diseases, pervasive developmental disorders, selected diseases of the nervous system, heart failure, sequelae of cerebrovascular diseases, chronic respiratory failure, liver failure, fibrosis and cirrhosis [207].

In the health care system, palliative and hospice care is provided in inpatient setting (in an inpatient hospice or a palliative care unit),

[206] https://www.who.int/cancer/palliative/definition/en/, [accessed 14.05.2020]

[207] List of diseases eligible for palliative and hospice care treatment attached as Annex 1 to the Regulation of the Minister of Health on guaranteed palliative and hospice care services.

in home-based settings (in a home hospice for adults or children up to 18 years of age) and in outpatient settings (in a palliative care clinic).

In the case of inpatient care, beneficiaries are entitled to: health care services provided by medical practitioners and nurses, pharmacological treatment, treatment of pain[208] and other somatic symptoms and prevention of complications, psychological care of the beneficiaries and their families, rehabilitation, examinations ordered by a medical practitioner employed by an inpatient hospice or a palliative care ward, provision of medical devices required for the provision of services and respite care, which consists in admitting the patient to an inpatient hospice or a palliative care ward for up to ten days.

In the scope of home-based care, patients can receive health care services provided by medical practitioners and nurses, services aimed at treating pain[209] and other somatic symptoms and the prevention of complications, rehabilitation services and psychological care for both the beneficiary and their family. However, patients receiving such services are not entitled to medical rehabilitation services provided in home-based settings and nursing and care services in the framework of long-term care in home-based settings.

The guaranteed services provided in outpatient settings include medical consultations and consultations in an outpatient clinic or at the patient's home (including consultations for persons not qualified for home-based hospice), psychological consultations and nursing services in an outpatient clinic or the patient's place of residence. Within the scope of consultations in palliative care outpatient clinics or home-based care settings, patients are entitled to medical interviews and physical examinations, medical practitioner's recommendations concerning the number of medicines to be administered (including analgesics), provision of necessary diagnostic examinations and ordering of nursing services in entities [210].

The guaranteed services for palliative and hospice care were extended on 31 July 2017 to include perinatal palliative care services. Perinatal palliative care primarily targets severe malformations, developmental disorders and other conditions considered lethal.

Prenatal diagnosis makes it possible to obtain early information about risks to the foetus and to implement preventive or therapeutic treatments. It also makes it possible to exclude serious genetic and developmental defects in the foetus and to obtain information on its development. According to the Recommendations of the Polish Gynaecological Society, all pregnant women in Poland, regardless of age,

[208] According to the World Health Organisation (analgesic ladder).

[209] According to the World Health Organisation (analgesic ladder).

[210] Regulation of the Minister of Health of 29 October 2013 on guaranteed services in the field of palliative and hospice care.

should be offered prenatal screening for the most common developmental defects and chromosome aberrations[211].

Guaranteed services of perinatal palliative care can be provided in a prenatal diagnostic centre, prenatal cardiology centre, genetics facility, palliative care outpatient clinic, paediatric home hospice or an inpatient hospice. In the scope of perinatal palliative care, the woman and her family are guaranteed care by a medical practitioner, a psychologist and a care coordinator.

The health care for patients in the advanced stages of terminal illness is a challenge for the health care system. Among the major problems identified are:

- an excessively narrow list of diseases eligible for treatment. In 2019, in Poland, 90% of patients over 18 of age receiving palliative and hospice care were those with an oncological diagnosis. The WHO estimates that patients with neoplastic diseases requiring palliative and hospice care represent 34% of all persons requiring such care, whereas patients with cardiovascular diseases represent 38.5% of such individuals[212] . As stated in the 2019 Supreme Audit Office report[213], according to national and provincial consultants, the range of disease entities eligible for treatment should first be extended to include heart failure and chronic renal failure,
- unequal access to palliative and hospice care services based on the place of residence - almost twice as many patients covered by this care live in urban areas than in rural areas,
- continuous increase in demand for palliative and hospice care services related to the ageing of society and the growing number of chronically and incurably ill people,
- improving the quality of care provided by developing standards for palliative and hospice care and enhancing coordination between different institutions[214].

Data on the availability of palliative and hospice care in the Republic of Poland and Europe are collected and published by the EAPC, which aims to promote and develop palliative care throughout Europe. The palliative care report

[211] Polish Gynaecological Society, 2009, p. 2.

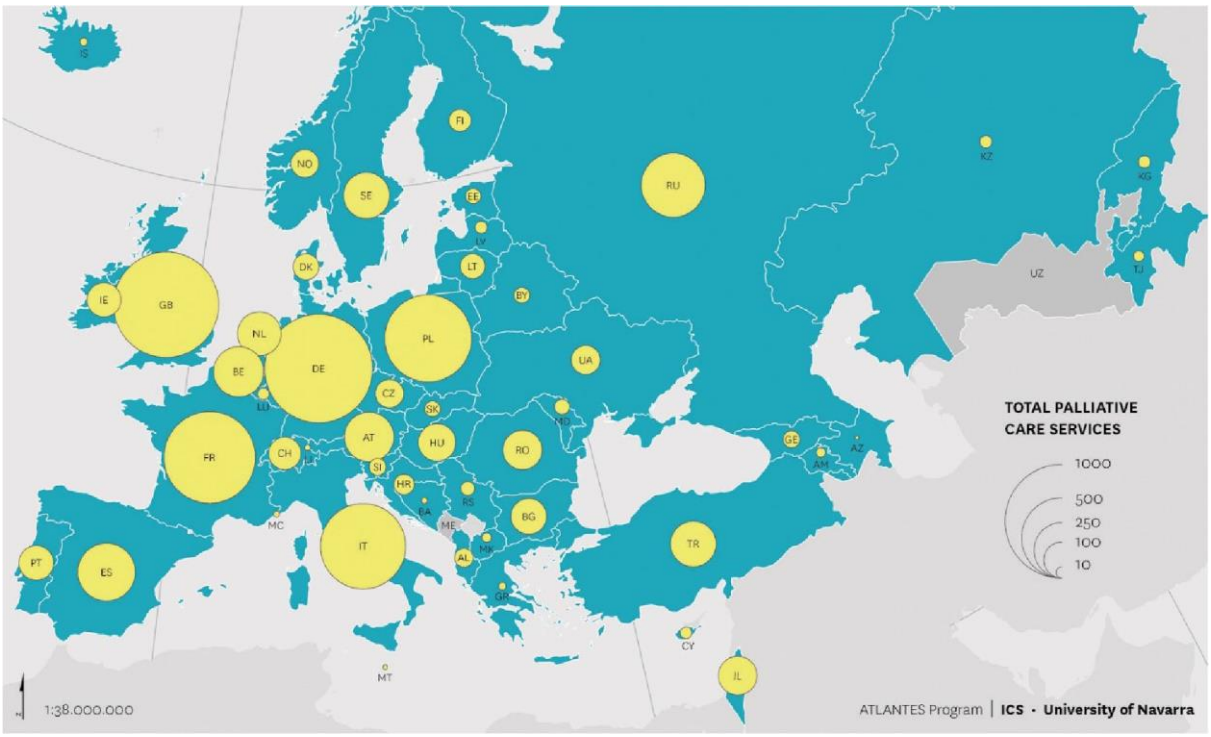
[212] https://www.who.int/nmh/Global Atlas of Palliative Care.pdf. [accessed 14.05.2020]

[213] *Provision of palliative and hospice care,* Supreme Audit Office, 2019, https://www.nik.gov.pl/plik/id,21371,vp,24011.pdf. [accessed 14.05.2020]

[214] Ibid.

published by the EAPC in 2019[215]states that the status of palliative care in Poland compared to that of other European countries is very good[216]. The situation was worst in Montenegro and Greece (below 0.1). In terms of the number of home care centres for adults per 100,000 population, the Republic of Poland was ranked third (1.06) among the countries of Central and Eastern Europe.

Figure 212. Total adult palliative care services in Europe



Source: EAPC Atlas of Palliative Care in Europe 2019

According to the financial reports of the NFZ, the costs of palliative and hospice care amounted to PLN 733,000,000 in 2018 and PLN 813,000,000 in 2019[217]which is less than 1 % of the total costs allocated to health care services financed from public funds. According to the August 2020 financial plans, the NFZ intends to allocate PLN 844,000,000[218]for palliative and hospice care in 2020. This is 15.1% more than in 2018 and 3.8% more than in 2019.

[215] Atlas of Palliative Care in Europe, EAPC, 2019, https://www.researchgate.net/publication/333390123 EAPC Atlas of Palliative Care in Europe 2019, [accessed 14.05.2020]

[216] Data were collected from December 2018 to March 2019

[217] Combined financial statements of the National Health Insurance Fund for the period 01/01-31/12/2019, https://www.nfz.gov.pl/gfx/nfz/userfiles/ public/bip/finanse nfz/2020/laczne sprawozdanie finansowe nfz 2019-sig.pdf, [accessed 21.09.2020]

[218] Financial plan of the National Health Fund for 2020 constituting an annexe to Order no. 130/2020/DEF of the National Health Fund Executive of 25 August 2020 on amending the financial plan of the National Health Fund for 2020, https://www.nfz.gov.pl/bip/finanse-nfz/,[accessed 21.09.2020]

10.1. Palliative and hospice care analysis

Patient characteristics

96,400 patients received palliative and hospice care services in 2019. The distribution of patients by gender was almost equal with a minimal predominance of women (50.6%). The vast majority of patients are 65 or more (73%), with those aged 65-79 accounting for 44% and those aged 80 or more 29% of all patients.

Table 60. Demographic structure of palliative and hospice care patients in 2019.

Age	Number of palliative and hospice care patients	Number of inpatient care patients ['000]	Number of outpatient care patients ['000]	Number of long-term home-based care patients ['000]
<18	1.9	0.2	0.0	1.8
18-39	1.8	0.4	0.2	1.4
40-64	22.5	8.5	4.5	14.0
65-79	42.6	15.8	6.9	27.9
80 or more	27.7	11.6	2.9	17.4

Source: Ministry of Health study based on data from NFZ

According to the data of the Minister of Social Policy, 43.5% of palliative and hospice care patients had a disability, of which 75.6% were patients with severe disabilities, 17.0% with moderate disabilities, 3.4% with mild disabilities, while 4.0% had disabilities up to 16 years of age.

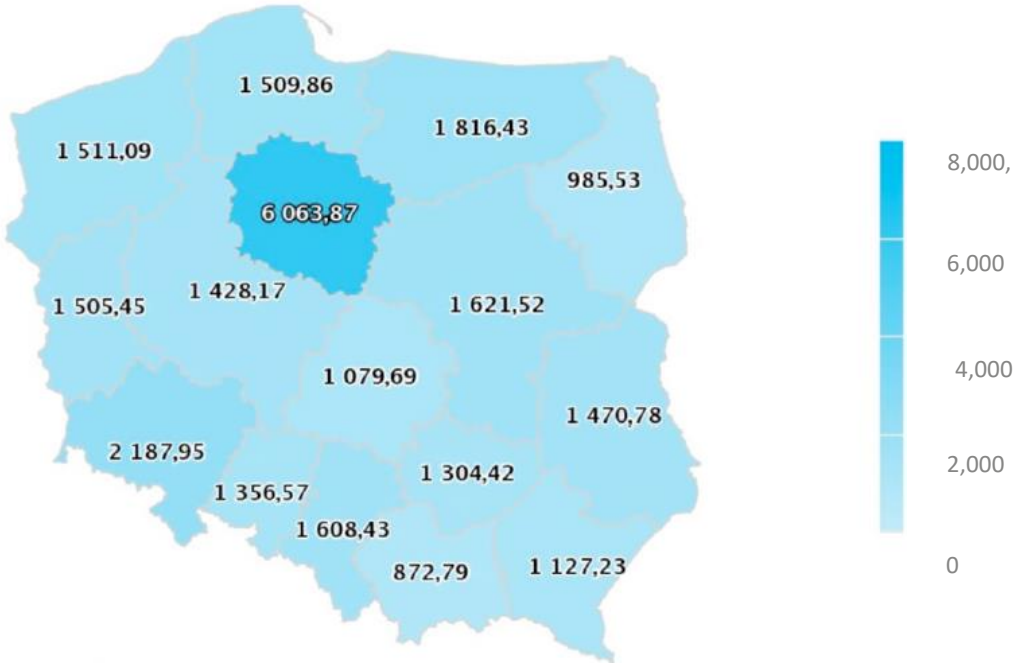
Based on 2019 data, it was observed that patients' place of residence had an impact on the access to palliative and hospice care. Only 32.2% of all patients were from rural areas. The greatest differences were observed for services provided in outpatient settings, in which case the patients living in rural areas accounted for only 25.0% of all patients. Limited access to services in rural areas is mainly due to the distribution of centres – 9% of patients received services at rural providers.

Analysis of the number of health care services

In 2019, in Poland, there were 654,000 visits/hospitalisations. On average,
there were 7 visits/hospitalisations per 1 patient over the year. Most palliative and hospice health services were provided in the home-based conditions (547,000 visits).
There were 66,000 visits in outpatient conditions, 41,000 hospitalisations.

There is wide variation in access to palliative and hospice care services between provinces. Most visits/hospitalisations per 100,000 population were observed in the Kujawsko-Pomorskie Province (6,063.87), which stood out among other provinces. The Dolnośląskie Province was ranked second (2,187.95). The lowest value of the ratio was observed in the Małopolskie (872.79) and Podlaskie (985.53) provinces.

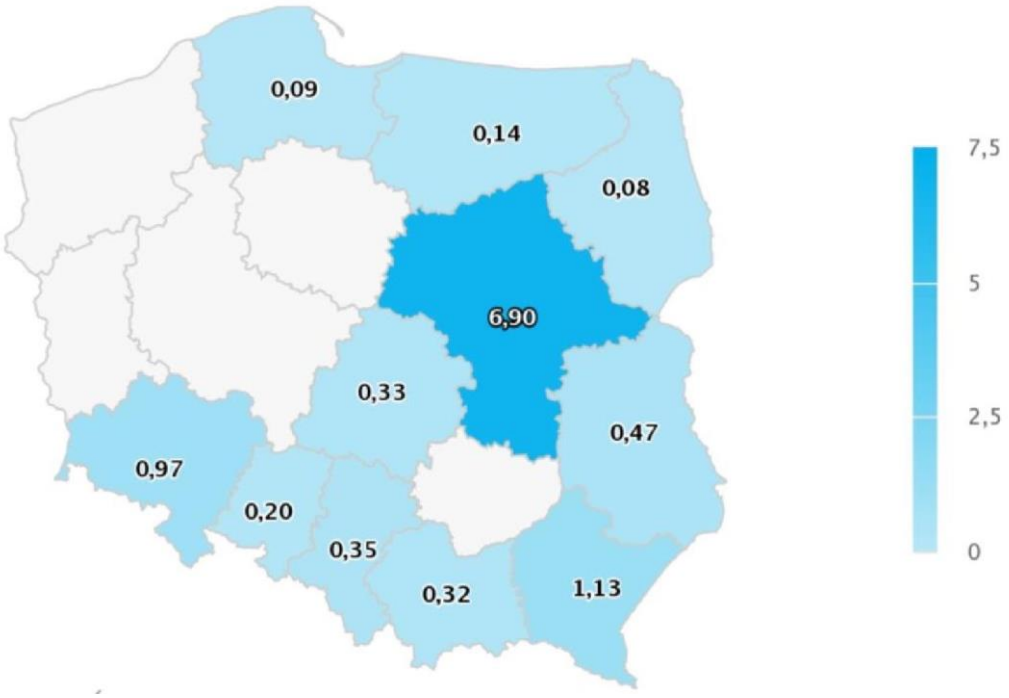
Figure 213. Number of visits/hospitalisations per 100,000 population in 2019



Source: Ministry of Health study based on data from NFZ and GUS

Based on the data presented in the map, there is regional variation in terms of access to services. In 2019, 5 provinces didn't report any perinatal palliative care services (the Zachodniopomorskie, Lubuskie, Wielkopolskie, Kujawsko-Pomorskie and Świętokrzyskie provinces).

Figure 214. The number of patients per 100,000 population in 2019 (perinatal palliative care)



Source: Ministry of Health study based on data from NFZ and GUS

Other health services, i.e. palliative care ward/inpatient hospice services, palliative care outpatient clinic services, home hospice services and paediatric home hospice services were secured in every province.

Average duration of services in inpatient care in 2019 was 30 days, and in home-based conditions it was about 100 days. Services for children lasted significantly longer, i.e. 117 days in inpatient care and 256 days in home-based care.

Analysis of diagnoses

The most common diagnosis with which patients were admitted to palliative and hospice care are malignant tumours (88.7%). This is largely determined by the list of disease entities that qualify for palliative treatment, as set out in the regulation of the Minister of Health of 29 October 2013 on guaranteed services in the field of palliative and hospice care. The most common cancers are malignant tracheal, bronchial and lung cancers (16.6%) and malignant colorectal and rectal cancers (10.9%). Men also received similar diagnoses (20.6% and 11.9%, respectively). Among women, malignant breast cancer was a predominant diagnosis (15.2%), followed by malignant tracheal, bronchial, and lung cancer (12.8%) and malignant colorectal and rectal cancer (10.0%). The most common diagnoses among children were

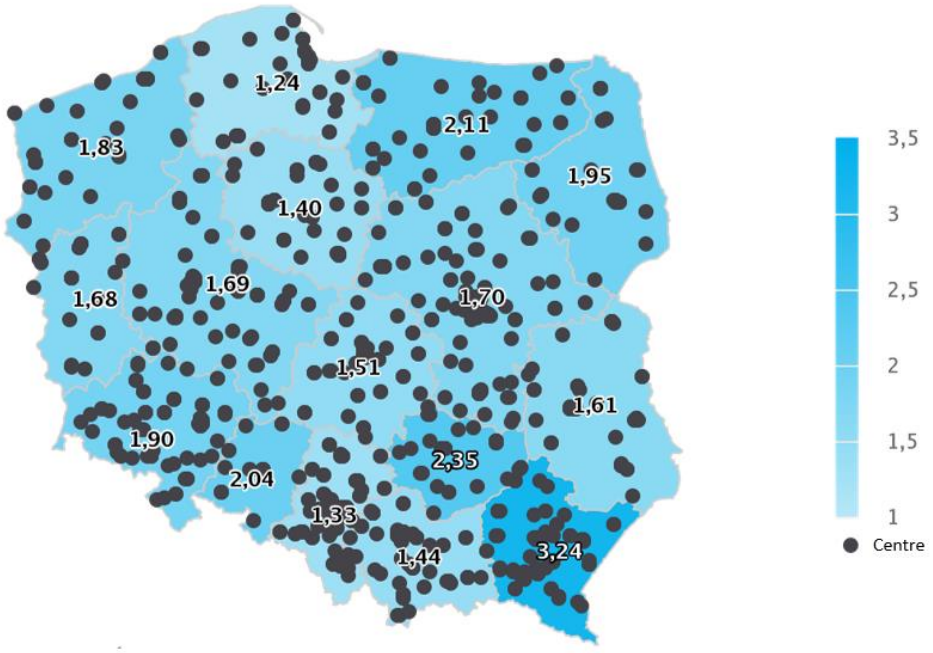
congenital birth defects (36.9%) and other nervous system diseases (36.2%).

Health service provider analysis

In 2019, there were 663 centres providing palliative and hospice care services, including 191 inpatient services, 155 outpatient services and 559 home-based care services (some entities provided several types of services). Compared to 2016, an increase in the number of palliative and hospice care providers of 15% (87 providers) was observed, of which 17% in inpatient care (28 providers), 16% in home-based care (76 providers) and 10% in outpatient palliative care (14 clinics). In terms of the centres for young patients in Poland in 2019, there were 71 home hospices for children operating under contracts with the NFZ. Perinatal palliative care services were provided by 13 entities: 1 inpatient care centre in the Lubelskie Province and 12 home-based care centres (2 in Dolnośląskie and Śląskie provinces and 1 in Lubelskie, Łódzkie, Małopolskie, Mazowieckie, Opolskie, Podkarpackie, Podlaskie, Pomorskie and Warmińsko-Mazurskie provinces).

In Poland, there was an average of 2 palliative and hospice care centers (1.71) per 100,000 population. Nine provinces had a lower number of centres per population than the average in Poland, i.e. Pomorskie (1.24), Śląskie (1.33), Kujawsko-Pomorskie (1.40), Małopolskie (1.44), Łódzkie (1.5146), Lubelskie (1.61), Lubuskie (1.68), Wielkopolskie (1.69) and Mazowieckie (1.70) provinces.

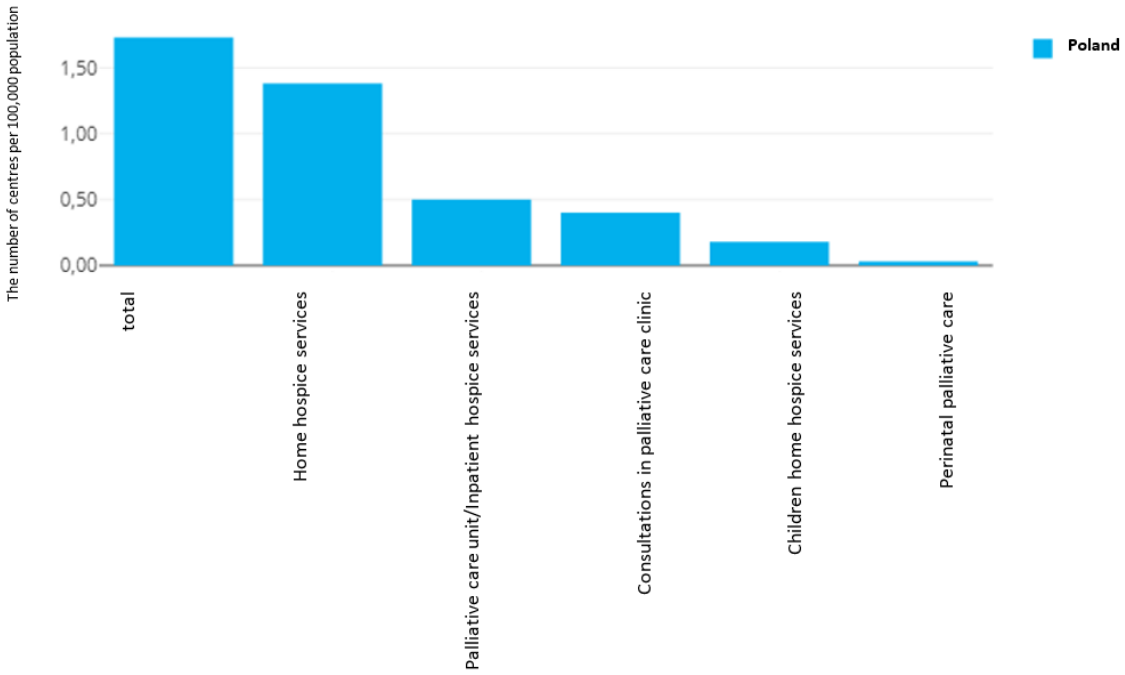
Figure 215. Number of palliative and hospice care centres per 100,000 population in Poland in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

In the case of health care services provided in a palliative care ward or hospice, there were 0.50 entities per 100,000 population under contracts with the NFZ, 0.40 outpatient services per 100,000 population, 1.38 home hospice services per 100,000 population, 0.18 paediatric home hospice services per 100,000 population, and 0.03 perinatal palliative care per 100,000 population.

Figure 216. Number of palliative and hospice care centres per 100,000 population in Poland in 2019 by services.



Source: Ministry of Health study based on data from NFZ and GUS

Queues of patients

According to the Act of 27 August 2004 on health care services financed from public funds from 1 January 2020, inpatient hospices and inpatient palliative care centres, home hospices, home-based palliative care teams, home hospices and paediatric palliative care teams are required to have schedules and waiting lists.

In February 2020, the number of patients waiting for palliative and hospice care services was 2,500, of which 63.4% were waiting for home-based services, 24.4% for inpatient care, and 12.2% for outpatient care. The largest number of patients waited for services in home hospices and home-based palliative care teams (1,600). However, the longest waiting lists were made for services in inpatient hospices

and inpatient palliative care centres – 43-45 days, depending on the medical category (urgent case, stable case).

Table 61. Queues for palliative and hospice care in February 2020

Queue	Number of providers [219]	Urgent case		Stable case	
		Number of waiting patients	Average waiting time	Number of waiting patients	Average waiting time
Inpatient care					
Palliative care ward	50	36	12.9	152	12.9
Inpatient hospice/inpatient palliative care centre	71	102	43.0	334	45
Home-based care					
Home hospice/home-based palliative care team	441	184	24.5	1,431	20.8
Home hospice/paediatric home-based palliative care team	64	-	-	9	7.3
Outpatient care					
Palliative medicine clinic	143	5	8.4	308	3.1

Source: Ministry of Health study based on data from NFZ

In the case of palliative and hospice care, the average waiting time for health care services was one of the shorter ones. Compared to long-term care centres, the average waiting time for services was almost six times shorter and the number of people waiting was almost seven times lower. However, it is important to keep in mind that palliative and hospice care is a specific type of service that covers patients in a terminal phase of a disease. In 2019, the average length of patient hospitalisation per year

[219] The number of organisational units reporting a waiting list for the selected queue.

in an inpatient hospice or palliative care ward was 30 days, while palliative home-based care patients received an average of 102 days of services per year, so waiting time for palliative care services is too long.

Medical staff

In many countries, the basic principles of palliative and hospice care are integrated into different medical specialties, and specialist palliative care provides support from an interdisciplinary team to alleviate suffering in the advanced stages of terminal diseases.[220]

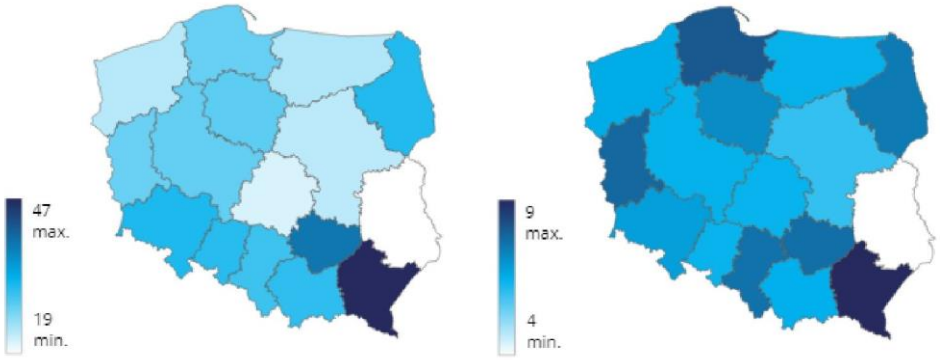
The NFZ data shows that in 2019 entities providing palliative care and hospice care services employed 6,288 nurses, 1,697 physiotherapists and 2,543 medical practitioners (including 774 internal medicine medical practitioners, 473 medical practitioners without speciality, 459 palliative care specialist, 338 anaesthesiology and intensive care specialists, 322 family medicine specialists, 265 paediatricians, 141 surgeons, 107 lung disease specialists, 100 clinical oncologists and others[221]).

Per 100,000 population, the largest number of medical staff in palliative care and hospice care centres was recorded in: Podkarpackie (46.6), Świętokrzyskie (38.8), Dolnośląskie (31.4) and Podlaskie (31.1) provinces, while the least in Lubelskie (19.4), Łódzkie (21.4), Mazowieckie (23.0) and Zachodniopomorskie (23.2) provinces.

[220] T. Buss, M. Lichodziejewska-Niemierko, *Opieka paliatywna w Polsce - od idei do praktyki (również lekarza rodzinnego)*, Division of Palliative Medicine of the Department of Family Medicine at the Medical University of Gdańsk, Forum Medycyny Rodzinnej 2008, volume 2, no. 4, pp. 277-285.

[221] Other medical specialties had less than 100 medical practitioners.

Figure 217. Medical staff in palliative and hospice care per 100,000 population in 2019 (left chart – medical staff in total, right chart – medical practitioners)



Source: Ministry of Health study based on data from NFZ

Table 62. Medical staff in palliative and hospice care in 2019

Province	In absolute terms			Per 100,000 population		
	staff in total	Medical practitioners	including medical practitioners PM[222]	staff in total	Medical practitioners	including medical practitioners PM[223]
Dolnośląskie	910	200	51	31.4	6.9	1.8
Kujawsko-Pomorskie	579	150	45	27.9	7.2	2.2
Lubelskie	408	88	14	19.4	4.2	0.7
Lubuskie	276	80	11	27.3	7.9	1.1
Łódzkie	526	160	33	21.4	6.5	1.3
Małopolskie	1,040	225	46	30.5	6.6	1.3
Mazowieckie	1,245	331	43	23.0	6.1	0.8
Opolskie	303	64	16	30.8	6.5	1.6
Podkarpackie	992	192	14	46.6	9.0	0.7
Podlaskie	367	89	17	31.1	7.6	1.4
Pomorskie	644	192	37	27.5	8.2	1.6
Śląskie	1,340	349	74	29.7	7.7	1.6
Świętokrzyskie	479	96	15	38.8	7.8	1.2
Warmińsko-Mazurskie	334	93	21	23.5	6.5	1.5
Wielkopolskie	967	229	51	27.6	6.5	1.5
Zachodniopomorskie	394	113	25	23.2	6.7	1.5

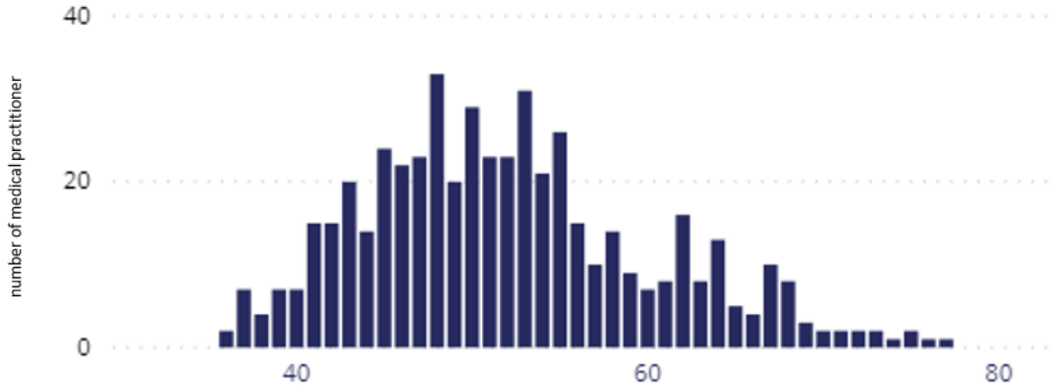
Source: Ministry of Health study based on data from NFZ

[222] Palliative care specialist.

[223] Palliative care specialist.

According to CRP and CIR data for Poland, in 2019 there were 515 palliative care specialists, 459 of whom worked in palliative and hospice care centres.

Figure 218. Age pyramid of palliative care specialists in 2019.



Source: Ministry of Health study based on data from CRP and CIR

The average age of a palliative care specialist was 52 years, almost 3 years higher than the average age of medical practitioners in Poland. This difference may be because palliative care specialists face suffering and a high psychological burden in their daily work. For this reason, this speciality is less frequently chosen and is often a second or subsequent choice. In 2019, 69% of palliative care specialists had 2 specialities, 28% had 3 specialities, and 2.7% had 4 or more specialities.

To answer the question of whether there is a generational replacement of palliative care specialists in Poland, the number of active palliative care specialists between 60 and 65 years old (14%) was calculated. This group represents the number of medical practitioners who may retire within 6 years. It has been assumed that medical practitioners in speciality training will obtain a specialist degree within 6 years.

Table 63. Generational replacement of palliative care specialists in 2019.

Specialisation	Specialists aged 60-65	Medical practitioners in speciality training	Difference between the number of specialists aged 60-65 and the number of medical practitioners in speciality training
Palliative care	72	134	-62

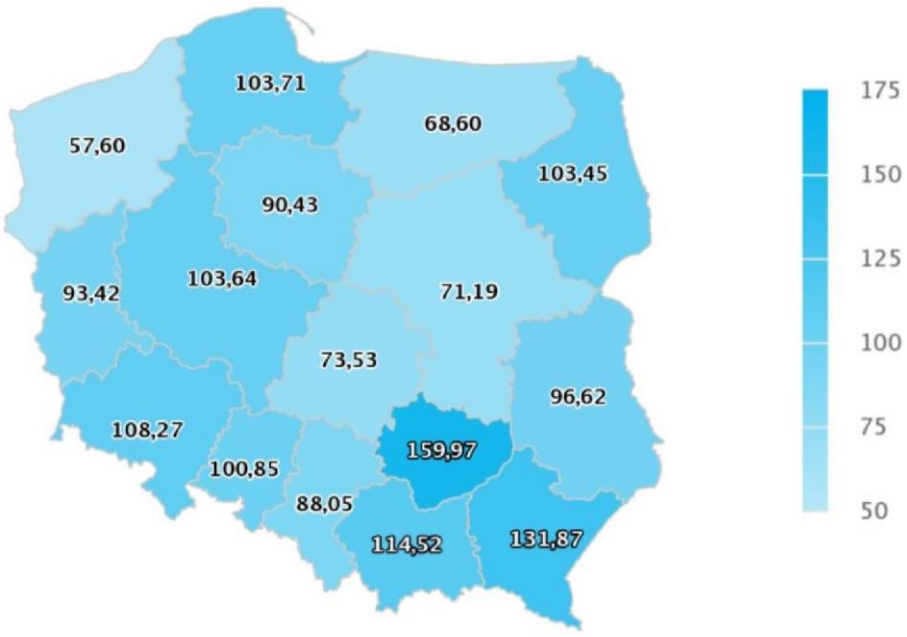
Source: Ministry of Health study based on data from CRP and CIR

According to the data presented above, palliative care does not face the problem of generational replacement, as the number of medical practitioners in speciality training significantly exceeds the number of medical practitioners of peri-retirement age.

10.2. Inpatient care

In 2019, a total of 36,500 patients were treated in palliative care wards or inpatient hospices. The distribution of patients by gender was almost equal with a minimal predominance of women (50.3%). The vast majority of patients were 65 or more (75%), with those aged 65-79 accounting for 43% and those aged 80 or more 32% of all patients. The distribution of the number of patients per 100,000 population treated in each province was uneven. A lower value of this ratio in relation to the average in Poland (94.97) was observed in 7 provinces: the Zachodniopomorskie (57.60), Warmińsko-Mazurskie (68.60), Mazowieckie (71.19), Łódzkie (73.53), Śląskie (88.05), Kujawsko-Pomorskie (90.43) and Lubuskie (93.42).

Figure 219. Number of inpatient care patients per 100,000 population in Poland in 2019.



Source: Ministry of Health study based on data from NFZ and GUS

At the end of 2019, palliative care wards and inpatient hospices had a total of 4,000 beds[224], and as of 2016 their numbers was steadily increasing – by 9% from 2016 to 2017, by 2% from 2017 to 2018, and by 8% from 2018 to 2019.

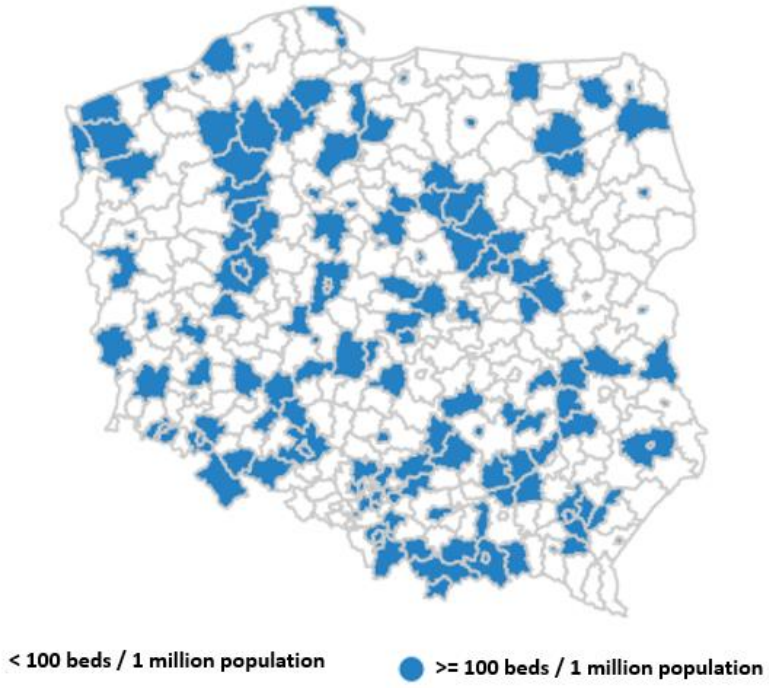
[224] Data on the number of beds come from REPMA and includes all entities in the country, including those that did not have a contract with the NFZ.

According to the report of the national consultant on palliative care of 2019, provinces need to be secured in terms of beds by achieving the number of 100 beds per 1,000,000 population as recommended by the EAPC.

At the end of 2019, in Poland, there were 105.05 beds in palliative and hospice care per 1,000,000 population. The ratio value recommended by the EAPC was achieved in most provinces. The recommended bed number was not provided in 7 provinces: the Warmińsko-Mazurskie (67.48), Łódzkie (72.51), Lubuskie (74.14), Mazowieckie (76.34), Lubelskie (78.74), Kujawsko-Pomorskie (93.61) and Opolskie (97.70). Increased compared to 2018 the ratio improved in almost all provinces (a decrease in the number of beds per population was observed only in the Lubelskie, Podlaskie and Warmińsko-Mazurskie provinces), and in the Pomorskie, Śląskie and Zachodniopomorskie provinces the recommended value was achieved. However, there is still an uneven distribution in this respect.

In terms of securing individual counties, only 38.4% of all districts in Poland had the recommended number of beds. The map of Poland shows in blue the districts in which, at the end of 2019 there were at least 100 beds per 1,000,000 population.

Figure 220. Security ratio in terms of beds in 2019



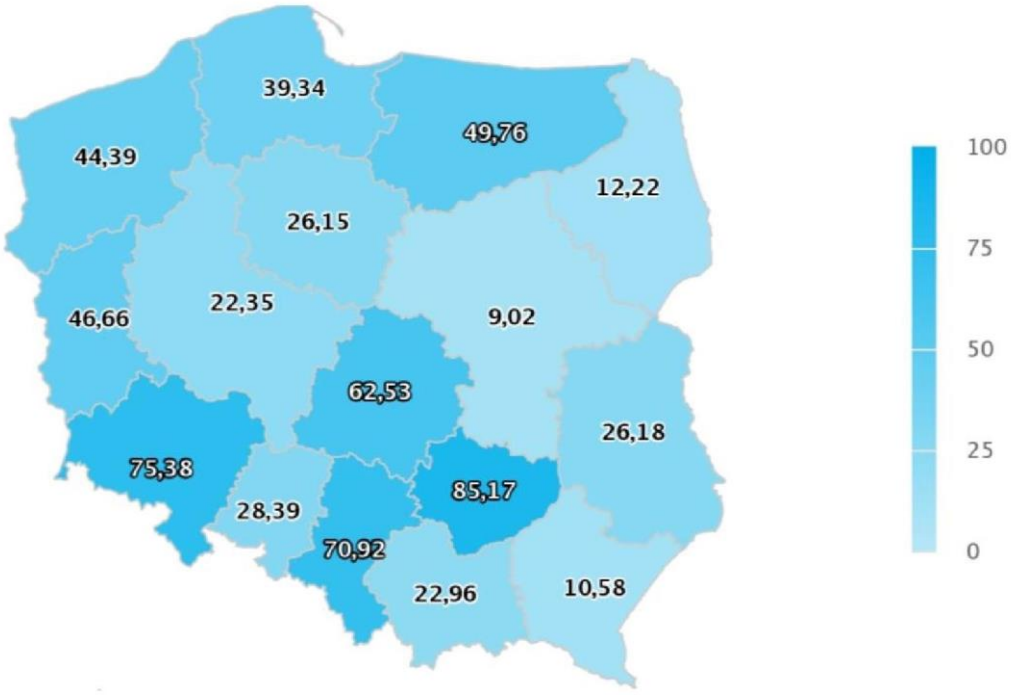
Source: Ministry of Health study based on data from NFZ, GUS and REPMA

10.3. Outpatient care

In 2019, a total of 14,600 patients received services within an outpatient care. The distribution of patients by gender was almost equal with a minimal predominance of women (52.6%). Compared to other types of care, palliative medicine clinic visits was less popular among young patients, 31% of patients were aged 40-64,

and 47% of those aged 65-79. The oldest patients (aged 80 or more) accounted for 20% of patients, i.e. by 60% less than in terms of inpatient services.

Figure 221. Number of outpatient care patients per 100,000 population in Poland in 2019.

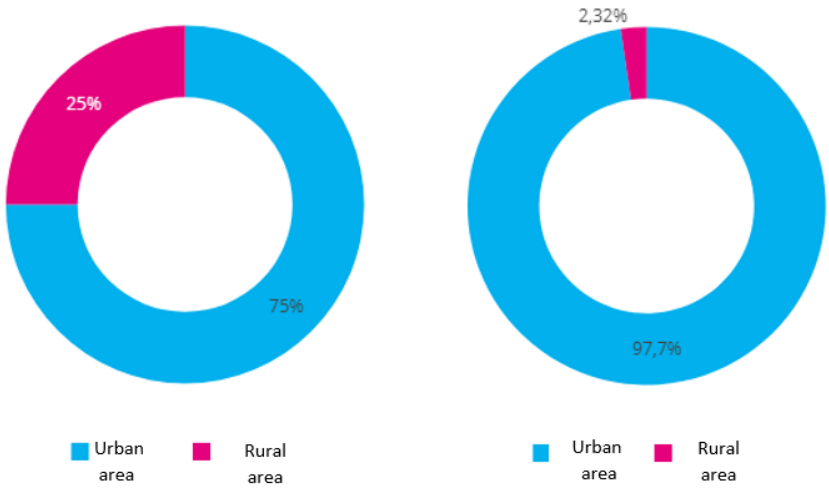


Source: Ministry of Health study based on data from NFZ and GUS

Outpatient palliative care had the largest regional variation in the number of patients admitted. The difference in the number of patients per 100,000 population was as high as 900% between the first and last rated province. Fewer patients (per 100,000 population) than the average in Poland (38.07) were admitted in eight provinces: the Mazowieckie (9.02), Podkarpackie (10.58), Podlaskie (12.22), Wielkopolskie (22.35), Małopolskie (22.96), Kujawsko-Pomorskie (26.15), Lubelskie (26.18) and Opolskie (28.39).

Limited access to outpatient palliative and hospice care services was also observed in rural areas compared to urban areas. In 2019, patients residing in rural areas accounted for only 25% of all service receivers, and only 2% of outpatient care patients received services at rural palliative medicine clinics.

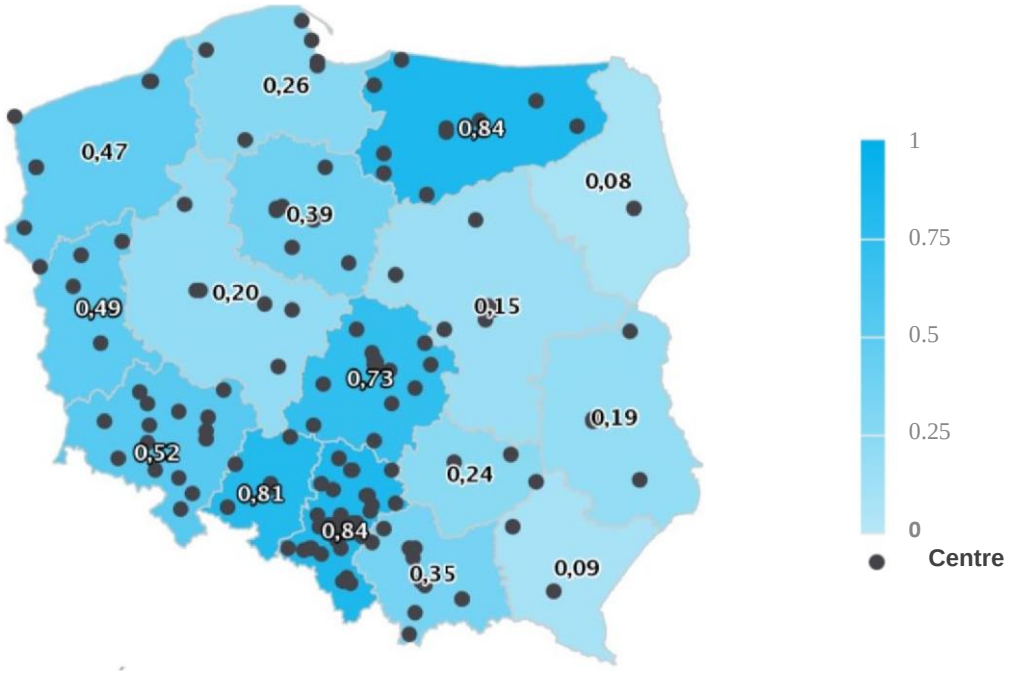
Figure 222. The distribution of outpatient care patients by patients' (left chart) and providers' place of residence (right chart) in 2019.



Source: Ministry of Health study based on data from NFZ

In 2019, in Poland, there were 155 outpatient palliative medicine clinics under contracts concluded with the NFZ. These institutions are mainly located in and around large cities. In Poland, the average number of clinics per 100,000 population was 0.40. There were 7 provinces in which there were more clinics than the Polish average per 100,000 population, i.e. in the Śląskie (0.84), Warmińsko-Mazurskie (0.84), Opolskie (0.81), Łódzkie (0.73), Dolnośląskie (0.52), Lubuskie (0.49) and Zachodniopomorskie (0.47) provinces.

Figure 223. Number of palliative care clinics per 100,000 population in Poland in 2019.



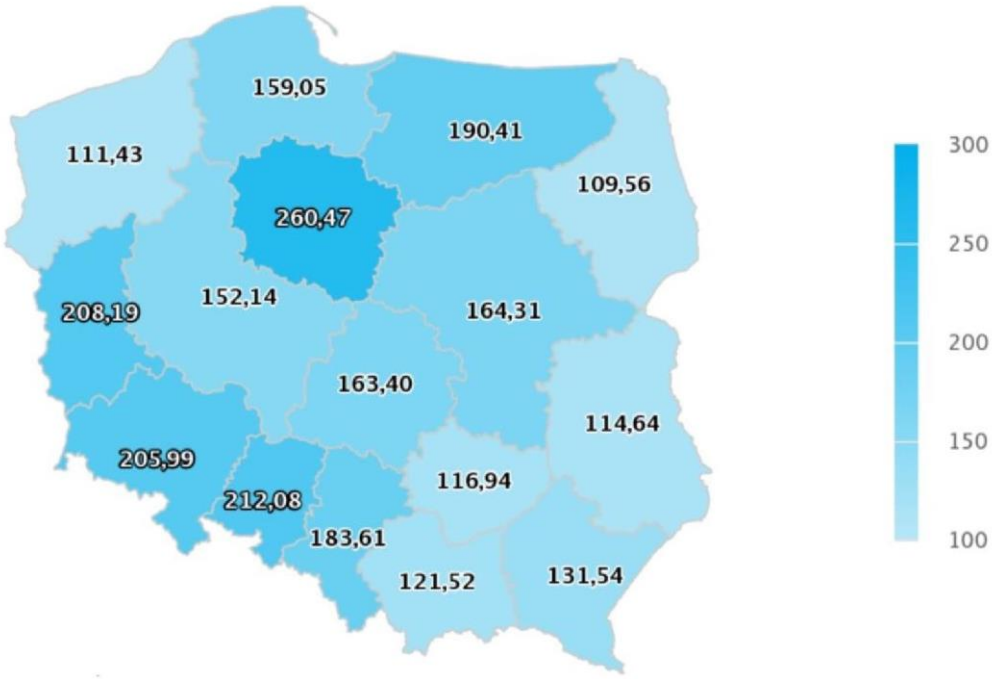
Source: Ministry of Health study based on data from NFZ and GUS

10.4. Home-based care

Home-based palliative care is the most common form of palliative and hospice care. In 2019, 62,500 patients benefited from such services.
Compared to 2016, the number of patients increased by less than 10%. The distribution of patients by gender was almost equal with a minimal predominance of women (50.2%).
The vast majority of patients were 65 or more (73%), with those aged 65-79 accounting for 45% and those aged 80 or more 28% of all patients.

The map of Poland shows the number of patients receiving home hospice services per 100,000 population by provinces. A lower value of this ratio in relation to the average in Poland (162.74) was reported in 8 provinces: the Podlaskie (109.56), Zachodniopomorskie (111.43), Lubelskie (114.64), Świętokrzyskie (116.94), Małopolskie (121.52), Podkarpackie (131.54), Wielkopolskie (152.14) and Pomorskie (159.05).

Figure 224. Number of long-term home-based care patients per 100,000 population in Poland in 2019.

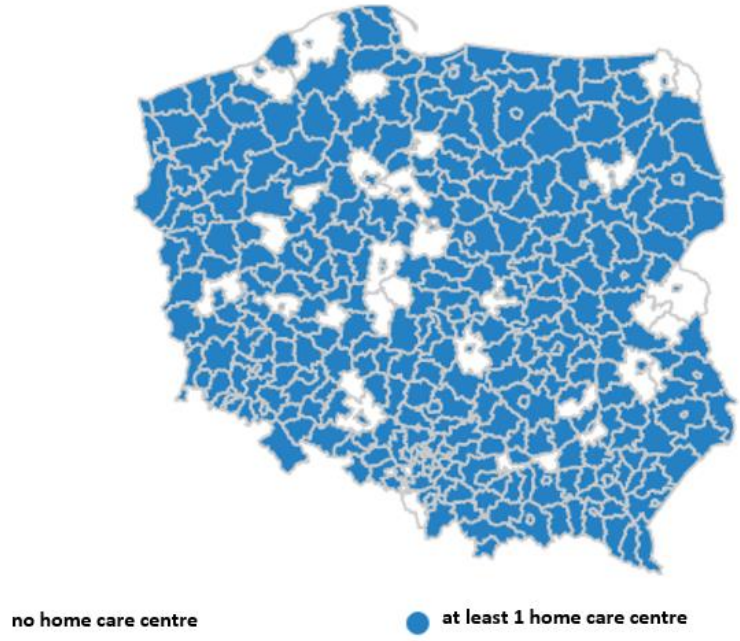


Source: Ministry of Health study based on data from NFZ and GUS

According to the national consultant on palliative care, in addition to securing Poland in terms of beds, efforts should be made to provide home-based care in every district. Home hospices take care of both patients and their relatives by providing psychological and spiritual support. Loved ones and family are often the most desired and valued caregivers by the patient, and the patient's home is often the most appropriate and preferable care environment for the patient, so it is important that home-based care services are widely available.

In Poland, in the vast majority of districts, health services were provided in home conditions. (90.5%). Every district on the territory of 3 provinces, i.e. the Dolnośląskie, Mazowieckie and Warmińsko-Mazurskie, had an access to home care centres. Lower value of this ratio in relation to the average of Poland was observed in 7 provinces: Lubelskie (79.2%), Wielkopolskie (80.0%), Podlaskie (82.4%), Kujawsko-Pomorskie (82.6%), Opolskie (83.3%), Śląskie (86.1%) and Pomorskie (90.0%). The map of Poland shows in blue the districts in which, at the end of 2019 the services were provided in at least 1 home care centre.

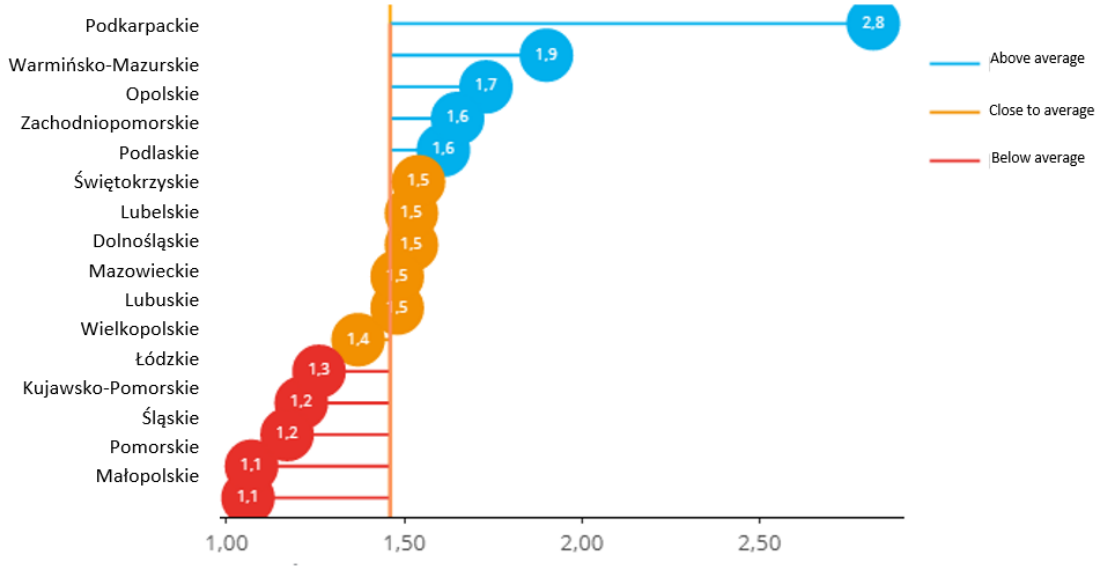
Figure 225. Security ratio in terms of home care centres availability in 2019.



Source: Ministry of Health study based on data from NFZ

In Poland, There were 559 home hospices (71 of which were paediatric home hospices) under the contracts with the NFZ, and there was an average of 1 palliative and hospice care centre (1.46) per 100,000 population. The highest value of this ratio was observed in the Podkarpackie (2.82) and Warmińsko-Mazurskie (1.90) provinces, while the lowest in the Małopolskie (1.06) and Pomorskie (1.07) provinces.

Figure 226. Distribution of provinces by number of home care centres per 100,000 population in 2019.



Source: Ministry of Health study based on data from NFZ

10.5. Number of beds forecast

Description of methodology for estimating the number of beds in palliative and hospice care

The ageing of the population, and the growing number of chronically ill patients resulting from it, poses new challenges to the health care system in Poland in terms of palliative and hospice care services. Therefore, a demand model for palliative and hospice care beds was developed. The authors of the model used the methodology presented by WHO in the *Global Atlas of Palliative Care at the End of Life*[225].

The methodology for the need for palliative and hospice care beds based on the WHO analysis is presented in the list below:

– incidence rates for solid tumours presented in the map of health needs for these diseases published in December 2016 were implemented, by six age groups;

– in order to calculate the population at risk of the analysed diagnoses, we calculated the product of the incidence rate and the forecast of the population of Poland developed by the GUS for 2020-2050 according to provinces and TERYT register codes;

[225] https://www.who.int/nmh/Global Atlas of Palliative Care.pdf, accessed 31.03.2020

– a life expectancy matrix framework was created to present the number of patients by year who, according to the NFZ and CRC (Central Register of Cancers data), live

- up to 1 year after the diagnosis,
- from 1 to 2 years after the diagnosis,
- from 2 to 3 years after the diagnosis,
- from 3 to 4 years after the diagnosis,
- from 4 to 5 years after the diagnosis,
- from 5 to 6 years after the diagnosis,

– survival rates were calculated by multiplying the value corresponding to the population incidence of ICD-10 diagnoses analysed and the survival probabilities of patients with a cancer diagnosis by all provinces and TERYT register codes (probability values were taken from the 2016 oncology maps of health needs);

– the death matrix in each interval of the life expectancy in point 4 was calculated by diseases and age groups analysed.

The original model proposed that palliative and hospice care be provided to 84% of all patients with diagnoses from catalogues C and D (according to ICD-10) one year before their death, given the results of studies on chronic pain in the aforementioned group of patients. However, after consultations with national experts in palliative care, in order to take into account the specific local conditions determining the need for hospice palliative care, it was decided to raise the value of this parameter to 90%.

The proposed multiplicative model has 4 components: A, B, C, and D.

- Hospice population = A * B * C * D.
- A = population incidence of diagnoses from catalogue C (except haematopoietic and lymphatic cancer) included in the analysis by genders and TERYT register codes. The methodology was presented in the "Treatment Process in Poland – Analyses and Models Volume I: Oncology "[226].
- B = 0.9 (percentage of all patients requiring palliative and hospice care in one year before death).
- C = 1.1259 (synthetic additional factor including the patients with diagnoses other than those listed in component A and included in the diagnoses listed in Appendix 1 to

[226] http://mpz.mz.gov.pl/publikacje/proces-leczenia-w-polsce-analizy-i-modele-tom-i-onkologia/, [accessed 31.03.2020].

the Regulation of the Minister of Health of 29 October 2013 on guaranteed services in the field of palliative and hospice care.)

- D = 1.0255 (synthetic additional factor reflecting the need to include patients receiving hospice and palliative care for more than one year).

The final model indicates the necessary number of palliative and hospice care facilities. The guidelines of the European Association for palliative care were applied to calculate the number of beds needed for inpatient hospices and palliative care wards, which indicates a need for at least 100 beds in inpatient palliative care centres and inpatient hospices per 1,000,000 population. The number of home hospice beds is the difference between the estimated number of beds in palliative and inpatient care and the number of beds in inpatient hospices and palliative care wards.

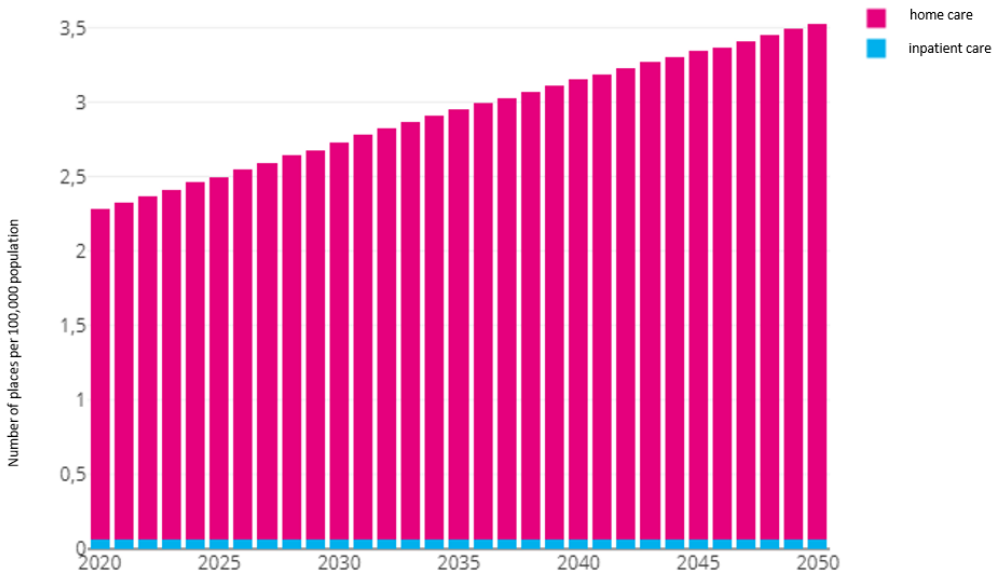
Methodological limitations

A forecast of palliative and hospice care beds was prepared for home-based and inpatient care only (demand for outpatient services was not included). The forecast is strongly influenced by demographic changes, in particular in the area of inpatient care, where the demand for the number of beds depends solely on the population forecast according to the GUS and on meeting the criterion of 100 beds per 1,000,000 population. The model for estimating the total number of palliative and hospice care beds was based on incidence and survival rates in 2014 for a selected group of cancers (C00-C16, C18-C26, C30-C34, C43, C50, C53-C54, C56, C61-C62, C64-C67, C70-C73, D05 including extensions) and therefore does not cover all diagnoses included in Annex 1 of the Regulation of the Minister of Health of 29 October 2013 on guaranteed services in the field of palliative and hospice care.

Forecast results

The results of the model of the demand on palliative and hospice care beds indicate that in 2020, 146,000 beds should be provided, of which 97.4% in home-based care (142,000). With a growing population of the elderly, by 2050, the expected increase in demand for palliative and hospice care beds will be 38%. A total of about 202,000 beds will be needed in Poland, of which 198,000 in home-based care centres, and 3,400 in inpatient hospices and palliative care wards.

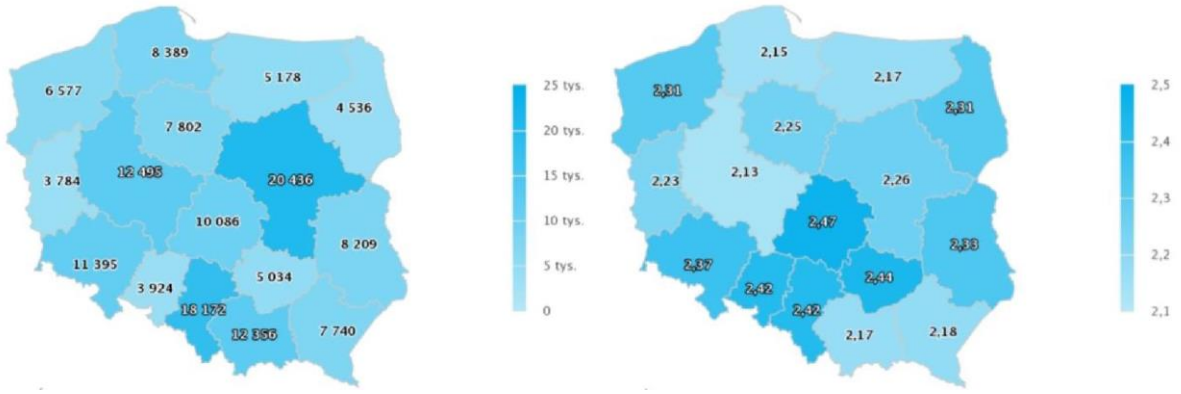
Figure 227. Forecast of the number of beds in palliative and hospice care in Poland for 2020-2050



Source: Ministry of Health study based on data from NFZ, CRC and GUS

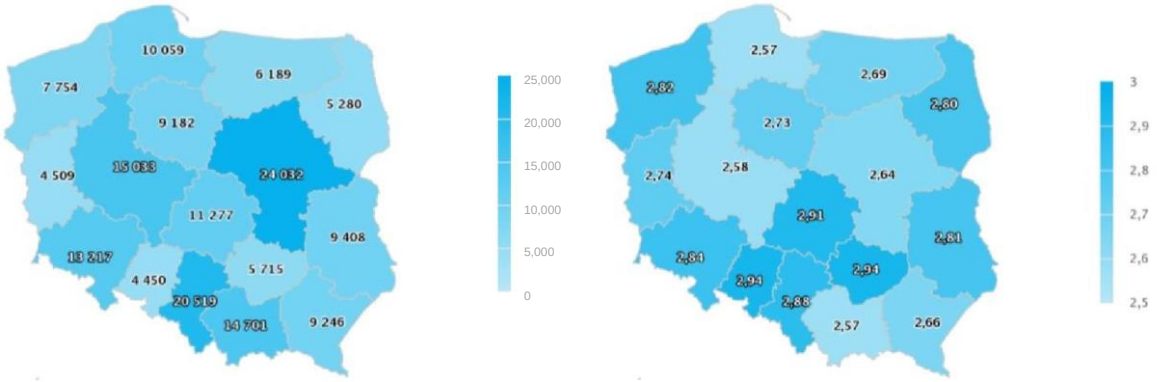
In terms of population in 2020, the largest number of beds should be provided in the following provinces: Łódzkie (2.47 per 100,000 population) and Świętokrzyskie (2.44 per 100,000 population), and the lowest in the following provinces: Wielkopolskie (2.13 per 100,000 population) and Pomorskie (2.15 per 100,000 population). In turn, in 2050, the greatest demand for the number of beds is expected in the following provinces: Opolskie (3.89 per 100,000 population) and Świętokrzyskie (3.87 per 100,000 population).

Figure 228. Forecast of the number of beds in palliative and hospice care in Poland in 2020 (left chart in absolute terms, right chart per 100,000 population).



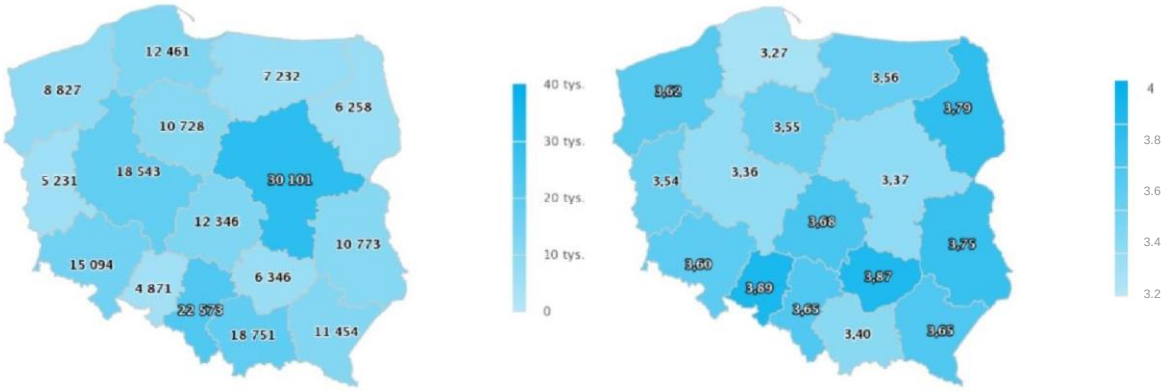
Source: Ministry of Health study based on data from NFZ, CRC and GUS

Figure 229. Forecast of the number of beds in palliative and hospice care in Poland in 2030 (left chart in absolute terms, right chart per 100,000 population).



Source: Ministry of Health study based on data from NFZ, CRC and GUS

Figure 230. Forecast of the number of beds in palliative and hospice care in Poland in 2050 (left chart in absolute terms, right chart per 100,000 population).



Source: Ministry of Health study based on data from NFZ, CRC and GUS

10.6. Conclusions

Palliative and hospice care within the health care system is provided in inpatient setting (in an inpatient hospice or a palliative care wards), at home (in a home hospice for adults or for children up to 18 years of age) and in outpatient settings (in a palliative care clinic). Its primary goal is to provide care for patients in a terminal state.

10.7. Health care system challenges

According to the Regulation of the Minister of Health of 29 October 2013 on guaranteed services in the field of palliative and hospice care, these services are available to people suffering from incurable, progressive and life-limiting

cancerous and noncancerous diseases. However, for adults, the list of diseases eligible for palliative and hospice care services is very narrow. In 2019, 88.7% of patients over 18 years of age had an oncology diagnosis. WHO estimates that cancer patients requiring this type of care represent 34% of all those in need. In contrast, people with cardiovascular diseases account for 38.5% of those in need. According to the 2019 NIK report, the diseases eligible for treatment should first be expanded to include heart failure and chronic renal failure. On average, 45,000 people die each year from heart failure and chronic renal failure. The analyses conducted by the Ministry of Health indicate that currently about 1,200,000 Polish population suffer from heart failure, and 140,000 of them die every year. These are mainly elderly people (80 or more) with multiple comorbidities. Moreover, patients with heart failure have a poor prognosis (5-year patient survival was 56.6%).

In view of the ongoing demographic and epidemiological changes, the number of people in need of palliative care will increase. According to the GUS forecasts, by 2050, the share of people aged 65 or more will increase to 32.7% (to 22.3% in the 65-79 age group and to 10.4% in the group aged 80 or more). With a growing population of the elderly, by 2050, the expected demand for the number of beds in inpatient and home-based palliative care will be 202,000 beds.

Not all districts in the region were secured in terms of home-based care accessibility. Home hospices take care of both patients and their relatives by providing psychological and spiritual support. Loved ones and family are often the most desired and valued caregivers by the patient, and the patient's home is often the most appropriate and preferable care environment for the patient, so it is important that home-based care services are widely available.

In 7 out of the 16 provinces, the minimum number of inpatient palliative care beds (100 beds per 1,000,000 inhabitants as defined by the EAPC) is not provided. The recommended number of beds was not provided in the following provinces: the Warmińsko-Mazurskie (67.48), Łódzkie (72.51), Lubuskie (74.14), Mazowieckie (76.34), Lubelskie (78.74), Kujawsko-Pomorskie (93.61) and Opolskie (97.70). Increasing the number of beds is an important element as there are still unmet patients' needs in inpatient palliative care, which will increase due to the progressing demographic changes. In February 2020, there were 624 patients waiting for inpatient care services, with an average waiting time of 13 days for palliative care wards and 43-45 days for inpatient hospices. For services as specific as palliative and hospice care, waiting time for admission to an inpatient palliative care centre is too long, especially when compared to the average length of stay for a patient per year, which in 2019 was approximately 30 days.

Patients' place of residence had an impact on the access to palliative and hospice care. In 2019, only 32% of all patients were from rural areas. The biggest differences

was observed for services provided in the outpatient conditions, in which case the patients living in rural areas accounted for only 25% of all patients. The differences in accessibility are also observed between provinces. The largest number of patients per 100,000 The largest number of patients in terms of place of residence was observed in the Kujawsko-Pomorskie (322.67) and Dolnośląskie (321.12) provinces, and the smallest in the Zachodniopomorskie (199.51) and Lubelskie (201.02) provinces. On average, services were provided to 251 patients per 100,000 population in Poland.

In 2017, perinatal palliative care was added to the basket of guaranteed services, unifying the standard of care and allowing financing under the general health insurance. Perinatal palliative care aims to provide medical advice and psychological support to women diagnosed with life-threatening diseases of the fetus or child during pregnancy, therefore it is crucial to guarantee the access to such services in Poland. In 2018, in Poland, there were only 340 perinatal palliative care visits, while in 2019 their number increased to 1,250 (almost 4-time increase). In 2019, in 5 provinces no such services were provided, i.e. in the Kujawsko-Pomorskie, Lubuskie, Świętokrzyskie, Wielkopolskie and Zachodniopomorskie provinces. As a result, patients and their families were forced to migrate to neighbouring provinces.

10.8. Recommended lines of actions

- → Guaranteeing all terminal patients appropriate care within the health care system. People with incurable, progressive and life-limiting illnesses should receive care appropriate to their needs, i.e. palliative and hospice care, long-term care, or any other type of guaranteed services. In order to guarantee patient comfort, it is advisable to shift the focus from inpatient wards to services provided in a non-institutional conditions;
- → Guaranteeing need-based access to palliative and hospice care by increasing the number of health services provided and closing the gaps in access between provinces and between rural and urban areas;
- → Increasing the access to palliative and hospice care in the home-based conditions, e.g. by including medical caregivers providing this type of guaranteed service in the staff. In addition to the prevention of pain and other somatic symptoms, home-based hospice is largely based on daily assistance with basic activities such as hygiene and care, bedsore prevention and support in the use of

orthopaedic and rehabilitation equipment, which largely overlaps with the scope of care activities to be performed by medical caregivers;

→ striving to provide care in home conditions throughout Poland (in every district), as well as to organise comprehensive informational, educational and psychological support for informal caregivers, who have a very large share in the care of people with incurable and progressive diseases;

→ increasing the number of beds in inpatient palliative care according to the European Association for Palliative Care, while developing health care in non-institutional conditions, possibly in the patients' or their families' homes;

→ increasing an access to perinatal palliative care for families with children who require this form of care;

→ it is desirable to introduce a palliative and hospice care organisational standard and coordination between PHC, long-term care and social assistance.

11. Emergency Medical Services

In this document, emergency medical services were analysed in such a broad scope for the first time within the framework of health needs maps. One area included in the analyses was emergency departments.

The emergency medical services system responds to specific health needs of the population by providing health care services to a person in a medical emergency (sudden deterioration of health or an accident). The principles of operation of emergency medical services in Poland are specified in the Act on Emergency Medical Services of 8 September 2006. (Dz. U. /Journal of Laws/ /Journal of Laws/ of 2006, no. 191, item 1410, as amended). In accordance with the provisions of the Act, in order to fulfil the state's tasks consisting in providing assistance to any person in a state of a sudden health threat, the system of Emergency Medical Services is established.

Pursuant to Art. 2 of the Act, within the framework of the system, the government administration authorities competent in the performance of tasks of the EMS system, medical dispatch centres and system units operate, i.e:

- Emergency Rescue Teams (including Air Ambulance Stations),
- hospital emergency wards.

Trauma centres and organisational units of hospitals specialised in providing medical services necessary for medical rescue, which have been included in the plan, cooperate with the system.

Moreover, units cooperating with the EMS also cooperate with the system, namely the units of the State Fire Service, Voluntary Fire Brigades included in the National Rescue and Firefighting System, Police, Border Guard, Ministry of National Defence, Volunteer Mountain Rescue Service, Volunteer Water Rescue Service, Maritime Search and Rescue Service, mine rescue stations and suchlike, together with social rescue organisations. This cooperation is very important, especially in the case of multiple incidents in difficult terrain or in the absence of an available Emergency Rescue Team.

Supervision over the system on the national territory is exercised by the minister competent in the field of health, while planning, organising, coordinating and supervising the system on the province territory is the task of a governor.

On the territory of a province, the system operates on the basis of a province action plan prepared by a governor. It is updated at least once a year, not later than by 30 March, according to the data for the previous year. Specifically, it includes:

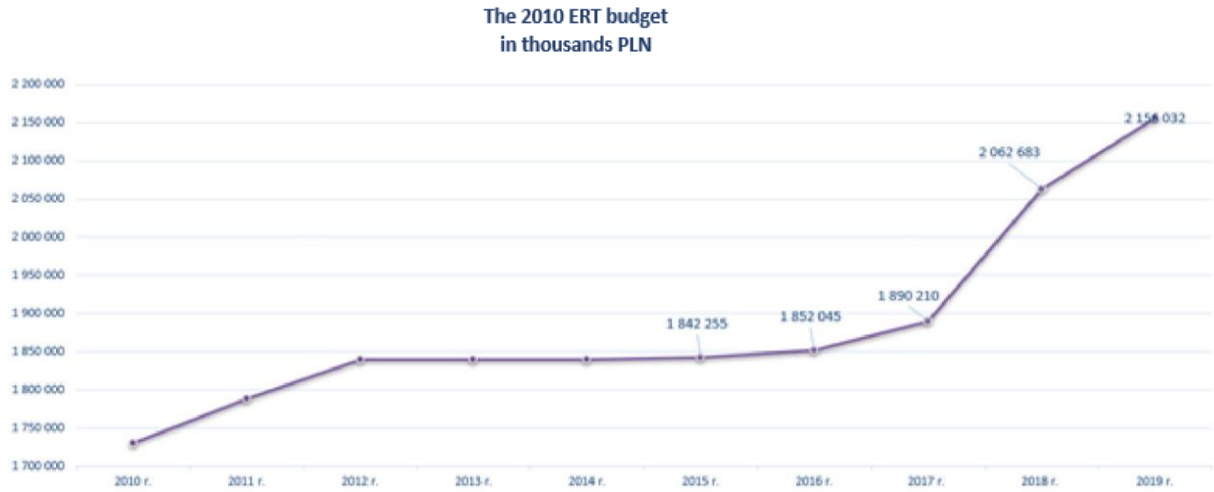
- the number and distribution on the area of a province of units of the system and the method of coordination of their actions;

- areas of operation and operational regions;
- calculation of costs of operation of emergency rescue teams;
- the method of co-operation with public administration authorities and units of the system from other provinces, ensuring efficient and effective saving of life and health, regardless of the course of the province borders;
- the way of co-operation of system units with units co-operating with the system;
- information on location of emergency call centres;
- description of the structure of the emergency reporting system;
- data on:
    - medical dispatch centre,
    - departures of Emergency Rescue Teams, including, among other things:
        - median time of arrival at the scene of the event,
        - maximum time of arrival at the scene,
        - average and maximum duration of medical action,
        - number of departures exceeding the maximum time of arrival at the scene,
        - the number of patients in the emergency department and the admission room of a hospital,
        - number of trauma patients and number of paediatric trauma patients;
- the organisation and functioning of radio communication system.

Financing of EMS tasks

Each element of the EMS system has separate sources of financing. EDs are financed from the budget of the National Health Fund, while Air Ambulance Stations are financed from the state budget from the part which is administered by the minister competent as regards health matters. Financing of tasks performed by ERTs is based on the state budget from the part administered by individual governors.

Figure 231. Increase in the budget for financing emergency medical rescue tasks in particular years



Source: Ministry of Health study

These funds are distributed between individual provinces according to principles described in article 46 of the Act of 8 September 2006 on State Emergency Medical Services.

Emergency rescue teams by type

ERTs are divided into two types depending on the composition of the team:

- specialist teams - at least three persons entitled to perform medical rescue procedures, including a system medical practitioner and a system nurse or a paramedic;
- primary teams - at least two persons entitled to perform medical rescue procedures, including a system nurse or a paramedic;
- HEMS teams - at least three persons, including at least one professional pilot, a medical practitioner of the system and a paramedic or a medical nurse of the system.

The general procedures for dispatching the ERTs are set out in the Regulation of the Minister of Health on framework procedures for managing emergency calls and reports on incidents by a medical dispatcher of 19 August 2019 (Dz. U. /Journal of Laws/ of 2019, item 1703). Determination of the priority of dispatching an emergency rescue team takes place on the basis of the medical history and, in accordance with that, the medical dispatcher assigns a code of urgency of the departure:

- Code 1 denotes the necessity of an immediate departure of an ERT with the shortest foreseeable time to the place of an incident due to a medical

emergency requiring immediate medical rescue procedures,

- Code 2 indicates the necessity of an available ERT to respond to an emergency requiring urgent medical procedures.

In relation to the above, to a patient in a state of life or health emergency, for which a medical dispatcher assigned an urgency Code 1, the nearest available ERT - regardless of its type - is dispatched in order to provide assistance as soon as possible.

The analysis of reasons for calls did not indicate significant differences in the dispatching of ERTs in relation to the type of Team.

Due to the fact that in particular months there were changes in the number or type of ERTs, the occupancy of ERTs should be assessed from the perspective of the monthly period. For example, in December there were 1563 ERTs, 23% of which were specialist teams.

The number of specialist and basic teams is determined by a governor, in accordance with the needs and possibilities. In the above-mentioned period, the largest number of ERTs operated in the Mazowieckie Province - 200 (including 23% of specialist teams), and the smallest - in the Opolskie Province - 44 (27%). Most specialist teams were on duty in the Mazowieckie Province - 47 (23% of all ERTs in the province), and the least in the Świętokrzyskie Province - 9 (18% of all ERTs in the province).

Changes in types of ERTs are usually dictated by the impossibility of staffing and most often concern reclassification of a specialist team to the primary team. This entails an update of the province plan, which must be approved by the Minister of Health. Then the agreement with NFZ is annexed.

However, in the summer months, additional teams, the so-called seasonal teams, are usually launched in tourist resorts in order to ensure the appropriate level of services for an increased number of people.

11.1. Emergency Rescue Teams

Incidents managed by ERTs

In the analysed period, i.e. from 1 April to 31 December 2019, there were about 8.5 2,500,000 incidents in total (about 6,500 per 100,000 population in Poland), with 30% of the departures conducted under Code 1. The highest number of incidents was recorded in the Mazowieckie Province (about 360,000) and the lowest in the Opolskie Province (about 56,000). Calculated per 100,000 inhabitants, the highest number of incidents occurred in Zachodniopomorskie (approx. 8,500), and the least in Wielkopolskie (4,800).

Table 64. Incidents managed by ERTs in provinces between 1 April to 31 December 2019.

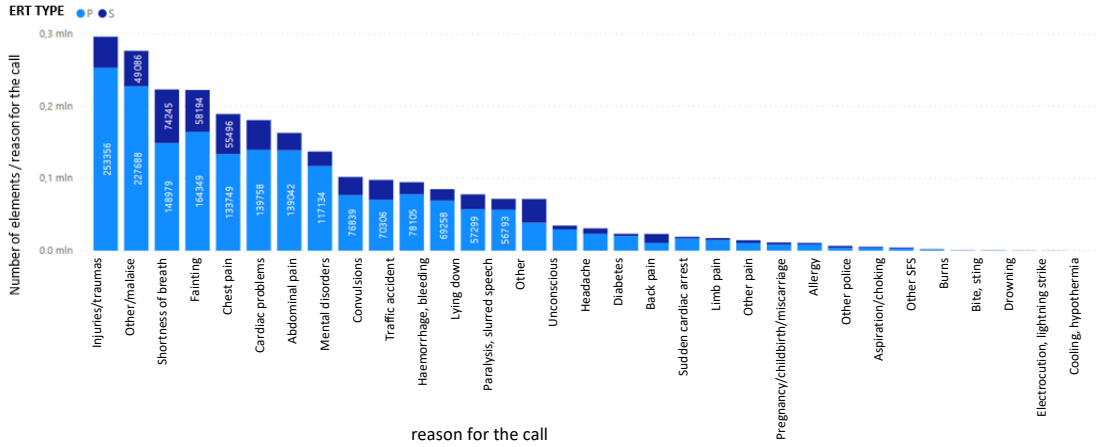
Province	Number of calls	Number of calls under Code 1	Number of calls under Code 2	Number of cancellations
Dolnośląskie	228,776	60,518	168,260	139
Kujawsko-Pomorskie	142,997	57,232	85,766	85
Lubelskie	146,966	42,713	104,254	222
Lubuskie	64,729	15,678	49,051	25
Łódzkie	169,696	32,117	137,584	76
Małopolskie	184,836	55,490	129,350	159
Mazowieckie	358,319	106,226	252,102	203
Opolskie	56,398	8,447	47,951	77
Podkarpackie	117,330	50,952	66,382	120
Podlaskie	61,378	18,443	42,935	53
Pomorskie	133,179	31,984	101,196	143
Śląskie	323,658	90,703	232,958	138
Świętokrzyskie	97,799	53,234	44,566	48
Warmińsko-Mazurskie	97,219	23,592	73,630	47
Wielkopolskie	167,797	60,312	107,485	208
Zachodniopomorskie	145,154	35,920	109,234	63
TOTAL	**2,496,231**	**743,561**	**1,752,704**	**1,806**

Source: Ministry of Health study based on data from the Command Support System of the Emergency Medical Services (CSS EMS)

Reasons for Emergency Rescue Team call

The dispatcher who receives the call and, on the basis of the interview, enters the reason for the call using a closed catalogue of several dozen items.
In the analysed period, the most frequent reason for the call fell into the category 'Injuries/traumas' - about 296,000 (about 14% of those managed by specialist teams).

Figure 232. Reasons for ERT call between 1 April to 31 December 2019.



Source: Ministry of Health study based on data from CSS EMS

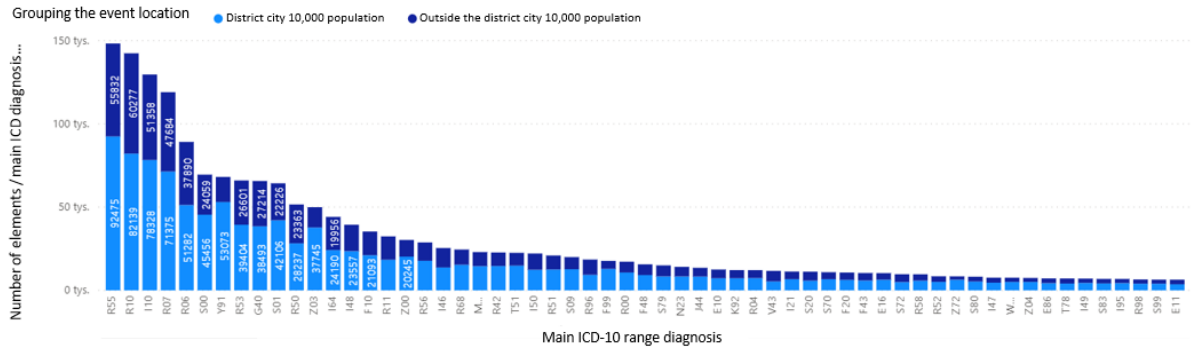
It is worth emphasising that the dispatcher is not always able to determine, by means of the medical interview, whether a particular incident is a medical emergency, and thus whether it is necessary to send an ERT, or whether it is enough to redirect the patient to a PHC entity or ED.

Diagnoses made by ERTs at the scene

At the scene of an incident, the team coordinator enters the diagnosis from the ICD-10 catalogue into the Medical Record. Over the analysed period, the most common diagnoses were those with codes as follows: R55 - Syncope and collapse (148,000 diagnoses), R10 - Abdominal and pelvic pain (142,000), I10 - Essential (primary) hypertension (130,000), R07 - Pain in throat and chest (119,000) and R06 - Abnormalities of breathing (89,000).

However, it is important to refrain from inferring that departures with R55 diagnoses are trivial or unnecessary, as abdominal pain is a non-specific symptom of many serious conditions, such as an aortic dissecting aneurysm or ectopic pregnancy.

Figure 233. ICD-10 diagnoses made by ERTs between 1 April and 31 December 2019.



Source: Ministry of Health study based on data from CSS EMS

Deaths

In December 2019, about 25,500 incidents terminated with patient's death within 30 days from the intervention of the ERT (the highest number in the Mazowieckie Province - 3,500, the lowest in the Podlaskie Province - 600), within 7 days - 16,500 (almost half of this number - about 8,000, constituted deaths on the day of the event).

Table 65. Incidents managed by ERTs with death occurring within 30 days in provinces in the period from 1 April to 31 December 2019.

Province	Number of calls	Number of basic ERT calls	Number of specialist ERT calls	Number of calls under Code 1	Number of calls under Code 2
Dolnośląskie	18,218	11,609	6,609	7,401	10,817
Kujawsko-Pomorskie	10,931	8,706	2,225	5,425	5,506
Lubelskie	11,223	6,538	4,685	4,598	6,625
Lubuskie	5,327	2,665	2,662	1,995	3,332
Łódzkie	15,549	10,624	4,926	6,132	9,418
Małopolskie	16,112	12,615	3,498	7,415	8,698
Mazowieckie	28,859	19,345	9,514	12,663	16,196
Opolskie	5,312	3,215	2,097	1,606	3,706
Podkarpackie	9,596	6,805	2,791	5,662	3,934
Podlaskie	4,836	2,405	2,431	2,299	2,537
Pomorskie	10,328	6,791	3,537	4,068	6,260
Śląskie	27,115	18,872	8,243	11,585	15,530
Świętokrzyskie	8,359	5,909	2,450	5,673	2,686
Warmińsko-Mazurskie	8,432	5,821	2,611	3,179	5,253
Wielkopolskie	14,560	9,076	5,484	7,368	7,192
Zachodniopomorskie	10,757	7,746	3,011	4,457	6,300
TOTAL	**205,514**	**138,742**	**66,774**	**91,526**	**113,990**

Source: Ministry of Health study based on data from CSS EMS

The statistics presented above are influenced by many factors: the type of incident (traffic accident, suicide attempt, etc.), the circumstances - multi-organ trauma, sudden cardiac arrest, in which the only help from witnesses is to call an ambulance or an ERT arrival that consists in the declaration of the patient deceased. Equally important is the question of the institution to which the patient will be sent, as well as further hospitalisation and post-hospitalisation care.

It is certainly not advisable to penalise the ERTs on the basis of these statistics - despite the efforts of medical practitioners and paramedics, 8,000 people could not be saved.

Waiting places of ERTs

From 1 April until 31 December 2019 ERTs were deployed in 1,031 stationing (waiting) places. Individual stationing places are designated by governors in a way that allows for even coverage of subordinate areas and enables the arrival of an ERT within the time indicated in the Act.

Figure 234. Waiting places of ERTs in Poland in the period from 1 April to 31 December 2019.

Source: Ministry of Health study based on data from CSS EMS

It is important to note at this point that the exceeded time to reach the patient suggests that adjustments need to be made in this regard.

ERT occupancy rate

As there were changes in the number or type of ERTs from month to month, occupancy should be assessed by looking at the monthly period. For example, in December 2019 there were approximately 263,000 incidents managed by 1563 ERTs. The average number of ERTs per 100,000 population in the Republic of Poland was 4.07, while the average occupancy rate amounted to 180.85. The highest average occupancy rate was recorded in the Dolnośląskie Province (226.57) and the lowest in the Podlaskie Province (120.93). Calculated per 100,000 population, the highest number of ERTs was stationed in the Warmińsko-Mazurskie Province (5.54), and the lowest in the Wielkopolskie Province (3.43).

Table 66. Emergency Rescue Teams in the period from 1 April to 31 December 2019.

Province	The number of ERTs	Number of Primary ERTs	The number of specialist ERTs	The number of ERTs per 100,000 population	Average ERT occupancy rate
Dolnośląskie	117	87	33	4.035	1,955,35
Kujawsko-Pomorskie	98	83	16	4.724	1,459,15
Lubelskie	107	73	37	5.066	1,373,51
Lubuskie	53	35	18	5.232	1,221,30
Łódzkie	105	85	23	4.268	1,616,15
Małopolskie	136	112	26	3.994	1,359,09
Mazowieckie	209	162	53	3.862	1,714,44
Opolskie	45	32	13	4.572	1,253,29
Podkarpackie	95	78	17	4.465	1,235,05
Podlaskie	57	41	20	4.833	1,076,81
Pomorskie	98	81	21	4.192	1,358,97
Śląskie	163	125	41	3.603	1,985,63
Świętokrzyskie	51	41	10	4.122	1,917,63
Warmińsko-Mazurskie	89	71	19	6.241	1,092,35
Wielkopolskie	128	93	36	3.662	1,310,91

Zachodniopomorskie	89	74	16	5.24	1,630,94
TOTAL	**1640**	**1273**	**399**		

Source: Ministry of Health study based on data from CSS EMS

Time of arrival at the place of incident

When analysing the functioning of EMS particular attention should be paid to arrival times, taking into account the parameters specified in art. 24 item. 1 of the Act of 8 September 2006 on State Emergency Medical Services.

For example, in December 2019, the best result in terms of the time of arrival at the place of the incident in a city with more than 10,000 inhabitants was recorded in the Świętokrzyskie Province - 98.3% of calls with time of arrival up to 15 min (median: 5 min, third quartile: 7 min).
In the case of incidents outside cities with population over 10,000 population, the best result was also recorded in the Świętokrzyskie Province - 94% of calls with arrival time up to 20 min (median: 11 min, third quartile: 15 min). For comparison, the lowest result in terms of the time of arrival at the place of the incident outside cities with a population above 10,000 inhabitants was recorded in the Dolnośląskie Province - only 72% of calls with time of arrival to 20 minutes.

In the case of events occurring in cities with more than 10,000 inhabitants, only a small percentage of cases involved arrival times longer than those specified in the Act. Therefore, it can be concluded that the medical protection of inhabitants remains at a proper level.

In the case of calls outside cities with more than 10,000 residents, there is a relatively large percentage of cases where an ERT arrived at the scene later than specified in the Act. In some provinces it was about 20% of incidents, and the highest number in Dolnośląskie Province - almost 27%. This demonstrates the problem of residents of small towns and villages who have limited access to assistance in emergency situations.

It is advisable to deepen the analysis in order to identify the causes of this phenomenon such as too many ERT departures, too large radius of operation of the team, delays in transferring the order for departure from the medical dispatch centre, delays in the departure of the team from the place of stationing, downtime in ED or ER, etc.

Detailed summaries can be found on the platform System Analysis and Implementation Database (see the platform 71).

11.2. Helicopter Emergency Medical Services (HEMS)

The tasks of the Air Ambulance Stations include flights to accidents and sudden illnesses as well as assistance to their victims, transport of patients requiring medical care between health care institutions, air medical transport outside

Poland and transport to the Republic of Poland of citizens of the country, victims of accidents or sudden illnesses that have occurred outside the borders of the Republic of Poland.

The HEMS team is able to begin the medical procedure from the moment of the arrival at the scene of the accident, as well as quickly transport the patient to the ED within the so-called golden hour.

Currently, the helicopters are stationed at 21 permanent bases located throughout Poland, and one seasonal base in Koszalin, launched during the summer holidays. A modern EC 135/H135 helicopter can reach the scene of an accident up to 60 kilometres away within several minutes, depending on the wind. The HEMS also include an Aircraft Transport Team (EMS[227]) located at Warsaw Chopin Airport. The aircrews operate using two Piaggio P.180 Avanti aircraft in their work.

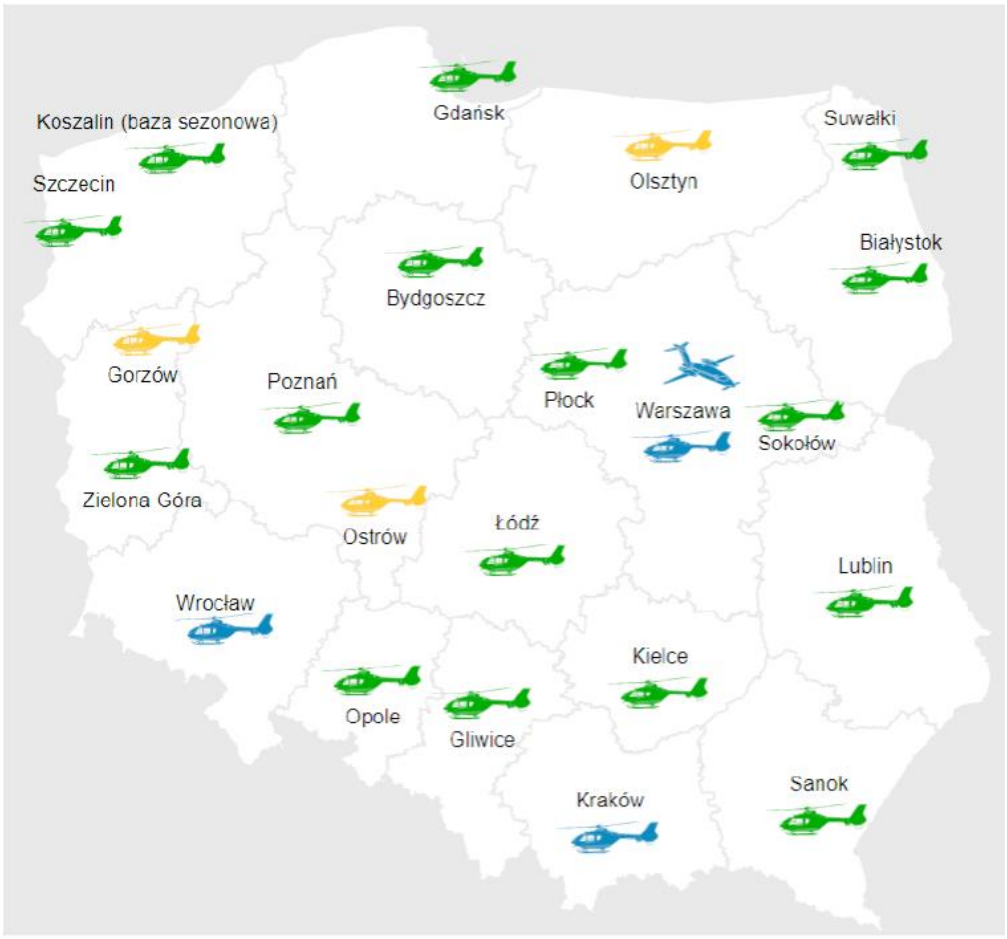
Individual bases are on duty from 7.00 a.m. to 8.00 p.m. (some of them from 7.00 a.m., but not before sunrise, to 45 min. before sunset, but no longer than until 8.00 p.m.). 24-hour duty is provided by bases as follows[228]:

- Gdańsk HEMS - codename Ratownik 3,
- Kraków HEMS - codename Ratownik 6,
- Warsaw HEMS - codename Ratownik 12,
- Wrocław HEMS - codename Ratownik 13.

[227] En. *Emergency Medical Service.*

[228] https://www.lpr.com.pl/pl/dla-dyspozytorow-medycznych/czas-dyzurow-baz-hems/, updated 21 August 2018, [accessed 01.08.2021]

Figure 235. Location of the Air Ambulance airbases



Source: HEMS study

The following are authorised to summon an HEMS team (a helicopter):

- a medical dispatcher, referred to in Art. 26 of the Act of 8 September 2006 on State Emergency Medical Services,
- a dispatcher of the Operational Centre of the HEMS,
- dispatchers of other rescue entities (State Fire Service, Volunteer Mountain Rescue Service, Tatra Volunteer Search and Rescue, Volunteer Water Rescue Service, Polish Ship Salvage Service, Mazury Rescue Service) through the medical dispatcher referred to in item 1, or directly on the basis of signed agreements.

The dispatching of an Air Ambulance (HEMS) team should take place primarily when:

- the time of transport by air from the place of incident/emergency of the patient to ED or other appropriate location is shorter than the time of transport by other means of locomotion and may bring benefits in the further treatment process,

- there are circumstances which may prevent or significantly delay the arrival of other rescue services at the scene of the emergency (e.g. topography),
- a mass event has occurred (a sudden threat, as a result of which the demand for medical rescue actions exceeds the capabilities of forces and resources present on the scene of the event, and it is necessary to carry out segregation understood as determination of treatment and transport priorities).

In the period from 1 January to 31 May 2020, Air Ambulance teams performed 1,786 missions, the majority of which were completed in the Zachodniopomorskie Province (204), the least in the Małopolskie Province (21).

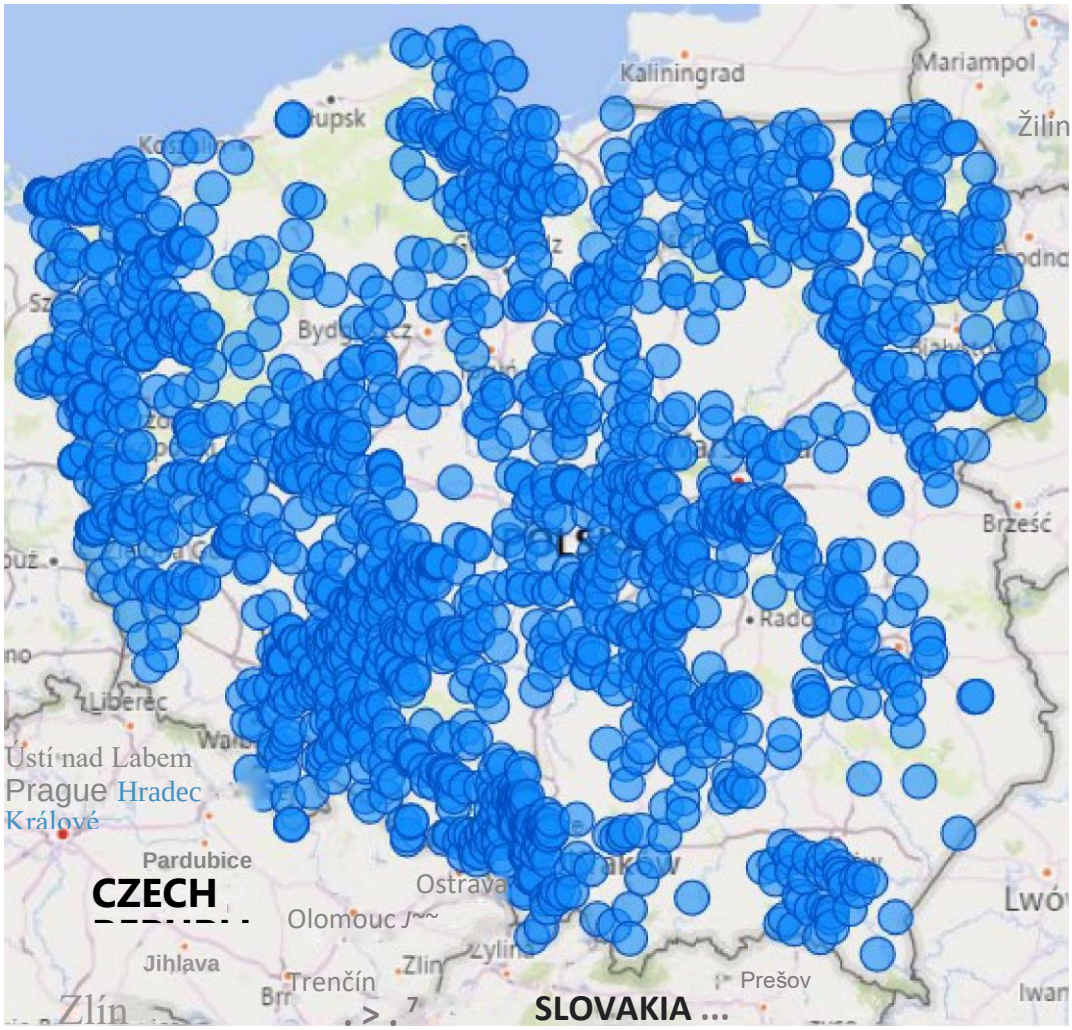
Table 67. Missions completed by Air Ambulance teams in the period from 1 January to 31 May 2020.

Province	Number of missions
Dolnośląskie	159
Kujawsko-Pomorskie	84
Lubelskie	49
Lubuskie	103
Łódzkie	151
Małopolskie	21
Mazowieckie	115
Opolskie	71
Podkarpackie	45
Podlaskie	144
Pomorskie	95
Śląskie	133
Świętokrzyskie	73
Warmińsko-Mazurskie	154
Wielkopolskie	186
Zachodniopomorskie	204
IN TOTAL	**1,786**

Source: Ministry of Health study based on data from CSS EMS

HEMS teams completed missions all over the country. The graphical representation of the places of incidents clearly indicates the areas where there was a higher number of such calls.

Figure 236. Incident locations of missions completed by Air Ambulance teams in the period from 1 January to 31 May 2020.



Source: Ministry of Health study based on data from CSS EMS

11.3. Emergency Departments

ED is an organisational unit of the hospital and the EMS system, established to provide health care services to a person in a medical emergency [229] (sudden deterioration of health or an accident). Both specialised and highly qualified medical staff and the equipment of the ward are subordinated to this task.

ED is a hospital ward where patients are hospitalised. Discharges are effected on a 24-hour basis, and the patient's stay may exceed 24 hours. The stay may

[229] A medical emergency consists in the sudden or foreseeable in a short time appearance of symptoms of deterioration of health, the direct consequence of which may be serious damage to the functions of the organism, bodily injury or loss of life.

by concluded by transfer for further hospitalisation to one of the departments of the parent hospital, transfer to another hospital or discharge home.

ED should not be perceived as a PHC or OSC unit.

Exemplary symptoms of a medical emergency that qualify for assistance in the ED are as follows: sudden cardiac arrest, loss of consciousness, impaired consciousness, convulsions, severe headache, stroke, limb paralysis, speech disorders, sudden acute chest pain, cardiac arrhythmia, increased dyspnoea, sudden acute abdominal pain, persistent vomiting, especially with the presence of blood, massive bleeding from the alimentary canal, acute allergic reaction, poisoning, e.g. with drugs, chemicals, gases, extensive burns, frostbite, heatstroke, hypothermia, electrocution, drowning, multiple injuries, extensive wounds, fractures, dislocations, traumatic amputation.

In the ED, the initial segregation and qualification of patients (so-called *triage*) is performed, as well as all activities to stabilise the patient's vital functions, and the direction of further diagnostic and therapeutic proceedings is determined. Medical practitioner on duty in the emergency department[230]:

- performs the preliminary diagnosis,
- decides on initiation of treatment to the extent necessary to stabilise vital functions of persons in the condition of health emergency,
- provides, if necessary, immediate sanitary transport to the nearest health care unit providing other health care services.

The activities of the hospital emergency department according to the Regulation of the Minister of Health of 27 June 2019 on the hospital emergency department (Dz. U. /Journal Of Laws/, item 1213) consist of:

- initial diagnosis,
- initiation of the treatment to the extent necessary to stabilise vital functions of persons in a condition of health emergency.

In simple terms, the structure of the ED can be described as follows:

- medical segregation and admission area, where registration and admission of the patient is conducted, as well as the selection of emergency treatment procedures, in addition to providing information to the families of the injured,
- temporary ward, where patients with less severe symptoms and those undergoing procedures under short general anaesthesia are placed under observation,

[230] According to Dz.U. /Journal Of Laws/ of 2019, item 1213, Art. 33 sec. 2 - Dz.U. /Journal Of Laws/ of 2020. item 882.

- a resuscitation and treatment theatre equipped with specialist medical equipment enabling the restoration and maintenance of basic life activities,
- consultation rooms where specialist medical consultations are provided,
- sanitary transport.

Patients in the ED

In 2018, approximately 3,500,000 patients were assisted in the ED and this was approximately 2% more than in 2016. By province, the highest increase in the number of patients was recorded in the Świętokrzyskie Province, almost 19%. At the same time, a decrease in the number of patients in EDs occurred in the Lubuskie and Warmińsko-Mazurskie provinces (about 3%), Małopolskie and Opolskie provinces (about 2.5%) and the Podkarpackie Province (about 0.5%).

The average age of patients was 43 years nationwide. The highest was noted in the Lubuskie Province (46) and the lowest in the Śląskie Province (38). It should be pointed out that nationwide about 23% of services were provided to patients over 65 years of age (the highest percentage in the Lubuskie Province - 27%) and 20% to patients below 18 years of age (the highest percentage in the Śląskie Province - almost 30%). The statistics in question reveal inadequate provision in this area dedicated to children and the problem of elderly people who report to the ED, often with trivial issues, instead of consulting a PHC or NHHC medical practitioner.
Moreover, 47.6% of services in EDs in Poland were provided to women, and this value differed by only a few % between particular provinces.

Table 68. Patients and services in the ED in 2018.

Province	Number of patients ['000]	The difference in the number of patients compared to 2016.	Number of consultations ['000]	The difference in the number of consultations compared to 2016.	Consultations from outside the province [%]	Number of consultations per 100,000 population	Share of consultations provided to women	Share of consultations provided to patients aged <18	Average patient age	Share of consultations provided to patients aged 18-65	Share of patients aged 65 and over
Dolnośląskie	258.1	6.24%	316.0	6.52%	6.9	10,892.6	48.0%	17.3%	44	58.1%	24.6%
Kujawsko-Pomorskie	229.9	2.96%	307.2	5.43%	5.1	14,784.6	48.9%	16.7%	44	60.7%	22.6%
Lubelskie	201.5	1.89%	256.2	2.87%	3.8	12,096.6	47.6%	21.3%	44	52.0%	26.7%
Lubuskie	75.9	-2.90%	91.0	-3.09%	7.4	8,968.1	46.5%	14.6%	46	57.9%	27.4%
Łódzkie	228.1	0.35%	276.6	-1.18%	4.1	11,216.7	46.9%	17.7%	43	58.3%	23.9%
Małopolskie	379.4	-2.53%	463.8	-3.04%	8.4	13,638.6	46.9%	21.6%	41	57.0%	21.4%
Mazowieckie	550.7	0.42%	698.7	0.37%	6.3	12,930.5	49.6%	20.5%	45	56.6%	22.9%
Opolskie	104.8	-2.48%	133.0	-2.45%	6	13,486.6	45.3%	20.2%	42	57.7%	22.1%
Podkarpackie	166.2	-0.48%	202.2	-0.08%	4.8	9,498.7	45.9%	21.3%	41	57.1%	21.6%
Podlaskie	121.9	7.05%	151.7	6.38%	4.9	12,837.9	48.3%	18.3%	43	58.5%	23.2%
Pomorskie	267.8	1.27%	338.8	0.93%	7.5	14,520.5	49.4%	18.5%	42	59.1%	22.3%
Śląskie	241.8	3.31%	289.5	3.55%	4.2	6,385.2	45.5%	28.5%	38	52.0%	19.5%
Świętokrzyskie	142.4	18.89%	180.0	21.46%	8.2	14,501.0	45.4%	21.1%	43	54.0%	24.9%
Warmińsko-Mazurskie	84.2	-2.73%	98.2	-2.86%	10.4	6,871.5	46.4%	15.0%	45	61.4%	23.6%
Wielkopolskie	290.7	0.10%	350.0	0.06%	5.7	10,017.9	45.5%	12.6%	45	62.8%	24.7%
Zachodniopomorskie	155.3	6.70%	198.2	7.39%	6.4	11,654.5	49.1%	23.0%	42	52.8%	24.2%
Poland	3 471.1	1.98%	4350.9	2.24%	6.2	11,320.8	47.6%	19.6%	43	57.2%	23.2%

Source: Ministry of Health study based on data from NFZ

Compared to 2016, the number of services in 6 provinces decreased, but no more than approx. 3%. The remaining provinces recorded a few percent increase (below 8%), with the exception of the Świętokrzyskie Province, where the number of services provided increased by about 21%.

About 75% of services were provided to patients from the same district where the ED was located (the highest percentage in Podkarpackie and Podlaskie provinces - about 82%), whereas 18% of services were provided to patients from outside the district but from the same province. The share of services provided to patients from outside the province only in the Warmińsko-Mazurskie Province exceeded 10%.

Compared to 2016, these statistics remained virtually unchanged.

Table 69. Regional distribution of patients in the ED in 2018.

Province	Share of patient advice from the same district [%]	Share of patient advice from outside the district but from the same province [%].	Share of patient advice from outside the province [%]
Dolnośląskie	75.5	17.6	6.9
Kujawsko-Pomorskie	78.6	16.4	5.1
Lubelskie	80.6	15.7	3.8
Lubuskie	77.6	15	7.4
Łódzkie	78.1	18.1	4.1
Małopolskie	78.2	13.4	8.4
Mazowieckie	71.5	22.2	6.3
Opolskie	76.8	17.2	6
Podkarpackie	81.9	13.3	4.8
Podlaskie	82	13.4	4.9
Pomorskie	70.4	22.1	7.5
Śląskie	67.8	28	4.2
Świętokrzyskie	78	13.7	8.2
Warmińsko-Mazurskie	76.1	13.5	10.4
Wielkopolskie	81.3	13	5.7
Zachodniopomorskie	68.3	25.3	6.4
Poland	75.8	18.1	6.2
Poland in 2016	76.3	17.5	6.3

Source: Ministry of Health study based on data from NFZ

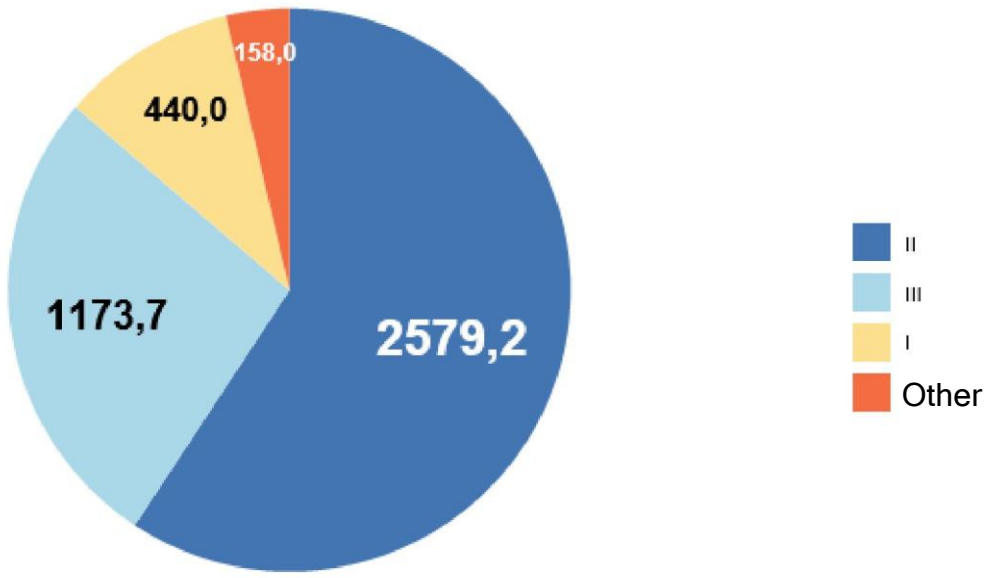
Services provided in the ED

The analysis of service structure by product category is presented below. The services have been grouped based on the Regulation of the President of the NFZ No. 69/2016/DSM[231]. The following categories were listed:

[231] https://www.nfz.gov.pl/zarzadzenia-prezesa/zarzadzenia-prezesa-nfz/zarzadzenie-nr-692016dsm,6512.htmlhttps://www.nfz.gov.pl/zarzadzenia-prezesa/zarzadzenia-prezesa-nfz/zarzadzenie-nr-692016dsm,6512.html, [accessed 01.08.2021]

- Category I - Patient assessment (triage), basic diagnostics (laboratory tests - basic package, ECG), medical consultations, nursing care, pharmacotherapy;
- Category II - Extended diagnostics (laboratory tests - additional package, review X-ray, ultrasound), consultation, small procedures;
- Category III - Extended diagnostic imaging, monitoring of basic vital signs, pharmacotherapy (intravenous, intraosseous), minor surgery on an outpatient basis, invasive testing (lumbar puncture, body cavity puncture), other additional testing;
- Category IV - Life support activities, extended diagnostics, administration of intravenous infusions, endoscopy, resuscitation (ALS with mechanical devices);
- Category V - One-day hospitalisation of a patient in the ED - monitoring of vital functions, extended diagnostic imaging (angiotomography, *trauma scan*, CT scan under general anaesthesia in children);
- Category VI - One-day hospitalisation of a patient at the IT station - monitoring of patient's vital functions according to the increased medical supervision card - constituting respectively Appendix no. 8 and 9 to the regulation, monitoring, artificial ventilation, pharmacotherapy, further diagnostics, *damage control*.

Figure 237. Product categories by number of services in the ED ['000] in 2018.



Source: Ministry of Health study based on data from NFZ

Compared to 2016, there was a decrease of 2.7% in the share of Cat. I services, 2.2% in Cat. II 0.5% in Cat. IV and a slight decrease in Cat. V and VI. At the same time, the share of Cat. III services increased by 4.1%.

The services provided in the ED were also analysed for specific groups of diagnoses according to the ICD-10. The largest number of services was reported in the following groups:

- limb injuries,
- functional disorders of the upper gastrointestinal tract,
- craniocerebral injuries,
- symptoms, disease features and abnormal test results,
- health care contacts (research),
- foreign body.

In the country, most services, about 27%, were related to limb injuries (in Wielkopolskie Province almost 33%). On the other hand, craniocerebral injuries (usually resulting from accidents) accounted for 7.5% of services (almost 9% in Dolnośląskie and Warmińsko-Mazurskie provinces). It should be pointed out that in this regard, there were no significant differences when compared to 2016.

Table 70. The structure of services by diagnosis group in the ED in 2018.

Province	Number of consultations ['000]	Limb injuries [%].	Functional disorders of the upper gastrointestinal tract [%]	Craniocerebral injuries [%].	Symptoms, disease features and abnormal test results [%]	Health care contacts (research) [%]	Foreign body [%]	Other diagnosis groups [%]
Dolnośląskie	316.02	24.8	7.7	8.9	6.1	4.4	3.2	45
Kujawsko-Pomorskie	307.19	23.2	7.2	5.9	5.7	5.2	3.2	50
Lubelskie	256.16	26.3	10	7.4	8.3	1	1.7	45.4
Lubuskie	90.99	30.9	7.3	7.4	6.5	2	0.4	45.5
Łódzkie	276.64	30.3	6.6	7.5	5.8	1.4	2.4	46.2
Małopolskie	463.79	32.5	9.1	7.8	7.1	3.2	1.5	38.9
Mazowieckie	698.69	24.7	8	7.2	7.1	2	2.3	48.7
Opolskie	133.05	30.8	7.5	7.5	4.3	5.1	3.4	41.4
Podkarpackie	202.23	31.2	8.7	8	6.6	3.7	2	39.9
Podlaskie	151.68	24.2	9	8.2	7.4	1.4	3	47.1

Pomorskie	338.84	24	9.5	7.2	7.6	2.8	2.4	46.6
Śląskie	289.48	26.5	6.6	8.3	7.5	6.2	3.3	41.6
Świętokrzyskie	180.04	25	9.2	7.7	7.8	1.5	3.6	45.1
Warmińsko-Mazurskie	98.19	30.1	7	8.9	6.7	0.6	3.3	43.4
Wielkopolskie	350.02	32.8	6.5	7.8	6	3	2.6	41.3
Zachodniopomorskie	198.25	24.5	8	5.9	7.9	1.5	1.4	50.8
Poland	4,350.91	27.3	8	7.5	6.8	2.9	2.5	45

Source: Ministry of Health study based on data from NFZ

Listed below are the 3 most common diagnoses that are included in the "other diagnosis groups" in the table above.

Table 71. The structure of the most common services from other diagnosis groups in the ED in 2018.

Province	Diagnosis	Share [%]
Dolnośląskie	Ocular andexa and orbit disorders	3.63
	Hypertension	2.22
	Atrial fibrillation and flutter	1.65
Kujawsko-Pomorskie	Slight pregnancy pathology	2.87
	Ocular andexa and orbit disorders	2.79
	Oral and pharyngeal diseases	2.13
Lubelskie	Hypertension	3.42
	Atrial fibrillation and flutter	3.29
	Urolithiasis	1.61
Lubuskie	Hypertension	2.58
	Atrial fibrillation and flutter	2.29
	Ischaemic heart disease	1.94
Łódzkie	Ocular andexa and orbit disorders	3.37
	Hypertension	2.09
	Chest injuries	1.81

Małopolskie	Hypertension	1.92
	Chest injuries	1.76
	Urolithiasis	1.39
Mazowieckie	Slight pregnancy pathology	2.14
	Ocular andexa and orbit disorders	2.13
	Hypertension	2.05
Opolskie	Ocular andexa and orbit disorders	3.15
	Hypertension	2.47
	Chest injuries	1.66
Podkarpackie	Hypertension	2.64
	Chest injuries	1.69
	Atrial fibrillation and flutter	1.47
Podlaskie	Atrial fibrillation and flutter	2.40
	Hypertension	2.37
	Ocular andexa and orbit disorders	2.00
Pomorskie	Slight pregnancy pathology	3.19
	Hypertension	2.19
	Atrial fibrillation and flutter	1.83
Śląskie	Other	4.84
	Ocular andexa and orbit disorders	2.18
	Hypertension	1.95
Świętokrzyskie	Hypertension	3.42
	Ocular andexa and orbit disorders	2.28
	Other eye and eye area diseases	2.27
Warmińsko-Mazurskie	Ocular andexa and orbit disorders	3.69

	Hypertension	2.16
	Atrial fibrillation and flutter	2.00
Wielkopolskie	Hypertension	1.83
	Atrial fibrillation and flutter	1.69
	Chest injuries	1.55
Zachodniopomorskie	Hypertension	2.25
	Ear and mastoid diseases	2.16
	Spinal diseases	1.80

Source: Ministry of Health study based on data from NFZ

The analysis of the diagnosis groups indicates that most of these services should be provided not in the ED but an appropriate OSC, PHC or NHHC outpatient clinic.

In 2018, according to the data, approximately 0.3% of services in the ED ended in the death of the patient, and this was 0.1% higher than in 2016. On the other hand, 7.1% of services resulted in a transfer of the patient to a hospital ward (transfer to a ward is understood here as the patient's appearance in a hospital ward of any hospital within 24 hours from the ED visit). Compared to 2016, it was more by 0.3%.

Table 72. Deaths in the ED and hospital ward transfers in 2018.

Province	Number of consultations ['000]	Share of deaths in the ED [%]	Hospital ward transfers [%]
Dolnośląskie	316	0.6	9.4
Kujawsko-Pomorskie	307.2	0.1	6.9
Lubelskie	256.2	0.3	9.0
Lubuskie	91	0.5	12.1
Łódzkie	276.6	0.1	7.1
Małopolskie	463.8	0.3	5.8
Mazowieckie	698.7	0.2	6.3
Opolskie	133	0.2	7.7
Podkarpackie	202.2	0.1	6.4
Podlaskie	151.7	0.2	7.4
Pomorskie	338.8	0.2	4.6
Śląskie	289.5	0.2	5.3
Świętokrzyskie	180	0.2	5.4
Warmińsko-Mazurskie	98.2	0.2	5.5
Wielkopolskie	350	0.9	11.9
Zachodniopomorskie	198.2	0.1	5.6
Poland	4,350.90	0.3	7.1
Poland in 2016	4,253.40	0.2	6.8

Source: Ministry of Health study based on data from NFZ

Providers with an ED

In 2018, there were 229 providers with EDs. Compared to 2016, it was 10 EDs more. The largest number of providers operated in Mazowieckie Province - 30, and the smallest in Opolskie Province - 7.

Table 73. Providers with an ED in 2018

Province	Number of providers	Average number of patients per provider ['000]	Average number of services per provider ['000]	Difference in the number of providers compared to 2016
Dolnośląskie	16	16.13	19.75	1
Kujawsko-Pomorskie	10	22.99	30.72	0
Lubelskie	16	12.59	16.01	0
Lubuskie	8	9.49	11.38	0
Łódzkie	18	12.67	15.37	1
Małopolskie	21	18.07	22.09	0
Mazowieckie	30	18.36	23.29	1
Opolskie	7	14.97	19.00	0
Podkarpackie	13	12.78	15.55	0
Podlaskie	11	11.08	13.79	2
Pomorskie	12	22.32	28.23	1
Śląskie	13	18.60	22.27	1
Świętokrzyskie	10	14.24	18.00	1
Warmińsko-Mazurskie	11	7.65	8.93	0
Wielkopolskie	24	12.11	14.58	0
Zachodniopomorskie	9	17.26	22.02	2
Poland	229	15.16	19.00	10

Source: Ministry of Health study based on data from NFZ

Providers were also analysed in terms of number of inpatient cares, number of inpatient cares per day, number of open days, and whether they had a neurology, cardiology, and orthopaedic ward. Only a ward that had at least one patient in 2018 was considered an operating ward.

11.4. Paediatric ED

Patients in a paediatric ED

In 2018, approximately 200,000 patients were treated in the ED for children. The average age was about 8 years (except for the Zachodniopomorskie Province, where there were some cases of providing services to adults). The low percentage of services provided to patients over 18 in other provinces can be explained by the fact that the services were provided to patients who have just reached the legal age.

Compared to 2016, in 2018, the number of patients increased by 42,000. The average patient age remained similar, with 98% of services being provided to patients under 18 years of age. At the same time, in 2016, not even one provider reported providing services to patients who are over 65 years of age.

What is puzzling is the high proportion of services provided to patients over 65 years of age who should not be placed in a paediatric ED in the Zachodniopomorskie Province. At the same time, it cannot be ruled out that the occurrence is due to misreporting.

Treatment in the paediatric ED was mainly provided to patients from the district and the province. The share of services for patients from outside the province oscillated below 5%. Only in the Warmińsko-Mazurskie Province it amounted to slightly more than 7%, which can be explained by the holiday season.

These statistics differed only slightly from those reported in 2016.

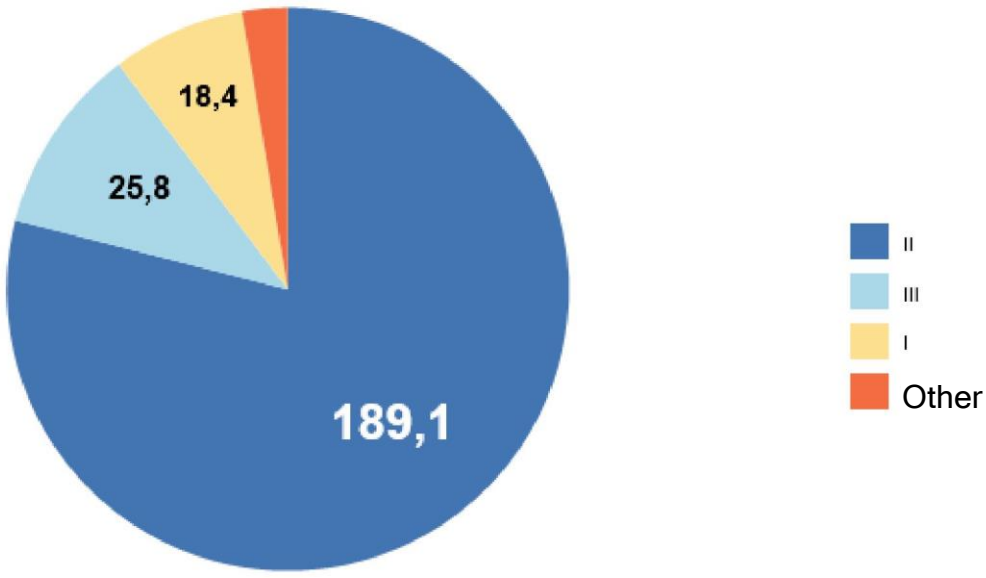
Services provided in a paediatric ED

The analysis of service structure by product category is presented below. The services have been grouped based on the Regulation of the President of the NFZ No. 69/2016/DSM[232]. The following categories were listed:

[232] the Regulation of the President of the National Health Fund No. 69/2016/DSM of 30 June 2016 on defining the terms and conditions for the conclusion and performance of a contract for hospital treatment with regard to services provided in a hospital emergency department and in a hospital emergency room, https://www.nfz.gov.pl/zarzadzenia-prezesa/zarzadzenia-prezesa-nfz/zarzadzenie-nr-692016dsm,6512.html, [accessed 01.08.2021]

- Category I - Patient assessment (triage), basic diagnostics (laboratory tests - basic package, ECG), medical consultations, nursing care, pharmacotherapy;
- Category II - Extended diagnostics (laboratory tests - additional package, review X-ray, ultrasound), consultation, small procedures;
- Category III - Extended diagnostic imaging, monitoring of basic vital signs, pharmacotherapy (intravenous, intraosseous), minor surgery on an outpatient basis, invasive testing (lumbar puncture, body cavity puncture), other additional testing;
- Category IV - Life support activities, extended diagnostics, administration of intravenous infusions, endoscopy, resuscitation (ALS with mechanical devices);
- Category V - One-day hospitalisation of a patient in the ED - monitoring of vital functions, extended diagnostic imaging (angiotomography, trauma scan, CT scan under general anaesthesia in children);
- Category VI - One-day hospitalisation of a patient at the IT station - monitoring of patient's vital functions according to the increased medical supervision card - constituting respectively Appendix no. 8 and 9 to the regulation, monitoring, artificial ventilation, pharmacotherapy, further diagnostics, damage control.

Figure 238. Product categories by number of services in paediatric ED ['000] in 2018.



Source: Ministry of Health study based on data from NFZ

In 2018, compared to 2016, there was a decrease in the share of products from cat. I and III by approx. 3% and a slight decrease in cat. IV. At the same time, there was an increase in the share of products from cat. III by approx. 3% and a slight increase in cat. V and VI (less than 1%).

The services provided in the paediatric ED were also analysed for specific groups of diagnoses according to the ICD-10. The largest number of services was reported in the following groups:

- limb injuries,
- craniocerebral injuries,
- functional disorders of the upper gastrointestinal tract,
- symptoms, disease features and abnormal test results,
- health care contacts (research),
- ear and mastoid diseases.

Nationally, about 30% of the services provided were related to limb injuries (in the Warmińsko-Mazurskie Province much higher than the national average - 36.4%). 13.5% of services were related to craniocerebral injuries (almost 16% in the Podlaskie Province and 16.5% in the Mazowieckie Province). This shows that about 43% of services were provided to patients who came to the ED due to an accident or injury.

Listed below are the 3 most common diagnoses that are included in the "other diagnosis groups" in the table above.

The analysis of the above groups of diagnoses indicates that most of these services should be provided not in the ED but an appropriate OSC or PHC outpatient clinic.

On average nationwide, approx. 6.6% of services ultimately ended with the patient being transferred to a hospital ward. A much higher value was recorded only in the Mazowieckie Province - almost 24%.

Providers with a paediatric ED

In 2018, only 10 providers had a paediatric ED. Compared to 2016, the number increased by two wards - one each in the Mazowieckie and Zachodniopomorskie provinces. As for the number of benefits provided, it increased by more than 48,000.

Providers were also analysed for the number of stays, number of stays per day, number of open days, the existence of a paediatric neurology ward, paediatric cardiology ward and paediatric orthopaedics ward. Only a ward that had at least one patient in 2018 was considered an operating ward.

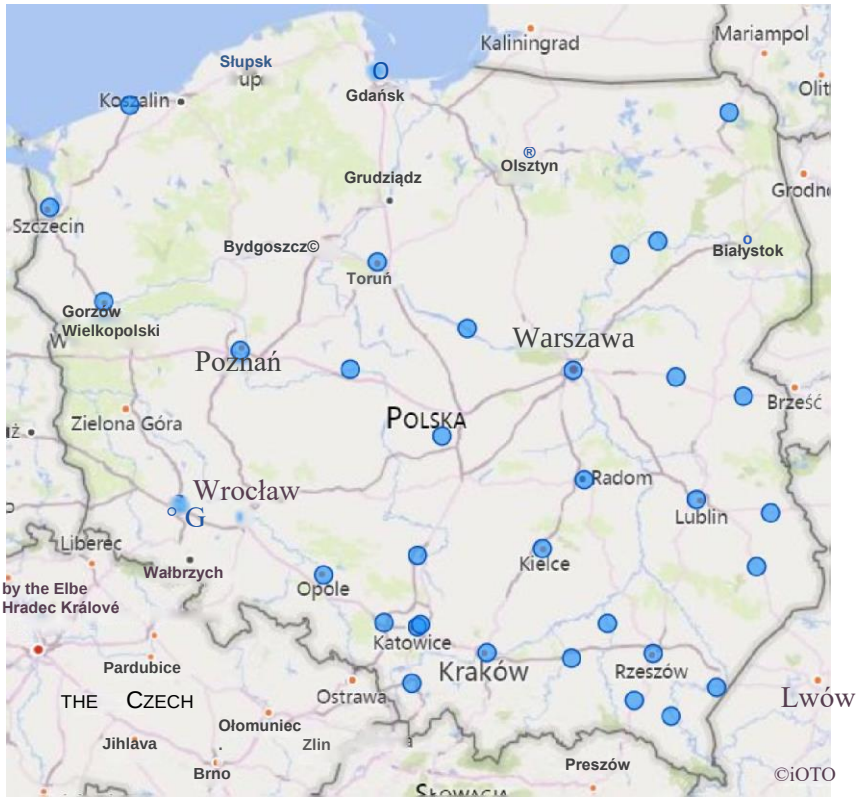
11.5. Medical dispatch centres

The medical dispatch centre is where 999 calls are received, 112 calls are transferred, and emergency rescue teams are dispatched to specific incidents.

The number of medical dispatch centres is directly correlated to the number of so-called operational regions, into which each province has been divided - for each operational region, there is one dispatch centre. It should be noted that due to the specificity of individual provinces, some of them are divided into more than 1 operational region.

In 2019, 39 medical dispatch centres were in operation. One dispatch centre functioning in the Lubuskie, Łódzkie, Opolskie, Świętokrzyskie and Warmińsko-Mazurskie provinces one dispatch centre, two dispatch centres in the Dolnośląskie, Kujawsko-Pomorskie, Małopolskie, Pomorskie, Wielkopolskie, Zachodniopomorskie, three in the Podlaskie Province, four in the Lubelskie Province, while in the Mazowieckie, Podkarpackie and Śląskie provinces there were 5 medical dispatch centres each.

Figure 239. Distribution of the medical dispatch centres in 2019.



Source: Ministry of Health study based on data from CSS EMS

11.6. Conclusions

The EMS system, which includes the ERT and ED, is a specific branch of health services. It is intended for people who find themselves in a state of life or health

emergency. However, especially in the case of the ED, it is not allowed to deny treatment to anyone who comes to get it. Therefore, there is a relatively large number of cases where people who should be treated in OSC, PHC or NHHC go to the ED and ERT to get it.

For services provided to patients in a medical emergency, the time it takes for help to reach the patient is essential. Therefore, for the analysis of the ERT, the time of arrival at the scene of the incident was taken into account, and it was also checked against compliance with the provisions of the Act of 8 September 2006 on State Emergency Medical Services.

At the same time, due to the type of services, there is no information about waiting times (queues) in the ED data reported by providers to the payer. However, it is important to assume that the assistance should be provided as soon as possible. There are widespread instances of waiting in the ED for several hours or more, but there is no way to verify this based on standard reporting data.

11.7. Health care system challenges

There are no significant differences in the type of incidents (reason for call/diagnosis) based on the type of ERT dispatched. Both S and P teams are dispatched to the same calls.

In cities with over 10,000 inhabitants, ambulances, in most cases, arrive at the patient's location within the statutory time frame. You can see the problem in incidents outside of cities with over 10,000 inhabitants - in some provinces approx. 20% of dispatches exceed the time frame.

ED services were mainly provided to patients from the same district (nationally approx. 76%, the highest number of services in the Lubelskie, Podkarpackie and Wielkopolskie provinces – over 80%). Patients received assistance outside their district, only in the Śląskie Province (one in three on average) and the Wielkopolskie Province (one in four), which indicate slightly less availability than in other provinces.

On average, 20% of ED services were provided to children, meaning one in five patients was under 18 years of age.

The ED often replaces PHC and OSC clinics – patients who are admitted suffer from chronic diseases (e.g. hypertension – approx. 2 - 3.5% in provinces, functional gastrointestinal diseases - approx. 8% nationwide) or non-life-threating diseases, which is a significant problem given the fact that the number of ED services is increasing compared to previous years and also increases waiting time.

11.8. Recommended lines of actions

- → A low number of paediatric EDs is a significant problem. On average, one in five ED patients is under 18. Due to the different nature of treating children, young emergency patients should have access to relevant specialists. The goal should be to have at least one facility with a paediatric ED in each province;
- → mechanisms should be pursued to support the conversion of the hospital's Emergency Room to an ED. Twelve new EDs is not much over two years;
- → taking into account the services provided in EDs, efforts should be made to support the services of PHC, OSC and NHHC to relieve the EDs from providing services to patients who are not in a medical emergency. In this context, it is also advisable to educate patients about where they should look for help. This is true for both ED and ER calls;
- → In the case of the implementation of tasks in the field of emergency rescue services, a significant problem is the "collection" of the medical staff allowing for duty of a specialised team (with a medical practitioner). It is advisable to deepen the analysis in this area and to develop a model that allows to solve this problem (e.g. The ER comprises of paramedics only, and a medical practitioner arrives if necessary). It is also advisable to verify if the medical practitioner's presence was necessary;
- → A long arrival time of an ambulance outside a city with a population of over 10,000 is a big problem. Provincial governors should modify the locations of the ER to better cover operational areas;
- → it also seems necessary to pay attention to the arrival time in holiday areas, where there is a clear increase in the number of incidents during the summer months, along with an increase in traffic and it seems necessary to find a systemic solution in the form of motorcycle ambulances. A paramedic on a motorcycle can arrive faster and perform triage, provide first aid, and even handle the entire incident area when there is no need to transport the patient to the hospital;
- → it is also advisable to introduce widespread education and training in first aid, at least in the area of basic cardiopulmonary resuscitation.

  In sudden cardiac arrest, CPR performed by witnesses of the incident greatly increases the victim's chances of survival.

12. Medical staff

The medical staff is one of the most important resources of the health care system. The size and quality of the educated medical staff are some of the key factors determining the level of the health care system. The analysis involved staff of medical practitioners, dentists, nurses, midwives, and physiotherapists in individual regions of the country. It explored the issues of medical staff ageing and the number of professionally active individuals post-retirement. The demand for medical specialists reported by national consultants was also presented. Based on this and the estimated difference between medical specialists reaching retirement age and medical practitioners obtaining a specialist degree, the number of speciality places needed in 2020 was calculated. Forecasts concerning the nursing staff, obstetrics staff, and physiotherapist staff numbers in 5 and 10 years are also presented.

12.1. Medical practitioners

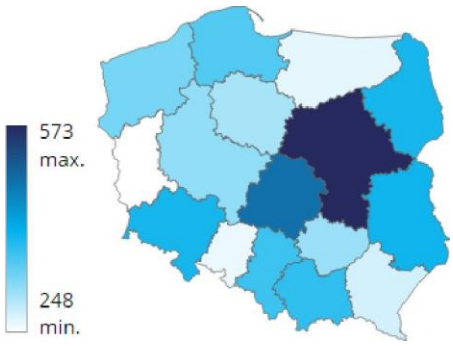
The total number of professionally active medical practitioners was 131,290 in 2019 (including 31,650 generalist medical practitioners and 99,640 medical specialists) Women constituted the bigger group among professionally active medical practitioners (76,160 vs. 55,130 men). The number of medical practitioners per 100,000 population in 2019 was 341.8.

The structure of the average number of medical practitioners per 100,000 population varied strongly between regions. The provinces for which the indicator reached the highest value are Mazowieckie (573) and Łódzkie (487). The lowest number of medical practitioners per 100,000 population was noted in Lubuskie (248), Opolskie (261) and Warmińsko-Mazurskie (265) provinces. This indicator was 131% higher in the Mazowieckie Province than in the Lubuskie Province. These values cannot be easily compared to other countries due to methodological differences in data collection. According to Eurostat and OECD data (they present the same values), in 2017 the Republic of Poland had 90,200 medical practitioners, including 15,900 generalist medical practitioners and 74,400 medical specialists This means that per 100,000 population, there were 41.89 generalist medical practitioners, which was the lowest score among the EU countries for which data are available (the highest score: Portugal - 262.87) and 195.86 medical specialists (the fifth lowest score in the EU, the highest score: Greece - 495.21)[233] [234].

[233] OECD, Health Workforce Statistic Database [accessed 23.06.2020]

[234] Eurostat, http://ec.europa.eu/eurostat/data/database [accessed 23.06.2020]

Figure 240. Number of medical practitioners per 100,000 population by province



Source: Ministry of Health study based on data from CRP, NFZ and GUS

Table 74. Number of medical practitioners, average age, average number of workplaces

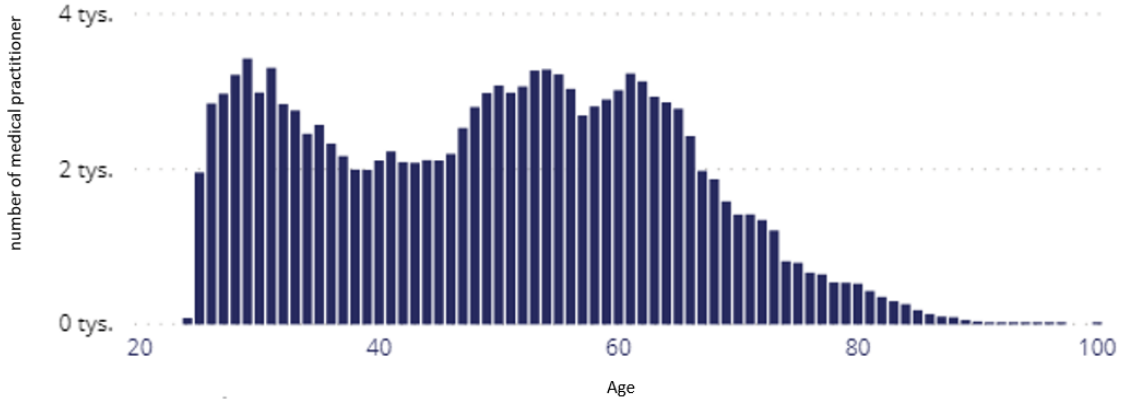
Province	Number of medical practitioners	per 100,000 population	Average medical practitioner age	Average number of workplaces
Dolnośląskie	11,490	396.2	49	1.592167
Kujawsko-Pomorskie	6,309	304.4	49	1.43858
Lubelskie	8,435	400.1	49	1.753883
Lubuskie	2,509	248.0	51	1.396971
Łódzkie	11,960	487.2	49	1.687542
Małopolskie	12,937	379.3	48	1.650846
Mazowieckie	31,090	573.3	49	1.746703
Opolskie	2,562	260.7	51	1.493365
Podkarpackie	5,873	276.1	49	1.600885
Podlaskie	4,666	396.0	49	1.645521
Pomorskie	8,383	357.6	47	1.576643
Śląskie	16,824	372.4	50	1.717071
Świętokrzyskie	3,844	311.5	50	1.71462
Warmińsko-Mazurskie	3,765	264.6	50	1.439309
Wielkopolskie	11,118	317.8	49	1.513132
Zachodniopomorskie	5,677	334.7	49	1.482473

Source: Ministry of Health study based on data from CRP, NFZ and GUS

In 2019, in the Republic of Poland, the average age of professionally active medical practitioners was 49.5 years. The proportion of professionally active medical practitioners of retirement age among all professionally active medical practitioners was 24%. This indicator reached the highest value in the Lubuskie Province (26%), while the lowest in the Pomorskie Province (19%). The high value of this indicator in the provinces may foreshadow staff shortages among medical practitioners in the near future.

In 2019, there was a noticeable increase in young medical practitioners compared to the number of medical practitioners aged 35-45. This trend when considered against the number of medical practitioners over 45 suggests that the issue of a decrease in the number of

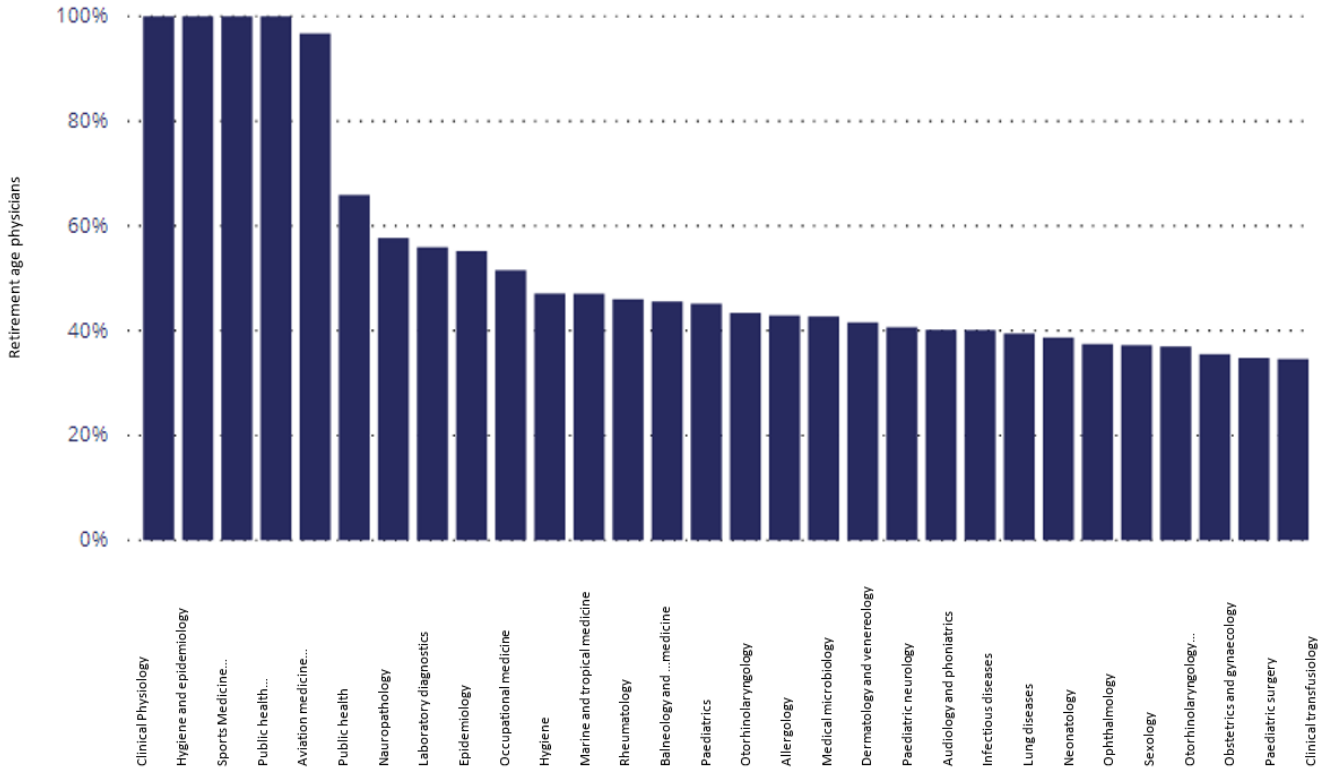
Figure 241. Age distribution of professionally active medical practitioners in Poland



Source: Ministry of Health study based on data from CRP, NFZ and GUS

The age distribution among medical practitioners varies between medical fields. The professionally active medical practitioners of retirement age represented 100% in the following fields clinical physiology, military hygiene and epidemiology, military sports medicine, and military public health. It is worth noting, however, that these were specialities with between 1 and 5 medical practitioners nationwide. Significant groups of retirement age medical practitioners were medical specialists in the fields of military aviation medicine (97%, 59 medical practitioners of retirement age), public health (66%, 1,001 medical practitioners of retirement age), neuropathology (58%, 15 medical practitioners of retirement age), clinical pathology (56%, 99 medical practitioners of retirement age), epidemiology (55%, 106 medical practitioners of retirement age), and occupational medicine (52%, 1,417 medical practitioners of retirement age).

Figure 242. Proportion of medical practitioners of retirement age in 2019

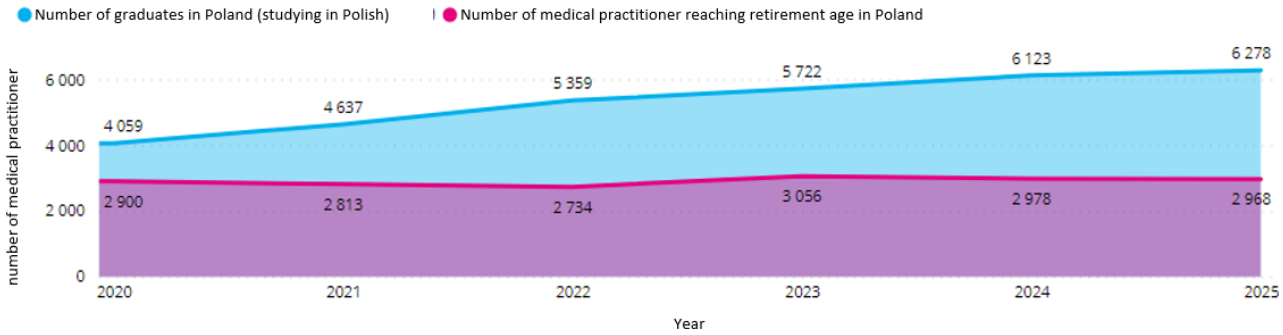


Training of medical practitioners

The number of potential medical graduates was estimated based on the admission limits established by the Minister of Health for 2012-2020. It was assumed that the number of graduates was equal to the admission limit set 6 years before.

The figure below shows the number of medical graduates (studying in Polish) and the number of medical practitioners nearing retirement age. The chart illustrates the substitutability of medical practitioners leaving the workforce. It can be observed that the balance of the number of medical practitioners, i.e. the difference between the number of medical graduates and the number of medical practitioners of retirement age, is clearly positive. This leads to the conclusion that the health care system is unlikely to face a problem of a decrease in the number of medical practitioners in the coming years.

Figure 243. Number of medical graduates and number of medical practitioners nearing retirement age



Source: Ministry of Health study based on data from CRP, NFZ and Regulations of the Minister of Health

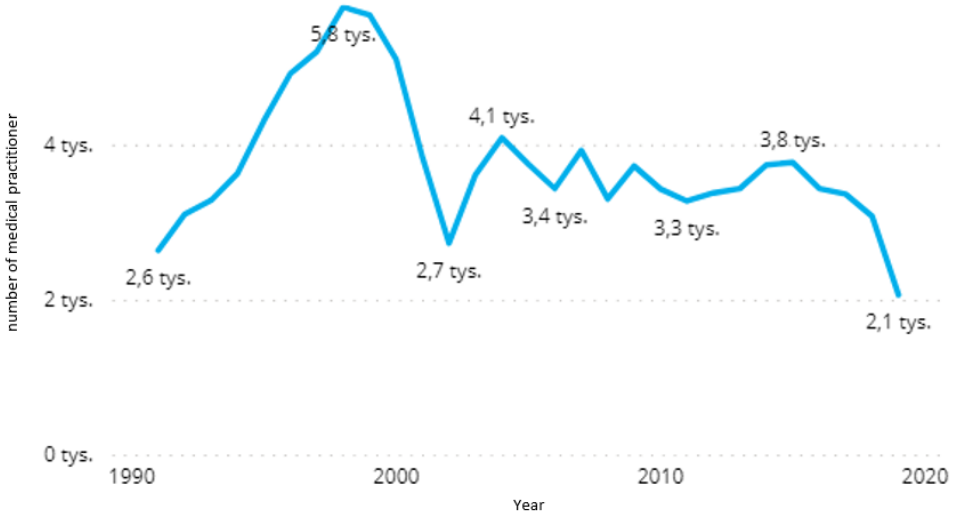
The distribution of medical students based on data from Statistics Poland shows a relatively comparable student structure from year to year. Medicine has been the most popular field in recent years, considering medical studies. Between 2014 and 2018, the average number of medical students (sum of all years and including foreigners) fluctuated around 29,000 while the number of students per study year averaged between 4,485 and 5,674[235]. In 2019, the number of young medical practitioners for each year, in the 26-28 age range was between 2,848 and 3,217. These values are much lower than the expected number of graduates, which may be due to the inclusion of foreign students and students who did not graduate in the latter. According to an ELA report, 5 years after graduation, approx. 93% (excluding foreigners) of medical graduates (due to the methodology used, this value may actually be higher) work in the profession, which indicates that very few of them do not enter the profession after graduation[236].

Medical specialists can be trained under resident and non-resident programmes. The number of medical practitioners obtaining specialist degrees has grown rapidly between 1991 and 1998. In 1998, there was a decline that continued through 2002. The subsequent years saw relatively small fluctuations. Starting from 2015, there was a noticeable downward trend in the number of new medical specialists entering the market.

[235] Szkolnictwo wyższe w latach 2013-2018, Bazy danych [Higher education in the years 2013-2018], Databases, Statistics Poland, https://stat.gov.pl/obszary- thematic/education/education/, [accessed 01.06.2020]

[236] Pracowity jak młody lekarz - najszybszy sukces na rynku pracy [As busy as a young medical practitioner - the fastest success in the job market], ELA, https://ela.nauka.gov.pl/pl/labor- market/working like a young medical practitioner, [accessed 21.09.2020]

Figure 244. Number of medical practitioners obtaining a specialist degree in a given year (new medical specialists) from among professionally active medical practitioners in 2019 (the chart does not include information about medical practitioners who obtained their specialist degrees in a given year and left the workforce before 31 December 2019; such medical

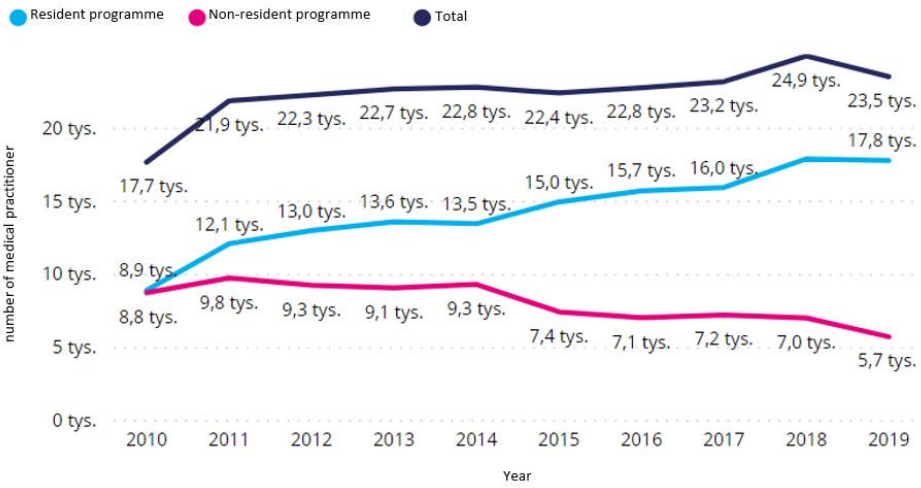


Source: Ministry of Health study based on data from CRP and NFZ

From 2010 to 2018, there was a clear upward trend in the number of medical practitioners training under resident programmes and a downward trend in non-resident training programmes. In 2019, there was a visible decrease in the number of medical practitioners undergoing speciality training, which was mainly due to fewer medical practitioners training under non-resident programmes.

Assuming that speciality training lasts 6-7 years, the annual number of people obtaining a specialist degree should be approx. 3-4,000. The decrease seen between 2015 and 2020 as well as the number of new medical specialists being significantly lower than 4,000, may have been related to slower speciality training completion rate, the pass rate of speciality exams, and a greater proportion of medical practitioners undergoing speciality training with a minimum duration of more than 6 years.

Figure 245. Medical practitioners in speciality training

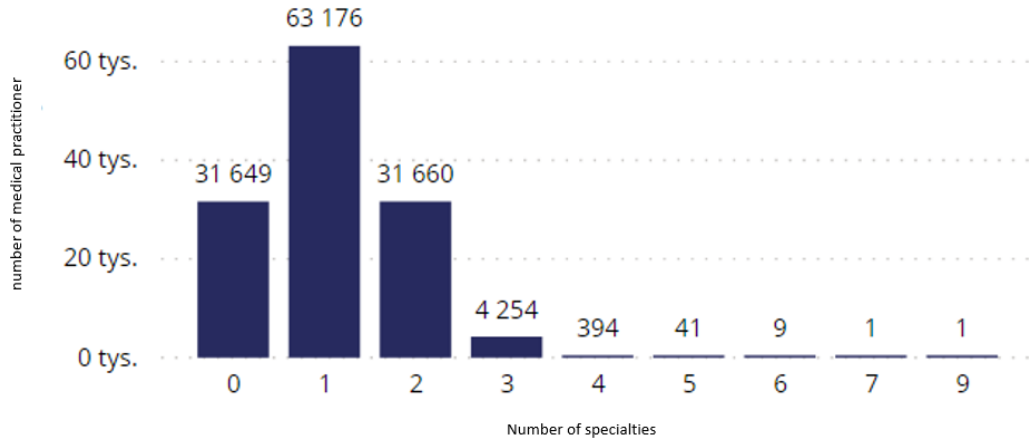


Source: Ministry of Health study based on data from the Ministry of Health

Specialities of medical practitioners

Obtaining a specialist degree allows a medical practitioner to perform a wider range of medical tasks, such as treating patients with selected diseases, performing procedures and complex examinations. A medical practitioner with a specialist degree is a medical practitioner who can treat the patient more broadly.

Figure 246. Number of medical practitioners by the number of specialities obtained

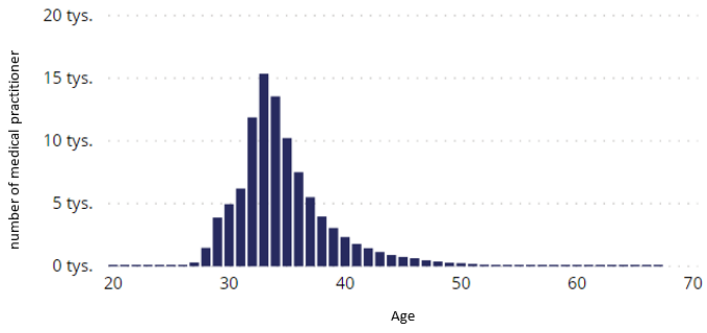


Source: Ministry of Health study based on data from CRP and NFZ

The number of specialities held illustrates the proportion of medical practitioners who can perform more advanced medical tasks. Medical practitioners with a single speciality formed the majority, as there were 63,200 of them, accounting for 48% of the total number of professionally active medical practitioners. The next two dominant groups were generalist medical practitioners - their number remained at 31,600 (24%), and medical practitioners with two specialities

- 31,700. (24%). There were 4,200 medical practitioners with three specialities, which accounted for 3% of active medical practitioners. It is worth mentioning that medical practitioners with several specialities usually also carry out teaching activities as academic teachers.

Figure 247. Number of medical practitioners by age at which they obtained the first speciality

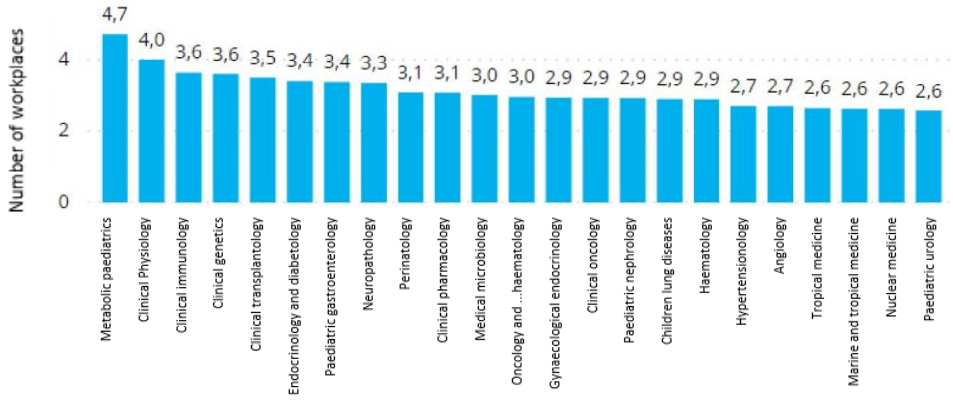


Source: Ministry of Health study based on data from CRP and NFZ

Another important aspect is the age at which medical practitioners obtained their medical speciality. The medical practitioners analysed usually obtained their first speciality in the 33-35 age range. Most medical practitioners earned their speciality degrees at 33 - 15,400. If medical practitioners graduated at 25, they obtained their speciality degree 8 years after they completed medical studies.

The medical practitioners worked in 1.9 places on average. On average, the medical specialists in the following fields worked in the highest number of places: metabolic paediatrics (4.7 workplaces), clinical physiology (4 workplaces), and clinical immunology (3.6

Figure 248. Average number of medical practitioner jobs in 2019



Source: Ministry of Health study based on data from CRP and NFZ

The problem of the decreasing number of medical specialists was analysed by calculating the number of professionally active medical specialists who will reach retirement age (which is not the same as leaving the workforce) within 6 years. It has been assumed that medical practitioners in speciality training will obtain a specialist degree within 6 years. The table below shows that this may particularly affect the field of internal medicine, in which the number of medical practitioners nearing retirement age was nearly double the number of medical practitioners in speciality training. In the future, a significant problem connected to the smaller number of medical practitioners may also occur in medical fields such as paediatrics, general surgery, pulmonary diseases, and obstetrics and gynaecology. Most likely to experience a successive exchange of peri-retirement age medical practitioners are specialities such as radiology and medical imaging, psychiatry, cardiology, and orthopaedics and traumatology of the locomotor system. In these fields, the number of medical practitioners in speciality training significantly exceeded the number of peri-retirement age medical practitioners. However, this does not mean that there is a lack of demand for new medical specialists in these fields.

Table 75. Difference between medical specialists nearing retirement age and medical practitioners obtaining a speciality degree (information on medical practitioners nearing retirement age was compiled from CRP data - as of 31 December 2019; data on medical practitioners in speciality training comes from the resources of the Ministry of Health - as of 20 March 2020)

Specialisation	Medical practitioners who will reach retirement age within 6 years (by 2024)	Medical practitioners in speciality training	Difference
Allergology	331	157	174
Anaesthesiology and Intensive Care	1,062	1,409	-347
Angiology	44	49	-5
Audiology and Phoniatrics	110	57	53
Balneology and Physical Medicine	103	87	16
Paediatric Surgery	237	153	84
Cardiothoracic Surgery	53	46	7
Vascular Surgery	95	156	-61
General Surgery	1,715	991	724
Oncological Surgery	148	269	-121
Plastic Surgery	30	73	-43
Lung Diseases	668	226	442
Paediatric Lung Diseases	14	68	-54
Internal diseases	4,846	2,536	2,310
Infectious Diseases	205	126	79
Dermatology and Venereology	447	421	26
Diabetology	268	179	89
Laboratory diagnostics	14	2	12
Endocrinology	312	277	35
Gynaecological Endocrinology and Reproductive Medicine	8	38	-30
Paediatric Endocrinology and	17	81	-64
Epidemiology	38	30	8
Clinical Pharmacology	16	23	-7
Clinical Physiology	0		0
Gastroenterology	163	209	-46
Paediatric Gastroenterology	10	63	-53
Clinical Genetics	14	49	-35
Geriatrics	83	134	-51
Gynaecological Oncology	38	95	-57

Haematology	66	186	-120
Hygiene	38		38
Military Hygiene and Epidemiology	0		0
Hypertensiology	64	33	31
Clinical Immunology	19	53	-34
Intensive care	0	9	-9
Cardiac Surgery	41	73	-32
Cardiology	578	1,250	-672
Paediatric Cardiology	38	71	-33
Aviation Medicine	51	17	34
Military Aviation Medicine	4		4
Military Maritime Medicine	1		1
Nuclear Medicine	53	60	-7
Palliative care	72	134	-62
Occupational Medicine	393	217	176
Emergency Medicine	167	414	-247
Family Medicine	1,940	1,918	22
Forensic Medicine	19	24	-5
(Civil) Sports Medicine	55		55
Military Sports Medicine	0		0
Tropical Medicine	10		10
Military Maritime and Tropical Medicine	24		24
Medical Microbiology	9	18	-9
Nephrology	241	176	65
Paediatric Nephrology	18	29	-11
Neonatology	358	313	45
Neurosurgery	92	139	-47
Neurology	630	669	-39
Paediatric Neurology	108	111	-3
Neuropathology	4	12	-8
Military radiation protection	0		0
Ophthalmology	793	823	-30
Paediatric Oncology and Haematology	39	62	-23
Clinical Oncology	119	436	-317
Orthopaedics and Traumatology of the Musculoskeletal System	602	1,043	-441
Otorhinolaryngology	678	432	246
Paediatric Otorhinolaryngology	33	52	-19
Pathomorphology	115	136	-21
Medical pedagogy	0		0

Paediatrics	3,038	2,077	961
Metabolic Paediatrics	4	17	-13
Perinatology	14	62	-48
Obstetrics and Gynaecology	1,518	1,159	359
Psychiatry	417	1,037	-620
Paediatric Psychiatry	47	183	-136
Radiology and Medical Imaging	506	1,229	-723
Oncological Radiotherapy	115	141	-26
Medical Rehabilitation	332	241	91
Rheumatology	296	246	50
Sexology	34	30	4
Clinical Toxicology	12	11	1
Military toxicology	0		0
Clinical Transfusion Medicine	46	23	23
Clinical Transplantation Medicine	76	133	-57
Urology	244	386	-142
Paediatric Urology	17	12	5
Public Health	243	63	180
Military Public Health	0		0

Source: Ministry of Health study based on data from CRP, NFZ, Ministry of Health

Recommendations of national consultants

The fields with the greatest shortage of medical specialists were identified by collecting data from national health care consultants on the demand for medical specialist staff. The greatest differences in the number of medical practitioners per 100,000 population between the recommended value and the value derived from CRL data (indicating a shortage) occurred in the following medical fields: internal medicine (difference per 100,000 population - 37), family medicine (16), psychiatry (9.9), occupational medicine (6.9), and geriatrics (6.6). In some fields, according to CRP data and demand indicators estimated by national consultants, the number of professionally active medical practitioners exceeded the demand. These included otolaryngology (-6.8), general surgery (-6.6), endocrinology (-2.6), pulmonary diseases (-1.9) and rheumatology (-1.8).

Table 76. Recommendations of national consultants and CRP data

Specialisation	Number of medical practitioners	Indicator of the recommended number of medical practitioners per 100,000 population according to national consultants	Number of medical practitioners per 100,000 population	Difference between the recommended and actual number
Allergology	1,357	2.0	3.5	-1.5
Angiology	268	1.0	0.7	0.3
Audiology and Phoniatrics	361	3.0	0.9	2.1
Balneology and Physical Medicine	575	2.2	1.5	0.7
Paediatric Surgery	1,029	1.3	2.7	-1.4
Cardiothoracic Surgery	262	0.5	0.7	-0.2
Vascular Surgery	562	1.8	1.5	0.4
General Surgery	8,292	15.0	21.6	-6.6
Oncological Surgery	876	3.0	2.3	0.7
Lung Diseases	2,643	5.0	6.9	-1.9
Internal diseases	27,498	108.6	71.6	37.0
Diabetology	1,443	4.0	3.8	0.2
Laboratory diagnostics	177	0.9	0.5	0.5
Endocrinology	1,488	1.3	3.9	-2.6
Gynaecological Endocrinology and Reproductive Medicine	62	0.4	0.2	0.2
Paediatric Endocrinology and	101	0.9	0.3	0.6
Clinical Pharmacology	83	1.3	0.2	1.1
Clinical Genetics	126	0.7	0.3	0.3
Geriatrics	462	7.8	1.2	6.6
Haematology	496	2.5	1.3	1.2
Clinical Immunology	124	1.0	0.3	0.7
Intensive care	0	0.3		0.3
Cardiology	4,489	10.0	11.7	-1.7
Paediatric Cardiology	159	0.7	0.4	0.2
Nuclear Medicine	299	1.0	0.8	0.2
Palliative care	515	3.0	1.3	1.7
Occupational Medicine	2,749	14.1	7.2	6.9

Emergency Medicine	1,049	6.7	2.7	4.0
Family Medicine	10,859	44.3	28.3	16.0
Forensic Medicine	171	0.5	0.4	0.1
(Civil) Sports Medicine	284	0.8	0.7	0.0
Medical Microbiology	96	0.9	0.2	0.7
Nephrology	1,304	4.4	3.4	1.0
Paediatric Nephrology	97	0.6	0.3	0.3
Neurosurgery	582	1.0	1.5	-0.5
Neurology	4,127	10.6	10.7	-0.1
Paediatric Neurology	423	2.2	1.1	1.1
Neuropathology	26	0.1	0.1	0.0
Paediatric Oncology and Haematology	220	0.8	0.6	0.2
Clinical Oncology	957	3.1	2.5	0.6
Otorhinolaryngology	3,137	1.4	8.2	-6.8
Paediatric Otorhinolaryngology	192	0.6	0.5	0.1
Metabolic Paediatrics	24	0.2	0.1	0.1
Perinatology	88	0.5	0.2	0.3
Psychiatry	3,904	20.0	10.2	9.9
Paediatric Psychiatry	426	2.0	1.1	0.9
Radiology and Medical Imaging	3,522	10.8	9.2	1.6
Oncological Radiotherapy	761	3.0	2.0	1.0
Rheumatology	1,641	2.5	4.3	-1.8
Sexology	188	0.7	0.5	0.2
Clinical Toxicology	97	0.2	0.3	0.0
Clinical Transfusion Medicine	211	0.9	0.5	0.3
Transplantology	469	1.1	1.2	-0.1
Paediatric Urology	69	0.3	0.2	0.1

Source: Ministry of Health study based on data from CRP, NFZ, Ministry of Health

Differences between the recommended number of medical practitioners indicated by national consultants and the actual number of medical practitioners per 100,000 population varied regionally. In the case of internal medicine specialists, the greatest discrepancy was observed in Lubuskie (63.3) and Opolskie (53.0) provinces. On the other hand, in Mazowieckie (-19.8) and Łódzkie (-2.6) provinces, the indicator of professionally active medical practitioners had higher values than the indicator of the recommended number of medical practitioners according to national consultants.

Table 77. Demand for internal medicine specialists
by provinces based on the demand reported by national consultants.

Province	Number of medical practitioners	Indicator of the recommended number of medical practitioners per 100,000 population according to national consultants	Number of medical practitioners per 100,000 population	Difference between the recommended and actual number
Lubuskie	458	108.6	45.3	63.3
Opolskie	546	108.6	55.6	53.0
Warmińsko-Mazurskie	806	108.6	56.7	51.9
Podkarpackie	1,211	108.6	56.9	51.6
Kujawsko-Pomorskie	1,183	108.6	57.1	51.5
Zachodniopomorskie	1,011	108.6	59.6	49.0
Wielkopolskie	2,396	108.6	68.5	40.1
Pomorskie	1,636	108.6	69.8	38.8
Świętokrzyskie	862	108.6	69.9	38.7
Lubelskie	1,677	108.6	79.5	29.0
Śląskie	3,667	108.6	81.2	27.4
Małopolskie	2,776	108.6	81.4	27.2
Podlaskie	995	108.6	84.4	24.1
Dolnośląskie	2,452	108.6	84.5	24.0
Łódzkie	2,729	108.6	111.2	-2.6
Mazowieckie	6,962	108.6	128.4	-19.8

Source: Ministry of Health study based on data from CRP, NFZ, Ministry of Health

Speciality places

The number of speciality places needed in 2020 was estimated taking into account the differences between medical specialists nearing retirement age and medical practitioners obtaining a specialist degree as well as the needs reported by national consultants.

The difference between medical specialists reaching retirement age and medical practitioners obtaining a speciality degree can be reduced by creating speciality places in 2020 especially in the following fields: internal medicine (3,140), paediatrics (1,446) and general surgery (984). According to the needs reported by national consultants, the greatest staff shortages also occur in the fields of

internal medicine (shortage of 14,203 medical practitioners), family medicine (shortage of 6,142 medical practitioners) and psychiatry (shortage of 3,796 medical practitioners). Three specialities had the highest amount of speciality places needed to reduce the difference between medical specialists reaching retirement age and medical practitioners obtaining a specialist degree and of speciality places estimated based on the demand reported by national consultants, i.e. internal medicine (17,343), family medicine (6,552), and psychiatry (3,267).
It is worth noting that the deficit occupations thus identified do not always overlap with the medical fields indicated in the Regulation of the Minister of Health of 30 June 2020 on the definition of priority fields of medicine (Dz.U. /Journal of Laws/ item 1156). [237]

The demand for medical specialists was illustrated by an increase in health services. An average increase in health services of 1.5% [238] was set and an average annual increase in medical practitioner efficiency of 5% [239] was assumed. On the example of the fields with the highest total number of speciality places needed, it can be observed that optimising the working time of medical practitioners make a significant difference to the system. Under these assumptions, 917 fewer internal medicine specialists, 468 fewer paediatricians, and 362 fewer family medicine specialists are needed.

Medical practitioners working under contracts for the provision of health care services with the NFZ

In 2019, the public system employed 113,900 medical practitioners. They represented 87% of all working medical practitioners in the country and 89% of medical practitioners working in entities dedicated to treatment. The medical staff was most often employed for hospital treatment (76,600), PHC (36,100) and OSC (28,100). With regard to the type of unit in which medical practitioners work, a significant group of medical practitioners was employed in PHC outpatient clinics (32,600), admission rooms (17,400), EDs (14,500) and internal medicine wards (9,100).

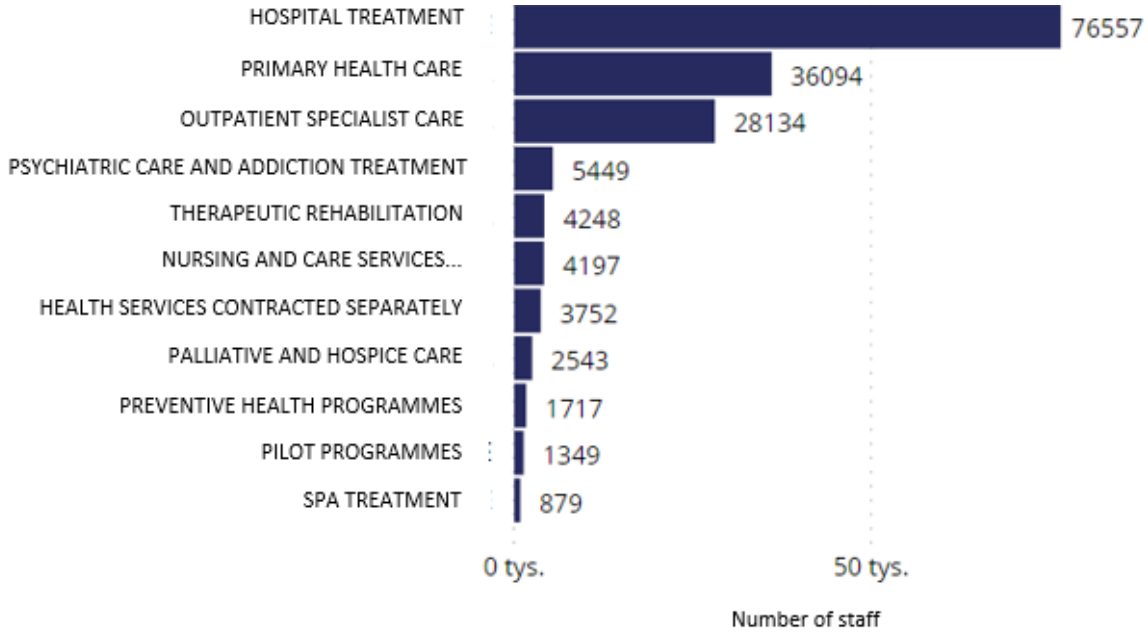
The number of available medical practitioners employed in health care units with NFZ contracts varied between regions: in the Mazowieckie Province (382) there were 43% more medical practitioners per 100,000 population than in the Lubuskie Province (268).

[237] Regulation of the Minister of Health of 30 June 2020 on the definition of priority fields of medicine (Dz.U. /Journal of Laws/ item 1156).

[238] This is an average of the increases in the number of services from 2016 to 2018.

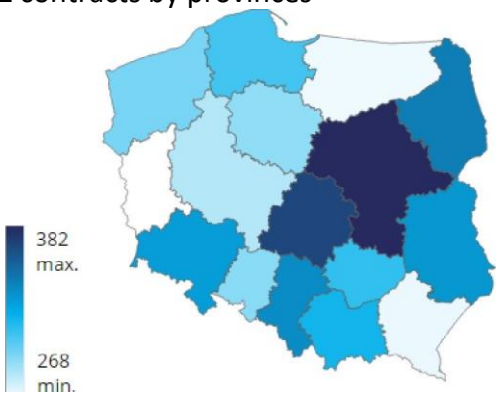
[239] Medical practitioners' working time can be optimised by relieving medical practitioners of tasks that do not require medical qualifications, e.g. filling some of the documentation. Optimising the working time of currently working medical practitioners, in addition to training new medical practitioners, is a potentially important

Figure 249. Number of medical practitioners by type of services contracted



Source: Ministry of Health study based on data from NFZ, CRP

Figure 250. Number of medical practitioners per 100,000 population that are employed in health care units with NFZ contracts by provinces



Source: Ministry of Health study based on data from NFZ and Statistics Poland CRP

Table 78. Number of medical practitioners employed in health care units with NFZ contracts by provinces

Province	Staff per 100,000 population	Staff size
Dolnośląskie	333.0	9,658
Kujawsko-Pomorskie	293.0	6,072
Lubelskie	335.6	7,075
Lubuskie	268.4	2,715
Łódzkie	369.6	9,074
Małopolskie	320.9	10,947
Mazowieckie	381.5	20,690
Opolskie	294.4	2,893
Podkarpackie	272.8	5,803
Podlaskie	346.5	4,083
Pomorskie	309.8	7,261
Śląskie	340.0	15,358
Świętokrzyskie	313.8	3,872
Warmińsko-Mazurskie	272.0	3,870
Wielkopolskie	285.0	9,973
Zachodniopomorskie	298.4	5,061

Source: Ministry of Health study based on data from NFZ, GUS, CRP

Table 79. Medical specialists employed in health care units with NFZ contracts[240]

Specialisation	Number of working medical practitioners	Number of medical practitioners working in medical entities	Number of medical practitioners working under the NFZ	Proportion of medical practitioners working under the NFZ among	The proportion of NFZ medical practitioners among medical practitioners working in entities
Allergology	1,357	1,350	1,216	90%	90%
Anaesthesiology and Intensive Care	6,363	6,251	6,049	95%	97%
Angiology	268	266	253	94%	95%
Audiology and Phoniatrics	361	354	332	92%	94%
Balneology and Physical Medicine	575	559	555	97%	99%
NO SPECIALITY	31,650	30,835	24,484	77%	79%
Paediatric Surgery	1,029	1,013	971	94%	96%
Cardiothoracic Surgery	262	256	246	94%	96%
Vascular Surgery	562	558	548	98%	98%
General Surgery	8,292	8,097	7,632	92%	94%
Oncological Surgery	876	874	862	98%	99%
Plastic Surgery	209	208	141	67%	68%
Lung Diseases	2,643	2,591	2,480	94%	96%
Paediatric Lung Diseases	79	79	78	99%	99%
Internal diseases	27,499	26,778	25,038	91%	94%
Infectious Diseases	1,017	998	933	92%	93%
Dermatology and Venereology	2,369	2,331	1,770	75%	76%
Diabetology	1,443	1,427	1,373	95%	96%
Laboratory diagnostics	177	162	94	53%	58%
Endocrinology	1,488	1,478	1,234	83%	83%
Gynaecological Endocrinology and Reproductive Medicine	62	62	51	82%	82%
Paediatric Endocrinology and Diabetology	101	101	96	95%	95%
Epidemiology	192	170	108	56%	64%
Clinical Pharmacology	83	80	59	71%	74%

[240] values over 100% may be due to methodological differences in counting medical practitioners based on CIR and NFZ data

Clinical Physiology	2	2	1	50%	50%
Gastroenterology	1,034	1,025	969	94%	95%
Paediatric Gastroenterology	89	89	87	98%	98%
Clinical Genetics	126	124	122	97%	98%
Geriatrics	462	451	455	98%	101%
Gynaecological Oncology	299	297	287	96%	97%
Haematology	496	494	471	95%	95%
Hygiene	172	151	89	52%	59%
Military Hygiene and Epidemiology	10	0	0	0	0
Hypertensiology	352	349	330	94%	95%
Clinical Immunology	124	124	117	94%	94%
Cardiac Surgery	336	334	328	98%	98%
Cardiology	4,489	4,458	4,276	95%	96%
Paediatric Cardiology	159	158	155	97%	98%
Aviation Medicine	246	243	160	65%	66%
Military Aviation Medicine	61	57	30	49%	53%
Military Maritime Medicine	11	11	9	82%	82%
Nuclear Medicine	299	295	254	85%	86%
Palliative care	515	511	515	100%	101%
Occupational Medicine	2,749	2,685	1,698	62%	63%
Emergency Medicine	1,049	1,041	963	92%	93%
Family Medicine	10,858	10,329	10,415	96%	101%
Forensic Medicine	171	137	42	25%	31%
(Civil) Sports Medicine	284	272	242	85%	89%
Military Sports Medicine	4	3	2	50%	67%
Tropical Medicine	59	59	23	39%	39%
Military Maritime and Tropical	119	114	71	60%	62%
Medical Microbiology	96	87	54	56%	62%
Nephrology	1,304	1,297	1,274	98%	98%
Paediatric Nephrology	97	96	97	100%	101%
Neonatology	1,509	1,491	1,485	98%	100%
Neurosurgery	582	574	549	94%	96%
Neurology	4,127	4,069	3,678	89%	90%
Paediatric Neurology	423	420	399	94%	95%
Neuropathology	26	26	17	65%	65%
Ophthalmology	4,387	4,307	3,529	80%	82%
Paediatric Oncology and Haematology	220	218	215	98%	99%
Clinical Oncology	957	947	937	98%	99%
Orthopaedics and Traumatology of the Musculoskeletal System	4,021	3,968	3,729	93%	94%

Otorhinolaryngology	3,137	3,068	2,698	86%	88%
Paediatric Otorhinolaryngology	192	191	169	88%	88%
Pathomorphology	703	673	401	57%	60%
Paediatrics	14,037	13,657	13,243	94%	97%
Metabolic Paediatrics	24	24	23	96%	96%
Perinatology	88	86	85	97%	99%
Obstetrics and Gynaecology	7,202	7,079	6,403	89%	90%
Psychiatry	3,904	3,836	3,314	85%	86%
Paediatric Psychiatry	426	421	383	90%	91%
Radiology and Medical Imaging	3,522	3,490	2,933	83%	84%
Oncological Radiotherapy	761	748	735	97%	98%
Medical Rehabilitation	1,911	1,878	1,855	97%	99%
Rheumatology	1,641	1,607	1,520	93%	95%
Sexology	188	185	156	83%	84%
Clinical Toxicology	97	93	81	84%	87%
Clinical Transfusion Medicine	211	205	116	55%	57%
Clinical Transplantation Medicine	469	466	457	97%	98%
Urology	1,298	1,281	1,238	95%	97%
Paediatric Urology	69	69	67	97%	97%
Public Health	1,519	1,396	1,098	72%	79%
Military Public Health	1				

Source: Ministry of Health study based on data from CRP and NFZ

12.2. Dentists

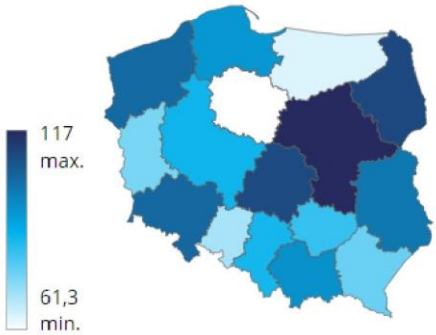
In 2019, the total number of professionally active dentists in the Republic of Poland was 35,070. Women were the majority among dentists - they constituted more than 26,000. In 2019, the average number of dentists per 100,000 population in 2019 was 91.3.

The average number of dentists per 1 resident varied between regions. The provinces in which this indicator had the highest value were Mazowieckie (116.6) and Podlaskie (110.2). The fewest dentists could be found in Kujawsko-Pomorskie (61.3) and Lubuskie (65.2) provinces. In the Mazowieckie Province, there were 90% more dentists than in the Kujawsko-Pomorskie Province per 100,000 of the population.

These data do not match international statistics, likely due to methodological differences, which makes objective comparisons difficult. According to Eurostat and OECD data, in 2017, the Republic of Poland had 13,300 dentists, which meant 35.1 professionally active dentists per 100,000 of the population. This was the lowest score

among the EU countries for which data are available. Bulgaria had the highest score (118.7).[241] [242]

Figure 251. The number of dentists per 100,000 population by province



Source: Ministry of Health study based on data from CRP, NFZ and GUS

Table 80. Number of dentists

Province	Number of dentists	per 100,000 population	Average dentist age	Average number of workplaces
Dolnośląskie	3,010	103.8	47	1.231561
Kujawsko-Pomorskie	1,271	61.3	49	1.142408
Lubelskie	2,119	100.5	46	1.291647
Lubuskie	766	75.7	48	1.084856
Łódzkie	2,695	109.8	45	1.366976
Małopolskie	3,250	95.3	45	1.265231
Mazowieckie	6,322	116.6	45	1.287725
Opolskie	695	70.7	49	1.132374
Podkarpackie	1,646	77.4	46	1.139733
Podlaskie	1,298	110.2	45	1.246533
Pomorskie	2,201	93.9	45	1.200818
Śląskie	3,911	86.6	46	1.231654
Świętokrzyskie	1,025	83.1	46	1.13561
Warmińsko-Mazurskie	927	65.2	48	1.137001
Wielkopolskie	3,051	87.2	46	1.203212
Zachodniopomorskie	1,755	103.5	46	1.255271

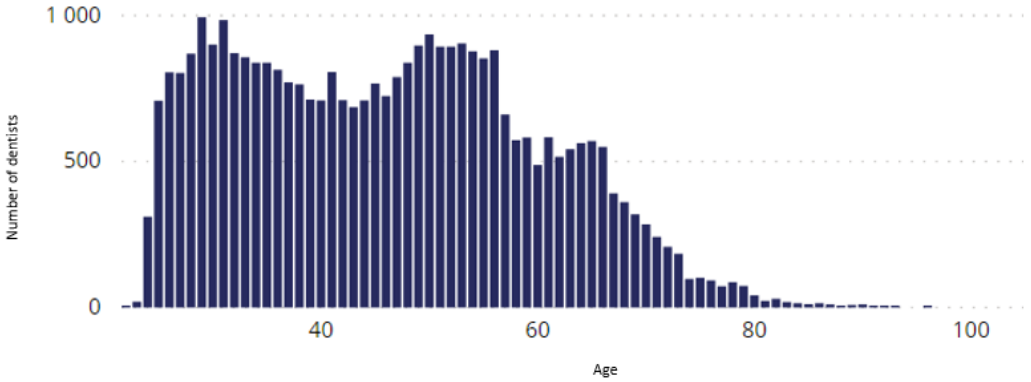
Source: Ministry of Health study based on data from CRP, NFZ and GUS

[241] OECD, Health Workforce Statistical Database, [accessed 23.06.2020]

[242] Eurostat, http://ec.europa.eu/eurostat/data/database,[accessed 23.06.2020]

The average age of dentists was 46. Dentists often continued to work despite reaching retirement age - the highest proportion of those professionally active at retirement age could be observed in the Kujawsko-Pomorskie Province (23%) and the lowest in Pomorskie and Podkarpackie provinces (14%). The age distribution of dentists was also indicative of a high increase in the number of young dentists.

Figure 252. Age distribution of working dentists in Poland in 2019.

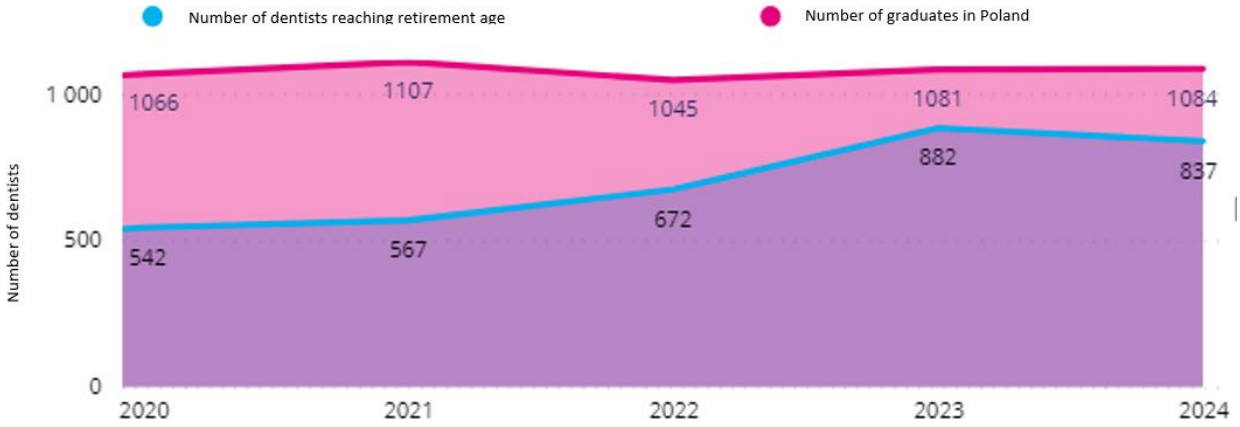


Source: Ministry of Health study based on data from CRP and NFZ

Training of dentists

The number of medical-dental graduates was estimated based on the admission limits established by the Minister of Health for 2012-2020. It was assumed that the number of graduates was equal to the admission limit set 5 years before. For each year, the number of graduates far exceeds the number of those reaching retirement age, which suggests that there should be no decrease in the number of dentists in the Polish health care system.

Figure 253. Number of medical-dental graduates and number of dentists reaching the age of 65.



Source: Ministry of Health study based on data from CRP, NFZ, Regulations of the Minister of Health

The distribution of the number of medical-dental students in the years 2014-2018 reveals a comparable level of student numbers across the years analysed. In 2014-2018, the average number of students (sum of all years and including foreigners) was 5,600, while the number of medical-dental students per study year ranged between 1,057 and 1,161[243].

Dentist specialities

Most professionally active dentists in 2019 did not have a speciality. There were 21,240 of them, accounting for 60.5% of the total number. The most popular speciality was non-invasive dentistry with endodontics - 10,400 students. Other specialities were far less numerous.

Table 81. Number of dentists by speciality

Specialisation	Number of dentists
No speciality	21,242
Dental surgery	1,742
Oral and maxillofacial surgery	327
Epidemiology	3
Orthodontics	1,188
Periodontology	483
Prosthodontics	1,443
Paediatric dentistry	692
Non-invasive dentistry with endodontics	10,410
Public Health	96

Source: Ministry of Health study based on data from CRP and NFZ

Dentists working under contracts for the provision of health care services with the NFZ

The number of dentists employed in health care units with NFZ contracts was 16,300, i.e. 47% of all dentists and 48% of those working in medical entities. The largest number worked in dental treatment (15,700), followed by hospital treatment (786). With regard to the type of unit in which dentists work, it is found that a significant group of dentists was employed in a dental clinic (13,500).

[243] Szkolnictwo wyższe w latach 2013-2018, Bazy danych [Higher education in the years 2013-2018], Databases, Statistics Poland, https://stat.gov.pl/obszary-

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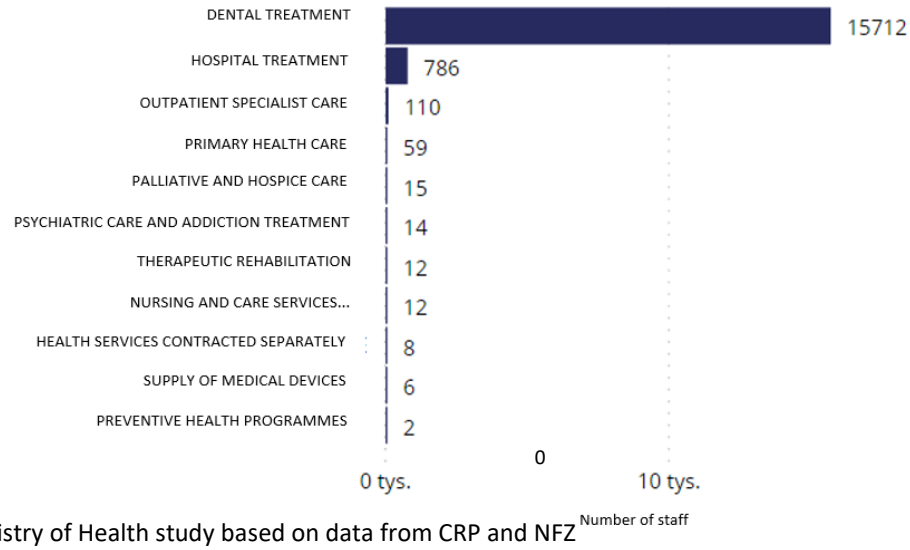
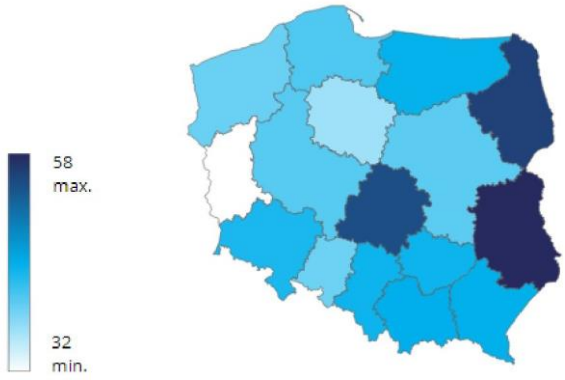
Figure 254. Number of dentists by type of services contracted



Source: Ministry of Health study based on data from CRP and NFZ

The number of dentists employed in health care units with NFZ contracts varied highly between regions. In the Lubelskie Province, there were 81% more dentists per 100,000 population than in the Lubuskie Province (58 vs 32).

Figure 255. The number of dentists per 100,000 population that are employed in health care units with NFZ contracts by provinces



Source: Ministry of Health study based on data from NFZ and Statistics Poland CRP

Table 82. Number of dentists employed in health care units with NFZ contracts by provinces and per 100,000 population

Province	Staff per 100,000	Staff size
Dolnośląskie	43.3	1,256
Kujawsko-Pomorskie	36.4	755
Lubelskie	58.0	1,223
Lubuskie	31.6	320
Łódzkie	54.5	1,338
Małopolskie	44.6	1,520
Mazowieckie	39.9	2,164
Opolskie	39.2	385
Podkarpackie	44.6	948
Podlaskie	55.6	655
Pomorskie	40.3	944
Śląskie	44.1	1,994
Świętokrzyskie	44.2	546
Warmińsko-Mazurskie	44.4	632
Wielkopolskie	40.1	1,402
Zachodniopomorskie	39.3	666

Source: Ministry of Health study based on data from NFZ, GUS, CRP

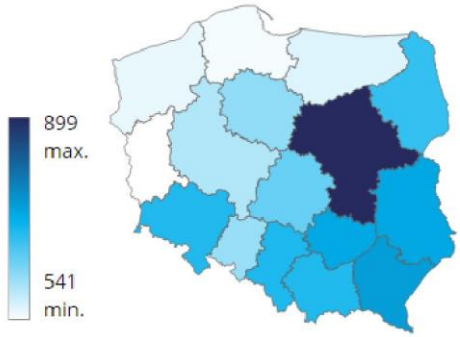
12.3. Nurses

In 2019, the total number of nurses who worked in entities performing medical activities and those not performing medical activities was 238,300. (620.5 per 100,000 population). The average number of nurses per 1 resident varied between regions. The provinces with the highest rate per 100,000 population were Mazowieckie (899), Podkarpackie (744) and Lubelskie (731). The lowest number of nurses was recorded in Lubuskie (541), Pomorskie (548) and Zachodniopomorskie (556) provinces. In the Mazowieckie Province, there were 66% more nurses than in the Lubuskie Province per 100,000 of the population.

The national data on the number of nurses do not match international statistics. According to Eurostat and OECD data, in 2017, the Republic of Poland had 193,700 nurses, which means 510 nurses per 100,000 population and consitutes the fourth lowest score

among the EU countries for which data are available (Germany has the highest rate in the EU - 1,293 nurses per 100,000 population, and Greece the lowest - 331).[244] [245]

Figure 256. Number of nurses per 100,000 population by province



Source: Ministry of Health study based on data from CRHP, NFZ and Statistics Poland

Table 83. Number of nurses

Province	Number of nurses	per 100,000 population	Average nurse age	Average number of workplaces
Dolnośląskie	20,202	696.6	51	1.392337
Kujawsko-Pomorskie	12,807	618.0	49	1.317405
Lubelskie	15,416	731.2	49	1.381422
Lubuskie	5,472	540.9	50	1.344481
Łódzkie	15,893	647.4	50	1.495816
Małopolskie	23,782	697.2	48	1.396645
Mazowieckie	48,772	899.3	49	1.500902
Opolskie	6,024	613.1	48	1.366534
Podkarpackie	15,833	744.3	48	1.353818
Podlaskie	8,054	683.5	49	1.41259
Pomorskie	12,836	547.6	49	1.354004
Śląskie	31,570	698.8	50	1.483339
Świętokrzyskie	9,009	730.1	48	1.384282
Warmińsko-Mazurskie	8,019	563.6	51	1.363013
Wielkopolskie	20,831	595.4	49	1.402525
Zachodniopomorskie	9,436	556.3	51	1.340504

Source: Ministry of Health study based on data from CRHP, NFZ and Statistics Poland

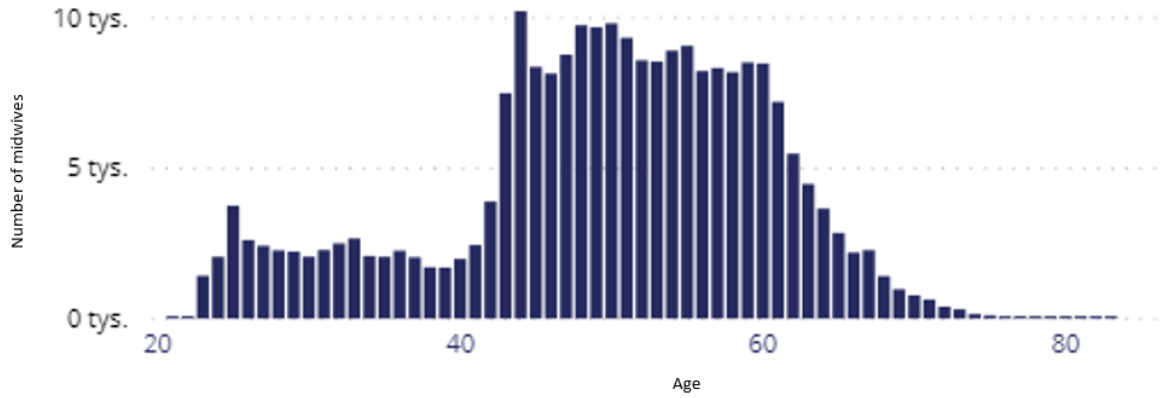
The average age of professionally active nurses in Poland was 49.5. Professionally active nurses over the age of 59 were not as significant a group as the medical practitioners of retirement age. The highest proportion was noted in the Zachodniopomorskie Province

[244] OECD, Health Workforce Statistical Database, [accessed 23.06.2020]

[245] Eurostat, http://ec.europa.eu/eurostat/data/database,[accessed 23.06.2020]

at 21%. The data presented in the age distribution revealed a relatively low increase in the number of young nurses and a high number of nurses over the age of 43, which may indicate a risk of this value decreasing.

Figure 257. Age distribution of nurses in Poland



Source: Ministry of Health study based on data from CRHP and NFZ

Training of nurses

The distribution of nursing students in individual years based on data from Statistics Poland shows noticeable cyclical fluctuations in the number of nursing students. In 2014, the total number of nursing students (sum of all years and including foreigners) was 25,689. In 2015, there was a 14.9% decrease in that number. In subsequent years, the number of students kept increasing and in 2018 it reached 34,205. In the years 2014-2018 (no data available for 2017), the number of nursing students per study year ranged between 4,371 and 6,841[246].

In 2019, the number of young nurses in the 23-26 age range was between 1,426 and 3,760. These values are much lower than the expected number of graduates, which may be due to the inclusion of foreign students in the latter. As the ELA survey indicates, 95% of nursing graduates 5 years after receiving their diploma work in Poland.
88% of the nurses analysed practice their profession in the health care sector. This indicates that very few nursing graduates do not enter the profession after graduation.[247]

Forecast

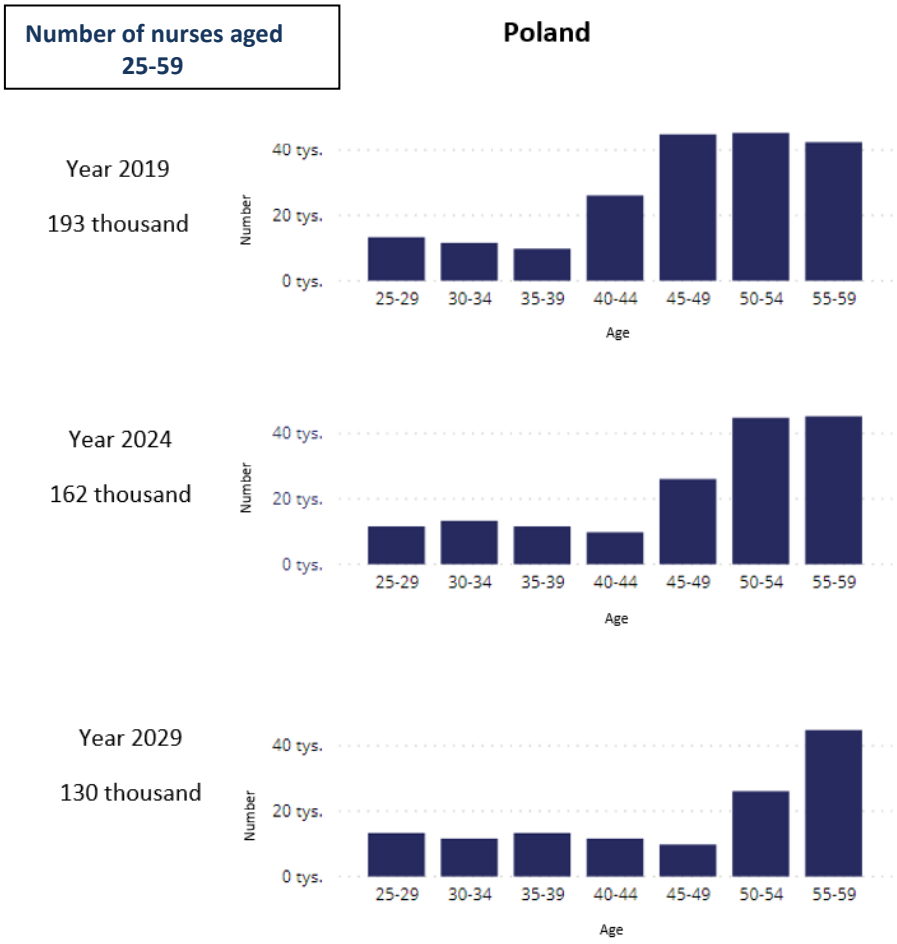
In order to estimate the number of nurses in 2024 and 2029, 5-10 years were added to the age of nurses, respectively, and the number of nurses under the age of 35 was assumed

[246] Szkolnictwo wyższe w latach 2013-2018, Bazy danych [Higher education in the years 2013-2018], Databases, Statistics Poland, https://stat.gov.pl/obszary- thematic/education/education/, [accessed

[247] Pracowity jak młody lekarz - najszybszy sukces na rynku pracy [As busy as a young medical practitioner - the fastest success in the job market], ELA, https://ela.nauka.gov.pl/pl/labor-

to be equal to the number of nurses reaching the same age in 2019, respectively. For the purpose of the analysis, it was assumed that nurses do not retire until 59 years of age.

Figure 258. Forecast of the number of nurses in Poland aged 25-59 in 2024 and 2029



Source: Ministry of Health study based on data from CRHP, NFZ and GUS

According to the chart for 2019, the number of nurses in the 25-44 age range was significantly lower than the number of nurses in the 45-59 age range. In 2024, the total number of professionally active nurses aged 25-59 will be lower by 31,000 (16%) compared to 2019. In 2029, this phenomenon occurs again, and the total number of professionally active nurses aged 25-59 will be lower than in 2019 by 63,000 (33%). The forecast prepared shows the risk of a significant decrease in the number of nurses over 10 years.

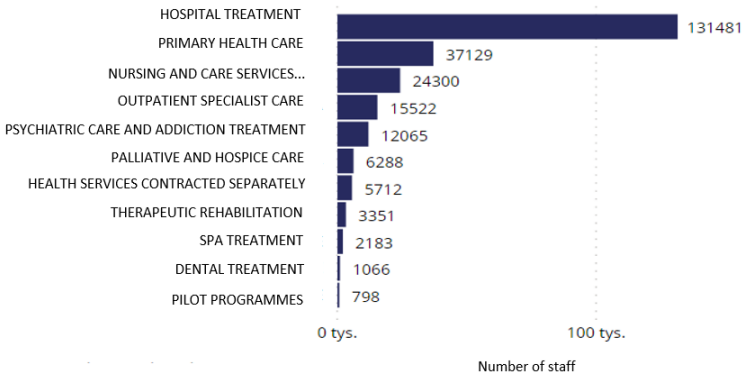
Nurses working under contracts for the provision of health care services with the NFZ

The number of nurses employed in health care units with NFZ contracts was 193,100, which accounted for 81% of all professionally active nurses in the country and 90% of nurses working in medical entities. With regard to the type of service, the largest number of nurses was employed for hospital treatment (131,500),

PHC (37,100) and nursing and care services (24,300). With regard to the type of unit, nurses most commonly worked in three kinds of wards: PHC nurse outpatient clinics/offices (21,900), internal medicine wards (15,800), and anaesthesiology and intensive care wards (15,500).

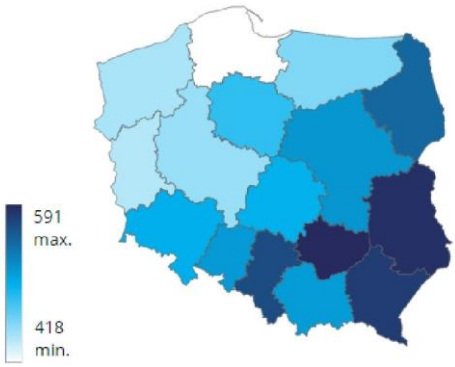
The number of nurses employed in health care units with NFZ contracts varied regionally: in the Świętokrzyskie Province (591) there were 41% more nurses per 100,000 population than in the Pomorskie Province (418).

Figure 259. Number of nurses by type of services contracted



Source: Ministry of Health study based on data from NFZ and Statistics Poland

Figure 260. Number of nurses per 100,000 population that are employed in health care units with NFZ contracts by provinces



Source: Ministry of Health study based on data from NFZ and Statistics Poland

Table 84. Number of nurses employed in health care units with NFZ contracts by provinces

Province	Staff per 100,000	Staff size
Dolnośląskie	505.4	14,658
Kujawsko-Pomorskie	488.5	10,124
Lubelskie	587.1	12,377
Lubuskie	443.2	4,483
Łódzkie	503.5	12,359
Małopolskie	517.7	17,658
Mazowieckie	521.6	28,285
Opolskie	518.4	5,094
Podkarpackie	579.1	12,319
Podlaskie	552.0	6,505
Pomorskie	417.8	9,792
Śląskie	569.5	25,728
Świętokrzyskie	591.4	7,298
Warmińsko-Mazurskie	460.7	6,554
Wielkopolskie	452.4	15,829
Zachodniopomorskie	447.2	7,585

Source: Ministry of Health study based on data from NFZ and Statistics Poland

12.4. Midwives

In 2019, the number of professionally active midwives was 31,400. On average, the number of midwives per 100,000 population was 81.7.

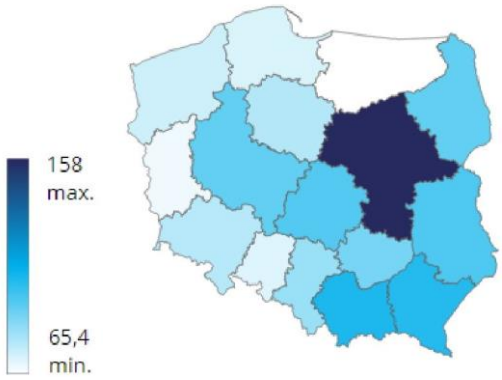
The average number of midwives per 1 resident varied between regions. The provinces in which this indicator had the highest value were Mazowieckie (158) and Małopolskie (106). The smallest number of midwives per 100,000 population was noted in Lubuskie (68) and Warmińsko-Mazurskie (65) provinces. In the Mazowieckie Province, there were 143% more midwives than in the Warmińsko-Mazurskie Province per 100,000 of the population.

The data presented do not match international statistics. According to Eurostat and OECD data, in 2017, the Republic of Poland had 22,700 midwives, i.e. 59.9 midwives per 100,000 of the population. This was the second highest score in the EU (Sweden had the highest ratio - 74.95, data for 2016, and Slovenia the lowest - 9.97)[248] [249].

[248] OECD, Health Workforce Statistical Database, [accessed 23.06.2020]

[249] Eurostat, http://ec.europa.eu/eurostat/data/database,[accessed 23.06.2020]

Figure 261. Number of midwives per 100,000 population by province



Source: Ministry of Health study based on data from CRHP, NFZ and Statistics Poland

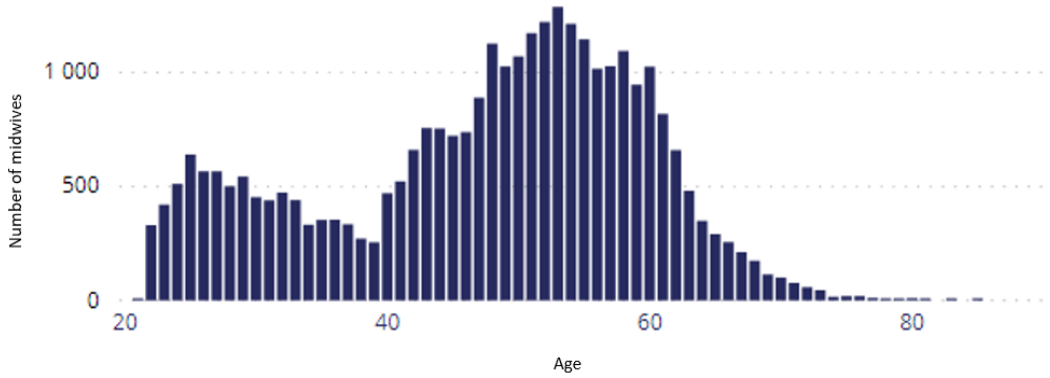
Table 85. Number of midwives

Province	Number of midwives	per 100,000 population	Average midwife age	Average number of workplaces
Dolnośląskie	2,275	78.4	48	1.521758
Kujawsko-Pomorskie	1,636	78.9	50	1.272005
Lubelskie	2,047	97.1	47	1.374695
Lubuskie	690	68.2	52	1.282609
Łódzkie	2,364	96.3	46	1.523266
Małopolskie	3,622	106.2	47	1.400607
Mazowieckie	8,547	157.6	47	1.46449
Opolskie	702	71.4	44	1.344729
Podkarpackie	2,231	104.9	47	1.278351
Podlaskie	1,103	93.6	48	1.409791
Pomorskie	1,691	72.1	47	1.365464
Śląskie	3,780	83.7	47	1.492328
Świętokrzyskie	1,109	89.9	46	1.386835
Warmińsko-Mazurskie	931	65.4	53	1.415682
Wielkopolskie	3,273	93.5	46	1.347388
Zachodniopomorskie	1,263	74.5	50	1.303246

Source: Ministry of Health study based on data from CRHP, NFZ and Statistics Poland

The average age of midwives is 47. Professionally active midwives over the age of 59 accounted for 15%. The highest value of this indicator was recorded in the Lubuskie Province (22%). The age distribution of midwives was indicative of a low increase in the number of young midwives compared to those over 40 years of age. Midwives in the 50+ age range accounted for 51% of the total number of professionally active midwives. Therefore, there is a risk of a decrease in the number of midwives in the future. However, it should be noted that, in light of the declining births per woman rate, such a big number of midwives as today

Figure 262. Age distribution of midwives in Poland



Source: Ministry of Health study based on data from CRHP, NFZ and Statistics Poland

Training of midwives

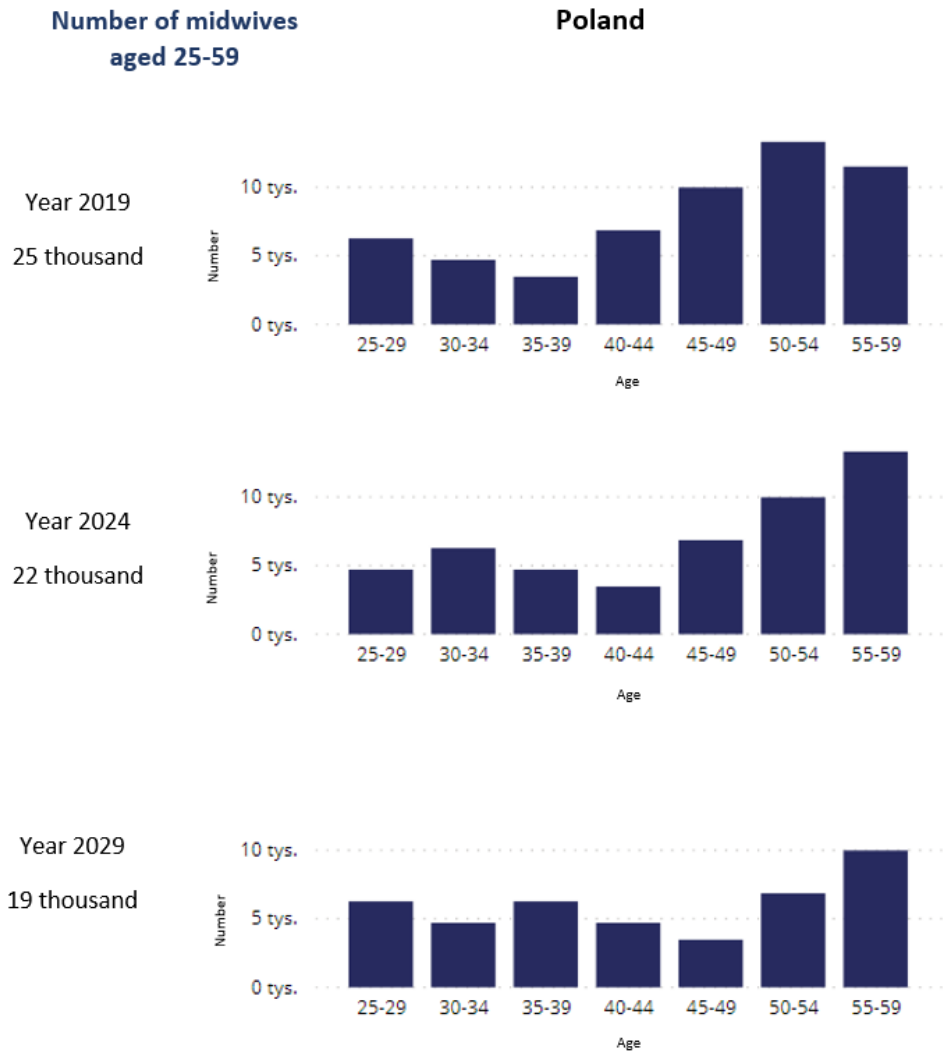
The distribution of midwifery students from 2014-2018 shows a comparable level of student numbers across the years analysed. In the years 2014-2018, the number of midwifery students (sum of all years; including foreigners) ranged from 3,916 to 4,707, while the number of midwifery students per study year was 783-941[250]. The age distribution shows that the number of young midwives in 2019 in the 23-26 age range was between 420 and 640. These values are much lower than the expected number of graduates, which may be due to the inclusion of foreign students in the latter.

Forecast

The following graphs show the forecasted distribution of professionally active midwives. In order to estimate the number of midwives in 2024 and 2029, 5-10 years were added to the age of midwives, respectively, and the number of midwives under the age of 35 in 2029 is equal to the number of nurses reaching the same age in 2019, respectively. For the purpose of the analysis, it was assumed that midwives do not retire until 59 years of age.

[250] Szkolnictwo wyższe w latach 2013-2018, Bazy danych [Higher education in the years 2013-2018], Databases, Statistics Poland, https://stat.gov.pl/obszary-

Figure 263. Forecast of the number of midwives in Poland aged 25-59 in 2024 and 2029



Source: Ministry of Health study based on data from CRHP, NFZ and Statistics Poland

In 2019, the number of midwives in the 25-44 age range was significantly lower than the number of nurses in the 45-59 age range. In 2024, the total number of professionally active midwives aged 25-59 will be lower by 3,000 (12%) compared to 2019. In 2029, this phenomenon occurs again, and the number will be lower than in 2019 (by 6,000, i.e. 24%).

The forecast prepared shows the risk of a significant decrease in the number of midwives. It is important to bear in mind that as births per woman rate declines, a number of midwives at a similar level to the current one may not be necessary.

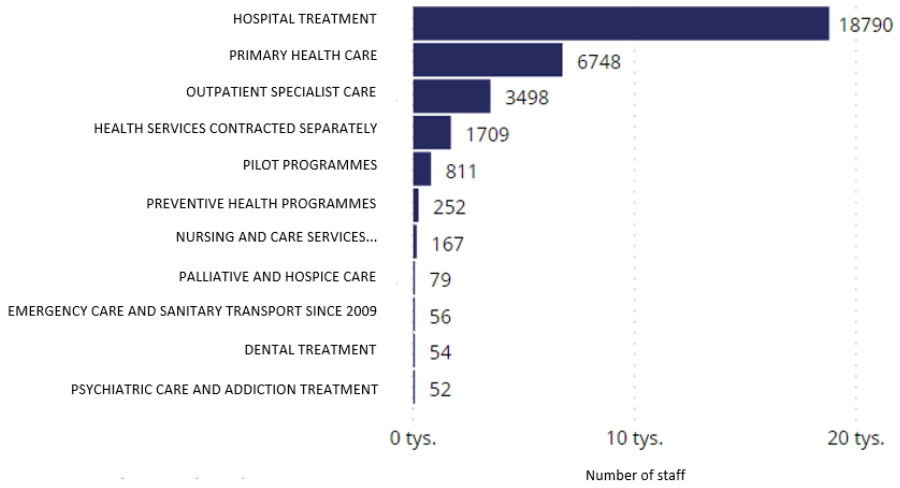
Midwives working under contracts for the provision of health care services with the NFZ

The number of midwives employed in health care units with NFZ contracts was 25,100, which accounted for 80% of the total and 90% of midwives working in medical entities. The majority of midwives worked in hospital treatment (18,800) and PHC (6,700).

The number of midwives by type of unit reached the highest values for obstetrics and gynaecology wards (13,600), PHC midwife outpatient clinics/offices (6,400) and obstetrics and gynaecology outpatient clinics (4,000).

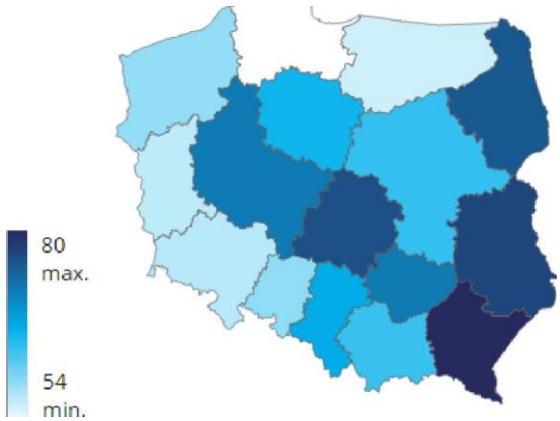
The number of midwives employed in health care units with NFZ contracts varied regionally: in the Podkarpackie Province there were 48% more midwives per 100,000 population than in the Pomorskie Province (80 vs 54).

Figure 264. Number of midwives by type of services contracted



Source: Ministry of Health study based on data from NFZ and Statistics Poland

Figure 265. Number of midwives per 100,000 population that are employed in health care units with NFZ contracts by provinces



Source: Ministry of Health study based on data from NFZ and Statistics Poland

Table 86. Number of midwives employed in health care units with NFZ contracts by provinces

Province	Staff per 100,000	Staff size
Dolnośląskie	57.9	1,678
Kujawsko-Pomorskie	66.2	1,372
Lubelskie	76.9	1,622
Lubuskie	57.6	583
Łódzkie	76.1	1,867
Małopolskie	64.2	2,189
Mazowieckie	64.4	3,493
Opolskie	59.8	588
Podkarpackie	79.6	1,694
Podlaskie	75.2	886
Pomorskie	54.4	1,274
Śląskie	67.4	3,044
Świętokrzyskie	72.1	890
Warmińsko-Mazurskie	56.8	808
Wielkopolskie	72.0	2,518
Zachodniopomorskie	59.7	1,013

Source: Ministry of Health study based on data from NFZ and Statistics Poland

12.5. Physiotherapists

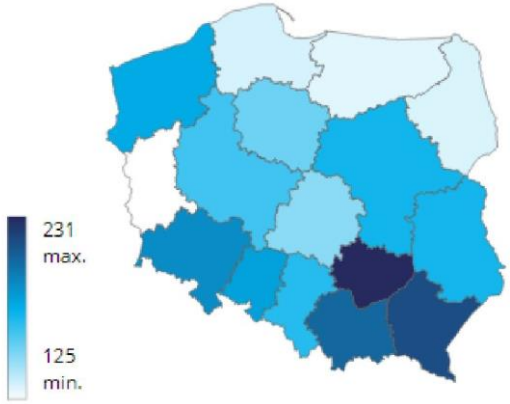
The total number of physiotherapists working in medical entities was 66,300. The average number of professionally active physiotherapists per 100,000 population in 2019 was 172.

The average number of physiotherapists per 1 resident varied between regions. The provinces with the highest rate per 100,000 were Świętokrzyskie (231), Podkarpackie (217) and Małopolskie (207). Meanwhile, the lowest rate was noted in the following provinces: Lubuskie (125), Warmińsko-Mazurskie (132) and Podlaskie (133). In the Świętokrzyskie Province, this indicator was 84% lower than in the Lubuskie Province.

The above data do not match international statistics, likely due to methodological differences, making objective comparisons difficult. According to Eurostat and OECD data, in 2017, the Republic of Poland had 26,500 physiotherapists, which gives 69.8 physiotherapists per 100,000 population and places the country in the middle of the EU ranking.

The highest score in this respect was achieved by Germany (227.5 physiotherapists per 100,000 population), and the lowest by Romania (8.2).[251] [252]

Figure 266. Number of physiotherapists per 100,000 population by province



Source: Ministry of Health study based on data from PChP and Statistics Poland

Table 87. Number of physiotherapists

Province	Number of physiotherapists	per 100,000 population	Average physiotherapis
Dolnośląskie	5,562	191.8	38
Kujawsko-Pomorskie	3,224	155.6	38
Lubelskie	3,669	174.0	36
Lubuskie	1,269	125.4	38
Łódzkie	3,662	149.2	37
Małopolskie	7,056	206.9	37
Mazowieckie	9,459	174.4	37
Opolskie	1,804	183.6	36
Podkarpackie	4,605	216.5	37
Podlaskie	1,568	133.1	35
Pomorskie	3,139	133.9	37
Śląskie	7,693	170.3	37
Świętokrzyskie	2,848	230.8	37
Warmińsko-Mazurskie	1,874	131.7	37
Wielkopolskie	5,761	164.7	36
Zachodniopomorskie	3,057	180.2	38

Source: Ministry of Health study based on data from PChP and Statistics Poland

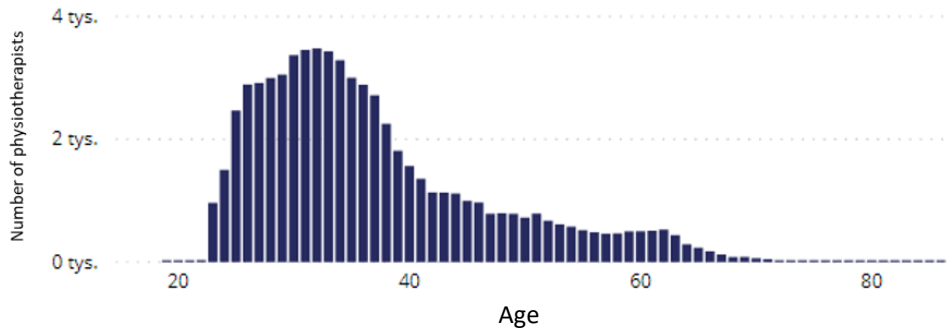
[251] OECD, Health Workforce Statistical Database, [accessed 23.06.2020]

[252] Eurostat, http://ec.europa.eu/eurostat/data/database,[accessed 23.06.2020]

The average age of professionally active physiotherapists in Poland was 37. Physiotherapists in the 25-35 age group constituted 51.9% of all professionally active physiotherapists, which indicates a high intensity of young physiotherapists in the Polish health care system.

Physiotherapists of retirement age were a relatively insignificant group in relation to the total number of professionally active physiotherapists. This indicator had the highest proportion (6%) in Zachodniopomorskie, Lubuskie and Kujawsko-Pomorskie provinces. The age distribution of physiotherapists shows a relatively high increase in the number of young physiotherapists up to 32 years of age, and a relatively small number of physiotherapists over 40 years of age.

Figure 267. Age distribution of physiotherapists in Poland



Source: Ministry of Health study based on data from PChP

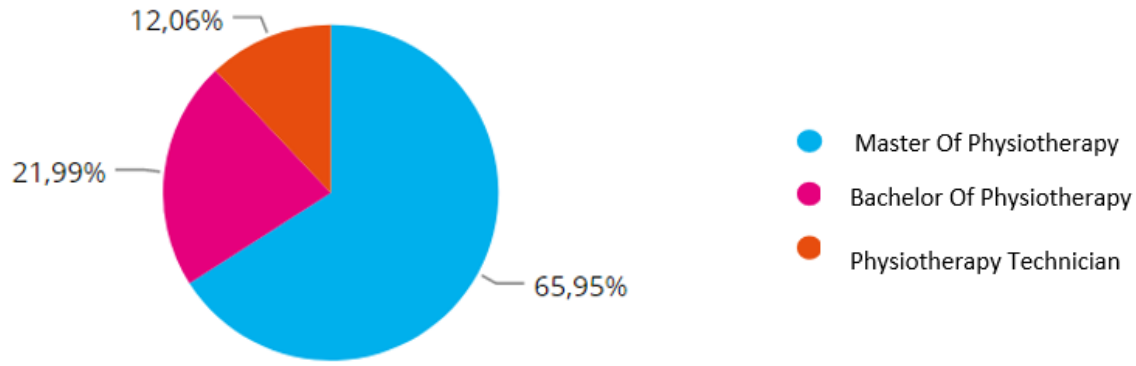
Training of physiotherapists

Statistics Poland data shows that in the years 2014-2018 (no data available for 2017), the number of physiotherapy students (sum of all study years and including foreigners) reached from 24,000 to 29,000 per annum and followed a downward trend. The number of physiotherapy students per study year ranged from 4,804 to 5,793[253]. The age distribution shows that the number of young physiotherapists in 2019 in the 23-26 age range was between 964 and 2,893. These values are much lower than the expected number of graduates, which may be due to the inclusion of foreign students in the latter.

The number of physiotherapists choosing to pursue a master's degree programme represented the highest proportion in relation to the total and reached 66%. Another relatively large group were bachelor's degree graduates in physiotherapy (22%). Physiotherapy technicians constituted a low proportion of the total (12%).

[253] Szkolnictwo wyższe w latach 2013-2018, Bazy danych [Higher education in the years 2013-2018], Databases, Statistics Poland, https://stat.gov.pl/obszary- thematic/education/education/, [accessed 01.06.2020]

Figure 268. Structure of physiotherapists' degrees in 2019



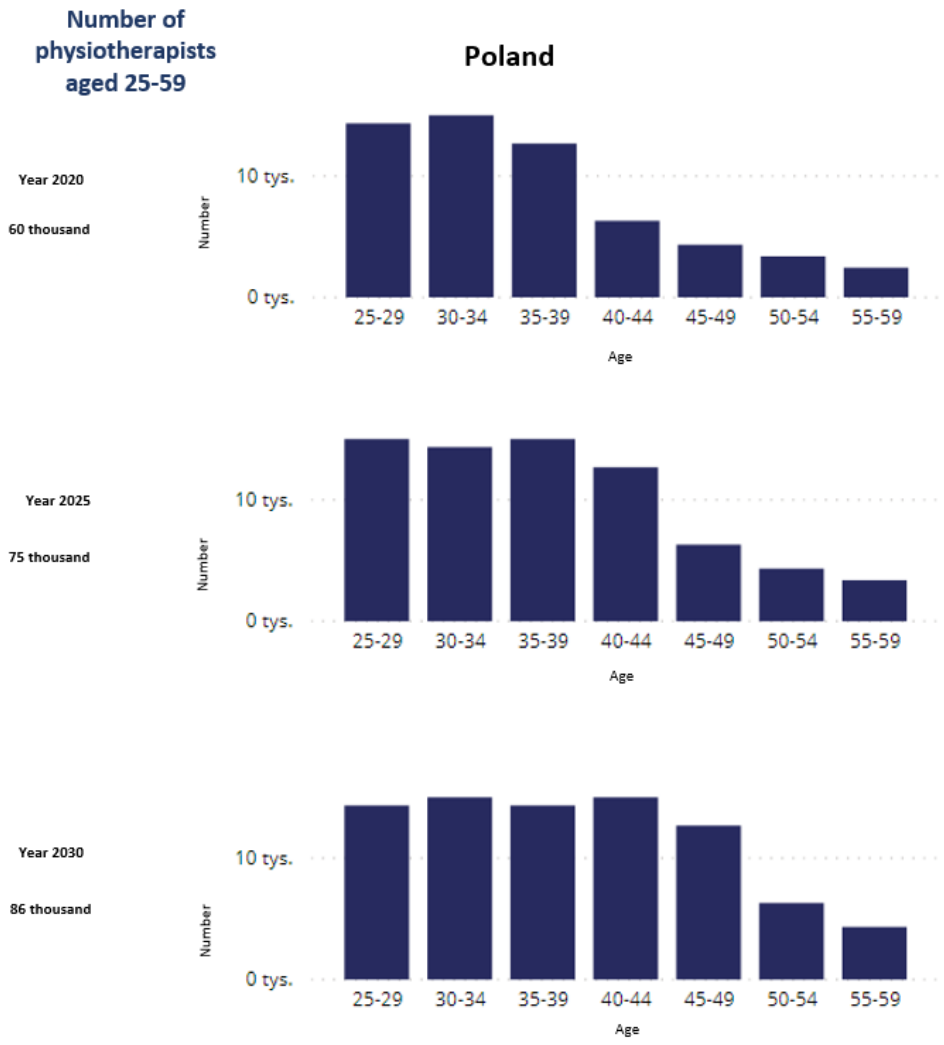
Source: Ministry of Health study based on data from PChP

Forecast

In order to estimate the number of physiotherapists in 2025 and 2030 5-10 years were added to the age of physiotherapists, respectively, and the number of physiotherapists under 35 in 2030 was assumed to be equal to the number of physiotherapists reaching the same age in 2020. For the purpose of the analysis, it was assumed that physiotherapists do not retire until 59 years of age.

In 2019, the number of physiotherapists in the 25-39 age range was significantly higher than in the 40-59 age range. In 2025, this phenomenon will reoccur and the total number of professionally active physiotherapists will be higher by 15,000 (25%) than in 2020.
In 2030, the total number of professionally active physiotherapists aged 25-59 will be higher by 26,000 (43%). The forecast prepared shows the possibility of a gradual increase in the number of physiotherapists over the years.

Figure 269. Forecasted distribution of professionally active physiotherapists aged 25-59 in 2025 and 2030

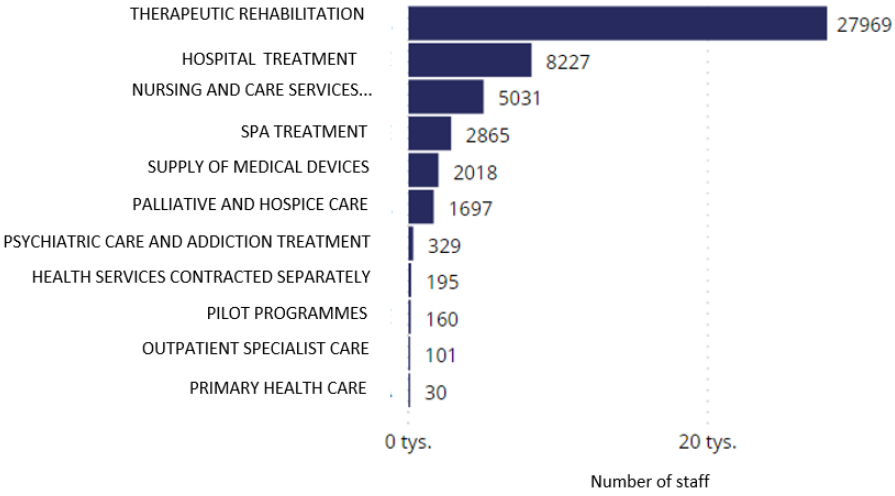


Source: Ministry of Health study based on data from PChP

Physiotherapists working under contracts for the provision of health care services with the NFZ

In 2019, physiotherapists employed in health care units with NFZ contracts accounted for 58% of all professionally active physiotherapists. The largest number of physiotherapists worked in medical rehabilitation services (28,000), followed by hospital treatment services (8,200). When the number of physiotherapists is analysed with regard to the type of unit they worked in, a significant group was employed in a physiotherapy facility (22,200) and in a medical rehabilitation facility/centre (6,700).

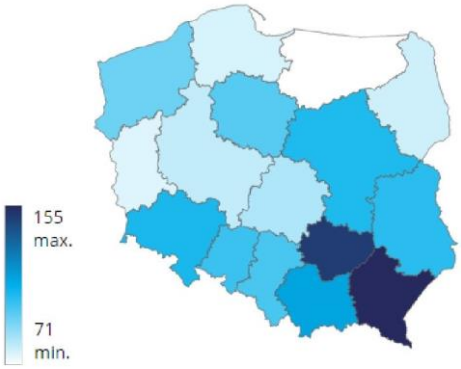
Figure 270. Number of physiotherapists employed by type of services contracted



Source: Ministry of Health study based on data from NFZ

The number of physiotherapists employed in health care units with NFZ contracts was highly varied regionally: in the Podkarpackie Province there were 118% more physiotherapists per 100,000 population than in the Warmińsko-Mazurskie Province (155 vs 71).

Figure 271. Number of physiotherapists per 100,000 population that are employed in health care units with NFZ contracts by provinces



Source: Ministry of Health study based on data from NFZ and Statistics Poland

Table 88. Number of physiotherapists employed in health care units with NFZ contracts by provinces

Province	Staff per 100,000	Staff size
Dolnośląskie	108.9	3,158
Kujawsko-Pomorskie	98.8	2,047
Lubelskie	106.2	2,238
Lubuskie	76.7	776
Łódzkie	84.5	2,074
Małopolskie	116.8	3,985
Mazowieckie	108.2	5,869
Opolskie	103.6	1,018
Podkarpackie	155.2	3,301
Podlaskie	79.4	936
Pomorskie	78.0	1,828
Śląskie	101.2	4,574
Świętokrzyskie	149.3	1,842
Warmińsko-Mazurskie	71.4	1,016
Wielkopolskie	81.4	2,847
Zachodniopomorskie	95.3	1,616

Source: Ministry of Health study based on data from NFZ and GUS

12.6. Conclusions

The situation of the medical staff in the Republic of Poland is difficult. The biggest challenges include the risk of a decline in the number of medical specialists, nurses, and midwives, uneven regional distribution, as well as an insufficient number of medical specialists in selected fields of medicine and an insufficient number of medical practitioners in speciality training.

12.7. Health care system challenges

The medical staff analysed is characterised by relatively high average age in the groups of medical practitioners, dentists, and nurses. Among nurses and medical practitioners, the average age was 50. Dentists were the younger professional group by 4 years - the average age of dentists was 46. These values show that there is a significant group of people who have already reached retirement age or will reach it in the next several years. At the same time, this points to the problem of small proportion of young people in the medical staff.

One of the major concerns is a decline in the number of nurses and midwives in the coming years. Over the next 10 years, it is estimated that the number of nurses aged 25-59

births per woman rate, a number of midwives at the same level as today may not be necessary, but in view of the ageing society, the lack of nurses may have serious consequences for the functioning of the Polish health care system.

Starting from 2015, there was a noticeable downward trend in the number of new medical specialists entering the market. In many fields, specialists who retire may no longer be replaced by new medical specialists. The difference may be particularly pronounced in the fields of internal medicine, paediatrics, general surgery, obstetrics and gynaecology, and pulmonary diseases.

The recommendations of national consultants show that the medical fields experiencing the greatest shortage of medical specialists are: internal medicine, family medicine, psychiatry, occupational medicine and geriatrics. Analysing the issues of the difference between medical specialists nearing retirement age and medical practitioners earning their speciality degree as well as the demand reported by national consultants, the greatest need for speciality places was estimated in internal medicine (17,343 speciality places), family medicine (6,552 speciality places) and psychiatry (3,267 speciality places). It should be noted that the creation of speciality places does not result in a rapid increase in the number of medical specialists. Education is a long process, and the minimum duration of speciality training is 4 to 10 years, depending on the type of speciality.

Based on the age distribution, it can be observed that young physiotherapists are a large group. Additionally, the forecast shows that if the current trends are maintained this number should increase over the next 10 years.

The number of medical staff per 100,000 population varies between provinces for each of the analysed professions - medical practitioners, dentists, nurses, midwives, and physiotherapists. There is a strong territorial variation for all occupations.

Part of the medical staff was not employed in health care units with NFZ contracts. The medical staffs which had the smallest proportion of employees in health care units with NFZ contracts were dentists (47% of professionally active dentists) and physiotherapists (58% of professionally active physiotherapists). The situation was better in the groups of nurses and midwives - respectively 81% and 80%. Despite the fact that medical practitioners employed in health care units with NFZ contracts represent a relatively large proportion (87%), upon further analysis, problems in individual specialities become visible.

12.8. Recommended lines of actions

→ Increase in the number of medical staff and satisfaction of key staffing needs to be achieved by:

- pursuit of a proactive and strong policy in order to increase the number of working nurses. Specifically, increasing the number of nursing students and taking measures to reintroduce to the profession those people who stopped practising it before retirement.
- development of a plan for the creation of speciality places to achieve an optimal number of medical specialists within a few years. At the same time, speciality places should be created with regard to epidemiological indicators: incidence, prevalence, etc. and population in the regions;
- update of the Regulation of the Minister of Health of 30 June 2020 on the definition of priority fields of medicine by adding to the list the fields in which the need for new speciality places has been estimated to be at least 200 places nationwide, and which are: occupational medicine, audiology and phoniatrics, obstetrics and gynaecology, pulmonary diseases, clinical pharmacology, medical microbiology, clinical immunology, diabetology, nephrology, balneotherapy and physical medicine, and public health;
- creation of places in relevant fields of study, particularly in regions where the size of medical staff differs significantly from the national average. At the same time, it is important to ensure proper quality of education by defining standards and verifying them in state examinations;
- consideration of modifying/shortening the educational process so that medical graduates can work as independent medical practitioners more quickly;

→ Improvement of medical staff productivity to be achieved by:

- changes in the scope of responsibilities among medical practitioners and nurses that will allow some of medical practitioners' tasks to be delegated to nurses, medical assistants or caregivers;
- transfer of some of medical practitioners' tasks related to the care for the chronically ill to pharmacists by creating a comprehensive system of pharmaceutical care and increasing the role of pharmacists in patient treatment;
- consideration of modifying the system for obtaining medical specialities and introducing the possibility to certify individual skills despite not having a degree in a particular field;
- provision of tools to streamline the work of medical practitioners: equipment, applications that speed up the process of diagnosis and the calculation of drug doses and duration of use, as well as applications that increase the level of cooperation between medical practitioners of different specialities involved in the

treatment process of the same patient, broader inclusion of automation and telemedicine in medical practitioner training programmes;

→ Promotion of the nursing profession;

→ Establishment of scholarships for those students who commit to working in the profession for a specified period of time;

→ Creation of incentives for medical practitioner, dentist, nurse and midwife positions in
the regions where significant deficits in these fields have been identified;

→ Creation of a programme that focuses on selective attraction of foreign specialists that are scarce in the Republic of Poland.

13. Medical equipment

Hardware resources are one of the key elements needed to secure the nation's health needs. Particularly important devices are listed in the Regulation of the Minister of Health of 30 July 2012 and they are priority for the analyses carried out[254]. In particular, the focus was on linear particle accelerators, angiographs, brachytherapy machines, ECMO machines, gamma cameras, mammography machines, PET machines, MRI machines, X-ray machines, CT scanners, and ultrasound machines. All of these devices (with the exception of ECMO, which is a specialist machine for extracorporeal membrane oxygenation that can substitute lung and heart activity for a certain time) are widely used in radiology and medical imaging and in radiotherapy. The biggest challenge that comes with any new investment in medical equipment is ensuring that resources are allocated efficiently so that these investments are as optimal as possible for society as a whole (i.e. they are aimed at maximum utilisation and, at the same time, reduce inequality in access to services across the country). It is important to note that medical equipment is one of the components of comprehensive medical care, and to be used effectively, it requires appropriately qualified staff.

International comparison

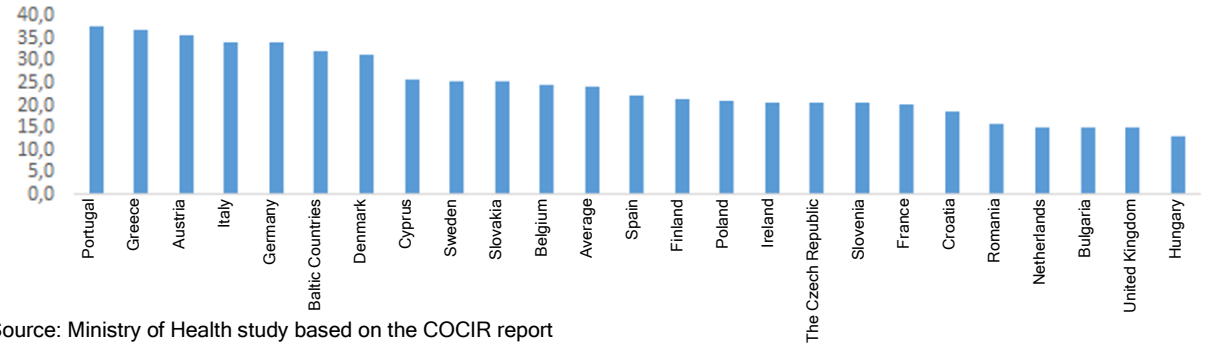
According to the COCIR[255] report entitled *Medical Imaging Equipment Age Profile & Density* of 2019, compared to other selected EU countries the Republic of Poland was below the average with regard to the density of CT scanners, MRI machines, angiographs and PET machines. In terms of CT scanners and angiographs, the Republic of Poland ranked 14 among the countries listed.

The situation is much worse for MRI and PET machines - here the country occupies respectively the 18th and 19th position.

[254] Regulation of the Minister of Health of 30 July 2012 on the list of medical devices of particular importance for securing health care needs and the scope of information about these devices, Dz. U. /Journal of Laws/ of 2012 item 895, Internetowy System Aktów Prawnych, http://isap.sejm.gov.pl, [accessed 04.06.2020]

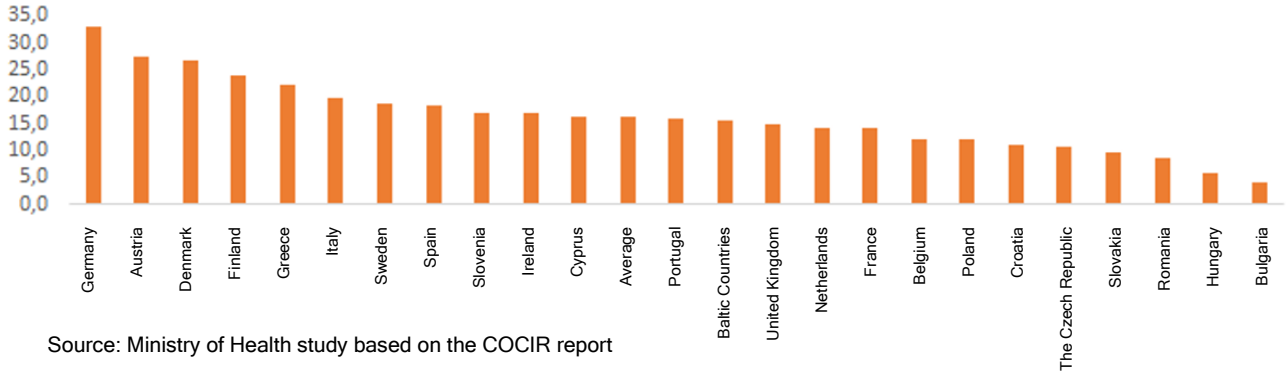
[255] European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry. https://www.cocir.org/fileadmin/Publications 2019/19076 COC AGE PROFILE web.pdf, [accessed 04.06.2020]

Figure 272. Density of CT scanners per 1,000,000 population.



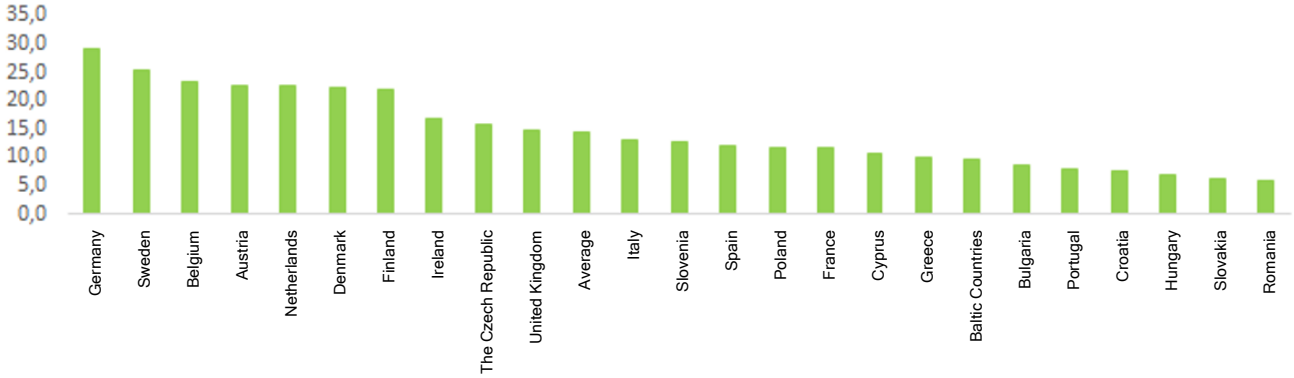
Source: Ministry of Health study based on the COCIR report

Figure 273. Density of MRI machines per 1,000,000 population.



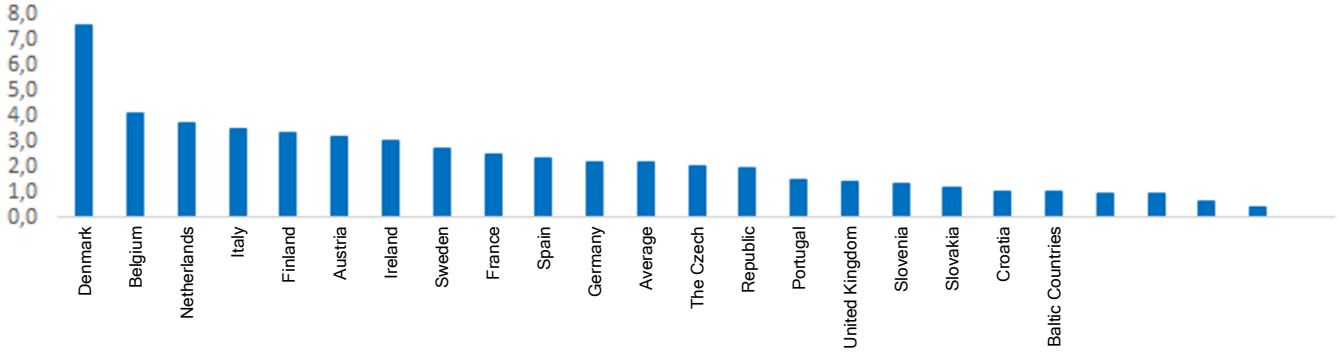
Source: Ministry of Health study based on the COCIR report

Figure 274. Density of angiographs per 1,000,000 population.



Source: Ministry of Health study based on the COCIR report

Figure 275. Density of PET machines per 1,000,000 population.



Source: Ministry of Health study based on the COCIR report

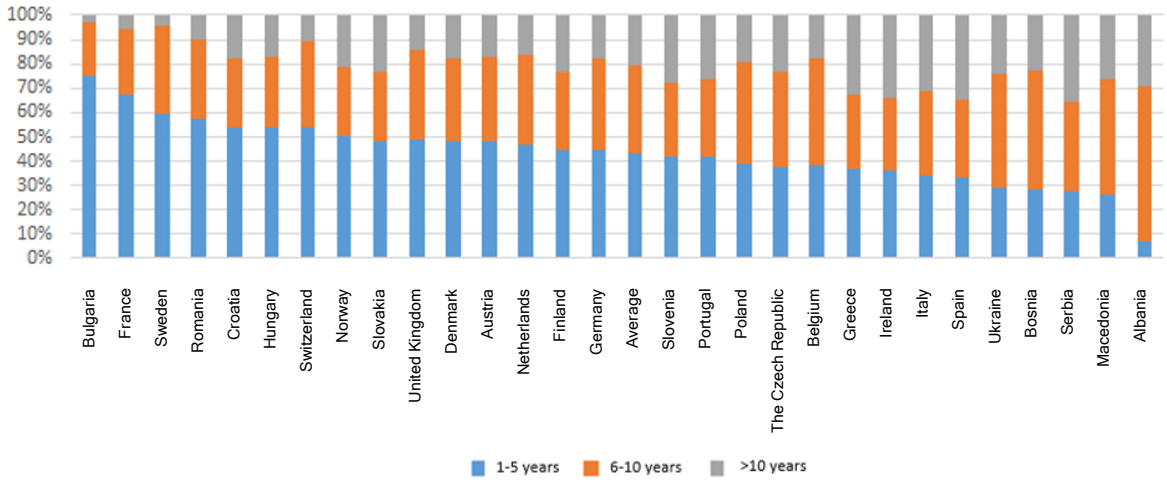
The second important issue to consider when analysing the state of the hardware infrastructure is the age distribution of particular types of equipment across the country. According to COCIR, the countries should strive to meet the following conditions ("*COCIR Golden Rules*"):

1) at least 60% of the installed equipment base should be less than 5 years old ("young" equipment),
2) no more than 30% of the installed equipment base should be between 5 to 10 years old,
3) no more than 10% of the installed equipment base should be more than 10 years old ("old" equipment).

The age of the equipment is very important from a technological perspective - new equipment ensures a better quality of medical procedures. In contrast, old equipment has many additional limitations, often related to issues with proper maintenance, and therefore does not perform efficiently.

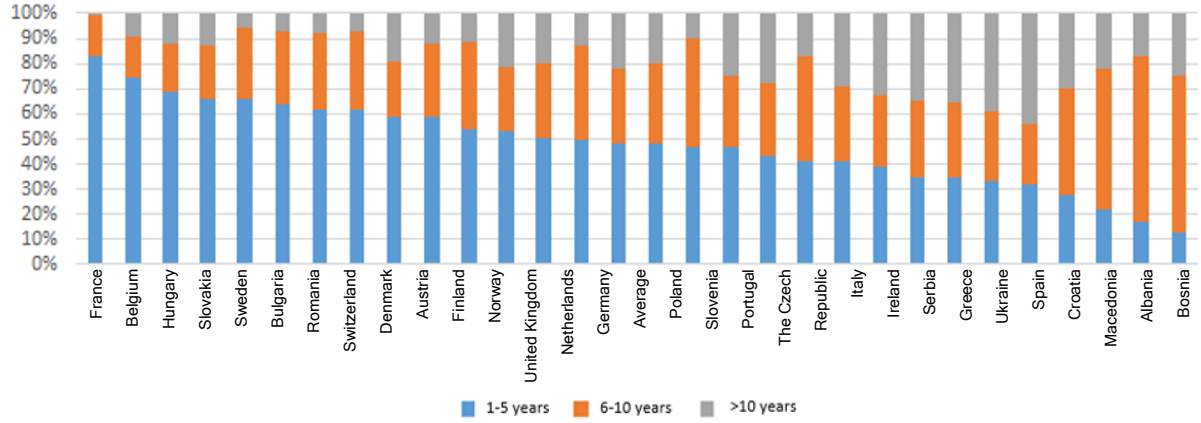
It is important to note that Poland has seen the effects of investments made in recent years with public funds, including the state budget and European funds. For CT scanners, MRI machines and PET machines, despite a lower than average share of "young" equipment, there is also a lower than average share of "old" equipment. In addition, for angiographs, the share of "young" equipment is higher than average. In all these cases, the aggregate number of "young" and 5-10-year-old equipment is higher than the European average. This means that in Poland, the condition of the existing diagnostic equipment base is better than the average condition in certain European countries.

Figure 276. Age distribution of CT scanners.



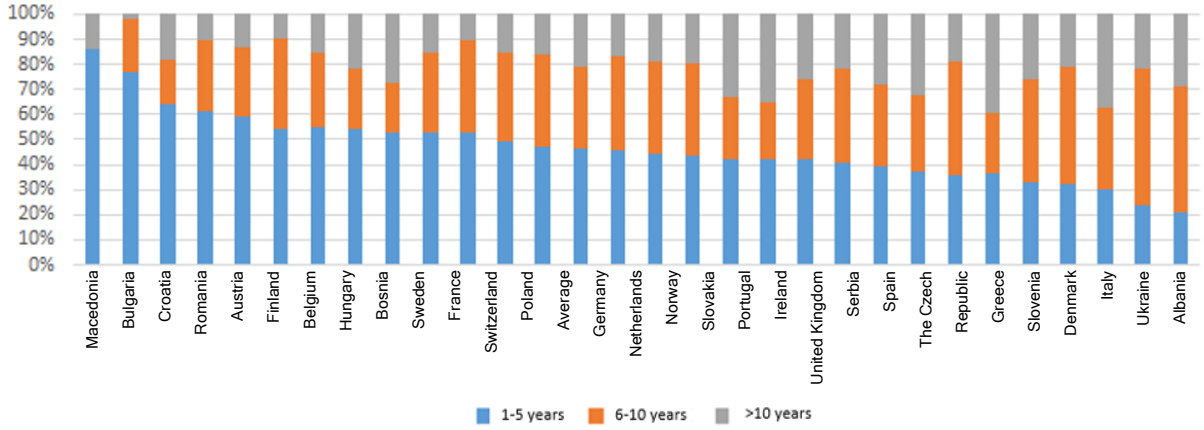
Source: Ministry of Health study based on data from COCIR report

Figure 277. Age distribution of MRI machines.



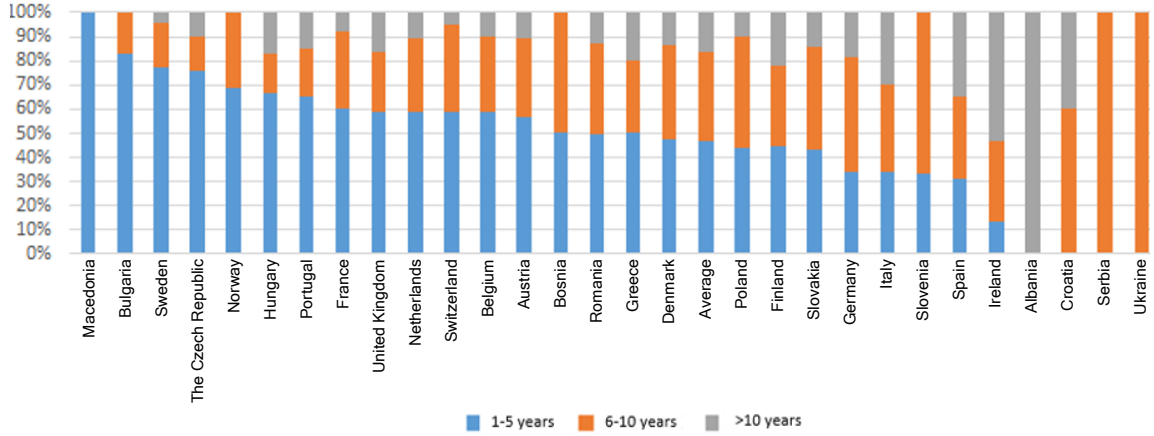
Source: Ministry of Health study based on data from COCIR report

Figure 278. Age distribution of angiographs.



Source: Ministry of Health study based on data from COCIR report

Figure 279. Age distribution of PET machines.



Source: Ministry of Health study based on data from COCIR report

13.1. Age and operation of medical equipment

The charts for individual devices presented below are based on average values for districts according to 2019 data.

Table 89. State of equipment resources in Poland in 2019.

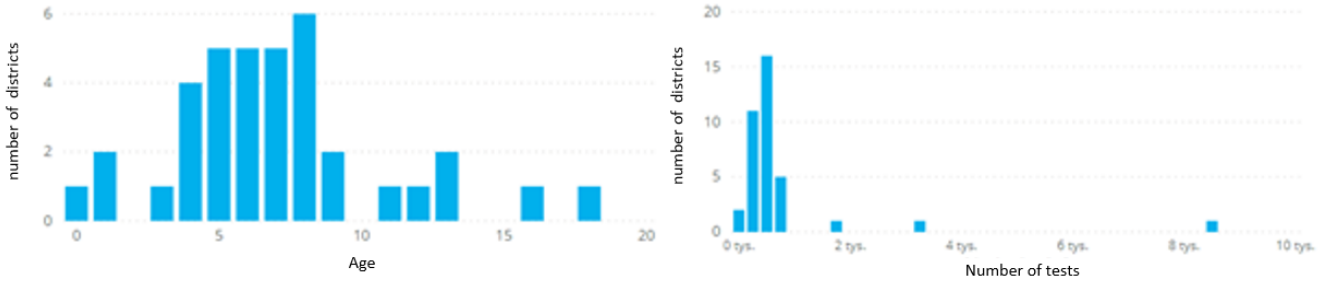
Equipment	Number	Number per 100,000 population	Average age	Average number of procedures performed
linear particle accelerator	168	0.44	6.87	1,132
angiograph	374	0.97	8.13	613
brachytherapy machine	54	0.14	10.10	442
ECMO machine	66	0.17	7.58	8
gamma camera	162	0.42	10.53	925
mammography machine	756	1.97	8.30	1,435
PET machine	32	0.08	6.72	1,966
MRI machine	404	1.05	7.02	2,430
X-ray machine	8,558	22.30	10.42	1,200
CT scanner	774	2.02	7.18	4,155
Ultrasound machine	14,102	36.74	10.16	960

Source: Ministry of Health study based on data from the NFZ, MZ-29 and MZ-11 reports, Report of the National Consultant on Oncological Radiotherapy and SIMP.

Linear particle accelerator

The age distribution of linear particle accelerators shows that in most districts the average age of equipment is less than 10 years. This indicates that these districts have the technical capacity to perform medical procedures in an efficient manner. On the other hand, it can be seen that in one district the average age of equipment is almost 20 years.
In most districts, the average number of procedures performed per annum is up to 2,000; this value is significantly higher only in two districts.

Figure 280. Age and utilisation distribution of linear particle accelerators - district averages.

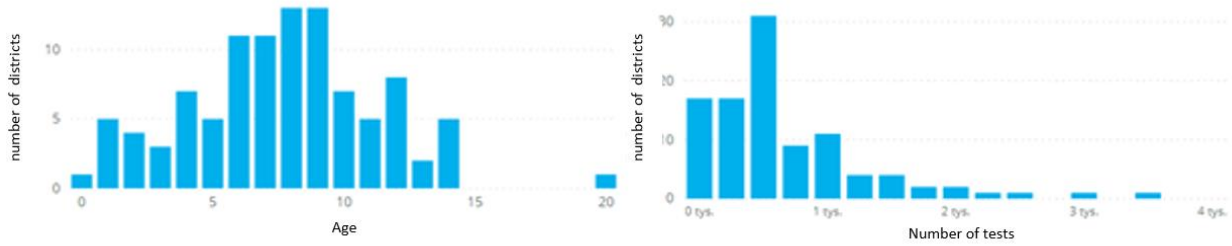


Source: Ministry of Health study based on data from NFZ

Angiograph

The age distribution of angiographs shows that in most districts the average age of equipment is less than 10 years. The most common age of angiographs is between 5 and 10 years, indicating that over the next few years the angiograph base will age significantly, which may cause the procedures performed using this equipment to be less efficient than before. The distribution of the number of procedures performed shows that most districts perform on average up to 2,000 procedures per annum; a few districts have a much higher value.

Figure 281. Age and utilisation distribution of angiographs - district averages.

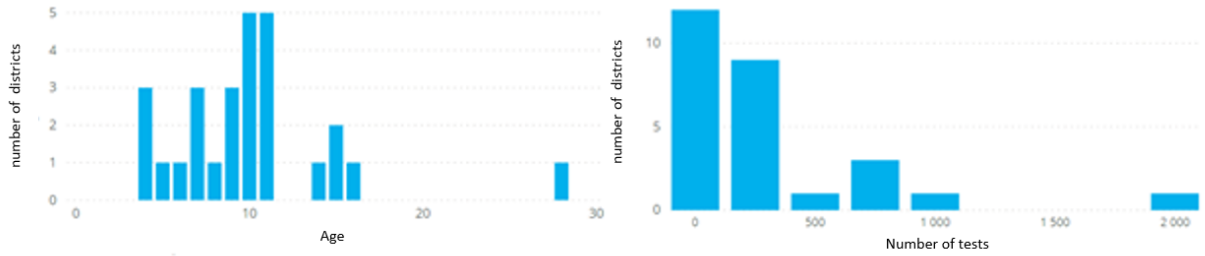


Source: Ministry of Health study based on data from NFZ

Brachytherapy machine

The age distribution of brachytherapy machines shows that in most districts, the average age of equipment is above 5 years, while in some it is even 15 years or more. This means that for this type of medical equipment Poland has a relatively old equipment base. The distribution of the number of procedures performed shows that most districts perform on average up to 1,000 procedures per annum, while one of the districts performs about 2,000 procedures per annum.

Figure 282. Age and utilisation distribution of brachytherapy machines - district averages.



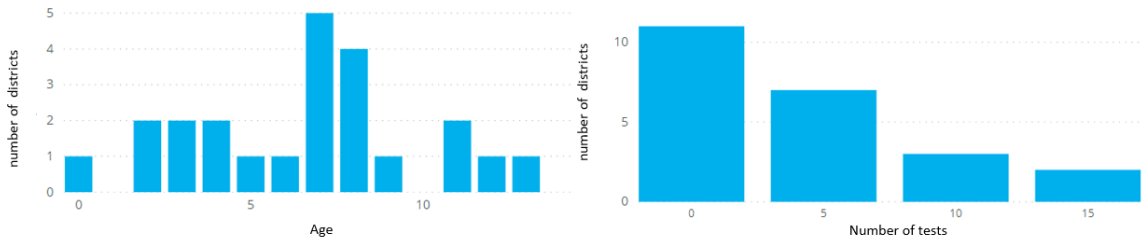
Source: Ministry of Health study based on data from NFZ

ECMO machine

The age distribution of ECMO machines shows that in most districts the average age of equipment is less than 10 years. In addition, it can be noted that there are no instances where the average age of the equipment in the district would significantly exceed 10 years.

The average number of ECMO machine examinations per annum is similar in all districts.

Figure 283. Age and utilisation distribution of ECMO machines - district averages.

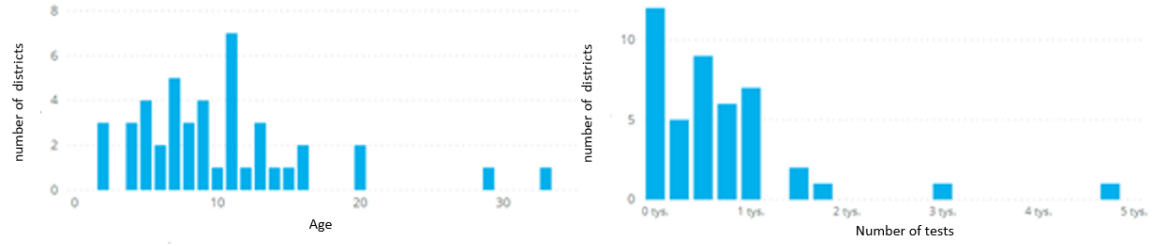


Source: Ministry of Health study based on data from NFZ

Gamma camera

The age distribution of gamma cameras shows that in a large proportion of districts the average age of the equipment is more than 10 years. In addition, it can be noted that in several districts the average age of the equipment is approx. 30 years. The distribution of the number of procedures performed shows that in most provinces an average of up to 2,000 procedures are performed per annum, while in a few districts the value is much higher.

Figure 284. Age and utilisation distribution of gamma cameras - district averages.



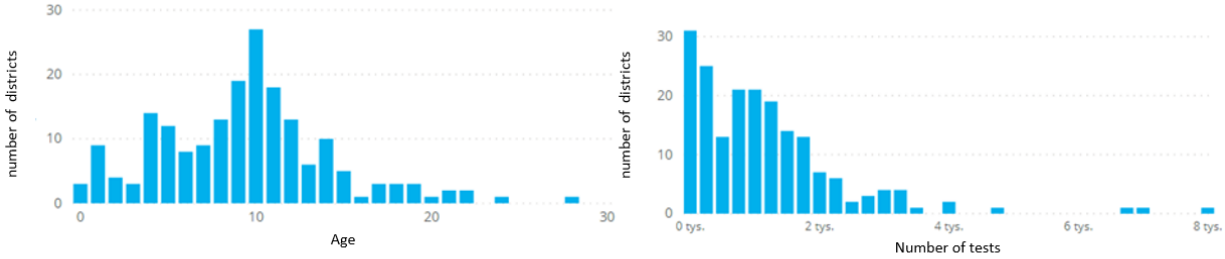
Source: Ministry of Health study based on data from NFZ

Mammography machine

The age distribution of mammography machines shows that the condition of the equipment varies widely across the country. In addition, it can be noted that in more than a dozen districts, the average age of the equipment is more than 15 years. This means that the demand for new mammography machines may increase significantly due to the ageing of equipment within a few years.

The distribution of the number of procedures shows that in most provinces an average of up to 4,000 procedures are performed per annum, while in several districts the average number of procedures performed is significantly higher. In addition, in very many districts the average number of procedures performed per annum does not exceed 500.

Figure 285. Age and utilisation distribution of mammography machines - district averages.

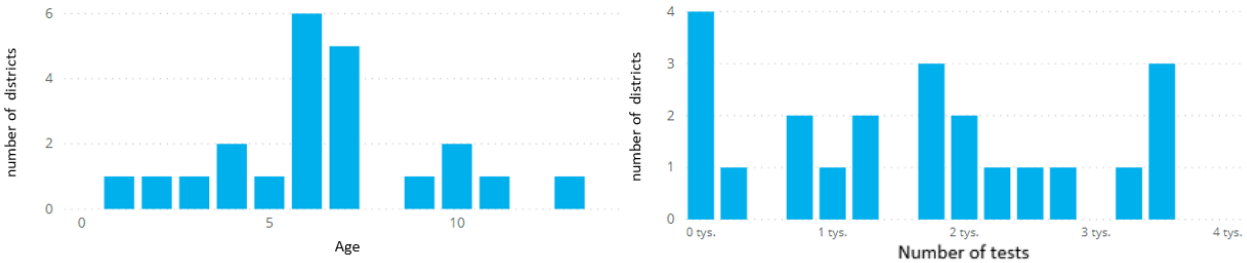


Source: Ministry of Health study based on data from NFZ

PET machine

The age distribution of PET machines shows that only in two districts did the average age of the equipment exceed 10 years. In addition, it can be seen that the average number of procedures per equipment in the district varies widely.

Figure 286. Age and utilisation distribution of PET machines - district averages.

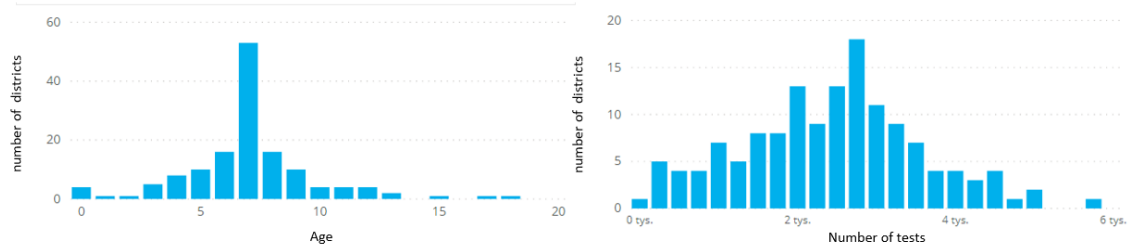


Source: Ministry of Health study based on data from NFZ

MRI machine

The age distribution of MRI machines shows that in most districts the average age of the equipment does not exceed 10 years. It can be noted that the most common average age of the equipment between the districts is approx. 7 years. The distribution of the number of procedures performed shows that in most districts an average of up to 4,000 procedures are performed per annum.

Figure 287. Age and utilisation distribution of PET machines - district averages.

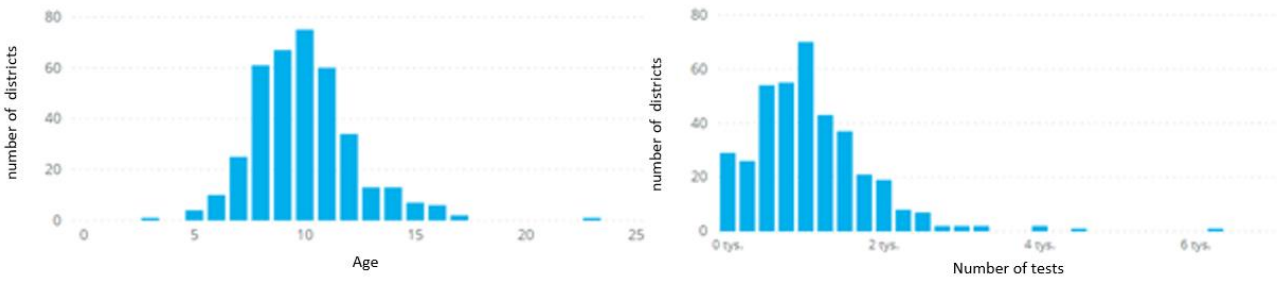


Source: Ministry of Health study based on data from NFZ

X-ray machine

The age distribution of X-ray machines shows that only in a few districts the average age of the equipment does not exceed 5 years. In addition, the average age in several districts significantly exceeds 10 years. It can also be noted that in most districts, the average number of procedures performed per annum is up to 2,000; this value is significantly higher for several districts.

Figure 288. Age and utilisation distribution of X-ray machines - district averages.

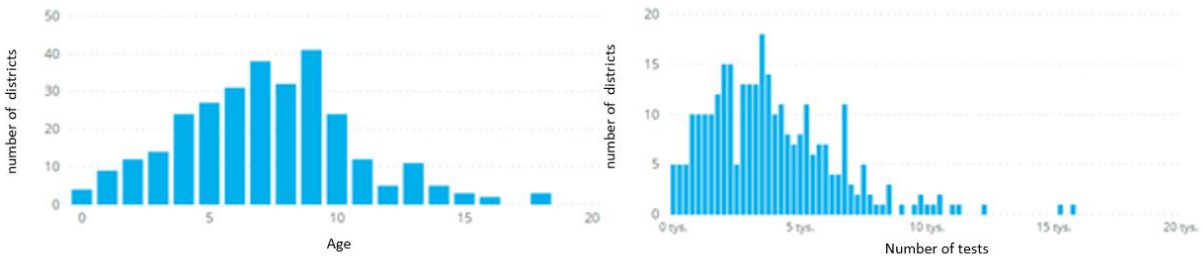


Source: Ministry of Health study based on data from NFZ

CT scanner

The distribution of the average age for CT scanners by district indicates that much of the infrastructure is less than 10 years old. However, in the next few years, new investments for the purchase of CT scanners will be necessary as a significant portion of the equipment has exceeded the age limit for efficient operation. An analysis of the average number of procedures shows that many districts can potentially boost the intensity of equipment utilisation.

Figure 289. Age and utilisation distribution of CT scanners - district averages.

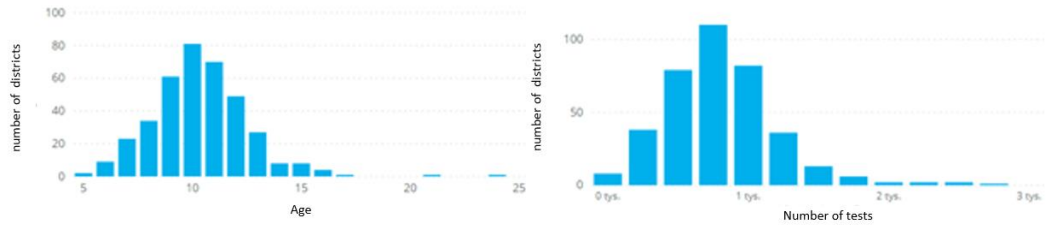


Source: Ministry of Health study based on data from NFZ

Ultrasound machine

The age distribution of ultrasound machines shows that in no district is the average age of the equipment less than 5 years. In addition, it can be noted that in most districts the average age of ultrasound machines is 10 or more years and the average number of examinations does not exceed 1,500, while for a few districts this value is much higher.

Figure 290. Age and utilisation distribution of ultrasound machines - district averages.



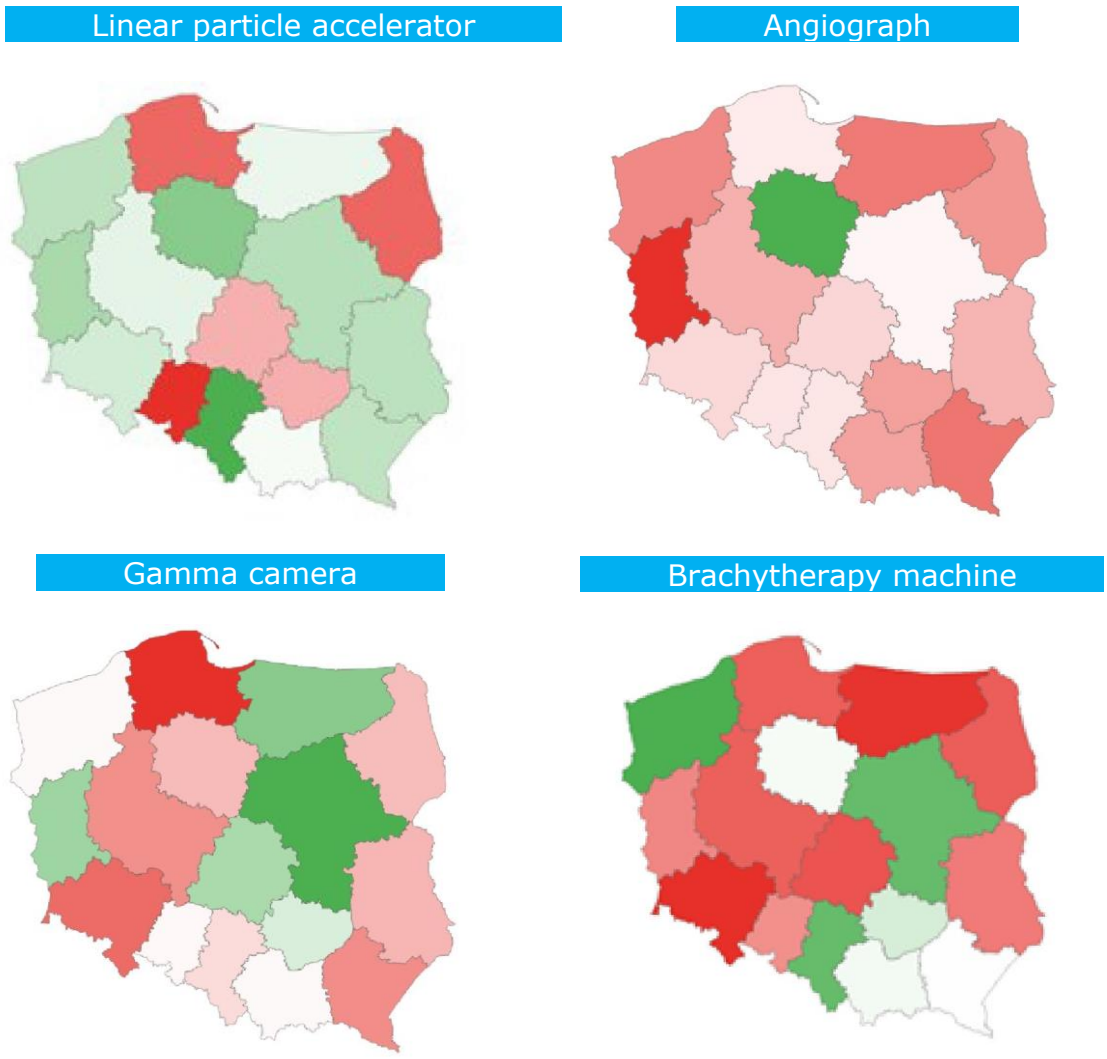
Source: Ministry of Health study based on data from NFZ

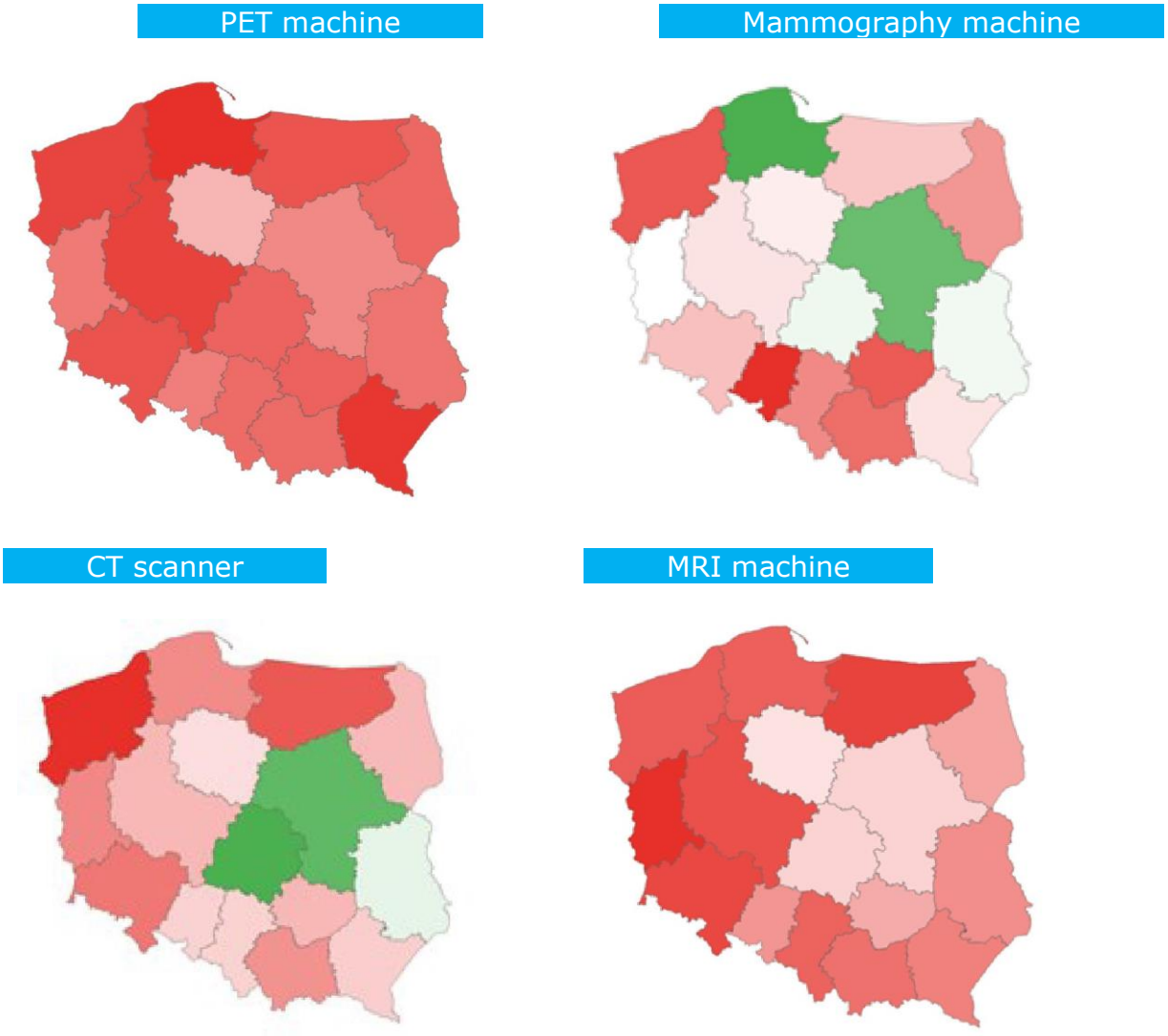
13.2. Density of equipment in provinces

The maps below show the density (number of pieces of equipment per 100,000 population) of selected equipment groups by provinces in relation to the determined reference value (*benchmark*) When the density in a district is above the *benchmark*,

it is coloured green; when it is below the benchmark, it is coloured red. The intensity of the colour shows how far from the *benchmark* is the density in a given province. The *benchmarks* were developed based on the median for the EU of the data from the COCIR report or other publications. In the absence of such information, the *benchmark* is the national average.

Figure 291. Density of selected equipment by province in relation to the *benchmark.*





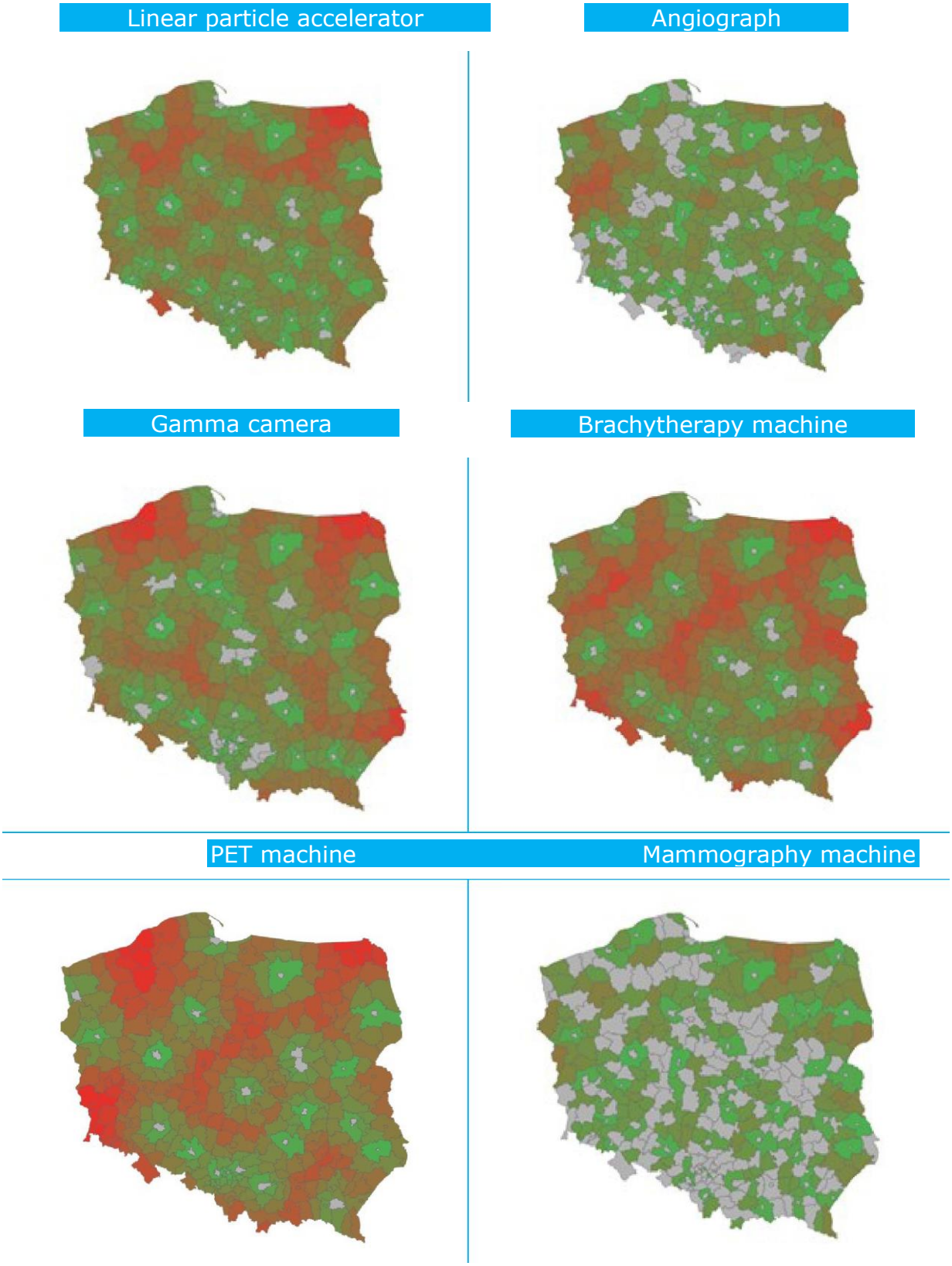
Source: Ministry of Health study based on data from NFZ

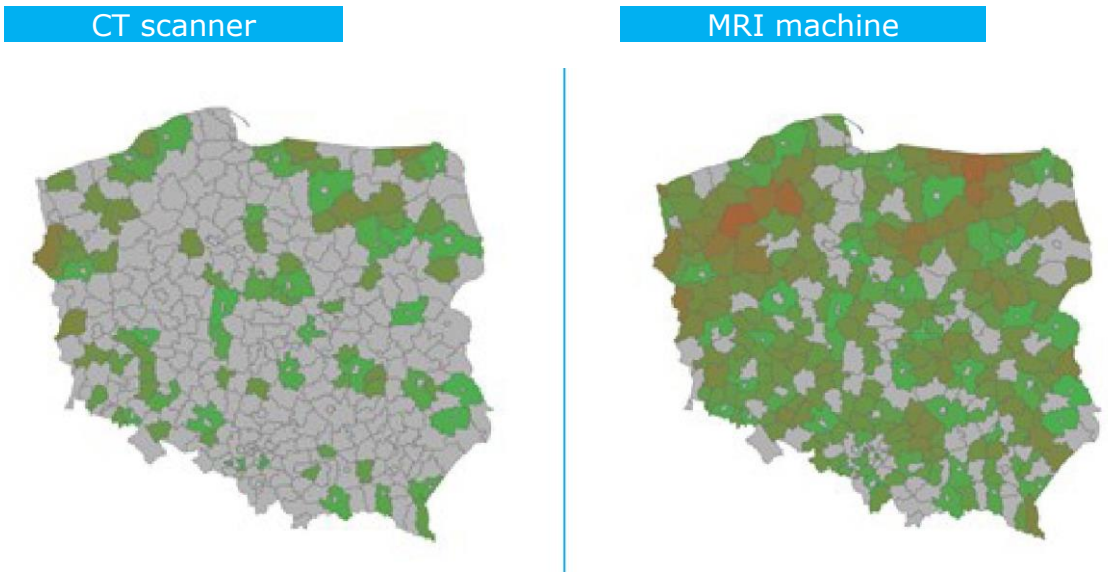
It can be seen that each group of equipment is highly varied in terms of density in the districts in relation to the benchmark. It is also possible to identify groups of equipment that show below benchmark levels in all districts - PET machines and MRI machines.

13.3. Distance to nearest equipment

The maps below show the distance of districts from the district where the nearest selected equipment is located Areas highlighted in grey denote those with at least 1 piece of equipment from the selected equipment group, those highlighted in green denote areas that are the least distant from the grey areas, and those highlighted in red denote areas that are the most distant.

Figure 292. Distance of districts from the district where the nearest equipment is located





Source: Ministry of Health study based on data from the NFZ

It can be observed that equipment such as angiographs, mammography machines, MRI machines, and CT scanners is fairly well distributed. The maximum distance from the district where the equipment is located does not exceed 85 km. On the other hand, equipment such as linear particle accelerators, brachytherapy machines, gamma cameras and PET machines is mainly distributed in large province cities, where there are specialised hospitals and qualified staff. This means that inhabitants of some districts may be more than 150 km away from the nearest equipment.

13.4. Equipment replacement

Replacement priority is determined on the basis of the age and the number of examinations that are performed using the equipment. For equipment that is heavily used, the cut-off age at which the equipment gains high replacement priority is lower (e.g. if a CT scanner performs more than 7,500 examinations per annum, it should be replaced after exceeding 10 years, whereas if it performs less than 7,500 examinations per annum, it should be replaced after 12 years).

Table 90. Replacement priority of selected equipment

Replacement priority	Low	Medium	High
CT scanner	72.7%	11.2%	16.10%
Linear particle accelerator	62.50%	33.90%	3.60%
angiograph	75.40%	1.60%	23%
brachytherapy machine	33.3%	59.3%	7.40%
gamma camera	59.30%	4.30%	36.40%
mammography machine	51.10%	6.20%	42.70%
PET machine	75.0%	21.9%	3.1%
MRI machine	80.4%	11.7%	7.90%
X-ray machine	73.50%	1.30%	25.3%
Ultrasound machine	36.8%	2.4%	60.8%

Source: Ministry of Health study based on data from NFZ

According to 2019 data, for each of the pieces of equipment analysed, apart from ultrasound and brachytherapy machines, more than 50% of the installed equipment base has low replacement priority. High replacement priority ranges from 3.1% for PET machines to 60.8% for ultrasound machines.

13.5. Long-term investments

The table below shows the demand for new investment in each equipment group in 2023 and 2025. The approach used was to consider the current equipment base and simulate the age of the equipment in the future. Any equipment that exceeds 10 years in a given year is counted as part of the base which requires replacement. Failure to supply new equipment will mean expanding blank spaces on the map and significantly reduced access to essential services.

Table 91. Demand for new investment.

Equipment	Demand in 2023	% of equipment considered old in 2023	Demand in 2025	% of equipment considered old in 2025
Linear particle accelerator	84	50%	105	62%
Angiograph	228	61%	267	71%
Brachytherapy machine	37	69%	40	74%
ECMO machine	49	74%	54	82%
Gamma camera	110	68%	135	83%
Mammography machine	415	55%	652	86%
PET machine	16	50%	25	78%
MRI machine	282	70%	327	81%
X-ray machine	5,250	6%	6,265	73%
CT scanner	438	57%	541	70%
Ultrasound machine	approx. 11,000	80%	approx. 12,500	90%

Source: Ministry of Health study based on data from NFZ

Based on the table above, it can be seen that in 2023, more than 50% of the equipment base for selected equipment groups will be over 10 years old. Whereas in 2025, more than 60% of the equipment for each group will be over 10 years old. An equipment group particularly encumbered with a high rate of old equipment, i.e. ultrasound, will have 90% of equipment over 10 years old in 2025.

13.6. Conclusions

With regard to the density of equipment owned by the country, Poland compares differently with other European countries depending on which medical equipment is chosen. In the case of angiographs and CT scanners, equipment density is close to the average of selected European countries, while for PET machines it is one of the lowest rates.

Judging by the age structure, Poland fares well - in particular thanks to the relatively low proportion of equipment over 10 years old.

Data for selected equipment in Poland (linear particle accelerators, angiographs, brachytherapy machines, ECMO machines, gamma cameras, mammography machines, PET machines, MRI machines, X-ray machines, CT scanners and ultrasound machines) was analysed considering four different criteria: the density of equipment in the country, its geographic distribution, age distribution and utilisation distribution. In addition, data on the age and operation of each piece of equipment was used to group the medical equipment by replacement priority. The analysis shows that the equipment base in Poland is sufficient, but should be used more intensively.

Thanks to the forecast of the national demand for new medical equipment investments, it is apparent for the selected years how much of the current equipment infrastructure will exceed an age that significantly limits its ability to perform procedures effectively. In 2025, over 60% of the equipment base will be considered old equipment, and the key equipment to be replaced will be ultrasound machines.

13.7. Health care system challenges

While the age of a significant portion of the medical equipment in the country is adequate to allow efficient operation, the average usage of equipment shows that in most districts the installed infrastructure has a very high potential to perform more examinations than it currently does. The effectiveness of investments in districts in which the average number of examinations performed is below the efficient level may be questionable and requires deeper analysis.

In almost all groups (except ultrasound and brachytherapy machines), more than 50% of the equipment has low replacement priority. The groups of equipment with the lowest proportion of equipment with high replacement priority are linear particle accelerators and PET machines.

The country is very diverse in terms of access to particular diagnostic and radiological equipment. It is possible to identify significant differences in the density of equipment in provinces, as well as districts, that are more than 150 km apart, in which the nearest equipment in a given equipment group is located.

Within 3-5 years, a significant number of diagnostic and radiological equipment will reach the age at which it should be replaced to facilitate efficient operation. It is worth noting that in 5 years approx. 90% of the ultrasound base will be of an age that significantly limits the ability to perform examinations efficiently.

13.8. Recommended lines of actions

→ The primary goal of the strategy concerning medical equipment should be to maximise the utilisation of the base that the health care providers currently possess;

- → when making investment decisions at the regional level, first to be considered should be replacement of the available equipment so that an appropriate age structure can be maintained. Replacement decisions should be made based on the priority - it is very important to first and foremost replace relatively old equipment that is being heavily used, as well as very old equipment whose age hinders efficient operation (high replacement priority);
- → decisions on new investments in medical equipment should take into account differences in the density of equipment in individual provinces and allocate new equipment in such a way as to equalise access across the country;
- → the implementation of the above investments should also take into account other criteria such as epidemiology, the geographic distribution of providers, the waiting time for examinations, and the development of new technologies based on machine learning and artificial intelligence;
- → the replacement of equipment should happen through the realisation of previously developed long-term strategies in accordance with a schedule that allows spreading the expenses over a longer time horizon.

Appendices

Appendix No. 1 Challenges for the health care system and recommended lines of action in the Dolnośląskie Province based on 2019 data

Appendix No. 2 Challenges for the health care system and recommended lines of action in the Kujawsko-Pomorskie Province based on 2019 data

Appendix No. 3 Challenges for the health care system and recommended lines of action in the Lubelskie Province based on 2019 data

Appendix No. 4 Challenges for the health care system and recommended lines of action in the Lubuskie Province based on 2019 data

Appendix No. 5 Challenges for the health care system and recommended lines of action in the Łódzkie Province based on 2019 data

Appendix No. 6. Challenges for the health care system and recommended lines of action in the Małopolskie Province based on 2019 data

Appendix No. 7 Challenges for the health care system and recommended lines of action in the Mazowieckie Province based on 2019 data

Appendix No. 8 Challenges for the health care system and recommended lines of action in the Opolskie Province based on 2019 data

Appendix No. 9 Challenges for the health care system and recommended lines of action in the Podkarpackie Province based on 2019 data

Appendix No. 10 Challenges for the health care system and recommended lines of action in the Podlaskie Province based on 2019 data

Appendix No. 11 Challenges for the health care system and recommended lines of action in the Pomorskie Province based on 2019 data

Appendix No. 12 Challenges for the health care system and recommended lines of action in the Śląskie Province based on 2019 data

Appendix No. 13 Challenges for the health care system and recommended lines of action in the Świętokrzyskie Province based on 2019 data

Appendix No. 14 Challenges for the health care system and recommended lines of action in the Warmińsko-Mazurskie Province based on 2019 data

Appendix No. 15 Challenges for the health care system and recommended lines of action in the Wielkopolskie Province based on 2019 data

Appendix No. 16 Challenges for the health care system and recommended lines of action in the Zachodniopomorskie Province based on 2019 data

Appendix No. 1

Challenges for the health care system and recommended lines of action in the Dolnośląskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	In the province, the fertility rate of women aged 15-49 in 2019 was 39.93, which places the province on the 7th position in the country. Compared to the previous year, there is a decreasing trend (by 1.08). At the same time, the total births per woman rate in the Dolnośląskie Province in 2019 was 1.357, which gives the 7th place in the Republic of Poland.	Considering the continuing downward trend in the fertility and total births per woman rates for the province, it can be assumed that demand for obstetric and neonatal services will decline.	not applicable
Epidemiology and epidemiological forecasting	2.1.	Epidemiological data indicate that the incidence of malignant breast neoplasm in the province was approx. 96.90 per 100,000 (Poland 93.5), and the death rate was approx. 38.20 per 100,000 (Poland 37.8). The forecasts show that in 2028 the incidence of malignant breast neoplasm will be higher by approx. was 12% than in 2019 (Poland 16%),	Neoplastic diseases are and will continue to be in the next 10 years a serious threat to the health and lives of the province inhabitants.	not applicable

	and the death rate will also increase by approx. 12% (Poland 9%).		
2.2.	Ischaemic heart disease (IHD) has been the biggest health problem in the province for years. In 2019, the DALY indicator, which determines the number of healthy life years lost and the number of deaths due to a particular health problem, has reached the highest values. Based on estimates of prevalence and death rates, it is believed that by 2028 will remain unchanged until 2028.	Ischaemic heart disease is and will continue to be a serious threat to the health and lives of the province inhabitants.	not applicable
2.3.	The second most severe health problem in terms of the DALY value and the mortality rate was stroke. Forecasts indicate that by 2028, the prevalence and incidence values of stroke will increase, while the number of deaths will remain at a similar level.	The high mortality rate caused by stroke and the anticipated increase in the number of patients is a serious threat to the health and lives of the province inhabitants.	not applicable
2.4.	The highest number of deaths in the province among neoplastic diseases was caused by malignant tracheal, bronchial and lung neoplasm, malignant colorectal neoplasm, and malignant pancreatic neoplasm.	The high mortality rate caused by neoplastic diseases is and will continue to be a challenge for the health care system in the province.	not applicable

Risk factors and prevention		Forecasts indicate that by 2028, the prevalence, incidence and death rate values will increase significantly.		
	2.5.	The health problems include a very rapid increase in the incidence of diabetes. From 2019 to 2028, the incidence rate value will increase by 23.63%, and the estimated growth will be the largest of all health problems.	not applicable	not applicable
	3.1.	The number of women reporting for preventive examinations (mammography and cytology) is very low in the Lubań, Góra and Zgorzelec districts.[1]	There is regional variation in the number of women reporting for preventive examinations in the province.	Taking measures to increase the number of people who report for screening (cytology and mammography). Equalising the access to those examinations.
	3.2.	Responsible for the highest number of deaths, for men and women combined, were: tobacco, high blood pressure, and dietary risks. The contribution of tobacco to deaths was approx. 242/100,000 population (Poland ca. 216/100,000 population), of high blood pressure approx. 234/100,000 population (Poland ca. 236/100,000 population), and of dietary risks	In the case of tobacco and dietary risks, the indicators for the province were above the average for Poland.	Taking measures to promote a healthy lifestyle. It is important to provide health education for the public and take preventive health measures, for which funding should be increased.

[1] Source: Dolnośląskie Province NFZ Branch study based on data from SIMP

Primary health care		approx. 231/100,000 population (Poland ca. 211/100,000 population).		
	4.1.	Active use of PHC services. Among patients registered on active lists, young men were the least represented group (75% registered aged 31-40, 82% registered aged 19-30, and 78% registered aged 41-50). Young women were also relatively less likely to use PHC services, but in the same age groups, the proportion of active patients was 3 to 6 percentage points higher than among men.	Reasons for this may include the use of private health care or not using medical services because of perceived good health.	Raising awareness, especially among young men, of the important role of prevention and the need for periodic health examinations.
	4.2.	The PHC personnel staffing was below the national average for the province. The number of medical practitioners per 100,000 population was 43.41 (the national average was 68.16). The situation was the most serious in the Kłodzko (14.56) and Lubin (16) districts and in Wałbrzych (19.75). In 15 districts the value was between 20 and 40, in 9 districts between 40 and the average. Only in 3 districts were there more than 76 medical practitioners per 100,000 population. The average medical practitioner age in the province is 48.5 years (1 year less than the national average). The number of PHC nurses per 100,000 population was 42.27 (below the national average of 76.21) for the province.	It will be a huge challenge to ensure continuity of nursing care in the teaching and education environment due to the ageing of staff - it consists mostly of women of retirement age.	Taking measures to substitute the older generation of nurses and midwives. Incentives should be considered to encourage medical staff to work in rural areas and in small towns.

		It was the lowest in Wałbrzych (11.67) and in the Wałbrzych (19.78), Środa Śląska (19.97) and Ząbkowice Śląskie (20) districts; in 11 districts it was significantly higher than 20 but lower than 40, and in 12 districts it was between 40 and 67. In three districts it was near or above the national average. The average nurse age in the province was 50.7 years (2 years more than the national average.) As for the PHC midwife personnel staffing, in 12 districts it did not exceed the province average (12.8), and it was the lowest in the Środa Śląska(1.82) and Lwówek Śląski (2.17) districts, and the highest in the Lubań (14.75) and Strzelin (18.36) districts. The average midwife age in the province was 48.4 years (1 year more than the national average).		
Outpatient specialist care	5.1.	In terms of the number of selected outpatient clinics per 10,000 population, the province achieved the following rates in 2019: 1) endocrinology - rate of 0.07 (15th lowest value among all 16 provinces) 2) paediatric endocrinology - rate of 0.01 3) gastroenterology - rate of 0.07 (14th lowest value)	The province compares particularly unfavourably with the rest of the country in terms of access to these outpatient clinics. The rates calculated for these clinics put the province in one of the last places among all provinces.	It is necessary to improve the accessibility of outpatient clinics, in particular those specialised in endocrinology, paediatric endocrinology, gastroenterology, nephrology, geriatrics, and with medical profiles dedicated to children.

	4) nephrology - rate of 0.04 (16th lowest value) 5) geriatrics - rate of 0.01(16th lowest value) 6) sports medicine - rate of 0.02 (16th lowest value) 7) hip dysplasia prevention - rate of 0.03 (14th lowest value)		
5.2.	In the 2015-2019 time frame, there is a visible decrease in the number of consultations provided in OSC, as well as a decrease in the number of patients using OSC services and a decrease in the rate of consultations per 1 resident in the province (from 2.01 in 2015 to 1.87 in 2019).	This is a steady downward trend in the number of consultations per capita that can be observed nationwide. In 2019, the ratio ranged from 1.86 to 2.48. Compared to other provinces, this rate puts the province in the penultimate place.	Taking measures to improve accessibility where queues are the longest.
5.3.	An analysis of the differences in the territorial distribution of outpatient clinics within the province indicates that there are inequalities in the access to clinics/services. The total number of clinics in the province is 1,813. The rate of clinics per 10,000 population, which averages 6.25, was ranging from 1.98 in the Wałbrzych district (11 clinics) to 9.74 in the city of Jelenia Góra (77 clinics).	In 2019, the overall rate of consultations provided by outpatient clinics per 1,000 population for the province was 1,883.27. The access to consultations as measured by the above-mentioned rate varies across individual districts.	Striving for equal access to OSC services within the province should particularly concern services contracted at the district level.

Hospital treatment	6.1.	The highest rate of 24-hour hospital beds per 10,000 population was recorded in the following wards: internal medicine - 5.4 (lower by 0.7 compared to the previous year), rehabilitation - 5.1 (annual decrease of 0.3) obstetrics-gynaecology - 3.5 (lower by 0.7 compared to the previous year), general surgery - 3.2 (lower by 0.8 compared to the previous year). In 2019, the proportion of intensive care beds, paediatric and adult combined, in the total number of hospital beds in the region was approx. 1.82%.	Irrational use of hospital infrastructure.	Rationalising the number of inpatient beds in inpatient wards or converting them in accordance with demographic and epidemiological forecasts.
	6.2.	Staff shortages, particularly medical specialists, necessitate a concentration of human resources - they can serve patients better if they do not have to divide their time between multiple entities. This can be seen in many medical fields, including neurology.	Difficult access to inpatient health services results in: - migration of patients to other provinces, - use of private health care, - increased waiting times for services	Training of medical practitioners and nurses in priority specialities, in particular: oncology, geriatrics, emergency medicine, orthopaedics and traumatology, psychiatry, child and adolescent psychiatry, diabetology, endocrinology, paediatric gastroenterology, neurology, paediatric surgery, angiology, vascular surgery, and medical caregivers.

Psychiatric care and addiction treatment	6.3.	There is no hospital in the province that has the PHC level - paediatric	Failure to provide comprehensive care for individuals under 18 years of age.	Consolidating the existing infrastructural resources in paediatric disease specialties in order to create a paediatric hospital (securing the availability of a hospital with the status: PHCPS level - paediatric hospital) and provide the fullest possible multispecialist care for patients up to the age of 18 in a single centre.
	7.1.	In the province, there is one Centre for Mental Health, located in Bolesławiec. In the city of Wrocław (534,000 inhabitants), Wałbrzych (95,000 inhabitants) and the district of Milicz (30,000 inhabitants), there are four basic forms of treatment necessary for the CMH to function. In addition, there are three forms of treatment in Legnica (Community Treatment Teams, day wards and an outpatient clinic) for a population of 83,000 and a high density of patients in the surrounding districts (Legnica, Lubin and Polkowice).	The way health care has been organised so far makes it necessary to redirect the flow of financial resources from inpatient care to OSC. The need to combat discrimination against people with mental illness and their families. The need to reduce suicide rates and reduce the stigma against people with mental disorders.	Increasing access to outpatient services, community treatment, day wards, and addiction treatment clinics as the popularisation of a community model of psychiatric care in all areas with limited access.
	7.2.	In 2019 compared to 2018, the number of adult patients who received addiction treatment	However, the ever-increasing number of patients indicates the need to increase	Securing outpatient addiction treatment services

Medical Rehabilitation		increased by 110 and amounted to 19,630. There is not a single smoking outpatient clinic in the province. Psychoactive substance abuse treatment clinics are available in 7 municipalities, while general substance abuse treatment clinics in 13. In much of the region, there are no addiction treatment clinics of any kind.	expenses on psychiatric services, including addiction services, to minimise waiting times for medical, psychologist and psychotherapy visits.	in each district.
	8.1.	Medical rehabilitation services under the NFZ were used by 16% fewer patients per 100,000 population than the national average (14th place among all provinces).	The availability of rehabilitation services within the services contracted with the NFZ, both inpatient and outpatient, is minimal due to the insufficient number of specialised centres and the limiting of these services.	Equalising access to services by enabling access to rehabilitation services as close to the patient's place of residence as possible. The most important task is to strengthen outpatient rehabilitation care, including care in day centres/wards, in order to ease the burden on hospital treatment.
	8.2.	The access to cancer rehabilitation and pulmonary rehabilitation services is insufficient in the province. There is only one contracted pulmonary rehabilitation centre, in the Jelenia Góra region (covering the districts of the former Jelenia Góra province: Jelenia Góra,	An insufficient number of outpatient care centres providing medical rehabilitation services.	Optimising rehabilitation beds in early and chronic inpatient (cancer and pulmonary) rehabilitation and in rehabilitation carried out

Long-term care		Zgorzelec, Lubań, Bolesławiec, Lwówek Śląski as well as the city of Jelenia Góra), while in other regions (Wrocław, Wałbrzych, Legnica) there are blank spots, and with regard to accessibility indicators, the province occupies one of the last places when compared to the rest of Poland.		in day care, outpatient and domestic conditions. Increasing funding for rehabilitation services that are considered a continuation of "acute" treatment.
	8.3.	As of 31 December 2019, there is no day rehabilitation centre for people with visual impairment in the province.	No access to rehabilitation services for people with visual impairment	Reactivating the day rehabilitation centre for people with visual impairment
	9.1.	Within the province, a total of 267 patients per 100,000 population have received nursing and care services as part of long-term care (-7% compared to the national average). When divided by service type, 146 patients per 100,000 population have received home-based care services (-18% compared to the national average). For inpatient care, it was 123 patients per 100,000 population (+11% compared to the national average). The number of person-days per 100,000 population in the province for long-term care was 65,000 (5% below	Access to this type of service is the most limited for patients in the Wrocław subregion (districts with accessibility below the province average: Oleśnica, Oława, Środa Śląska, Wrocław, the city of Wrocław).	Striving to improve access to long-term inpatient care primarily in the subregions of Legnica and Wrocław (it takes too long to provide long-term inpatient care for the entire province, and additionally in these regions there is the largest number of districts with the worst accessibility). The accessibility improvement should be significant and implemented in two ways - on the one hand, focusing on inpatient care, through

		the national average): for long-term home-based care 37,000 (21% below the national average) and for long-term inpatient care - 28,000 (30% above the national average).		proper allocation of already existing inpatient care resources and adjusting the organisation of service provision to patients' needs; on the other hand, the aim should be to increase the proportion of home-based care relative to inpatient care by gradually increasing the availability of home and community health care.
	9.2.	Despite the increase in the number of CTC/NCC beds over the past few years, there has been an increasingly long waiting period for receiving inpatient care (more than six months) and a decrease in the rate of beds per 1,000 population aged over 65. The situation is the most difficult in the Góra district and the city of Wałbrzych, in which there are no providers of this type of service and which constitute "blank spots" in the province as well as in the Legnica subregion (districts with accessibility below the province average: Głogów, Lubin, Polkowice, Legnica, the city of Legnica) and the Wrocław subregion (districts with accessibility below the province average: Oleśnica, Oława,Strzelin, Środa Śląska, Wołów, the city of Wrocław), because these	The insufficient number of long-term care beds results in extended periods of unwarranted hospitalisation of patients in hospital wards, which causes a dramatic shortage of internal medicine beds. Uneven distribution of long-term care centres in the province. Low percentage of provision of long-term home care compared to the national average.	Developing and improving access to comprehensive care for the chronically ill and elderly and those requiring long-term care. Providing inpatient care services in the district of Góra and the city of Wałbrzych. Increasing the number of home-based care and community treatment services offered.

	regions have the highest number of districts with accessibility below the province average (number of patients per 100,000 population).		
9.3.	There are 4 inpatient centres for mechanically ventilated adult patients in the province. There is no such centre for children because some patients from the Dolnośląskie Province were provided such services in other provinces.	No centre for children requiring mechanical ventilation.	Establishing a centre for children requiring mechanical ventilation.
9.4.	The population of the province is characterised by an older age structure than the population of Poland. In 2019, the province was inhabited by 552,000 people aged 65 and over, which accounted for 19% of the total population (compared to 18.1% for Poland). Meanwhile, the youngest people (up to 14 years old) constituted 420,000, their share amounting to 14.5% (compared to 15.3% for Poland). The province will see a decline in the percentage of the youngest people (0-14 years old) up to 11.7% in 2050. The number of residents in the 65 and over age group will increase, reaching 33.5% of the total population of the province in 2050.	The rapid ageing of the population of the province foreshadows growing challenges associated with increased demand for care for the elderly who require nursing and care services as part of long-term care.	Adapting and securing long-term care infrastructure to meet the current and future needs of an ageing population. Increasing the number of home-based care and community treatment services offered. Providing inpatient care services in districts where this form of care does not currently exist.

Palliative and hospice care	10.1. 10.1.	The number of patients receiving home-based palliative and hospice care per 100,000 population is good in comparison to Poland (205.99 patients per 100,000 population, 4th place in the country, +27% compared to the national average), the demand for these services continues to grow. Inequalities in the distribution of potential across districts cause problems with access to home-based palliative care for local populations, whereas due to the nature of the services, the centres should be close to the patient's place of residence.	The demand for palliative and hospice care is increasing due to the ageing of the population and the observed increase in the incidence of chronic diseases.	Due to the forecast of growing demand for palliative and hospice care services related to demographic and epidemiological changes, access to home-based care services should be increased, first of all in districts with the worst accessibility: Legnica, Polkowice, Lubin, Legnica, Wrocław, Kłodzko and Złotoryja.
	10.2.	In the province, there were 15 entities providing inpatient services (0.52 per 100,000 population, 5th place in the country, +4% compared to the national average). At the end of the year, palliative medicine ward and inpatient hospices had 125.17 beds per 1,000,000 inhabitants, which is the 3rd best result in the country (+19% compared to Poland). The overall situation in the province is good; however, there are significant differences between districts due to the location of the centres and the contracting of this range of services to groups of districts.	The availability of services varies across the province. Below the average volume per province are the region and district of Wrocław, the city of Wrocław and the district of Legnica.	Increasing the availability of inpatient hospice services, first of all in the district and city of Wrocław, which has less than 80 beds per 1,000,000 inhabitants. After that, also in other districts that currently do not have inpatient hospices but have unmet medical needs in this area (a long-term endeavour due to the time needed to establish

Emergency Medical Services				and contract inpatient facilities).
	10.3.	The number of palliative care medical practitioners per 100,000 population is 2.2; the average medical practitioner age is 50. The medical practitioner availability rate should be 3 per 100 population. There is also an insufficient number of nurses, particularly ones specialising in palliative/hospice care nursing.	In the province, the medical staffing of palliative and hospice care centres is insufficient.	Increasing the number of medical practitioners specialising in palliative care and nurses, particularly ones specialising in palliative/hospice care nursing, in palliative and hospice care centres.
	11.1.	Statistical data indicate longer than legally specified times of ERT arrival at the scene of an incident outside a city with a population above 10,000 inhabitants for 23% of calls. Positive experience with the "stroke" areas for the Lower Silesia, which were created for the purpose of proper operation of the ERTs by assigning specific population groups divided into districts to medical entities providing stroke treatment (included in the emergency rescue plan of the province), indicate that these methods should be employed in other medical fields, especially those characterised by low availability of hospital beds, e.g. internal medicine.	Improvement of emergency medical response in the event of threats to the health and lives of patients.	Redistributing the ERTs to ensure arrival times in accordance with legal provisions to incident scenes outside the city. Launching motorcycle ambulances that will reach the place of the incident in a shorter time.

Medical staff	12.1.	A suboptimal number of speciality places taking into account the number of training places needed to ensure generational replacement and an insufficient number of specialists in the following fields: internal medicine (987), family medicine (411), psychiatry (238), occupational medicine (198), geriatrics (180), paediatrics (112), and emergency medicine (111).	Ensuring a sufficient number of specialists in specific medical fields.	Launching more speciality places in deficit areas in the coming years in order to reduce the unfavourable difference between the number of specialists reaching retirement age and the number of medical practitioners obtaining a speciality degree, and to meet the demand for medical specialists reported in the conclusions.
	12.2.	Despite the launch of an increased number of training vacancies in each recruitment procedure, both in the resident and non-resident programmes, there is little interest in training in the following fields: internal medicine, general surgery, paediatrics, obstetrics and gynaecology, pulmonary diseases, neonatology.	Ensuring a sufficient number of specialists in specific medical fields that are not popular among medical practitioners choosing a speciality.	Creating and implementing an action plan to encourage medical practitioners to complete their speciality training mainly in district hospitals, where the staff shortages are the greatest.
	12.3.	The shortage of nurses is estimated at least at 16%, and of midwives at 12%, of the current (also too small) number of working nurses, and it occurs in all entities conducting medical activity in the province,	Shortages in the number of nurses and midwives are observed. Additionally, there is a serious risk that the number of nurses and midwives declines whilst the demand for nursing care increases	Increasing the number of nursing degree vacancies and creating an incentive system to encourage people to undertake

Medical equipment		particularly in inpatient medical entities. The systematically deepening ageing of the population of the province means that the need for nursing care is bound to increase. The nursing staff shortage is particularly noticeable in fields such as geriatric, internal medicine, and long-term care nursing.	because of the ageing of the population.	nursing studies is recommended. Taking measures to motivate those who have left the nursing profession to be professionally active again and improving access to paid or low-paid workshops and training for medical personnel.
	13.1.	The reference number of procedures performed per annum on one PET-CT scanner in the province is 3,500 - 3,750, which is below the benchmark of 4,000. The number of examinations is higher compared to other provinces and the national average.	The usage distribution of PET-CTs in the province indicates inefficient operation of this equipment. It is possible to indicate districts in which, according to the adopted reference values, the utilisation rate of the equipment should be higher.	In the identified cases, efforts should be made to optimise the use of currently owned PET-CTs.
	13.2.	There were 12 accelerators in the province, of which 9 had medium replacement priority (75%) and 3 had low replacement priority (25%).	In the province, it is possible to identify accelerators with medium and high replacement priority.	In the identified cases, action should be taken to replace accelerators, starting with those whose replacement priority has been determined as high, followed by those with medium replacement priority.

	13.3.	Angiographs were distributed between eleven districts. The area furthest from the district where there is at least 1 angiograph is the Milicz district (62 km). The average age of the equipment in the districts ranges from 4 to 20 years. The oldest angiographs are in the city of Jelenia Góra, where as of 2019, two angiographs are 20 years old. 38.7% of angiographs in the province have a high replacement priority, while 61.21% belong to the equipment base with low replacement priority. Note the uneven distribution of equipment utilisation (the lowest average number of examinations performed per annum in the Legnica district: 0, the highest in the Świdnica district: 1958).	By 2029, all currently owned angiographs will qualify as old equipment in need of replacement.	In the identified cases, action should be taken to replace the equipment and monitor its wear level.
	13.4.	The average age of the equipment in the districts ranges from 6.6 to 13.6 years (in most districts it exceeds 9 years). The large proportion of "old" equipment is reflected in the recommendations according to which as much as 58% of the machines have high replacement priority. The analysis showed an uneven distribution of equipment utilisation (the lowest average number of examinations performed per annum in the Wałbrzych district: 270, the highest in the Góra district: 1540).	In 2020, 63.8% of the ultrasound machines in the province should be replaced. In 2028, 100% of the equipment will exceed 10 years and will be counted as part of the base which requires replacement.	In the identified cases, action should be taken to replace the equipment and monitor its wear level.
	13.5.	The average age of the equipment in the districts ranges from 1 to 16 years. 16% of CT scanners	By 2022, 50% of CT scanners will reach an age that significantly limits effective	In the identified cases,

	in the province currently have high replacement priority, 12% have medium replacement priority X-RAY MACHINES The average age of the equipment in the districts ranges from 6 to 17 years. 25.1% of the equipment has high replacement priority (these are machines aged 12-42 years). Low replacement priority was given to 73.6% of X-ray machines.	performance of examinations, and by 2029, all currently owned CT scanners will qualify as old equipment in need of replacement. By 2022, 54% of the X-ray machines in the province will exceed 10 years old and will be counted as part of the base which requires replacement.	action should be taken to replace the equipment and monitor its wear level.
13.6.	The machines are located in nine districts. In 2019, the average age of equipment exceeded 10 years in only one district (the Oleśnica district - 11 years). The average number of procedures performed per annum in these districts ranged from approx. 1,000 to over 3,000. Because of the large proportion of middle-aged equipment with a relatively low number of examinations performed per annum, 73.9% of the machines have low replacement priority, and only 6 machines have medium or high replacement priority	By 2022, 78% of MRI machines in the province will exceed 10 years and will be counted as part of the base which requires replacement. In 2029, 100% of the current equipment will have to be replaced.	In the identified cases, action should be taken to replace the equipment and monitor its wear level.
13.7.	The province has only 2 brachytherapy machines, located in the city of Wrocław. The average age of the equipment is 6 years. One of the machines (9 years old), performing an average of 1,171 examinations per annum, has high replacement priority.	By 2027, the other machine will also need to be replaced.	In the identified cases, action should be taken to replace the equipment and monitor its wear level.

Other areas	13.8.	The average age of ECMO machines is over 8 years; average usage: 4.6 procedures per annum. 100% of the equipment had low replacement priority.	The entire base of currently owned ECMO machines will need to be replaced by 2023.	In the identified cases, action should be taken to replace the equipment and monitor its wear level.
	13.9.	The average age of the gamma cameras is 7 years with the average number of procedures performed being 694. 100% of the equipment had low replacement priority. Uneven distribution of equipment utilisation (the lowest average number of examinations performed per annum in the Świdnica district: 5, the	By 2026, all currently owned gamma cameras will need to be replaced.	In the identified cases, action should be taken to replace the equipment and monitor its wear level.
	13.10.	The age of stationary mammography machines ranged from 1 to 28 years. In 2019, 33.3% of the equipment had high replacement priority and 14.6% medium. Equipment utilisation varies between districts: from 0 to 8,645 examinations/year. The lowest average equipment utilisation was recorded in the Jelenia Góra district: 42 examinations/year, but it should be noted that this applies to the oldest machine (28 years old).	Half of the owned stationary mammography machines will need to be replaced by 2024 and the current base by 2028.	In the identified cases, action should be taken to replace the equipment and monitor its wear level.
	14.1.	The number of referrals issued in the province for spa treatment of adults and children in spa hospitals is gradually decreasing, which does not correlate with the hospital morbidity rates and the demand	The demand for spa health services will increase due to the ageing of the population and an increase in the incidence	Ensuring optimal access to early sanatorium treatment.

		for other rehabilitation services, including inpatient medical rehabilitation (where the reported waiting times for services reach several years).	of chronic civilisation diseases that can be effectively treated in spas.	
	14.2	Persons insured in the province have to wait too long for the provision of spa health services only in the scope of sanatorium treatment of adults.	Failure to ensure optimal accessibility of services results in excessively long waiting times for sanatorium services.	Increasing the number of services under contract with the NFZ.

Appendix No. 2

Challenges for the health care system and recommended lines of action in the Kujawsko-Pomorskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	In 2019, 21.6% of the population of the province was of post-working age, and the demographic dependency ratio was 65.6. According to forecasts of Statistics Poland, in 2050 in the province, the proportion of post-working age people in the total population will increase to 29%, and the demographic dependency ratio to 78.1.	In the coming years, health care should be adapted to the changing demographic structure of the population by placing greater emphasis on the health needs of elderly people.	not applicable
Epidemiology	2.1.	The highest DALY value in the province was recorded for neoplastic diseases and cardiovascular diseases. Those subgroups of health problems were also the most common causes of death.	The health problem subgroups identified as neoplastic diseases and cardiovascular diseases had the greatest impact on the number of life years lost, the number of years lived with disability and the number of deaths.	not applicable
	2.2.	Out of all neoplastic diseases, the highest value of the DALY indicator in the province was recorded for malignant tracheal, bronchial and lung neoplasm, and malignant	Out of all neoplastic diseases, the most significant for the population of the province are malignant tracheal, bronchial and lung neoplasm, and malignant	not applicable

	colorectal neoplasm. These neoplastic diseases were also responsible for the highest number of deaths in this disease subgroup. Years 1999-2019 saw a significant increase in the number of deaths caused by neoplastic diseases in general.	colorectal neoplasm. In recent years, the significance of malignant prostate neoplasm in the male population and malignant breast cancer in the female population has also kept increasing.	
2.3.	The highest DALY value in the province was reported for ischaemic heart disease. In the years 1999-2019, this value has been declining but it has remained well above the values for other health problems. There has been a decrease in the incidence rate value which, according to the forecast, will remain at the level close to 2019 values until 2028. In contrast, the prevalence rate value has been increasing steadily in the years 1999-2019 and according to the forecast, the trend will be maintained until 2028. Ischaemic heart disease was also the most common cause of death out of all health problems. According to the forecast, the situation is expected will remain unchanged until 2028.	Out of all health problems, ischaemic heart disease had the greatest impact on the number of life years lost, the number of years lived with disability and the number of deaths. According to the forecast, this situation will not change in the coming years.	not applicable

	2.4.	There has been a significant increase in the DALY value recorded for diabetes in 2019 compared to the value for 2009. Forecasts indicate that by 2028, the prevalence rate value will increase significantly (approx. 24%), and so will the incidence rate value and the number of deaths.	The province has seen an increasing impact of diabetes on the health status of its inhabitants.	not applicable
	2.5.	Alzheimer's disease and other dementia-related diseases were among the most common causes of death for the female population in the province. The death rate for this health problem was higher than for many neoplastic diseases.	Among women, Alzheimer's disease and other dementia-related diseases were significant causes of death.	not applicable
	2.6.	According to the forecast, by 2028, the greatest increase in the rate of deaths per 100,000 population will concern nervous system diseases, psychoactive substance use disorders and neoplastic diseases. For psychoactive substance use disorders, the projected increase in the number of deaths will be the highest in the country.	An expected increase in the importance of nervous system diseases, psychoactive substance use disorders and neoplastic diseases, manifested by an increase in the number of deaths caused by these health problems.	not applicable
	2.7.	The highest value of the incidence rate in the province was recorded for upper	The identified subgroup of health problems is and will continue to be important to the population of the province.	not applicable

Risk factors and prevention	respiratory tract infections. This situation has remained unchanged over the years 1999-2019. This health problem subgroup is forecasted to have in 2028 the highest incidence rate value per 100,000 of the population.		
	2.8. According to the forecast, by 2028, the prevalence rate value per 100,000 population will increase the most for diabetes and kidney diseases, diseases of the sensory organs, musculoskeletal diseases and cardiovascular diseases, and in each case the increase will be greater than for Poland.	An increase in the importance of the identified health problem subgroups such as diabetes and kidney diseases for the health of the population of the province.	not applicable
	3.1. Behavioural factors, among them tobacco, had the greatest impact on the DALY values and deaths in the province. The impact of tobacco on deaths and DALY values was significantly greater in the province than in Poland (by approx. 12% as regards deaths and DALY values for men and women combined), which put the province in the 4th place among provinces with the highest value of both indicators. In addition, for the male population, tobacco contribution to DALY was 8,690 per 100,000 population, and to deaths 336 per 100,000 of the population. For the	Tobacco is a significant factor contributing to death and loss of healthy life years. Its importance in the province is greater than in the country as a whole. The actions taken to offset the negative effects of tobacco use are insufficient.	Undertaking promotional and educational activities to raise awareness of the negative impact of tobacco on health and to encourage tobacco cessation, with a particular focus on the male population.

	female population, these values were 4,090 and 152,500, respectively. In the province, only 3 local government units have been implementing public health tasks aimed at combating the health consequences of the use of tobacco and related products[1].		
3.2.	For the male population, the contribution of alcohol consumption to DALY was 4,580 per 100,000 population, and to deaths 123.6 per 100,000 of the population. For the female population, the respective figures were 600 and 7,600 respectively.	The impact of alcohol consumption on DALY and deaths was several times higher in the male population than in the female population.	Undertaking promotional and educational activities to raise awareness of the negative impact of alcohol consumption on health and to encourage abstinence, with a particular focus on the male population.
3.3.	A total of 17.5% of the annual population to be screened was screened for cervical cancer (the average for Poland was 17.3%). The proportion of women screened in the population to be screened increased compared to 2018 by about 1%. Cervical malignant neoplasm incidence rate per 100,000 women in the province was 17.1 (16.5 in the country). At the same time, the number of deaths it caused per 100,000	A low number of women reporting for cervical cancer screening. Higher incidence and higher number of deaths from cervical cancer than the national average.	Action should be taken to improve the number of women reporting for cytology screenings.

[1] Information on public health tasks completed or undertaken (public health reporting system).

		women in the province was 11.2 (10.7 in the country).		
	3.4.	A total of 68.6% of the annual population to be screened underwent malignant breast neoplasm screening (average for Poland - 63.6%). The proportion of women screened in the population to be screened increased compared to 2018 by about 17%. Malignant breast neoplasm incidence rate per 100,000 women was 104.2 in the province, and 93.5 in the country. At the same time, the number of deaths it caused per 100,000 women was 43.6 in the province, and 37.6 in the country.	Although the situation in the province improved compared to 2018 with regard to the proportion of women screened for malignant breast neoplasm in the population to be screened, the incidence and death rate values for the province were higher than for the country.	Action should be taken to improve the number of women reporting for mammography screenings.
	3.5.	The province had almost three times lower rate of screening tests performed as part of the Screening Programme for colorectal cancer per 100,000 population than Poland as a whole (68.8 and 181.6). This was the third lowest value of the rate among all provinces.[2]	The number of people reporting for screening tests under the Screening Programme for colorectal cancer was low compared to the country as a whole and other provinces.	Action should be taken to improve the number of people reporting for colorectal cancer screening.

[2] Source: Own calculations based on data from the website of the Screening Programme for colorectal cancer (www.pbp.org.pl) and the Local Data Bank by Statistics Poland (www.bdl.stat.gov.pl)

Primary health care	3.6	Other risk factors affecting the DALY and death rate values in the province were: high blood pressure, high BMI, dietary risks, high fasting glucose levels, high cholesterol levels, air pollution, occupational risks, abnormal functions, and low physical activity. In addition: The provincial self-government is implementing or planning to implement programmes for the prevention of, e.g.: overweight and obesity, human papillomavirus (HPV) infections, chronic back pain, osteoporosis, chronic obstructive pulmonary disease, adult pneumococcal infections, falls among seniors, severe pneumonia in oncological patients with the most common solid and haematological tumours, and alcohol addiction; as well as for the promotion of early detection of hypertension and screening tests for abdominal aortic aneurysm.	Actions need to be taken to implement prevention programmes that address the remaining risk factors that affect DALY and deaths.	Improving the effectiveness of the disease prevention and health promotion activities and reducing the negative impact of risk factors on DALY and deaths by implementing public health tasks, health policy programmes and preventive health programmes concerning the indicated risk factors.
	4.1.	The rate of medical practitioners specialising in family medicine per 100,000 population of the province was 24.1, which placed it at the 12th position in the country. It is significantly lower than the recommended 44.3 value. Out of the total number of medical practitioners with this speciality, 19%	Medical staffing in the province is insufficient.	Finding solutions at the provincial level for medical staff development

Outpatient specialist care		were medical practitioners of retirement age. 65 medical practitioners will reach retirement age within 6 years. Meanwhile, 109 medical practitioners are in speciality training.		and optimal distribution.
	5.1.	In the province, the rate of consultations provided as part of OSC per 1 resident was lower than the average value for the country. In the years 2015-2019, there has been a decrease in the number of consultations provided in OSC and a decrease in the number of patients using OSC services.	The comparison of the rate of consultations per 1 resident in the province with the average value for the country, the decrease in the number of consultations provided and the decrease in the number of patients may indicate limited access to OSC services (within the NFZ) in the province.	Increasing the access to OSC services.
	5.2.	The health problems for which the most OSC consultations were provided were: musculoskeletal and connective tissue diseases, neoplastic diseases, urogenital diseases, cardiovascular diseases, respiratory diseases, eye and appendage diseases, skin and subcutaneous tissue diseases. Most OSC services were provided for patients in the 65+ age group.	The health problems for which the most OSC consultations were provided, the most numerous age group of patients, demographic forecasts and epidemiological data indicate an increased demand for services in the field of oncology, cardiology, rheumatology, urology, pulmonology, ophthalmology, dermatology and geriatrics.	Providing better access to specialist clinics in the fields which provide the most services, are forecasted to have an increased demand due to, among other things, the ageing of the population and which are most often used by the elderly.
	5.3.	Longer than the national average waiting times for care services for stable cases, according to February 2020 data, were reported	Longer than the national average waiting times for services in the specified clinics might	Improving the access to specialist clinics with

	include in clinics of gastroenterology, geriatrics, trauma and orthopaedic surgery, ophthalmology, obstetrics and gynaecology, urology, neurology, cardiology, diabetes, and others. For urgent cases, waiting times in the analysed outpatient clinic types were lower than the national averages, with the exception of queues for dermatology clinics.	indicate limited availability of OSC services.	waiting times for services longer than the national average.
5.4.	The longest average waiting times for OSC services for stable cases, as of February 2020 concerned: blood cancer clinics, paediatric metabolic disease clinics and vascular surgery clinics, among others. In the paediatric metabolic disease and vascular surgery clinics, the average waiting time was about 100 days longer than in Poland as a whole. For urgent cases, the longest waiting times concerned the paediatric endocrinology and diabetology clinic and the genetics clinic. In both cases, the average waiting time was about 100 days longer than in Poland.	The longest average waiting times for OSC services in the specified types of clinics may indicate limited availability of OSC services.	Improving the access to specialist clinics with the longest average waiting times for services.
5.5.	Individual districts of the province reported that some types of services provided in OSC clinics were not available. This applies to the clinics of: oncology	Within the province, there is variation in the availability of OSC services across districts.	Striving to equalise access to specialist clinics in the province, in particular

		oncological surgery, chemotherapy, haematology, pulmonary diseases, gastroenterology, nephrology, geriatrics, genetics, radiotherapy, endocrinology, paediatric cardiology, audiology, speech therapy, paediatric otorhinolaryngology, paediatric neurology, paediatric general surgery, paediatric nephrology, neonatology, paediatric trauma and orthopaedic surgery, paediatric urology, pregnancy pathology, and others.		by supplementing the network of contracted clinics in the districts that do not have access to them.
	5.6.	In the province, particular types of OSC clinics have only individual entities that provide services under contracts with the NFZ. This applies to the outpatient clinics of plastic surgery, paediatric metabolic diseases, paediatric infectious diseases, paediatric dermatology, paediatric endocrinology and diabetology, hepatology, immunology, paediatric immunology, cardiac surgery, paediatric cystic fibrosis, paediatric neurosurgery, paediatric oncology, preventive and curative care (HIV/AIDS), proctology, paediatric rheumatology, transplantology, paediatric transplantology, among others.	The existence of only one entity that provides a particular type of service as part of an OSC clinic in the province may indicate a limited availability of services.	Striving to equalise access to specialist outpatient clinics in the province, in particular, by supplementing the network of contracted outpatient clinics in the fields for which there is only one entity that provides services under contracts with the NFZ.

Hospital treatment	6.1.	The province has seen a steady increase in the proportion of hospitalisations in the 65 and over age group. In 2010, 27.5% of the total number of hospitalisations of residents in general hospitals in the province concerned people aged 65 and over, and in 2019, it was already 35.7%. In 2019, 21.6% of the population of the province was of post-working age, and the demographic dependency ratio was 65.6. According to forecasts of Statistics Poland, in 2050 in the province, the proportion of post-working age people in the total population will increase to 29%, and the demographic dependency ratio to 78.1.	In the coming years, a significant increase in the proportion of hospitalisations among the elderly is expected.	Improving the access to hospital treatment dedicated to the elderly.
	6.2.	Among the residents of the province, the most common cause of hospitalisation in general hospitals in the province in 2019 were cardiovascular diseases - 19% and neoplastic diseases - 11%. These subgroups of health problems were also the most severe for the population of the province in terms of the DALY and death rate values. According to the forecast, this situation will not change.	Securing the treatment of cardiovascular diseases and neoplastic diseases as part of hospital treatment is the biggest challenge for the health care system both today and in the near future.	Increasing the possibilities and effectiveness of treatment of the most common causes of hospitalisation, including access to the latest medical technology.

	6.3.	The highest value of the bed occupancy rate in the province (above 90%) was recorded in the following wards: psychogeriatrics (115%), oncology (101%), stroke (96%), alcohol withdrawal syndrome treatment - detoxification (96%), psychiatry (94%), alcohol addiction treatment (94%), neurotic disorders treatment (92%), rehabilitation (91%), intensive cardiological care (89.3%), musculoskeletal rehabilitation (88%), neurological rehabilitation (87%), AIDS (87%), haematology (86%), paediatric psychiatry (86%), gastroenterology (86%), addiction treatment (85%), geriatrics (84%), observation and infectious diseases (83%), nephrology (82%), pulmonology (81%), and oncological surgery (80%)[3].	In the selected wards operating in the province, occupancy rates approached or exceeded 100%, which means that the hospital treatment system may soon reach its limit in this area.	Optimising the bed base in the wards with the highest occupancy rates.
	6.4.	In the province, the rate of beds per 100,000 population was significantly lower than in Poland for the following wards: trauma and orthopaedic surgery (16.7 - the lowest value among all provinces, 23.5 in Poland) and internal medicine (42 - the second lowest value among all	The number of beds per 100,000 population in the indicated specialties was significantly lower compared to the country as a whole and other provinces, which means that the population of the province is not sufficiently secured in this regard.	Increasing the bed base in the wards with the lowest rate of beds per 100,000 population compared to other provinces.

[3] Source: Statistical Bulletin. Health care in Kujawsko-Pomorskie Province in 2019, pp. 194-196, based on the MZ-29 report.

		provinces, 53.7 in Poland) and rehabilitation wards (16.3 compared to 33.7 in Poland).		
	6.5.	In the province, there were 15 operating cardiology wards located in: Bydgoszcz, Toruń, Tuchola, Golub-Dobrzyń, Grudziądz, Inowrocław (42 beds), Osielsko and Włocławek. On the other hand, cardiac surgical wards were located only in Bydgoszcz, the Bydgoszcz district and Grudziądz.	The hospital treatment of the population of the province for cardiovascular diseases was provided unevenly. In terms of access to cardiology wards and beds, the situation was unfavourable in the eastern part of the province. In terms of cardiac surgery, the southern part of the province was completely unprotected, despite the fact that the provincial indicator of the number of beds in cardiac surgical wards per 100,000 population was higher than the national one.	Improving the access to inpatient cardiac treatment in the eastern and southern parts of the province, legitimising a referral network of cardiac centres.
	6.6.	Oncology, oncological surgery, and clinical oncology/chemotherapy wards operated only in cities with district rights. The rate of beds in oncological wards per 100,000 population was significantly lower in the province than in Poland (1 vs 5.63).	The hospital treatment of the population of the province for oncological diseases was provided insufficiently and unevenly, it was limited to the largest cities with district rights.	Improving the access to inpatient oncological treatment.
	6.7.	The number of day care beds per 100,000 population in the province was 126, much lower than the value of the same indicator for Poland (187). The number of beds in	The population of the province was provided with an uneven number of day care beds and beds in same-day care wards. There is	Improving the treatment capacity of hospitals, particularly

	Same-day care wards per 100,000 population in the province was 2, much lower than the value of the same indicator for Poland (4,31).	a need to increase the number of day care beds and beds in same-day care wards.	day care places and same-day care wards.
6.8.	As of February 2020, queues with the longest average waiting time in hospital treatment in the province were related to services such as: knee and hip replacement (in stable and urgent cases), as well as hallux valgus surgery (in stable cases). Compared to Poland, significantly longer average waiting times were reported for hallux valgus surgery (especially in stable cases - more than 250 days), as well as for knee replacement (almost 250 days in stable cases and almost 200 days in urgent cases) and hip replacement (more than 200 days in stable cases and almost 200 days in urgent cases).	Provision for the province's population of designated health care services in the field of orthopedic surgery was insufficient, which translated into long waiting times and the deterioration of health and comfort of life of waiting patients.	Improving access to orthopedic treatment by rationalising the use of hospital beds and increasing the number of beds to reduce waiting times for the above-mentioned health care services.
6.9.	Since 2018, the number of hospital-acquired infections has been increasing in the province. In terms of the rate of inpatient hospital-acquired infections treated per 100,000 residents, the province ranks 3rd in the country with a value of 286.48 (above the national average, which was 235.55). The rate of	The actions taken to prevent hospital-acquired infections in medical entities in the province are insufficient and require improvement.	Increasing the sanitary and epidemiological regime in medical entities with particular emphasis on haematology wards.

		deaths due to hospital-acquired infections per 100,000 inhabitants in 2019 in the province was higher than the national average (5.74 vs. 4.05). In terms of mortality due to hospital-acquired infections, the province ranked 13th in Poland counting from the lowest values.		
	6.10.	The rate of Clostridium difficile-associated infections (CDI) per 100,000 people in the province was higher than the value for Poland (33.58 vs. 29.33) and has been increasing sharply since 2011. To 2017 it was lower than the value for the country. Also the infection rate in the province per 10,000 patient days exceeded the national figure. In contrast, the death rate per 100,000 residents due to CDI infection was lower than the national average (8.4 vs. 9.45). It decreased by 2.4 compared to the previous year. The death rate up to 90 days after CDI diagnosis per 100,000 residents was 8.4 (while the national average was 9.45). According to the Kaplan-Meier estimator, the probability of survival within 90 days of CDI infection in the province was 75%, which was higher than the national average (67.77%). The units where the highest number of infections were likely to occur were: internal medicine,	In the province, there has been a negative trend in recent years associated with an increase in the number of infections with CDI aetiology per 100,000 residents and with exceeding this value for the country.	Taking steps to reduce the risk of infection with CDI aetiology with particular emphasis on internal medicine, emergency, general surgery and admission rooms.

	emergency, general surgery, and casualty departments.		
6.11.	The rate of sepsis per 100,000 residents in the province was higher than the national average (131.83 vs. 86.79) and since 2015 it has been steadily increasing. Also the infection rate in the province per 10,000 patient days exceeded the national figure. Analogous to this was the rate of sepsis-related deaths per 100,000 people (death up to 28 days after diagnosis of sepsis). The rate was 35.18, higher than the national average of 24.37. This value has also been increasing steadily since 2015. According to the Kaplan-Meier estimator, in the province, the probability of survival within 28 days after the onset of sepsis was 73.32%, which was higher than the national average (71.92%). The wards where the highest number of sepsis incidents are likely to occur are internal medicine, emergency, observation and infectious disease, and anaesthesiology wards as well as intensive care units.	In the province, there has been a negative trend in recent years associated with an increase in the number of sepsis and deaths caused by it per 100,000 residents and with exceeding both of the values for the country.	Taking steps to reduce the risk of sepsis with emphasis on internal medicine, emergency, observation and infectious disease, and anaesthesiology wards and intensive care units.
6.12.	not applicable	not applicable	Taking steps to increase the number of anesthesiology

				and intensive care units, in safety-critical hospitals in the region, and in other hospitals of local importance. Improving the coordination of the functioning of the health care system. Reducing the length of stay for patients in intensive care units. Establishing transitional wards in medical entities for patients treated in intensive care units who no longer require advanced treatment methods[4].
	6.13.	not applicable	The maxillo-facial surgery wards currently operating in the province are not adjusted to provide services for children and adolescents up to age 18. They operate in hospital facilities that do not have pediatric, pediatric anesthesiology and intensive care	Establishing a unit providing inpatient maxillo-facial surgery services for children and adolescents under the age of 18[5].

[4] Provincial consultant recommendation
[5] Provincial consultant recommendation

		units, as required by safety standards for the delivery of services. This problem encompasses all needs in this age group, including acute craniofacial trauma in children and adolescents.	
6.14.	not applicable	The availability of haematology health care services in 2019 was insufficient, especially in the former Bydgoszcz Province. This was due to an insufficient number of specialists and a limited bed base.	Improving access to inpatient haematology treatment.
6.15.	Total infant mortality rate in the province was 4.91, the highest among all provinces. For both boys and girls, the rate was higher than the national figure. For girls, it was the highest among all provinces. Also, when divided into urban and rural areas, the rate was in both cases higher than the value for Poland. For the urban areas, it was again the highest among all provinces. In contrast, the total perinatal mortality rate amounted to 7.2 and was	There is a need to take action to reduce neonatal and infant mortality.	Taking steps to qualify existing paediatric and neonatology wards for higher referential levels, retrofitting them with equipment and staff.

		the highest among all provinces. In both urban and rural areas the rate was higher than in Poland. In the urban areas, it was the highest value among all provinces, and in the rural areas, only one province reported a higher value.		
	6.16.	Lack of certain hospital wards in the province or their concentration in the largest cities, including : diabetology, paediatric otorhinolaryngology, paediatric orthopaedics and traumatology, and paediatric dermatology wards.	Access to inpatient care for certain specialities was limited due to the lack of an appropriate ward in the province or unequal distribution of wards.	Taking steps to establish hospital wards in new locations specialising in treatments, access to which for a large part of the population is limited due to the lack of wards in the province or their uneven distribution.
Psychiatric care and addiction treatment	7.1.	The province had the highest rate of patients in psychiatric care and addiction treatment per 100,000 people among all provinces, in both adult as well as child and adolescent populations. More than 96.82% of patients living in the province are treated in their area of residence. More than 3,500 patients are treated outside of their area of residence.	The rate of patients provided with mental health care services and patient migration data indicate inadequate accessibility to mental health care services in the province.	Increasing access to paediatric mental health and psychiatric services.

	7.2.	Most adult patients were treated for anxiety, mood, and organic disorders. For all of these disease groups, the rate of patients per 100,000 people was higher in the province than in the country. Among children and adolescents, the most commonly treated disease groups were hyperkinetic disorder and other mental, emotional and pervasive developmental disorders. For all of these disease groups, the rate of patients per 100,000 people was higher in the province than in the country.	The number of patients with individual types of disorders who received psychiatric and paediatric psychiatric care services may contribute to creating a situation of inadequate access to this type of services in the province.	Realisation of goals and tasks specified in prevention programs prepared for the province.
	7.3.	The province has one of the lowest values in the country for the number of patients per 100,000 residents treated in a psychiatric ward. High bed occupancy in psychiatric and geriatric psychiatry wards. Areas lacking accessibility to treatment in a paediatric psychiatric ward were identified.	The availability of treatment in inpatient psychiatric, geriatric psychiatry, and paediatric psychiatric wards is insufficient to meet current and future needs.	Developing the bed base in hospital psychiatric wards.
	7.4.	In the province, adult outpatient clinics operated in all districts or neighbouring cities with district rights. On the other hand, community treatment teams and day units operated only	There is a need for more centres providing mental health services.	Improving access to health care services provided by day wards and

	in cities with district rights. Paediatric day wards operated only in provincial capitals, and there were no paediatric community treatment teams in the province. Therefore, access to these forms of treatment was severely limited for most municipalities and districts.		community treatment teams.
7.5.	There is only one Centre for Mental Health in the province, which operates in the city of Toruń.	There is a need to establish more mental health centres and adapt the infrastructure of medical entities that implement the community psychiatric care model and wish to be included in the new psychiatric care model for adults.	Developing a community-based model of adult psychiatric care.
7.6.	The province has an insufficient number of providers operating under the new paediatric psychiatric care model.	There is a need to establish Centres for Community Psychological and Psychotherapeutic Care for Children and Adolescents, Centres for Mental Health, Centres for Multidisciplinary 24-hour Psychiatric Care operating under a new psychiatric care model for children and adolescents.	Implementing a new model of psychiatric care for children and adolescents based on three referral levels.

	7.7.	In the case of addiction treatment for adults, in comparison with other provinces, some of the lowest values were recorded in relation to treatment in outpatient clinics (number of patients and consultations per 100,000 people) and detoxification wards/centres (number of patients and person-days per 100,000 people).	There is a need to increase the level of security of access to addiction treatment and prevention of new psychoactive substance intoxication (including their effective identification).	Improving access to addiction treatment services with a special emphasis on therapy for children and adolescents.
	7.8.	The province lacks hostels for people addicted to alcohol and other psychoactive substances. There were also few detoxification wards/centres that were located outside of the largest cities in the province.	There is a need to establish hostels for alcohol addicts and detoxification wards/centres. (according to the NFZ, creating hostels is pointless, as is increasing access to detoxification. NFZ postulates restoration of the sobering station system)	Establishing hostels for people addicted to alcohol and other psychoactive substances in the province. Taking steps to reduce the EDs' workload related to providing services for people who do not require treatment through sobering stations and strengthening support for the homeless.
	7.9.	In the province, paediatric outpatient clinics operated only in cities with district rights (Bydgoszcz, Toruń, Grudziądz) and in Świecie, where the Provincial Psychiatric Hospital is located. Therefore, the greatest distance from the units	There is a need for more centres providing mental health services for children and adolescents.	Improving access to outpatient psychiatric treatment for children and adolescents.

Medical Rehabilitation		providing this type of services concerned the municipalities in the western part of the province.		
	7.10.	The value of the indicator of the number of psychiatrists per 100,000 population amounted to 9.2 and was significantly lower than the recommended value (20.0, and also lower than the value for Poland (10.2). The value of the indicator for the number of child and adolescent psychiatrists per 100,000 population reached 1.3 and was significantly lower than its value recommended by national consultants (2.0), but slightly higher than the value for Poland (1.1). The average age of a medical practitioner was 54.31 years, the percentage of medical practitioners in retirement age amounted to	In the province, the availability of medical staff in psychiatric and paediatric psychiatric care is not sufficient.	Increasing the availability of staff in psychiatric and paediatric psychiatric care.
	8.1.	The province reported a 16% higher than the national average value of the indicator in terms of the number of patients who received services in medical rehabilitation per 100,000 population in relation to the place of its provision. In day rehabilitation, the rate was 45% lower, in inpatient rehabilitation - 24% lower, home-based rehabilitation - 44% lower, outpatient rehabilitation - 21% higher. The number of medical rehabilitation consultations per 100 inhabitants was, in relation to the average values for Poland: higher by 9% in the case of outpatient rehabilitation and by 75% lower in the case of home-based rehabilitation.	The indicator of the number of patients who received services under medical rehabilitation, the number of medical consultations and demographic forecasts may indicate insufficient availability of this type of services in the province.	Increase accessibility to services provided in medical rehabilitation.

	8.2.	The migration balance of patients requiring rehabilitation in the province was positive and amounted to 1,162. This is the value presented for all types of benefits combined. This is the value presented for all types of services combined. The highest migration balance was in cities with district rights, and the lowest in Bydgoszcz District, Toruń District, Włocławek District and Grudziądz District. Migration of patients to cities with district rights from their outskirts is very clearly observable. The province has recorded a negative migration rate in day and home-based rehabilitation.	The migration balance indicator demonstrates territorial limitations to the availability of services in the field of medical rehabilitation.	Increase accessibility to services provided in medical rehabilitation.
	8.3.	The indicator of the number of patients undergoing rehabilitation per 100,000 100,000 inhabitants, differed the most from average values for the country in the following areas**:** cardiology (- 29%), neurology (+ 2%), general rehabilitation (+ 16%), pulmonology (- 46%), hearing and speech disorders (-20%), coma (- 60%), visual disorders (- 68%), developmental age disorders (+	The indicator regarding the number of patients who received medical rehabilitation services in particular scopes may indicate insufficient availability of services.	Increase accessibility to medical rehabilitation services in areas where the indicator of the number of patients differs the most from average values for the country.
	8.4.	The highest differences between the values of the number of patients per 100,000 inhabitants for the country and the province occurred in inpatient rehabilitation in the following areas: cardiology (-26%), general rehabilitation (-28%), pulmonology (-33%), coma (-66%), neurology (-4%). The number of beds at the end of the year, per 100,000 inhabitants in the province was	The indicator regarding the number of patients who received inpatient medical rehabilitation services may indicate insufficient availability of services in the following areas: cardiology, pulmonology, general rehabilitation, coma.	Increase accessibility of services provided under inpatient medical rehabilitation in cardiology, pulmonology, general rehabilitation, coma, neurology.

	lower by 26% than the national average. In the province there were very long waiting periods for inpatient general medical rehabilitation.		
8.5.	The most significant differences to the average values for the country of the number of patients per 100,000 inhabitants were observed in day rehabilitation in the following areas: general rehabilitation (-72%), visual disorders (-76%), hearing and speech disorders (-43%). Very long waiting times for day rehabilitation services were observed in the province. The indicator of the number of day rehabilitation centres per 100,000 inhabitants was by 39% lower than the national average. In 14 districts there are no day rehabilitation centres.	The indicator of the number of patients who received medical rehabilitation services during daytime may indicate insufficient accessibility to services in the above mentioned scopes.	Increase access to day medical rehabilitation services.
8.6.	The most significant differences to the average values for the country of the number of patients per 100,000 inhabitants with respect to home-based services concerned general rehabilitation. rehabilitation. The indicators of medical consultations per 100,000 inhabitants and of physiotherapist visits were respectively 83% and 64% lower than the national average.	The indicator concerning the number of patients who received home-based medical rehabilitation services, the number of medical consultations and physiotherapist visits may indicate insufficient availability of such services.	Increase availability of home medical rehabilitation services.
8.7.	The main diagnoses posed in medical rehabilitation in the province (in all types of services combined) were musculoskeletal diseases	According to demographic and epidemiological forecasts, there is an increase in demand for services	Provision of comprehensive rehabilitation for patients with musculoskeletal disorders

	(74.4%) and nervous system diseases (15.7%). Diseases of the musculoskeletal system were the main reason for rehabilitation carried out in outpatient, inpatient and day setting, while in the case of home-based rehabilitation - the main reason were diseases of the nervous system. In the province, the share of patients diagnosed with stroke in the total number of patients using medical rehabilitation services increased compared to previous years.	provided as part of medical rehabilitation.	post-stroke and post-injury elderly persons.
8.8.	The ratio of outpatient rehabilitation centres per 100,000 residents was 12% higher than the average for Poland. In that context, compared to the average values of the indicators for the country: inpatient rehabilitation 12% lower, outpatient rehabilitation 27% higher, home rehabilitation 44% lower, day rehabilitation 34% lower.	The indicator of the number of home-based, day and inpatient rehabilitation centres may indicate insufficient access to entities providing the indicated scope of services.	Increasing the number of rehabilitation centres in the province, especially those offering home rehabilitation, day rehabilitation and inpatient rehabilitation.
8.9.	At the end of the year, the number of beds available in the province for inpatient medical rehabilitation per 100,000 inhabitants was 26% lower than the average value for Poland.	The availability of inpatient medical rehabilitation care beds is insufficient to meet the current as well as future needs of the community.	Development of bed base for inpatient medical rehabilitation care.
8.10.	The rate of medical practitioners specialising in medical rehabilitation per 100,000 residents was lower than	There is a shortage of physiotherapists.	Taking action to educate and hire

Long-term care		the average value for the country. The number of physiotherapists, based on data from the National Chamber of Physiotherapists in May 2020, per 100,000 residents was 10% lower than the average value for Poland and amounted to 155.6.		more medical practitioners specialising in medical rehabilitation and physiotherapists.
	9.1.	In the province, the share of patients who received long-term care services per 100,000 was lower by 23% than the national average. . The rate was 28% lower in the case of home-based care and 16% lower in the case of inpatient care. There is also a negative migration balance of patients, which was recorded mainly in districts where there are no long-term inpatient care centres.	The share of patients who received long-term care assistance and the negative migration rate indicates insufficient accessibility to that type of services in the province.	Improving access to long-term care services: home and inpatient.
	9.2.	Among the total number of patients receiving long-term care in the province, 30.2% were in the 65-79 age group while 52.7% were over 80 years of age. After 2025, the number of 80+ patients receiving long-term inpatient and home-based care is forecasted to increase significantly. The leading issues in long-term care were cardiovascular disease (37.80%, of which strokes were a large group) and	Demographic forecasts indicate ageing of the population, therefore the demand for nursing and care services in long-term home-based care and inpatient care will increase.	Adapting and securing long-term care infrastructure to meet the current and future needs of the province by providing inpatient services in places where that kind of services is not provided and gradually increasing

		diseases of the nervous system (29.2%, with Alzheimer's disease and other dementia diseases. In the province, a higher than the average for Poland indicator was recorded with regards to nursing and it was 251 (+11% over the national average). Still, according to forecasts of Statistics Poland, the value of the indicator will fall below 200 before 2030.		availability of home and community-based care.
	9.3.	At the end of the year, the number of beds available in the province for inpatient long-term care per 1,000,000 inhabitants was 13% lower than the average for Poland. In some districts of the province, there are no inpatient long-term care centres.	The availability of long-term care beds is insufficient to meet the current and future needs resulting from an ageing population.	Development of the bed base in long-term care centres and adapting the existing bed base to meet the health needs of the population. Establishing additional inpatient long-term care centres, focusing on districts where such centres do not exist.
	9.4.	The indicator of services provided in nursing long-term home-based care is 42% lower than the value for Poland.	Availability of services in nursing long-term home-based care is limited.	Increasing access to long-term home-based care.

Palliative and hospice care	9.5.	In the province, mechanically ventilated centres where long-term care services for adult patients were provided were located only in two cities with district rights. For services provided in a nursing and care facility, the rate of mechanically ventilated patients per 100,000 residents ranks the province as the second to last in the country and it is 42% lower than the national average.	There is limited availability of long-term care services for patients requiring mechanical ventilation. Demographic and epidemiological forecasts indicate a possible increase in demand for services.	Increasing access to long-term care services for mechanically ventilated patients.
	9.6.	The rate indicating the number of staff (total) in long-term care per 100,000 population in 2019 was 61.5, which is one of the lower values in comparison to the rest of the provinces.	The medical staffing security in long-term care is not sufficient in the province.	Increasing the number of staff in long-term care by introducing certain incentives, improving opportunities for free and subsidised professional/specialised education, improving working conditions and pay.
	10.1.	The rate of patients living in the province per 100,000 people was 2% lower for inpatient care than the national average, 30% lower for outpatient care, and 60% higher for home-based care. Average waiting time in queue for inpatient hospice/inpatient palliative care centre	Long waiting time for inpatient hospice/inpatient palliative care centre services and a negative migration rate may indicate insufficient	Increasing access to services provided in palliative and hospice care.

	was the longest in Poland, at approx. 31 days for stable cases, and 5 days for urgent cases (the second highest value in the country). The province had a negative migration balance for palliative and hospice care. The largest negative value of the migration rate concerns inpatient and outpatient palliative and hospice care services.	availability of such services in the province.	
10.2.	Among the total number of patient receiving palliative and hospice care in the province, 45.6% were in the 65-79 age group, while 25.7% were over the age of 80 years. The number of patients receiving inpatient palliative and hospice care is expected to increase.	Demographic prognoses and epidemiological data indicate an increase in demand for palliative and hospice care services.	Adapting and securing palliative and hospice care infrastructure.
10.3.	Rate of palliative and hospice care centres per 100,000 of the population (including all types of care), it was 19% lower than the national average (in inpatient conditions it was 4% lower, in outpatient conditions 3% lower, in home-based care it was 17% lower). In 6 districts of the province there were palliative medicine outpatient clinics and the number of patients using outpatient services was 30% lower than	Notably, the number of outpatient clinics and the number of patients per 100,000 are lower than the Polish average. of the population.	Establishing additional palliative and hospice care centres, focusing on districts where such centres do not exist.

	the average value for the country. The availability of services outside large urban areas is limited. The rate of average number of palliative medicine clinics operating under the NHF per 100,000 of the population was lower than the national average.		
10.4.	The rate of inpatient palliative and hospice care beds per 1,000,000 inhabitants at the end of the year was 11% lower than its average value for the country. The availability for this form of service is territorially limited. The indicator of securing the bed base of the province, taking into account the average number of beds per 1,000,000 population, places the province in 12th position in the country (below the national average). The average waiting time for placement in a palliative care ward was 7 days for a patient in stable condition.	The availability of inpatient palliative and hospice care beds is insufficient to accommodate the current and future needs based on demographic and epidemiological data	Development of inpatient palliative and hospice care bed capacity to reach the recommended level of 100 beds per 1,000,000 population.
10.5.	In the province, there is no perinatal care centre.	Despite tenders announced by the Provincial Department of NHF, the residents of the province do not have access to perinatal palliative care.	Ensuring accessibility to perinatal palliative care services.

Emergency Medical Services	10.6.	The number of palliative care medical practitioners per 100,000 people is 2.7, and the average age of a medical practitioner is 49. The medical practitioner availability rate, as indicated by the national consultant, should be 3 per 100,000 of the population. There is also an insufficient number of nurses, particularly ones specialising in palliative/hospice care nursing.	In the province, the medical staffing of palliative and hospice care centres is insufficient.	Increasing the number of medical practitioners specialising in palliative care and nurses, particularly ones specialising in palliative/hospice care nursing, in palliative and hospice care centres.
	11.1.	In 5 years, due to the lack of medical practitioners in the specialist ERTs, the number of specialist "S" type ambulances has decreased from 31 to 12 - this trend is not changing at the moment.	Reducing the number of specialist ERTs and replacing them with primary ERTs will not decrease the availability and standards of aid provided to patients with medical emergencies.	Aiming to reduce the number of specialist ERTs and establish primary ERTs in their place.
	11.2.	Access to employment for the professional group of paramedics has been severely limited resulting in a significant increase in the average working time of paramedics having more than one job.	The number of paramedics working in emergency rescue teams is limited due to the simultaneous employment of this professional group in emergency departments, casualty departments and other hospital wards.	Opening more courses in the field of emergency medical services with a simultaneous system of apprenticeships for new paramedics in ERTs.

Medical staff	12.1.	The smallest number of speciality vacancies was recorded in the following fields: vascular surgery, oncological surgery, dental surgery, endocrinology, gynaecological endocrinology and reproduction, gastroenterology, haematology, neurosurgery, paediatric otorhinolaryngology, orthodontics, rheumatology, paediatric dentistry.	Increasing the number of speciality vacancies in areas with the lowest number of them.	Creating more speciality vacancies in areas where the greatest need for them has been estimated.
	12.2.	Lower rate of specialist medical practitioners per 100,000 residents in relation to the average nationwide value was recorded, i. a., in the field of: anaesthesiology and intensive care, audiology and phoniatrics, vascular surgery, general surgery, pulmonary diseases, paediatric pulmonary diseases, internal medicine, laboratory diagnostics, dermatology and venereology, diabetology, endocrinology, gynaecological and reproductive endocrinology, endocrinology and diabetologyinternal medicine, laboratory diagnostics, dermatology and venereology, diabetology, endocrinology, gynaecology and reproductive endocrinology, paediatric endocrinology and diabetology, clinical pharmacology, paediatric gastroenterology, geriatrics, clinical genetics, hypertensiology, intensive care paediatric cardiology, occupational medicine, emergency medicine, family medicine, medical microbiology, nephrology, paediatric nephrology, neurology, neonatology, neuropathology, clinical oncology, orthopaedics and traumatology of the musculoskeletal system, paediatric urology, pathomorphology, and paediatrics,	Securing a clinical staff requires taking some steps to ensure an optimal number of specialist medical practitioners.	Finding solutions at the provincial level for medical personnel development

		metabolic paediatrics, perinatology, obstetrics and gynaecology, psychiatry, radiology and diagnostic imaging, medical rehabilitation, clinical toxicology, clinical transplantology, cardiology, ophthalmology. The greatest deficit in terms of speciality vacancies (estimated for 2020, including the number of training places needed for generational interchangeability and the recommended number of specialists) occurred in internal medicine, family medicine, psychiatry, occupational medicine, geriatrics, paediatrics and emergency medicine.		
	12.3.	The province had the lowest rate of dentists per 100,000 residents, the highest percentage of dentists at retirement age, and one of the highest average ages in the nation for this professional group. The indicators for the number of specialists in all fields of stomatology are also lower than the average value for Poland.	Securing the medical staff of dentists and dental specialists is not at the adequate level in the province.	Development of solutions to ensure adequate numbers of dentists and specialists in all areas of dentistry.
	12.4.	Statistical indicators concerning the number of nurses and midwives per 100,000 residents rank the province in both professions	It is necessary to take measures to secure	Taking of incentive measures to increase the number of working nurses

Medical equipment		10th in the country. The number of midwives and nurses per 100,000 inhabitants is lower than its average value for the country. The number of nurses and midwives is projected to decline in the coming years.	an optimal number of nurses and midwives.	and midwives. Development of a support system for nurses to enter the profession in the province. Promotion of the nursing and midwifery professions, an increase in vacancies at nursing studies and continuous improvement of professional qualifications, including through speciality training.
	13.1.	In the province, 64% of accelerators had a low priority for replacement, 36% had a medium priority for replacement. Territorially limited deployment of equipment.	There are accelerators operating in the province that will have a high priority for replacement in the coming years.	There is a need for successive replacement of ageing medical equipment and their commissioning in locations closer to where patients live.
	13.2.	In the province, 76% of angiographs had a low priority for replacement; 24% had a high priority for replacement. Territorially limited deployment of equipment.	There are angiographs operating in the province that will have a high priority for replacement in the coming years.	There is a need for successive replacement of ageing medical equipment and their commissioning in locations closer to where patients live.

	13.3.	In the province, 100% of brachytherapy machines had a medium priority for replacement. Territorially limited deployment of equipment.	There are brachytherapy machines operating in the province that will have a high priority for replacement in the coming years.	There is a need for successive replacement of ageing medical equipment and their commissioning in locations closer to where patients live.
	13.4.	In the province, all ECMO machines have a low replacement priority.	No apparatuses with medium or high priority for replacement can be identified in the province.	Efforts should be made to make the best use of currently owned medical equipment and to deploy it in locations closer to where patients live.
	13.5.	In the province, 57% of gamma cameras had a low priority for replacement, 43% had a medium priority for replacement. Territorially limited deployment of equipment	There are gamma cameras operating in the province that will have a high priority for replacement in the coming years.	There is a need for successive replacement of ageing medical equipment and their commissioning in locations closer to where patients live.
	13.6.	In the province, 51% of mammography machines had a low priority for replacement, 10% had a medium priority for replacement, 39% had a high priority for replacement. Territorially limited deployment of equipment.	There are mammography machines operating in the province that will have a high priority for replacement in the coming years.	There is a need for successive replacement of aging medical equipment and their commissioning in locations closer to where patients live.

	13.7.	The average age of PET machines is 7 years. There are territorial restrictions with regard to the access to equipment.	There are PET machines operating in the province that will have a high priority for replacement in the coming years.	There is a need to gradually replace ageing medical equipment.
	13.8.	In the province, 80% of MRIs had a low priority for replacement, 17% had a medium priority for replacement, and 3% had a high priority for replacement. Territorially limited deployment of equipment.	There are MRIs in the province that will have a high priority for replacement in the coming years.	There is a need for successive replacement of ageing medical equipment and their commissioning in locations closer to where patients live.
	13.9.	In the province, 71% of X-ray machines had a low priority for replacement, 1% had a medium priority for replacement, 28% had a high priority for replacement.	The province has x-ray machines that will have a high priority for replacement in the coming years.	There is a need to gradually replace ageing medical equipment.
	13.10.	In the province, 86% of CT scanners had a low priority for replacement, 2% had a medium priority for replacement, and 12% had a high priority for replacement. Territorially limited deployment of equipment	The province has CT scanners that will have a high priority for replacement in the coming years.	There is a need for successive replacement of ageing medical equipment and their commissioning in locations closer to where patients live.
	13.11.	In the province, 33% of ultrasound machines had a low priority for replacement, 3% had a medium priority for replacement, 64% had a high priority for replacement.	There are ultrasound machines in the province that will have a high priority for replacement in the coming years.	There is a need to gradually replace ageing medical equipment.

Other areas	13.12.	In recent years, investments requiring the purchase of types of medical equipment and apparatus other than those previously mentioned have been made in the province in relation to the development of technology in medicine.	There is a need to increase the standard of treatment of patients in view of the opportunities offered by the introduction of new technologies in medicine.	Undertaking activities aimed at ensuring high quality of services, including improvement of the level of patients' treatment through retrofitting medical entities with highly specialised medical equipment.
	14.1.	According to GUS, there were 33 health resort units operating in the province, providing access to nearly 8,000 beds. In terms of the number of wards, the province was ranked 3rd, and for the number of beds, it was ranked 2nd nationwide. The highest number of patients among all provinces was treated in outpatient health resorts. In terms of the number of patients treated in inpatient medical centres, the province was ranked 2nd in the country. According to GUS data, people aged 65 and over accounted for 48.9% of patients receiving inpatient care in hospitals and health resorts nationwide.	The province has great potential in the field of health resort treatment. As the population ages, the importance of health resort treatment will increase.	Taking action to maximise the potential of the province in terms of health resort treatment.

	14.2.	According to GUS data, in 2019, more than half of the patients treated in inpatient care in health resort treatment used the NFZ financing. Some patients also used financing from ZUS, KRUS and PFRON	Treatment for the majority of patients receiving inpatient care at health resorts was publicly funded.	Undertaking of activities to increase the share of health resort treatment in the pool of public funds allocated for financing health care services.
	14.3.	The rate of dental consultations per 1,000 population in the province was significantly lower than the national average.	The rate of dental consultations indicates insufficient availability of such services in the province.	Improve access to dental services.
	14.4.	There are municipalities in the province that provide unprotected access to dental services. Difficulties also exist in the provision of emergency dental care (Inowrocław, Toruń), as well as at district level in specialist services, such as surgery or orthodontics (especially in Toruń - 3 providers, or the former Włocławek Province - 6 providers).	There is variation across the province in terms of access to dental services.	Commitment to equalising access to dental outpatient clinics in the province, particularly to supplementing the network of contracted clinics in municipalities with no access to such facilities and districts with limited access to specialist services.
	14.5.	The province had the lowest rate of dentists per 100,000 population in the country. The indicators for the number of specialists in all	There is a need to secure specialist staff - dentists and specialists in all areas of dentistry.	The provision of an adequate number of dentists and specialists in all areas of dentistry.

		fields of dentistry are also lower than the average value for Poland.		
	14.6.	As of February 2020, the longest average waiting times in the province in dental treatment concerned prosthetic treatment, treatment with braces, orthodontic clinics for children and dental prosthetics clinics. Only in the first case was the average waiting time longer than in Poland in both stable and urgent cases (especially in stable cases - by more than 100 days).	The longest average waiting time for dental treatment may indicate limited availability of dental services.	Improvement of the access to specialist clinics with the longest average waiting times for services.

Appendix No. 3

Challenges for the health care system and recommended lines of action in the Lubelskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	The urban population constituted 46.4% of the province population Cities with district rights have the highest population density, i.e. the highest in the city of Lublin (2,304 people/km2), and the lowest in the Włodawa District (31 people/km^2). Districts with the lowest population density are concentrated in the east and south of the province.	Districts with the lowest population density may have trouble with adequate health care coverage.	not applicable
	1.2.	The population of the province is slightly older than the population of Poland. People aged 65 and over accounted for 18.6% of the province's population. The population aged 85 and over accounted for 12.5% of the population aged 65 and over. The share of the post-working age population (women aged 60 and over, men aged 65 and over) in the total population is increasing. This is a trend that has continued in recent years,	The ageing of the province's population increases the need for health services for the elderly	not applicable

	both in the Lublin Province and nationwide. Forecasts indicate that by 2029, the population of Lublin Province will decrease twice as much as on the scale of Moreover, the number of people over 60 will increase.		
1.3.	The number of women in the province was 1,086,422, while the number of men was 1,021,848. A larger percentage of the population was female in both urban and rural areas. Male life expectancy is shorter than nationally in contrast to female life expectancy, especially for older women	This indicates a clear excess mortality rate among men, which is probably due to men's lifestyle, inadequate health care or preventive care.	not applicable
1.4.	In rural areas, 54% of living children were born in relation to the total number of live births, while 57.7% stillborn children were recorded in relation to the total number of stillbirths	not applicable	not applicable
1.5.	The overall fertility rate for women aged 15-49 was 39.63 children per 1,000 women, and thus the province was ranked eighth in Poland (according to increasing values of this indicator). The fertility of female residents of the province is slightly lower than the national level, none	Considering the continuing downward trend in the fertility and total births per woman rates for the province, it can be assumed that demand for obstetric and neonatal services will decline and thus	not applicable

Epidemiology and epidemiological forecasting	of the districts achieves a births per woman rate that guarantees simple generation replacement. The birth rate in the province was negative and amounted to -3,729, positive growth was recorded only in the districts of Lublin, Łęczna, Łuków, the city of Biała Podlaska and Lublin.	the demand for personnel in these fields will decline too.	
2.1.	Analysis of the structure of health problems according to the DALY value showed that non-communicable diseases accounted for the largest share, i.e. 84%, of the total DALY value. Injuries accounted for 12%, while infectious diseases, maternal and neonatal conditions, as well as nutritional disorders accounted for 4%.	The problems listed above take away the most years of healthy life from the inhabitants of the province	not applicable
2.2.	The largest contributors to DALYs were cardiovascular diseases and cancer, which together accounted for about 45% of DALYs. Among cardiovascular diseases, ischemic heart disease and stroke are the most significant, while for cancer - malignant tracheal, bronchial and lung neoplasm as well as malignant colorectal neoplasm. The highest number of deaths was recorded for the above-mentioned health problems, with cardiovascular disease accounting for 50% of the total number of deaths and cancer accounting for 24%.	Cardiovascular diseases and neoplastic diseases are and will continue to be in the next 10 years a serious threat to the health and lives of the province inhabitants. It is essential to ensure that adequate hospital facilities and staffing are available and that appropriate non-invasive treatment is provided close to where the patient lives.	not applicable

	2.3.	The DALY value and the number of deaths due to ischemic heart disease were the highest in the province. In this respect, the situation was similar to that in Poland. The 2020-2028 projection for ischemic heart disease shows an increase in prevalence and death rates per 100,000 of the population.	Ischemic heart disease is the leading health problem in the cardiovascular disease subgroup among the population and is also the leading cause of death.	not applicable
	2.4.	In the province, the DALY value per 100,000 population for strokes was significantly higher than the value for Poland. In the subgroup of cardiovascular diseases, stroke had the highest YLD. The number of deaths in the province (per 100,000 population) was significantly higher than the average for Poland. Strokes are the second most common cause of death in the province and are projected will remain unchanged until 2028.	Strokes are the second highest contributing health problem with regard to the DALY value in the cardiovascular disease subgroup in the province, and they significantly affect the loss of life years due to disability among the province's population, indicating the need for resource adaptation, with particular attention to the availability of rapid specialised diagnostics	not applicable
	2.5.	Cancer ranked second in terms of the DALY value and number of deaths in the province. The highest values were reported for malignant neoplasms of the trachea, bronchus and lung, where the DALY value represented 27% and 26%, respectively, of the total DALY value for neoplasms and	The estimated increase in cancer deaths points to the need to adjust the available resources accordingly, with a particular focus on access to rapid specialised diagnostics.	not applicable

	malignant colorectal neoplasm - 13.42% and 14.98% of the total DALY value for neoplasms, respectively). It is estimated that by 2028 The number of deaths due to neoplasms will increase by 8% compared to 2019.		
2.6.	Deaths from Alzheimer's disease and other dementing diseases doubled between 1999 and 2019 Since 1999, more than 50% increase in DALY value has been observed compared to 2019. There has also been an increase in incidence and prevalence values between 1999 and 2019. This trend is similar throughout Poland. The projections reveal that in 2028 the number of deaths due to nervous system diseases will increase by 17.5% compared to 2019.	With the continuing upward trend in incidence and prevalence rates, it can be assumed that there will be an increase in demand for health services in this area.	not applicable
2.7.	In terms of DALY values, the province has recorded a significant increase in diabetes from 10th position in 1999 to 5th in 2019, Since 1999, There has been an almost twofold increase in the value of the YLD, which means that the inhabitants of the province are losing more and more years of healthy life due to the disability caused by this health problem. The upcoming years will be marked by an increase in the value of	Diabetes will continue to be a major health problem in the upcoming years, so it is reasonable to assume that demand for health services will increase.	not applicable

	incidence, prevalence and death rates.		
2.8.	When analysing the 2019 YLD values, the highest values were observed for health problems such as lower back pain, diabetes, as well as age-related hearing loss and other causes (together 80% of the total YLD). The YLD value has been increasing for each of the problems listed over the past 20 years. Epidemiological projections indicate that, in 2028, the prevalence rate for diabetes will increase by 22%, for age-related hearing loss and other causes by 7%, and for lower back pain by 2%, compared to 2019.	In the following years, there will be an increase in the prevalence rate, which will have an impact on the loss of years of life due to disability.	not applicable
2.9.	Psychiatric disorders accounted for 4.5% of the total DALY value. In 2028, incidence per 100,000 population will be 20.8% higher than in 2019. Of the health problems classified as mental disorders, the highest increases are projected for depressive disorders, with an incidence of 24.55% and prevalence of 19.22%.	As the incidence values for this subgroup of health problems increase, it is reasonable to assume that the demand for these services will increase.	not applicable
2.10.	The epidemiological projection for the year indicates that the highest prevalence rate	With a sustained increase in prevalence values, it is assumed that	not applicable

Risk factors and prevention		per 100,000 population will invariably be recorded in the group: other non-communicable diseases, unintentional injuries and diseases of the nervous system. Moreover, in the above-mentioned health problems, the rate is projected to increase for diabetes and kidney diseases. The rate will decrease for respiratory infections and tuberculosis. Despite the decrease, it will remain higher than for Poland.	the demand for health services in this area will grow.	
	3.1.	Risk factors responsible for the loss of the greatest number of healthy life years for men and women combined included high blood pressure (by approx. 4% DALY more than in Poland, per 100,000 population) and dietary risks (by approx. 2% DALY more than in Poland, per 100,000 population). Deaths in both sexes were most influenced by high blood pressure (by approx. 9% more deaths than in Poland, per 100,000 population), dietary risks (by approx. 9% more deaths than in Poland, per 100,000 population). Compared to Poland, a higher DALY value per 100,000 population was recorded for the following risk factor: renal impairment (by approx. 0.2%).	The risk factors listed above have a significant impact on residents' health problems and deaths, which is why intensified prevention efforts are needed. Detection of diseases in early stages and high level of health awareness among the population increase the chances of avoiding and curing many diseases.	Strengthening of preventive measures for the following diseases: cardiovascular; cancer; respiratory; neurological; musculoskeletal; infectious (in particular for Lyme disease and tuberculosis) and highly contagious diseases, as well as in the fields of: nephrology and urology, diabetology, ophthalmology, taking into account risk factors as well as the demographic and epidemiological situation.

		Higher proportion of deaths (value per 100,000 population) compared to Poland was observed in the following risk factors: high blood pressure (by approx. 9%), dietary risks (by approx. 9%), high BMI (by approx. 1%), high LDL cholesterol (by approx. 8%),high fasting plasma glucose levels (by approx. 0.5%), renal impairment (by approx. 5%), low physical activity (by approx. 9). High blood pressure between 1990 and 2019 reduced its contribution to DALY losses by approximately 31% and to deaths by approx. 17% (for men and women combined, value per 100,000 population). Demography 1.3 Epidemiology 2.2; 2.3; 2;4; 2.6; 2.7.; 2.8; 2.10		
	3.2.	Epidemiology: 2.9 The risk factor responsible for the loss of the greatest number of healthy life years for men and women combined was tobacco (by approx. 2% DALY less than in Poland, per 100,000 of the population. It was also one of the risk factors with the greatest impact on deaths in both sexes in the province. For men, tobacco affected DALY loss and deaths more than twice as much as in women.	Epidemiology: 2.9 Addiction has a significant impact on the loss of healthy life years and deaths, which is why it is important to take action in this area.	Strengthening of preventive measures in the field of psychiatry (including prevention of addictions), taking into account the epidemiological situation in a given province and risk factors.

		With respect to alcohol consumption among men, its contribution to DALYs was almost 10 times higher and to deaths as much as 47 times higher than in women. Between 1990 and 2019 (for women and men combined, value per 100,000 population), the impact of tobacco on DALY loss and deaths decreased (by 24.71% and 20.8%, respectively). Among men, there was a significant decrease in the contribution of this factor to DALY by approx. 29%, whereas since 2010 this value decreased by approx. 9%. Despite the favourable trends, it should be noted that for men, this is still the risk factor that contributes most to DALYs and deaths. For women, the contribution of tobacco to DALYs also declined between 1990 and 2019 by approx. 13%, but between 2010 and 2019, there was an alarming increase by approx. 6%. The largest number of prevention programmes concerned the prevention and solving of alcohol problems - 171 prevention programmes were carried out in this area, with the average number of people covered by the activities amounting to approx. 12,000 (the fourth best province in the country). In the area of smoking prevention, 48 programmes were conducted, covering an average of 5,000 persons (5th place in Poland). In 5 districts,		

		there were no activities reported in this category. The annual information on tasks completed or undertaken in the field of public health reported to the Lubelskie Province Governor[1] shows that the largest number of tasks were included in the operational objective No. 2 of the National Health Programme for 2016-2020, i.e. Prevention and solving of problems related to the use of psychoactive substances, behavioural addictions and other risky behaviours - 757 tasks (62.25%), while with regard to operational objective No. 3, i.e. Prevention of mental health problems and improvement of the mental well-being of the society, only 95 tasks were implemented (7.81%).		
	3.3.	Compared to Poland, a higher DALY value (per 100,000 population) was recorded for the "other environmental hazards" risk factor (by approx. 11%), while slightly higher as for Poland for	Environmental risk factors significantly affect the loss of healthy life years and deaths, which is why action needs to be taken in this area.	Strengthening of prevention efforts to prevent hazards related to environmental risk factors.

[1] Opinion on the compliance of completed public health tasks with the Priorities for Regional Health Policy for the Lubelskie Province for 2019. https://www.lublin.uw.gov.pl/potrzeby-zdrowotne/opinia-dot-zgodno%C5%9Bci-zrealizowanych-zada%C5%84-z-zakresu-zdrowia-publicznego-z-prpz

	for abnormal ambient temperature (by approx. 0.3%) Higher proportion of deaths (value per 100,000 population) compared to Poland was reported for the following risk factors: abnormal ambient temperature (by approx. 7%), other environmental hazards (by approx. 16%), while slightly higher value than for Poland was noted for air pollution (by approx. 0.3%).		
3.4.	Epidemiology: 2.1; 2.10	Epidemiology: 2.1; 2.10	Strengthening of preventive measures aimed at reducing the incidence of health problems caused by injuries, taking into account the epidemiological situation in a given province.
3.5.	Demography 1.2	Demography 1.2	Strengthening of prevention efforts for people over 65 years of age, keeping in mind the demographics of a given province.

	3.6.	The annual information on the tasks carried out or undertaken in the field of public health reported to the Lublin Province Governor indicate that the least tasks compliant with objective 2 of the Priorities for Regional Health Policy, i.e. 11 (0.9% to the total number of tasks reported), were conducted in the field of dentistry and periodontology. Only one programme was reported with regard to caries prevention.	The population's awareness of the impact of oral health on the condition of the whole body is still low.	Strengthening of preventive measures in the field of dental and periodontal care,
	3.7.	The annual information on the tasks implemented or undertaken in the field of public health reported to the Lublin Province Governor shows that only 18 tasks (1.48% of the total number of the reported tasks) addressed to mothers and children were implemented and compliant with objective 3 of the Priorities for Regional Health Policy. Demography 1.4 Epidemiology: 2.1	Demography 1.4 Epidemiology: 2.1 Detection of diseases in early stages and high level of health awareness among the population increase the chances of avoiding and curing many diseases.	Strengthening of mother- and child-centred prevention efforts.
	3.8.	A total of 21.87% of the annual population to be screened was screened for cervical cancer. In relation to Poland, the province was characterised by a higher number of women examined (value per 100,000 of the annual population to be examined), thus taking 5th place in the ranking of provinces. Between 2017 and 2019, there has been an increase in the number (value per 100,000	Incidence and number of deaths from malignant breast and cervical neoplasms per 100,000 women compare favourably to the nation.	Strengthening of prevention efforts with regard to cervical cancer and breast cancer. As with other cancers, the aim should be to keep these rates as low as possible.

		. annual population to be examined) of women screened for cervical cancer. There was also an increase in the percentage (value per 100,000 of the annual population to be examined) of women examined in the in-depth diagnostic stage. The incidence of malignant cervical cancer per 100,000 women in the province was 13.7 (16.5 for Poland), while the number of deaths per 100,000 of women was 9.1 (10.7 for Poland). Screening for malignant breast cancer was undertaken by 71.3% of the annual population to be screened. This is more than the average for Poland (63.9%; 4th place). The proportion of women in the population to be examined decreased compared to 2018 by about 5%. The number of women examined in the in-depth diagnostic stage per 100,000 of the annual population to be examined compared to 2018 remained at a similar level, and compared to 2017 - it decreased by approx. 8%. The incidence of malignant breast cancer per 100,000 of women in the province was 79.1 (93.5 for Poland), while the number of deaths per 100,000 of women was 33.7 (37.6 for Poland).		In the area of cervical cancer prevention, it is recommended to intensify activities aimed at increasing the percentage of examined patients in the annual population of women eligible for such examination. It is also important to examine as many women as possible for breast cancer

Primary health care	4.1.	89.51% of the province's population was registered on active PHC lists (slightly more than nationally). The ratio of actual patients to patients registered on active lists at the district level varied. The lowest patient activity was recorded in the Radzyń, Chełm, Janów, and Łuków Districts (below 85%), while the highest in Zamość and Biała Podlaska (above 90%). It did not exceed 100% in any district. Migrations of patients can be observed, meaning that patients do not necessarily appear on active lists where they live. The lowest percentage of registered patients in relation to the population was found in 'ring-shaped' districts (Chełm, Zamość, Lublin, Biała Podlaska), where it ranged from 59-75%. The highest values were recorded in cities with district rights (Lublin, Chełm, Biała Podlaska, Zamość), where they ranged from 107% to 129%.	The province has a high degree of security with regard to primary health care services despite slight regional variation in this regard.	Maintenance of the current level of security with regard to primary health care services with particular emphasis on regional variation.
	4.2.	Taking into account the place of residence of the province's population, 80.56% of people registered in PHC living in urban areas had at least one visit to a PHC, while in rural areas this rate was slightly lower, i.e. 79.85%. In both cases, the percentage	The availability of primary health care services is at a good level.	Maintenance of the current level of accessibility of health services provided within the scope

		exceeded the national data. Moreover, data at the national level indicate that for the general population, of those registered on active lists, those from rural areas were more likely to have had at least 1 visit than the urban population, while the opposite was recorded in Lubelskie Province.		primary health care for the province inhabitants.
	4.3.	Night and holiday health care services were performed by 27 entities. The average number of patients per one medical entity varies from 0 (Chełm District) and 31.7 in Zamość to 113 in Lublin. The percentage of PHC visits within NHHC was slightly higher than the national average.	This form of health care is inefficiently utilised, as it is across the country. Patients often end up in Emergency Departments instead of NHHC, even without a medical emergency that qualifies for ED services.	Enhancing the role of NHHC to improve the reporting of patients to this form of medical assistance and relieve emergency departments of cases that do not require health and life-saving intervention, thereby allowing the ED staff to focus on those patients who need their help the most.
	4.4.	The number of staff working in PHC per 100,000 of the population was above the provincial average for medical practitioners (78.8 versus 68.2), nurses (85.9 versus 76.2), midwives (19 versus 12.8) and paediatricians (75 versus 74.3). It was common to see lower values for 'ring-shaped' districts and higher values for cities with district rights. - On a district basis, the situation was worst for medical practitioners in the Chełm,	There is a high degree of security in the province in the area of PHC personnel, despite slight regional variation in this area.	Maintenance of the current level of security in the area of PHC personnel, with particular emphasis on regional variation.

		Krasnystaw and Zamość Districts (30, 16-39, 57), and the best in Zamość itself, as well as in the Ryki and Lublin Districts (119.8-139.5). Overall, below average provincial values were recorded for 11 districts. - The number of nurses per 100,000 of the population, in terms of districts, was below the provincial average in 9 districts, of which the lowest values were recorded in the Chełm, Lublin, Zamość, and Biała Podlaska Districts ('ring shaped' districts), and the highest in Chełm, Biała Podlaska, Kraśnik, Hrubieszów and Zamość Districts (106.7 versus 132.41). - For midwives, there were only 3 districts below the provincial average, with the least in the Lublin District (7.7). The best situation was in Lublin (31.5). The situation was most varied among paediatricians. In the Chełm District, it was only 13.6 per 100,000 residents; slightly more, i.e. 18.6, in the Lublin District. In the second case, the problem is less urgent because in Lublin the value was among the highest in the province (127), but in Chełm the value was below the provincial average (69). The best results were found in the Ryki District (195).		
	4.5.	not applicable	Modernisation of existing medical entities will contribute to improving	Increase in quality with regard to primary health care services

Outpatient specialist care			the standards of treatment and conditions of service delivery.	through the modernisation of the existing infrastructure.
	5.1.	In the province, there was one outpatient clinic for audiological care for children, chemotherapy, thoracic surgery, oncological surgery for children, vascular diseases, infectious diseases for children, phoniatric care for children, gynaecological care for girls, gynaecological oncology, pediatric oncology and hematology, pregnancy pathology, preventive and curative (HIV/AIDS) care, radiation therapy, rheumatological care for children, urological care for children.	Residents had significantly limited access to the listed clinics.	Provision of appropriate access to outpatient specialist care services for adults and children, taking into account distance, number of outpatient clinics per 10,000 residents and waiting lists/ as of February 2020
	5.2.	not applicable	Lack of proper access to OSC services results in inpatient care. This leads to an increase in the cost of services provided, which is why it is desirable to redirect the payer's financial stream by reducing funding from diagnostic hospitalisations in hospital treatment to diagnostics that can be performed in outpatient specialist care units.	Shifting of the burden from inpatient to outpatient specialist care (particularly for less complex procedures and diagnostics).

	5.3.	According to the ICD-10, the three largest groups of diseases for which medical consultations were sought within the OSC were: eye diseases and adnexa oculi, musculoskeletal and connective tissue diseases and cardiovascular diseases. Epidemiology 2.2; 2.3; 2;4; 2.6; 2.7.; 2.8; 2.10 Demography 1.1	With continued increases in prevalence values, it is assumed that the demand for health services in this area will increase. Epidemiology 2.2; 2.3; 2;4; 2.6; 2.7.; 2.8; 2.10 Demography 1.1	Commitment to securing access in each district of the province (Total for cities with district rights and the so-called "torus-shaped" districts) to the following outpatient clinics: Cardiology, Neurology, Ophthalmology, Trauma and Orthopaedic Surgery, General Surgery, Diabetes, Dermatology, Otolaryngology and Urology.
	5.4.	Demography 1.2.	The ageing of the province's population increases the need for health services for the elderly	Increase in the access to outpatient geriatric specialist care services.
	5.5.	Patients had to wait over 100 days for services in the following outpatient clinics: Endocrinology, Genetic Testing, Paediatric Neurology, Vascular Surgery, Magnetic Resonance Imaging, Nephrology, Paediatric Audiology, Audiology, Phoniatry and Paediatric Allergology (stable case).	Residents had significantly limited access to the listed clinics.	Provision of greater access to clinics with the longest waiting times

		The average waiting time to the gastroenterology outpatient clinic for children, neurosurgery outpatient clinic, nephrology outpatient clinic for children, posture defects outpatient clinic and genetic outpatient clinic exceeded 200 days (stable case).		
	5.6.	Demography 1.1 , 1.4.	Demography 1.1 , 1.4.	Increase in territorial accessibility to obstetric-gynaecological outpatient clinics, especially in rural areas
	5.7.	not applicable	Maintaining the quality of comprehensive treatment is contingent on systematic modernisation and equipping/replacing of existing infrastructure. Some medical entities are located in old buildings with non-functional layouts and worn-out and outdated medical equipment, which affects diagnostic and therapeutic activities, causing poorer treatment outcomes and longer hospitalisation. Modernisation of existing treatment units and purchase of modern	Increase in the quality and accessibility of outpatient specialist services through the modernisation of the existing infrastructure

Hospital treatment			equipment will contribute to better health and economic effects as well as to providing the province inhabitants with improved standards of treatment and conditions of service delivery	
	5.8.	not applicable	It is becoming a challenge for today's society to increase access to certain health care services. Therefore, it is necessary to take measures to support the infrastructure of medical and care institutions in terms of adjusting medical entities to the requirements of persons with special needs and increasing the supply of medical and care services provided remotely in the form of e-medicine services.	Increase in the quality and accessibility of outpatient specialist services through the development of telemedicine and eHealth services.
	6.1.	In 10 hospitals, the proportion of hospitalisations lasting 0 days (admission and discharge on the same day) that did not end in death exceeded 15%. Contracts providing exclusively same-day services were excluded from the analysis.	Strengthening of funding for outpatient specialist care to reduce avoidable hospitalisations (diagnosing and treating patients at an early stage of disease) and eliminate short, one-day hospitalisations (often	Reduction in the length of hospital stay by shifting the burden toward outpatient care, where treatment costs are lower with a higher level of safety for the patient.

			diagnostic ones), the effect of which can be achieved in open treatment.	
	6.2.	For cataract surgery, the percentage of one-day hospitalisations ranges from approx. 80% to 100%, Contracts providing exclusively same-day services were excluded from the analysis.	The data indicate a shift in treatment structure from multi-day hospitalisations to same-day services.	Increase in the access to same-day ophthalmological services, which is a desirable outcome.
	6.3.	Information From the Priorities for Regional Health Policy There is a clear need to concentrate services in medical entities properly prepared to provide them due to the observed correlation between such concentration and lower postoperative mortality.	There is a clear need to concentrate services in medical entities properly prepared to provide them due to the observed correlation between such concentration and lower postoperative mortality. Restriction of funding for wards with low levels of surgical procedures performed, providing similar health care services and located near larger centres to counteract the fragmentation of contracts with NFZ and increase the financial level of hospitals. Concentration of surgical procedures that will affect the quality of health services provided and patient safety.	Concentration of surgical procedures that will affect the quality of health services provided and patient safety.

	6.4.	Among 16127 patients with a cancer diagnosis, nearly 20% were treated outside the Lublin Province. The most frequent types of malignant neoplasms treated outside the patient's province (more than 60% of patients) were thyroid malignancies (87.4% of 354 patients), malignant neoplasms of the eye (83.6% of 61 patients), malignant neoplasms of the thymus (4 of 5 patients), malignant neoplasms of other endocrine glands and related structures (77.4% of 31 patients) and malignant neoplasms of the meninges (4 of 6 patients). Epidemiology 2.2;2.5	Epidemiology 2.2;2.5	Attention should be paid to the comprehensiveness, coordination and concentration of services provided, as well as oncological services unavailable in the Lublin Province, for which a significant level of patient migration to other provinces is observed.
	6.5.	Epidemiology 2.2;2.5	Epidemiology 2.2;2.5	Improvement of the effectiveness of cancer treatment. by implementing modern diagnostics and new anti-cancer therapies as well as creating friendly conditions for development of innovative medical technology enterprises.

	6.6.	Demography 1.2.	There is a need to adapt hospital care to the needs of the ageing population of the province Demography 1.2.	Increase in the access to geriatric health services.
	6.7.	Demography 1.2. Epidemiology 2.2; 2.3; 2.4; 2.5; 2.6; 2.7;2.8;2.10; Risk Factors 3.2;	There is a need to develop the infrastructure of medical entities, which is confirmed by the epidemiological situation and forecasts of demand for hospital beds presented in previous editions of maps[23], which, according to the current map of health needs for Poland, can still be a point of reference.	Increase in the access to health services in the following areas: oncology, cardiology, cardiac surgery, vascular surgery, neurology, neurosurgery, diabetology, nephrology, urology, rheumatology, infectious and highly contagious diseases endocrinology, orthopaedics, trauma and orthopaedic surgery gastroenterology and tuberculosis and pulmonary diseases.
	6.8.	Demography 1.2.	Rheumatological care requires changes with regard to the access to modern forms of treatment that slow the progression of	Improvement of efficiency of rheumatological treatment.

[2] Map of health needs in the scope of hospital treatment for the Lubelskie Province (2018) http://mpz.mz.gov.p1/wp-content/uploads/sites/4/2018/06/03 lubelskie.pdf
[3] Source: p. 10 of the document entitled Priorities for Regional Health Policy for the Lubelskie Province
https://www.lublin.uw.gov.pl/sites/default/files/zdrowie/potrzeby/CZ%C4%98%C5%9A%C4%86%20OPISOWA%20Lubelskie%20PRPZ%20-%20wersia%20ostateczna.pdf

		disability and impairment.	
6.9.	Skin diseases rarely cause direct deaths but moderately severe and severe course of psoriasis as an immune-mediated disease contributes to a more rapid development of atherosclerosis and two-fold increase in the incidence of cardiovascular diseases, thereby shortening life by an average of 5 years. Due to the observed increase in the incidence of immune-mediated dermatologic diseases, it is important to provide patients with access to modern biological therapy delivered in a same-day hospitalisation setting. Proper treatment of these types of conditions will reduce professional inactivity.	The desired direction of change in the treatment of dermatological diseases is to increase access to inpatient same-day care and to modern forms of treatment.	Improving the effectiveness of treatment, in particular by creating an entity or reorganising an already existing one, securing access to highly specialised diagnostics or treatment.
6.10.	In terms of the number of staff employed in inpatient care per 100,000 population of province, Lubelskie occupies: - medical practitioners - ranked 3rd in the country, - nurses - ranked 2nd in the country, - midwives - ranked 4th in the country, - physiotherapists - ranked 3rd in the country.	Compared to Poland, the province maintains a high level of employed staff.	Maintaining the level of staff.

	6.11.	The lowest availability of services in hospital treatment expressed in the average waiting time (queue length) in February 2020 for stable cases in Lubelskie Province occurred in the following wards: trauma and orthopedic surgery - 1026.9 days (Poland 548.5 days), cardiology - 221.2 days (Poland 113.4 days), neurosurgery - 178.8 days (Poland 319.3 days). The queues in other wards were equal to or shorter than 168 days, e.g. diabetology - 168.0 days (Poland 106.8), observation and infectious diseases -125 days (Poland - 57 days). The average waiting time to a ward during that period was 77.82 days, compared to 114.33 days for Poland. Considering the queues of urgent cases in February 2020, the longest were to the following wards: trauma and orthopaedic surgery - 311.8 days (Poland 185.2 days), cardiology - 159.3 days (Poland 87.8 days), diabetes -118 days (Poland 69.3 days), neurosurgery - 110.8 (Poland 222.6 days). nephrological - 88.8 days (Poland - 44.5 days), urological - 74.1 days (Poland - 54.4 days) he average queue was 59.03 days (Poland - 56.37 days).	Services for which the longest waiting time are financed mainly by the PHCPS (except for endoprostheses and oncological gynaecology - contracted by the National Health Fund in Lublin outside the hospital network).	Increasing access to health services in wards with the longest waiting queues by introducing organisational changes within hospitals in wards financed with a flat-rate (change of the financing structure of individual units, increase of outlays on deficit services); Increasing outlays paid on fee-for services, for which availability is limited.

	6.12.	Total number of beds in hospital wards and other hospital care units in the Lubelskie Province in 2019 was 7.6% lower than in 2018. The above, in particular, resulted from the introduction of minimum employment standards for nurses and midwives, which forced hospital managers to make registration changes in this regard. Hospital bed rate in hospital wards and other hospital care units per 100,000 population of the province in 2019 was lower by 43 compared to 2018, but higher than the average for Poland in 2019. and placed the province in 5th position in the country in terms of the number of beds per 100,000 of the population. The highest rate of beds in hospital wards and other hospital care units per 100,000 population in 2019 appeared on the wards of internal medicine, general psychiatry and general surgery, gynaecology and obstetrics. In hospital wards and other hospital care units, the average bed occupancy rate was 85% i.e. 4 percentage points higher than in 2018. (81%). The average for Poland in 2019 was 83%.	The data indicate hospital wards with high and low bed occupancy.	Reorganisation in the number and structure of beds in individual hospital wards with a view to increasing the availability of beds where the highest occupancy rates are recorded, while reducing beds in wards with low occupancy rates.

		The highest average bed occupancy rates (above 90%) were recorded in: Kraśnik district (124%), Łuków district (120%), Puławy district (102%), the city of Zamość (98%), the city of Biała Podlaska (97%), Radzyn district (92%). The highest average bed occupancy rates (above 90%) were recorded in the following wards: clinical oncology/chemotherapy (148%), neurology (138%), same-day care (134%), oncological surgery (120%), psychiatric rehabilitation (107%), allergology (105%), haematology (100%), endocrinology (98%), nephrology (96%), cardiac surgery (94%), neurosurgery (91%), detoxification (89%). The lowest average bed occupancy (up to 50%) was recorded in the following wards: paediatric dermatology (9%, however, in all 4 provinces in which such wards operate, their occupancy rate did not exceed 65%), paediatric ophthalmology (36%), plastic surgery (39%), immunology (41%, which was the highest occupancy rate among the 3 provinces in which such wards operate), transplantology (43%), obstetrics-gynaecology (49%). Number of intensive care beds in the province per 100,000		

	population (26.28) was slightly higher than the average for Poland (25.82). The number of incubators in a province per 100,000 population (6.69) was slightly higher than the Polish average (6.27), which ranked the province fifth in the country in terms of the number of incubators per 100,000 of the population.		
6.13.	Drug programmes were implemented in 14 out of 24 districts, with the highest number in the city of Warsaw, Lublin and Zamość. 6,575 inhabitants of the province were treated in drug programmes. Compared to 2018, there was a 10% increase in the number of patients from the province. There were 89 drug programmes in Poland, 78 of which were implemented in the province.	Although there has been an increase in the number of patients benefiting from drug programmes, there is regional variation in the province in this respect. The lack of access in the province to all programmes implemented in the country.	Improving access to drug programmes in districts where they were not implemented and aiming at the highest possible number of implemented programmes among those implemented in Poland.
6.14.	According to the value of inpatient hospital-acquired infections per 100,000 population, the province ranked 4th. place in the country (above the value for Poland). The number of deaths due to hospital-acquired infections per 100,000 population was lower than the national average (2.47 vs. 4.05). In terms of mortality due to hospital-acquired infections	the province reported an increase in inpatient hospital-acquired infections compared to 2018. Despite the fact that all hospitals in the province have developed a protocol for CPE screening in patients admitted to hospitals	Organising the provision of health care services in such a way as to minimise the risk factors for hospital infections and the occurrence of epidemic outbreaks (ongoing updating of procedures, supervision of their compliance by

		the province ranked 12th in Poland.	with identified risk factors such as hospitalisation in other institutions, long-term antibiotic therapy, hospitalisation in CTC, SWH or in another institution in the province and the country, it is not observed by many entities[4]. The analysis of incidence and mortality related to sepsis leads to the conclusion that the Lubelskie Province is in a good situation in this respect in comparison with other provinces	medical staff, ongoing staff training).
	6.15.	not applicable	Maintaining the quality of comprehensive treatment depends on systematic modernisation and equipping/replacing existing infrastructure. Some medical entities are located in old buildings with non-functional layouts and worn-out and outdated medical equipment, which affects diagnostic and therapeutic activities, causing poorer treatment outcomes	Improving the quality and accessibility of health services provided by modernising existing infrastructure.

[4] w.lublin.uw.gov.pl/wojew%C3%B3dzki-zesp%C3%B3%C5%82-ds-monitorowania-i-zwalczania-zaka%C5%BCe%C5%84-patogenami-opornymi-na-antybiotyki-kluczowe

			and longer hospitalisation. Modernisation of existing medical entities and the purchase of modern equipment will contribute to obtaining better health and economic effects as well as provide the province residents with improved standards of treatment and conditions of providing health care services.	
	6.16.	not applicable	It is becoming a challenge for today's society to increase access to certain health care services. Therefore, it is necessary to take measures to support the infrastructure of medical and care institutions in terms of adjusting medical entities to the requirements of persons with special needs and increasing the supply of medical and care services provided remotely in the form of e-medicine services. Telemedicine improves access to health care services. Reducing queues to specialists, reducing medically unjustified visits,	Improving the quality and accessibility of health care services provided by developing and implementing solutions in the field of e-health, including: tele-medicine (e.g. tele-monitoring, tele-rehabilitation, tele-radiology, tele-care), digitisation of health care and strengthening of IT infrastructure in hospitals, including the development of modern patient information channels.

Psychiatric care and addiction treatment			responding more quickly to disease exacerbations, reducing geographical barriers, saving time and improving the work of medical practitioners, nurses and other medical professionals. It also results in financial savings at the medical entity level.	
	7.1.	There were two Centres for Mental Health in the province, located in Radzyń Podlaski and Chełm, which covered 3 districts. Epidemiology: 2.9	Inhabitants of other regions were not provided with this form of treatment. Epidemiology: 2.9	Establishing centres offering comprehensive psychiatric services (Centres for Mental Health) as new multi-profile organisational units.
	7.2.	In the province there were: - psychiatric hospital wards (general) in two cities with district rights (Lublin, Chełm) and in five districts (three neighbouring districts: Radzyń, Łuków and Parczew, as well as Zamość and Janów), - psychiatric rehabilitation ward in the city of Lublin - psychogeriatric ward in the city of Lublin and Janów district, - psychiatric ward for the chronically ill	Inhabitants of the province did not have access to psychiatric services for somatic patients and tuberculosis patients provided within hospital wards. Moreover, the data given indicate limited availability of services in the psychiatric rehabilitation ward and treatment of neurotic disorders. Demography 1.2	Providing the province inhabitants with 24-hour psychiatric services by creating hospital wards at general hospitals to enable patients to receive psychiatric and somatic treatment.

		in Zamość district, - neurotic disorders treatment ward in the city of Lublin. The province lacks a psychiatric ward for somatic patients and a psychiatric ward for tuberculosis patients. Number of beds per 100,000 population in the psychiatric rehabilitation ward and the neurotic disorders ward in the province was below the national level. The number of patients per 100,000 population over the age of 18 in the province in a psychiatric rehabilitation was was 6, making it 11th in comparison to other provinces, while in the neurotic disorders treatment ward it was 13th - 10th place among provinces. Demography 1.2	Epidemiology: 2.9	
	7.3.	In the province there were: - psychiatric day ward (general) in three cities with district rights (Chełm, Biała Podlaska, Lublin) and in the districts of Radzyń, Puławy and Kraśnik, - day psychiatric rehabilitation ward in two cities with district rights (Lublin,	The distribution of entities providing psychiatric day care services indicates limited availability of this form of care for the province residents. Demography: 1.2 Epidemiology: 2.9	Increasing access to psychiatric day care services by raising the number of wards providing these services.

		Zamość), - psychogeriatric day ward in the city of Lublin and in two districts (neighbouring Biała Podlaska and Włodawa districts), -day ward for neurotic disorders in the city of Lublin and Puławy district.		
	7.4.	Psychiatric care facilities/wards were functioning in the city of Chełm and in the city of Lublin, Parczew, Łuków, Puławy, and Zamość districts. The average waiting time (as of February 2020) to an institution or psychiatric care ward for a stable case was 305 days. The province lacks a psychiatric nursing facility/ward.	The data provided confirm the low availability of psychiatric care facilities/wards in the province. Inaccessibility of inhabitants to services provided within a psychiatric nursing facility/ward. Epidemiology: 2.9	Increasing the availability of mental health care and treatment facilities by increasing the number of medical entities providing services in this area or by increasing the number of beds in existing entities. Establishing a psychiatric nursing facility/unit.
	7.5.	There was one hostel for people with mental disorders in Lubelskie Province.	Efforts should be made to increase accessibility to this form of care in Lubelskie Province in order to improve the quality of life and daily functioning as well as to restore social skills of people with mental disorders.	Creating hostels for people with mental disorders.

	7.6.	Within the province there were: - mental health clinics, which were available in almost every district (except for the districts of Zamość and Chelm, with Chelm district being the responsibility of the Centre for Mental Health located in Chelm), - neurosis outpatient clinic in the city of Lublin - psychological outpatient clinics in four cities with district rights (Biała Podlaska, Chełm, Lublin, Zamość) and seven counties (Łuków, Puławy, Kraśnik, Biłgoraj, Tomaszów, Włodawa, Łęczna) There was a lack of psychogeriatric outpatient clinic in the province. Demography: 1.2 Epidemiology: 2.9	It is necessary to provide access to outpatient clinics for inhabitants of districts where there is no service provision of this kind. Demography: 1.2 Epidemiology: 2.9	Establishing specialised outpatient clinics, in particular psychogeriatric outpatient clinics, taking into account the demography of the province.
	7.7.	Anxiety disorders and mood disorders were the most common types of disorders diagnosed in adult patients of the province. The number of patients with mood disorders per 100,000 population of the province was	An insignificant share of individual psychotherapy and psychological consultations indicates that not all patients requiring this form of help were provided with it.	Providing psychotherapy to patients requiring this form of treatment.

	higher than the national average. The province reported the largest share of medical consultations (58.93%) followed by a low share of individual psychotherapy (22.09%), psychological consultations (17.07%).		
7.8.	Community (home-based) treatment operated in four cities with district rights (Biała Podlaska, Chełm, Lublin, Zamość) and in six districts (four neighbouring districts: Radzyń, Biała, Parczewo and Łęczna and Puławy, Kraśnik).	Patients living in the southern part of the province had the most limited access to this form of treatment	Increasing accessibility to services provided by community (home-based) treatment in the southern part of the province.
7.9.	The province lacked day wards for substance abuse and uncharacterised addictions. Patients had difficulty accessing day units for alcohol addiction therapy due to their distribution. These entities operated in Łuków, Parczew and Krasnostaw districts, the cities of Chełm and Lublin. The average waiting time (as of February 2020) to a substance abuse rehabilitation ward for stable cases was 20 days, longer than its value calculated for the whole country (7 days). There was no anti-smoking	A barrier limiting the availability of addiction treatment services for adults was the uneven distribution or lack of providers. Inhabitants also had significantly limited access to addiction treatment services due to long waiting times.	Increasing access to addiction treatment services for adults through establishing medical entities providing these services.

	clinic in the province. Patients had limited access to general outpatient clinics for addiction treatment, which were located in the districts of Łuków, Łęczna, Kraśnik, Janów, the city of Lublin, Zamość, and Chełm and substance abuse outpatient clinics operating in the districts of Kraśnik, Puławy and Tomaszów and the cities of Chełm and Lublin. In Lubelskie Province there are no hostels for alcohol and substance abuse addicts.		
7.10.	The migration rate of patients residing and treated in the same area between districts in the Lublin Province, combined for psychiatric care and addiction treatment, varies greatly and ranges from 0% (Chełm district) to 94.75% (the city of Lublin). ,for 5 districts the rate was below 50%, for 4 districts between 50% and 70%, for 9 districts between 70% and 80% and for 6 above 80%.	Patient migrations indicate regional variations in access to services.	The provincial priority action is to fill the "blank spot" on the resource map of adult psychiatric and addiction care in subregions and districts.
7.11.	The number of psychiatrists in the province was 236, the rate of medical practitioners per 100,000 population was 11.2 - according to the recommendations it should be 20.	An insufficient number of medical staff results in a decrease in the availability and quality of health care services and significantly longer waiting times for health care services, which	Increasing the number of psychiatric doctors, child and adolescent psychiatrists, psychiatric nurses, social workers and community therapists,

		The rate indicating the number of staff (total) in psychiatric care and addiction treatment per 100,000 population in the province was 52.7 (4th place in the country).	directly affects the effectiveness of medical care and health of the population.	psychotherapists (including addiction psychotherapy specialists), psychologists (including clinical psychologists) through creation of mechanisms motivating (including financial ones and better working conditions) to take up speciality studies, and to take up and maintain work in these professions in the Lubelskie Province.5
	7.12.	not applicable	Maintaining the quality of comprehensive treatment is contingent on systematic modernisation and equipping/replacing of existing infrastructure. Some medical entities in Lubelskie Province are located in old buildings with non-functional layouts and worn-out and outdated medical equipment, which affects diagnostic activities,	Modernisation of existing medical entities and purchasing modern equipment will contribute to obtaining better health and economic effects as well as provide the province residents with improved standards of treatment and conditions of providing services.

[5] Information from the 2019 Annual Report of the Provincial Consultant on Psychiatry

			causing poorer treatment outcomes and longer hospitalisation.	
	7.13.	The province lacks Centres for Mental Health for children and adolescents as well as a Centre for Highly Specialised 24-hour Psychiatric Care for children and adolescents, which are to be established in accordance with the assumptions of the reform in the mental health care system for children and adolescents.	Lack of access to comprehensive psychiatric care for children and adolescents.	Creation of centres offering comprehensive psychiatric services (e.g. Centres for Mental Health), as new multi-profile organisational units.
	7.14.	There was 1 day psychiatric ward for children in the province (the city of Lublin), 1 day ward for children and adolescents (the city of Lublin), 2 day unit for persons with child autism (the city of Lublin, and Chełm).[6]	A barrier limiting the availability of services in child and adolescent psychiatric care in day care terms is the insufficient number of appropriate facilities, unevenly distributed, mostly centralized in Lublin.	Provision of adequate access to day psychiatric care services for children and adolescents, bearing in mind the current uneven distribution of providers.
	7.15.	The province lacks specialised wards for children and adolescents, such as a ward for the treatment of neurotic disorders.	No access to these services for inhabitants under the age of 18. Limited access to inpatient health services for children and adolescents	Establishing day and 24-hour wards, in particular: treatment of: neurotic disorders.

[6] Data obtained from National Health Fund (NFZ) - Regional Branch in Lublin, confirmed as at 31 December 2019.

		with mental disorders results in children with these problems being treated in other paediatric wards (paediatrics, paediatric neurology), which is not beneficial for the other patients.	
7.16.	In Lubelskie Province, there were no paediatric psychiatry care and treatment centres and no paediatric psychiatry nursing and care centre/ward.	No access to these services for inhabitants under 18 years of age.	Establishing paediatric psychiatric care and treatment facility and a paediatric psychiatric care facility/ward.
7.17.	There was no hostel for children and adolescents with mental disorders in Lubelskie province.	No access to these services for inhabitants under the age of 18.	Creating a hostel for children and adolescents with mental disorders in the province.
7.18.	In Lubelskie province there were 7 mental health outpatient clinics for children and adolescents (the cities of Lublin, the city of Zamość, and Chełm), 5 outpatient clinics for persons with child autism (Biała Podlaska and Biłgoraj districts, the city of Chełm and Lublin).	Insufficient availability of outpatient specialist care services for children and adolescents.	Establishing specialised outpatient clinics, especially in the types with the longest waiting times.

7 Data obtained from National Health Fund (NFZ) - Regional Branch in Lublin, confirmed as at 31 December 2019.

	The average waiting time (as of February 2020) for consultations at a paediatric autism outpatient clinic is 140 days.		
7.19.	In accordance with the reform of the mental health care system for children and adolescents as regards the provision of services within the Community psychological and psychotherapeutic care centre for children and adolescents - Psychological outpatient clinic for children and adolescents operates within First reference level[8]	Provision of such services to inhabitants of the province under 18 years of age.	Establishing a psychological outpatient clinic for children and adolescents within the first reference level, where such clinics do not yet exist.
7.20.	In the province, patients under 18 received the most medical consultations (71.36%), with a low share of psychological consultations (24.55%) and individual psychotherapy (4.06%), and an almost zero share of group/family interventions (0.01%). The share of medical consultations in the province was higher than the average for Poland (62.42%), the share of individual psychotherapy was much lower than the average for Poland (the province - 4.06%, Poland - 13.78%). In the Lubelskie Province, the rate of patients per 100,000 population was higher than	An insignificant share of individual psychotherapy and psychological consultations indicates that not all patients requiring this form of help were provided with it.	Providing psychotherapy to patients requiring this form of treatment.

[8] https://www.gov.pl/web/zdrowie/informacja-o-aktualnym-stanie-prac-nad-reforma-w-systemie-ochrony-zdrowia-psychicznego-dzieci-i-mlodziezy; https://isap.sejm.gov.p1/isap.nsf/download.xsp/WDU20200001641/O/D20201641.pdf

	the Polish average for the following groups of disorders: neurotic disorders associated with stress and somatic form, behavioural disorders and mixed behavioural and emotional disorders, adolescent emotional disorders, mental and behavioural disorders caused by the use of psychoactive substances, eating disorders, tics.		
7.21.	The province lacks care provided in the form of a community (home-based) treatment for children and adolescents.	No access to this form of care for inhabitants of the province under 18 years of age.	Taking actions to provide provincial residents under 18 years of age in services provided as part of a community (home-based) treatment.
7.22.	No form of paediatric psychiatric care was provided in the districts of: Radzyń, Łuków, Chełm, Krasnystaw, Włodawa, Lubartów, Parczew, Lublin, Świdnik, Łęczna, Ryki, Opole, Kraśnik, Janów Lubelski, Zamość, Hrubieszów, Tomaszów Mazowiecki, Puławy and the city of and Biała Podlaska.	Lack of availability of any form of psychiatric care in most districts.	Providing adequate access to paediatric psychiatric care services in the province to meet the needs of residents. It is necessary to increase and even out regional differences in access to paediatric psychiatric care services within the province.

	7.23.	The province lacks a paediatric toxicology ward [9].	Due to the increasing number of adolescents requiring hospitalisation after consuming intoxicants, it can be inferred that the demand for services in this area will increase.	Establishing a paediatric toxicology ward.
	7.24.	In Lubelskie Province, there was 1 substance abuse outpatient clinic for children and adolescents (the city of Lublin), 1 rehabilitation centre for psychoactive substance addicts (Puławy District).[10]	The insufficient number of entities providing services in addiction treatment for children and adolescents was a barrier limiting access to services in this field in Lubelskie Province.	Increasing access to addiction treatment services for children and adolescents through the establishment of treatment entities providing services in this area.
	7.25.	The migration rate of patients residing and treated in the same area for psychiatric care and addiction treatment altogether, between districts of Lubelskie Province is highly varied and ranged from 0% (Chełm, Lubartów, Lublin, Parczew, Zamość districts), 0.39% (Świdnik District), 0.64% (Krasnystaw District) up to 95.41% (the city of Lublin). For 13 (out of 24) districts this rate was below 30%.	Migration of patients up to 18 years of age indicate regional variations in terms of access to services.	The provincial priority action is to fill the "blank spot" on the resource map of adult psychiatric and addiction care for children and adolescents in subregions and districts.

[9] Data obtained from National Health Fund (NFZ) - Regional Branch

[10] Data obtained from National Health Fund (NFZ) - Regional Branch

	7.26.	The number of paediatric psychiatrists in the province was 16 and the ratio of medical practitioners per 100,000 population was 0.8, although according to the recommendations the rate should be 2. Compared to all the provinces, Lubelskie had the highest number of medical practitioners of retirement age (56%).	A barrier limiting the availability of paediatric psychiatry services is the insufficient number of specialists in the field. The insufficient number of medical staff results in a decrease in the availability and quality of health care services and significantly longer waiting times for health care services, which directly affects the effectiveness of medical care and the population's health.	Increasing the number of paediatric psychiatrists by creating incentive mechanisms (including financial and better working conditions) to undertake specialist studies and take up and hold jobs in these professions in the Lubelskie Province.
	7.27.	not applicable	Maintaining the quality of comprehensive treatment depends on systematic modernisation and equipping/replacing existing infrastructure. Some medical entities in Lubelskie Province are located in old buildings with non-functional layouts and worn-out and outdated medical equipment, which affects diagnostic and therapeutic activities, causing poorer treatment outcomes and longer hospitalisation.	Modernisation of existing medical entities and purchasing modern equipment will contribute to obtaining better health and economic effects as well as provide the province residents with improved standards of treatment and conditions of providing services.

Medical Rehabilitation	8.1.	The ratio of outpatient rehabilitation centres per 100,000 population was 16% higher than the national average, making it 4th nationwide. Inpatient rehabilitation was provided to 0.3% of all patients who underwent medical rehabilitation services. The number of patients per 100,000 population (by place of service) was 8% below the national average, making it 10th. in Poland. Availability of inpatient rehabilitation services in terms of: • Overall per 100,000 population was 6% below the average, ranking it 8th in Poland, • Cardiology per 100,000 population was 18% above the average, ranking in 5th in Poland, • Neurology per 100,000 population was 19% below the average, ranking it 14th in Poland. Waiting times for services are high (average waiting time for inpatient general rehabilitation for stable cases in February 2020	Despite the high number of inpatient rehabilitation centres, which is above the national average, other data confirm the insufficient availability of inpatient rehabilitation services.	Increasing accessibility to inpatient rehabilitation services, in particular neurological and cardiological rehabilitation, by increasing the number of health care entities providing services in these areas or by increasing the number of beds in already existing entities.

	was 394 days). Average waiting time for inpatient cardiac rehabilitation in stable case in February 2020 was 15,7 days. At the end of 2019, number of beds per 100,000 population in inpatient rehabilitation was 29% below the national average.		
8.2.	The number of patients per 100,000 of inhabitants aged 0-17 (by place of providing services) is 3.1, which is 91% below the average for Poland. Waiting times for services are long (average waiting time for a general rehabilitation inpatient rehabilitation ward for children in a stable case in February 2020 was 135 days)	Insufficient availability of inpatient rehabilitation services for children	Increasing the number of inpatient rehabilitation services for children or increasing the number of beds. Increasing the number of rehabilitation services for children
8.3.	The ratio of outpatient rehabilitation centres per 100,000 population was 34% higher than the national average, making it 3rd nationwide. Day rehabilitation was provided to 11.9% of all patients who received medical rehabilitation services in 2019.	Despite a satisfactory rate of day rehabilitation centres, the number of day care beds is too low, which results in long waiting times for services Demand for services exceeds supply	Increasing accessibility to day rehabilitation services by increasing the number of entities or the number of day beds in entities as well as increasing the number of services provided

		The number of patients per 100,000 population (by place of service) was above the national average by 24%, which is 2nd in Poland. Waiting times are long (the average waiting time to an inpatient rehabilitation facility/centre for a stable case in February 2020 was 176 days). At the end of 2019, number of day care beds per 100,000 population was below the national average by 43%.		
	8.4.	Day rehabilitation services for children were provided in the cities of Lublin, Biała Podlaska, Chełm and Zamość and the districts of Łuków, Ryki, Lubartów, Łęczyca, Puławy, Opole, Biłgoraj, Tomaszów Mazowiecki, Hrubieszów. The average waiting time to a paediatric day rehabilitation facility/centre is 37.9 days. The number of patients per 100,000 inhabitants aged 0-17 (by place of service) is 14 and is 58% below the average for Poland.	Insufficient availability of day rehabilitation services for children	Increasing the number of providers of inpatient day rehabilitation services for children or increasing the number of beds. Increasing the number of rehabilitation services for children
	8.5.	The ratio of outpatient rehabilitation centres per 100,000	Despite a satisfactory rate of outpatient rehabilitation centres	Increasing the access to rehabilitation services

		population was at the average for Poland, making it 9th nationwide. Inpatient rehabilitation was provided to 89.5% of all patients who underwent medical rehabilitation services. The number of patients per 100,000 population (by place of service) was 4% above the national average, making it 8th in Poland. Waiting times for services are long (average waiting time for outpatient physiotherapy in stable case in February 2020. was 120 days).	waiting times for services are too long . Demand for health care services exceeds supply	outpatient care through increased funding.
	8.6.	General outpatient rehabilitation services for the 0-17 age group (by provider location) were performed in all districts. The average waiting time for a children's rehabilitation clinic in a stable case in February 2020 was 28.2 days. General outpatient rehabilitation services in the age group of 0-17 number of patients per 100,000 of the province's population aged 0-17 is 546, 9% below the national figure.	insufficient access to outpatient rehabilitation services for children	Increasing the number of rehabilitation services for children

	8.7.	The ratio of home rehabilitation centres per 100,000 population was 3% higher than the average for Poland. Waiting times for services are long (average waiting time for home physiotherapy in stable case in February 2020. was 41 days).	Despite the satisfactory rate of home rehabilitation centres, waiting times for services are too long.	Increasing the number of physiotherapy services in home rehabilitation.
	8.8.	The migration balance of patients requiring rehabilitation in Lubelskie province was negative and amounted to -2 652. This is the value presented for all types of benefits combined. The highest migration balance was recorded in the cities of Lublin, Zamość, Biała Podlaska and Chełm, and the lowest in the districts of Lublin, Zamość and Biała Podlaska. There is a very clear migration of patients to the cities with district rights from their outskirts. Inpatient rehabilitation centres were not available in 4 districts. A high concentration of these centres can be found in the city of Lublin and the district of Puławy. Compared to 2016, the province gained 1 new provider. Day rehabilitation centres were available in all districts. High concentration	Patient migration is a result of insufficient accessibility to medical rehabilitation services. There is regional variation regarding rehabilitation services.	Medical rehabilitation service providers commensurate with the needs of the population.

		centers can be found in the city of Lublin. Compared to 2016, the province gained 3 new providers. Outpatient rehabilitation centres were available in all districts. A significant concentration of centres can be observed in the city of Lublin. Compared to 2016, it gained 20 new providers. There were no home rehabilitation centres in 1 district. A high concentration of these centres can be found in the districts of Lublin and Hrubieszów.		
	8.9.	The main diagnoses in medical rehabilitation (in all types of services combined) were musculoskeletal diseases (70.1%) and nervous system diseases (21.5%). Diseases of the musculoskeletal system were the main reason for rehabilitation carried out in outpatient, inpatient and day setting, while in home-based rehabilitation the main diagnosis was a disease of the nervous system.	Considering the diagnoses and the group of the most common diseases qualifying for rehabilitation, access to services after injuries, surgeries and strokes should be improved.	Increase in the share of rehabilitation services for people after injury, surgery or stroke.
Long-term care	9.1.	Number of patients provided with nursing and care services under long-term care in total per 100,000 population was similar to Polish average. Per type of service, in the case of	The data presented confirm the insufficient availability of nursing and care services under long-term care in inpatient setting.	Adapting long-term care infrastructure to current needs.

	care provided in the home setting were provided to 4% more patients/100,000 population compared to the average for Poland, in the case of inpatient care 5% less than the Polish average of patients/100,000. of the population.		
9.2.	The province had the highest migration balance in the country - the rate value in 2018, reached - 205, while in 2019 - 234, indicating an increasing trend and implying limited access to long-term care services.	Migration of patients is the result of insufficient access to long-term care services.	Providing adequate access to long-term inpatient care services for inhabitants
9.3.	In the province, queues with the longest average waiting time in the stable case (as of February 2020) were recorded for the nursing facility/ward (239 days) and the residential care facility/ward (307 days). This time was longer in the province compared to the average time in Poland in both cases.	The presented data confirm low accessibility of long-term care services in comparison with other provinces.	When planning and implementing measures to improve the situation of older and dependent persons, efforts should be made to expand the institutional long-term care sector (CTC/NCC).
9.4.	The average number of beds per 1,000,000 inhabitants was below the average value indicated for Poland by 33% and thus the Lubelskie Province was ranked 14th among all provinces.	The availability of long-term care beds is insufficient to meet current and future needs based on demography and epidemiology.	Increasing the number of medical entities providing long-term inpatient care services or increasing the number of beds in existing ones.

	9.5.	In the districts of Ryki, Lubartów, Włodawa, Zamść, Chełm and Krasnystaw there were no nursing/care centres	Access to this form of care was most limited for inhabitants of Krasnystaw, Ryki and Lubartów districts, due to the high negative migration balance of patients and the geographical location of these districts (distance to districts where the migration balance is positive).	Establishing a nursing and care/care and treatment centre/ward within a new medical entity or organisational unit of a medical entity in the districts of Krasnystaw, Ryki and Lubartów.
	9.6.	Health care services in a nursing and care / care and treatment unit for mechanically ventilated patients were provided by 4 entities located in the city of Lublin and the districts of Łuków and Radzyń Podlaski.	Significantly constrained access for patients living in the southern part of the province.	Establishing a nursing/care facility for mechanically ventilated patients in the southern part of the province and taking actions to evenly distribute medical entities in the province.
	9.7.	Nursing and care / care and treatment facilities for children and adolescents did not function in one of seven provinces in Poland. Among the neighbouring provinces, only Mazowieckie Province had 1 centre,	No access to these services for inhabitants of the province under 18 years of age.	Establishing nursing and care / care and treatment facility for children and adolescents.

	where the rate of centres per 100,00 population was 0.02.		
9.8.	There were no nursing and care /care and treatment centres for mechanically ventilated children and adolescents.	No access to these services for inhabitants of the province under 18 years of age.	Creating nursing and care /care and treatment centres for mechanically ventilated children and adolescents
9.9.	The number of patients provided with health services of long-term home-based care for mechanically ventilated patients in relation to the place of residence and per 100,000 population was 27.65. This value was the second highest in comparison to other provinces and 51% higher than the value in Poland. In addition, all centres providing long-term home-based care team services for mechanically ventilated patients were located in the city of Lublin and Ryki district.	Lack of provision in the southern and eastern parts of the province.	Establishing a centre providing long-term home-based care services for mechanically ventilated patients and taking actions to evenly distribute medical entities across the province, taking the needs of the residents of all districts into account.
9.10.	Centres providing long-term home-based care services for mechanically ventilated children were located only in the Ryki District and the city of Lublin.	Lack of provision in the southern and eastern parts of the province.	Establishing a centre providing long-term home-based care services for children

		The number of centres per 100,000 of population in the province is 0.09 and is below the value for Poland by 25% (Poland 0.12).		mechanically ventilated patients, and to take actions aimed at a balanced distribution of treatment entities within the province, taking into account the needs of patients under 18. years of age of all districts.
	9.11.	Demography 1.2.	The DCCs provide assistance in the care for dependent people, especially those over 65, who, due to their health condition, require nursing, care and rehabilitation services and continuation of treatment but do not require hospitalisation and do not qualify for care in a CTC due to a Barthel scale score above 40.	It is advisable to develop day care forms such as DCC.
Palliative and hospice care	10.1.	Palliative and hospice care services were provided to 21% fewer patients per 100,000 population relative to the average for Poland, making it 15th nationwide.	The data presented confirm the insufficient availability of palliative and hospice care services.	Adapting palliative and hospice care infrastructure to current needs.

	10.2.	Patients with a diagnosis of neoplastic disease accounted for 92.8% of palliative care patients in Malignant tumours of the trachea, bronchi and lung (15.9%) and malignant tumours of a large intestine and rectum (11.5%) predominate among patients overall. The forecast for the number of beds in palliative and hospice care in the province is 9,400 in 2030, 10,300 in 2040 and 10,800 in 2050,	The constant increase in the incidence of neoplastic diseases and the increasing death rate, as well as the ageing of the population, will increase the demand for palliative and hospice care in the upcoming years.	The systematic increase of availability of palliative and hospice services in the province.
	10.3.	According to the European Association for Palliative Care guidelines on standards and norms for palliative care in Europe, the province does not provide a minimum number of inpatient care beds. The rate value was 78.74/1 mln population (100 is recommended).	A lower than recommended rate indicates a shortage of beds in inpatient palliative care wards and hospices.	Increasing bed capacity in inpatient palliative and hospice care.
	10.4.	In the districts of Biała Podlaska, Biłgoraj, Chełm, Hrubieszów, Janów Lubelski, Krasnystaw, Lublin, Łęczyca, Łuków, Parczew, Radzyń Podlaski, Ryki, Świdnik and Tomaszów Lubelski there were no inpatient palliative care wards/hospices; therefore access to this form of care was most difficult for the residents of the districts of Łuków, Krasnystaw, Świdnik and Hrubieszów, due to high negative	Access to inpatient palliative and hospice care is limited by an insufficient number of facilities and a distribution that is not commensurate with the needs of the population	Efforts to provide inpatient care in the following districts: Łuków, Krasnystaw, Świdnik nd Hrubieszów, where its inhabitants have the most difficult access to this form of care.

		patient migration balance (below the provincial value of -33) and the geographical location of these counties (distance to counties with a positive migration balance).		
	10.5.	Availability of services in palliative and hospice care in the outpatient setting was limited by an insufficient number of outpatient clinics - 4. The value of rate in terms of the number of outpatient clinics in the province per 100,000 population was 52% lower than in Poland, which placed Lubelskie province on the 13th place in the country.	The province's inhabitants had significantly limited access to outpatient clinics.	Increasing access to outpatient palliative care services for adults
	10.6.	For palliative care and hospice care in home-based settings, home hospices were not available in Biała Podlaska, Lublin, Parczew, Radzyń Podlaski and Świdnik districts.	There are regional variations in access to services in this regard	Providing access to palliative and hospice services in home settings in all districts of the province.
	10.7.	Access to palliative and hospice care is influenced by the place of residence. More than 30% fewer patients from rural than urban communes benefited from the services. The difference of nearly 80% in the number of patients in	Inhabitants of Lublin Province had one of the most problematic access to palliative and hospice care11.	Improving access to inpatient and outpatient services provided

[11] Source: https://www.nik.gov.pl/plik/id,21371,vp,24011.pdf

Emergency Medical Services		of individual provinces (per 10,000 population).		near the patient's residence.
	10.8.	The outlays per person in this type of health care services placed Lublin province on the 15th place in the country (PLN 17.71 - 77.43% of the national average)[12].	Too low rate of outlays per insured person compared to other provinces.	Increasing funding for palliative and hospice care.
	11.1.	Health care services on a 24-hour basis for persons in a medical emergency were provided by 17 emergency departments (EDs), of which 4 (including a paediatric one) were located in Lublin There are 3 EDs planned to be opened, of which 1 in Lublin (1 Wojskowy Szpital Kliniczny z Poliklinika), and the remaining 2 at the Independent Public Health Care Complex in Lubartów and the Independent Public Health Care Complex in Hrubieszów.	not applicable	Efforts should be made to ensure an even distribution of emergency departments.
	11.2.	Total admissions to hospital emergency departments (not broken down by age) in	The data presented show the dysfunction of NES and PCP in terms of patient diagnosis and referral	Increasing the number of activities focused on information about the possibility of obtaining help through NHHC and PHC.

[12] Opracowanie własne Lubelskiego OW NFZ na podstawie danych ujętych w planie zakupu świadczeń na 2019 r.

		2019 5.98% more patients compared to 2017, and by 5.54 % compared to 2018. In 2018, the proportion of emergency patients transferred to the ED by the ERT (i.e. the number of patients transferred by emergency medical services teams to the total number of patients admitted to the ED in a medical emergency) was - 25.90%, 2019 - 27.74%.	non-emergency patients to the ED.	
	11.3.	On average, per 100,000 population there were 5,066 ambulances (ranked 6th place nationally in terms of the number of emergency rescue teams). Population, the lie of the land and distribution of road network pose a threat to accessibility of services in the southern part of the province (the districts of Tomaszów Mazowiecki, Hrubieszów and Biłgoraj) and in the northern part of the Biała Podlaska district, close to the Mazowieckie Province border. Periodic analysis of the data on the time it takes for the emergency rescue teams to reach a person in a state of emergency, indicates that the achievement of the statutory values is also influenced by the renovation works carried out and the delineation of new routes, crossing the existing road network.	Insufficient amount of ambulances per 100,000 of the population. A too long time of transfer of a patient by ERTs to the hospital also had a negative impact on the arrival time.	Increasing the number of ambulances and redistributing the existing ERTs or creating new ones should be preceded by an analysis of visits to persons in a medical emergency and adjusted to the changing transport system with terrain conditions and population density in mind. Seasonal activation of so-called temporary teams in high-traffic tourist areas.

	In a city with over 10,000 residents, there were 95.56% of calls with a travel time of up to 15 minutes and 4.45% of calls over 15 minutes, which ranks 6th nationwide. Outside cities with over 10,000 inhabitants, there were 80.29% of calls with a travel time of up to 20 minutes and 19.09% of calls over 20 minutes, which ranks 11th nationwide.		
11.4.	From 1 April to 31 December 2019 the province ranked 7th nationally with 146,966 emergency medical services (EMS) calls, the average ERT workload was 1,373.51.	The number of emergency rescue team calls is high.	Increasing activities focused on information about the role of the ERT in providing services to people in a medical emergency.
11.5.	Out of the 107 ambulances in the system, 25 vehicles are more than 5 years old.	The condition of ambulances can affect the proper functioning of emergency rescue teams and their arrival at the scene of an incident, and the subsequent transport of the injured person to the nearest ED in the shortest possible time.	It is necessary to gradually replace the currently used fleet of ambulances and provide medical rescue teams with medical equipment, including chest compression devices, which should be available in all

Medical staff				rescue teams, including P-type and S-type teams.
	12.1.	Values of the number of total medical practitioners per 100,000 population and specialist medical practitioners were higher than the national average (400.1 vs 341.8 and 298.2 vs 259.4, respectively). Moreover, the Lubelskie Province ranked 3rd across all provinces that had the highest total number of medical practitioners and specialist medical practitioners per 100,000 of the population. The Chełm District has the lowest number of medical practitioners. In cities with district rights and in the Puławy District the number of specialist medical practitioners per 100,000 population was above the value indicated for the Lubelskie Province. In the city of Lubline alone, there was a high concentration of specialist medical practitioners.	Despite the high value of the number of medical practitioners and medical specialists, there is a regional diversity in this regard.	Creating and implementing an action plan to encourage medical practitioners to conduct their speciality training at smaller centres, mainly in district hospitals, where the staff shortages are the greatest. It is necessary to support young medical staff to encourage them to study, settle and work in the Lubelskie Province and to improve access to paid or low-cost workshops and training for medical staff.
	12.2.	The number of specialist medical practitioners was significantly lower than recommended, particularly in the areas where the percentage of coverage was: 4% clinical pharmacology; 21% palliative care; 24% clinical immunology; 24% geriatrics; 26% laboratory diagnostics; 27% metabolic paediatrics; 28% paediatric endocrinology and diabetology; 29% paediatric cardiology;	Residents of the Lubelskie Province had very limited access to specialists in selected fields.	Creating more new speciality vacancies and introducing a programme to encourage young medical practitioners to specialise in areas where the number of specialists was significantly lower than

		35% medical microbiology, 36% paediatric urology; 37% occupational medicine; 39% paediatric psychiatry; 51% clinical genetics; 52% paediatric nephrology; 54% sports medicine (civilian); 55% paediatric neurology; 56% psychiatry; 59% surgical oncology. The province saw little interest from medical practitioners in choosing specialities such as geriatrics, infectious diseases, general surgery, clinical transfusion medicine and pathomorphology [13]		recommended by national consultants, and in previous years there was a lack of applicants for these specialities.
	12.3.	By 2024, the number of specialist medical practitioners who will reach retirement age will be 1,085, while the number of medical practitioners who can complete speciality training is estimated at 1,406. The positive difference between these values signals an increasing shortage of specialists, particularly in the fields of internal medicine, paediatrics, family medicine, general surgery, otorhinolaryngology, lung diseases, obstetrics and gynaecology, as well as endocrinology. When it comes to the recommendations and generational interchangeability, the greatest need for new speciality places was estimated in the following	A significant problem is the ageing of the medical staff and the large proportion of the staff reaching the retirement age.	The purpose of starting up more speciality vacancies in deficit areas in the coming years is to reduce the gap between specialists reaching retirement age and medical practitioners obtaining the title of specialist, and to meet the demand for specialist medical practitioners indicated in the recommendations.

[13] source: data taken from the Health Department of the Lubelskie Province Governor's Office in Lublin based on SMK - session: autumn 2019 - spring 2020

	fields: internal medicine, occupational medicine, psychiatry, paediatrics and geriatrics.		
12.4.	Epidemiology: 2.2., 2.4., 2.5., 2.6., 2.7., 2.9., 2.10.	Epidemiology: 2.2., 2.4., 2.5., 2.6., 2.7., 2.9., 2.10.	Allocation of speciality vacancies in districts of the Lubelskie Province in accordance with the health needs of residents, taking into account the demographic and epidemiological situation.
12.5.	Values of the number of total dentists per 100,000 population and dentists with specialities were higher than the national average. The Lubelskie Province was ranked 6th and 2nd among all provinces that had the highest number of total dentists and dentists with specialities per 100,000 of the population. The Chełm and Biała Podlaska districts have the lowest number of dentists per 100,000 population. In cities with district rights, the number of dentists with specialities was higher than the provincial average. In the city of Lubline alone, there was a high concentration of	Despite the high value of the number of dentists, there is a regional diversity in this regard.	Focusing on improving access to dentists in the few districts where it still clearly deviates from the rest of the region, particularly in the districts of Chełm and Biała Podlaska.

		dentists with a speciality. In relation to the province as a whole, the most difficult situation was noted in the Chełm district, where the number of dentists with specialities per 100,000 population is merely 11.5 and the proportion among these medical practitioners reaching retirement age is high, i.e. 40%.		
	12.6.	The number of nurses per 100,000 population was higher than the national average. The Lubelskie Province was ranked 3rd among all the provinces that had the largest number of nurses per 100,000 population. The number of nurses over the age of 59 per 100,000 population in the province was higher than the national average. Compared to all other provinces, Lubelskie Province was ranked 7th in the country. As regards 2019 and forecasts for 2029, in Lubelskie Province, the number of nurses aged 25-59 will decrease by 33%.	Despite the high number of nurses compared to other provinces, nurses aged over 50 accounted for 50% of the total, so it should be concluded that there will be staffing shortages in the future.	Taking measures to increase the number of young nurses is necessary. Increasing the number of nursing degree vacancies and creating an incentive system to encourage people to undertake nursing majors. Taking measures to motivate those who have left the nursing profession to be professionally active again.
	12.7.	The number of midwives per 100,000 population was higher than the national average. The Lubelskie Province was ranked 4th among all the provinces that had the largest number of midwives per 100,000 of the population.	Despite the high number of midwives compared to other provinces, midwives aged 50 and over accounted for 43% of the total, so it should be	Taking measures to increase the number of young midwives is necessary. Increasing the number of midwifery degree vacancies

Medical equipment		The number of midwives over the age of 59 per 100,000 population was lower than the national average. Compared to all other provinces, Lubelskie Province was ranked 15th in the country. As regards 2019 and forecasts for 2029, in Lubelskie Province, the number of midwives will decrease by 24%.	concluded that there will be staffing shortages in the future.	and creating a system to incentivise people to pursue midwifery majors. Taking measures to motivate those who have left the midwifery profession to be professionally active again.
	12.8.	Physiotherapists in the province make up a fairly large (174 per 100,000 population vs 172 in Poland) and young group of specialists (average age is 36). As regards 2020 and forecasts for 2030, the number of physiotherapists will increase by 50% and it will be higher than the value for Poland (43%).	The number of physiotherapists remains at a good level.	Maintaining the upward trend in the number of physiotherapy graduates and expanding opportunities for this professional group.
	13.1.	Accelerators were available in two districts (city of of Lublin, city of Zamość). The distance to this type of equipment was the greatest for the inhabitants of the Biała Podlaska (84 km) and Włodawa (83 km) districts. The number of equipment per 100,000 population was slightly higher than the benchmark (0.40) and amounted to 0.47 (the average value for Poland was 0.44).	Despite the number of equipment rate being above the benchmark, the access to radiotherapy for patients in the outermost districts is significantly hindered.	Increasing the access to accelerators for patients in the outermost districts by providing hospital wards with modern medical equipment.

	13.2.	The average age of accelerators in both districts did not exceed 7 years. The relatively low age of the equipment and the average number of procedures performed per annum being less than 527 resulted in 7 out of 10 accelerators having low replacement priority, while 3 had medium replacement priority. It is estimated that by 2023 4 accelerators in the city of Lublin will exceed 10 years of age and will be counted as part of the base which requires replacement, while by 2028, 80% of currently owned accelerators will need to be replaced, i.e. 5 in the city of Lublin and 3 in the city of Zamość.	In the province, there are accelerators with medium and low replacement priority.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
	13.3.	Angiography machines were available in five districts - city of Lublin, city of Zamość, city of Chełm, city of Biała Podlaska, district of Puławy. The area furthest away from the district where there is at least 1 angiograph was the district of Parczew (58 km). The number of equipment per 100,000 population was lower than the benchmark (1.24) and amounted to 0.9 (the average value for Poland was 0.97).	Considering the location and the benchmark, efforts should be made to provide access to equipment for the inhabitants of the outermost districts.	Increasing access to angiography machines by providing medical entities with modern equipment.
	13.4.	The average age of the angiographs ranged from 2 to 12 years. The oldest angiographs were located in the city of Lublin, the city of Zamość, the city of Biała Podlaska. 26.3% of the angiographs exceeded	In the province, there are angiographs with high and low replacement priority.	In the upcoming years it is necessary to focus on the renewal of the equipment base with regard to machines

		10 years of age, with the oldest being 23, while 73.7% of all angiographs were "young" equipment. 26.3% of the angiographs had high replacement priority, while the remaining 73.7% belong to the equipment base with low replacement priority. By 2023, 52.63% of the angiographs will reach an age that will qualify them to be replaced with new units. By 2028, all currently owned angiographs will qualify as old equipment in need of replacement.		with high replacement priority (very old or relatively old and heavily used equipment).
	13.5.	Uneven distribution of angiograph utilisation is noticeable (the lowest average number of examinations is performed per annum in the city of Lublin - 524.75, the highest in the city of Biała Podlaska - 2,091). High equipment utilisation was related to the number of equipment per 100,000 population, it did not result from its average age.	Some equipment is not optimally utilised.	Efforts should be made to make the best use of the currently owned medical equipment.
	13.6.	In the province, there were 2 brachytherapy machines, located in the city of Lublin, where a cancer centre operates. The distance to a brachytherapy machine was the greatest for the inhabitants of the districts of Hrubieszów (135 km) and Tomaszów Lubelski (138 km). The number of equipment per 100,000 population was lower than the	Considering the location and the benchmark, efforts should be made to provide access to equipment for the inhabitants of the outermost districts.	Increasing access to brachytherapy machines by providing medical entities with modern equipment.

		benchmark (0.14) and amounted to 0.09 (the average value for Poland was 0.14).		
	13.7.	The average age of the brachytherapy machines is 11.5 years, so they are currently in the base which requires replacement, both machines have been given medium replacement priority. According to demand forecasts, 1 machine should be replaced by 2020 and the other by 2021.	In the province, there are brachytherapy machines with medium replacement priority.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
	13.8.	The ECMO machines, used for extracorporeal blood oxygenation, are located in the city of Lublin, the city of Zamość, and the city of Biała Podlaska. The distance to the nearest ECMO machine is the greatest for the inhabitants of the district of Łuków (81 km). The number of equipment per 100,000 population was higher than the benchmark (0.17) and amounted to 0.33 (the value of the indicator for Poland was 0.17).	Despite the inhabitants being provided with high access to this equipment, there is regional variation in this regard.	Focusing on the improvement of the situation in districts where it still clearly deviates from the situation in the other regions - with the aim to ensure even distribution.
	13.9.	The ECMO machines ranged from 0 to 18 years old. Medium replacement priority was given to 1 machine, which constitutes 14.3% of the equipment, and low priority was given to 6 machines or 85.7%.	In the province, there are ECMO machines with medium and low replacement priority.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or

	According to demand forecasts, more than half of the currently owned ECMO machines will need to be replaced by 2023, while by 2028 it will be 85.71%.		relatively old and heavily used equipment).
13.10.	The distribution of ECMO machine utilisation in the province is uneven, ranging from 0 to 5.5 procedures per annum. This is not a high rate, but ECMO therapy may have application in treating the most severe cases of COVID-19 in situations where using a ventilator is insufficient, which is relevant in the context of the COVID-19 pandemic.	Some equipment is not optimally utilised.	Efforts should be made to make the best use of the currently owned medical equipment.
13.11.	Gamma cameras were located only in the district of Lublin. The distance to gamma cameras was the greatest for the inhabitants of the Hrubieszów (135 km) and Tomaszów Lubelski (121 km) districts . The number of equipment per 100,000 population was lower than the benchmark (0.42) and amounted to 0.33 (the value of the indicator for Poland was 0.42).	Considering the location and the benchmark, efforts should be made to provide access to equipment for the inhabitants of the outermost districts.	Increasing access to gamma cameras by providing medical entities with modern equipment.
13.12.	The age of the gamma cameras was from 1 to 7 years for 3 pieces and from 12 to 30 years for 4 pieces. High replacement priority was given to 4 equipment units, which is 57.1% of the total	In the province, there are gamma cameras with high and low replacement priority.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or

	equipment, while low replacement priority was given to 3 units, which is 42.9%. According to demand forecasts, by 2023 5 of the currently owned gamma cameras will need to be replaced, while by 2028 6 cameras will need to be replaced.		relatively old and heavily used equipment).
13.13.	The age of stationary mammography machines ranged from 5.45 to 22 years. In eight districts, the average age of the equipment was 10 years or more. High replacement priority was given to 14 mammography machines, which constitutes 31.8% of total equipment, while medium priority was given to 2 mammography machines, i.e. 4.5%. According to demand forecasts, 52.27% of the currently owned stationary mammography machines will need to be replaced by 2023, while by 2028, it will be 95.45%.	In the province, there are mammography machines within the high and medium replacement priority categories.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.14.	Stationary mammography machines operated in 18 districts: Hrubieszów, Janów Lubelski, Kraśnik, Łuków, Puławy, Ryki, Świdnik, as well as in 4 cities with district rights,(Lublin, Zamość, Chełm i Biała Podlaska).	The distribution of mammography machines, supported by mobile units, is responsible for the good accessibility of screening, but some equipment is not optimally utilised.	Efforts should be made to make the best use of the currently owned medical equipment.

	Average equipment utilisation across districts varied from 0 to 2,599 examinations/year. High equipment utilisation was related to the number of equipment per 100,000 population, it did not result from its average age.		
13.15.	PET machines were located in the city of Lublin and the city of Zamość. The density of these devices was lower than the benchmark of this indicator (0.09 vs 0.2) and slightly higher than the national average (0.09 vs 0.08), although it must be noted that the PET machine located in the city of Zamość does not provide publicly funded services.	Considering the location and the benchmark, efforts should be made to provide adequate access to equipment for the inhabitants of the province.	Increasing the access to PET machines by providing publicly funded services in the city of Zamość.
13.16.	The average age of PET machines is 5.5 years in the city of Lublin and 4 years in the city of Zamość. Based on the recommendations, both PET machines in Lubelskie Province currently have low replacement priority. It is forecasted that the machine located in the city of Lublin will reach an age that will qualify it for replacement in 2023, while the machine in the city of Zamość - in 2026.	In the province, there are PET machines within the low replacement priority category.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.17.	MRIs are located in 9 districts: Hrubieszów, Krasnystaw, Puławy, Radzyń and Tomaszów districts, and in four municipal districts (Lublin, Zamość, Chełm	Considering the location and the benchmark, efforts should be made to provide access to equipment for the inhabitants of the outermost districts.	Increasing access to MRI machines by providing medical entities with modern equipment.

		and Biała Podlaska). 15 districts do not have MRIs, and their distance to the nearest machine is approx. 30 km. The citizens of Biłgoraj District (48 km) and Włodawa District (51 km) had to travel farthest to get to the MRI. The number of equipment per 100,000 people was lower than the benchmark (1.57) and amounted to 1.09 (the average value for Poland was 1.05).		
	13.18.	The MRI machines ranged in age from 0 to 20 years, with 7 of them being 10 years or older. The average annual number of procedures performed in most districts was less than 2,500, with only 1 MRI machine (14 years old) located in the city of Lublin, which was used to perform 4,059 tests per year. The large proportion of moderately aged and older equipment with a relatively low number of examinations performed per year means that 82.6% of the machines are low priority for replacement and only 3 machines were in the group of high priority for replacement (in the city of Lublin, Puławy District), which accounts for 13% of the total equipment. However, this does not change the fact that in the 2023 perspective 60.87% of MRI machines will exceed 10 years and will be counted as part of the base which requires replacement. In 2028,	In the province, there are MRI machines with high and low replacement priority.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

		91.30% of the current equipment will have to be replaced.		
	13.19.	The average age of X-ray machines in the districts ranged from 6.92 to 14.09 years. 23.6% of the machines are of a high priority for replacement, 0.6% of medium priority. According to demand forecasts, 379 of the currently owned X-ray machines will need to be replaced by 2023, while by 2028 it will be 583 machines.	In the province, there are X-ray machines with high and medium replacement priority.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
	13.20.	X-ray machines are very popular diagnostic devices, available in all districts. The average use of the equipment in the districts varied from 62 (Chełmno District) to 1,894 (Łuków District) procedures/year.	Despite access to x-ray machines in every district, some equipment is not optimally utilised.	Efforts should be made to make the best use of the currently owned medical equipment.
	13.21.	The average age of CT scanner machines in the districts ranged from 0 to 18 years. 25.5% of the CT scanner machines are of a high priority for replacement, 17% of medium priority. Forecasts indicate that by 2023, 28 CT scanner machines will reach an age that significantly limits the effective performance of procedures, and by 2028, 93.62% of currently owned CT scanner machines will	In the province, CT scanner machines are of high and medium priority for replacement.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

	be among the old equipment that needs to be replaced.		
13.22.	CT scanner machines were located in most districts except for Lublin, Chełm, Świdnik and Zamość. The number of CT scanner machines was higher than the baseline for that indicator (2.23 vs. 2.19) and the national average (2.23 vs. 2.02). In terms of the availability of CT scanner machines, the province ranks first in the country. Average us of the machine ranged from 343 procedures/year (Biała Podlaska District) to 8,678 (Łuków).	Despite the satisfactory availability of CT scanner machines in the province, some equipment is not optimally utilised.	Efforts should be made to make the best use of the currently owned medical equipment.
13.23.	Ultrasound machines are very popular diagnostic devices, available in all districts except for Chełm District. The number of equipment per 100,000 residents was lower than the reference value (36.74) and amounted to 30.74 (average value for Poland is 36.86).	Due to the reference value of ultrasound machines, efforts should be made to ensure access to equipment adequate to the needs of the inhabitants of the province.	Increasing access to ultrasound machines by providing medical entities with modern equipment.
13.24.	The average age of ultrasound machines in the districts ranged from 6.22 to 15.8 years (in most districts, the equipment was more than 10 years old).	In the province, there are ultrasound machines with high and medium replacement priority.	In the upcoming years it is necessary to focus on the renewal of the equipment base with regard to machines

	62.7% of ultrasound machines were of high priority for replacement, while 1.9% of ultrasound machines were of medium priority for replacement. According to demand forecasts, by 2023, 539 owned ultrasound machines will need to be replaced, while 648 will need to be replaced by 2028.		with high replacement priority (very old or relatively old and heavily used equipment).
13.25.	The utilisation of ultrasound machines varies in the districts and it ranges from 0 to 1,186 procedures/year.	Some equipment is not optimally utilised.	Efforts should be made to make the best use of the currently owned medical equipment.

Appendix No. 4

Challenges for the health care system and recommended lines of action in the Lubuskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	According to population forecasts, by 2050, there will be an increase in the population aged 60 and older by 39.7% (from 255,144 in 2019 to 356,398 persons in 2050), especially persons aged 80 and over - more than double (from 38,474 persons to 89,061 persons). At the same time, there will be a significant increase in the proportion of older people aged 60 and over (from 25.2% to 40.6%), and those aged 80 and over (from 3.8% to 10.1%). There will be a decrease in the share of children and teenagers (0-18 years) in the total population (from 19.0% in 2019 to 15.3% in 2050).	As the percentage of elderly people increases, the need for health services for this group of people will increase. There will be an increase in demand for specialists in the areas of chronic and degenerative diseases and rehabilitation services; there will be a decline in demand for obstetrical services and paediatric care.	not applicable
	1.2.	The number of deaths (11,070) was higher than the number of births (9,036). According to the forecast, in 2050 the number of births will decrease by 30.4%, while the number of deaths will increase by 2.8%. Men died more often than women - mortality rate for men	The number of deaths exceeds the number of births. There is an excess of male mortality and a difference in life expectancy between those living in urban and rural areas, with the predominance of the former.	not applicable

		was 11.9 per 1,000 of men, and for women it was 10.0 per 1,000 of women. Women lived 8.1 years longer, however, both men and women in Lubuskie province live shorter than the national average. The average life expectancy of women living in urban areas was higher than in rural areas (by 1 year). Men living in urban areas, both nationally and in the Lubuskie Province lived longer than men residing in rural areas (by 2 years in the Lubuskie province). Additionally, average life expectancy for men living in rural areas in the Lubuskie Province was the shortest in comparison to the country (16th place in the country).		
	1.3.	The total births per woman rate was 1.33 (1.35 in urban areas, 1.28 in rural areas) and did not ensure substitutability of generations (the minimum coefficient ensuring the substitutability of generations is 2.10) Compared to 2017, the births per woman rate decreased from 1.43 to 1.33 in 2019, and was below the national average (1.42), which ranked the province 11th in the country among other provinces. The low births per woman rate is accompanied by a shift in the highest female fertility - from the 20-24 age group (53.62) to the 25-29 age group (88.67),	There is a lack of substitutability of generations. Declining births per woman rates in Lubuskie province, as in Poland and EU countries. Declining birth rates and the number of women of childbearing age.	not applicable

Epidemiology and epid. forecasts	as well as a significant increase in fertility among women aged 30-34 (74.44). In recent years, the number of women of reproductive age (15-49) has been steadily declining (2016 - 46.1% of all women, 2017 - 45.8%, 2018 - 45.6%, 2019 - 45.3%). It is projected that in 2050 this percentage will be 33.1% of women. As the number of women of reproductive age declines, the number of births also declines (2017 -10,300 births, 2018 - 9 467, 2019 - 9 036, 2050 - 6 290).		
1.4.	It is projected that by 2050 (in comparison to the 2019 population) the total population will decrease by 13.1%, of which the urban population will decrease by as much as 21.6%, while the rural population will increase by 2.5%. In district terms, the population will increase in the districts surrounding the cities with district rights (Gorzów, Zielona Góra) and decrease in the cities with district rights themselves and in the other districts.	For several years, there has been observed a decline in the percentage of the population living in cities, similar to the national trend. The location of services such as PHC, senior day care and other requiring frequent patient interaction will change.	not applicable
2.1.	Cardiovascular diseases cause 41% of all deaths and neoplastic diseases - 32%. Despite the decline in DALY rate since 1999, the ischaemic heart disease remains the most significant health problem	Cardiovascular diseases are and will continue to be a challenge to the provincial health care system.	not applicable

		in the province, accounting for 22% of all deaths. Prevalence rate by 2028 is projected to increase by 15% and deaths rate by 9%.		
	2.2.	Diabetes ranked 5th in terms of DALYs. (8th place in 1999). This is due to a doubling of the DALY - YLD compound value, which accounts for the number of years of life in disability. According to the 2020-2028 forecast, the prevalence rate is estimated to increase by 24% compared to 2019.	Demand for diabetes treatment services is expected to increase due to a projected increase in the number of patients.	not applicable
	2.3.	There was a significant increase in YLDs for age-related and other causes of hearing loss (up to 37% compared to 1999). An increasing trend was also observed for prevalence rate. It is projected that by 2028 the value of this indicator will rise by 12% compared to 2019.	The growing burden of age-related and other causes of hearing loss on society.	not applicable
Risk factors and prevention	3.1.	The proportion of all risk factors in DALYs is higher than in Poland. The death rate per 100,000 of the population was lower in the province than in the country was 676.9 (690.1 for Poland).	Risk factors (mainly lifestyle-related) have a significant impact on health and lives of residents of the province.	Taking preventive measures, focused on risk factors that burden the population the most.

		Lifestyle risk factors, particularly tobacco, have the greatest impact on DALYs and deaths in the province. High blood pressure, high BMI, dietary risks, high fasting plasma glucose, alcohol consumption, and high cholesterol also have a large impact on DALYs and deaths.	The dominant group of risk factors, much like in the whole country, was the group of behavioural factors, but the situation in the province in this respect was worse than the national average.	Effective measures should be taken in the field of: prevention of tobacco smoking; promotion of proper nutrition and prevention of overweight and obesity; prevention of external causes of death, including suicide; encouraging patients to increase physical activity in daily life; oral health; implementation of province-wide prevention and rehabilitation programs, also for working people; raising health competencies of the population, including: awareness of responsibility and ability to influence their own health and the health of others, i.a., through educational programs in the mass media.
	3.2.	Within the scope of prevention activities aimed at the most aggravating risk factors, i.e. tobacco, there were 6 programs conducted in the province and the average number of participants	The province has uneven access to tobacco prevention activities.	Providing access to tobacco prevention activities in all districts.

	was approx. 1,600 As many as 9 districts did not conduct such activities.		
3.3.	Only 13.9% of the annual population scheduled to be screened in the province was actually screened for cervical cancer. This was lower than the national average of 17.3%. Moreover, it should be noted that the proportion of women screened in the population to be screened has been decreasing each year (from 17,400 to 13,900 per 100,000 annual population to be screened). The province shows a high number of women screened at the in-depth diagnostic stage per 100,000 Women screened overall (in 2019 was the third highest value in the country). The incidence of malignant cervical neoplasm per 100,000 women (19.9 vs. 16.5 for Poland), as well as the number of deaths per 100,000 women (12.8 vs. 10.7 for Poland).	Low enrolment in cytology screenings. The province compares negatively with the country in terms of the incidence of the cervical malignant neoplasm.	Improving activities aimed at increasing enrolment in cytological examinations, as well as increasing the number of cervical cancer prevention activities
3.4.	A total of 90.2% of the annual population to be screened underwent malignant breast neoplasm screening in the province. This is the highest value in the country (the average for Poland was 63.9%). At the same time, the province has the second lowest value of women screened at the in-depth diagnostic stage, i.e. approx. 2,500 (620.5 per 100,000 women screened overall).	Mammography screening enrolment is higher than the national average.	Taking measures to increase the number of women reporting for mammography screening.

Primary health care	3.5.	As at 31 December 2019, the province had as many as 1,305 people who refused to have their children vaccinated.	There is a growing problem of parental vaccine refusal. Given the fact that the number of unvaccinated children is growing, and that the province is a border province with significant migration of population and a large number of people coming from the eastern border (mainly Ukraine) for work purposes, the so far stable epidemiological situation may change adversely.[1]	Immunisation promotion activities and community health education.
	4.1.	Much like in the whole of Poland, the proportion of women using PHC is higher than the same rate for men regardless of age, but the difference is most pronounced in the 18-60 age group.	Men, regardless of age, use PHC care too rarely.	Improving activities aimed at men's health education, which is mainly the task of PHCs, and activities that break down the aversion among men to using health care services before a health crisis occurs.
	4.2.	More than 86% of the population in the Lubuskie Province was on active lists in PHC, 3 percentage points less than the national figure. The rate is lowest in the 18 to 30 age group,	When it comes to young people, a smaller percentage belongs to active lists compared to older people.	Determining the reason for such a low percentage and, if possible, increasing it.

[1] Report documenting the performance of a provincial public health consultant in 2019.

	and it is 72.43% which is almost 10 percentage points lower than the national value.		
4.3.	According to the MZ-11 report, among children and adolescents, the total preventive medical examinations performed (health balance) amounted to 67.5%, with the lowest rates in the districts of Słubice (47.8%), Strzelce-Drezdenko (61.8%) and Krosno (62.9%). Survey data collected and analysed by the Lubelskie Province Office Health Department shows that as of 2018, there was variation in the percentage of screening tests performed by nurses based on the child's age (from 96.7% in infants 0-6 months to 73% in 5-year-olds). PHC midwives provided care to only 42.7% of women giving birth. On average, only 9 visits per pregnant woman were made out of a total of 26 visits funded by the National Health Service.	Incomplete preventive medical, nursing, and obstetric examinations were recorded across all age groups.	Strengthen primary health care for healthy patients by increasing preventive and educational activities as well as screening and care efforts focused on genetically-burdened and at-risk patients. Improve communication between the PHC and the patients, e.g. through a dedicated portal, patient notification system in the area of balance sheets, vaccinations. Promotion and engagement activities for parents, guardians and other responsible parties to increase the scale of preventive medical screenings.
4.4.	According to the MZ-11 report, the main health problems faced by children and adolescents aged 0-18 qualified for active care	There is variation in the main reasons for eligibility for active care based on age.	Increase the role of PHC in the care of chronically ill patients stabilised in OSC,

	by primary care medical practitioners included refractive and accommodation disorders of the eye, bronchial asthma, spinal deformities, obesity, anaemia, and skin allergies, including: – in children under 3, food and skin allergies, anemia, and bronchial asthma predominate, – in children aged 3-4 years, bronchial asthma, refractive and accommodative eye disorders, food and skin allergies and obesity predominate, – in children aged 5-9, the most common conditions are visual impairment, bronchial asthma and spinal deformities, as well as obesity, – in children and adolescents aged 10-18, apart from visual impairment and spinal deformities, obesity is also common, followed by bronchial asthma and thyroid disease. The main health problems of adults qualified for active care by primary care medical practitioners include cardiovascular diseases (mainly hypertension, ischemic heart disease and hypertensive disease), musculoskeletal and connective tissue diseases, chronic digestive system diseases, peripheral nervous system diseases	Many patients do not require ongoing specialised care.	including collaboration with psychiatrists, geriatricians, school nurses, physiotherapists, and dietitians, as well as increased patient care in the community and collaboration with the families of chronically ill patients. Increasing the cooperation of primary health care with outpatient specialist care, hospital treatment, NHHC and occupational medicine, including in terms of exchanging (electronic) medical records, information about the patient's condition and needs in connection with specialist treatment and hospitalisation, examinations for the employer's need.

Outpatient specialist care		and diabetes. Among young people up to the age of 35, musculoskeletal and connective tissue diseases were the most frequently diagnosed, while cardiovascular diseases were the most frequently diagnosed in all other groups.		
	4.5.	Among the visits to PHC, only 4.72% were night and holiday visits.	There is a need to relieve the ED of stable cases.	Strengthening the role of NHHC to improve patient referral to this form of care.
	5.1.	The average number of clinics per 10,000 population and the average number of pieces of advice per 1,000 population is lower than the national average. In contrast, the number of consultations per 1,000 population is lower than the provincial average in 10 of the 14 counties. On the other hand, the ratio of the number of clinics per 10,000 population is lower than the provincial average in 9 of the 14 districts. Number of consultations per 100,000 population which is ranked last in Poland was observed in the following clinics: dermatology, diabetes, rheumatology, paediatric endocrinology, neonatology, paediatric gynaecology.	The large number of counties with lower ratios than the provincial averages may indicate uneven access to OSC. Taking into account the characteristics of patients in clinics not operating in their province, which occurs in at least half of the provinces in the country and the lack of specialist medical staff – in the Lubuskie Province, there is no possibility, and sometimes no need to create all these types of clinics.	Employing specialist staff in deficit areas to work in specialist clinics and improve access to OSC in deficit areas while maintaining territorially balanced access and taking into account the potential of staff, in particular: – outpatient clinics in each district of the Lubuskie Province of the following specialities: allergology, general surgery, dermatology,

		Among the clinics whose availability is analysed at the district level – not all counties have clinics of the major health problems: – Allergology clinics – none of them in Gorzów, Krosno, Słubice, Świebodzin, Wschowa districts; – Dermatology clinics – none of them in Gorzów, Nowa Sól, Wschowa districts; – Diabetology clinics – none of them in Gorzów, Międzyrzecz, Słubice, Wschowa districts; – Cardiology clinics – none of them in the Gorzów district; – Endocrinology clinics – none in the country district of Gorzów, Słubice, Strzelce-Drezdenko, Sulęcin, Wschowa districts; – Urology clinics – none in Strzelce-Drezdenko district. The following clinics, which are located in at least half of provinces, do not function: child allergology, child gastroenterology, child rheumatology, hepatology, radiotherapy,	There is difficult access to the following outpatient clinics, for which the number of consultations per 100,000 population is ranked last in Poland: Dermatology, Diabetes, Rheumatology, Paediatric Endocrinology, Neonatology, Paediatric Gynaecology outpatient clinics. Considering the epidemiological trend, with a changing climate and increasing air pollution, a clear increase in allergies/increase in hypersensitivity and allergic diseases is to be expected. As a result, there is an increasing demand for allergy consultation, diagnosis and treatment in specialised centres.	diabetes, gynaecology and obstetrics, cardiology, neurology, ophthalmology, otolaryngology, trauma and orthopaedics, urology, endocrinology; – improving access to outpatient neurological services close to the patient's place of residence (establishing hospital stroke, extrapyramidal diseases and dementia clinics in hospitals with neurological wards); – improving access to specialist services for children, mainly to ensure the continuation of hospital treatment (in particular: paediatric cardiology, paediatric gastroenterology, paediatric otorhinolaryngology,

		chemotherapy, metabolic diseases, phoniatric, paediatric infectious diseases, transplant, breast disease prevention, immunology, paediatric haematology, gynaecological oncology, endocrinological-gynaecology, paediatric neurosurgery. In the province, there are the following outpatient clinics: Chemotherapy, Radiation Therapy, Pregnancy Pathology and Gynaecological Oncology outpatient clinics but the services are settled from the general scope for the Oncological outpatient clinic and a complex of Obstetric and Gynaecological outpatient clinics.		paediatric rheumatology, paediatric gynaecology, immune disorders, and vaccination); – in the field of obstetrics and gynaecology: – establishing the following outpatient clinics: Gynaecological Oncology, Breast Disease Prevention, Gynaecological Endocrinology, Lactation and Consultation for Pregnancy Pathology at gynaecological and obstetrics wards of the III and II degree of reference financed by the NFZ and improving infertility treatment on the basis of the existing potential of outpatient care and hospital treatment; in the field of cancer diagnostics, – Increasing access to CT scans, especially for patients undergoing outpatient care,

			by increasing the number of health care facilities that have signed agreements with the Lubuskie Province Department of the NFZ to perform CT
5.2.	As of February 2020, the average waiting time in urgent cases, the longest waiting time, above the national average is observed in the availability of the following clinics: vascular diseases (the longest waiting time in Poland – 185 days, Poland – 111 days), infectious diseases (Lubuskie Province – 144 days, Poland – 125 days), speech therapy (Lubuskie Province – 58 days, Poland – 28 days), tuberculosis and lung diseases (Lubuskie Province – 44 days, Poland -- 42 days). In stable cases, the longest waiting time, above the national average, is observed in the access to the following outpatient clinics: Vascular Surgery (longest waiting time in Poland – 528 days, Poland – 249 days); Vascular Diseases (Lubuskie Province – 250 days, Poland – 235 days); Paediatric Endocrinology and Diabetology (longest waiting time in Poland – 244 days, Poland – 210 days); Infectious Diseases (Lubuskie – 209 days, country – 163 days); Posture Defects (second longest waiting time in Poland –164 days, Poland – 103 days); Paediatric Ophthalmology (Lubuskie Province – 149 days, Poland – 129 days); Speech Therapy (Lubuskie Province - 85 days, Poland – 74 days).	Long waiting time for health care services in a given specialist outpatient clinic is not always related to the number of medical practitioners of that speciality providing NFZ services. In many cases, patients decide to wait longer despite the availability of an institution with a shorter waiting time, based on the reputation of the institution, the opinion about the medical practitioner or the distance from their place of residence. This many indicate that the growing needs of patients in these medical specialties are not being met by the public health care system. It can also delay the treatment, finally resulting in the patient's health deterioration and the need for hospitalisation. It is also one of the main reasons why patients choose private services	Reducing waiting queues by providing greater access to the clinics in specialties with long waiting time – mainly: vascular disease, vascular surgery, infectious disease, tuberculosis and lung disease, speech therapy, genetics, haematology, neurology and paediatric neurology, child endocrinology and diabetology, speech therapy, posture defects, lung diseases, rheumatology clinics, by developing telemedicine services (telecare, teletherapy, teleconsultation, telenetwork), including tools to facilitate the enrollment and discharge of patients from queues

		(non-NFZ). Long waiting time for NFZ services also inclines patients (especially the ones with high income) to use private health care services, which in turn leads to a growing disparity in access to health care services and thus in health condition and life expectancy between people with different financial status.	and introducing solutions to motivate patients to inform treatment providers about cancelling appointments.
5.3.	The number of consultations provided to patients over the age of 65 increased by 3.3% from 2015 to 2018, with a decrease in visits of patients from other age groups, resulting in a decline in the number of consultations by 11.3%.	Changes in the age of OSC patients reflect the population ageing process.	Improved accessibility to clinics for the elderly (e.g. geriatric, cardiology, neurology clinics). Taking into account that elderly people have big problems with reaching clinics, it is recommended to create a network of even smaller clinics, which would cover evenly the whole province.

Hospital treatment	6.1.	Number of hospital-acquired infections per 100,000 population is lower than the national average, ranking the province 14th in this respect (171.61 vs 235.55). The number of deaths due to hospital-acquired infections per 100,000 population is also lower than the national average (1.88 vs. 4.05). According to the MZ-29 report, 1,729 hospital-acquired infections of inpatients were reported, i.e. 9.44% less than in 2018. In 2019, there were 19 deaths due to hospital infections, i.e. nearly 30% less than in 2018.	Hospital-acquired infections are a significant problem. A high number of infections in multi-specialist hospitals may indicate inadequate sanitary and epidemiological standards.	The adaptation of hospital wards to the organisational standards of health care concerning patient care or performing health care services as defined by law and as directed. There is a need for closer collaboration between hospital medical practitioners and clinical transfusion specialists.
	6.2.	Poland has one of the highest numbers of hospital beds per 100,000 population (533). The Lubuskie Province is very close to this ratio (534). MZ-29, MZ-29A and MZ-30 reports show that in 2018, in the province, the average bed occupancy rate (both general and psychiatric hospitals, CTC, NCC, hospices, hostels) was 74.8%, while in 2019 – 77.0%. In 2019, a patient, stayed in the ward for an average of 9.8 days, i.e. 1.3 days longer compared to 2018 (8.5 days). In more than half of the wards (56.2%)	The analysis of the number of beds and their occupancy may be an important element when taking decisions on optimising the distribution of wards in the province. It it important, however, that the assessment of a ward effectiveness should also take into account the specificity of treatment provided in a given ward and other factors that may affect the current situation, e.g. human resources, equipment, scope and the quality of	It is advisable to adapt the number of beds/places/stands/tables to the actual needs, taking into account the human resources and equipment available, as well as previous experience – striving to ensure comprehensiveness and continuity of treatment and balanced territorial accessibility

bed occupancy was between 50% and 85%. Wards with average bed occupancy above 85% accounted for 34.4%, while wards with occupancy below 50.0% accounted for 9.4% of all wards. The lowest average bed occupancy (below 50%) was observed in the following wards: gastroenterology (9.8%), endocrinology (32.1%), neonatology (46.9%), oncology surgery (48.8%), rheumatology (49.7%), and ophthalmology (49.9%). The highest average bed occupancy (above 95%) was observed in the following wards: intensive cardiological care – 290.5%, high security forensic psychiatry for adolescents – 103.8%, pulmonary rehabilitation – 100%, multi-specialist non-invasive treatment – 100%, high security forensic psychiatry – 97.1%, psychiatric rehabilitation – 96.5%, haematological – 96.2%, general psychiatric – 95.7%, The province lacks a centre for treating patients with severe traumatic central nervous system injuries; there is also limited access to emergency neurosurgical consultations in neurological centres that do not have a neurosurgery ward.	services provided and the amount of the contract with the NFZ. Some beds are not used efficiently, so not all bed reductions translate into reduced access to hospital treatment. However, medical entities also reduce the number of beds in deficit wards, with high occupancy rates and long queues. As a result of the reduction of beds, the hospitals still have wards with several or a dozen of beds, which raises doubts about their profitability and optimal use of medical staff, which is in short supply in the province. The elderly require a different approach to the complex nature of their health problems than internal medicine, thus the availability of geriatric services in the province is insufficient. In view of the dynamic development of diagnostics and invasive treatment	(diagnostics, pre-hospital and hospital treatment, rehabilitation, the continuation of treatment in outpatient and home-based care). Increasing access to, mainly: – geriatric services, – neurosurgical consultations on an acute basis for neurology centres that do not have a neurosurgery ward; – audiological and phoniatric care, – interventional treatment for patients with ischemic stroke (so-called trombits), – surgical treatment of degenerative spine disease and establishing an endovascular centre for the treatment of cerebrovascular disease.

		The need for audiologic and phoniatric care is increasing as the number of preschool and school-age children with voice disorders is increasing, and as the population ages, the number of the elderly with hearing loss, voice disorders, and balance disorders increases. Approximately 10 diagnoses of new patients with metabolic diseases should be expected each year (based on disease frequency and birth rate in the province). Paediatric urology procedures in hospitals in Gorzów Wielkopolski and Zielona Góra are reported and billed under paediatric surgery.	In the field of cardiology, the number of "difficult" to interdisciplinary supply patients is increasing – hybrid procedures for ischemic heart disease, minimally invasive procedures, anti-arrhythmic treatment as part of joined cardiology and cardiac surgery teams.	Strengthening the role of early intervention centres for children with neurological disorders – establishing day rehabilitation centres for children. In hospitals where the number of births does not reach the threshold value of 400, the need of the existence of both the obstetrics/gynaecology/obstetrics ward (in terms of births) and the neonatology ward/subdivision should be considered – the exception is the situation where the distance between the district of the patient's residence and the district of the hospital exceeds 40 km.

	6.3.	The distribution of paediatric wards and beds is uneven - there is a shortage in the north of the province, three districts do not have paediatric wards and in two hospitals in Gorzów Wielkopolski and Zielona Góra (securing districts and cities with district rights) paediatric wards serve as both "district" and "specialist" wards.	not applicable	Leaving paediatric wards in functioning if the number of hospitalisations classified as general paediatric exceeds 700 per year. For other hospitals, there is a recommendation to merge or convert their paediatric wards into open units or indirect forms. Striving to establish 24-hour pre-hospital paediatric emergency departments based on present paediatric wards with low numbers of services and incomplete staff and equipment, and increasing educational activities for paediatricians working in the province on metabolic diseases, particularly emergency management.

	6.4.	For stable cases, the longest waiting time in the Lubuskie Province (as of February 2020) was observed in the availability of the following wards: multi-specialist surgical – 219 days (Poland – 120 days), trauma and orthopaedic surgery – 198 days (Poland – 548 days), neurosurgery – 147 days (Poland – 319 days). Queues for other wards were equal to or shorter than 143 days. In urgent cases, the longest waiting time (as of February 2020) was observed in access to the following wards: vascular surgery – 132 days (Poland – 86 days), multi-specialist surgical – 74 days (Poland – 35 days), plastic surgery – 61 days (Poland – 61 days). The average queue length was 36 days (Poland – 56 days).	In many cases, patients preferred to wait longer for a procedure, despite the access to a facility with a shorter waiting time, based on the reputation of the facility.	Actions aimed at shortening the queues of patients waiting for health services in highly busy hospital wards and the pursuit of securing the provincial services characterised by a large migration of patients outside the Lubuskie Province.
	6.5.	The demand for surgical health services will increase in the coming years, especially among patients with a BMI above 35.	The quality of services is enhanced by the use of minimally invasive methods and the possibility to provide care to outpatients.	Reducing hospitalisation time by using minimally invasive surgical methods and introducing modern surgery. The possibility of neurosurgical consultations for neurology centres that do not have a neurosurgery ward.

	6.6.	In district hospital pharmacies (with specialist wards), the staffing situation is alarming and may lead to the transformation of the hospital pharmacy into a hospital pharmacy ward, with significantly narrowed professional activities, e.g. drug storage only.	The transformation of hospital pharmacies into pharmacy wards will result in reduced access to drugs stored in the pharmacy and more difficult drug ordering procedure, and it will lead to a significant restriction in the provision of individual therapy to patients of individual hospital wards.	Increasing hospital pharmacy staff (including pharmacy and hospital pharmacy specialists), as well as support staff (qualified pharmacy aides).
	6.7.	In 2016, 1,810 patients received the treatment, while in 2019 as many as 2,784 patients were treated (an increase of 53%) under 54 drug programmes (89 in Poland). The programmes were implemented by 15 medical entities (580 in Poland). In the Lubuskie Province, the largest number of patients were covered by drug programmes (10 major programmes) for the following treatment: – neovascular (exudative) form of age-related macular degeneration (AMD) – 471 patients, – Chronic hepatitis C with interferon-free therapy – 410 patients; – Focal dystonias and hemifacial spasm – 206 patients; – multiple sclerosis - 202 patients,	The number of services under the drug programmes is steadily growing; however, provincial consultants on health care indicate the need to launch more drug programmes.	Increasing the number of intravitreal injections of anti-VEGF drugs under the drug programme for the exudative AMD treatment. There is also a need for a drug programme for patients with diabetic cystoid macular oedema.

Psychiatric care and addiction treatment		– Chronic hepatitis B – 181 patients; – child respiratory syncytial virus infection with chronic lung disease (bronchopulmonary dysplasia) – 178 people, – breast cancer – 148 people, – rheumatoid arthritis and juvenile idiopathic arthritis with an aggressive course – 104 people, – advanced colorectal cancer – 86 people, – Secondary hyperparathyroidism in hemodialysis patients – 80 patients.		
	7.1.	There are two CMHs operating in the pilot province: in Międzyrzecze (which covers the Międzyrzecz and Sulęcin Districts) and in Gorzów Wielkopolski (which covers the city of Gorzów Wielkopolski). The areas ready to open more CMHs, according to the map of health needs, are only the agglomeration of the Zielona Góra District and the city of Zielona Góra covering 177,500 adult population. For adults, the average distance from each of the four forms of treatment providing comprehensive care was ranged from 0 to 41.64 km.	not applicable	Improving the quality and access to adult psychiatric treatment services by the creation of CMH.

	7.2.	All districts had an adult psychiatric/psychological clinic in their area. Psychiatric day wards were located in three districts (in the area of CMH and in Zielona Góra), community treatment teams were located in eight districts, and psychiatric hospital wards were located in four districts. Mz-29, MZ-29A and MZ-30 reports show that in the Lubuskie Province, the highest average bed occupancy ratio was observed in the following wards: high security forensic psychiatry for adolescents (103.8%), high security forensic psychiatry (97.1%), psychiatric rehabilitation (96.5%), general psychiatry (95.7%), and psychiatric care and treatment institutions (95.1%).	not applicable	Shifting the services from hospital to outpatient care – aiming at a modern model of psychiatric care based on community-based treatment and care of the patients in their environment, opening new facilities close to the patients' place of residence, including community treatment teams and day wards.
	7.3.	Only 1 psychogeriatric ward was available in the province.	Securing psychogeriatric care due to ongoing demographic changes – the ageing of population.	Establishing a psychogeriatric clinic in Gorzów Wielkopolski and in Międzyrzecz, and a psychogeriatric ward in the northern part of the province.

	7.4.	For children and adolescents, the average distance from each of the four forms of treatment providing comprehensive care was more than 30 km (from 43.88 km to 131.72 km). The largest distance was observed for the following communes: Kostrzyn-Odra (131.72 km), Górzyca (127.11 km), Słubice (125.24 km), Słońsk (122.69 km). Patients had access to outpatient clinics in 4 communes and to one hospital. However, there was no day ward or community treatment team for children. 3,350 patients under 18 years of age were receiving psychiatric and drug addiction treatment services. The ratio per 100,000 population was 1,832 (Poland –2,142), which ranked the province on the 12th place nationwide. In the Lubuskie Province, the following was observed: – 90.53% of patients under the 18 years of age who lived and were treated in the province –it ranked the Lubuskie Province 13th in Poland (in Poland this value ranged from 96.75% to 85.32%). In terms of districts, the highest values were observed in the city of Gorzów Wielkopolski. – 87.08%, the city of Zielona Góra – 87.08%, the Żary District – 71.35%, the Międzyrzecz District – 60.87%, in the remaining districts, the value was below 32% due to the lack of	In the province, the network of mental health outpatient clinics for children and adolescents is not evenly distributed, there are no community treatment teams, day wards or hostels for adolescents. These factors impede access to comprehensive psychiatric treatment. In the Lubuskie Province, there is a shortage of approx. 4-5 child mental health clinics – outpatient psychiatric services for children and adolescents and their families are more available in the cities of Zielona Góra (and the surroundings), Gorzów Wielkopolski and Żary, while it is not sufficient in other parts of the province.	Improving the quality and access to psychiatric treatment services for children and adolescents through the implementation of guidelines of the National Programme for Mental Health Protection and the standards of psychiatric care for children and adolescents within three reference levels, in particular: – establishing community treatment teams for children and adolescents, – establishing evenly distributed day care centres for children and adolescents – the first day care centre should be established in a place where there are facilities and educated staff, i.e. in the Children and Adolescence Treatment Centre in Zabor, the next in Gorzów Wielkopolski, Żary or Żagań, Nowa Sól or Wschowa,

		basic forms of psychiatric treatment in these districts; – 467 patients under 18 years of age received treatment outside their area of their residence – it ranked the Lubuskie Voivodeship 14. in Poland (in Poland this value ranged from 1,225 to 346); – The relative surplus was 1.083 - which means that the number of patients residing and treated outside the province was lower than the number of patients from outside the province treated in the Lubuskie Province (positive migration ratio). Considering the districts, large relative surpluses were observed in the Zielona Góra Districts – 2.49, the city of Zielona Góra – 2.11, the city of Gorzów Wielkopolski – 1.53, the Międzyrzecz District – 1.29 and the Żary District – 1.2, i.e. a large number of patients from other counties migrated to these areas. In terms of relative surplus, the Lubuskie Province was ranked 2nd in Poland (in Poland this value ranged from 1.141 to 0.946).		Zielona Góra, Międzyrzecz, Słubice – one or two day care wards should be established for children and adolescents at risk of alcohol and other psychoactive substances addictions (the first one should be established in Zielona Góra, where there are proper facilities and staff), – establishing a hostel for young people with mental disorders – establishing a psychiatric observation sub-ward (3-5 beds) or a room in a general specialist hospital for children and adolescents after suicide attempts and with severe symptoms of eating disorders who require monitoring and urgent specialist consultations due to a life-threatening condition (e.g. in a new

				Mother and Child Health Centre in Zielona Góra), – establishing a mental health clinic for children and adolescents in Słubice, Wschowa, Sulęcin and Strzelce Krajeńskie – or in the vicinity of these towns (e.g. based on present adult mental health clinics or PHCs) and establishing community-based care at mental health clinics.
	7.5.	Most consultations provided in psychiatric and psychological outpatient clinics for adult patients diagnosed with mental disorders were medical – 67.2%. In contrast, individual psychotherapy accounted for 15.92%, psychological consultations for 13.25%, home/community visits/consultations for 2.18%, and group/family services for only 0.93%. For children and adolescents, most (70.27%) consultations in paediatric psychiatric/psychological outpatient clinics were medical (nationwide – 62.42%). Individual	As in Poland, there was an inverse proportion of the types of consultations given versus recommended.	Changing the proportion of types of consultations given, i.e. reducing the share of medical consultations, while increasing other types of consultations, especially psychological ones, whose share in the province is much lower than the national average.

	psychotherapy (13.08%), group/family services (12.19%) and psychological advice (4.46%) were provided to a lesser extent. The share of psychological consultations was much lower than in Poland (Poland – 21.39%), the share of group/family service was much higher (Poland – 2.32%), and the share of individual psychotherapy was similar.		
7.6.	There are not many medical practitioners specialising in psychiatry – 8.8 per 100,000 population (12th position in Poland, Poland – 10.2 per 100,000 population). The proportion of medical practitioners of retirement age was 26%. The number of medical practitioners specialising in paediatric psychiatry was 10, i.e. 1.0 per 100,000 population (value per 100,000 population for Poland is 1.1, and the recommended value is 2,0). The number of medical practitioners of retirement age was 30%.	There is a large difference between the recommended value of the ratio of medical practitioners per 100,000 population and its actual value.	Educating more psychiatrists – aiming for the recommended ratio of 20 medical practitioners per 100,000 population; medical practitioners specialising paediatric psychiatry – aiming for a ratio of 2.0 medical practitioners per 100,000 of the population. Increasing by at least 9-10 the number of paediatric psychiatry specialists or medical practitioners obtaining training in this area of medicine over the next years.

7.7.	Clinics for adults provide medical assistance for adolescents at risk of addiction, but it is insufficient and does not include children, especially those at risk of alcohol addiction. There is a statute of limitations on the court's commitment to inpatient drug addiction treatment.	There is inadequate support for children and adolescents at risk of addiction. Need to improve access to inpatient drug addiction treatment.	Need to reduce waiting time for inpatient drug addiction treatment under court commitment. Establishing a subdivision for psychoactive substance addiction patients (including girls) at the existing psychoactive substance addiction ward in Międzyrzecz and increasing the number of beds in the dual diagnosis treatment ward in Nowy Dworek.
7.8.	The psychological service is most often an urgent case. There is access to a psychologist, but not a fully qualified specialist especially for children and adolescents (there is a very long waiting time for a visit). A major complication is a need for a referral to a psychologist, which limits access to psychological assistance as well as to a specialist for children and adolescents, so it is common for children to be admitted to adult mental health clinics.	The demand for the services of clinical psychology professionals increases social frustration and the number of mental-health-threatening situations.	There should be access to a clinical psychology specialist in every city, especially on an outpatient basis.

Medical Rehabilitation	8.1.	In all forms of rehabilitation, the total number of patients per 100,000 population (8,538) is lower than the national average (8,695), while the number of centres per 100,000 population (9.29) is higher than the national average (8.37). According to national data, too many physical therapy procedures are performed (68.3%) compared to kinesitherapy (23.4%), while the effectiveness of kinesitherapy is more thoroughly documented.	Lower than the national average number of patients per 100,000 population with a higher number of centres per 100,000 population may indicate an inadequate number of patients (limits) admitted to rehabilitation centres. Access to outpatient rehabilitation is low, mainly to rehabilitation outpatient clinics, mostly located in large urban areas, and there is a shortage in districts. The priority for the elderly is rehabilitation, which ensures that the elderly person remains as fit and independent as possible for as long as possible.	Striving to ensure the comprehensiveness and continuity of treatment and rehabilitation, taking into account even territorial accessibility and the creation of interdisciplinary therapeutic teams with specialists for the patient's needs (including transportation to the rehabilitation and also the care of patients' caregivers), especially with regard to children and adolescents. Combining physical therapy, kinesitherapy, orthopedic services, education, and meeting psychological needs. Launching geriatric rehabilitation by the NFZ. As the population ages, including the working population, there will be an increasing number of

				health problems and lower physical fitness – in order to maintain the physical fitness of the working population at a good level, it is necessary to combine activities in the field of occupational medicine (prevention of health disorders resulting from work) with activities in the field of medical rehabilitation (treating health disorders that cannot be prevented) and socio-professional rehabilitation (support in professional retraining or adaptation of workplaces to the changing psycho-physical abilities of employees).
	8.2.	Diseases of the musculoskeletal system were the main reason for rehabilitation in outpatient and inpatient setting, for outpatient rehabilitation the main diagnosis were the nervous system diseases, while for inpatient rehabilitation the main diagnosis was...	Due to the ageing process and the increasing dominance of static posture on the musculoskeletal system, posture musculoskeletal disorders among the working population will increase.	Activities to encourage patients to increase movement in their daily lives. Popularising patient education on self-care at home that is both

	were psychiatric disorders.		an effective and low-cost component of rehabilitation.
8.3.	According to the 2018 MZ-11 report, one of the main health problems of children and adolescents aged 0-18 qualified for active care by primary care medical practitioners are spinal deformities. Six districts, i.e. the Gorzów Wielkopolski, Zielona Góra, Żagań, Sulęcin, Międzyrzecz districts and the city of Gorzów Wielkopolski, reported a higher than average rate per 10,000 population (269.34).	Spinal disorders are a serious health problem among children and adolescents.	Implementing prevention and rehabilitation programs for children, adolescents, working people in the province.
8.4.	The number of day rehabilitation beds is 6.62 per 100,000 population, and the number of person/days in day rehabilitation is 8,873 per 100,000 population The number of day rehabilitation centres per 100,000 population is 1.09. The average waiting time (as of February 2020) for urgent cases was: 171 days to a rehabilitation facility/centre (national average – 176 days), 18 days to a paediatric day rehabilitation facility/centre (national average – 65 days).	The number of beds in day care centres, the number of person-days and the number of day rehabilitation centres are the lowest in Poland. No day rehabilitation services for visual disorders were provided.	Establishing day rehabilitation wards and developing home rehabilitation as close as possible to the patients' place of residence, while maintaining even territorial access. Contracting day rehabilitation services for visual disorders by the NFZ.

		The average waiting time (as of February 2020) for stable cases was: 247 days to a day rehabilitation facility/centre (national average – 310 days), 70 days to a paediatric day rehabilitation facility/centre (national average – 128 days). There is a negative migration balance in day rehabilitation (-281).		
	8.5.	The number of person-days in inpatient rehabilitation is 16,302 per 100,000 population (national average –15,920). The number of inpatient rehabilitation centres is 1.29 per 100,000 population (national average – 1.15). The number of beds in inpatient rehabilitation per 100,000 population is 66.83 (national average – 95.25). There is a positive migration balance (109). According to data from MZ-29 report, the highest bed occupancy rate was observed in pulmonary rehabilitation wards (provincial mean – 100.0 %). The average waiting time (as of February 2020) for urgent cases was: 99 days to a systemic rehabilitation institution/centre (national average 160 days), 4 days to neurological rehabilitation (national mean – 84	The interval from the hospitalisation period to the admission to the rehabilitation ward means that some changes can no longer be reversed, or that adverse changes are much more difficult to reverse, preventing optimal recovery for the patient. Patients who are not rehabilitated well may not return to work and may not perform well in their social roles.	Improving access to rapid rehabilitation immediately after a patient's hospitalisation, especially in the following areas: neurology, trauma and orthopaedic surgery, cardiology and cardiac surgery, rheumatology, oncology.

Medical Rehabilitation		days), on an ongoing basis – the patients were admitted to psychiatric rehabilitation (national average – 13 days). The average waiting time (as of February 2020) for stable cases was: 577 days to a systemic rehabilitation institution/centre (national average 1,193 days), 777 days to neurological rehabilitation (national average – 601 days), 109 days to psychiatric rehabilitation ward (national average – 148 days).		
	8.6.	The number of patients per 100,000 population in home-based rehabilitation services is 111 (national average – 126). The number medical consultations per 100,000 population in home-based rehabilitation services is 11 (national average – 22). The number of physiotherapy visits per 100,000 population in home-based rehabilitation services is 247 (national average – 205). The number of physiotherapy treatments per 100,000 population in home-based rehabilitation services is 15,376 (national average – 20,682). Each district (as of July 2020) has a home rehabilitation centre.	The number of patients, medical consultations and physiotherapy treatments per 100,000 population in home rehabilitation services is lower than for Poland.	Promoting telerehabilitation – it is particularly beneficial for patients whose health makes it difficult to travel to the location of traditional services, and it also reduces the risk of spreading infectious diseases. Establishing forms of psychological support for caregivers of children with disabilities and promoting caregivers' education on how to care for a child with disabilities at home.

	8.7.	Number of patients receiving outpatient rehabilitation per 100,000 population is 7,707 (national average –7,795). The number of medical consultations in outpatient rehabilitation per 100,000 population was 867 (national average – 5,269). The number of physiotherapy treatments per 100,000 population is 402,792 (national average – 327,086). The province has a positive balance of outpatient rehabilitation (1,425). The average waiting time (as of February 2020) for outpatient rehabilitation for urgent cases was: 68 days to outpatient physiotherapy (national average – 102 days), 18 days to rehabilitation clinic (national average – 69 days), while for stable cases: 110 days to outpatient physiotherapy (national average – 151 days), 91 days to a rehabilitation clinic (national national – 98 days). In May 2020, the number of all physiotherapists registered in PChP (125 per 100,000 population) was lower than the national average (172), which ranks the Lubuskie Province on the last place among the provinces. Population per physiotherapist providing rehabilitation services within the NFZ	The number of patients per 100,000 population is lower than the national average. The number of medical consultations per 100,000 population is the lowest in Poland. The lack of rehabilitation clinics funded from public funds in the following districts: Krosno, Nowa Sól, Słubice, Strzelce-Drezdenko, Żary.	Ensuring access to rehabilitation clinics in every district, taking into account the ageing of population and increasing demand for rehabilitation of people with disabilities, chronically ill people and people requiring rehabilitation due to illness or injury – quick rehabilitation guarantees better therapeutic results and prevents aggravation of dysfunctions and independence in everyday life. Increasing access to speech therapy treatment by establishing speech therapy clinics at hospital wards, ensuring continuity of treatment for patients leaving hospital wards (children and adults) and providing continuity of speech therapy treatment for patients with disabilities who,

Long-term care		in 2019 (1,732) was higher than the national average (1,393).		leaving school, leave day rehabilitation centres and move on to other facilities. Undertaking activities to employ more physiotherapists who provide services under contracts with the NFZ in the Lubuskie Province.
	9.1.	Lack of paediatric CTC/NCC in the province. Some patients residing in the Lubuskie Province received such services in other provinces.	There is a shortage of long-term inpatient care for children and adolescents.	Establishing long-term inpatient care beds for children and adolescents.
	9.2.	The number of people receiving long-term care in the health care system in the population of people aged 65 and over was 1.2% (including inpatient care – 0.5%), while in Poland – 1.34% (including inpatient care – 0.6%), while the average for 25 OECD countries was 10.8%.	The ageing society corresponds to an increase in the number of chronically ill people and people requiring support in everyday functioning, which poses a new challenge for the health care system related to the provision of nursing and care services in the framework of long-term care.	Developing health services to meet the health needs of elderly patients and ensuring the access to long-term care for the 65+ population in all forms of care.

	9.3.	The share of home-based care in long-term care is 58.3%, and at the national level it is 61.2%, while the average for 20 OECD countries is 67.5%.	Low proportion of home-based care in long-term care compared to the country and OECD countries	Increasing the number of patients treated in the home conditions.
	9.4.	According to projections, the care potential ratio will decrease from around 265 in 2019 to 180 in 2030. The care ratio for Poland was 227 in 2019, and it will be 177 in 2030. Now, the ratio value is higher than the national value, but in 2030, it will be similar.	There is a shortage of innovative forms of support in telemedicine and in policies to help informal caregivers. Support is particularly important in view of the fact that informal caregivers often already belong, or soon will belong, to the category of the elderly. As the care ratio decreases, this phenomenon will increase. The projected change in the care ratio means that the rapid ageing of the population of the province will translate into an increase in the number of chronically ill people and those requiring support in daily functioning, which poses a challenge to the health care system to provide nursing and long-term care services and results in an increased demand for	Establishing forms of assistance for informal caregivers and improving caregivers' competencies in the field of care of elderly and disabled persons (e.g. conducting training, providing informal caregivers with psychological support and professional information and advice on the disorders of the elderly).

		non-hospital forms of day and community-based care.	
9.5	The unmet needs in long-term care in also evidenced by the negative migration rate (-37). The neighbouring provinces, which have a negative migration balance, i.e: the Zachodniopomorskie (-89), Dolnośląskie (-161) provinces, cannot be helpful, and only the Wielkopolskie Province has a positive migration balance (+100).	The current infrastructure is insufficient and inadequate to meet the current and future needs of people requiring long-term care. Not all patients who needed long-term care were provided with it. Some patients accessed services in private nursing homes.	Increasing access to out-of-hospital forms of day and community-based care, i.e. specialist forms of long-term care under public funding (CTC, NCC, mechanical ventilation of patients in home-based and inpatient settings, a network of geriatric outpatient clinics, pain management, home-based long-term care, home-based rehabilitation, nursing care and care services, with particular emphasis on the even distribution and comprehensiveness of the services offered.
9.6	There is a diverse access to long-term care services between the districts. In 2019, the smallest number of patients by place of treatment was observed in the Słubice (90	The levels of care and safety of patients are diverse between the province. The responsibilities are often taken over by foundations and associations, but	Equalising access to long-term care in the districts with the lowest patient treatment ratio.

Palliative and hospice care		patients per 100,000 population) and Nowa Sól (100) districts, while the highest number was found in the Świebodzin District (348).	the demand is growing quite rapidly. Social services are also unable to meet their obligations.	
	9.7	Most long-term care services are based on home-based care or informal care provided by the family.	As a result of changes in the traditional family model and lifestyle of the society, as well as the economic situation of some families, informal care will become a less dominant form of care for dependent persons in the future than it is today, which will translate into increased demand for publicly funded services.	Organising various forms of care for the elderly in home conditions.
	10.1.	In 2019, palliative and hospice services were received by 295.87 patients per 100,000 population (ranked 4th nationally; +18% in relation to the average for Poland). By 2050, the number of inpatient and home-based palliative care beds is expected to increase in the province from 3,784 beds in 2020 to 5,231 beds in 2050 (including 88 inpatient care beds and 5,143 home-based care beds).	As the number of older people increases, there will be an increased demand for inpatient and home-based palliative care beds and specialist medical and nursing staff in palliative and hospice care.	Ensuring adequate access to palliative and hospice care by increasing the number of health services provided.
	10.2.	29.2% of all patients in the province live in rural areas (Poland – 32.2%).	There are differences in the number of patients receiving	Closing the gap in the access between the districts,

		The greatest differences were observed for health care services provided in the outpatient settings, in which case the patients living in rural areas accounted for 26.9% of all patients (Poland – 25.0%).	palliative and hospice services by patients' place of residence (urban/rural).	in particular in terms of outpatient palliative and hospice care.
	10.3.	The ratio of palliative and hospice care beds recommended by the European Association for Palliative Care (100 beds per 1,000,000 population), which was at the level of 74.14 at the end of the year, was not provided. Waiting time for inpatient hospices/inpatient palliative care centre for urgent cases was (as of February 2020): 0 days (national average – 42 days), while in stable cases: 15 days (national average – 17 days).	For a type of service as specific as palliative and hospice care, waiting time for inpatient hospice admission is too long. Increasing the bed base in palliative and hospice care is an important element due to ongoing demographic and epidemiological changes and long waiting time for services.	Increasing the access to palliative and hospice care services provided in inpatient setting, particularly in the Słubice, Strzelce-Drezdenko and Nowa Sól districts.
	10.4.	There were 5 palliative medicine clinics under the contracts with the NFZ (0.49 per 100,000 population, ranked 6th in Poland). Outpatient palliative care services were provided in 5 out of 14 counties, mainly in the northern part of the province and in Zielona Góra. As of February 2020, stable cases above the national average are observed	The access to palliative medicine clinics in the province is limited.	Incresing access to palliative medicine clinics in the province.

	in the access to palliative medicine clinics (the Lubuskie Province – the longest waiting time in Poland – 11 days, Poland – 3 days).		
10.5.	No contracted guaranteed services for perinatal palliative care.	The lack of adequate perinatal palliative care forces patients and their families to migrate to neighbouring provinces.	Contracting perinatal palliative care by the NFZ in the province.
10.6.	There were 15 home hospices in 13 of the 14 districts (1.48 per 100,000 population, ranked 9th Poland, +1% compared to the national average). Palliative and hospice care services in home conditions were not provided only in the Zielona Góra District, but the patients received the services in the neighbouring districts, e.g. the city of Zielona Góra.	Access to home-based palliative and hospice care was not provided in all districts.	Striving to provide care in the home conditions in every district.
10.7.	Waiting time for home hospice/\palliative care teams for urgent cases was (as of February 2020): 20 days (national average – 24 days), and for stable cases 30 days (national average – 20 days).	In the case of services as specific as palliative and hospice care, waiting time for home-based palliative care team visits is too long – some patients die before the first team visit.	Reducing waiting time for home-based palliative care team visits and provide home-based palliative and hospice care services in the Zielona Góra District.

Medical staff	10.8.	The number of palliative care medical practitioners per 100,000 population is 0.9, and the average age of medical practitioners is 55. The medical practitioner availability rate should be 3 per 100 population.	The provision of medical staff is insufficient in the province.	Increasing the number of specialised medical medical practitioners and nurses.
	12.1.	Number of medical practitioners per 100,000 population in the province was 248, which was the lowest value observed in Poland. The average medical practitioner age was 51, which was the lowest value observed in Poland. The province has the highest percentage of medical practitioners of retirement age in Poland (26%). In the province, a significant group (50% and more) of medical practitioners of retirement age were the specialists in: laboratory diagnostics, paediatric gastroenterology, plastic surgery, balneology and physical medicine, epidemiology, hygiene, public health, occupational medicine, paediatric urology, audiology and phoniatrics, allergology, rheumatology, neonatology, sports medicine. The greatest needs for the number of specialists was observed in the following areas: internal medicine (736), family medicine (231), psychiatry (114), occupational medicine (83), geriatrics (73), and emergency medicine (52).	Medical staff in many areas will not be replaced by new staff after the retirement. There is little or no interest or willingness for medical practitioners to specialise in certain areas.	Increasing the number of medical faculty spots in the province. Increasing the number of institutions with a clinical and didactic function within the province in order to enable medical students and medical staff undergoing speciality training to undergo apprenticeships as much as possible within the province. Creating and promoting a system that motivates medical practitioners to work in the province, e.g. attractive job offers, providing accommodation, scholarships for some students who will commit to working in the profession

		In the province, there is little interest or lack of willingness to specialise in the following areas: paediatric surgery, general surgery, internal medicine, geriatrics, family medicine, neonatology, clinical oncology, orthopaedics and traumatology of locomotive organs, radiotherapy.		in the province for a given period of time. Improving working conditions by adjusting facilities to hygiene and sanitation requirements and improving ergonomics at workplaces (appropriate equipment and facilities). Increasing the employment and training of assistants, medical caregivers, and caregivers of the elderly and delegating to them some of the tasks that do not require medical training. Increasing the number of accredited vacancies in deficit areas and accumulating trained personnel in centres with higher numbers of services provided in this field, as well as retrofitting training units to meet the conditions for obtaining or maintaining accreditation.

				Creating and promoting a system of incentives for postgraduate education in deficit specialities, in particular where there was a shortage of those willing to specialise.
	12.2.	In terms of dentists per 100,000 population, the province had 76 of them, which gave it the 13th spot nationwide. Among dentists of retirement age, specialists in public health, prosthodontics, paediatric dentistry, non-invasive dentistry with endodontics and dental surgery constituted the largest group.	A major challenge for the province is to improve access to medical and dental staff.	Improving working conditions by adjusting facilities to hygiene and sanitation requirements and improving ergonomics at workplaces (appropriate equipment and facilities). Creating and promoting a system that motivates dentists to work in the province, e.g. attractive job offers, providing accommodation, scholarships for students who undertake to work in the dentistry profession in the province for a certain time.

	12.3.	In the province, the number of nurses per 100,000 population was 541, which was the lowest value observed in Poland. The number of nurses is projected to decline. Should the current trends continue, the projected total number of active nurses aged 25-59 in 2029, compared to 2019, will be 38% lower (and 33% lower nationwide).	Improving access to nursing staff and securing nursing staff in view of the ageing population and the high risk of a decline in the number of nurses is yet another challenge facing the province.	Increasing the number of medical faculty spots in the province. Creating and promoting a system that motivates nurses to work in the province, e.g. attractive job offers, providing accommodation, scholarships for students who undertake to work in the nursing profession in the province for a certain time. Improving working conditions by adjusting facilities to hygiene and sanitation requirements and improving ergonomics at workplaces (appropriate equipment and facilities). Take steps to encourage those who have resigned from the nursing / midwifery profession prior to retirement to return to the profession.

	12.4.	In the province, the number of midwives per 100,000 population was 68, which gave it the second to last spot nationwide. The average age of midwives was 52 years (national average - 47 years). Midwives over the age of 59 accounted for 22% of all professionally active midwives (the highest percentage nationwide; national average - 15%).	Improving access to midwifery staff and securing midwifery staff in view of the high risk of a decline in the number of midwives is a challenge for the province.	Creating and promoting a system that motivates midwives to work in the province, e.g. attractive job offers, providing accommodation, scholarships for students who undertake to work in the midwifery profession in the province for a certain time. Improving working conditions by adjusting facilities to hygiene and sanitation requirements and improving ergonomics at workplaces (appropriate equipment and facilities). Take steps to encourage those who have resigned from the midwifery profession prior to retirement to return to the profession.

	12.5.	In the province, the number of physiotherapists per 100,000 population was 125, which was the lowest value observed in Poland.	A major challenge for the province is to improve access to physiotherapy staff.	Creating and promoting a system that motivates physiotherapists to work in the province, e.g. attractive job offers, providing accommodation, scholarships for students who undertake to work in the physiotherapy profession in the province for a certain time.
	12.6.	In the province, the number of NHF laboratory diagnosticians per 100,000 population was 1.9, which gave the province the 12th spot nationwide. The required number of diagnosticians was 50-60 (as of 2019, there were 19 diagnosticians employed under NHF contracts).	A major challenge for the province is to improve access to lab diagnostician staff.	Creating and promoting a system that motivates lab diagnosticians to work in the province, e.g. attractive job offers, providing accommodation, scholarships for students who undertake to work in this profession in the province for a certain time.
	12.7.	According to the MZ-88 report, the province had a low pharmacist employment rate compared to the nationwide averages (the rate of pharmacists per 100,000 population was 3.5; 15th place nationwide).	The challenge facing the province is to increase the staffing of pharmacists at hospitals.	Establish and promote a system to motivate pharmacists to work in hospitals in the province, e.g. attractive job offers, providing housing, creating

Medical equipment				scholarships for students who commit to working in the profession in the province for a specified period of time.
	12.8.	The province struggles with a shortage of electroradiology technicians at some units.	A major challenge for the province is to improve access to electroradiology technician staff.	Creating and promoting a system that motivates electroradiology technicians to work in the province, e.g. attractive job offers, providing accommodation, scholarships for students who undertake to work in this profession in the province for a certain time.
	13.1.	There were 5 accelerators. 3 machines are located in the city of Zielona Góra, and another 2 in the city of Gorzów Wielkopolski. The distance to this type of equipment was the greatest for the inhabitants of the Słubice (65km) and Żary (61km) districts. The number of accelerators per 100,000 population in the province was 0.49, with a national average at 0.44, which means that accessibility is at the national average level. Currently, the average age of accelerators in the province is 3 years, including a 5 years old in the city of Zielona Góra, and a 1 year old in the city of Gorzów Wielkopolski. - They are currently not subject to replacement due to age. According to the demand forecast,	While the age of a significant portion of the medical equipment is adequate to allow efficient operation, the average usage of equipment shows that in most districts the installed infrastructure has a very high potential to perform more examinations than it currently does. The province has lower than the national average accessibility per 100,00 population of the following equipment: angiographs, ECMO machines	First of all, efforts should be made to make the best use of the currently owned medical equipment. In the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high and medium priority for replacement, as well as on increasing the number of medical devices, if justified, so that the Lubuskie Province can reach

in 2023 1 machine will need to be replaced. There were 3 angiographs. There is one angiograph in the city of Zielona Góra as well as one in the Nowa Sól and Żary districts. The distance to this type of equipment is the longest for the inhabitants of the following districts: Gorzów Wielkopolski (106 km), Strzelce Krajeńskie (99 km), Słubice (89km), Sulęcin (83 km), Międzyrzecz (82km). The number of angiographs per 100,000 population is 0.3, with a national average of 0.97, which is the lowest value in the country. Currently, the average, age of angiographs in the province is 12 years, including a 14 years old in the city of Zielona Góra, a 13 years old in the Nowa Sól district and a 8 years old in the Żary district. 2 angiographs need to be replaced due to age (more than 10 years) - high priority. According to the demand forecast, in 2023 all 3 machines will need to be replaced. The average number of procedures performed in the districts ranges from 0 to over 3,000 in the Nowa Sól district, where the largest number of examinations is performed. In 2019, there was 1 brachytherapy machine in the province. The machine is located in the city of Zielona Góra. The distance to this type of equipment is the longest for the inhabitants of the Strzelce Krajeńskie (118 km) and Gorzów Wielkopolski	brachytherapy machines, MRI machines, CT scanners, X-ray machines and ultrasound machines. Currently, high replacement priority in Lubuskie Province concerns 95% of mammography machines, 67% of angiography machines, 53% of ultrasound machines, 22% of X-ray machines, 17% of gamma cameras, 6% of CT scanners. Meanwhile, by 2023, the following proportion of equipment will reach an age that significantly limits the effective performance of procedures: 100% of MRI machines, angiography machines, mammography machines, 76% of ultrasound machines, 66% of gamma cameras, 61% of X-ray machines and 50% of CT scanners. It is important to mention that in the years 2020-2021, in connection with the fight against COVID-19, many hospitals have been retrofitted with equipment and this should also be taken into account when planning new investments in the future.	accessibility per 100,000 population at least at the level of the national average. Currently it concerns: – angiograph (worse availability in the northern part of the province), – brachytherapy device for the Gorzów hospital. – MRI machine (poorer availability in the northern part of the province), – X-ray machine.

		gamma cameras will need to be replaced. In Żary District, where the equipment is older, more procedures are performed on average (1,000 procedures performed in 2019) than in Gorzów Wielkopolski (700 procedures performed in 2019), where the average equipment age is lower. There were 20 mammography machines. 13 machines are located in the city of Zielona Góra, 3 in the city of Gorzów Wielkopolski and 2 each in Żary and Nowa Sól districts. The travel distance to access this type of equipment is the most considerable for the residents of the Słubice District (65 km). The number of mammograms per 100,000 population was 1.98, with a national average at 1.97, which means that accessibility is at the national average level. The average age of equipment in the province is 13, of which - 16.5 in Żary District, 15.5 in Nowa Sól District, 13 in the city of Zielona Góra and 10 years in Gorzów Wielkopolski. Currently, 19 machines need to be replaced due to age (over 10 years old) - high priority. Forecasts indicate that by 2023, all machines will need to be replaced, i.e. 100%. In 2019, as part of the contract with the National Health Fund, one PET scanner operated in a hospital in Gorzów. Moreover, according to the MZ-11 report in Gorzów Wlkp., there operates one more extra PET scanner (no contract with the National Health Fund). Both machines are located		

		in Gorzów Wielkopolski. Residents of Żagański (154 km), Żarski (150 km) and Nowosolski (132 km) districts have the greatest distance to such equipment. The number of contracted PET scanners/100,000 residents is 0.1, with a national average 0.08 - which means availability at the national average. In the province, the current age of the contracted machines is 2 years and the equipment does not require replacement due to age. Forecasts indicate that by 2023, the machine will not yet need to be replaced. The number of MRI scanners was 7. 2 machines are located in the city of Gorzów Wlkp., 3 in the city of Zielona Góra, and 1 each in the districts of Żary and Nowa Sól. Residents of the Słubice district have the worst accessibility to this kind of equipment, distance-wise (65 km). Number of MRIs per 100,000 population in the province was 0.69, with the national average of 1.05 - the lowest rate in the country. Currently, the average age of equipment in the province is 7 years. At the moment, MRIs do not require replacement due to advanced age. Forecasts indicate that by 2023, all MRI scanners will need to be replaced. In 2020, an MRI scanner was purchased for the hospital in Świebodzin (which has a		

		neurology ward). Some hospitals do not have on-site MRI scanners and patients must be transported to MRI labs located several dozen kilometres away. This may pose an obstacle in more critically ill patients who would have been able to undergo this type of examination if the device had been available on site. The number of RTGs was 164. All districts have access to X-ray machines - 36 machines are located in the city of Zielona Góra, 26 in the city of Gorzów Wlkp., 20 in the Nowa Sól district , 18 in the Żary district, 10 in the Świebodzin district, 9 each in Słubice and Żagań district, 6 in Gorzów and Wschowa district, 5 each in the districts of Strzelce-Drezdenko, Krosno, Międzyrzecze and Sulęcin, 4 in Zielona Góra district. Number of RTGs/100,000 population in the province was 16.21, with a national average of 22.30. The current average age of equipment in the province is 10 years, where the oldest machines are located in the following districts: 15 years in Strzelce-Drezdenko, 14.5 years in Gorzów Wielkopolski , 12 years in Międzyrzecze, 11 years in the districts of Nowa Sól, Wschowa, Słubice and Zielona Góra , 10 years in the city of Gorzow Wlkp. and in the Żary district. Currently, 36 (22%) x-ray machines need to be replaced due to the advanced age (over 10 years) - high priority. Forecasts indicate that by 2023, 100		

		x-ray machines will need to be replaced, i.e. 61%. The average number of procedures performed ranges from 466 in the Wschowa district to 2,400 in the Sulęcin district. There were 18 CT scanners. All districts have access to a CT scanner in a nearby location, the farthest from one being the Krosno Odrzańskie district (48 km). The city of Zielona Góra, the city of Gorzów Wielkopolski and the Świebodzin district have 3 scanners each, the Nowa Sól, Żary and Sulęcin districts have 2 scanners each, and the Zielona Góra, Międzyrzecz and Słubice districts have 1 scanner each. The number of CT scanners per 100,000 population in the province was 1.78, with a national average of 2.02, which means that the availability is lower than the national average. The current average age of equipment in the province is 6 years, the oldest equipment age being: 8 years old in the city of Gorzów Wielkopolski, the city of Zielona Góra and in the district of Zielona Góra. Most procedures are performed in Gorzów Wielkopolski, an average of 7,000 in 2019, and least in the district of Zielona Góra – 300 procedures performed. Currently, one CT scanner needs to be replaced due to age (over 10 years old) – high priority. Forecasts indicate that by 2023, 9 computed		

		tomographs will need to be replaced, i.e. 50%. The number of ultrasound machines was 364. 83 machines are located in the city of Zielona Góra, 77 in the city of Gorzów Wlkp., 33 in the Żary district, 28 in the Nowa Sól district, 23 in Świebodzin and Krosno districts, 19 in the Międzyrzecze district, 17 in Zielona Góra and Wschowa districts, 13 in Żagań district, 11 in Słubice district, 9 in the Gorzów Wielkopolski district, 7 in the Sulęcin district, 4 in the Strzelce-Drezdenko district. The number of ultrasound machines per 100,000 population in the province was 35.98, with a national average value of 36.78. Currently, the average age of equipment in the province is 9 years with the oldest equipment is located in the following districts: 13 years in Sulęcin, 12 years in Żagań and Międzyrzecze, 11 years in Zielona Góra and Strzelce-Drezdenko, 10 years in the districts of Żary, Słubice and Wschowa. The Strzelce-Drezdenko district performs the most procedures, with an average of nearly 1,700 procedures performed in 2019, and the least in the Żary district with 540 procedures. Currently, 53.3% of ultrasound machines are eligible for replacement - high priority and 4.7% - medium priority. According to the demand forecast, in 2023 277 ultrasound machines will need to be replaced, i.e. 76%.		

Polish Emergency Medical Services	14.1.	The main reasons for calling an emergency rescue team are malaise, injury/trauma, shortness of breath, fainting, chest pain and psychiatric disorders.	EDs provide services to patients who are not in a medical emergency.	EDs should be relieved of providing services to patients who are not in a medical emergency by improving access to diagnostics and services provided within the PHC as well as access to OSC and Night and Holiday Health Care.
	14.2.	According to the data available at the Lubusz Provincial Office, there are difficulties in providing full medical staff for specialised ambulances due to the general shortage of specialised medical staff in the labour market and the high cost of obtaining medical practitioners.	There is a need to make this ERT staffing situation more realistic.	Transformation of 8 specialist emergency rescue teams (ERT S) into primary emergency rescue teams (ERT P) and appointing additional ERTs obtained through the transformation of ERT S will affect the possibility of smooth management of teams, resulting in an improved arrival time in places difficult to access.

Other areas	14.3.	Arrival time is exceeded in the border area, peripheral area, and resort towns, as well as in Zielona Góra, especially during the summer months due to heavy traffic.	There is a need to reduce the time for ERTs to reach patients. In sudden cardiac arrest, CPR performed by witnesses of the incident greatly increases the victim's chances of survival.	Launching a motorcycle ambulance to support the specialist medical rescue team stationed in Zielona Góra and introducing widespread education and training in first aid, at least in the field of non-instrumental cardiopulmonary resuscitation.
	15.1.	There is lower availability of specialised periodontal services than nationally. As of February 2020, the average waiting time in urgent cases exceeding the national average is observed in terms of access to such outpatient clinics as dental prosthetics (Lubuskie - the second longest waiting time in the country - 123 days, national avg. - 105 days, and in stable cases - to outpatient clinics for dental surgery (Lubuskie - 98 days, national avg. - 92 days).	Access to speciality dental services is uneven.	Increasing the number of contracts with the National Health Fund for health care services in periodontology, especially in the southern part of the province, and prosthodontics.

Appendix No. 5

Challenges for the health care system and recommended lines of action in the Łódzkie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	20.1% of the total population of the region were people aged 65 and over (compared to 18.1% nationwide). The share of the youngest people (up to 14 years old) in the population was 14.4% (compared to 15.3% for Poland).	The province is one of Poland's fastest-ageing regions, and demographic forecasts show that the ageing process will continue. This will result in an overall increase in demand for health care services dedicated to the elderly.	not applicable
	1.2.	The province has the highest rate of feminisation nationwide (number of women per 100 men) at 110 (national average: 107).	The predominance of women in the population structure is a result of the excessive mortality of men observed across almost all age groups.	not applicable
	1.3.	The province is characterised by the lowest average life expectancy in the country; for male newborns, it was 72.5 years, for female newborns – 81 years (with national average values at 74.1 and 81.8 years, respectively).	The unfavorable situation in terms of life expectancy is closely correlated with the unfavorable demographic and epidemiological situation in the region, but also with	not applicable

Epidemiology and epidemiological forecasting			socioeconomic factors.	
	1.4.	The province had the highest number of deaths per 100,000 population, i.e. 1,244.2 (index value for Poland: 1,067.3).	The high death rates are influenced by a number of factors, among other, demographic and epidemiological conditions. In the total number of deaths of residents, 76% are deaths of people over the age of 65, and the region is one of the fastest ageing in the country. The number of deaths caused by cancer and cardiovascular disease, for example, is high and is projected to rise further.	not applicable
	2.1.	The most important health problem in the province is ischaemic heart disease. Both the value of DALY rate and death rate due to this disease significantly exceeded the values for other health problems. The second health problem in the ranking of DALYs loss is stroke. It is also the second most common cause of death and will remain unchanged until 2028.	The health problems contributing to the greatest loss of DALYs are ischaemic heart disease and stroke.	not applicable
	2.2.	Cancer is a significant problem	The projected upward trend in	not applicable

		due to the number of deaths caused by them (28% of the total number of deaths). Among them, the most deaths in the province could be attributed to malignant tracheal, bronchial and lung neoplasm, malignant neoplasm of the colon and rectum, and breast neoplasm. Deaths from these diseases are estimated to increase by 2028 up to 11.08%, 8.7% and 2.64%, respectively. It is estimated that by 2028 the number of cancer patients per 100,000 of the population will increase by 13.33% (growth for Poland will be 4.2%). In the case of incidence rate, increases of approx. 2% are projected	incidence of cancer will increase the demand for oncology services.	
	2.3.	Since 1990 the DALY value for Alzheimer's disease and other dementing diseases has increased by 42% A similar trend was reported for other indicators - number of deaths, incidence and prevalence. The number of deaths due to nervous system diseases are forecasted to increase by 15.64% in 2028 compared to 2019, especially due to Alzheimer's disease and other dementia-related diseases (up 18.3%).	The number of nervous system diseases including Alzheimer's disease and other dementia-related diseases are forecasted to increase in the province.	not applicable
	2.4.	The YLD for diabetes has nearly doubled in the last two decades.	Diabetes is a significant health problem in terms of its impact on	not applicable

Risk factors and prevention		In addition, when considering DALY values, diabetes was the fifth most important health problem in the province, with the recorded value being 8% higher than the average value for Poland. It is projected that by 2028 prevalence will increase by 21%, the highest increase of any health problem.	disability. This disease also contributes to a greater loss of DALYs than the national average. Moreover, a high increase in prevalence is projected in the coming years.	
	2.6.	Comparing the DALY values for the major health problems, it was observed that the province performed the worst in terms of cirrhosis and other chronic liver diseases, as well as self-injury, stroke, injuries in traffic incidents, and alcohol use disorders.	Health problems directly or indirectly related to alcohol abuse or other risky behaviours are more pronounced in the Łódzkie Province than in other regions.	not applicable
	3.1.	In the province, risk factors have a very significant impact on DALYs and deaths compared to the rest of Poland. Considering all risk factors (behavioural, metabolic, and environmental/occupational), the region ranked first among provinces in terms of DALYs per 100,000 population (20,100 vs. 17,000 for Poland, a deviation of 18.41% from the national average). The same was true for the death rate per 100,000 population	The data presented here show the extent to which risk factors affect the loss of healthy life years and the likelihood of death for province residents.	It is necessary to improve the effectiveness of disease prevention and health promotion activities and to reduce the negative impact of risk factors on DALYs and deaths by intensifying educational activities (information campaigns, promotion of participation in prevention programmes

	(820.1 vs. 690.1 for Poland, a deviation of 18.84% from the national average value).		engagement of the media), as well as increasing accessibility to prevention programmes and raising the health awareness of the region's residents.
3.2.	The province saw the highest contribution of behavioural factors to both DALYs per 100,000 population (14,000 vs. 11,800 for Poland, a deviation of 19.05%), as well as in deaths per 100,000 population (545.7 vs. 460.3 for Poland, a deviation of 18.55%).	Behavioural risk factors such as smoking, excessive alcohol consumption, poor diet and physical inactivity are modifiable risk factors, meaning that their severity can be altered through interventions (lifestyle changes or appropriate treatment).	Focusing prevention efforts on counteracting behavioural risk factors by intensifying educational activities (information campaigns, promoting participation in prevention programmes, involving the media), increasing access to prevention programmes and raising health awareness of the region's residents.
3.3.	In the province, risk factors such as tobacco, high blood pressure, high BMI, high fasting plasma glucose, dietary risks and alcohol consumption were responsible for the loss of the highest number of healthy life years, for men and women combined.	Half of the factors responsible for the loss of the greatest number of healthy life years are behavioural factors and the other half are metabolic factors, but these are also highly correlated with lifestyle,	Focus prevention efforts on addressing the risk factors that are responsible for the loss of the greatest number of healthy life years and have

		primarily dietary habits and physical activity levels. These are modifiable factors through interventions (lifestyle changes or appropriate treatment).	Significant contributors to death: smoking, high blood pressure, high BMI, high fasting plasma glucose, dietary risks, alcohol consumption (especially in men). Prevention should also address areas such as physical activity and stress management.
3.4.	Tobacco had more than 2 times the effect on DALY loss in men than in women. Regarding alcohol consumption, the impact of this factor on DALY loss was more than 8 times greater in men than in women (alcohol was the second most influential risk factor on DALYs in men, ninth in women; tobacco was first in both sexes).	In the province, as in the whole country, the problem of tobacco and alcohol abuse by men is clearly visible.	Intensify preventive actions concerning smoking tobacco and drinking alcohol (educational actions, prevention programmes).
3.5.	For both sexes, risk factors such as high blood pressure, tobacco, dietary risks, high fasting plasma glucose and high BMI had the most significant impact on deaths In men, the most significant risk factor	Risk factors that significantly affect deaths are modifiable by making lifestyle changes (proper nutrition, increasing physical activity, maintaining	Focus prevention efforts on addressing the risk factors that have the greatest impact on deaths. Promoting healthy lifestyles.

	The risk factor affecting deaths was tobacco (over 2x greater impact than in women, where this risk factor was only ranked 5th in terms of impact on deaths). In women, high blood pressure ranked first among the risk factors with the greatest impact on deaths (in this case the impact was similar in both sexes, in men this factor ranked 2nd, after tobacco).	a healthy body weight, avoiding stimulants).	
3.6.	The province was the leader concerning the impact on DALYs of risk factors such as tobacco (deviation from PL: 17.5%), high blood pressure (deviation from PL: 21%), alcohol consumption (deviation from PL: 32.2%), inappropriate ambient temperature (deviation from PL: 26.9%), other environmental hazards (deviation from PL: 22.9%), child abuse (deviation from PL: 30.6%), contaminated water, poor hygiene and lack of handwashing (deviation from PL: 28.2%).	Residents of the province lost more years of healthy life due to the risk factors listed, compared to residents of other regions.	Focus prevention efforts on addressing the risk factors that have the greatest impact on DALYs.
3.7.	Between 1990 and 2019, the effect of tobacco on DALY loss and deaths decreased (by 23.2% and 18.7%, respectively), with a much more pronounced downward trend in men than in women	The reduction in the impact of tobacco on DALYs lost and deaths among the population of the Łódzkie Province over the last two decades	Intensification of activities related to counteracting tobacco smoking, alcohol addiction and

	(3x greater decrease in the effect of tobacco on DALYs in men than in women, 5x greater decrease in the effect of tobacco on deaths). There is an increasing trend for the other addictions in terms of their impact on DALY loss and deaths: alcohol use (36.5% and 47.9% increase, respectively), drug use (48.5% and 71.4% increase, respectively).	is a positive phenomenon, but it should be noted that the region still loses most DALYs due to tobacco smoking. In men, this factor is also leading in terms of impact on deaths. The upward trend in the impact of alcohol and drug use on DALY loss and deaths indicates an increase in the use of these substances.	drug addiction (educational actions, prevention programmes).
3.8.	The largest number of prevention programmes (100 actions) concerned prevention and solving of alcohol problems - on average about 18,000 people were covered by activities in this area. Concerning smoking, only one measure was reported. This is not a satisfactory result, given that the province loses the most DALYs due to smoking, and more activities have been carried out in provinces where the impact of tobacco on DALY loss is much lower.	Accessibility to prevention programmes is insufficient. The range of programmes should cover areas related to risk factors which are responsible for the loss of the greatest number of healthy life years and account for a significant proportion of deaths, as well as preventive scopes for epidemiologically important diseases.	Increase accessibility to prevention programmes, in particular those addressing areas such as smoking, alcohol problems, drug and psychoactive substance use, promotion of healthy lifestyles and physical activity, cancer, cardiovascular diseases and mental disorders.
3.9.	Only 14.7% of the annual population to be screened for cervical cancer actually underwent screening (the national average was 17.3%). In terms of	Regular cervical screenings make it possible to detect precancerous lesions and cancer at an early - and treatable -	Taking measures to increase the number of women reporting for

		reporting for cervical screenings, the region ranked 13th. nationwide. The proportion of screened women in the population to be screened in the province is decreasing year by year. It should be emphasized that the province compares unfavourably with the country as regards the incidence of cervical cancer per 100,000 women (19.5 vs. 16.4 for Poland), as well as the number of deaths per 100,000 women (12.7 vs. 10.7 for Poland).	stage. Participation in cervical screenings is very low (1/7th of the female population), which translates into poor incidence and mortality rates.	cervical cancer screening tests, including: conducting information and education campaigns promoting the programme in areas with the lowest number of women participating in cytological examinations, participation of medical practitioners, nurses and midwives in information campaigns, production and distribution of information materials on prophylaxis programmes.
	3.10.	A total of 70.7% of the annual population to be screened underwent malignant breast neoplasm screening (average for Poland - 63.9%). In terms of mammography participation, the region ranked 5th in the country. The proportion of women tested in the population to be tested increased by 8.1% compared to the previous year. However, the incidence of breast cancer per 100,000 women is higher than the national average (111.8 vs. 93.5 for Poland), as the number of deaths per 100,000 women (43.8 vs. 37,8 for Poland) supports the need for further improvements in mammography participation.	Although mammography participation is better than the national average, as the region continues to lead in national statistics for incidence and mortality due to this cause, further improvements in mammography participation rates should be pursued.	Undertaking activities aimed at increasing the participation of women in mammography examinations, including: information and education campaigns promoting the programme in the areas with the lowest participation of women in mammography, participation of medical practitioners, nurses and midwives in information campaigns, production and distribution of information materials on preventive care programmes.

Primary health care	3.11.	Analysing the structure of health problems according to the DALY indicator, it can be noted that among cancers in men, colorectal and rectal cancers take second place, and among women - third place. In the region, 1,333 people died from this cancer (2nd after tracheal, bronchial and lung cancers).	Colorectal cancer is a significant health problem in the region. A key role in the prevention of colorectal cancer is screening, which allows the disease to be detected at an early, curable stage. The problem is the low participation in colonoscopies.	Undertake activities aimed at increasing the number of participants in colorectal cancer screening, including: information and education campaigns promoting the programme in areas with the lowest number of participants, participation of medical practitioners, nurses and midwives in information campaigns, production and distribution of information materials on preventive care programmes.
	4.1.	Primary health care was secured in every district (but not in every commune - the distribution of POZ results mainly from the willingness of entities to sign contracts for services in the above-mentioned scope; the procedure for signing contracts in the above-mentioned scope is still open). The ratio of the number of patients enrolled in relation to the number of inhabitants was the lowest in the Skierniewice and Piotrków Trybunalski districts (61% and 66%), but this can be explained by the fact that these are city county adjacent	The availability of primary health care services in the province is at a good level.	Maintaining access to primary health care in the province at the current level.

		districts: Skierniewice and Piotrków Trybunalski, in which the percentage of patients on active lists in relation to the number of inhabitants was 123% and 118%, respectively. Inhabitants of the province, regardless of age group, used the Primary Health Care services to a greater extent than the population of Poland in general.		
Outpatient specialist care.	4.2.	The average number of use of primary health care services was 6.12 (5th in the country, above the Polish average: 5.89). In every group over 6 years of age, women predominated among those using the primary health care services.	Men use the primary health care services less frequently than women. In addition, their healthy life expectancy or life expectancy is lower than for women	Measures aimed at health education for men and measures to encourage the use of primary health care services should be strengthened.
	4.3.	The province had the highest rate in the country as regards the number of medical practitioners in primary health care per 100 000 population (114.3), but in the case of nurses it ranked 14th in Poland (94,100/100,000 population). Availability of midwives was high (22,400/100,000 population, 2nd place in Poland).	The number of personnel in Primary Health Care in the Łódź Province is good in terms of medical practitioners in Primary Health Care and midwives in Primary Health Care, but in the case of nurses in Primary Health Care urgent actions should be taken to increase the number of nurses employed in Primary	Take measures to increase the number of nurses employed in Primary Health Care. Maintain the good situation regarding the number of medical practitioners in Primary Health Care and the number of midwives.
	5.1.	In terms of the number of outpatient clinics per 10,000 inhabitants the province is ranked low in comparison with the country with regard to the following clinics: **haematology** - (0.00) the worst situation in Poland,	In comparison with the rest of the country, the province is ranked low in terms of availability of outpatient clinics: haematological, rheumatological, cardiological, pain treatment, audiological, endocrinological and	Increase accessibility to outpatient clinics: haematology, rheumatology, cardiology, pain management, audiology, phoniatry, endocrinology and

		rheumatology - (0.11) - 15th in the country, **cardiology** - (0.26) - 12th in the country, **audiology** - (0.02) - 13th in the country, **endocrinology** - (0.15) - 11th in the country, **phoniatry** - 0.03 per 10,000 population - 11th in the country. In terms of the number of outpatient clinics per 1,000 inhabitants, accessibility to the following clinics is the worst: **pain management clinic** - (3.82) - 13th in the country, **cardiology for children** - (5.33) - 13th in the country, **trauma and orthopaedic surgery for children -** (5.74) - 10th in the country.	cardiological for children, trauma and orthopaedic surgery for children.	cardiological for children, trauma and orthopaedic surgery for children.
	5.2.	Taking into account **differences in the territorial distribution of outpatient clinics** in the province, inequalities in access to services occur in relation to the following clinics: **neurology** - in terms of the number of outpatient clinics per 10,000 population, the lowest availability is in the districts of Tomaszów, Pajęczań, Zduńska wola, Łęczyca and Rawa **vascular surgery** - the number of outpatient clinics per 10,000	In terms of the distribution of outpatient specialist care clinics per 10,000 population, the southern and eastern parts of the region stand out unfavourably.	Access to the following outpatient clinics should be increased: Neurology – in the districts of Tomaszów Mazowiecki, Pajęczno, Zduńska Wola, Łęczyca and Rawa Mazowiecka, where there is the lowest availability of them; vascular surgery, surgery

		residents 0.02 (6th place in the country). **vascular disease clinics** - the number of clinics per 10,000 residents was 0.02 (7th place in the country). In the southern and eastern part of the province, there is not a single outpatient clinic rendering vascular surgery or vascular disease profile services, **general surgery for adults** - in terms of consultations provided per 1,000 population (142.25) - 15th place nationwide. The worst accessibility is in the south-eastern part of the Łódzkie Province, **geriatric** - only 7 clinics in the province (3 in Łódź, one in the districts of Łowicz, Łódź Wschodnia, Sieradz and the city of Skierniewice). The lowest number of clinics per 10,000 population 0.03 (3rd place, together with 6 other provinces); number of consultations per 1,000 residents was 1.68 (7th place).		general surgery for adults - in the southern and eastern part of the province, geriatrics- in the southern part of the province.
	5.3.	As for the number of clinics per 10,000 population, territorial distribution, and number of consultations per 1,000 population has a good accessibility to the following clinics: **dermatological, ophthalmological, otorhinolaryngological.**	The provision of services in dermatology and ophthalmology, as well as otorhinolaryngology clinics in the region is optimal.	Maintaining the availability of the following clinics: dermatology, ophthalmology, otolaryngology.
	5.4.	As for the number of clinics per 10,000 population and the number of consultations per 1,000 residents, the province has better	The provision of services at the mentioned clinics in the region is good.	Maintaining accessibility to of the mentioned clinics, at least at the current

		accessibility compared to other provinces in the following outpatient clinics: **maxillo-facial surgery, thoracic surgery, cardiac surgery**, **paediatric otorhinolaryngology, paediatric endocrinology, paediatric ophthalmology**, **paediatric urology**, **diabetology.**		level.
	5.5.	Better accessibility compared to other provinces in terms of number of units per 10,000 inhabitants and the number of consultations per 1,000 residents in the following outpatient clinics: **neurosurgery, gastroenterology, gastroenterology for children, audiology for children and neurology for children** but that does not mean good availability overall as the average waiting time for an appointment in the clinics is long. **neurosurgery** - 148 days for urgent cases, **gastroenterology** - 70 days for urgent cases, **gastroenterology for children** - 100 days for stable cases, **neurological care for children** - 73 days in stable cases,	Despite better accessibility to the clinics compared to other provinces, long waiting times for appointments mean that the provision of services is insufficient.	Improving access to neurosurgical, gastroenterological, gastroenterological clinics for children, audiology for children and neurological clinics for children.

	audiology for children - 64 days for stable cases.		
5.6.	In February 2020, the longest average waiting time for stable cases was recorded for the following clinics: osteoporosis endocrinology clinic - 336.11 days, home oxygen treatment clinic - 291.28 days, endocrinology clinic - 272.78 days, The following clinics were ranked next: vascular surgery, rheumatology for children, vaccination for children in high-risk groups, neurosurgery and haematology.	The longest average waiting times for stable cases were recorded for clinics: endocrine osteoporosis, home oxygen therapy and endocrinology.	It is necessary to improve access to specialist clinics where there is the longest average waiting time.
5.7.	The value of contracted services in outpatient specialist care declined by 24.6% compared to 2017. Outlays for that type of care are still insufficient (the costs of providing health services exceeded the value of contracted services by 22.0%). Łódź Province was ranked sixth in the country in terms of the lowest expenditures on outpatient medical	Financial outlays for the provision of outpatient specialist care are insufficient.	It is necessary to increase financial outlays for services in the field of outpatient specialist care.

	services.[1].		
5.8.	Currently, there is no outpatient clinic for diabetic foot syndrome in the province with the ability to consult a diabetologist, vascular surgeon, and orthopedist [2].	Patients hospitalised due to diabetic foot syndrome cannot continue treatment on an outpatient basis.	There is a need to open a diabetic foot syndrome clinic in the province.
6.1.	Cardiovascular diseases accounted for 27.6% of hospitalisations, cancer for 18.3%, and diseases of the genitourinary system for 15.4%.	The most common causes of hospital stays among residents included cardiovascular diseases, cancer, diseases of the genitourinary system.	The incidence of cardiovascular diseases and cancer will increase in the coming years, which will also increase the demand for hospital services.
6.2.	The lowest availability of services in hospital treatment expressed in the average waiting time (queue length) in February 2020 for stable cases in the Łódź voivodship occurred in the following wards: trauma and orthopaedic surgery – 784.9 days (Poland 548.5 days), neurosurgery – 222.4 days (Poland 319.3 days), paediatric otorhinolaryngology – 176.7 days	Very long waiting times for the following wards: trauma and orthopaedic surgery, neurosurgery, and paediatric otorhinolaryngology.	Improvement of accessibility to wards with the longest average waiting times.

[1] Source: 2019 National Health Fund Activity Report. https://www.nfz.gov.pl/zarzadzenia-prezesa/uchwaly-rady-nfz/uchwala-nr-42020iv,6534.html

[2] Opinion of the Provincial Consultant on Diabetology for the Łódzkie Province prepared to develop regional recommendations for the 2020 Map of Health Needs.

	(Poland 211.1 days).		
6.3.	As of February 2020, the longest queues were to the following procedures (stable cases): 866.8 days for knee replacement – (1022.6 days for Poland), 656.1 days for hip replacement – (924 days for Poland) 485.1 for lens surgery –cataract (483.7 days for Poland). The average waiting time for the procedure during this period was 118.4 days, while nationwide it was 137.1 days.	Although the average waiting time for procedures in the province is shorter than the average for Poland, the queues are still too long. Very long queues for some procedures have a negative impact on the treatment effectiveness.	Shorten queues to procedures with the longest waiting time by increasing the availability of services.
6.4.	The highest percentage of bed utilisation (more than 85%) was reported in the wards of : pulmonary rehabilitation (115.8%), paediatric diabetology (95.6%), psychiatric rehabilitation (95.1%), cardiac rehabilitation (92.0%), tuberculosis and pulmonary diseases (91.4%), diabetology (90.8%), paediatric nephrology (90.5%),	The high rate of bed utilisation in the wards listed above may indicate insufficient availability of them.	Improve access to services in wards with the highest hospital bed utilisation rates by adjusting the number of beds to actual needs.

Psychiatric care and addiction treatment		chemotherapy (88.2%), palliative care (87.4%), nephrology (87.3%), psychiatry (86.6%), and paediatric neurology (85.5%).		
	6.5.	There is only 1 centre in the province providing inpatient respiratory rehabilitation services, and the waiting time for the service is over 6 months[3].	There is limited availability of respiratory rehabilitation services in the province.	It is necessary to improve the availability of pulmonary rehabilitation in the province and to reduce the waiting time for admission to the ward.
	7.1.	Compared to the citizens of Poland, the inhabitants of the province were more frequently diagnosed and treated for: anxiety disorders (1,842.5 vs. 1,680.1), organic disorders (1,033.7 vs. 806.9), mood disorders (982.2 vs. 972.8), addictions (916.6 vs. 841.4), schizophrenia (568.5 vs. 520.2), intellectual disability (203.0 vs. 195.3), adult personality and conduct disorders (150.1 vs. 128.7). According to the "individual" demographic case,	Mental disorders are more common in the province population than in the population of Poland. The expected increase in the incidents of disorders requires appropriate preventive measures.	Implement activities in the field of prevention of mental health problems, professional activation of people with mental disorders and providing multilateral adequate help for the needs of people with mental disorders. It is also important to intensify

[3]A request submittedby the Provincial Consultant on Pulmonary Diseases for the Łódzkie Province, and prepared to develop regional recommendations for the map of health needs in 2020.

		between 2020 and 2029 there will be an increase only in the incidents of organic disorders (by more than 3%), which is connected with the growing phenomenon of an ageing population.		informational, educational and promotional activities in the field of mental health and increase health competence of the population, fight against stigmatisation and discrimination of people with mental disorders as well as to increase the social integration of the mentally ill.
	7.2.	The locations of forms of adult mental health care in the region are as follows: - 77 mental health clinics for adults, evenly spread throughout the province (each district has at least one clinic, 29 in the city of Łódź), - 17 psychological outpatient clinics, including 11 in the city of Łódź, 3 in Pabianice district and one in Sieradz, Tomaszów and Wieluń districts, - 25 psychiatric hospital wards, including 10 in the city of Łódź, 6 in the district of Sieradz, 4 in the district of Bełchatów, 2 in the district of Zgierz and one in the districts of:	There is quite good accessibility to mental health clinics in the province, but most residents of the province are deprived of other forms of treatment close to their place of residence. Residents in the northern and southwestern parts of the province are in the worst situation, since there are not enough day wards and CTTs. The number of psychiatric inpatient wards is insufficient, and they are spread unevenly in the region.	Concerning the base of health care for adults, it is recommended to increase the number of places in day wards for adults with mental disorders, to develop a base of the psychogeriatric care system, to create psychiatric wards on the basis of general hospitals in the places called "white spots" (northern and southwestern part of the province) where there is the worst situation in the accessibility of psychiatric treatment or as integral components of

		eastern Łódź, Pabianice and Tomaszów, - 2 psychogeriatric wards in the city of Łódź, - 13 community treatment teams located in Łódź and the following districts: Pabianice, Bełchatów, Radomsko, Sieradz and eastern Łódź, • 9 day wards located similarly to CTT.		community Centres for Mental Health. It is necessary to develop and create a network of hostels and readaptive housing for people in treatment, and to improve accessibility by increasing the number of community treatment teams, particularly in the northern/north-eastern and south-western parts of the province.
	7.3.	Among patients treated in psychiatric wards for adults in the Łódzkie Province, the highest number of person-days is generated by patients with the following diagnoses: schizophrenia (33.9%), organic disorders (24.4%) and mood disorders (16.8%).	The highest number of person-days is generated by patients with specific conditions, i.e.: schizophrenia, organic disorders and mood disorders.	It is advisable to diversify therapeutic offers by creating wards/centres concentrated on the treatment of specific disorders (treatment of neuroses, schizophrenia, organic disorders, therapeutic and rehabilitative, etc.) especially on the basis of wards functioning in large psychiatric hospitals.

	7.4.	The average waiting time for an appointment at an adult mental health clinic in February 2020 is over a month. [4]	Accessibility to mental health clinics in the Łódzkie Province is good (they are located in all districts).	The mental health clinics in the Łódzkie Province should be maintained at the current standard.
	7.5.	As part of a pilot programme of the Ministry of Health, there are 3 Centres for Mental Health (for the city districts of Widzew, Łódź-Bałuty and Bełchatów District). Currently, the criteria required to establish more Centres for Mental Health are met by the districts of Pabianice and Sieradz (these are districts with a population of slightly less than 100,000 people and have four forms of treatment: a mental health clinic, day ward, psychiatric ward and community treatment team).	There are three Centres for Mental Health in the province. Next Centres should be opened in the district of Pabianice and Sieradz.	Popularise community model of mental health care by developing Centres for Mental Health.
	7.6.	In psychiatric care dedicated to adults, the number of medical practitioners specialising in psychiatry per 100,000 people was 13.8 (second place in the country, value for Poland was 10.2) of which 20% were medical practitioners at the retirement age. According to the recommendations of the National Consultant on Psychiatry, it should be 20 per 100,000 people of the population.	Despite the good situation in Poland regarding the availability of psychiatric specialists, the number of medical practitioners in this field in the region is too low compared to needs.	Efforts should be made to increase the number of medical practitioners specialising in psychiatry.

[4] According to data of NFZ

	7.7.	Distribution of different forms of addiction treatment: **Treatment of alcohol addiction:** • alcohol addiction treatment clinics and alcohol dependence and co-dependence therapy - located throughout the province, • hostels (2 in Łódź and 1 in Zgierz), • alcohol treatment units, alcohol abstinence syndrome treatment units (detoxification) and wards of alcohol addiction treatment services; **Treatment of psychoactive drug addiction:** • outpatient substance abuse treatment services for psychoactive substances other than alcohol and 1 substitution treatment program, • 3 hostels, • ward for treatment of abstinence syndromes following psychoactive substance use	The availability of different forms of addiction therapy in the Łódź province is insufficient in relation to needs.	It is necessary to improve access to in-hospital and out-of-hospital forms of treatment for alcohol and psychoactive substance addiction by expanding the base of detoxification units, alcohol and psychoactive substance abuse treatment units, and out-of-hospital forms of care in this area.

	(detoxification) located in the city of Łódź, 5 wards providing rehabilitation services for psychoactive substance addicts, 1 ward providing therapy services for psychoactive substance addicts with coexisting psychotic disorders (dual diagnosis) and 1 ward providing short-term psychoactive substance therapy services.		
7.8.	Patients with mental illnesses and disorders were very often treated in PHC (87,800 – PHC vs 87,500 – psychiatric care). 24,600 patients took advantage of the Ministry of Health's pilot programmes.	The treatment of a large group of patients with mental illnesses and disorders in the PHC may indicate inadequate accessibility to services in psychiatric care, but it may also be due to greater patient trust in the PHC.	Efforts should be made to align availability of services in psychiatric care with the actual needs.
7.9.	The number of adolescent patients diagnosed with mental disorders was 7,270 Among the disorders, the most common were holistic developmental disorders (23.7%), hyperkinetic disorders (19.8%), other mental disorders (19.3%), and	In terms of the prevalence of mental disorders in children and adolescents, the province is close to the nationwide average. The majority of districts in the Łodzkie Province have no	Efforts should be made to align the availability of services in paediatric psychiatric care with the actual needs. It is particularly advisable to

		neurotic disorders related to stress and somatic form (18.8%). Comprehensive developmental disorders occur with similar frequency to the Polish average; other disease entities occur less frequently than the Polish average. The province had four inpatient hospital wards for children and adolescents (including 3 in Łódź and 1 in Warta, totalling 106 registered beds) with four day wards and 16 psychiatric outpatient clinics, located in Łódź (12), Zgierz District (3) and Sieradz District (1). Underage patients are very likely to receive various forms of psychiatric care dedicated to adults (13.5%).	child and adolescent psychiatric clinics. There is a lack of community treatment teams for children and adolescents as well. The availability of day wards and inpatient wards is inadequate. In addition, there is an apparent geographically uneven distribution of the network of psychiatric treatment facilities, creating the so-called "blank spots," especially in the northern/northeastern and southern/southeastern parts of the province.	create non-hospital forms of care for children and adolescents, especially mental health outpatient clinics, day care wards, hostels, community treatment teams in those regions of the province which are in the so-called "blank spots". There is a need to develop a base of small psychiatric wards attached to general/paediatric hospitals. It would be advisable to create wards/centres profiled to treat specific disorders.
	7.10.	The province has a higher percentage of medical consultations in children than in Poland overall (78.3% vs 62.4%). The average wait time for child and adolescent psychiatric outpatient services is over 60 days, as of January 2020, the wait time was 106.9 days, while in February 2020, it was 75.8 days.	Underage patients on average wait twice as long as adult patients for an appointment at a mental health clinic, which is a result of an insufficient number of clinics in the Łódź Province. Most consultations provided in paediatric psychiatric outpatient clinics are medical, while	Establishing psychological and psychotherapeutic outpatient clinics for children and adolescents in all districts where such clinics do not yet function. It is advisable to change the inverse proportion of types

		individual psychotherapy, psychological advice or group/family services are provided to a small extent.	medical consultations provided as part of PHC compared to the recommendations for children and adolescents – in PHC for children and adolescents, the highest number of medical consultations was reported, with a low share of individual psychotherapy, psychological advice and group interactions.
7.11.	The number of psychiatrists for children and adolescents per 100,000 population was 1.8, slightly lower than the value recommended by national consultants (2.0) but higher than the average for Poland (1.1).	The number of paediatric psychiatrists in the region is too low relative to the needs.	Efforts should be made to increase the number of medical practitioners specialising in paediatric psychiatry.
7.12.	The treatment of children and adolescents with conditions caused by intoxication with psychoactive drugs is a significant problem. Underage patients are often treated in paediatric wards, which are not equipped to treat patients after poisoning with such drugs or end up in adult centres. In 2018, 123 minors were hospitalised for poisoning by psychoactive drugs, while in 2019, there were 100 such cases. Most often, juvenile patients suffering from poisoning are brought to the ED at Sporna Street, to the SP ZOZ Central Clinical Hospital of the Łódź Medical University; older patients are taken to the Institute of Occupational Medicine's	The detoxification treatment base for children and adolescents is insufficient.	It is necessary to improve access to in-hospital and out-of-hospital forms of addiction therapy, and therefore the possibility of detoxification treatment for patients under 18 years of age in hospital wards dedicated to them, e.g. by creating a toxicology ward for children and adolescents in a multidiscipline hospital where, in addition to paediatrics,

		adult toxicology ward. For children and adolescents, the most commonly treated addiction diagnosis was mental and behavioural disorders caused by multiple drug and substance use.		psychiatry, neurosurgery, neurology, surgery, intensive care services and a specialised laboratory will also be provided. An important component of psychiatric care for children and adolescents, including substance abuse and related health problems, could be the establishment of a provincial family counselling centre.
	7.13.	The province ranked third in terms of the lowest expenditures on mental health and addiction treatment services nationwide. Compared to 2018, the value of contracted services in psychiatry and addiction treatment declined by 12.9% (there was an upward trend until 2018). The cost of providing benefits exceeded contracted benefits by 9.5%.[5]	Expenditures for services in psychiatric care and addiction treatment in the province are inadequate.	It is necessary to increase the share of expenditures on services in psychiatric care and addiction treatment in the cost structure of NFZ, Łódzkie Province Branch.

[5] Source: 2019 National Health Fund Activity Report. https://www.nfz.gov.pl/zarzadzenia-prezesa/uchwaly-rady-nfz/uchwala-nr-42020iv,6534.html

Medical Rehabilitation	8.1.	Medical rehabilitation services within the National Health Fund were used by 232,500 patients (i.e. 9,472 patients/100,000 population, ranked 6th nationally; +9% in relation to the average for Poland). More than 41% of patients used services provided in the city of Łódź. The number of medical rehabilitation centres (including all types of services)/100,000 population was 8.15, giving the province 8th spot nationwide (-3% in relation to Poland).	The presented data show that the demand for medical rehabilitation services in the Łódzkie Province is high, but their availability is insufficient, mainly due to an insufficient number of centres (in particular outside the city of Łódź).	Aligning medical rehabilitation infrastructure with actual needs.
	8.2.	The main diagnoses in medical rehabilitation were musculoskeletal diseases (76.7%) and nervous system diseases (16.1%). Cardiovascular diseases were the cause of rehabilitation for 2.4% of all rehabilitated patients (within this group of diseases, the most common cause of rehabilitation was stroke: 52.7%).	The province is one of the fastest-ageing regions in Poland, and according to demographic forecasts, this process will deepen, thus increasing the share of people with disabilities in society. This will further increase the demand for medical rehabilitation services, which are already provided at a level inadequate to meet the needs. Strokes are already the second most critical	Adapt rehabilitation infrastructure to meet the region's growing needs due to the worsening demographic and epidemiological conditions.

		health problem in the region, and according to the provincial consultant on neurology, every third stroke patient requires intensive inpatient or outpatient rehabilitation.[6]	
8.3.	Because of cancer, only 0.5% of all rehabilitated patients received medical rehabilitation services.	According to the recommendations of the Polish Society of Clinical Oncology, rehabilitation should be an integral form of support for oncological therapy, available to all patients treated for malignant neoplasm. [7] In practice outside of cancer centres, there are limited options for rehabilitating patients after cancer, which is influenced by such things as insufficient preparation of medical personnel of rehabilitation clinics or physiotherapeutic centres for the rehabilitation	Increasing access to oncology rehabilitation and establishing a rehabilitation outpatient clinic/centre dedicated to patients with lymphoedema.

[6] Source: Opinion of the Provincial Consultant on Neurology for the Łódzkie Province prepared to develop regional recommendations for the 2020 Map of Health Needs.
[7] Source: Rehabilitation recommendations of the Polish Society of Clinical Oncology:
http://onkologia.zalecenia.med.pl/pdf/zalecenia_PTOK_tom1_19_Rehabilitacja_chorych_na_nowotwory_20140807.pdf

		of such patients.	
8.4.	The province had the highest negative balance of migration of patients requiring rehabilitation to other provinces in the country (-5,723). This is the value presented for all types of benefits combined. The situation is most unfavourable in the case of inpatient services (migration balance at -3,788). A significant negative migration balance was also recorded for outpatient services (-1,409).	Patient migration is a result of insufficient accessibility to medical rehabilitation services.	Increase access to medical rehabilitation services according to current needs.
8.5.	Of concern is the lack of willingness of medical practitioners to pursue specialities in medical rehabilitation; the Education Monitoring System shows that as of September 2020, 70 out of 81 accreditation slots remain vacant. As of May 2020, the number of physical therapists per 100,000 population was lower than the average value for Poland and amounted to 149.2. Only 4% of the physician cadre is of retirement age. According to projections provided by the National Board of Physiotherapists, the total number of active physiotherapists in the 25-59 age range will continue to increase through 2030.	The demand for rehabilitation services will increase and, consequently, it will be necessary to provide an adequate number of medical rehabilitation medical practitioners and physiotherapists in relation to the needs.	Increase the number of rehabilitation medical practitioners and physical therapists.

	8.6.	The province ranked fifth in terms of the lowest expenditures on medical rehabilitation services in the country. The cost of providing benefits exceeded contracted benefits by 12.3%.[8]	Outlays for medical rehabilitation services are inadequate.	It is necessary to improve funding for guaranteed medical rehabilitation services because the demand for these services will increase. It is also necessary to increase the share of rehabilitation expenditures in the cost structure of the health services rendered by NHF, Łódzkie Province Branch. Consideration should be given to increasing funding at those centres where more complex cases are treated.
	8.7.	The ratio of outpatient rehabilitation centres per 100,000 population was 7.58 (ranking 5th nationally; +11% in relation to the average for Poland). The number of patients using outpatient rehabilitation/100,000 population (by place of service provision) was 8,935 (3rd place nationwide, above the national average by 15%).	Despite the seemingly good availability of outpatient rehabilitation services (available in most districts, except for Skierniewice; high number of rehabilitated patients compared to other provinces), demand still exceeds supply.	Funding for rehabilitation delivered in an outpatient setting should be increased.

[8] Source: 2019 National Health Fund Activity Report. https://www.nfz.gov.pl/zarzadzenia-prezesa/uchwaly-rady-nfz/uchwala-nr-42020iv,6534.html

		The number of medical consultations per 100,000 population was 8,609 (2nd place nationwide, 63% above the national average); the number of physiotherapy visits per 100,000 population was 5,371 (9th place nationwide, 7% below the national average).	This is indicated by such things as a significant negative migration balance and long wait times for services (in February 2020, the average wait time for a rehabilitation clinic appointment for stable patients was 56 days, i.e. 1.9 months, but there is a much longer wait time for physiotherapy treatment itself). This results in a large group of patients using private sector services (no detailed data on the extent of this is available).	
	8.8.	The availability rate of inpatient centres was 1.02 centres per 100,000 population (11th place nationwide; -11% in relation to the average for Poland). There were no inpatient rehabilitation centres in the following districts: Skierniewice, Piotrków, Łęczyca, Rawa, Brzeziny, Opoczno, Wieruszów and Pajęczno. A high concentration of such centres can be seen in the city of Łódź and the neighboring district of Zgierz. The number of patients using inpatient rehabilitation/100,000 population (by place of service delivery) was 454 (14th place nationwide, 22% below the national average). Fewer patients use	The availability of inpatient medical rehabilitation services is inadequate in terms of all ranges offered. Insufficient number of inpatient rehabilitation centres and beds in relation to needs has a very negative effect on waiting time for services, which in neurological rehabilitation units is on average 2.5 years, in general rehabilitation units 1.5 years, in pulmonary rehabilitation units 2.7 months, and in the case of	It is necessary to improve access to inpatient medical rehabilitation services by increasing the number of centres and allocating them according to need.

		inpatient rehabilitation in specific ranges compared to other provinces: neurological rehabilitation (66 patients/100,000 population; last place in Poland, 37% below the national average), cardiac rehabilitation (59 patients/100,000 population (15th place in Poland, 41% below the national average), general rehabilitation (317 patients/100,000 population; 12th place nationwide, 12% below the national average), pulmonary rehabilitation (18 patients/100,000 population (ranked 7th out of 13 provinces that render such services; -40% compared to the national average). Inpatient cardiac rehabilitation centres are mainly located in the city of Łódź. There is an insufficient number of general rehabilitation wards in the south-eastern part of the region and inpatient neurological rehabilitation centres are lacking in both the eastern and western parts of the region. There is only a single pulmonary rehabilitation centre (in the city of Łódź).	cardiology rehabilitation units, it is 1.6 months (for stable cases as of February 2020 according to NHF data).	
	8.9.	The number of inpatient rehabilitation beds per 100,000 population was the lowest nationwide at 66.6 (30% below the national average).	Low accessibility of inpatient rehabilitation services in the Łódzkie Province in comparison to other	Increase the number of inpatient rehabilitation beds in all ranges.

		provinces.	
8.10.	The availability rate of inpatient centres was 1.83 centres per 100,000 of population (9th place nationally; -16% in relation to the average for Poland). There were no day rehabilitation centres in the following districts: Skierniewice, Piotrków, Kutno, Rawa, Bełchatów, Opoczno and Wieruszów. The total number of patients using outpatient rehabilitation/100,000 population (by place of service delivery) was 525 (12th place in Poland, 39% below the national average). The province ranked last in the country in terms of the number of patients rehabilitated in day care settings for hearing and speech disorders (7.8 patients/100,000 population; 80% below the national average by 80%. Only one institution has a contract with the National Health Fund and conducts comprehensive hearing and speech rehabilitation, among others, for children with cochlear implants). The situation is equally bad in the case of day rehabilitation in developmental age disorders (144 patients/100,000 population (14th place in Poland, below the national average by 44%; centres are available in 5 district, primarily concentrated in the city of Łódź) and general rehabilitation	Availability of medical rehabilitation services delivered in a day care setting is low compared to other provinces and inadequate in relation to the needs. This translates into a long average waiting time of 226 days (7.5 months) for treatment at an inpatient day rehabilitation facility/centre – for stable cases as of February 2020, per the National Health Fund data.	Improve accessibility to medical rehabilitation services provided in a day care setting: - increase the number of paediatric hearing and speech rehabilitation centres and increase the valuation of the procedures performed, - increase the number of rehabilitation centres for developmental age disorders and general rehabilitation (particularly in districts where such services are unavailable).

		in a day care setting (320 patients/100,000 population, 38% below the national average by; 11th place nationwide; there is an insufficient number of centres both in the eastern and western part of the region).		
	8.11.	The availability rate of inpatient centres was 1.18 centres per 100,000 population (10th place nationwide; -14% in relation to the average for Poland). Home-based rehabilitation was not available in Skierniewice, Piotrków, Łęczyca, Wieruszów, Pajęczno and Łask districts There is a clear concentration of centres in Łódź. The number of patients using outpatient rehabilitation/100,000 population (by place of service delivery) was 132 (8th place nationwide, above the national average by 5%). The number of medical consultations per 100,000 population was 5 (13th place nationwide, 77% below the national average); the number of physiotherapy visits per 100,000 population was 262 (5th place nationwide, 28% above the national average); the number of physiotherapy procedures per 100,000 population was 16,528 (9th place nationwide, 20% below the national average).	The availability of such services is lower compared to other provinces. No such services are provided in some districts.	It is advisable to further develop the base of home rehabilitation centres in those districts of the province where such services are not yet available.

Long-term care	9.1.	Among the total number of patients receiving long-term care in Łódzkie Province, 27.3% were in the 65-79 age group while 60.5% were over 80 years of age. increases. Starting from 2025, the number of patients over 80 years of age receiving long-term care in home and inpatient setting is projected to increase significantly.	The province is one of Poland's fastest-ageing regions, and demographic forecasts show that the ageing process will continue. This will increase the demand for nursing and long-term care services. The current infrastructure is insufficient to meet the current and future needs of those requiring this type of care.	Adapt long-term care infrastructure to meet the region's growing needs due to the worsening demographic and epidemiological conditions.
	9.2.	A total of 238 patients per 100,000 population have received nursing and care services as part of long-term care (10th place nationwide; -17% in relation to the average for Poland). Service type breakdown indicated that 128 patients per 100,000 population received home-based care services (14th place nationwide, -28% compared to the average for Poland); for inpatient care, it was 113 patients/100,000. population (ranked 7th nationwide, close to the average for Poland).	Low accessibility to long-term care services compared to other provinces.	Increase access to long-term care nursing and care services (in all ranges offered) according to current needs.

	9.3.	The number of long-term care centres (including all types of care) per 100,000 population in 2019 was 4.11, giving the Łódzkie Province 14th place nationwide (-21% in relation to Poland).	Low accessibility to long-term care services compared to other provinces.	Increase access to long-term care nursing and care services (in all ranges offered) according to current needs.
	9.4.	The number of long-term care centres per 100,000 population was 3.3 (-22% compared to the average for Poland; 14th place in Poland). Long-term home-based care was available in all districts (with a clear concentration of providers in the city of Łódź).	Low availability of home-based long-term care services in the region compared to other provinces and their uneven distribution.	Increase the number of long-term home-based care centres and distribute them evenly across the province.
	9.5.	The availability rate of inpatient centres was 1.14 centres/100,000 population (-6% compared to the average for Poland, 9th place in Poland). In 2019, no inpatient centres were available in seven districts (Brzeziny, Łowicz, Rawa, Skierniewice and the city of Skierniewice, Wieluń and Zduńska Wola), five of which were located in the northeastern part of the region (however, this may be due to lack of bidders). In this case, concentration	Low availability of inpatient long-term care services in the region compared to other provinces and their uneven distribution.	Establishing additional centres for inpatient long-term care, with particular emphasis on the districts where there are currently no such centres (the "blank spot" in the north-eastern part of the province) and in the city of Łódź and other counties where the current availability of long-term care services is

	of a larger number of entities in the city of Łódź is also visible; however, this does not translate into better accessibility to this type of services (0.88 centres/100,000 population compared to 4.87 in Poddębice District, where access to inpatient centres is the highest in the region).		insufficient, as potentially indicated by such things as patient migration.
9.6.	The province had the second to last negative migration balance of patients requiring long-term care compared to other provinces (-171). The migrations concerned primarily the inhabitants of the city of Łódź, but also of Wieluń and Zduńska Wola districts, as well as the majority of districts located in the north-eastern part of the region (Kutno, Łowicz, Skierniewice, Brzeziny, Rawa, Opoczno, Łęczyca Districts).	Patient migration is a result of inadequate accessibility to long-term care services in the Łódź Province.	Increase access to long-term care nursing and care services according to the current needs.
9.7.	The availability of long-term care beds among the population aged 65 or more in the province was 4.88 per 1,000 population (this is close to the national average, but compared to the province ranked 1st in this regard – i.e. Dolnośląskie – it remains 28% lower). This rate deviates significantly from the average bed availability in this age group for 33 OECD countries. In terms of the indicator showing the 2019 average number of long-term care beds	The availability of long-term care beds in Poland is insufficient to meet the current and future needs resulting from an ageing population.	Efforts should be made to expand the bed base in long-term care centres.

	per 1,000,000 population, the resulting value – 945 places – gives the province 4th place nationwide (+17% above the national average).		
9.8.	In terms of the number of long-term home-based care teams for mechanically ventilated patients/100,000 population, the province ranked 12th nationwide with a value of 0.16 (-33% in relation to the value for Poland). Such services were provided in four districts: the city of Łódź and districts of Sieradz, Łask and Bełchatów (183 persons were treated altogether); no such services were available in the northern, eastern and southern parts of the province.	Low availability of long-term home-based care team service for mechanically ventilated patients in the region compared to other provinces, as well as their uneven distribution.	Increase the number of long-term home-based care teams for mechanically ventilated patients, particularly in the northeastern and southern parts of the province.
9.9.	Long-term inpatient services for mechanically ventilated patients were provided in the only care facility in the region dedicated to patients requiring chronic ventilator therapy, located in Łódź (the facility provided care for 17 patients). The indicator of the number of centres per 100,000 population was 0.04 (15th place nationwide out of 15 provinces where this type of service	The presented data confirm the very limited availability of inpatient long-term care for mechanically ventilated patients in the region compared to other provinces. Due to a significant shortage of specialist centres, patients requiring chronic ventilator therapy occupy beds in	There is an urgent need to create at least two chronic ventilation therapy wards with 20-30 long-term ventilator therapy beds and to provide them with funding from the

	is provided; -69% compared to the value for Poland.	intensive care units, where treatment is more expensive than in a dedicated CTC/NCC.	NFZ.[9]
9.10.	The number of nursing home long-term care visits per 100,000 population was 34% lower than the national average (12th place in the ranking of provinces). In total, in 2019, more than 406,000 visits were made, of which almost $^1/_3$ in the city of Łódź.	The availability of long-term nursing care provided to chronically ill patients at home is inadequate.	Increase access to long-term nursing care provided to chronically ill patients in the home environment as a line of action to deinstitutionalise long-term care.
9.11.	The rate indicating the number of staff (total) in long-term care per 100,000 population was 75.1 (10th place in the country). Compared to other provinces, the worst medical staff availability rates occur in the case of adult and paediatric long-term home-based care teams (15th place nationwide), nursing home long-term care (12th place nationwide) and nursing and care facilities for adults (10th place in Poland).	Medical staffing security in long-term care is not sufficient.	Increase access to health care professionals in long-term care. Increase access to qualified caregivers for the elderly and dependent patients.
9.12.	Although the value of contracted services in long-term care is steadily increasing,	Expenditures on long-term care services in the province	It is necessary to increase the proportion of spending on

[9] Source: Opinion of the Provincial Consultant on Anaesthesiology and Intensive Care for Łódzkie Province prepared to develop regional recommendations for the 2020 Map of Health Needs.

Palliative and hospice care		(in 2019 it increased by 40.2% over 2017), outlays for this type of care continue to be insufficient (2019 service provision costs exceeded the value of contracted services by 6.9%). The province ranked fourth nationwide in terms of the lowest expenditures on long-term care services.[10]	are inadequate.	nursing and long-term care services within the cost structure of the Łodzkie Province Branch of the NHF. According to the financial plan of Łódzkie Province Branch of the NHF for 2020, after the amendment of 10 February 2020, the projected costs for these services represent only 1.6% of total projected health service expenditures.
	10.1.	Palliative-hospice services were used by a total of 244.05 patients/100,000 population (9th place nationwide, -3% in relation to the average for Poland). Service type breakdown indicated that 163.4 patients per 100,000 population received home-based care services (8th place nationwide; close to the national average); for inpatient care, it was 75.53 patients/100,000 population, 13th place nationwide, -23% in relation to the average for Poland), and in outpatient conditions – 62.53 patients/100,000 population (ranked 4th nationwide, +64% in relation to the average for Poland).	Low availability of palliative/hospice care services (particularly in terms of inpatient and home-based care).	Increase access to palliative and hospice care services according to current needs.

Source2019 National Health Fund Activity Report. https://www.nfz.gov.pl/zarzadzenia-prezesa/uchwaly-rady-nfz/uchwala-nr-42020iv,6534.html

	10.2.	The province has the largest share of cancer in the structure of diseases covered by palliative and hospice care services in Poland (96.6%; the national average is 88.7%). Malignant tumours of the trachea, bronchi and lung (18.9%) and malignant tumours of a large intestine and rectum (12.5%) predominate among patients overall. Among women, the predominant diagnosis is malignant breast cancer (17.0%), and in men, malignant tumours of the trachea, bronchus, and lung (22.8%). Patients under 18 years of age most often receive palliative-hospice care due to other nervous system diseases (50.6%).	Projected demographic and epidemiological changes in the province will increase the need for palliative and hospice care services.	Adapt the palliative-hospice care infrastructure to meet the region's growing needs due to the worsening demographic and epidemiological conditions.
	10.3.	In terms of the number of palliative and hospice care centres per 100,000 population (including all types of care), the province ranks 12th nationally with a ratio of 1.51 (-13% compared to the average for Poland which is the ratio of 1.73/100,000 population).	Accessibility to palliative/hospice care centres is low compared to other provinces.	Increase the number of palliative/hospice care centres.
	10.4.	The number of adult home hospices/100,000 population was 1.18 (-14% compared to the average for Poland; 12th place in Poland). The services were offered in the entire province, except for the districts of Skierniewice and Piotrków (this type	There is a need to improve access to adult palliative and hospice care services provided at home hospices.	Increase the number of adult home hospices, including ensuring that home centres are available in every district.

	of care was available in cities with district rights, i.e. Skierniewice and Piotrków Trybunalski).		
10.5.	Home hospice services for children were offered only in 2 centres located in Łódź, giving the province 16th place nationwide in terms of accessibility (0.08 centres/100,000 population; 56% below the national average. However, in the opinion of the Provincial Consultant on Palliative Care, this range of services is sufficient – all patients requiring such care receive immediate assistance).[11]	The Provincial Consultant on Palliative Care believes that the provision of home hospice services for children is optimal.	Maintain at least the same level of access to home-based hospice care for children.
10.6.	Patients are more likely to use palliative medicine clinic services – number of clinic patients/100,000 population was 62.45 (4th place in Poland, +64% compared to the national average). The availability of palliative medicine outpatient clinics is significantly higher than the national average (+82%; 0.73 centres/100,000 population; 4th place nationwide); however, it should be noted that they are available only in 11 districts, with a high concentration in the city of Łódź (44.4% of all	Palliative medicine outpatient clinics are not evenly distributed across the province, with a high concentration of such centres in the city of Łódź; 12 of the region's districts have no such clinics. The good accessibility to palliative medicine outpatient clinics, compared to other provinces, does not	Maintain at least the same level of access to outpatient care, including a possible expansion of palliative medicine outpatient clinics in districts where there are no outpatient clinics.

[11] Source: Opinion of the Provincial Consultant on Palliative Care for the Łódzkie Province prepared to develop regional recommendations for the 2020 Map of Health Needs.

	clinics in the region are located in Łódź).	constitute a solution to the lack of adequate availability of inpatient and home-based care placements.	
10.7.	Palliative and hospice care in inpatient setting was available in the following districts: Łódź, Sieradz, Bełchatów, Zgierz and Zduńska Wola. Per 100,000 population, an average of 0.33 inpatient palliative care units/hospices were available (the worst result in Poland; -34% compared to the national average). Just over 2,000 patient stays in these centres were recorded (85.3/100,000 population, 13th place nationwide, 20% below the national average).	The availability of inpatient palliative and hospice care is inadequate. The distance to the nearest inpatient hospice or palliative care centre from each district should be as short as possible, but currently, this type of care is available in only 5 districts.	Ensure better geographic distribution of inpatient care units. Create new inpatient hospices/palliative care centres, especially in the districts of the eastern and northern part of the province, which are currently a "blank spot" in terms of this scope of services.
10.8.	The province does not provide the minimum number of inpatient palliative care beds (100 beds/1,000,000 inhabitants) as specified by the European Association for Palliative Care (EAPC). The province, with an index of 73.73, ranks 15th nationwide; -37% in relation to the Polish average.	The number of beds in inpatient palliative/hospice care is insufficient.	Adjust the number of beds in inpatient care at least to the ratio defined by the European Palliative Care Association (at least 100 beds/1,000,000 population).
10.9.	The province is one of 11 with a perinatal palliative care centre for children with lethal defects. The annual contract of this	The provision of services in a perinatal palliative care centre, in the opinion of the Provincial Consultant on Palliative Care,	Maintain the current level of service accessibility at the

	centre covers 48 patients, so the need for this type of service is completely covered (in 2019, it provided care for only 8 patients).[12]	is optimal.	perinatal palliative care centre.
10.11.	The number of palliative care medical practitioners per 100,000 residents is 1.8; the average age of medical practitioners is 53 (16% are of retirement age). The medical practitioner availability rate should be 3.0/100,000. residents. There is also an insufficient number of nurses, particularly ones specialising in palliative/hospice care nursing.	The medical staffing of palliative and hospice care centres is insufficient.	Increasing the number of medical practitioners specialising in palliative care and nurses, particularly ones specialising in palliative/hospice care nursing, in palliative and hospice care centres.
10.12.	The province ranked third in the country in terms of the lowest expenditures on palliative and hospice care. The costs of provision of services in palliative and hospice care exceeded the values specified in signed contracts. The percentage of over-delivery in relation to the contracted amount was 7.2% (2nd position in the country).[13]	Expenditures for palliative and hospice care services are inadequate.	Increasing the share of expenditures on palliative and hospice care in the cost structure of Łódzkie Province Branch of the NHF. According to the financial plan of Łódzkie Province Branch of the NHF for 2020, after the amendment of 10 February 2020, the forecasted cost of nursing and hospice services is less than 1% of the total expenditures.

[12] Source: Opinion of the Provincial Consultant on Palliative Care for the Łódzkie Province prepared to develop regional recommendations for the 2020 Map of Health Needs.

[13] Source: 2019 National Health Fund Activity Report. https://www.nfz.gov.pl/zarzadzenia-prezesa/uchwaly-rady-nfz/uchwala-nr-42020iv,6534.html

Emergency Medical Services [14]			.
	11.1.	There are 18 emergency departments (ED) in the province, with 4 located in Łódź.	not applicable	Establishing additional emergency departments and buying more equipment for the existing ones. Increasing financial support for EDs.
	11.2.	Out of 18 EDs in Łódzkie Province, 10 medical entities have a landing ground that operates 24 hours a day; out of 4 EDs located in Łódź, only 1 has a landing ground that operates 24 hours a day.	Eight medical entities with EDs do not have a landing ground that operates 24 hours a day; it is due to the lack of funds for their construction, also, there is not enough money to buy equipment for emergency departments (no landing ground at EDs in Brzeziny District and Poddębice District).	Construction of landing grounds at EDs (including financial support for investment projects).
	11.3.	On average, per 100,000 residents, there are 4.27 ambulances. The region ranks 9th in the country in terms of the number of ERTs - to compare, in the Warmińsko-Mazurskie Province which ranks first, there are 6.24 ambulances per 100,000 inhabitants.	According to the data from CSS EMS on the number of people, the topography and the structure of the road network, access to medical emergency services is at risk in the Brzeziny, Bełchatów	It is necessary to increase the number of emergency medical service units in the Łódzkie Province (improvement of ERT ratio/100,000 inhabitants), which should

[14] Developed in collaboration with the Provincial Consultant on Emergency Medicine.

		Number of ambulances in the districts: the city of Łódź – 28, Zgierz – 8, Łęczyca – 3, Kutno – 4, Łowicz – 3, Skierniewice – 4, Rawa Mazowiecka – 2, Brzeziny – 1, Łódź Wschód – 3, Tomaszów Mazowiecki – 4, Opoczno – 3, Bełchatów – 4, Piotrków Trybunalski – 7, Radomsko – 4, Pajęczno county - 3, Wieluń – 3, Wieruszów – 2, Zduńska Wola – 2, Sieradz – 5, Łask – 3, Pabianice – 4, Poddębice – 3. In terms of the time to reach incidents in a city with more than 10,000 inhabitants – 88.43% of calls with a travel time of up to 15 minutes and 11.58% of calls exceeding 15 minutes were recorded, which is 14th place nationwide. In terms of the time to reach incidents outside a city with more than 10,000 inhabitants – 79.32% calls with a travel time of up to 20 minutes and 20.68% calls exceeding a travel time of 20 minutes were recorded, which is 15th place nationwide.	and Opoczno districts. A too long time of transfer of a patient by ERTs to the hospital also had a negative impact on the arrival time.	improve the arrival time to the patient. Procedures for patient transfer to the hospital by an ERT should also be prepared and implemented.

Medical staff	11.4.	In terms of the number of calls to emergency medical teams, between 1 April and 31 December 2019, the Łódzkie Province was ranked 5th. in Poland with 169,696 calls, the average ERT workload was 1,616.14.	The number of calls for emergency rescue teams in the Łódzkie Province, including groundless calls, is high.	There is the need to increase the number of public campaigns to raise citizens' awareness of the grounds for calling emergency medical teams.
	11.5.	In the ambulance fleet currently used by emergency rescue teams, 27.2% of vehicles are more than 5 years old.	The age of the ambulance fleet can affect the proper functioning of emergency rescue teams and their arrival at the scene of an incident, and the subsequent transport of the injured person to the nearest ED in the shortest time possible.	Successive replacement of the current ambulance stock should be pursued. Equipping emergency rescue teams with medical equipment, including chest compression devices (only 23 out of 103 ERTs in the province have such devices).
	12.1.	The largest differences between the number of medical practitioners who will reach retirement age by 2024 and the number of medical practitioners who will have earned a speciality degree by then are in the fields of: internal medicine (256), paediatrics (193), family medicine (130), pulmonary diseases (64), general surgery (56), and obstetrics and gynaecology (50).	Too few new specialists in the above-listed fields compared to the ageing specialist staff.	Launching more speciality places in shortage areas in the coming years to reduce the gap between the specialists reaching retirement age

			and the medical practitioners obtaining a speciality degree.
12.2.	The largest negative differences between the ratio of recommended number of medical practitioners per 100,000 population [15] and the actual ratio of medical practitioners per 100,000 population in the province were observed in the following fields: geriatrics (7.8 - recommendation of the national consultant vs. 1.5 - the rate for the province; a difference of 6.3/100,000 population), psychiatry (20.0 vs. 13.8; a difference of 6.2/100,000 population), occupational medicine (14.1 vs. 9.0; a difference of 5.1/100,000 population), emergency medicine (6.7 vs. 4.2; a difference of 2.5/100,000 population).	In selected fields, the number of specialist medical practitioners per 100,000 population is lower than recommended.	Introducing a programme to encourage young medical practitioners to obtain a speciality and opening more speciality spots in the above-mentioned fields in the coming years.
12.3.	The greatest deficit in terms of speciality vacancies (estimated for 2020, including the number of training places needed for generational replacement and the recommended number of specialists) were identified in the following fields: internal medicine (279), paediatrics (243), geriatrics (156), family medicine (153), occupational medicine (128), and psychiatry (104).	There are needs for speciality spots in the above-listed fields.	Launching more speciality places in family medicine in the coming years. Developing a system to motivate smaller facilities that do not yet provide speciality training in the field of

[15] Source: Recommendations of national consultants

		The presented data do not fully reflect the situation because in internal medicine, geriatrics and occupational medicine the interest in training is low, in paediatrics – interest in speciality training is high, but due to the feminisation of the profession in this area of medicine, a significant extension of the duration of speciality training is observed. In the field of family medicine, the interest in speciality training is high, new training spots are created, but it is worth noting that in this field the generation gap will be clearly marked (contrary to the national trend).		family medicine to apply to the Director of CMKP for accreditation to create new training spots. Creating and implementing an action plan to encourage medical practitioners to specialise within the province in areas where there is insufficient interest (mainly in internal medicine, geriatrics, occupational medicine).
	12.4.	The number of specialists in oncological fields working in the province is: **haematology** – 1 medical practitioner/100,000 population; the recommendation of the National Consultant[16] – 2.5, **oncological surgery** – 2.6 medical practitioners/100,000 population; the recommendation of the National Consultant – 3.0, **Paediatric oncology and haematology –** 0.6	Staff strengthening in oncology disciplines will be necessary.	Launching more speciality places in deficit areas in the province in the coming years. Introducing a programme encouraging young medical practitioners to obtain a speciality mainly in the oncological

[16] Source: Recommendations of national consultants in the Systems Analysis and Implementation Database

	medical practitioners/100,000 population; recommendation of the National Consultant – 0.8, **clinical oncology** – 4.5 medical practitioners/100,000 population; the recommendation of the National Consultant – 3.1,		disciplines.
12.5.	Shortages of infectious disease specialists are observed throughout the country, but the province is in a special situation here (the ratio of medical practitioners per 100,000 population is 3.7). The average age of an infectious disease specialist in the province is over 60 (ranked 4th place in Poland in terms of the highest average age of infectious disease specialists).	Too few infectious disease specialists and a high average age of specialists.	Launching more speciality places in family medicine in the coming years. Introducing a programme encouraging young medical practitioners to obtain a speciality mainly in infectious diseases.
12.6.	There is a projection of significant decline in the number of nurses and midwives aged 25-59by 2029 (by 38% and 20%, respectively) in the province. The shortage of nurses is estimated at the level of at least 5% of the current number of the nurses employed and it occurs in all entities conducting medical activity in the Łódzkie Province, especially in inpatient health care wards. This deficit is likely to increase (in the next 5 years,	The current number of qualified nurses in the province is too low, and the steadily increasing ageing of the population of the province will result in a demand for an increase in nursing care.	Action must be taken to reduce the increasing shortage of nurses and midwives in medical entities. It is necessary to increase the number of students in nursing and obstetric faculty by creating a programme to motivate high school graduates to study on this faculty and to develop

		18% of nurses employed in Łódź Province may retire). The nursing staff shortage is particularly noticeable in fields such as geriatric, internal medicine, long-term care and education, and occupational health nursing. Consultants also reported significant staff shortages in cancer nursing care, in anaesthesiology and intensive care wards, in primary health care, as well as in radiology and diagnostic imaging laboratories and in long-term care nursing (especially in small districts)[17].		develop a system for supporting nurses and midwives in entering this profession. Taking measures to motivate those who have left the profession to be professionally active again.
	12.7.	According to forecasts, by 2030, the total number of professionally active physiotherapists aged 25-59 will continue to increase. Currently, there are only three training centres in the province which are accredited to carry out	Too few specialist physiotherapists in the province.	Maintaining the upward trend in the number of physiotherapy graduates and expanding opportunities for professional development for this professional group.

[17] Conclusions of the Provincial Consultants regarding nurses and midwives submitted to the Marshal Office of the Łódzkie Province for the "Health Policy Strategy for the Łódzkie Province for 2021-2027" project.

Medical equipment		physiotherapist speciality training.		
	13.1.	There were 8 accelerators in the province (0.33 accelerators per 100,000 population – 12th place in Poland; the benchmark is 0.40). The devices were located in the city of Łódź and in the Tomaszów Mazowiecki District (in oncological centres). The average age of the devices was less than 7.4 years, and the average number of procedures performed per year was 912.	Accelerator access is lower compared to other provinces, but 7 of the 8 devices are currently low priority for replacement due to their relatively low age and the low average annual number of procedures performed. It is estimated that by 2023 3 machines will need to be replaced and by 2026 2 more machines; by 2028, all currently owned accelerators will reach an age of more than 10 years and will be counted toward the new equipment requirement base.	Above all, efforts should be made to optimise the use of currently owned accelerators and on a case-by-case basis consideration should be given to the need of activation of additional machines to improve availability. Successive efforts should be made to replace accelerators that will achieve high replacement priority.
	13.2.	There were 26 angiographs in the province (1.06 machines per 100,000 inhabitants, ranked 7th in Poland; the reference value is 1.24, the national average is 0.97). The angiographs were distributed in six districts (the city of Łódź, the city of Piotrków Trybunalski, Łowicz district, Zgierz district, Bełchatów district, Radom district). The average age of angiographs in the region ranged from 5 to 10 years, but as many as 37% of the machines located	The distribution of angiograph utilisation indicates the inefficient operation of some machines. Namely, 15.4% of the angiographs have a high replacement priority, while the remaining 84.6% belong to the equipment base with a low replacement priority. It is estimated that 16 angiographs will need to be replaced from	Above all, optimal utilisation of currently owned angiographs should be pursued. Moreover, the need for activation of additional machines should be considered on a case-by-case basis to improve availability in selected districts where such equipment is not

	in Lódż were 10 years old or older. 34.6% of angiographs in the province are new equipment, 26.9% are considered "old" equipment. Attention is drawn to the uneven distribution of equipment utilisation (the lowest average annual number of examinations performed in Skierniewice district: 1, the highest in Sieradz district: 1 525).	the current base (61.5%) by 2023, while another 3 machines will need to be replaced by 2026. In the 2029 perspective, all currently owned angiographs will qualify as old equipment in need of replacement.	available. Successive efforts should be made to replace angiographs that will achieve high replacement priority.
13.3.	The province has 2 brachytherapy devices, located in districts with oncological centres (city of Łódź, Tomaszów district). In terms of the number of such devices per 100,000 population, the region ranks 13th nationwide with a ratio of 0.08 (the national average is 0.14). The average age of the equipment is 10.1 years. The average use of the device operating in Łódź is 839 tests per year; the one in Tomaszów Mazowiecki performed no tests in 2019.	The availability of brachytherapy machines is lower compared to other provinces. The replacement priority is high for the machine located in Łódź and medium for the one in Tomaszów Mazowiecki (due to the lack of testing performed in 2019).	Above all, optimal utilisation of currently owned brachytherapy machines should be pursued. Moreover, the need for additional machines should be considered on a case-by-case basis to improve availability. Successive efforts should be made to replace X-ray machines that will achieve high replacement priority.
13.4.	The province has six ECMO machines. All are located in the city of Łódź. In terms of the number of such devices per 100,000 population, the region ranks 3rd nationwide, with a ratio of 0.24	In 2019, 66.7% of equipment had a low priority for replacement; 33.3% had a medium priority. According to demand projections,	Successive efforts should be made to replace ECMO machines that will achieve high

		(the average for Poland is 0.17). Average equipment age is 7 years; average usage: 11.7 procedures per year.	half of the current ECMO machines will need to be replaced by 2023; by 2026, 2 more will have to be replaced, with the last one requiring replacement by 2028.	replacement priority.
	13.5.	There were 14 gamma cameras available in the province, located in Łódź and Kutno, Poddębice and Zgierz districts. In terms of the number of such devices per 100,000 population, the region ranks 4th nationwide with a ratio of 0.57 (the national average is 0.42). The age range of equipment owned is wide, ranging from 1 to 21 years (in two counties, the average age of gamma cameras is less than 10 years while in the other two it is 16 and 20 years, respectively). Uneven distribution of equipment is noticeable (the lowest average number of examinations per year were performed in the Poddębice District – a total of 4; the highest, in the city of Łódź at 1,895).	The distribution of gamma camera utilisation indicates the inefficient use of some cameras. In 2019, 14.3% of equipment had a medium replacement priority and 42.9% of it had a high replacement priority. The large proportion of "old" equipment means that 8 devices are already eligible for replacement (most are located in Łódź and Zgierz District). By 2023, as many as 11 of the currently used devices will require replacement (78.6%), and by 2026, yet another device will have to be replaced.	Efforts should be made to optimise the use of currently owned gamma cameras. Successive efforts should be made to replace gamma cameras that will achieve high replacement priority.
	13.6.	The region has 52 stationary mammography machines, 73% of which are located in Łódź, and the rest in Skierniewice, Piotrkow Trybunalski, as well as the districts of Brzeziny, Sieradz, Bełchatów, Kutno, Łęczyca, Pabianice, Pajęczno, Radomsko and Tomaszów. In terms of	The current distribution of stationary mammography machines, supported by mobile units, enables relatively good accessibility of testing within the province. The distribution of mammogram utilisation indicates inefficient	Efforts should be made to optimise the use of currently owned mammography machines. Successive efforts should be made to replace mammograms that will achieve high

		the number of such devices per 100,000 population, the region ranks 3rd nationwide with a ratio of 2.12 (the national average is 1.97). The age range of the available equipment is wide, ranging from 2 to 26 years; in half of the districts, the average equipment age exceeded 10 years. The equipment use varies across the districts, ranging from 1 to 1,732 screenings per year; in four districts, the average equipment use did not exceed 150 screenings per year (Pajęczno, Łęczyca, Sieradz and Tomaszów). It was not always the old equipment that was used the least.	use of certain instruments. In 2019, the replacement priority was high for 44.2% of the equipment and medium for 1.9% of it. According to demand forecasts, half of the currently owned stationary mammography machines will need to be replaced by 2023, while by 2026, another 22 of them, with the entire current base requiring replacement by 2027.	replacement priority.
	13.7.	The voivodship has 2 positron emission tomography (PET) machines located in Łódź. In terms of the number of PET machines per 100,000 inhabitants, the region ranks 8th place in Poland with an index of 0.08 (at the level of the national average, but below the reference value that is 0.20). The average age of the machines is 6.37 years. Average machine utilisation is 3,400 - 3,600 procedures per year.	PET machines are used quite intensively. Both available machines are currently of medium replacement priority. It is estimated that 100% of the PET machines will reach an age requiring their replacement by 2023 and by 2024, respectively.	Successive efforts should be made to replace PET machines that will achieve high replacement priority. Alternatively, consideration should be given to the need of activation of additional PET machines to improve availability.
	13.8.	The voivodship has 34 MRI scanners, of which 59% are located	The large proportion of middle-aged MRI scanners with relatively low numbers of examinations	Above all, optimal utilisation of

		in Łódź, and the remaining ones in Skierniewice, Piotrków Trybunalski and the districts such as Sieradz, Bełchatów, Kutno, Łęczyca, Pabianice, Radom, Wieluń and Zgierz. In terms of the number of MRI scanners per 100,000 inhabitants, the region ranks 2th in Poland with an index of 1.39 (above the national average of 1.01 and the EU's reference value of 1.57). In 2019, in none of the districts, the average age of the equipment exceeded 10 years (the average age of equipment in the districts was approximately 7 years). The average annual number of procedures performed in most districts did not exceed 2,500; however, it was much higher in Skierniewice – almost 4,000 examinations per year.	performed annually results in 91.2% of the scanners that have a high replacement priority, and only 3 scanners are in the groups of medium or high replacement priority (Łódź - 2, Skierniewice - 1). Nevertheless, this does not make a difference that in 2023 perspective, 30 MRI scanners in the Łódzkie Province (88%) will exceed the age of 10 years and will be counted in the demand base for new equipment, and another 2 MRI scanners by 2026. In 2028, 100% of the current equipment will have to be replaced.	currently owned MRI scanners should be pursued. Moreover, the need for activation of additional scanners should be considered on a case-by-case basis to improve availability in selected districts. Successive efforts should be made to replace MRI scanners that will achieve high replacement priority.
	13.9.	X-ray machines are available in all districts. In terms of the number of X-ray machines per 100,000 inhabitants, the region ranks 7th in Poland with an index of 23.18 (above the national average of 21.99 and the EU reference value of 22.30). The average age of X-ray machines in the districts ranges from 8 to 12 years. The average X-ray machine use ranged from 12.5 procedures per year (Skierniewice district) to	The distribution of X-ray machine utilisation indicates inefficient operation of some machines. Namely, 18.5% of equipment has a high replacement priority (these are machines aged 13.35 years; 45% of this group is used in the city of Łódź). It means that 81.0% of X-ray machines has low replacement priority.	Efforts should be made to make the best use of the currently owned X-ray machines. Successive efforts should be made to replace X-ray machines that will achieve high replacement priority.

		almost 2,000 (Sieradz district).	X-ray machines. By 2023, 335 X-ray machines in the Łódzkie Province (59%) will reach the age of more than 10 years and will be classified as part of the demand base for new equipment, and another 124 X-ray machines by 2026.	
	13.10.	CT scanners are located in most districts of the voivodship except for the following districts: Pajęczno, Wieruszów, Skierniewice and Piotrków Trybunalski The density of CT scanners is 2.48 and it is lower than the reference value of this indicator (2.19) and the national average (2.02). In terms of CT scanner availability, the voivodship ranks first in the country. The average age of the equipment in the districts ranges from 4 to 10 years. Namely, 9.8% of the CT scanners are classified as "old" equipment and 41% of the scanners are classified as new equipment. The average CT scanner use ranged from 702 procedures per year (Łódź East district) to 11,450 (the city of Piotrków Trybunalski).	The distribution of CT scanner utilisation indicates inefficient operation of some scanners. Based on the recommendations, the replacement priority for 13.1% of the CT scanners is currently high while 9.8% of such scanners are of a medium replacement priority. It is estimated that 32 CT scanners from the current base (52.5%) will require replacement by 2023 and another 17 scanners will require replacement by 2026. In the 2030 perspective, all currently owned CT scanners will qualify as old equipment in need of replacement.	Efforts should be made to make the best use of the currently owned CT scanners. Successive efforts should be made to replace CT scanners that will achieve high replacement priority.

	13.11.	Ultrasound machines are available in all districts. In terms of the number of ultrasound machines per 100,000 inhabitants, the region ranks 11th in Poland with an index of 34.14 (below the national average of 36.61 and the EU's reference value of 36.74). The average age of ultrasound machines in the districts ranges from 7.8 to 13.4 years (in most districts it exceeds 10 years). Attention is drawn to the uneven distribution of equipment utilisation (the lowest average annual number of tests performed in the Skierniewice district: 1, the highest in Sieradz district: 1 828).	Distribution of ultrasound machine use in the Łódź voivodship indicates inefficient operation of some machines. The large proportion of "old" equipment is reflected in the recommendations according to which as much as 61.9% of the machines are of high replacement priority. According to demand projections, 673 ultrasound machines from the currently available base (80.3%) will need to be replaced by 2023, another 126 machines need to be replaced by 2026, and the entire current base by 2028.	Above all, optimal utilisation of currently owned ultrasound machines should be pursued. Moreover, the need for activation of additional machines should be considered on a case-by-case basis to improve availability in selected districts. Successive efforts should be made to replace ultrasound machines that will achieve high replacement priority.

Appendix No. 6.

Challenges for the health care system and recommended lines of action in the Małopolskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of action
Demography	1.1.	According to Statistics Poland demographic forecast, the coming years will see an increase in the number of people in the province (until 2033), and in subsequent years, yet another major population decrease. The median age was 40 years (up 3 months from 2018). Between 2016 and 2019, the births per woman rate did not guarantee a simple generational replacement. A decrease in the female fertility rate was observed between 2018 and 2019. The excess of immigrants over emigrants resulted in a positive foreign migration balance. The internal migration balance was positive as well, with the number of residents having registered for permanent residence exceeding the number of those who permanently left the province [1]. The highest migration balance per 1,000 population was recorded in the Wieliczka district (12.8), and the lowest in Tarnów (-5.9).	The data confirm the progressive ageing of the population due to increasing life expectancy, low births per woman rates and the current age structure of the population. The data also show the diversity of the demographic situation in the districts of the province (in terms of birth rate, migration balance and the percentage of the post-working age group in the total population.	not applicable

[1] https://www.polskawliczbach.pl/malopolskie

Epidemiology and epidemiological	2.1.	Ischaemic heart disease has for years been the leading health problem – it is responsible for the highest number of healthy life years lost and remains the most common cause of death. In 2019, it led to 10,000 deaths, and according to the 2020-2028 forecast, its prevalence and death values are expected to increase. The second most common cause of death is strokes, and projections show an increase in deaths through 2028. In 2019, the contribution of strokes to the YLL total was 8% (6% in 1999).	Ischemic heart disease takes away the highest number of healthy life years and causes the most deaths in the province (with strokes ranking second in this regard).	not applicable
	2.2.	Cancer is a significant problem because of the number of deaths it causes. Forecasts indicate that this value will continue to increase, exceeding the 2019 figures by 6% by 2028. Among neoplasms, the highest index values were recorded for malignant tracheal, bronchial and lung neoplasm, as well as malignant colorectal neoplasm. By 2028, the number of deaths caused by these health problems is estimated to increase by 2% and 13%, respectively. The contribution to the neoplasm YLL total was 32%; compared to 1999 figures, this value was higher by by 4 percentage points.	The estimated increase in cancer deaths points to the need to adjust the available resources accordingly, with a particular focus on access to rapid specialised diagnostics.	not applicable

	2.3.	A significant increase in DALY values was observed in the case of Alzheimer's and other dementing diseases. Since 1999, the value of the DALY index nearly doubled. A similar trend applies to the values of the other indicators - number of deaths, incidence and prevalence. Alzheimer's disease and other dementing diseases were responsible for almost 5% of deaths in the province (similar to the national average). Projections suggest that people will increasingly often die due to nervous system diseases (22.5% more deaths in 2028 compared to 2019), especially Alzheimer's disease and other dementia-related diseases (25% more deaths).	With the continued upward trend in DALY values, incidence and prevalence, it can be assumed that there will be an increase in demand for Alzheimer's and other dementia services.	not applicable
	2.4.	In the ranking of health problems according to the DALY index, diabetes saw the greatest rank increase (in 1999 it ranked 11th, in 2019, it ranked 6th). According to epidemiological projections, significant increases in prevalence, incidence and death rates for diabetes are expected by 2028.	Diabetes will continue to be a major health problem in the years ahead. Therefore, it is reasonable to assume that demand for diabetes-related services will continue to increase.	not applicable
	2.5.	Epidemiological forecasts indicate an increase in the incidence of mental illness. By 2028,	Mental illnesses will pose a challenge in the future due to the increase in the number of patients.	not applicable

Risk factors and prevention	the incidence will increase by 20% compared to 2019 figures. When broken down into health problem subgroups, the highest increase occurs in the case of depressive disorders (a 23% increase).		
3.1.	The contribution of behavioural factors to DALY loss was 10,440 per 100,000 of the population. The impact on deaths was 419.7 per 100,000 of the population. For the metabolic factor group, these values were 8.19 and 404.2, respectively.	The predominant groups of risk factors affecting both DALYs and death rates were lifestyle-related behavioural and metabolic factors, primarily dietary habits and physical activity levels.	Measures aimed at improving lifestyles should be taken.
3.2.	For males, tobacco's contribution to DALYs was 6,870 per 100,000 population, and in the case of deaths, it was 261.5 per 100,000 of the population. In comparison, the respective figures for women were 3,050 per 100,000 population and 113.9 per 100,000 of the population. The data indicates that tobacco has ranked first among risk factors for the past decade, and although it had been declining or increasing slightly over the years, an upward trend has been visible since 2017.	Tobacco's contribution to DALYs and deaths for men is higher than for women. Its impact on DALYs has more than doubled.	Some of the tobacco prevention efforts should be targeted at men.
3.3.	The proportion of dietary risks in DALYs for men and women combined was 3,850 per 100,000	Nutritional risks are the second risk factor with the greatest	Activities should be conducted that include the promotion of

	of the population. Since 2017, an upward trend is observed.	contribution to DALY loss for both men and women.	proper nutrition, as well as overweight and obesity prevention.
3.4.	In the case of men, other factors having a high contribution to DALYs and high ratios per 100,000 population were high blood pressure and high BMI. Alcohol consumption ranked 5th (in terms of contribution to DALYs), with an upward trend in both DALYs and deaths visible since 2014.	For men, the impact of risk factors correlated with a healthy lifestyle is critical.	Activities promoting healthy lifestyles are recommended, including ones aimed at preventing alcohol consumption among men.
3.5.	In the case of the DALY rate per 100,000 population for women, high BMI ranked first, followed by tobacco (compared to 2017, the latter's contribution has increased by 3%), high blood pressure and nutritional risks. As for alcohol consumption, this factor was ranked 11th in women. High blood pressure, dietary risks, high LDL cholesterol, and high BMI had the highest impact on deaths. Tobacco ranked sixth, with a contribution increase of about 4.5% since 2017, whereas alcohol use ranked as low as 17th.	As in men, the most aggravating risk factors in women are those associated with a healthy lifestyle, including proper nutrition.	Healthy lifestyles, including proper nutrition, should be promoted among women. Some of the smoking prevention efforts should be dedicated to women, among whom the issue of tobacco use is growing.
3.6.	There are gaps in mental health prevention programmes funded by the National Health Service. Society	Limited mental health activities occur	Take action, particularly long-term action, concerning mental health,

		views psychiatric treatment as stigmatising, resulting in a fear of any available form of help, both in treatment at mental health clinics and in addiction and substance abuse treatment. With the ever-increasing dangers of technology, as well as internet and computer access, it is crucial to be especially mindful of children and adolescents. The analysis of data on public health actions implemented by local government units shows that it is primarily large local government units that implement preventive health programmes. These programmes are generally long-term and continue in subsequent years after their initiation. In contrast, smaller localities, e.g., rural municipalities, do not undertake public health activities or only undertake one-time activities in this regard.	(especially long-term activities) in smaller localities.	especially in smaller localities. Prevention should also address such areas as stress management.
	3.7.	Local government units indicate that the primary issues in the implementation and reporting of public health tasks are the limited financial resources for the above activities, as well as limited and often	There are limited public health activities (especially long-term activities) for smaller localities which is largely due to	Undertaking public health activities, especially long-term ones, by the Małopolskie Province.

	changing human resources responsible for the implementation of public health tasks, lack of experience in implementation of such activities, unclear legal regulations, lack of training for local government unit employees that would allow them to acquire competencies in implementation and reporting of the above tasks, and lack of quick and easy access to reliable and complete data needed to assess health needs/problems of small local communities.	financial and staffing problems, as well as lack of experience.	It is vital to coordinate activities in the field of public health tasks at the provincial level, which must be carried out by various entities (medical entities, local government units, sanitary inspectorate, schools, etc.).
3.8.	Over the 2017-2019 period, there was a decrease in the percentage of women screened (per 100,000 annual population to be screened). For breast cancer, the Małopolskie Province had the worst nationwide score in terms of the number of examined women per 100,000 annual population to be screened (the nationwide average is 36% more women screened). There exists significant variation between districts in terms of cervical cancer and breast cancer screening enrolment. According to data from the NFZ, the Małopolskie Province Branch, the percentage of the population covered with cytological screenings in the district with the lowest enrolment level amounts to 6.67% (Proszowice District) while in the one with the highest enrolment, it is 27.80% (Sucha Beskidzka	Data indicate low enrolment for preventive screening.	Taking measures to increase enrolment for preventive screening for cancers that are major causes of morbidity.

Primary health care		differences in population coverage range from 27.39% (City of Tarnów) to 43.55% (Miechów District).		
	4.1.	The fewest medical practitioners working in primary care per 100,000 population was found in the districts of Wieliczka, Nowy Sącz, Wadowice, Brzesko, and Sucha Beskidzka, and the largest in the district of Oświęcim, the city of Kraków, district of Miechów, and the city of Tarnów. The highest number of nurses employed in PHC per 100,000 population was recorded in Tarnów; high values were also found in Kraków, Chrzanów District, Bochnia District, Oświęcim District, Nowy Sącz and Miechów District, and the lowest in Wieliczka District and Tatry District. In the case of the number of midwives, the highest values per 100,000 population were found in Dąbrowa, Kraków and Gorlice Districts, and the lowest in Nowy Sącz, Tatry and Oświęcim Districts.	The availability of PHC staff varies across districts.	Strive to ensure equal availability of PHC workforce across all districts.
	4.2.	In 2019, the most common reasons for visits to the PHC facilities in the province were similar to those observed in Poland overall.	Reduce age disparities in the proportion of patients using PHC services.	Determine the causes of the disparity and take appropriate action.

Outpatient specialist care		In terms of a patient age breakdown, the proportion of patients using PHC services did not differ significantly from observations for Poland as a whole.		
	4.3.	In 2019, the province had 81 units (education centres) authorised to conduct speciality training in family medicine, which is the most basic speciality for PHC. They had a total of 430 vacancies for medical practitioners who wanted to specialise in this field. Training in other medical specialities (internal medicine, paediatrics) is mainly conducted in inpatient settings. The number of people in postgraduate training in family medicine was 172.	The conclusion and recommendation are included in the MEDICAL STAFF area.	not applicable
	5.1.	OSC services were provided by 1,706 outpatient clinics (460 providers). The number of OSC consultations provided per 1,000 population varied. The highest values were noted in outpatient clinics in Tarnów, Nowy Sącz, Kraków, Miechów District and Chrzanów District, while the lowest in outpatient clinics in Kraków, Nowy Sącz, Tarnów and Wieliczka Districts. In the case of cancer, an increasing number of consultations was recorded, which	Population ageing will increase the number of patients and consultations and thus the demand for OSC services. The data indicate an uneven provision of OSC services at clinics. Growing need for cancer consultations. The clinics selected were characterised by long wait times (or high	Take actions aimed at the development, improvement and equalisation of the accessibility and quality of OSC services, in terms of diagnosis and treatment for diseases that are the main causes of death in the province and other regionally significant disease entities.

		is due to an upward trend in cancer incidence over the years. for medical services. The highest number of consultations was provided for patients in the 65+ age group and starting from 2015, there is an upward trend in the advice given to this patient group. According to demographic projections, the number of elderly and dependent persons requiring comprehensive health services will increase in the coming years. According to statistics, since 2019 there has been a downward trend in the number of consultations provided. This is due to such things as the decline in the number of providers and the decline in the number of clinics starting from 2017 (2018 saw a slight increase in their number; in 2019, there was a decline again). This may indicate that the services are provided as part of inpatient care (the number of hospitalisations has shown an upward trend in recent years, and the NFZ expenditures on inpatient care are also higher). The longest waiting time for services (both in stable and urgent cases) was shown for the neurosurgery outpatient clinic (over 400 days), with a relatively low – compared to some clinics – number of people queuing for services (1,901	numbers of queued patients)	

Hospital treatment		stable cases; 508 urgent cases). Long waiting times (over 200 days) for health services are also observed for genetic, immunology and endocrinology clinics. In contrast, the highest number of people queuing for services was shown for the ophthalmology outpatient clinic in the case of stable patients. The second highest number of people waiting for services was shown for the cardiology outpatient clinic for stable cases. For all the above clinics, the average wait times for health care services (for stable cases) were among the longest, exceeding 100 days for stable patients.		
	6.1.	In the 2014-2019 period, the number of hospitalisations trended upward while a downward trend was observed for the number of outpatient specialist care consultations.	The conclusion and recommendation are included in the OSC area.	

	6.2.	In 2019, there was a significant decrease in the number of hospital beds (excluding psychiatric beds and long-term care beds marked with departmental codes 5 160 – 5 360) In both public and private general hospitals, the highest numbers of beds per 10,000 population was recorded in the Tatry, Kraków, Tarnów, and Nowy Sącz Districts, and the smallest in the Tarnów, Kraków, Nowy Sącz, and Bochnia Districts. In addition, there is one district in the province in which no hospital operates (Wieliczka). The highest number of people treated in hospitals under the services funded by the National Health Fund was recorded in the following wards: obstetrics and gynaecology, internal diseases, general surgery, trauma and orthopaedic surgery, paediatrics and cardiology. The bed occupancy rates in these wards ranged from 53-86%.	The data confirm variation in the availability and use of hospital beds.	Considering bed occupancy rates in particular wards of specific districts, efforts should be made to rationalise the number of available beds, also taking into account actions enabling a balanced development of medical entities.
	6.3.	When considering the availability of services in terms of queues for wards, in February 2020, the longest queues in inpatient care for stable cases were recorded in the following wards: same-day care – 994.3 days (avg. for Poland: 550.6 days), plastic surgery – 687 days (avg. for Poland: 344.4 days),	Some of the services provided in hospitals are subject to long wait times. Data show uneven access to hospital wards and treatments	Take measures to increase the availability and quality of inpatient care services, particularly for disease entities

	neurosurgery – 506.5 days (avg. for Poland: 319.3 days). Queues for other wards were equal to or shorter than 503.1 days. In this period, the average waiting time to be hospitalised in a ward was longer than the nationwide average and amounted to 138.6 days, while for Poland as a whole it was 114.3 days. The longest queues in urgent cases were recorded in trauma and orthopaedic surgery – 196.8 days (avg for Poland: 185.2 days), otorhinolaryngology – 115.8 days (avg. for Poland: 80.4 days), neurosurgery – 115.4 days (avg. for Poland 222.6 days). The average across queues was 44.9 days (avg. for Poland: 56.4 days). In February 2020, the longest inpatient care queues for stable cases occurred in the case of knee replacement – 768 days (avg. for Poland: 1022.6 days), hip replacement – 754.7days (avg. for Poland: 924 days), hallux valgus surgery – 639.9 days (avg. for Poland: 595.8 days). Queues for other surgeries were equal to or shorter than 509.6 days. The average waiting time for a procedure during this period was 163.5 days, while nationwide it was 137.1 days. In February 2020, the longest queues for urgent cases were recorded for such procedures as	carried out as part of inpatient care services	characterised by long wait times for medical services, taking into account groups requiring particular care, i.e. the elderly, mothers, newborns and children, and ensure access to diagnosis and treatment of rare diseases.

		knee replacement – 363.7 days (avg. for Poland: 483.9 days), nasal septum surgeries – 268.9 days (avg. for Poland: 129.1 days), surgical treatment of carpal tunnel syndrome – 266.7 days (avg. for Poland: 156.8 days). The average across queues was 121 days (avg. for Poland: 106.6 days).		
Psychiatric care and addiction treatment	6.4.	In terms of the rate of inpatient hospital-acquired infections treated per 100,000 population, the province ranked 7th nationwide and was above the national average (251.25 vs. 235.6). The rate of deaths due to hospital-acquired infections per 100,000 population in the province was lower than the national average (3.08 vs. 4.05).	In terms of the rate of inpatient hospital-acquired infections treated per 100,000 population, this rate exceeded the average value for Poland.	Measures should be taken to improve the quality of inpatient services.
	7.1.	In the case of children and adolescents, there is a high rate of resident patients 1treated in the same area for the entire province (96.5%); however, this rate varies significantly for individual districts (from 0.3% to 97.3%). In 2019, most forms of treatment for children and adolescents were concentrated in Kraków, with 1 or 2 forms of treatment available in the districts of Oświęcim, Olkusz, Miechów, Kraków, Wieliczka	There is a large migration of patients between different regions of the Małopolskie Province. Therefore, both the availability of paediatric psychiatric services within districts and the current infrastructure are still insufficient to meet the current and future needs of people requiring psychiatric care.	Take steps to increase the availability and quality of child and adolescent psychiatry services, including by continuing to implement the child and adolescent psychiatric care reform initiated in 2020, which provides for the establishment of treatment centres

		Bochnia, Myślenice, Limanowa and Tarnów. The analysis found that access to comprehensive psychiatric treatment dedicated to children and adolescents was much more difficult than for adults. Patients from the following municipalities had to travel farthest to access the nearest clinic: Kościelisko District – 63 km, Zakopane – 58 km, Poronin – 53 km. Similarly, these municipalities showed the highest average distance to each of the four forms of treatment. The proportion of consultations given in the Małopolskie Province was better than the national average (i.e. the proportion of general physician advice was lower). However, the average wait time for child mental health clinics in February 2020 was 93 for stable and urgent cases alike (which is the 3rd longest queuing time nationwide).	This is indicated by high wait times for services.	for children and adolescent at three reference levels.
	7.2.	97% of patients received various forms of psychiatric treatment and assistance within the province. The analysis of patient migration shows that it is closely related to the availability and distribution of the facilities providing psychiatric assistance within the province. In terms of a district-specific breakdown, the lowest percentage of patients residing and treated in the same area was recorded for such districts as Kraków, Tarnów and Nowy Sącz,	Data indicate that the availability of adult mental health and addiction treatment services and the current infrastructure in some areas of the province are insufficient to meet the patients' health needs; it is also important to consider that the demand	Take action to increase the availability and quality of adult psychiatric services, particularly in areas where access to selected forms of care is limited. Strive to achieve the recommended proportion of services provided

	whereas high percentages were shown for cities with district rights, i.e. Kraków, Tarnów and Nowy Sącz. This means that these cities have better-specialised resources in psychiatric care, which translates into the in-migration of patients from the above. districts. In terms of basic forms of psychiatric treatment, psychiatric/psychological counselling centres for adults were available in all districts of the province; community treatment teams were available in almost all of them (except for Dąbrowa Tarnowska District); 8 districts had no day wards whereas hospital wards were available in 9 districts. Psychogeriatric wards operate in Kraków and the Wadowice District. According to demographic projections, the number of elderly and dependent persons requiring comprehensive health services will increase in the coming years. As part of the three-year MHC pilot programme launched in 2018, 4 Centres for Mental Health were established in the province. According to 2019 data, there was an inverse proportion of the types of counselling provided compared to that recommended. There is a high proportion of	for psychogeriatric care is bound to increase.	(the proportion of medical advice in relation to psychotherapy and psychological counselling), including by continuing the changes already underway (Centre for Mental Health pilot programme).

		medical counselling in psychiatric/psychological clinics (65.5%) with a low proportion of individual psychotherapy (17.81%), psychological counselling (15.29%), and group/family interventions (1%). There is limited access to specialised addiction treatment, despite addiction being among those behavioural risk factors that most affect the DALY rate (addiction to alcohol, drugs, psychoactive substances, etc.). The services of addiction treatment outpatient clinics (general) and substance abuse treatment outpatient clinics, as well as day care wards for addiction treatment, are mainly available in larger cities (especially Kraków), despite patients in smaller administrative centres having similar needs. There are no anti-smoking clinics or hostels for alcohol and narcotic addicts in the province.		
	7.3.	The number of medical practitioners specialising in psychiatry per 100,000 population was 12.1. This factor is far from satisfactory as	The conclusion and recommendation are included in the MEDICAL STAFF area.	not applicable

Medical Rehabilitation		it should be 20 according to the national consultant. For paediatric psychiatry, the number of medical practitioners was 1.3 per 100,000 of the population. The difference between the number of medical practitioners recommended by the national consultant per 100,000 population (2.0) and the actual number of medical practitioners per 100,000 population is 0.7.		
	8.1.	In February 2020, there were 83,737 stable patients queued for outpatient physiotherapy services (average waiting time: 166 days; national average: 151) and 16,361 patients requiring urgent care (average waiting time: 106 days; national average: 102 days). The waiting time to access a rehabilitation clinic was 43 days for stable cases and 38 days for urgent cases. The lowest availability of inpatient medical rehabilitation services in 2019 occurred in the field of cardiac rehabilitation (this figure per 100,000 population was 33% lower than the national average; 12th place in Poland) and neurological rehabilitation (1% below the national average; 8th place nationwide). Inpatient general rehabilitation showed the longest average waiting time. In February 2020,	The data confirm the varied and limited availability of medical rehabilitation services in all its forms. The high number of patients waiting for rehabilitation indicates a high demand for rehabilitation services; at the same time, the long waiting time negatively affects the health of patients due to the late commencement of rehabilitation.	Take action aimed at increasing the availability and quality of comprehensive services with respect to disease entities relevant to the region of the Małopolskie Province, particularly in districts with limited service availability.

		the average waiting time for this service was 1,385 days for stable cases, with 20,500 patients queued, and for urgent cases, it was 187 days with 2,400 patients queued. The average waiting time for treatment at an inpatient day rehabilitation facility/centre was relatively high at 359 days for stable cases and 182 days for urgent cases (as of February 2020). Waiting times for home-based rehabilitation health care service were much better than in the case of outpatient rehabilitation (however, this service is used by the smallest number of patients). In February 2020, The number of stable patients queued for home physiotherapy services was 721 (wait time: 47 days) while the number of urgent patients was 119 (wait time: 45 days). For the sake of comparison, the average waiting time for this service nationwide is 53.02 days (for stable cases) and 36.81 days (for urgent cases). In regard to rehabilitation, the fewest number of patients per 100,000 population took advantage of this service in the Nowy Targ, Wadowice, Sucha Beskidzka and Tatry Districts. The lowest accessibility of long-term care was recorded in the Tarnów, Wadowice, Nowy Sącz, Kraków and Chrzanów Districts.		

		The availability rate of inpatient rehabilitation centres was very low; in 2019, the figure per 100,000 population in the Małopolskie Province was 16% lower than the national average, giving Małopolskie 13th spot nationwide. In 2019, eight districts had no inpatient rehabilitation centres, i.e. the Sucha Beskidzka, Wadowice, Myślenice, Wieliczka, Bochnia, Tarnów, Proszowice and Miechów Districts. A total of 5.9% of all patients who received medical rehabilitation services in the Małopolskie Province in 2019 took advantage of inpatient rehabilitation; the number of patients per 100,000 population (by place of service provision) was 4% lower than the national average, which gives Małopolskie the 7th spot in Poland. The 2019 availability rate of home rehabilitation centres per 100,000 population in 2019 was 22% lower than the national average, and as such, Małopolskie ranked 12th nationwide in this regard. In 2019, this type of rehabilitation was provided in all districts of the Małopolskie Province, with most centres located in Kraków.		
	8.2.	The number of medical rehabilitation specialists registered at the Regional Chamber of Medical Practitioners and Dentists in Kraków as of 2019 saw a significant increase	The conclusion and recommendation are included in the MEDICAL STAFF area.	not applicable

Long-term care		compared to 2018. This number ensures continuity of health services at current contracting levels, although the shortage of medical rehabilitation specialists is still evident. Considering the current lack of medical practitioners willing to specialise in this field, the staffing outlook is unfavourable, and there is a generation gap in medical rehabilitation. Such reasons as the broadness and interdisciplinary nature of the speciality, persistent low valuation of rehabilitation services, as well as the possibility of referring patients for physiotherapy procedures by medical practitioners of other specialities, result in a low number of young medical practitioners willing to enter this field [2].		
	9.1.	The province also has the second-highest number of urgent cases awaiting a CTC admission and the highest number of stable patients waiting for CTC admission among all of Poland's provinces. The average waiting time for admission to a CTC for stable cases was also the highest at 592 days.	Inadequate accessibility to long-term care services due to long patient wait times.	Take action to reduce queuing times for health care services in inpatient long-term care facilities.

[2] Partial report of the provincial medical rehabilitation consultant for the period covered by the contract with the Province Governor in 2019.

	9.2.	In the 65+ population, the availability of long-term care beds per 1,000 population by the end of 2019 was 21% higher than the average value for Poland. In terms of the indicator showing the 2019 average number of long-term care beds per 1,000,000 population, Małopolskie ranked 6th nationwide (14% above the national average).	The current infrastructure is sufficient to meet the needs of patients requiring this type of care. However, it is important to keep in mind that the ageing population phenomenon will increase the demand for long-term care services in the future.	Adapt long-term care infrastructure to meet the region's growing needs due to the worsening demographic and epidemiological conditions.
	9.3.	There were 4 districts (Tarnów, Tatry, Limanowa and Wadowice) in which there were no centres providing inpatient care. According to the data of NHF, the Małopolskie Province Branch, inpatient care services are contracted for specific district groups and not for individual districts, and as such, services in all of the above areas are secured in the above scope. However, in the case of inpatient care, the distance from the place of service to the patient's place of residence is important, which translates into patients migrating to receive services.	Lack of inpatient care in 4 districts.	Ensure accessibility to inpatient care in districts where such care is unavailable.

Palliative care and hosp. care	9.4.	Varied distribution of home-based care providers for patients requiring mechanical ventilation. Such services for adults were provided by medical entities located in five districts (Chrzanów, Kraków, Wieliczka, Nowy Targ and Tarnów), as well as in the city of Tarnów, whereas for children, they were only available in two districts (Chrzanów and Nowy Targ). In this case, these benefits are also contracted for the entire province, not for individual districts.	Low accessibility of services for patients requiring mechanical ventilation.	Provide mechanical ventilation services in districts where such services are unavailable.
	9.5.	Patients migrate to regions with better institutional resources providing long-term care. The highest migration balance was recorded for the Nowy Targ District, the city of Kraków, as well as the Chrzanów District and Sucha Beskidzka District. A negative migration balance was reported for 14 out of 22 districts. The following districts had the lowest availability of long-term care: Kraków, Oświęcim, Tarnów, Wadowice (negative values).	Varied and limited availability of long-term care services across districts.	Take steps to increase the availability and quality of long-term care services in all available forms of care, particularly in counties with limited availability of such care.
	10.1.	When broken down by type of health care services, 25% fewer patients per 100,000 population received health care services in the home setting compared to the national average,	The data presented confirm worse accessibility of palliative and hospice care services as compared to the nationwide average.	Take action to increase the availability and quality of palliative care services

	giving Małopolskie the 12th spot nationwide. In the case of outpatient care, it was 40% fewer patients per 100,000 population, also giving Małopolskie the 12th spot nationwide. In terms of the number of palliative and hospice care centres per 100,000 population (including all types of care), the province ranked 13th nationwide, with an index of 1.44 (17% lower than the national average).	(this particularly applies to home-based care and outpatient care).	and hospice care services in all available forms.
10.2.	Apart from Śląskie and Pomorskie provinces, the Małopolskie Province had the lowest security index in Poland in terms of home-based hospice care availability (1.1 home centres per 100,000 population). Two of its districts – i.e. Proszowice and Dąbrowa Tarnowska – had no home-based care centres at all. Małopolskie ranked last in terms of the number of home hospice services provided to adult patients (the number of such patients per 100,000 population is 30% lower than the national average). In February 2020, the average wait time for admission to a home hospice or assignment to a hospice home-based care team was 26 days, with 332 queued patients.	Inadequate availability of home-based palliative and hospice care services.	Establish new home hospices, prioritising districts with limited availability of such hospices.

	10.3.	By 2050, the demand for palliative hospice care beds in the province will increase, reaching the figure of 18,800 beds (a 52% increase compared to 2020). Increased demand for home-based care is evident. Analyses of the number of inpatient beds for the Małopolskie Province forecast a slight decrease from 340 beds in 2020 to 328 beds in 2050. Projections for the number of home-based care beds show an increase in demand from 12,000 in 2020 to 18,400 in 2050,	According to demographic and epidemiological projections, the need for home-based palliative and hospice services will increase.	Increase the amount of home-based palliative and hospice care services provided.
	10.4.	A total of 18 entities provided inpatient palliative and hospice care services. Nine of the twenty-two districts did not provide this type of care to patients (i.e. the Bochnia, Chrzanów, Kraków, Myślenice, Proszowice, and Tarnów Districts, the city of Tarnów, as well as the Wadowice and Wieliczka Distrticts). According to data of NHF, Małopolskie Province Branch, inpatient services are contracted for specific groups of districts, not for individual districts. However, for inpatient services, the distance from the place of service to the patient's place residence is critical.	The availability of such services across the province varied by region.	Take steps to equalise access to inpatient hospices/inpatient palliative care centres between districts.

	10.5.	There were a total of 12 outpatient palliative care clinics per 100,000 population in 8 out of 22 districts; this is 13% below the national average, giving Małopolskie the 9th place nationwide. Accessibility to palliative medicine outpatient clinics was limited, with outpatient palliative medicine services available mainly in the western and southern parts of the province (there were no outpatient clinics in Małopolskie's north-eastern districts). According to remarks provided by NFZ, Małopolskie Province Branch, palliative care outpatient clinic services are contracted for the entire province and not individual districts. However, for this range of services, the distance from the place of service to the patient's place residence is critical.	There is limited availability of palliative medicine clinics in the province.	Increase and equalise the availability of palliative and hospice services provided in outpatient settings in all districts.
	10.6.	The rate of patients who took advantage of perinatal palliative care per 100,000 population was 0.32, with the national average being 1.23. The province had only one provider who rendered services in the above scope.	not applicable	Maintain at least the same level of access to perinatal palliative care services.

Polish Emergency Medical Services	10.7.	The number of palliative care medical practitioners per 100,000 population is 1.3, and the average age of medical practitioners is 52. The medical practitioner availability rate recommended by the National Consultant should be 3 per 100,000 of the population.	The medical staffing of palliative and hospice care centres is insufficient.	Increase the number of medical practitioners specialising in palliative care at palliative and hospice care centres (at least up to the reference value indicated by the national consultant on palliative care, i.e. 3.0 medical practitioners/100,000 population), as well as nurses, particularly ones specialising in nursing in palliative and hospice care.
	11.1.	The Małopolskie Province ranked 13th nationwide in terms of the number of emergency medical teams per 100,000 Of the population. In terms of the time to reach incidents in a city with more than 10,000 population, the travel time for 96.1% of calls was no more than 15 minutes; only for 3.9% of calls did it exceed 15 minutes, which is the 4th lowest percentage nationwide. In terms of the time to reach incidents outside a city with more than 10,000 population, the travel time for 94.4% of calls	not applicable	To improve the time of arrival at the accident scene, it is suggested to consider relocating the existing Emergency Rescue Teams or increasing their number according to the resources available for the provision of emergency medical services.

Medical staff		was no more than 20 minutes and exceeded that time limit only in the case of 5.7% of calls, which is the lowest percentage in all of Poland. The median ERT arrival time for the Małopolskie Province – in a city with a population over 10,000 – was defined at 6 minutes in the map of health needs. The median ERT arrival time for the Małopolskie Province – outside a city with a population over 10,000 – was defined at 11 minutes in the map of health needs.		
	12.1.	As of 2019, the number of nurses per 100,000 population in Małopolskie was above the national average, and as such, the province ranked 6th nationwide. It should be noted that 63% of all nurses were over the age of 45. Estimations indicate that by 2029, the number of nurses in the province will decrease by 25% (by 33% nationwide). The number of midwives per 100,000 population was 29% higher than for the national average (2nd place among all provinces). Should the number of midwives continue to decrease, then by 2029, compared to 2019, there may be 25% fewer midwives in the province. It is noteworthy that in the	Increasing the employment of nurses and midwives is a major challenge for the province.	Action must be taken to reduce the increasing shortage of nurses and midwives. It is necessary to increase the number of students by creating a programme to encourage secondary school graduates to enter this field and develop a system for supporting nurses and midwives in entering this profession.

	2016-2018 period, Małopolskie's total births per woman rate was increasing.		
12.2.	The number of medical practitioners per 100,000 population in Małopolskie was above the national average, giving the province the 6th spot nationwide (379 vs. 342 for Poland). The number of dentists per 100,000 population gave the Małopolskie Province the 7th spot nationwide (95 vs. 91 for Poland). The average age of a dentist was 45 years (with a national average of 46).	Increase employment of junior staff in the medical practitioner and dentist professions.	Take action to increase the attractiveness of work in the medical and dental professions and to encourage young people to work in these professions in the province. Increase the number of medical and dental student vacancies in the province. Create a system to encourage working in the province in certain fields, e.g. scholarships for students who commit to work in the province, housing assistance for young physicians.
12.3.	Forecasts indicate that by 2024, there will be more medical practitioners reaching retirement age than medical practitioners earning their speciality degrees in many fields. This is likely to be particularly evident	Not enough medical practitioners are choosing certain specialities.	Increase the number of speciality training places in the province.

		in such fields as internal medicine, paediatrics, general surgery, pulmonary diseases and otolaryngology. The largest differences between the total and the recommended number of specialists occurred in internal medicine, family medicine, psychiatry, occupational medicine and geriatrics. According to CMKP and Małopolska Provincial Office data, there were far fewer medical practitioners interested in obtaining specialities than there were places under both resident and non-resident programmes. In addition, for many fields of medicine, there remain unused training slots in each year's qualifying proceedings – even under resident programmes. This applies to such fields as pulmonary diseases, paediatric pulmonary diseases, infectious diseases, geriatrics, cardiology, palliative care, emergency medicine, neonatology, clinical oncology, pathomorphology, psychiatry, paediatric psychiatry, radiation oncology, medical rehabilitation, clinical toxicology. In addition, it is important to keep in mind the fields in which the total number of specialists was		Take action to contribute to increasing the attractiveness of work in medical fields, in which the problem of lack of new specialists is not caused by the insufficient number of training slots but rather the lack of persons willing to undertake such specialities, as well as striving to improve the use of specialists' time in light of staff shortages. Creating a system to encourage working in the province in certain fields, e.g. scholarships for students who commit to work in the province, housing assistance. Increase the employment of medical assistants to help medical practitioners in designated areas.

Medical equipment		below 20 and the percentage difference between the recommended number of specialist medical practitioners and the actual number was 50% or more. Such fields included audiology and phoniatrics, paediatric endocrinology and diabetology, clinical pharmacology, medical microbiology, paediatric nephrology, neuropathology, metabolic paediatrics and perinatology.		
	12.4.	The reason for the low number of specialists in certain fields is the low number of training slots. These include most specialities in medical and dental fields, as well as in such medical fields as plastic surgery, dermatology and venereology or ophthalmology.	Insufficient training slots result in a low number of specialists in some medical fields.	Work to improve access to speciality training in selected fields where insufficient training places result in a low number of specialists.
	13.1.	The average age of the accelerators was 8.2 years (6th place in terms of the oldest average age among all provinces). The number of accelerators per 100,000 population in the Małopolskie Province was 0.41 (14 units of equipment in absolute terms). Accelerators were available in all 3 cities with district rights, i.e. Kraków, Nowy Sącz and Tarnów. Patients from the Tatry District had to travel farthest to access this type of equipment, i.e. 81 km.	While the age of a significant portion of the medical equipment is adequate to allow efficient operation, the average usage of equipment shows that in some districts the installed infrastructure has a very high potential to perform more examinations than it currently does. The age distribution of the equipment indicates that within a few years, a significant portion	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

		In 2019, in Małopolskie, the average usage in districts ranged from 291 (Nowy Sącz) to 692 (Kraków). According to the recommendations, the replacement priority was low for 71.4% of accelerators and medium for 28.6% of them. Forecasts indicate that by 2025, all accelerators will be more than 10 years old, resulting in the need to replace 100% of them.	of the equipment will have aged, which will make it difficult to perform procedures efficiently.	
	13.2.	The mean age of the angiographs was 6.28 years, giving the province the 14th place nationwide in terms of the oldest average equipment age). The number of angiographs per 100,000 population in the Małopolskie Province was 0.82 (28 units of equipment in absolute terms). Angiographs are available in 3 districts (Chrzanów, Nowy Targ and Tatry) as well as the cities of Tarnów and Kraków. Patients from the Nowy Sącz District had to travel farthest to access this type of equipment, i.e. 70 km. In 2019, the average use among all districts ranged from 0 in the Chrzanów District to 807 in Tarnów. According to the recommendations, the replacement priority was low for 89.3% of angiographs and high for 10.7% of them. Forecasts indicate that by 2030, all angiographs will be more than 10 years old,	Some equipment is not optimally utilised. The equipment age distribution indicates that within a few years a significant portion of the base will have aged, making it difficult to perform procedures efficiently.	Efforts should be made to make the best use of the currently owned medical equipment. Replacement of equipment with new units is recommended in the coming years.

	which means that all of them will have to be replaced.		
13.3.	The average age of brachytherapy devices was 10.4 years, and as such, they are already marked for replacement – 9th place in terms of the oldest average equipment age in Poland. The number of brachytherapy devices per 100,000 population in the Małopolskie Province was 0.15 (5 units of equipment in absolute terms). The devices are located in two cities with district rights, i.e. Kraków and Tarnów. Patients from the Tatry District had to travel farthest to access this type of equipment, i.e. 109 km. In 2019, the average usage in districts of the Małopolskie Province varied from 168 for Kraków to 328 for Tarnów. According to the recommendations, replacement priority was low in the case of 80% of equipment. By 2025, 80% of Małopolskie Province's equipment will reach an age that significantly limits effective testing.	While the age of a significant portion of the medical equipment is adequate to allow efficient operation, the average usage of equipment shows that in most districts the installed infrastructure has a very high potential to perform more examinations than it currently does. Within a few years, a significant portion of the base will have aged, making it difficult to perform procedures efficiently.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.4.	The average gamma camera age was 8.2 to 13 years. place nationwide in terms of the oldest average equipment age).	The age of a significant portion of medical equipment is appropriate to enable efficient operation, whereas the average	Efforts should be made to make the best use of the currently owned medical equipment.

	The number of equipment per 100,000 population in the Małopolskie Province was 0.41 (14 units of equipment in absolute terms). Gamma cameras are available in 2 districts (Wadowice and Kraków), as well as two cities with district rights, i.e. Kraków and Tarnów. Patients from the Tatry District had to travel farthest to access this type of equipment, i.e. 94 km. In 2019, the average use in districts ranged from 0 in the Kraków district to 1,505 in the city of Kraków. According to the recommendations, the replacement priority is high for 14.3% of cameras. By 2025, 93% of gamma cameras in the Małopolskie Province will reach an age that significantly limits effective testing.	equipment use shows that the infrastructure in most counties has a very high potential to perform more tests than it currently does. The equipment age distribution indicates that within a few years a significant portion of the base will have aged, making it difficult to perform procedures efficiently.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.5.	The average age of the mammograms was 8.4 years, giving Małopolskie the 8th place nationwide in terms of the oldest average equipment age). The number of mammograms per 100,000 population in the Małopolskie Province was 1.23 (42 units of equipment in absolute terms). Mammography machines were available in 13 districts and 3 cities with district rights, with the largest number available in Kraków.	Almost half of the equipment needs to be replaced.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or

	In 2019, the average use in Małopolskie's districts ranged from 74 in the Wieliczka District to 1,699 in Kraków. In 2019, the replacement priority was high in the case of 42.9% of devices. According to the demand projections, more than half of the currently used mammography machines should be replaced by 2021.		relatively old and heavily used equipment).
13.6.	The current average PET scanner age is 6.7 years – 9th place nationwide in terms of the oldest average equipment age). The number of PETs per 100,000 population in the Małopolskie Province is 0.09 (3 units of equipment in absolute terms). The PETs are available in Kraków. The average number of procedures per year was 1,976. According to the recommendations, the replacement priority is low for 2 PETs in the province and medium for 1 PET. It is projected that 100% of the devices will reach an age requiring their replacement by 2025.	While there is no need to replace any of the PET devices as of today, this will change in the future.	It is recommended that the equipment be replaced no later than by 2025. Efforts should be made to make the best use of the currently owned medical equipment.
13.7.	The current average age of MRIs is 6.8 years – 11th place nationwide in terms of the oldest average equipment age). The number of MRIs per 100,000 of population in the Małopolskie Province is 1.23	Out of 33 units of equipment, replacement priority is high only in the case of 1 unit.	Efforts should be made to make the best use of the currently owned medical equipment.

		(33 units of equipment in absolute terms). The equipment is available in 9 districts and 3 cities with district rights; the largest number is located in the City of Kraków. The average use in the districts ranged from 800 in the Myślenice District to 3,598 in the Nowy Targ District. According to the recommendations, the replacement priority is low for 90.9% of Małopolskie's MRIs, medium for 6.1% of them and high for 1 MRI unit. By 2025, MRIs with low and medium replacement priority will reach an age requiring their replacement.		Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
	13.8.	The current average age of X-ray machines is 9.3 years, giving Małopolskie the 16th place in terms of the oldest average equipment age nationwide. The number of X-ray machines per 100,000 population in the Małopolskie Province is 18.09 (617 units of equipment in absolute terms). The equipment is available in all of Małopolskie's 19 districts and 3 cities with district rights; the largest number is located in the City of Kraków. The average use across the districts ranged from 453 in the Krakow District to 2,923 in the Tatry District.	While the age of a significant portion of the medical equipment is adequate to allow efficient operation, the average usage of equipment shows that in most districts the installed infrastructure has a very high potential to perform more examinations than it currently does. The equipment age distribution indicates that within a few years a significant portion of the base will have aged, making it difficult to perform procedures efficiently.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

	According to the recommendations, the replacement priority was low for 77% of the province's x-ray machines and high for 19.3% of them. By 2025, 73% of the X-ray machines in the province will exceed the age of 10 years and will be counted as part of the base which requires replacement.		
13.9.	The current average age of X-ray machines is 7.8 years, giving the province 4th place in terms of the oldest average equipment age nationwide. The number of CT scanners per 100,000 population in the Małopolskie Province is 1.82 (62 units of equipment in absolute terms). The equipment is available in 17 of Małopolskie's districts and 3 cities with district rights; the largest number is located in the City of Kraków. In 2019, the average use of CT scanners in Małopolska's districts ranged from 1,564 in the Kraków District to 28,956 in the Oświęcim District. Based on the recommendations, the replacement priority is low for 71% of Małopolskie Province's CT scanners and high for 16% of them. By 2025, 83.87% of the X-ray machines in the province will exceed the age of 10 years and will be counted as part of the base which requires replacement.	While the age of a significant portion of the medical equipment is adequate to allow efficient operation, the average usage of equipment shows that in most districts the installed infrastructure has a very high potential to perform more examinations than it currently does. The equipment age distribution indicates that within a few years a significant portion of the base will have aged, making it difficult to perform procedures efficiently.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

	13.10.	The current average age of ultrasound equipment is 9.4 years – 14th place in terms of the oldest average equipment age nationwide. The number of such machines per 100,000 population was 35.39. The equipment is available in all of Małopolskie's 19 districts and 3 cities with district rights. The average use across districts ranges from 288 in the Wieliczka District to 1,340 in the Bochnia District. Based on the recommendations, the replacement priority is low for 57.4% of Małopolskie Province's ultrasound machines and high for 41.5% of them. By 2025, 88.48% of the ultrasound machines in the province will be over 10 years old and it will be necessary to purchase new equipment, while by 2028, all currently owned machines will need to be replaced.	While the age of a significant portion of the medical equipment is adequate to allow efficient operation, the average usage of equipment shows that in most districts the installed infrastructure has a very high potential to perform more examinations than it currently does. The equipment age distribution indicates that within a few years a significant portion of the base will have aged, making it difficult to perform procedures efficiently.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

Appendix No. 7

Challenges for the health care system and recommended lines of action in the Mazowieckie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	Mazowieckie is Poland's largest and most populated province. In 2019, 64.5% of the total population were urban residents, with more than half of them residing in the capital city of Warsaw. Forecasts indicate that by 2050, the population of the province will decrease from today's 5,500,000 to 5,300,000. However, the decline will occur in the younger age groups, whereas the population of people over 60 will increase significantly. years of age.	not applicable	not applicable
	1.2.	In the Mazowieckie Province, the structure of population by gender has been for years characterised by a numerical predominance of women. Their share in the total population exceeds 52%. In 2019, the feminisation rate – which indicates the number of women per 100 men – was 109. It was also higher in urban (114) than in rural areas (101).	not applicable	not applicable

	1.3.	The population of the province is ageing slightly each year. The state of population age demographic is expressed by the so-called population median age (years). Between 2000 and 2019, the median value in the province increased from 36.8 to 40.9 years of age. The urban population is older than the rural population (41.5 vs. 39.5 years of age), with a larger increase in the median age in rural areas.	not applicable	not applicable
	1.4.	A decrease in the number of births is observed in the Mazowieckie Province. 2019 was yet another year that saw a decline in births. In Mazowieckie, the rate of live births per 1,000 inhabitants was higher in urban areas than in rural areas, and this situation has been constant since 2014. Birth rates were higher than the national average.	not applicable	not applicable
	1.5.	In the Mazowieckie Province (as in the rest of Poland), the level of population reproduction, i.e. an average of 2 children per 1 woman aged 15-49 (the optimal number of births per woman rate is 2.10 to 2.15), does not guarantee a simple generational replacement. Admittedly, this ratio has increased slightly since 2015, but its value (1.57 in 2019) is far from optimal. The number of women of childbearing age (15-49) is projected to decline in the coming years.	not applicable	not applicable

	Both these changes and the fact that women are choosing to become mothers at ever later ages will cause a permanent decline in births.		
1.6.	The Mazowieckie Province is characterised by one of the lowest infant mortality rates in Poland. The rate calculated per 1,000 live births was 3.17. Over the past few years, the infant mortality rate in rural areas has generally been higher than in urban areas, but here, too, the rate has taken a value below 3.5 per mille.	not applicable	not applicable
1.7.	The number of deaths in the Mazowieckie Province exceeded 50,000 annually. In 2019, there were just under 11 deaths for every 1,000 population. The intensity ratio was slightly lower in urban than in rural areas. Approximately 51% of those who died were men; the median age of all those who passed away was 78 years (72 years for men and 83 years for women). The main causes of death in Mazowieckie are cardiovascular diseases and cancer, just like in all of Poland. They account for ca. 60% of all deaths in the province.	not applicable	not applicable
1.8.	Life expectancy for women is several years longer than for men. Comparing	not applicable	not applicable

Epidemiology and epidemiological forecasting		values by place of residence, it can be seen that the life expectancy of men in rural areas is shorter than in urban areas, but this difference is decreasing every year.		
	2.1.	Ischaemic heart disease has been the biggest health problem in the province for years. In 2019, the DALY indicator, which determines the number of healthy life years lost and the number of deaths due to this particular health problem, has reached the highest values ever recorded. Based on estimates of prevalence and death rates, it is believed that by 2028 will remain unchanged until 2028.	not applicable	not applicable
	2.2.	The second most severe health problem in terms of the DALY value and the mortality rate was stroke. In 2019, the number of deaths caused by this health problem was more than double the number of deaths caused by ischemic heart disease (IHD). However, on the other hand, strokes resulted in almost twice as many years lived with a disability as IHD. Forecasts indicate that by 2028, the prevalence and incidence rates of stroke will increase,	not applicable	not applicable

	whereas the number of deaths will remain at a similar level.		
2.3.	Cancer is also a significant group of health problems in the province. Among these, malignant neoplasms of the trachea, bronchus, and lung were responsible for the highest DALYs and the highest number of deaths, ranking third for both indicators. Malignant colorectal as well as breast neoplasms were responsible for a significant number of deaths as well. The third place ranking was primarily influenced by mortality among women, while for male residents, the third most common result concerned prostate cancer. Forecasts indicate that by 2028, the prevalence, incidence and death rates for cancer will see significant increases, with the increase in prevalence being the most significant in the province at the disease group level. Among cancers, the pancreatic malignant neoplasm is projected to have the largest increase in deaths, amounting to 15.71%.	not applicable	not applicable
2.4.	Among the five health problems characterised by the highest DALYs in the province were also	not applicable	not applicable

		lower back pain and diabetes. For both health problems, the values of the index in the province were characterised by lower values than the national average, and they were more influenced by the YLD component, determining the number of years lived with a disability. Both problems also showed an increase in DALYs over the ten years (2009-2019); however, the increase was more rapid for diabetes. Forecasts concerning the latter are alarming as well. Based on them, by 2028, diabetes will rank second in terms of increasing prevalence rates, with an increase as high as 23.33%.		
	2.5.	The number of deaths from Alzheimer's disease and other dementing diseases has increased dramatically from 1999 to 2019. Forecasts indicate that by 2028, deaths from Alzheimer's disease and other dementing diseases will increase significantly by 21.71% compared to 2019.	not applicable	not applicable
	2.6.	The observation regarding the number of deaths caused by lower respiratory tract infections makes Mazowieckie stand out among other provinces. Only in this	not applicable	not applicable

Risk factors and prevention		province was the mortality rate due to such infections so high as to cause them to rank third among health issues causing the highest number of deaths.		
	3.1.	The risk factors contributing the most to the DALYs are consistent with the nationwide risk factors, and their values are slightly lower than those for Poland. These include: tobacco (a share lower by about 6% than nationally), high blood pressure (about 1% lower), high BMI (about 0.3% lower). Just like nationally, deaths among both sexes in Mazowieckie are most influenced by high blood pressure, tobacco, and nutritional risks. High blood pressure exceeds the values for Poland by about 1%. The value for tobacco is lower by about 5%, and for dietary risks by about 7%. Tobacco's contribution to DALYs has declined since 1990 by about 32%, and since 2010 by about 4%. The downward trend is greater than the national trend	The risk factors having the greatest impact on DALYs and deaths in the province are lifestyle-related. Despite the favourable trends for tobacco involvement in DALYs, it is still one of the most burdensome risk factors.	Equalise and increase access to effective prevention programmes in the areas of risk factors that most burden the region's population, i.e. smoking, high blood pressure, high BMI and other lifestyle factors.
	3.2.	Mazowieckie saw the highest number of prevention programmes nationwide – 714 out of all 3,764 carried out in Poland. The highest number of implemented programmes concerned such areas as resolving alcohol addiction problems – 184, smoking – 92, healthy lifestyle – 65.	Although a large number of prevention programmes have been conducted in the region, e.g. ones focused on smoking prevention, healthy lifestyles and alcohol addiction, these factors still	Intensification of health promotion and health education activities for the population. Activating providers, including PHC providers, to increase engagement

	In terms of smoking, an average of approx. 10,000 people were a part of prevention programme. This was the third highest value in the country. In 13 districts, no activities were conducted in this area.	have a significant impact on healthy life expectancy and deaths.	in the implementation of health promotion activities.
3.3.	The number of women screened for preventive cytology in the public health system was only 11.71% (46,916 women) of the population intended for screenings. This is the lowest result across all the provinces (the value for Poland was 16.22%). The lowest population coverage rate, not exceeding 10%, was observed in the following districts: Białobrzegi, Ciechanów, Grójec, Maków Mazowiecki, Nowy Dwór Mazowiecki, Ostrów Wielkopolski, Piaseczno, Pruszków, Przysucha, Pułtusk, Szydłowiec, Warszawa Zachodnia, Zwoleń and the cities: Radom and the Capital City of Warsaw.	The province has a low level of enrolment in cervical screening in the province. The problem is particularly prevalent in some districts.	Taking measures to improve reporting on cytology preventive examinations and intensify activities promoting preventive examinations with particular emphasis on districts with the lowest enrolment rate.
3.4.	The number of women screened in preventive mammography examinations in the public health care system was 53% of the population to be screened, which is below the average value for Poland (63%) and ranks 14th across all provinces. Within the framework of the breast cancer prevention program - during the primary stage, 123,223 women participated in the examinations on the territory of the Mazowieckie Province.	The province has a higher incidence of malignant breast neoplasm than the national average. Still, the number of women screened for this condition is below the national average. In order to assess the actual population coverage rate of the screening tests available in the programs, there should be	Taking measures to improve reporting of mammography preventive examinations and intensify activities promoting preventive examinations with particular emphasis on

Primary health care		which is 37.09% of the population eligible for the examination. The average value for Poland in the analysed period was 39.01%. The lowest population coverage rate of less than 30% was recorded in the following districts: Przasnysz, Przysucha and Żuromin. Breast malignant neoplasm incidence per 100,000 women is above the national average (97.9 vs. 93.5 for Poland).	solutions developed for inclusion in statistics, surveys conducted in the private health care sector.	taking into account the districts with the lowest reporting.
	4.1.	In the Mazowieckie Province Branch of the NHF, the share of the population remaining on active PHC lists does not differ significantly from the average value for Poland, which is about 90% of the resident population and amounts to approx. 92.3% of its total population. Compared to 2018-2020, there is a small, about 1% annual increase in the number of people on the PHC lists. By comparison, in January 2018, the lists of primary health medical practitioners included approx. 4,910,000 people, in 2019, approx. 4,970,000 people, in 2020, approx. 5,010,000 people.	Maintaining the current potential of contracts and further development of PHC to enable the largest possible population of recipients to be covered.	Running PHC-related promotional activities and work on the quality of PHC offer for patients
	4.2.	The utilisation of PHC services by persons under care, seasonality of illnesses and characteristics of reasons for providing medical consultations coincide with the data for Poland.	Strengthening the role and increasing the activity of the primary care nurse and midwife in performing the tasks of the Primary Health Care Clinic. Implementing proactive patient care in Primary Health Care Clinics.	Increasing the number of nurses and midwives with completed specialist training in "Prescribing drugs and writing prescriptions for nurses and midwives".

		The largest number of consultations are reported with a principal diagnosis of repeat prescribing. This is followed by hypertension, acute respiratory, nasopharyngeal infections, advice related to preventive age screening of children and adolescents, and lower respiratory tract infections.		Improving healthy patients care, increasing preventive measures, screening tests, care for patients with genetic predisposition, from risk groups. Developing a form of comprehensive coordinated health care in PHC, i. a., through the implementation of standards developed under the Pilot Program PHC PLUS.
	4.3.	Out of all the visits to PHC, only 4.78% were visits to night and holiday health care in the Mazowieckie Province. This rate is slightly lower than the national average of 4.91%.	Based on the analysis of data on patients in the ED and the study of groups of diagnoses with which patients come to the ED, it can be concluded that the NHHC is not an adequately used form of providing care.	Strengthening the role of NHHC in order to improve patient attendance and relieve the ED
	4.4.	In the Mazowieckie Province, primary health care services are fully secured.	Maintaining the level of security of access to PHC services.	Promoting PHC, with particular emphasis on

Outpatient specialist care		PHC entities can be found in almost all communes in the province. The only exception are 5 units bordering the cities of Ciechanów, Łaskarzew, Mińsk Mazowiecki, Płońsk and Przasnysz. The above does not have an adverse effect on accessibility to the services.		areas where deficits occur.
	4.5.	In PHC contracts implemented in the area of the Mazowieckie Province as of the end of 2019, when it comes to the medical personnel, the following was listed: primary care medical practitioners - 4,900; primary care nurses - 3,500; primary care midwives - 900; school nurses/hygienists - 1,340 people. people. As at the end of 2019, the number of medical practitioners in the PHC contracts who did not accept the declaration of choice amounted to approx. 29.7%. The number of nurses providing services in PHC contracts, who do not create their own lists of beneficiaries, oscillated at the level of approx. 16%.	Considering the increasing number of medical practitioners and nurses in contracts, not creating lists of beneficiaries, which may be prompted by staffing problems and low interest in permanent commitment to primary health care	Taking measures to reverse the trend
	5.1.	With regard to obstetric and gynaecological services, it was found that women residing in rural areas accounted for 30% of all patients covered by obstetric and gynaecological outpatient clinics. At the same time, more than 80% of them received benefits in urban communities, i.e., outside their area of residence.	Ensuring equitable, adequate access to gynaecological services across the province.	Signing contracts with additional clinics to improve access to services in rural areas. Ultimately, the number of obstetrics and gynaecology outpatient clinics should increase by 179

			and provide care to patients in rural communities.
5.2.	The Mazowieckie Province has the largest number of patients admitted to outpatient clinics, but at the same time has one of the lowest values of outpatient clinics per 1 resident (1.96) and the lowest rate of patients per 1 resident (0.42) in the country. There is a decrease in the number of consultations per 1 resident from 2015 to 2019. There has been a sequential increase in the number of consultations related to cancer treatment between 2015 and 2019. The largest group of people using services in connection with cancer treatment are women in age groups between 40 and 64 and over 65. The largest number of consultations in connection with this health problem were given in the following clinics: oncology, general surgery, dermatology, oncological surgery, urology, obstetrics and gynaecology and computer tomography laboratory.	Improved access to services in the areas of oncology and oncologic surgery to provide care for patients who require surgical intervention without hospitalisation by signing contracts with additional outpatient clinics in locations that are known as "blank spots."	Ultimately, the number of oncological outpatient clinics should increase by 7, providing care for patients from the districts of Białobrzegi, Lipsko, Ostrołęka, Płock, Siedlce, Gostynin and Nowy Dwór Mazowiecki. As for oncological surgery outpatient clinics, their number should increase by 26, providing care for patients from the following districts: Białobrzegi, Gostyń, Grodzisk Mazowiecki, Grojec, Kozienice, Lipsko, Łosice, Nowy Dwór, Ostrołęka, Ostrów, Płock, Płońsk, Pruszków, Przasnysz, Przysucha, Siedlce, Sierpc, Sochaczew, Sokołów, Szydłowiec, Warsaw West, Węgrów, Zwoleń, Żuromin, Żyrardów.

The Mazowieckie Province has the highest number of services in endoscopy laboratories in Poland, whereby, the Mazowieckie Province has the lowest rate of such examinations per 1,000 inhabitants (15.41) and the outpatient clinics per 1,000 Residents (0.15). Despite the fact that there are no limits, and it has the the Mazowieckie Province has one of the longest times and lists for the examinations magnetic resonance imaging and computed tomography. This involves a noticeable increase in oncology services, as well as in the importance of diagnostic imaging in the treatment process of a patient in an outpatient speciality care.	Successive actions aimed at increasing availability by approx. 25% endoscopic services, magnetic resonance imaging and under outpatient specialist care (OSC), in order to minimise the number of short hospitalisations, carried out in order to perform the examination in question. Providing rapid diagnostics to patients diagnosed with cancer.	It is recommended to secure accessibility to: - endoscopy labs in the following districts: Białobrzegi, Lipsko, Ostrołęka, Płock Radom, Siedlce, Szydłowiec, Zwoleń, - Magnetic Resonance Imaging lab (MRI): Białobrzegi, Gostynin, Kozienice, Lipsko, Łosice, Maków, Mińsk, Nowy Dwór, Ostrołęka, Płock, Przasnysz, Przysucha, Pułtusk, Radom, Siedlce, Sierpc, Sochaczew, Sokołów, Szydłowiec, Warsaw West, Węgrów, Wołomin, Wyszków, Zwoleń, Żuromin, Żyrardów, - Computed Tomography (CT) lab - Białobrzegi, Lipsk,

Hospital treatment				Ostrołęka, Płock, Radom, Siedlce, Sierpc, Szydłowiec, Warsaw West, Zwoleń.
	6.1.	There is a high rate of 24-hour hospitalisations (same-day admission and discharge) not resulting in death. The most common type of hospitalisation is at third-level hospitals and national hospitals. The percentage of 1-day hospitalisations (not resulting in death) was 18.4% . The largest number of such hospitalisations was done: - in non-invasive treatment areas: clinical immunology - hospitalisation 85.5%, dermatology and venereology - hospitalisation, 41.5%, infectious diseases - hospitalisation 33.5%, - in surgical areas: ophthalmology - hospitalisation (except cataract surgery) 64.5%, gynaecology oncology 52.5%, obstetrics and gynaecology - hospitalisation (gynaecology only) 51.0%, maxillofacial surgery - hospitalisation 39.5% urology - hospitalisation 27.6%.	Minimising the number of short hospitalisations provided for diagnostic and surgical services by approx. 10%.	Increasing the accessibility to this type of service within the OSC.

	6.2.	The population of the province is ageing slightly each year. The state of population age demographic is expressed by the so-called population median age (years). Between 2000 and 2019, the median value in the province increased from 36.8 to 40.9 years of age. The urban population is older than the rural population (41.5 vs. 39.5 years of age), with a larger increase in the median age in rural areas. The progressing ageing of the population is evidenced by the gradual increase in the share of older age groups and the decrease in the share of younger age groups. Over the past 9 years, the number of people who are 65 and older has increased by nearly 30% in the province, with relatively greater growth in urban areas than in rural areas (35% and 19%, respectively). The increase in the share of people over 65 years of age was recorded in all districts of the Mazowieckie Province. It is important to note at this point that the majority of the group in question are women.	Developing long-term and hospice care system	Allocating approx. 5% of the current bed base, especially in district hospitals for long-term and hospice care
	6.3.	The bed occupancy rate in the Mazowieckie Province, in 2019 was 88.24% (ranked 4th nationally), and 82.81% for Poland. Excluding EDs, average bed occupancy rates above 100% were recorded for 7 types of wards. The highest occupancy rate was recorded for the following wards: neurological (including stroke) - 142.24%, audiological and phoniatric, including	Optimisation of bed utilisation in inpatient wards	Optimization of bed utilisation in inpatient wards to up to 85%

Psychiatric care and addiction treatment		audiology and phoniatrics for children - 128.91%, haematology (including blood cancers and bone marrow transplantation) - 112.12%. Occupancy rates below 50% were recorded for 10 types of wards. The lowest values were found in the following wards: transplantology - 37.43%, clinical immunology - 35.45% (one of three provinces with such ward), gynaecology oncology - 28.74%. In 6 districts, the average occupancy rate exceeded 100%, with the highest rates in the districts of Sochaczew (133.5%), Nowy Dwór (130.8%), and Radom (120%).		
	7.1.	The percentage of people using an inpatient form of care in relation to the average value for Poland (Mazowieckie Province 18.82% to 18.04% in Poland) indicates that the actions aimed at lowering this indicator in the Mazowieckie Province are necessary so that it at least matches the average for Poland.	Reducing the number of hospitalisations, as well as the bed occupancy rate in inpatient wards, and thus rationalise the number of inpatient care beds by converting them to day care units or, in line with demographic projections, to long-term psychiatric care centres (10% bed reduction).	Increasing accessibility to day units and community treatment teams. This can only be solved by strengthening outpatient care and community treatment segment.
	7.2.	Access to addiction treatment outpatient clinic services (general) and substance abuse treatment outpatient clinics and day care wards is accumulated in large cities,	The number of outpatient and day care centres for addiction treatment in relation to the demand is inadequate.	Providing access to outpatient substance abuse treatment clinics and day units for patients in smaller

	mainly in Warsaw, while at the same time the patients in smaller administrative centres of the province clearly need them as well.		administrative centres of the province.
7.3.	The number of hostels and re-adaptive facilities for people during or after treatment in relation to the demand for such places is insufficient.	Developing a network of hostels and re-adaptive facilities for people in or out of treatment.	Increasing the number of hostels and re-adaptive housing.
7.4.	In 2019, in the province, adult psychiatric/psychological outpatient clinics were available in every district. Hospital psychiatric wards were located in 12 districts. Day wards were located in 7 districts; the southern and northeastern districts of the province did not have them. Community treatment teams were located in seven districts, mainly in Warsaw and its adjacent districts; there were none in the northern and eastern parts of the province.	Limited access to community treatment teams in the province.	Ensuring equitable, adequate access to outpatient services, community-based treatment and day wards close to the patient's place of residence (ensuring comprehensiveness of these services at the district level), which will increase the number of people using these forms of care, thus reducing the number of inpatient services. It is advisable to gradually increase the number of community treatment centres, especially in non-urban areas. Building Day Care Centres primarily in the southern

			and the eastern part of the province.
7.5.	A high rate of patients residing and treated in the same area was seen for Radom (93.5%), Siedlce (92.1), or the Capital City of Warsaw (89.8%), with a simultaneous large diversity in this indicator compared to the districts of the province (from 4.96%). For 11 of the 42 districts, the rate was below 50%.	Low access to adult psychiatric care services in some districts of the province.	Providing adults with access to services within their area of residence.
7.6.	The number of psychiatrists per 100,000 people of the province is the highest in Poland (17.8; the national average - 10.2), but it is slightly lower than the recommended value (20.0).	Low number of psychiatrists.	Increase the number of psychiatrists to the recommended value.
7.7.	The number of patients under the age of 18 per 100,000 minors ranked 4th across all provinces in Poland (2307). The highest number of patients per 100,000 people was recorded in the districts of Żyrardow (4432), Płońsk (3703) and Otwock (3220). The most common diagnoses were holistic developmental disorders (7,450), other mental disorders in children and adolescents (7,280), and neurotic disorders related to stress and somatic forms (4,790).	Implementing and expand psychiatric care for children and adolescents, according to changing needs.	Ensuring access to appropriate care for infants and preschool children. For holistic developmental disorders, which are the most common diagnosis among children, a correct diagnosis should be made by 2 years of age. Similarly, to prevent a number of mental disorders,

			including severe personality disorders, diagnosis and therapy for bonding and attachment disorders should be conducted even in the first months of a child's life.
7.8.	Child psychiatric/psychological outpatient clinics were available in some districts of the province. Psychiatric hospital wards for children and adolescents could be found in Warsaw, two adjacent districts (districts of Piaseczno and Otwock) and the Garwolin district, which means that there were none in the northern part of the province, nor in the southern districts. There were no paediatric community treatment teams in the province, and day care wards were located in 7 districts, with an inadequate number of them, primarily in the northern part of the province. It is worth noting that the problem of poor provision of psychiatric care in the north-eastern part of the province exceeds the borders of the Mazowieckie Province, because in the Podlasie Province there is no inpatient ward for children and adolescents, and access to outpatient and day care is very limited.	1. Lack of psychiatric/psychological counselling for children in the northeastern part of the province. 2. Lack of community treatment teams for children. 3. Low number of day wards.	1. Increasing access to psychiatric/psychological counselling centres for children (the target is to increase the number of counselling centres in the districts constituting the so called "blank spots"). 2. Establishing community treatment teams. 3. Creating day wards in the northern part of the province.

Medical rehabilitation	7.9.	The percentage of patients residing and treated in the same district among children and adolescents varied, with the highest values for Warsaw (91%), the Płońsk district (86.7%) and Płock (85.1%). For most of the districts in the province, it had low values (for 30 of the 42 districts below 20%, including 0% for a large proportion of them). The province had the highest absolute surplus value - the number of patients treated in a given area minus the number of patients residing in the area - 964; for Warsaw, the value of this indicator was 5,532. The relative surplus value was 1.04 for the province, and it was the 6th value across all the provinces.	No access, or very low access to services dedicated to children and adolescents.	Ensuring that children and youth have access to services within their area of residence.
	7.10.	The number of psychiatrists for children and adolescents per 100,000 people in the province is the highest in Poland.	The number of psychiatrists in the province is consistent with the recommended amount (province value: 2.0; recommended value: 2.0).	Distributing them evenly throughout the province.
	8.1.	The ratio of outpatient rehabilitation centres per 100,000 population in 2019 was 5 (ranked 14th nationally, -27% in relation to the average for Poland). Outpatient rehabilitation centres were available in all districts. High concentration of centres	Demand for services exceeds supply - wait time for services is long (average wait time for physiotherapy	Reducing wait times for treatment services through additional contracts.

	can be seen in Warsaw. Compared to 2016, the province gained 14 new providers. Outpatient rehabilitation was used by 88.2% of all patients who received medical rehabilitation services. The number of patients per 100,000 people (by place of service provision) was 8,629 (ranked 4th nationally, above the national average by 11%).	the provision of outpatient services in February 2020 was 156 days).	
8.2.	The ratio of outpatient rehabilitation centres per 100,000 people was 1.05 (ranking 9th nationally, -9% in relation to the average for Poland). Inpatient rehabilitation centres were not available in 13 districts. A high concentration of such centres can be seen in Warsaw. Compared to 2016, the province gained 6 new providers. Inpatient rehabilitation was used by 4.6% of all patients who received medical rehabilitation services. The number of patients per 100,000 people (by place of service provision) was 450 (the last place in Poland, below the national average by 23%).	Waiting times for services are high (average waiting time for inpatient general rehabilitation for stable cases in February 2020 was 825 days, and 163 days if the case was the urgent).	Reducing wait times for services through additional contracts, especially in districts where such services are not available.
8.3.	Number of beds per 100,000 people in inpatient rehabilitation was 81 (below the national average by 14%).	Service availability: - General: 299 patients per 100,000 people, ranking 14th in Poland, below average by 17%,	Strive to achieve indicators equal to at least national average for Poland.

			- Cardiology: 50 patients per 100,000 people, ranking last in Poland, below the average by 50%, - Neurology: 99 patients per 100,000 people, ranking 9th in Poland, below average by 5%.	
	8.4.	From 2016 to 2019, the rate of person-days per 100,000. residents in inpatient pulmonary rehabilitation decreased (from 133 in 2016, to 124 in 2019). The primary beneficiaries of these types of services in 2019 were patients with chronic obstructive pulmonary disease (46.5%), asthma (32.4%), and other chronic respiratory diseases (8.4%). The Mazowieckie Province is one of the two provinces with the lowest level of access to pulmonary rehabilitation (indicator of the number of centres per 100,000 residents is 0.04 and is 50% lower than the average indicator for Poland). Currently, the services in question are provided by 2 medical entities. In February 2020, the average treatment waiting time for stable cases was 140 days.	Increasing access to inpatient pulmonary rehabilitation services to an average indicator of patients per 100,000 people for Poland (30).	Concluding additional contracts, especially in the group of districts of the Ostrołęka Delegation, Ciechanów, Radom, Warsaw and the area around Warsaw.

	8.5.	For inpatient cardiac rehabilitation, a rate of person-days per 100,000 people was 1,238, which means that the Mazowieckie Province ranks 15th across all 16 province (the average for Poland was 2,255 person-days per 100,000 people). Currently, services in this area are provided by 12 health care providers, and the average number of hospitalisation days is 20	Increasing the number of inpatient cardiac rehabilitation centres.	Concluding additional contracts, especially in the areas not yet covered (group of districts of Ostrołęka Delegation) and areas with accessibility index (number of pts/10,000 people) below the average rate for the whole Mazowieckie Province (the area of the Siedlce Delegation and the districts around Warsaw).
	8.6.	The ratio of home rehabilitation centres per 100,000 people was 1.42 (ranking 6th nationally, +3% in relation to the average for Poland). Home rehabilitation centres were not available in 2 districts. A high concentration of such centres can be seen in Warsaw and in Radom. Compared to 2016, the province gained 67 new providers.	It is advisable to further develop the base of home rehabilitation teams, in progress since 2017. Demand for services exceeds supply - waiting times are long (average wait time for home physiotherapy for stable cases in February 2020 was 46 days).	Reducing the wait time and increasing service accessibility, especially in those districts where this service is not yet available (districts of Ostrołęka, Żuromin).
	8.7.	The ratio of outpatient rehabilitation centres per 100,000 population was 3.08 (ranking 2nd nationally, +41% in relation to the average for Poland). Day rehabilitation centres were not available in 8 districts.	Waiting time for the provision of services is long (average waiting time to a day rehabilitation facility/centre	Reducing wait times and increasing service accessibility.

Long-term care		A high concentration of such centres can be seen in Warsaw. Compared to 2016, the province gained 21 new providers.	the provision of services for stable cases in February 2020 was 294 days).	
	9.1.	Number of long-term care centres per 100,000 population was 4.81 - which is 8% below the national figure. The number of long-term care centres per 100,000 inhabitants was 3.95 (6% less than in Poland), for long-term inpatient care centres it was 0.98 (19% less than in Poland). The province has the highest migration rate in Poland (379 in 2019), which means that a relatively high percentage of residents from other provinces receive long-term care in the Mazowieckie Province.	Enhancing long-term care to at least the national averages.	It is necessary to adjust the availability of long-term care in all the offered ranges
	9.2.	The rate of long-term care patients per 100,000 population was lower than the national average by 16% (240 - Mazowieckie Province vs. 286 - Poland), there were 135 patients per 100,000 people in home-based care (-24% relative to the national average), and in inpatient care 109 (+3% relative to the average).	Reducing the proportion of patients under inpatient care in the total number of patients in long-term care (in 2019 in the Mazowieckie Province- 44.2%), at least to the size of the national rate (38.5%) by increasing the number of contracted home-based care services.	Increasing the number of long-term home-based care centres.

Palliative and hospice care	9.3.	As for inpatient care, there are 8 districts in the province without contracted nursing facilities; residents of these districts receive home-based care or are placed in inpatient care in neighbouring districts.	Improving the accessibility of inpatient long-term care in the province through the implementation of mechanisms (legal, financial) stimulating the operation of nursing homes, especially in areas outside cities, lacking such services, e.g. in the districts of Grojec, Grodzisk, Sochaczew, Ostrów Wielkopolski, Ostrołęka and Wyszków, Węgrów.	Establishing additional inpatient long-term care centres, especially in the above-mentioned districts.
	10.1.	The rate of long-term care patients per 100,000 residents in the province is slightly below the national average (223.89 - the Mazowsze Province, 251.26 - Poland). Service type breakdown indicated that 164.31 patients per 100,000 population received home-based care services population (ranked 7th nationally, +1% compared to the average for Poland), for inpatient care 71.19 patients/100,000. population (14th in the country, -25% in relation to the average for Poland), and in outpatient conditions 9.02 patients/100,000 population (last place in the country, -76% in relation to the Polish average).	Improving palliative and hospice care to at least average values for Poland.	It is necessary to adjust the availability of palliative and hospice care in all the offered ranges.

	10.2.	In terms of the number of palliative and hospice care centres per 100,000 of the population (including all types of care), the province ranks 8th nationally with a ratio of 1.70 (-2% compared to the average for Poland which is the ratio of 1.73/100,000 population).	Introducing legal and financial mechanisms to motivate entities to run inpatient hospices/inpatient palliative care wards, especially in districts where there is not enough of them.	Increasing the number of contracted services in districts with the lowest coverage rate.
	10.3.	The province shows a lower ratio of beds per 1,000,000 inhabitants than the national average. The average index for Poland is 100.1, while for the province it is 74.7.	Increasing the bed base at least to the rate of the national average, the target amount is 100 beds per 1,000,000 inhabitants.	In order to achieve the desired indicator, an is necessary to prepare approx. 124 additional hospice beds in the province.
	10.4.	Inpatient hospices and inpatient palliative care wards are mainly located in the centre and northwest of the province. Inhabitants of other districts receive home-based forms of palliative and hospice care or stay in inpatient hospices further away from their place of residence.	Improving access to services provided by inpatient hospices and inpatient palliative care wards in the so-called "blank spots".	Establishing inpatient hospices and palliative care wards in the southern and eastern parts of the province.
	10.5.	The province shows the lowest rate of palliative medicine outpatient clinics per 100,000 of the population.	Improving access to services provided in palliative medicine clinics.	Establishing a palliative medicine clinic according to the needs.

Emergency Medical Services	10.6.	The number of palliative care medical practitioners per 100,000 population is 1.3, and the average age of medical practitioners is 52. The medical practitioner availability rate should be 3 per 100 population. There is also an insufficient number of nurses, particularly ones specialising in palliative/hospice care nursing.	Medical staffing in palliative and hospice care centres is inadequate.	Increasing the number of medical practitioners in palliative and hospice care, especially the ones specialising in palliative care (at least to the reference value 7, i.e. 3.0 medical practitioners/100,000 population), as well as nurses, particularly ones specialising in nursing in palliative and hospice care.
	11.1.	The ratio of the number of emergency rescue teams (hereinafter: ERTs) per 100,000 population is 3,862.	The actual challenge is to strengthen the fleet and increase the number of units of the Polish Emergency Medical Services (hereinafter EMS) providing health services in pre-hospital settings - to the average rate for Poland.	Adjusting the ERT to the constantly changing state (size) and structure of the province population (ageing population, migration of people from rural to urban agglomerations)
	11.2.	ERT arrival times in cities with more than 10,000 residents: • 86.8% of calls had an arrival time of up to 15 minutes, and • 13.2% of calls over 15 minutes	The need to strive to improve ERT response times, as outlined in the Act of 8 September 2006. on National Emergency Medical Service	Increasing the number of Emergency Rescue Teams (ERTs), allocation with possible dispersal of teams - especially adjusted to the specifics of the province, potential

				risks, health needs of the community. Moreover, it is a good idea to consider the possibility of improving the EMS System by launching motorcycle teams, after introducing appropriate legal regulations. It is recommended in particular to introduce motorcycle teams in large cities in the Mazowieckie Province, i.e. Warsaw, Radom, Płock, Ostrołęka, Siedlce, Ciechanów.
	11.3.	Time to reach incidents outside a city with more than 10,000 residents: • 78.8% of calls had an arrival time of up to 20 minutes, and • 21.2% of calls over 20 minutes	The need to strive to improve ERT response times, as outlined in the Act of 8 September 2006. on State Emergency Medical Services.	Increasing the number of ERTs, allocation with possible dispersal of teams - specially adjusted to the specifics of the province, potential risks, health needs of the population. Furthermore, another issue worth exploring is the possibility of improving the EMS System

			by launching motorcycle teams, once regulations are in place.
11.4.	Lack of a sufficient number of medical practitioners to secure the composition of the specialised ERT	not applicable	In view of further problems with ensuring the availability of medical practitioners to work in the ERT and the fact of development of the paramedic profession as a pillar of the EMS System, it is recommended to outline the number of specialist teams, taking into account the possibility of real support of medical activities by these teams for basic emergency rescue teams. It is also recommended to analyse the existing requirements concerning the qualifications of EMS System medical practitioners and the requirements for the composition of specialist ERTs.

Medical staff	11.5.	The quality of the means of transport used to provide services by the ERT and providing the team with specialised medical equipment requires continuous improvement.	not applicable	Replacement of the means of transport of emergency medical services needs to be promoted, with particular emphasis on equipping ambulances with devices for automatic chest compressions, especially in ERT operating in a two-person team.
	11.6.	The effectiveness of the schedules referred to in Art. 21a of the Act of 8 September 2006 on State Emergency Medical Services (i.e., the schedule of organisational units of hospitals specialised in providing health care services necessary for emergency medical services operating under conditions of increased readiness to provide health care services to persons facing emergency health conditions) requires further study and potential development.	Determining the so-called "A and E" in a way that allows patients to be directed to facilities that provide appropriate kind of services should ultimately have an impact on eliminating unacceptable situations of refusing to admit patients. Improvements are also expected in the time it takes for a patient to receive services appropriate to the health problem at hand.	It is recommended to maintain the above-mentioned schedules of services in the areas of, i. a., child psychiatry, ophthalmology and possible extension to other ranges of services according to the needs reported by the community.
	12.1.	Estimations indicate that the biggest differences between the number of medical practitioners who will reach retirement age by 2024 and the number of medical practitioners who will obtain the title of specialist by that time will occur in the following fields: internal medicine (702), general surgery (161),	There exist shortages in the number of speciality medical practitioners in selected fields and such shortages are projected to continue.	Increase the number of speciality places in areas affected by staff shortages.

pulmonary diseases (143), paediatrics (120), diabetes (81), allergology (66), neurology (46). Based on the estimations, the largest differences between the ratio of the recommended number of medical practitioners per 100,000 population and the actual rate of medical practitioners per 100,000 will occur in the case of geriatrics, family medicine, emergency medicine, psychiatry, occupational medicine. Considering generational replacement and recommendations, it was estimated that the greatest need for new speciality places in 2020 would occur in family medicine (439 speciality places), geriatrics (348), paediatrics (235), occupational medicine (246), emergency medicine (165), palliative care (89). In the fields of allergology and diabetology, there is a greater need for specialist care due to the increasing incidence of chronic respiratory diseases and diabetes. In the case of such fields as infectious diseases, anaesthesiology and intensive care, internal medicine, general surgery, pulmonary diseases, neurology, neonatology, geriatrics, medical rehabilitation – despite the provision of numerous training slots in each qualification procedure under both resident and		Apply to medical entities to take action to obtain accreditation for speciality training and create a system to incentivise institutions to apply for accreditation, especially in selected areas. Establish an incentive system to encourage professionals to undertake work in the province in selected fields, e.g.scholarships for students who undertake to work in the province, housing assistance for young physicians. Take measures to encourage medical practitioners to take speciality courses at smaller centres, mainly in district hospitals where staff shortages are the greatest and increase the number of training slots.

	non-resident programmes, interest in such training remains insufficient.		
12.2.	According to forecasts, by 2030, the number of professionally active physiotherapists aged 25-59 will increase, assuming that the current trends of young physiotherapists entering the labour market are maintained. Currently, there are six training centres in the province which are accredited to carry out physiotherapist speciality training.	Maintain the upward trend in physiotherapy graduates.	Expand opportunities for this professional group to improve their skills, especially by increasing the number of speciality places.
12.3.	The systematically deepening ageing of the province population means that the need for nursing care is bound to increase. The nursing staff shortage is particularly noticeable in areas such as surgical nursing, diabetes nursing, epidemiology nursing, geriatric nursing, neurology nursing, paediatrics nursing, psychiatry nursing, family nursing, as well as occupational health nursing. There are significant staffing shortages in cancer nursing, anaesthesiology and intensive care units and infectious disease wards, and in the scope of long-term care nursing services.	Taking action to reduce the deepening shortage of nursing and midwifery staff in medical entities.	Promotion of the nursing and midwifery professions, an increase in vacancies at nursing studies and continuous improvement of professional qualifications, including through speciality training. Creating a system to incentivise people to pursue nursing studies. Taking measures to motivate those who have left the nursing profession to be professionally active again.

Medical equipment	13.1.	Accelerators are available in four districts (city of Warsaw, Legionowo District, city of Siedlce, city of Radom). Patients from the Ostrołęka District had to travel farthest to access this type of equipment, i.e. 108 km. It is estimated that by 2023, 42% of accelerators will reach an age beyond which carrying out enough testing to ensure efficiency will become impossible, and as such, will be counted as part of the equipment base requiring replacement, and by 2029, all available accelerators will need to be replaced.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	13.2.	Angiographs are available in twelve districts (Ciechanów, Grodzisk Mazowiecki, Otwock, Sierpc, Wołomin, the city of Ostrołęka, the city of Radom, the city of Siedlce, the city of Warsaw). The area furthest from the district where there is at least 1 angiograph is the Ostrów Wielkopolski district (54 km). The replacement priority is high for 32.3% of angiograms, medium for 3.1% and low for 64.6% of them. By 2023, 69% of angiographs will reach an age that will require them to be replaced with new units. By 2029, all currently owned angiographs will qualify as old equipment in need of replacement.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.

	13.3.	The province has a total of 12 brachytherapy devices, which are available in the city of Warsaw, the city of Radom, Legionowo District and Lipsk District. The average brachytherapy device age is 9.5 years.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	13.4.	The province has 15 ECMO machines for extracorporeal blood oxygenation. They are located in the city of Warsaw (12), the city of Radom (2), and the city of Ostrołęka (1). The distance from the nearest machine is the most considerable for residents of the Sierpc District (117 km). In 2019, the replacement priority was low for 80% of machines and medium for 20% of them. According to demand projections, 87% of the existing ECMO machines will need to be replaced by 2023, and the entire current base by 2027.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	13.5.	Gamma cameras are available in three districts (the city of Warsaw, Ciechanów District, the city of Siedlce). The travel distance to access that type of equipment is the most considerable for the residents of the Kozienice District (92 km).	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on the renewal of the equipment base with regard to equipment	Ongoing replacement of worn-out medical equipment, as well as investments in new

		In 2019, the replacement priority was low for 62.5% of equipment and high for 37.5% of it. It is important to be aware of the uneven distribution of equipment.	with high replacement priority (very old or relatively old and heavily used equipment).	technological solutions along with adaptation of infrastructure.
	13.6.	Stationary mammography machines operate in most districts of the Mazowieckie Province. In 2019, the replacement priority was high for 27.9% of the equipment and medium for 2.8% of it.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	13.7.	There are 6 PET machines in the province. The average age of the machines is 6,6 years. The area located furthest away from the district with PET scanners is the Sierpc District (119 km). Among the 6 PET scanners, the replacement priority is medium for 1 unit.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	13.8.	MRIs – instruments are located in the city of Warsaw, the city of Ostrołęka, the city of Płock, the city of Radom, the city of Siedlce, Ciechanów District,	Efforts should be made in the coming years to make the best use of the currently owned medical equipment,	Ongoing replacement of worn-out medical equipment, as well as investments

	Garwolin District, Grodzisk Wielkopolski District, Legionowo District, Otwock District, Płońsk District and Pruszków District. In three districts, the average equipment age exceeded 10 years.	as well as to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old or relatively old and heavily used equipment).	in new technological solutions along with the adaptation of infrastructure.
13.9.	X-ray machines are very popular diagnostic devices, available in all districts. The average age of the equipment in the districts ranges from 7 to 14 years. The replacement priority is high for 27.9% of equipment. Replacement priority for 71.0% of X-ray machines is low.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
13.10.	CT scanners are available in most districts of the Mazowieckie Province. The average age of such across all districts ranges from 1 to 14 years. Based on the recommendations, the replacement priority for 15.8% of Mazowieckie's CT scanners is currently high while 9.8% of such scanners have a medium replacement priority. Forecasts indicate that by 2023, 52% of CT scanners will reach an age that significantly	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.

	limits effective testing, and by 2030, all currently owned CT scanners will qualify as old equipment in need of replacement.		
13.11.	Ultrasound machines are very popular diagnostic devices, available in all districts. The average age of such equipment available in the districts ranges from 7 to 24 years (it exceeds 10 years in the case of most districts). By 2023, 77% of ultrasound machines will reach the age at which they will be unable to perform enough examinations to ensure efficiency and will be counted as part of the equipment base requiring replacement.	In the coming years, it is necessary to strive for optimal use of the currently owned medical equipment, as well as to focus on renewal of the equipment base with a high replacement priority (very old or relatively old and heavily used equipment).	Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
13.12.	By 2023, as many as 42% accelerators, 69% angiographs, 50% brachytherapy machines, 87% ECMO machines, 68% gamma cameras, 34% mammograms, 50% PET scanners, 65% MRIs, 62% X-ray machines, 52% CT scanners and 77% ultrasound machines will reach an age significantly hindering effective testing.	Optimal use of current medical equipment should be pursued, and innovative medical technologies should be implemented.	Invest in innovative methods and technologies used to deliver medical services.

Appendix No. 8

Challenges for the health care system and recommended lines of action in the Opolskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended directions of actions
Demography	1.1.	In 2019, the population density in the Opolskie Province was 104 persons/km^2 and was below the national average. Both the number of women (507,500) and men (475,200) was the lowest among all provinces. In 2050, Opolskie will see the highest-ever medial age at 56.1 years, i.e. 3.6 years higher than for Poland overall. In the 2013-2050 period, the number of people aged 65 and over in the province will increase by 75.0% and reach 268,900 by 2050; the number of people aged 80 and up will rise by 138.4%, up to 90,700, whereas the percentage of these people in the province's population will reach 12.2% by 2050. Projections indicate that the province's total population in 2050 will be 744,580, the lowest nationwide.	Population density in the Opolskie Province is below the national average. Forecasts indicate that the Opolskie Province will experience the fastest population ageing process nationwide.	not applicable

Epidemiology	1.2.	In 2019, compared to 2018, changes occurred in the demographic situation of the Opolskie Province, which included a population decrease both in rural and urban areas, an increase in the number of people in the post-productive age along with a decrease in the number of people in the pre-productive age, a decrease in the number of marriages, a decrease in the number of divorces and separations, a decrease in the number of live births and increase in the number of registered deaths, a higher births per woman rate, which, however still does not guarantee generational replacement, a decreased number of registrations and de-registrations of permanent residents in internal movement, as well as a decrease in the number of people de-registering due to their departure abroad.	Due to demographic changes in the province, there will be a change in the demand for selected health care services within the public health care system (an increase in demand for geriatric services with a simultaneous decrease in demand for paediatric, neonatology and gynaecology-obstetrics services).	not applicable
	2.1.	In 2019, ischemic heart disease was responsible for 26.73% of the total number of deaths; 11.67% of them were due to stroke, whereas malignant tracheal, bronchial and lung neoplasms caused 7.03% of all deaths. The total proportion of deaths due to cancer was 15.31% of the total number of deaths in the province.	The most common causes of death among residents of the Opolskie Province in 2019 were ischemic heart disease, stroke and cancer.	not applicable
	2.2.	Cardiovascular diseases continue to be the most common cause of death among province residents aged 45-59. In addition, they are the most common	not applicable	not applicable

	cause of death among people over 60 years of age. However, epidemiological forecasts for 2020-2028, both for the Opolskie Province and for all of Poland, suggest a gradual decrease in the prevalence and incidence of cardiovascular diseases.		
2.3.	Epidemiological projections for 2020-2028 indicate that the prevalence and incidence of chronic respiratory diseases will increase steadily, partly due to the increasing population of persons over 65 years of age. In 2019, pulmonary diseases were the second most prevalent cause of death apart from cardiovascular disease.	not applicable	not applicable
2.4.	An analysis of the most significant health problems, according to the DALY index over the past twenty years (1999-2019) indicates that the most significant problems have consistently been ischemic heart disease, stroke, and malignant tracheal, bronchial and lung neoplasm.	not applicable	not applicable

Risk factors and prevention	3.1.	In 2019, the contribution of behavioural risk factors to DALYs was 12,300 per 100,000 population, and to deaths 494.6 per 100,000 of the population. They exceeded the values for Poland (11,780 and 460.3, respectively).	The dominant group of risk factors, just like nationally, was the behavioural factor group; nonetheless, the situation in the province was worse than the national average.	Promote a healthy lifestyle among the province residents.
	3.2.	In the case of both men and women, the highest contribution to the DALY rate (value per 100,000 population) occurred in the case of tobacco (5,970), high blood pressure (4,840), high BMI (4,580), dietary risk (4,550) and high fasting plasma glucose (4,200). The highest contribution to deaths among risk factors in the province (per 100,000 population) occurred in the case of high blood pressure (269,700), dietary risks (245,900), tobacco (227,500), and high fasting plasma glucose (195,890). Compared to nationwide figures (for both men and women combined), tobacco's contribution to DALYs was about 5% higher than the national average, and to deaths, about 6% higher. Nutritional risks were a major issue in the province, with Opolskie ranking 1st nationwide in terms of DALYs and 2nd in terms of deaths. In terms of the contribution of high blood pressure, high BMI and high fasting plasma glucose to DALYs,	The risk factors having the greatest impact on DALYs lost and deaths in the province are lifestyle-related.	Promote proper nutrition and physical activity among the province's population to reduce the impact of factors such as smoking, dietary risks, high blood pressure, high BMI and high fasting plasma glucose.

		the province ranked 3rd nationwide. In terms of the contribution of high blood pressure and high fasting plasma glucose to DALYs, the province also ranked 3rd nationwide. In contrast, the impact of high BMI on deaths was the highest in the country.		
	3.3.	Tobacco's contribution to DALYs and deaths for men and women combined has declined since 1990 (by approx. 14% and approx. 4%, respectively). Since 2010, there has been an increase in tobacco's contribution to both DALYs and deaths (by about 3% and about 7%, respectively). Since 2010, tobacco's contribution to DALYs in women has increased by as much as ca. 12%, and to deaths, by ca. 17% (average values for Poland are about 9% and 13%) Since 2010, tobacco's contribution to DALYs in men has decreased by about 0.5%, and to deaths, increased by about 3%. The contribution of high blood pressure to the DALYs, which was the risk factor most influencing deaths in the province (for men and women combined), has decreased since 1990 by about 15%, and since 2010, by about 6%. Since 1990, its contribution to deaths has increased by ca. 4%, and since 2010, by about 3%.	Tobacco's contribution to DALYs and deaths has seen unfavourable trends over the past decade, particularly for women. Despite the lower contribution of high blood pressure to DALYs, this factor remains a significant contributor to deaths.	Actions that contribute to reducing the impact of tobacco (some actions should target women, among whom this problem is growing) and high blood pressure are recommended.

	3.4.	Reports indicate that only 4 tobacco prevention activities were implemented in the province.	A low number of tobacco prevention activities was carried out, despite this factor being among the most aggravating ones.	Increase the number of smoking prevention programmes.
	3.5.	Only 16.7% of the annual population to be screened for cervical cancer actually underwent screening (the national average was 17.3%). In addition, it should be noted that the proportion of women screened in the population to be screened has been declining in recent years (from 18,900 per 100,000 of the annual population to be screened in 2018, down to 16,700 in 2019) The incidence of malignant cervical neoplasm per 100,000 women was 17.8% (national average: 16.5%) while the number of deaths per 100,000 women was 11.9 (national average: 10.7)	Enrolment in cytology screenings is at a low level, just like nationwide. In addition, the province compares negatively with the rest of the country in terms of epidemiological indicators in the context of cervical cancer.	Take measures to increase the number of women reporting for cytology screening. Promoting screening.
	3.6.	A total of 52.9% of the annual population to be screened underwent malignant breast neoplasm screening. This was the second-lowest value nationwide (the average for Poland is about 63.9%). The proportion of women screened in the population to be screened increased compared to 2018 (from 40,700 per 100,000 of the annual population to be screened to 52,900). Breast malignant neoplasm incidence per 100,000 women was higher than the national average (97.1 vs 93.5 for Poland),	Mammography screening enrolment in the province is lower than the national average. The province also has higher malignant breast neoplasm incidence and mortality rates than the national average.	Take measures to increase the number of women reporting for mammography screening. Promoting screening.

Primary health care		similarly to the number of deaths per 100,000 women (41.1 vs. 37.6 for Poland).		
	4.1.	According to 2019 data, 82.48% of the population in the Opolskie Province were signed up for active PHC lists; the lowest percentage of them (68.9%) was recorded in the Opole District (a district adjacent to the city of Opole) and the highest in the city of Opole itself (98.6%). The percentage of the population enrolled in primary health care in the province of residence was 98.35%, but a similar comparison at the district level shows variation in this percentage (from 79.06% in the Opole District to 96.43% in the Kędzierzyn-Koźle District).	The province saw a lower percentage of the population enrolled on active PHC lists in its the Opole District – its city-adjacent rural district – as its population was often enrolled on active lists in the nearby cities with district rights.	Given the lower average PHC list enrolment rate among the residents of the Opolskie Province, promotional and educational activities are needed to encourage residents to sign up for the lists – especially among young and healthy people. Examples of such activities include organising educational and promotional campaigns in local information media (portals and local newspapers), as well as organising preventive and screening tests for the population enrolled in the PHC.
	4.2.	In 2019, the number of patients in the province amounted to 648,700, most of whom were people between 60 and 70 years of age. Among total patients in terms of gender, women dominated both in absolute terms (356,200	Patients residing in urban areas predominated regardless of age group; however, when looking at the percentage of patients using the services among all those enrolled, there was no significant difference in place of residence.	It is recommended that PHC play a leading role in securing access to health care services in the Opolskie Province. Its efficiency

	patients), as well as in terms of the percentage of patients using health services among those enrolled.		and effectiveness largely determines the effectiveness of the entire health care system.
4.3.	According to 2019 data, the main health problems among patients from the Opolskie Province who visited health care facilities included spontaneous (primary) hypertension accounting for 12.18% of the total problems, acute upper respiratory tract infection of multiple or unspecified location (7.43% of the total) and acute rhinosinusitis (common cold), accounting for 6.22% of all cases in the Opolskie Province.	Hypertension, acute respiratory infection and the common cold are the main health problems that the province's patients struggled with.	Increase the frequency of diagnostic tests ordered by primary health care medical practitioners and expand diagnostics at the primary care level in the Opolskie Province.
4.4.	Data for 2019 indicate that the number of medical practitioners per 100,000 population working in primary care in the province was 43.05, with the average for all provinces being 68.15. There were significant differences at the district level. The lowest index was found in the Prudnik District (12.67), and the highest in the city of Opole (78.88). The number of nurses per 100,000 population employed in the PHC in the province was 58.41, which was below the national average of 76.22. At the district level, there was also significant variation, with the lowest indices recorded in the Opole (19.40) and Prudnik Districts	PHC staffing in the province is at a lower level than the average for all provinces, hence it is concluded that it is inadequate.	It is necessary to improve the staffing situation in the field of PHC in the province by attracting medical staff to districts where the number of medical practitioners, nurses or midwives per 100,000 population is particularly low, especially to districts that are not adjacent to cities (i.e. the Opole District).

	(36.20), and the highest in the city of Opole (91.38). Number of midwives per 100,000 inhabitants working in primary care was 6.21, with the national average being 12.82.		
5.1.	The lowest number of clinics per 10,000 inhabitants in 2019 was 597, which was the second to last result in Poland, while the number of consultations per 10,000 inhabitants amounted to 1,811.24, which was the lowest value nationwide. The average waiting time for health services in the province exceeded 100 days. Patients wishing to use the endocrinology clinic had to wait particularly long – as many as 311 days.	Province residents had significantly limited access to outpatient health services resulting in long waiting times.	Improve access to outpatient specialist care in the Opolskie Province and relieve the burden on hospitals at the same time. Ensuring equal access to services, monitoring of waiting times for first-time advice, introduction of coordinated care, adequate number of specialists, especially in deficit areas (infectious diseases, urology, anesthesiology).

Outpatient specialist care

Hospital treatment	6.1.	In 2019, the province had 40 hospitals, and the number of hospitals by PHCPS was as follows: out-of-network hospitals: 13, first-level hospitals: 13, second-level hospitals: 5, national hospitals: 5, pulmonary hospitals: 3 and one cancer hospital. These proportions are comparable to the average for Poland, with the exception of third-level and paediatric hospitals, which are lacking in the Opolskie Province.	The current infrastructure is insufficient to meet the health needs of third-level and paediatric hospitals relative to other provinces.	It is advisable to maximise paediatric care.
	6.2.	Apart from ED, average occupancy rates above 100% were recorded for 5 types of wards, with the highest rates for such wards as clinical oncology and selected chemotherapy services - 157.25%, internal medicine - 116.92%, forensic psychiatry - 110.72%. Occupancy rates below 50% were recorded for 4 types of wards. The lowest for the following wards: paediatrics - 46.85%, neonatology - 39.19%, same-day (surgery and treatment) - 23.18%.	There is a clear need to relieve internal medicine wards of the burden of services provided.	Reallocation of internal medicine patients from the central area (especially Opole District) to adjacent counties, and within the central area of the province - from the University Teaching Hospital ED to hospitals in the region, including two departmental hospitals, in order to balance the disproportionate load of internal medicine beds in the province.

	6.3.	The highest 24-hour bed number index per 100,000 population occurred at the following wards: internal - 56 (it was lower by 4.8 compared to the previous year), rehabilitation – - 36.4 (an annual increase of 2.1), psychiatric – - 35.7, obstetrics-gynaecology – - 33.5 (it was lower by 9.8 compared to the previous year).	The number of hospital beds available in the province is insufficient.	It is recommended that the bed base be expanded and that it be used rationally, particularly in hospital wards with the highest occupancy.
	6.4.	For stable cases, the longest inpatient queues in February 2020 (i.e. with the highest average number of waiting days) occurred in the following wards: rheumatology - 341.5 days, trauma and orthopedic surgery - 244.9 days and neurosurgery - 230 days. The average waiting time for ward admission during this period was 79.9 days, significantly shorter than the national figure (114 days). Considering urgent case queues in February 2020, longest waiting times occurred for rheumatology wards - 191.3 days (Poland 89.8 days), neurosurgery - 122 days (Poland 222.6 days), trauma and orthopaedic surgery - 81.6 days (Poland 185.2 days). The average across queues was 53.3 days (avg. for Poland: 56.4 days).	The average waiting time for hospital treatment services (particularly in the wards of rheumatology, trauma and orthopaedic surgery and neurosurgery) indicates limited availability of services.	There is a need to increase access to those services for which the average waiting times are the longest.

Psychiatric care and addiction treatment	6.5.	The number of medical practitioners working in the Opolskie Province in 2019 and rendering hospital treatment per 100,000 population was 196.3. This was the 6th lowest result in the country.	Insufficient number of medical practitioners per 100,000 inhabitants. Specifically, action must be taken in regard to observation and infectious disease, rehabilitation, nephrology, paediatric surgery and ophthalmology wards.	The number of medical staff should be increased by, among other things, improving material and living conditions, increasing training places in accredited units in medical fields where there is a shortage of medical staff.
	7.1.	Adult psychiatric/psychological outpatient clinics are available in every district; hospital wards are available in five districts of the province.	There are gaps in access to day wards and community treatment teams, which are available in five and six districts, respectively (out of twelve districts in the province).	Increase access to psychiatric day units and community treatment teams for adult patients. In addition to the planned establishment of a Centre for Mental Health in Opole, further such Centres should be established.
	7.2.	Access to addiction treatment clinics in the province: general addiction treatment clinics were located in the southern part of the province (in seven municipalities), alcohol addiction clinics were located in ten municipalities; they were lacking in the central part	There is a need in the province for increased availability of general addiction treatment clinics	Change the proportion of counselling provided, especially in adult counselling centres, in favour of a greater proportion of psychological counselling,

		of the voivodeship (including Opole); the only counselling centre for addiction to psychoactive substances was located in Opole and no anti-tobacco counselling centre was available there. As far as other forms of addiction treatment are concerned, there were 3 day units for alcohol addicts in the province, located in Opole, Nysa and Kędzierzyn-Koźle; addiction treatment units/centres were available in five communes; alcohol detoxification wards/centers were available in two outlying municipalities of the province (Namysłów, Branice); a hostel for substance abuse was available in the municipality of Chrząstowice.	in the central part of the province (including Opole).	individual psychotherapy and group/family interactions.
	7.3.	The percentage of patients residing and treated in the same area in the province was 89.04. Only in two districts of the province did the number of patients under 18 treated in their county of residence exceed 80%; for most counties, the rate was less than 20%, which may indicate inadequate access to care in most counties. The percentage of medical advice provided in outpatient clinics for children and adolescents was lower in the province than the average in Poland (54.02% in the province vs. 62.42% nationwide). Outpatient clinics were only available in Opole and Kędzierzyn-Koźle, and hospital care was also available in Opole.	Access to basic forms of psychiatric treatment care for children and adolescents was very limited in the province. In 2019, there are no day wards or community treatment teams for children and adolescents in the province. The high level of migration in relation to other provinces is indicative of the low availability of paediatric psychiatric care services in relation to needs.	Contracting health services for children and adolescents at three reference levels, according to the reform of psychiatric care for children and and adolescents. Establishing psychological and psychotherapeutic outpatient clinics for children and adolescents in all districts where such clinics do not yet function.

Medical Rehabilitation	7.4	In 2019, there were only six child and adolescent psychiatrists, two of whom were of retirement age. Per 100,000 population, only 0.6 medical practitioners were available, which is below the average for Poland (1.1).	An insufficient number of paediatric psychiatrists.	Striving to increase the number of medical professionals specialising in paediatric psychiatry.
	8.1.	The province had 100 rehabilitation centres; the largest number of them was located in the city of Opole (16) and Nysa District (15), and the lowest in Prudnik District (3). In contrast, the number of centres per 100,000 population was 10.18, one of the highest rates in the country. The highest index occurred in Głubczyce District (15.37) and the lowest in Prudnik District (5.43).	Despite the large number of rehabilitation centres, day rehabilitation services for visual impairment and pulmonology are not provided. At the same time, few day rehabilitation services in cardiology are provided - the number of patients per 100,000 population was 17 (60% below the Polish average).	Take steps to ensure availability of day rehabilitation services in the following areas: visual impairment, pulmonology and cardiology.
	8.2.	The most common diagnoses that patients come to medical rehabilitation with are musculoskeletal and nervous system diseases. The longest waiting time for urgent rehabilitation services is in day rehabilitation centres/facilities and amounts to 192 days (176 days nationwide), which is one of the highest values in Poland.	Insufficient number of centres offering inpatient rehabilitation contributes to increased patient waiting times for health services.	It is recommended to minimise the waiting time for rehabilitation of patients by increasing the number of centres providing inpatient rehabilitation services.

Long-term care		However, for stable cases, the longest patient wait time is for inpatient neurological rehabilitation, with an average of 1,095 days (nationally, 556 days). In 2019, the province had one of the higher rates of person-days per 100,000 population in inpatient rehabilitation (19,993; 4th place), while the rate for Poland as a whole was 15,920.		
	8.3.	In 2019, number of medical practitioners working in the field of medical rehabilitation per 100,000 population was 4.2 and was below the national average (5.0).	The province is experiencing a shortage of medical practitioners in the field of medical rehabilitation.	Increase the prevalence of speciality in rehabilitation among medical practitioners for further training to alleviate the shortage of medical practitioners in a specific field.
	9.1.	Among long-term care patients, 2,964 were female (67.9%) and 1,399 were male (32.1%). The age structure of long-term care patients, by gender, was similar to national data. The number of people covered by long-term care in the population of people aged 65 and older in age groups was 2% (including inpatient care – 0.65%), which exceeds the average for Poland (1.34%) (including inpatient care – 0.6%).	Lack of long-term inpatient care centres in two districts (Kędzierzyn-Koźle and Strzelce Opolskie Districts).	Establishment of inpatient long-term care facilities in 2 districts of the Opolskie Province – Kędzierzyn-Koźle and Strzelce Opolskie.

		The leading diagnoses in long-term care were cardiovascular disease (35%, of which strokes were a large group) and nervous system disease (28%; Alzheimer's disease and other dementias dominated this group). Long-term home-based care was available in all districts. The ratio of home rehabilitation centres per 100,000 population was 9.36 (+122% compared to the average for Poland). The availability rate of inpatient centres was 1.73 centres/100,000 population (+43% compared to the national average).		
	9.2.	According to projections, the care potential coefficient will decrease from around 217 in 2019 to 176 in 2030.	The decline in this coefficient will be one of the reasons creating demand for nursing care services, as the declining care coefficient contributes to a decrease in the potential for informal care and the need for an increased role for public administration in providing care to elderly dependents.	It is necessary to adjust the availability of nursing and care services in the framework of long-term care (in all ranges offered), to the deepening unfavourable demographic and epidemiological situation in the region.
	9.3.	DCCs provide supportive care for dependents, especially those over 65 years of age who, because of a medical condition, require	It is important to increase access to long-term nursing care provided to chronically	It is recommended to develop day care forms such as

Hospice and palliative care		nursing, care and rehabilitation services, as well as the continuation of treatment, but do not require hospitalisation in a hospital ward and are not eligible for CTC care due to a Barthel scale score above 40. The services in DCC are not guaranteed. There are currently 2 such facilities in the province.	ill patients in a home setting as a line of action for the deinstitutionalization of long-term care.	e.g. DCCs and ensuring their funding from the National Health Fund.
	10.1.	In 2019, palliative and hospice services were used by 288.31 patients per 100,000 population (5th place nationwide, +15% in relation to the average for Poland). Inpatient palliative and hospice care services were available in 4 districts. In the field of palliative and hospice care the total number of beds at the end of the year was 96, including: 47 in the city of Opole, 20 in the Opole District, 15 in the Nysa District and 14 in the Namysłów District. At the end of the year, the number of beds per 1,000,000 inhabitants was 97.7; respectively in the city of Opole: 367.09, in the Namysłów District: 328.38, in the Opole District: 161.65, and in the Nysa District: 110.34. In the remaining counties, the services provided are not in line with the recommendations of the European Association for Palliative Care	There is a need to increase and equalise access to palliative and hospice care services between districts.	Ensure adequate access to palliative and hospice care services by adjusting the number of beds in inpatient care to at least the ratio defined by the European Association for Palliative Care (min. 100 beds/1,000,000 population).

	(100 beds per 1,000,000 population). This is one of the lowest scores in Poland.		
10.2.	In view of demographic and epidemiologic changes, the need for palliative and hospice care beds over the next 30 years (2020-2050) is projected to increase from 3,800 in 2020 to 4,800 by 2050 (a 25% increase). In addition, in 2040 and in 2050, the Opolskie Province is expected to have the highest demand for the number of palliative and hospice care beds per 100,000 population compared to the rest of the country (3.40 and 3.82, respectively).	With the continued upward trend in the need for palliative and hospice care beds, access to home-based care must be improved.	Expansion of existing inpatient and home-based care facilities due to increased demand for palliative and hospice care services associated with demographic and epidemiological changes. Strive to ensure the operation of home centres in every district.
10.3.	The number of palliative care medical practitioners per 100,000 population is 1.3 (the reference value is 3/100,000 population); The average age of medical practitioners is 51.	Medical staffing in palliative and hospice care settings is inadequate. This applies to both medical practitioners and nurses, especially those specialising in palliative and hospice care nursing.	It is reasonable to increase the number of medical practitioners specialising in palliative care in palliative and hospice care centres at least to the reference value, i.e. 3.0 medical practitioners/100,000 of the population. At the same time, increase in the number of nurses, especially ones specialising in nursing in palliative care and hospice care.

Emergency Medical Services	11.1.	The analysis of the operation of the medical rescue system in Opole Province shows that it has the smallest number of medical rescue teams in comparison to Poland's other provinces – i.e. 44. In the Opolskie Province, despite having seven hospital emergency departments, there are many cases of refusal of admissions, after which the medical rescue team, in cooperation with the medical dispatcher and the provincial coordinator of medical rescue, look for a place for the patient at other hospital facilities. On occasion, emergency rescue teams spend 4-5 hours trying to find another medical entity that will admit their patients. This poses a real threat to the patients' life and limb. This is particularly true for internal medicine patients, due to a shortage of beds at such wards in hospitals located in the central part of the province.	Lack of cooperation and communication between Emergency Departments in different medical entities of the province.	Improving communication between hospital wards and other medical entities regarding the transfer of patients from emergency departments to the destination ward. Ensure a better flow of patients through hospital emergency departments, which should be staffed with an adequate number of medical personnel.
Medical staff	12.1.	In 2019, the number of medical practitioners in the province per 100,000 population was 261 (national average: 342) and it is one of the lower indicators in relation to other provinces. In contrast, the average age of medical practitioners, at 51, is one of the highest in the ranking (2nd place in Poland).	Insufficient level of employment of medical practitioners and dentists in the province, caused by the insufficient number of speciality places in some fields of medicine. A major problem	Creating more vacancies in the fields where there exists the greatest need for specialist staff vacancies and

		The greatest deficit in terms of speciality vacancies (estimated for 2020, taking into account the number of training places needed for generational replacement and the recommended number of specialists was estimated in the following fields: internal medicine (614), family medicine (246), psychiatry (130), occupational medicine (83), geriatrics (71). In 2019, the number of dentists per 100,000 population was 70.7 (14th place among all provinces). The average age for a dentist in the province was 49, with a national average of 46.	is also the ageing of the medical workforce.	in the case of which the province has no specialised or has only 1-2 such medical practitioners and this value significantly deviates from the recommendations of national consultants. Creating a system to encourage working in the province in certain fields, e.g. scholarships for students who commit to work in the province, housing assistance.
	12.2.	The number of nurses per 100,000 population in the province was 613 (621 in Poland). In the next 10 years, it is estimated that the number of active nurses aged 25-59 will decrease by 29% (with a nationwide decrease of 33%).	The number of active nurses is decreasing.	Increase the number of places in the nursing major and increase the promotion of the speciality among nursing students. Creating incentive and scholarship programmes for secondary school graduates to encourage them to pursue nursing degrees.

	12.3.	Number of midwives per 100,000 population in the province was 71 (82 in Poland). In the next 10 years, it is estimated that the number of active nurses aged 25-59 will decrease by 4% in the province (with a nationwide decrease of 24%).	The level of midwifery staffing in the province is inadequate, especially given the projected decline in active midwives.	Increase the number of places in the midwife major and increase the promotion of the speciality among midwifery students. Creating incentive and scholarship programmes for secondary school graduates to encourage them to pursue midwifery degrees.
	12.4.	The number of physiotherapists per 100,000 population in the province was 184. For the group of physiotherapists aged 25-59 in the province, it was estimated, that their number will be growing within the next 10 years, just like for all of Poland.	not applicable	Increase the promotion of the speciality among physiotherapy students.
Medical equipment	13.1.	The number of accelerators in the province was 2; neither required urgent replacement. Such medical equipment was only available in the city of Opole. In this regard, the province scored the lowest nationwide – 0.2 per 100,000 of the population. The equipment is relatively old - at 12 and 14 years old, meaning the accelerators have reached an age that prevents their	The gas pedals were available only in the city of Opole. Although no replacement priority has been specified, the available accelerators are no longer effective and should be replaced.	Renewal of the equipment base with respect to accelerators and increasing their availability for patients outside of Opole.

	effective use. The instruments performed an average of 600 tests per year.		
13.2.	The number of angiographs was 11 and the number of angiographs per 100,000 population was 1.12, with a national average of 0.97, indicating that accessibility is better than the national average. The average age of angiographs in the districts ranges from 7 years in the Kędzierzyn-Koźle District to 14 years in the Kluczbork District. Kluczbork District. also performs the most procedures, averaging about 1,000 per year. 27.3% of angiographs in the province have a high priority for replacement (including the one in the Kluczbork District), while the remaining 72.7% have a low priority for replacement. Forecasts indicate that by 2021, the demand for angiographs will require 9 units, including: 5 in the city of Opole and 1 unit each for the districts of Kluczbork, Nysa, Krapkowice and Kędzierzyn-Koźle.	Some angiographs in the province need to be replaced with new ones.	Purchase of new angiographs; ongoing replacement of old and very worn-out equipment, among others in the Kluczbork district.
13.3.	In the province, the number of brachytherapy devices was 1, and the value of the rate per 100,000 population was 0.1, which is below the average for Poland (0.14). The age of the device was 11 years and the average number of tests performed per year was 215.	The equipment was assigned a medium replacement priority due to the low number of procedures performed; however, the age of the equipment may prevent effective	Replacement of brachytherapy devices is recommended.

		testing, and as such, it should be replaced anyway.	
13.4.	There were 9 mammography machines in the province. The number of mammograms per 100,000 population, in comparison with the nationwide average (1.97), was lower and amounted to 0.92. The average age of equipment in the province's districts ranged from 5 years in Opole to 20 years in the Kędzierzyn-Koźle District. The most procedures were performed in the city of Opole – an average of 7,000 procedures annually. This means that the equipment is utilised well. Forecasts indicate that by 2021, demand for mammograms (7 units) will occur in the counties of: Strzelce (2 units) and Nysa, Głubczyce, Kędzierzyn-Koźle, Brzesko and the city of Opole (1 unit each).	In the Opolskie Province, 66% of mammography machines were categorised as having a high replacement priority.	More mammography equipment needs to be purchased; equipment with a high replacement priority must be replaced.
13.5.	The number of PET units in the province was 1. The number of PET units per 100,000 population compared to the average value for Poland (0.08) was higher and amounted to 0.1. The equipment has a low replacement priority.	The only PET machine located in the province has a low priority for replacement and does not perform enough procedures to ensure effective service.	It is recommended that the capacity of the PET device be increased.

	13.6.	The number of MRIs in the province was 11. Number of MRIs per 100,000 population, in comparison with the average value for Poland (1.05), was higher and amounted to 1.12. The replacement priority is low for 9 devices and high for the remaining 2. The average age of MRI machines in districts ranges from 6 years in Opole to 17 years in the Kędzierzyn-Koźle District, which is also the district where most procedures are performed annually – about 4,800. On average, the fewest procedures are performed in the Nysa District – 1,330. Based on forecasts, in 2021, MRIs will be needed in the following districts: city of Opole (2 units), districts of Kędzierzyn-Koźle and Nysa (1 unit).	The Kędzierzyn-Koźle District MRI is the oldest and most heavily used and should be replaced.	MRI replacement in the Kędzierzyn-Koźle District. Strive to ensure an even utilisation of equipment across all districts.
	13.7.	The number of X-ray machines in the province was 136. The number of X-ray machines per 100,000 population was 13.84, the lowest nationwide. The average age of X-ray machines ranges from 7 years in the Głłubczyce District to 14 years in the Nysa District. The largest number of procedures are performed in the city of Opole, with an average of 2,500 procedures performed. The replacement priority is high for 30% of the machines. Forecasts indicate that by 2021, x-ray scanners (71 units) will be needed primarily in the city of Opole (24 units), as well as the districts of Nysa (11 units)	The number of X-ray machines available in the province per 100,000 population is inadequate. Additionally, nearly 1/3 of them need to be replaced.	More x-ray machines need to be purchased and those that are old and worn out need to be replaced.

	(8 units), Kędzierzyn-Koźle, Olesno and Prudnik (6 units).		
13.8.	The number of CT scanners in the province was 20. The number of CT scanners per 100,000 population was higher than the national average (2.02) at 2.04, of which 5 CTs had high replacement priority. The average age of CT scanners in the province's districts ranged from 4.5 years in the Kluczbork District to 12 years in the Kędzierzyn-Koźle District. On average, these districts also performed the fewest and most tests, respectively. Forecasts indicate that by 2021, tomographs (9 units) will be needed in: city of Opole (4 units), Prudnik District (2 units) and the districts of Strzelce, Głubczyce and Kędzierzyn-Koźle – 1 unit each.	There are not enough CT scanners in the province.	Purchase of new CT scanners, ongoing replacement of old and severely worn-down ones.
13.9.	The number of ultrasound machines was 410. The number of ultrasound machines per 100,000 population was 41.72, with a national average of 36.74 of which 288 were prioritised for replacement. The average ultrasound machine age ranges from 10 years in the Kędzierzyn-Koźle District to 16 years in the Olesno District. On average, the highest number of procedures is performed in the Prudnik District - 1,030 procedures per year, and the lowest in Kluczbork District - 330 procedures. Forecasts indicate that by 2021, ultrasound machines (318) will be needed	The demand for ultrasound machines will increase in the future, hence new equipment will need to be purchased. More than half of them already require replacement.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards ultrasound machines that have a high priority for replacement (very old or relatively old and heavily used equipment).

	the most in the city of Opole (90), Nysa District (53) Kędzierzyn-Koźle district (33), Brzesko district (22), Kluczbork and Krapkowice Districts (20).		
13.10.	There was 1 ECMO machine in the province. The highest value of the indicator per 100,000 population was 0.1, with a national average of 0.17.	In 2021, the province's sole ECMO machine will reach an age indicating the need for replacement.	It is recommended that the ECMO machine be replaced, preferably by 2021.
13.11.	The number of gamma cameras was 4. The highest value of the indicator per 100,000 population was 0.41, with a national average of 0.42, and with 3 cameras requiring urgent replacement. The average age of the gamma cameras is 11 years and they perform an average of 590 procedures per year.	In 2026, all 4 cameras will reach an age indicating the need for their replacement.	Purchase new gamma cameras to replace the old ones.

Appendix No. 9

Challenges for the health care system and recommended lines of action in the Podkarpackie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	In 2019, the province was inhabited by 2,100,000 people, which constituted 5.5% of Poland's total population. It was the 8th most populous province in Poland. The population density was 119 population/km^2, which was the 7th highest value among all provinces. Population density among the province's districts varied, with the highest recorded in Rzeszów (1,550 population/km^2) and the lowest in Bieszczady and Lesko districts.	not applicable	not applicable
	1.2.	By 2050, population is projected to decline by 11.7%. The highest population declines are projected for Tarnobrzeg (33.6%) and Przemyśl (30.1%); the only district with projected population growth is Rzeszów District and the population of the city of Rzeszów is expected to remain constant.	The decline in population will vary by territory.	not applicable
	1.3.	Life expectancy in the Podkarpackie Province is the longest of all provinces of Poland, at 75.4 years for men and 83.2 for women,	High life expectancy will increase the need for benefits dedicated to	not applicable

	which further intensifies all population ageing processes. The projected life expectancy is higher for urban than rural residents, at 76.3 and 74.7 for men and 83.5 and 82.9 for women, respectively.	the elderly. The projections vary depending on the place of residence (urban/rural).	
1.4.	The province had 18.2% of people of pre-working age, 61.5% of people of working age, and 20.4% of people of post-working age. The share of people in the post-working age was therefore slightly lower than in Poland (21.9%). In 2050, the projected share is as follows: 13.6% of the pre-working age population, 48.95% of the working-age population, and 37.45% of the post-working age population, which is related to the general nationwide ageing of the population. The share of population aged over 85 in Podkarpackie amounted to 2.5% and was higher than in all of Poland (2.1%).	The population age structure is projected to change – population ageing.	not applicable
1.5.	In 2019, the number of live births in the province was 1.7% higher than in 2016. The 2016-2018 period saw an increase in live births, whereas 2019 saw a decrease. The 2016-2019 period saw a 1.9% decrease in the nationwide population, and as such, the trend in Podkarpackie was slightly more favourable. On the other hand, the number of stillbirths in 2019 was 65.	not applicable	not applicable

	1.6.	The province's total births per woman rate was lower than the average for Poland (1.34 compared to 1.42). In terms of fertility rates for women aged 15-49, the province ranked 6th – a result slightly below the average for Poland. The demographic dynamics coefficient was above the average value for Poland (1.03 vs 0.92), which is primarily due to the low number of deaths in the province.	not applicable	not applicable
	1.7.	The death rate per 100,000 population for Podkarpackie was the lowest in the entire country. It was lower in urban areas than in rural areas. By 2050, the death rate per 100,000 population is projected to increase to 1246.7; in such a case, Podkarpackie would rank 12th among all of Poland's provinces.	not applicable	not applicable
	1.8.	In terms of infant mortality per 1,000 live births, Podkarpackie ranked 5th among all provinces (Podkarpackie – 4.03; Poland –3.77). Infant mortality was significantly higher in rural than in urban areas (4.45 vs 3.36). In contrast, nationally, the difference between rural and urban mortality was not as great (3.88 and 3.69, respectively). In terms of the perinatal mortality rate, Podkarpackie ranked 6th among all provinces and slightly higher than the average for Poland (5.5. vs 5.3). This rate was lower for urban residents than for rural residents	Infant mortality higher for rural residents.	not applicable

Epidemiology and epidemiological forecasting		(5.1 vs 5.8, respectively). No such relationship was observed on a nationwide scale – the rate was the same for urban and rural residents.		
	2.1.	The DALY indicator and the number of deaths caused by ischemic heart disease reached the highest values among all health problems. Based on estimates of prevalence and death rates, it is believed that by 2028 will remain unchanged until 2028.	Ischemic disease has been for years and by 2028 will continue to be the biggest health problem in the province.	not applicable
	2.2.	The second most severe health problem in terms of the DALY value and the number of deaths was stroke. The values of both indicators in the province were close to the average values for Poland. Compared to ischemic heart disease, which is a chronic disease, strokes were responsible for twice as many years of life lost due to disability. Forecasts indicate that by 2028, the prevalence, incidence and death rates for stroke will see increases and stroke will remain the second most common cause of death in Podkarpackie.	not applicable	not applicable

	2.3.	Based on the DALY rankings, lower back pain ranked third. An increase in DALY values for lower back pain was observed between 1999 and 2019, whereas a decrease was observed in the case of ischemic heart disease and stroke. Prevalence and incidence values are projected to continue to increase between 2020 and 2028, by 6% and 5%, respectively.	Lower back pain is a growing problem in the province.	not applicable
	2.4.	The third cause of death in the province was malignant tracheal, bronchial and lung neoplasms, which accounted for more than 9% of all deaths in men yet only 3% in women. In addition, colorectal and rectal malignancies have increased in ranking relative to DALYs, rising between 1999 and 2019 from the 12th spot to the 7th spot. During this period, the number of deaths due to this cause nearly doubled in men and increased by 50% in women. Forecasts indicate that by 2028, the prevalence, incidence and death rates for cancer will show significant increases, with the highest increase in prevalence among the analysed groups of diseases, amounting to 20%, which	not applicable	not applicable

	makes the province unique on a national scale, as only a 4% increase is expected nationwide.		
2.5.	Among the five health problems exhibiting the highest DALYs was also diabetes, which rose in importance (from the 9th to the 5th spot in 2019). This was primarily influenced by the increase in the value of the YLD component. The projections regarding diabetes are alarming. By 2028, the incidence rate index will increase by 26%, and the estimated increase will be the third largest of all health problems.	Growing significance of diabetes as a health problem.	not applicable
2.6	The health problems responsible for the most deaths also included Alzheimer's and other dementia diseases; compared to 1999, the number of deaths has doubled. There was also a dynamic increase in the value of DALYs, which resulted in this health problem rising in importance in the ranking of the most crucial health problems from the 17th to the 9th spot. Projections for the coming years indicate that the number of deaths from Alzheimer's and other dementia diseases will see the second-highest	not applicable	not applicable

Risk factors and prevention		increase among all health problems, i.e. a 20% increase between 2020 and 2028.		
	3.1.	The proportion of all risk factors in DALYs was the lowest in the nation at approx. 14,600 per 100,000 population (for Poland, it was ca. 17.000). In contrast, the death rate per 100,000 population was 610.8 (690.1 for Poland) – the second-best result among all of Poland's provinces. The dominant group of risk factors, as in the entire country, was the behavioural group, although its contribution to DALYs and deaths was lower than in all of Poland. The risk factors contributing most to DALYs in the province are tobacco, high blood pressure and dietary risks. Their values are lower than those for Poland (by ca. 20%, ca. 8% and ca. 9%, respectively). Deaths are most influenced by high blood pressure, dietary risks, and tobacco use. As with the DALY contribution, the situation in Podkarpackie is better than in all of Poland. The value for high blood pressure is lower by about 4%, for nutritional risks by about 2% and for tobacco by about 20%. Tobacco's contribution to DALYs and deaths in the province is the lowest in the country (ca. 4,500 and 172.6 per 100,000 population).	While the province compares favourably with the entire country, it is worth striving for the lowest possible values of risk factors. The group of lifestyle-related factors has the largest influence on DALYs and deaths.	Actions aimed at reducing the impact of behavioural factors are necessary. Prevention efforts for tobacco use, high blood pressure, dietary risk, high BMI, high cholesterol and sugar, and excessive alcohol use should be increased.

	3.2.	The contribution of tobacco and dietary risks to DALYs has been declining since 1990 (by approx. 24% and 29%); however, since 2010, this trend has been slowing down and an increase has been observed, which amounted to about 1%. In the case of contribution to deaths, the trends are similar, i.e. since 2010 tobacco's contribution to deaths increased by about 2% and the contribution of dietary risks by about 8%.	Tobacco's contribution to DALYs and deaths has been increasing in recent years.	Intensify smoking and tobacco use prevention activities. Support efforts to improve the reporting and effectiveness of ongoing prevention programmes.
	3.3.	A total of 79 programmes were carried out in the area of smoking prevention, covering an average of nearly 9,400 people (the fourth highest value nationwide). In 7 districts, no activities were conducted in this area. A total of 23 programmes were carried out in the field of overweight and obesity prevention, covering an average of about 1,900 people (ranked 7th among all of Poland's provinces). In this case, no such activities were conducted in 9 districts.	No smoking and overweight and obesity prevention measures have been introduced in certain districts.	Ensure equal access to tobacco and overweight and obesity prevention measures across the province. Make local government units aware of the benefits of prevention and encourage them to take action in this regard.
	3.4.	A total of 15% of the annual population to be screened underwent cervical cancer screening, which was below the national average of 17.3%. In 2018, this number was 16,700 women per 100,000 of the annual population to be surveyed, and in 2019, 15,000).	The number of women reporting for cytology screenings is insufficient. The number of women screened has been declining in recent years.	Take measures to increase the number of women reporting for screening tests. Conduct activities aimed at promoting screening.

Primary health care	3.5.	A total of 55.1% of the annual population to be screened underwent malignant breast neoplasm screening. This is lower than the average for Poland (63.9%). Compared to 2018, the proportion of women screened vs the population to be screened increased (from 51,400 to 55,100 per 100,000 annual population to be screened). The number of women examined at the in-depth diagnostic stage is increasing and in 2019 reached the highest nationwide value per 100,000 women screened overall.	The number of women reporting for mammography is below the national average. A high percentage of women is referred for in-depth diagnosis.	Undertake activities to increase the number of women reporting for breast cancer screening. Conduct activities aimed at promoting screening.
	4.1.	The number of patients on active lists relative to the province's population (86.82%) was below the national rate (89.35%); however, it was still slightly higher among populations over 80 years of age, particularly men and urban populations. The lowest participation in the active lists was among the population aged 19-30 and 31-40 (74.75% and 76.17%, respectively) and the rural population (73.24%, 74.35%), especially among men (73.92% and 75.03%).	Lack of information in the public space about the benefits of enrolling with a PHC medical practitioner.	Take steps to increase the rate of patients reporting to the PHC medical practitioners and the benefits of being enrolled in a clinic.
	4.2.	Compared to national averages, the province medical staffing looked good. The number of medical practitioners, nurses and midwives working in Primary Health Care per 100,000 population was higher in the province than the national average rates (respectively: 72.02	The PHC personnel staffing in the province is slightly better than the national average.	Maintain positive trends in PHC staffing.

	vs. 68.16 for Poland; 98.49 vs. 76.22 for Poland and 13.82 vs. 12.82 for Poland). The number of paediatricians working in primary care per 100,000 population was slightly lower than average (71 vs. 74,3 for Poland).		
4.3.	The PHC staffing situation at the intra-province level was characterised by considerable variation. For 19 out of 25 districts, the number of medical practitioners per 100,000 population was lower than the national average, with the lowest level (from 35.1 to 47.08) recorded in the districts of Przemyśl, Rzeszów, Bieszczady, Nieman and Lubaczów and the highest in the district of Leżajsk, as well as the cities of Przemyśl and Rzeszów. The variation was lower for nursing personnel staffing, i.e. fewer counties had a below-average level (7 out of 25), with the lowest rate recorded in Rzeszów, Lesko and Lubaczów districts and the highest in the city of Przemyśl, Leżajsk district, as well as the city of Rzeszów. In the case of the midwife personnel staffing index, half of the districts (12 out of 25) ranked below the national average (Kolbuszowa district had the fewest, the city of Rzeszów had the most). Below-average paediatrician staffing occurred in 13 districts;	Uneven PHC personnel staffing in the province.	Equalise PHC service accessibility across the province.

Outpatient specialist care		this level was particularly low in Przeworsk and Bieszczady districts (19.73 and 26.43) and was below 40 in 5 other districts. The situation was best in cities with district rights and in the Leżajsk district (Tarnobrzeg, Leżajsk district, Rzeszów, Przemyśl and Krosno).		
	5.1.	In 2019, there was no outpatient ophthalmology clinic providing services within the National Health Fund framework in the districts of Bieszczady, Lesko and Przemyśl and no outpatient urology clinic in the counties of Przemyśl, Lubaczów and Strzyżów.	"Blank spots" in OSC services, i.e. ophthalmology and urology clinics in districts where no such clinics are available.	Improve OSC availability in the relevant districts, e.g. access to ophthalmology and urology clinics in districts that have no such clinics.
		Changes in the age and gender structure of Outpatient Specialist Care patients reflect the population ageing process. In the 2015-2019 period, the number of counselling sessions provided to persons over the age of 65 increased while the number of visits by patients from other age groups decreased; this trend disappeared when changes in the population of each age group were taken into account. The Podkarpackie Province Branch of the National Health Fund contracted 2 geriatric outpatient clinics – one in the Łańcut and one in the Jasło district.	An increase in services provided to seniors has been recorded.	OSC providers and the public payer must adapt to the needs of the ageing population, including through the creation of dedicated geriatric outpatient clinics to relieve other forms of health care.

	5.3.	There was an increase in breast cancer and other cancers among the health problems of patients reporting to outpatient specialist care, which is probably partly a reflection of changes in the patient age structure, but also of changes in cancer treatment introduced in recent years (e.g. the introduction of a rapid cancer diagnostic and assessment pathway). Despite an overall decrease in the number of consultations provided at most types of outpatient clinics and in the number of patients using OSC under the NHF, there was also an increase in the number of consultations provided at oncology clinics. Comparing 2019 and 2015 data, there was also an increase in diagnostic laboratory examinations – by 61.8% at the magnetic resonance laboratory and by 18.7% at the computed tomography laboratory.	Increased number of tests at diagnostic laboratories and more consultations at oncology clinics.	Gradual replacement of worn down and obsolete diagnostic equipment. Adaptation of providers to the increasing demand for oncology clinic visits.
	5.4.	The Podkarpackie Province had only a single centre contracted to provide services for comprehensive oncological care for breast cancer patients (the so-called "KON-Pierś" services), which was located in Brzozów.	Comprehensive oncological care for breast cancer patients is only available at a single provider in the entire province.	Increase access to coordinated care in the scope of comprehensive oncological care for breast cancer patients.

Hospital treatment	6.1.	Waiting times exceeding 100 days in urgent cases occurred for the following types of inpatient services: pulmonary rehabilitation, nursing care facility/ward, knee joint replacement, paediatric same-day care ward, hip joint replacement, day rehabilitation facility/centre, transcutaneous or other cardiac valve replacement, pulmonary ward, cardiac and thoracic aortic surgery in extracorporeal circulation, inpatient general rehabilitation, otorhinolaryngology ward.	Excessively high wait times for some urgent hospital services.	Increase health service accessibility, especially in areas where wait times for patients classified as urgent are the longest. Increase health service contracting, the development of existing infrastructure and staffing to reduce waiting times for inpatient services classified as urgent.
	6.2.	For stable cases, the longest inpatient queues in February 2020 occurred in such wards as paediatric same-day care – 627 days (value for Poland: 322 days), pulmonary diseases –427 days (value for Poland: 97.3 days), trauma and orthopaedic surgery – 400.9 days (value for Poland: 548.5 days). Queues for other wards were equal to or shorter than 192.3 days. The average waiting time for admission to a ward during this period was 83.52 days (value for Poland: 114.33 days). Waiting times for inpatient services for stable patients were	In the case of some benefits, the wait times far exceed the national average.	Increase health service accessibility, especially in areas where wait times for patients classified as stable are the longest.

	the longest for such services as knee joint replacement – 1,696.7 days (value for Poland: 1,022.6 days), hip joint replacement – 1,472.8 days (value for Poland: 924 days), leg varicose vein stripping – 311.9 days (value for Poland: 308.1 days). Queues for other surgeries were equal to or shorter than 266 days. The average waiting time for the procedure during this period was 148.43 days, while nationwide it was 137.1 days.		
6.3.	The province had no paediatric emergency department, nephrology ward or dermatology ward. Further, the region lacks a leading hospital providing comprehensive maternal and child care. The province's only paediatric anesthesiology and intensive care unit at No. 2 Clinical Hospital in Rzeszów had only 4 beds and 4 incubators. The average wait time for a paediatric genetics outpatient clinic was 38 days in urgent cases and 150 days in stable cases.	Inpatient care for children and adolescents must be developed further.	Establish missing paediatric wards, especially life-saving ones, and ones ensuring continuous cyclical services based on the existing clinical base. Develop facilities providing comprehensive perinatal care.
6.4.	As of 31 December 2019, the total number of hospital beds in 24-hour wards was lower by 547 compared to the end of 2018 (4.8%). Bed number index per 100,000 population in late	Hospital service range is becoming streamlined.	Support hospitals in adapting their service range to the needs of the population.

	2019 was 507 and was down by 25 beds per 100,000 population compared to 2018.		
6.5.	In 2019, the highest 24-hour bed number index per 100,000 population in 2019 occurred in the case of such wards as internal medicine (down 2.2 from the previous year), obstetrics and gynaecology (down 4 from the previous year), surgery (down 4), and psychiatry (up 2).	There is a gradual change in the structure of hospital treatment.	Support initiatives aimed at changing hospital structure to be in line with the needs of the population.
6.6.	The average occupancy rate for inpatient beds was 84.34% – a nearly 5% increase over the previous year (79.73%).	There is an increase in the use of the existing hospital infrastructure.	Continue to support the actions of hospitals that actively align their service range with the needs of the population.
6.7.	It was noted that some hospital infrastructure remains underutilised. The average ward occupancy over the past 5 years was calculated and the results indicate occupancy rates below 40% at 5 paediatrics wards, 3 gynaecology and obstetrics wards, 2 general surgery wards, as well as 1 rheumatology ward. Average 5-year occupancy rates below 60% were reported for 8 orthopaedic and 4 internal medicine wards. At 2 internal medicine wards in the regional capital, the 5-year average occupancy was 100%. The Rzeszów rural district	Underutilised hospital facilities in the province were identified.	Introduce regional actions to transform and activate underutilised hospital resources.

	had 1 internal medicine ward with an average occupancy rate of less than 60% over the recent years. Further, patients with more complicated health issues were brought to Rzeszów from other parts of the Podkarpackie Province.		
6.8.	A special area of the province that requires a slightly different approach is the Bieszczady region (Bieszczady, Lesko and Sanok districts). The southern, mountainous part of the region has additional specific conditions and very low population density. The average occupancy rate in 5 wards operating in hospitals in districts of Bieszczady, Leski, Sanok during the last 5 years was below 40% (2 paediatrics, 1 gynaecology and obstetrics, 1 neonatology, 1 anaesthesiology and intensive care unit), while the value of 60% was not exceeded by 7 wards (2 general surgery, and one each of trauma and orthopaedic surgery, gynaecology and obstetrics, pulmonology, infectious diseases and paediatrics) did not exceed 60%.	Low utilisation of hospital infrastructure in the Bieszczady region with simultaneous duplication of some resources.	Develop local solutions for the functioning of health care in large areas of low population density, taking into account the availability of health services.
6.9.	In terms of the rate of inpatient hospital-acquired infections treated per 100,000 population, the province ranked 12th in the country with a value below the national average (207.84 vs 235.6). The rate of deaths caused by	At a minimum, maintain the hospital infection rate.	Support local initiatives that contribute to lower rates of hospital-acquired infections.

		hospital-acquired infections per 100,000 population in the province was much lower than the national average (0.28 vs. 4.05). In terms of mortality due to hospital-acquired infections, the province ranked last nationwide. On the other hand, in terms of incidence of Clostridium difficile-associated infections (CDI) per 100,000 population, both in terms of the total number of infections and nosocomial infections (rates for the province: 33.94 and 21.34; respectively, rates for Poland: 29.33 and 17.89), the province took the 4th spot. The wards likely to have the highest number of infections in terms of total CDI cases were internal medicine wards, emergency departments, admission rooms as well as surgical wards. CDI-related death rate (up to 90 days after CDI diagnosis) per 100,000 population was 8.04, whereas the average for Poland was 9.45. Narrowing the analysis to hospital-acquired infections caused by this pathogen, the death rate per 100,000 population was 5.83 while the average for Poland was 6.32. In terms of the number of people with sepsis per 100,000 population, the province ranked 10th nationwide (82.6 vs 86.79 for all of Poland). Approx. 33% of reported sepsis cases were		

Psychiatric care and addiction treatment		classified as hospital-acquired sepsis (a rate of 27.6/100,000 population, with a national average of 21.06). By 2018, an increasing trend was observed for the incidence of sepsis in the province, but this trend reversed in 2019. An analogous trend occurred in the case of mortality rates. The wards where sepsis was probably most likely to develop were internal medicine wards, observation and infection wards and general surgery wards.		
	7.1.	In terms of distribution of primary care for adult psychiatry, psychiatric or psychological outpatient clinics were located in every district/metropolitan area. Hospital care was available in 8 districts of the province, while the residents of the southern part of the province had to travel farthest to reach a hospital. Community mental health treatment teams were located in 6 districts and were lacking in the southern and western parts of the province. Day wards were available in 12 districts.	Ensure availability of psychiatric services in all districts of the province.	Ensure accessibility to adult inpatient psychiatric care, especially for urgent cases, by aligning existing resources with population health needs. Provide greater access to community-based mental health care, particularly in the southern part of the province.
	7.2	More adult patients residing in the province were treated with diagnoses of mental disorders at PHC facilities than as part of specialised psychiatric care and treatment services and	A significant percentage of patients diagnosed with mental health disorders are not transferred to specialised care.	Development of Centres for Mental Health, ensuring equitable access to outpatient clinics, community treatment

	addiction treatment services, with more than 70% of PHC patients treated at PHC facilities alone.		and day care in the province.
7.3.	The relative surplus value in the province was less than 1 (0.994), meaning that the number of patients treated in the province is less than the number of patients residing in the province. Podkarpackie also has the lowest rate of out-of-province patients treated in the country (3.07%).	The mental health and addiction treatment services available in the province appear to be less attractive to patients than those offered in other provinces.	Take steps to improve the quality of services provided in the province.
7.4.	In February 2020, the average wait time for admission in psychiatric (general) wards was 28.1 days for stable cases and 19 days for urgent cases.	The 19-day waiting time for urgent psychiatric hospitalisation needs improvement.	Increase access to urgent care to ensure the safety of the residents of the province.
7.5.	In the Podkarpackie Province, two Mental Health Centres operated under a pilot programme at the Prof. Antoni Kępiński Specialised Psychiatric Health Care Complex In Jarosław, as well as the Independent Public Health Care Centre in Nowa Dęba.	It makes sense to expand comprehensive services for people with mental issues for the entire province.	Implement a psychiatry care reform across the province.
7.6.	The number of adult psychiatrists per 100,000 population was lower than the average for Poland (8.2 vs. 10.2). Moreover, this value is much lower than	Too few adult psychiatrists.	Promote the development of the psychiatric workforce with a special emphasis on medical practitioners.

	the value recommended by national consultants (20).		
7.7.	In terms of the distribution of primary forms of care in paediatric psychiatry, the only inpatient ward was available in Łańcut District. Psychiatric/psychological outpatient clinics were available in 7 districts; none of them was situated in the northwestern part of the province. Day wards were available only in the cities of Rzeszów and Przemyśl, as well as the Łańcut district. The Podkarpackie Province had no community mental health treatment teams.	It is necessary to ensure access to paediatric psychiatry services for all districts in the province.	Developing a network of psychological and psychotherapeutic outpatient clinics for children and adolescents in districts where such clinics do not yet exist and day care and community treatment clinics in line with the reform of paediatric psychiatry.
7.8.	The only paediatric psychiatry ward available in the province regularly recorded full bed occupancy. The number of beds at the unit is 24, i.e. 1 per 100,000 of the population. In Poland, the average number of beds per 100,000 population at (general) psychiatric wards for children is much higher – 2.8.	Psychiatric inpatient facilities for children and adolescents need to be developed.	There is a need to ensure the availability of inpatient psychiatric care for patients aged 0-18 along with the separation of child and adolescent health services through the development of existing infrastructure.
7.9.	In Podkarpackie, more patients under 18 with a diagnosis of mental disorder were treated as part of outpatient special care services than as part of	A significant percentage of patients diagnosed with mental health disorders are not transferred to specialised care.	Developing outpatient psychiatric care for children and adolescents to ensure access to services.

Medical Rehabilitation		psychiatric care and addiction treatment, with nearly 70% of OSC patients treated exclusively there.		
	7.10.	There were 15 paediatric psychiatrists in the region, resulting in a ratio of 0.7 medical practitioners per 100,000 population (the average for Poland is 1.1, and the value recommended by national consultants is 2).	The number of working paediatric psychiatrists in the province must be increased.	Provide support for young medical staff to encourage them to study, settle and work in the province.
	8.1	Very long average waiting time for pulmonary and systemic rehabilitation for stable inpatient cases (1,102 days and 769 days, respectively). In urgent cases, wait times are halved for pulmonary rehabilitation, while for general rehabilitation, wait times are nearly 6 times shorter.	Unacceptable wait times for some urgent inpatient care services.	Increase access to specialised inpatient rehabilitation.
	8.2.	The balance of migration of patients requiring rehabilitation was positive at 552. This is the value presented for all types of benefits combined. The highest migration balance was in the city of Rzeszów and the lowest in the Rzeszów District. Patients have been observed to migrate to centres located in district cities from the outskirts of such cities.	Equal access to services must be ensured for all province residents.	Ensure equal access to benefits for residents of the province.

	8.3.	In May 2020, the number of physiotherapists per 100,000 population was 26% higher than the average value for Poland. According to forecasts, by 2030, the total number of professionally active physiotherapists aged 25-59 will continue to increase.	Positive trends in access to physiotherapists must be maintained.	Maintain positive trends in accessibility to physiotherapists.
	8.4.	The ratio of outpatient rehabilitation centres per 100,000 population was 113% greater than the average for Poland, allowing the province to rank 1st nationwide. Outpatient rehabilitation centres were available in all districts. A high concentration of centres was observed in the city of Rzeszów and the Rzeszów District. Compared to 2016, the province gained 7 new providers.	High accessibility of outpatient rehabilitation must be maintained.	Take steps to maintain high accessibility of outpatient rehabilitation.
	8.5.	The demand for health care services exceeds the supply – wait times are long (in February 2020, the average wait time for outpatient physiotherapy in stable cases was 132 days).	Ensure access to services catered to the health needs of the population.	Provide access to non-inpatient rehabilitation services based on the health needs of the population.
	8.6.	Inpatient rehabilitation was used by 5.2% of all patients who received medical rehabilitation services. The number of patients per 100,000 population (by place of	Poorly developed inpatient rehabilitation compared to the country. Low availability of inpatient rehabilitation centres in the province.	Support efforts to develop inpatient rehabilitation services.

		service provision) was 4% lower than the national average; as such, the province ranked 8th nationwide. The ratio of inpatient rehabilitation centres per 100,000 population was 18% lower than the national average, and as such, the province ranked 14th nationwide. In Poland, the average number of beds per 100,000 population was 23% below the national average and 10 districts had no inpatient rehabilitation centres at all. A high concentration of such centres was observed in the Krosno District. Compared to 2016, the province gained 3 new providers.		
	8.7.	The ratio of outpatient rehabilitation centres per 100,000 population was 80% higher than the Polish average, making the province rank 1st nationwide Day rehabilitation centres were available in all districts. A high concentration of such centres can be seen in Rzeszów. Compared to 2016, the province gained 6 new providers. Day rehabilitation was used by 9.9% of all patients who received medical rehabilitation services in the province. The number of patients per 100,000 population (by place of service) was 24% higher than the national average; this makes the province rank 3rd in Poland.	Maintain high accessibility throughout the province.	Take steps to maintain high accessibility of day rehabilitation.

Long-term care	8.8.	In February 2020, the average waiting time for access to inpatient day rehabilitation facility/centre for stable cases was 206 days.	Significant wait times for rehabilitation in a day care setting.	Support efforts aimed at reducing queues.
	8.9.	In February 2020, the average wait time for home physiotherapy in stable cases was 57 days.	Excessively long wait times for home physiotherapy.	Reduce wait times for home physiotherapy.
	9.1.	The province had a developed and fully utilised inpatient long-term care base. Considering the demographic trends, the demand for these health benefits is bound to increase. At the same time, there is a shortage of providers in the districts of Brzozów, Bieszczady, Krosno, Lesko, Nisko and Przeworsk. In districts without an inpatient base, long-term home-based care was developed; the area without inpatient care mostly coincided with underutilised beds in hospitals.	Equitable access to services must be ensured.	Transform underutilised hospital infrastructure into long-term inpatient care solutions.
	9.2.	The balance of patient migration in long-term inpatient care was positive, meaning that more patients from other provinces received health services in the Podkarpackie Province. At the same time, the balance of migration between districts completely coincided with the lack of inpatient facilities and beds. Patients in need of	Equal access to benefits across the province must be ensured.	Transform underutilised hospital infrastructure into long-term inpatient care solutions.

Palliative and hospice care		inpatient care were forced to migrate to districts offering better health care resources.		
	9.3.	The average waiting time in facilities that reported queues exceeded 250 days for CTC and between 17 and 80 days for NCC, depending on the patient's condition. The wait time for home-based care for stable patients was 112 days.	Reducing wait times for selected forms of home-based care.	Establishment of long-term inpatient care facilities in districts that lack such services (Brzozów, Bieszczady, Krosno, Leżajsk, Nisko, Przeworsk).
	10.1.	Overall, palliative-hospice services were used by 5% fewer patients per 100,000 population in relation to the average for Poland, which makes the province rank 10th nationwide. When broken down by type of health care services, 18% fewer patients per 100,000 population received health care services in the home setting compared to the average for Poland, and in this regard, Podkarpackie ranked 11th nationwide. For inpatient care, this figure was 39% higher than the national average, making the province ranked 2nd nationwide. However, in the outpatient setting, the rate was 72% lower than the national average, giving Podkarpackie the 15th spot nationwide.	Equitable access to health care services must be ensured.	Ensuring adequate access to palliative and hospice care services through development of the existing palliative and hospice care base in the Podkarpackie Province, with particular emphasis on regions with limited access and ensuring better geographical distribution of inpatient care units. Improving access to outpatient palliative and hospice services

			by establishing new palliative medicine outpatient clinics in the province and striving to provide palliative and hospice care in the home setting in every district.
10.2.	There were 17 entities providing inpatient palliative care services in the province. Per 100,000 population, this coefficient was 60% higher than the Polish average, giving the province the 2nd spot nationwide. The ratio of the number of beds per 1,000,000 population at the end of the year in inpatient hospices and palliative care wards reached a high value compared to other provinces, making the Podkarpackie Province ranked 2nd nationwide; however, their regional distribution was uneven. Inpatient palliative care was available mainly in the central part of the province, i.e. in 9 of the 25 districts.	Equitable access to health care services must be ensured.	Equalise access to inpatient palliative and hospice care in the province.
10.3.	Well-developed home-based hospice care services. Almost all districts had at least one entity providing adult home-based hospice care. As part of NHF agreements, a total of 60	The network of home hospices is well developed in the province. The only district where this form of care was not available was the district of Tarnobrzeg,	Maintain the current availability of home-based care services with possible expansion of the hospice network to include Tarnobrzeg District.

	providers operated across the province, which was 93% higher than the national average in terms of the number of centres per 100,000 population (1st spot in Poland).	however, patients were still able to receive services in the city of Tarnobrzeg.	
10.4.	In 2019, 6 entities provided paediatric home-based palliative care services, which appears to have been sufficient as of February 2020 considering that there were no queues for this range of health services.	Home-based palliative care services provided for children are sufficient.	Maintain the current availability of home-based services for children.
10.5.	Outpatient palliative care services were provided in 2 outpatient palliative medicine clinics. The indicator per 100,000 population was 78% lower than the Polish average, making the province rank second to last nationwide.	The availability of palliative medicine clinics was very limited in the province.	Increase access to palliative medicine clinics in the province.
10.6.	In view of the occurring demographic and epidemiological changes, it is estimated that over the next thirty years (2020-2050) the increase in demand for palliative and hospice care beds will significantly exceed the Polish average (50% vs. 38%). The demand for beds is projected to increase from 7,500 in 2020 to 11,300 in 2050.	Access to services must be ensured.	Systematically increase access to palliative and hospice services in the province.

Emergency Medical Services	10.7	In 2019, the number of palliative care medical practitioners per 100,000 population was 0.7. The mean age of medical practitioners is 54. The medical practitioner availability rate should be 3/100,000 of the population. There is also an insufficient number of nurses, particularly ones specialising in palliative/hospice care nursing.	Medical staffing of palliative and hospice care centres is inadequate.	Increase the number of medical practitioners specialising in palliative care at palliative and hospice care centres (at least to the reference value indicated by the national consultant on palliative care), as well as the number of nurses, particularly ones specialising in palliative and hospice care.
	11.1.	The only base of the Medical Air Rescue of the province was located in Sanok, and it provided adequate coverage for the southern part of the province. The construction of another ED is underway in Rzeszów; it is located at the Ministry of Interior and Administration Independent Community Care Centre and will feature a rooftop landing pad (enabling shorter landing time).	Ensure access to benefits according to the needs of the population.	It is deemed reasonable to make available a second Medical Air Rescue helicopter at the Rzeszów – Jasionka airport, which would reduce the rescue time for severely injured people in the central and northern part of the province.
	11.2.	Both in towns with over 10,000 population and outside such towns, ERTs typically intervened to handle incidents defined as "other/feeling ill".	Ensure access to benefits according to the needs of the population.	Provide adequate Primary Health Care, as well as Night and Holiday Medical Care for patients who come to

Medical staff			for emergency departments and admission rooms.
	11.3.	Diagnoses made by ERTs in towns with more than 10,000 population were most often "fainting and collapse," while in areas outside towns with 10,000 residents, the most common diagnosis given was "abdominal and pelvic pain."	Ensure access to benefits according to the needs of the population.	Providing adequate Primary Health Care and Night and Holiday Health Care and conducting awareness campaigns to remind people that EMS only provide help in a medical emergency.
	12.1.	The number of medical practitioners and dentists per 100,000 population in the province was lower than the Polish average, while in the case of nurses, midwives and physiotherapists this ratio was higher than the national average.	Adequate medical staffing must be provided.	Increase in the number of places at medical student courses. Establish a system to incentivise dentists to work in the province.
	12.2.	There is a deficit in medical practitioners specialising in paediatric psychiatry, gastroenterology, gynaecological oncology, paediatric endocrinology and diabetology, diabetology, as well as oncologic surgery, along with too few speciality places. The greatest deficit in terms of speciality vacancies (estimated for 2020,	There exist shortages in the number of speciality medical practitioners in selected fields and such shortages are projected to continue.	Create more speciality positions. Creation of a system incentivising institutions to apply to the CMKP Director for accreditation to create new training places.

		taking into account the number of training places needed for generational interchangeability and the recommended number of specialists) occurred in internal medicine, family medicine, psychiatry, occupational medicine, geriatrics, paediatrics and emergency medicine. Despite the shortages, 50% of the places were vacated in areas where a shortage of specialists exists, including internal medicine, family medicine, psychiatry, geriatrics, emergency medicine, radiology and diagnostic imaging, and haematology.		Creation of a system to incentivise medical practitioners to specialise in fields in which there is a shortage of applicants for speciality training and a demand for new speciality places. Creating and implementing an action plan to encourage medical practitioners to conduct their speciality training at smaller centres, mainly in district hospitals, where the staff shortages are the greatest. Support for young medical staff to encourage them to study, settle and work in the province and improve access to paid or low-paid workshops and training for medical staff.
	12.3.	The systematically deepening ageing of the province population means that the need for nursing care is bound to increase. The province is expected to	Shortages in the number of nurses and midwives are projected.	Increase in the number of nursing and midwifery student places.

Medical equipment		suffer a major decline in the number of nurses and midwives aged 25-59 by 2029 (a 25% and a 27% decrease, respectively).		Establishing a system to encourage secondary school graduates to enter nursing or midwifery programmes. A system to help new candidates enter the nursing profession must be established.
	13.1.	Accelerators were available in 3 districts – Brzozów, the city of Rzeszów and the city of Tarnobrzeg. Their age ranged from 0 to 16 years, and each performed an average of 330 procedures per year. The accelerator replacement priority is medium in the case of 3 units and low in the case of others. The average equipment age in the districts ranged from 0 to 8 years. Three accelerators were more than 10 years old and qualified for replacement. If no new investments are made, it is estimated that by 2025, 40% of the accelerators available in the province will reach an age that makes effective procedures impossible and their replacement priority will be high.	Ensure effective use of existing resources.	Replace equipment according to replacement priorities.
	13.2.	The average age of angiographs, of which there were 13 in the province, ranged from 1 to 9 years; however, in as many as three districts – Mielec district, the city of Rzeszów and the city of Przemyśl, their average age was 9 years. In the remaining two districts, i.e. Sanok	Ensure effective use of existing resources.	Replace equipment according to replacement priorities.

	and Stalowa Wola, the equipment was new. The aforementioned districts also performed the most testing, averaging 1,000 and 2,000 per piece of equipment. The replacement priority was high in the case of 4 out of 13 angiographs. If no new investments are made, it is estimated that by 2025, 70% of the angiographs available in the province will reach an age that makes effective procedures impossible, and by 2029, the entire equipment base should be replaced.		
13.3.	The average age of the brachytherapy devices in the districts was 7 and 16 years for the Brzozów district and the city of Rzeszów, respectively. Additionally, the former had a device that was as old as 24 years. Each instrument performed an average of 300 procedures per year. If no new investments are made, it is estimated that by 2023, the entire equipment base will need to be replaced.	Ensure adequate equipment along with the consideration of condition, utilisation rate and equal access to benefits.	Replace equipment according to replacement priorities.
13.4.	The province had ECMO machines, which were located in the city of Rzeszów. The residents of the Bieszczady district had to travel farthest to access the machine (117 km). The average age of the devices was almost 12 years, and two of them were over 10 years old. If no new investments are made, it is estimated that by 2023, the entire equipment base will need to be replaced.	Ensure adequate equipment along with the consideration of condition, utilisation rate and equal access to benefits.	Replace equipment according to replacement priorities.

	13.5.	The number of gamma cameras per 100,000 population was 0.28 with a national average of 0.42, meaning the province ranked 14th nationwide. The average age of equipment in the counties ranged from 7 years in the city of Rzeszów to 13 in the city of Przemyśl, with an average number of procedures performed at 920 and 330, respectively. This implies that the replacement priority is high in the case of 30% of cameras. If no new investments are made, it is estimated that by 2023, 50% of the devices will need to be replaced, and by 2028, all devices will reach an age that makes it impossible to perform testing effectively.	Ensure adequate equipment along with the consideration of condition, utilisation rate and equal access to benefits.	Replace equipment according to replacement priorities.
	13.6.	The number of mammography units per 100,000 population was 1.83, with a national average of 1.93. This means that accessibility is slightly below the national average. Both age and equipment use varied widely. The replacement priority was high in the case of 25% of devices. It is estimated that half of the existing mammography machines will need to be replaced by 2023 and the current base by 2028.	Ensure adequate equipment along with the consideration of condition, utilisation rate and equal access to benefits.	Replace equipment according to replacement priorities.
	13.7.	The large proportion of middle-aged MRI machines with relatively low numbers of examinations performed annually results in 27% of the instruments being assigned a high priority for	More efficient use of existing equipment resources while ensuring proper maintenance.	Replace equipment according to replacement priorities.

	replacement. By 2023, 86% of MRIs in the province will be older than 10 years and will be counted towards the equipment category requiring replacement. In turn, by 2028, 100% of the current equipment will have to be replaced.		
13.8.	In the next 3-4 years, the average age of X-ray machines in the province will be well over 10 years and closer to 20 years. At the same time, the demand for this equipment was much lower than the existing equipment base, particularly in Krosno, Przemyśl, Rzeszów and Tarnobrzeg, as well as the Jarosław, Kolbuszowa, Łańcut, Nisko and Stalowa Wola counties. However, forecasts indicate that by 2023, 67% of x-ray machines will be beyond the age enabling them to perform effective examinations.	Adjust the existing resources to the needs of the province while maintaining their adequate technical condition.	Replace equipment according to replacement priorities.

Appendix No. 10

Challenges for the health care system and recommended lines of action in the Podlaskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Epidemiology and epidemiological forecasting	2.1.	Cardiovascular diseases accounted for 22.23% of the total DALYs. The DALY value for ischemic heart disease accounted for as much as 9.73% of the pooled index value; for strokes, it was 5.74%. These are also the most common causes of death. According to the projections for the 2020-2028 period, the values of prevalence, incidence and number of deaths caused by the above health problems are estimated to increase.	Cardiovascular diseases pose a serious threat to the lives and well being of the residents of the province, a trend that is expected to continue for years to come.	not applicable
	2.2.	Cancer accounted for 19.11% of the total DALYs for the province. The DALY value for tracheal, bronchial and lung malignancies was 4.63% of the total DALY value, while for colorectal and rectal malignancies it was 2.43%. The epidemiological forecast shows that the prevalence and incidence of cancer	Oncological diseases pose a serious threat to the lives and well being of the residents of the province, a trend that is expected to continue for years to come.	not applicable

Risk factors and prevention		2020 will increase by 2028; cancer deaths will also increase significantly.		
	2.3.	Diabetes incidence in 2028, compared to 2019, will increase by 24.7% per 100,000 population (the second highest value in Poland). For diabetes, the value of the prevalence rate in the analysed period will increase by 14.7% while the number of deaths will increase by 14.2%. In both cases, the increases listed will be higher than the national averages.	Diabetes poses an increasing risk to the life and health of province inhabitants.	not applicable
	3.1.	The effect of alcohol consumption on DALYs and deaths had the third highest value in Poland (it was higher than the mean for Poland by 10.11% and 14.74%, respectively). Between 1990 and 2019, the impact of alcohol use on DALYs increased by a total of 38.02%, whereas the impact on deaths increased by 62.40%. The change in the 2010-2019 period was negligible (the DALYs saw a 0.31% increase and deaths a 2.61% increase).	Alcohol consumption is among more debilitating risk factors of the province. Continued upward trends recorded in recent years are troubling.	Increase access to treatment (inpatient and outpatient) for addicts and increase funding for alcoholism prevention activities. Intensify alcohol abuse prevention activities.
	3.2.	Considering the DALY indicator, the risk factors responsible for the highest number of healthy life years lost were tobacco (4,910/100,000 population), high blood pressure (3,910), high BMI (3,730/100,000 residents), high fasting plasma glucose levels (3,690	Smoking situation, high blood pressure, high BMI, and nutritional risk in the province is better than the national average, but the above-mentioned risk factors clearly negatively	Intensify health promotion and disease prevention activities to reduce the impact of the most relevant risk factors.

	/100,000 population) and nutritional risks (3,510/100,000 inhabitants).	affect the healthy life expectancy of the residents of the province.	
3.3.	The province has implemented 207 prevention programmes, including 94 addiction programmes, 22 overweight and obesity prevention programmes, 20 healthy lifestyle promotion programmes, as well as 12 rehabilitation programmes. The programmes that covered the largest number of people included the programme of prevention of risks posed by physical, chemical and biological factors, pulmonary disease prevention programme, overweight and obesity prevention programme and the healthy lifestyle promotion programme. Among others, no colorectal cancer prevention programme was implemented.	The province has not carried out preventive activities targeting some critical health problems, e.g. colorectal cancer.	It is recommended to undertake prevention activities tailored to the needs of the province taking into account epidemiological data and risk factors affecting DALYs and deaths.
3.4.	A total of 22.7% of the annual population to be screened was screened for cervical cancer. Breast cancer screening was performed on 66.6% of the annual population to be screened (9th place nationwide).	The province has low enrolment in cytology screenings, which is also the case in all of Poland. For mammography, reporting is at a higher level, but the goal should be to get as many women screened as possible. The situation may be due to women's low awareness of the need for systematic screening.	Intensification of activities aimed at women in the field of cancer prevention. Promoting screening.

Outpatient specialist care	5.1.	Waiting time for admission to such outpatient clinics as dental surgery, genetic, hematological, pain management, periodontological, rehabilitation, urology and children's urology was the longest in the Podlaskie Province compared to other provinces. The Podlaskie Province had the second-longest waiting time among all provinces for the following outpatient clinics: gastroenterology, geriatrics, gynaecology for girls, ophthalmology for children, pregnancy pathology, proctology, rheumatology. In the case of Podlaskie outpatient clinics that provided the highest number of consultations in 2019, in February 2020, a longer-than-average wait time for stable cases compared to the nationwide figures occurred in the case of such outpatient clinics as trauma and orthopaedic surgery, general surgery, ophthalmology, diabetes, allergology, and tuberculosis and lung diseases.	Waiting times for some outpatient specialist care clinics are longer than in other provinces in the country.	Improve access to outpatient specialist care clinics, which have long wait times for services.
	5.2.	Between 2015 and 2019, the number of patients decreased in all age groups, except for the group of patients aged 65 and over – their number increased by 10.77% during the period analysed.	The demand for outpatient specialist care services among older adults is increasing.	Improve access to outpatient care for clinics where a significant portion of patients are aged 65 and up (including cardiology,

Hospital treatment				ophthalmology, neurology, general surgery).
	5.3.	The province ranked first in Poland in terms of the number of patients per 1 resident (0.48) and second in Poland in terms of the number of consultations per 1 resident (2.43). On the other hand, the number of clinics was the third-lowest nationwide	The province has a significantly above-average number of outpatient specialist care patients per 1 resident and consultations provided per 1 resident, whereas the number of outpatient clinics per 1 resident is lower than in most other provinces.	Adjust the supply of outpatient health care services in the province to the needs of residents.
	6.1.	There is no same-day care ward in the province. Further, there are no paediatric same-day care wards either.	Lack of access to same-day services.	Enable the provision of and public funding for same-day services.
	6.2.	For stable cases, the waiting time for admission to Podlaskie's otorhinolaryngology ward in February 2020 was the second-longest in Poland. The neurosurgery ward and the alcohol addiction treatment ward had the third-longest wait time nationwide; the paediatric otorhinolaryngology ward and the paediatric ophthalmology ward had the fourth-longest. The provision of services related to nasal septum surgery and surgical treatment of carpal tunnel syndrome were subject to the longest wait time nationwide. Long wait times	Waiting times are significantly increased in some wards/service ranges.	Increase accessibility to services in wards/service ranges with long waiting times.

		also occurred in the case of knee endoprosthesis, knee collateral ligament plication, hallux valgus surgery, therapeutic arthroscopy of the knee and arthroscopic cruciate ligament reconstruction. In "urgent" cases, Podlaskie had the longest waiting times in Poland for arthroscopic cruciate ligament reconstruction, genetic testing, and outpatient and home physiotherapy. It also had the second-longest wait times were found for knee arthroscopy and knee lateral collateral ligament treatment. In the case of the surgical treatment of carpal tunnel syndrome, Podlaskie had the third-longest wait time nationwide.		
	6.3.	The number of geriatric beds per 100,000 population was 1 (the average value for Poland was 3.27). For stable cases, the waiting time for admission to Podlaskie's geriatric ward in February 2020 was 111 days (the fourth-longest in Poland).	The number of geriatric beds in the province is insufficient to adequately provide for the needs.	Expand the geriatric bed base.
	6.4.	The bed occupancy rate was 69.39% (avg. for Poland: 83%). The highest occupancy rate was recorded at the neurology ward (121.51%), ophthalmology ward (101.59%) and the addiction treatment ward (95.03%); the lowest occupancy rate was found at the neonatology ward (34.38%), rehabilitation ward	Wards at the medical entities of the province have uneven bed occupancy.	Optimise bed resources in the province (particularly by increasing the neurological bed base).

Psychiatric care and addiction treatment		cardiology (35.82%) and paediatric ward (42.02%).		
	7.1.	The province ranked second in the country in terms of the number of patients per 100,000 population aged 18 and over (5,518; the value for Poland was 4,791.36). The highest number of patients per 100,000 population was recorded in the city of Suwałki (7,035 patients), the city of Białystok (6,822 patients), Hajnówka district (5,955 patients) and Augustów district (5,954 patients). For stable cases, the average wait times as of February 2020 were the longest in the country (longer than in all other provinces) in the case of the pediatric autism outpatient clinic, the community residential treatment team, the mental health outpatient clinic for children, the mental health outpatient clinic, and the substance abuse treatment outpatient clinic for children. The neurosis outpatient clinic, addiction outpatient clinic, psychogeriatric ward, psychogeriatric day ward and substance abuse outpatient clinic are the units with the second-longest wait times nationwide.	The province has a significantly higher rate of patients receiving psychiatric and addiction treatment compared to the national average. Additionally, wait times for both inpatient and outpatient care are the longest or nearly the longest in the country for most providers.	Improve access to guaranteed benefits in psychiatry and addiction treatment.

	7.2.	The Podlaskie Province has neither a smoking outpatient clinic nor a hostel for addicts.	Lack of access to any forms of addiction treatment within the province.	Establish a smoking outpatient clinic and a hostel for addicts.
	7.3.	Accessibility to mental health outpatient clinics in the province is good (outpatient clinics are available in every district/urban area). The majority of the province residents do not have access to other forms of treatment near their homes (there are no community treatment teams in 9 districts, no day care wards in 8 districts and no hospital wards in 7 districts).	Access to psychiatry and addiction treatment services is uneven in the province. Improving access to out-of-hospital care centres close to home will help ensure that patients receive comprehensive care and reduce the likelihood of hospitalisation.	Establishing out-of-hospital psychiatric care centres (community treatment teams and day wards) in districts that need them.
	7.4.	Podlaskie is the only province in the country that does not have a hospital ward for children and adolescents; nor does it have a community treatment team for children and adolescents. Access to other forms of care was also limited – outpatient clinics for children operated only in Białystok, Łomża, Suwałki and in the Łomża district, whereas day wards for children were only available in Białystok and Łomża.	The availability of paediatric psychiatric health services is inadequate. Patients under 18 are often forced to use services at adult providers or to use services in other provinces.	Improving access to health services in the field of child and adolescent psychiatry, including the opening of a hospital ward dedicated to them and the development of a network of psychological and psychotherapeutic counselling centres for children and adolescents in districts where such counselling centres do not yet exist, as well as day care and community treatment, as per

Medical Rehabilitation				the assumptions of the child and adolescent psychiatry reform.
	7.5.	The vast majority of consultations provided in the adult psychiatric/psychological outpatient clinics of the province are medical. In the case of adults, they accounted for 79.55% of all counselling provided, and for children and adolescents, they accounted for 67.16% (both were higher than the national average, i.e. 68.9% and 62.42%, respectively). However, among the total number of consultations, the share of individual psychotherapy is much lower than the nationwide average. In Podlaskie, it is 10.44% for adults and 5.45% for children (in all of Poland it is 15.25% and 13.78%, respectively).	The structure of counselling provided in psychiatric/psychological counselling centres is based on medical practitioner counselling.	Change the structure of counselling provided in outpatient clinics, i.e. increase the proportion of individual psychotherapy to medical consultations.
	8.1.	Podlaskie is one of only three provinces in Poland that have no pulmonary rehabilitation centres.	Lack of a pulmonary rehabilitation centre.	Ensure the availability of pulmonary rehabilitation services.
	8.2.	The most common diagnoses resulting in inpatient rehabilitation were musculoskeletal diseases (77.6% of patients), nervous system diseases (11.2%), cardiovascular diseases (3.2%) and cancer (1.4%). The number of patients who received inpatient general rehabilitation services was 248 per 100,000 population	The distribution of the ranges in which inpatient rehabilitation services are provided is based on the group of diseases giving rise to the rehabilitation, but also on the availability of a given range of rehabilitation services.	Adjust the funding stream for services to the demand for a given scope of rehabilitation.

	(the lowest in the country; 31% less than the national average), this included 131 cardiac rehabilitation patients (the fourth-highest number in the country; 31% more than the national average), as well as 79 neurological rehabilitation patients (the second-lowest value in the country; 24% less than the national average). The waiting time for general inpatient rehabilitation is 310 days (the third-shortest in the country), for cardiac rehabilitation, it is 36.2 days (the third-longest in the country), and for neurological rehabilitation, it is 248.2 days (11th place in Poland).		
8.3.	The ratio of outpatient rehabilitation centres per 100,000 population was the lowest in the country (55% lower than the nationwide average). On the other hand, the waiting time for service provision in February 2020 was 197 days (the nationwide average was 98 days). The number of medical consultations per 100,000 population was the highest in the country (77% higher than the nationwide average for Poland).	The supply of outpatient rehabilitation services in the province is insufficient in relation to the demand for them.	Increase funding and improve access to outpatient rehabilitation services.
8.4.	The most common diagnoses resulting in inpatient rehabilitation were musculoskeletal diseases (77.6% of patients), nervous system diseases (11.2%), cardiovascular diseases (3.2%) and cancer (1.4%). The number of patients provided with	The distribution of the ranges in which inpatient rehabilitation services are provided is based on the group of diseases giving rise to the rehabilitation, but also on the availability of a given range of rehabilitation services.	Adjust the funding stream for services to the demand for a given scope of inpatient rehabilitation services.

		inpatient general rehabilitation services was 248 per 100,000 (the lowest in the country; 31% less than the national average), this included 131 cardiac rehabilitation patients (the fourth-highest number in the country; 31% more than the national average), as well as 79 neurological rehabilitation patients (the second-lowest value in the country; 24% less than the national average). The waiting time for general inpatient rehabilitation is 310 days (the third-shortest in the country), for cardiac rehabilitation, it is 36.2 days (the third-longest in the country), and for neurological rehabilitation, it is 248.2 days (11th place in Poland).		
	8.5.	The number of beds in inpatient rehabilitation per 100,000 population was 79.26 (10th place nationwide; 17% lower than the national average). There were no rehabilitation centres in 6 districts (including two where such centres were located in cities with district rights).	The supply of inpatient rehabilitation services in the province is insufficient in relation to the demand for them.	Increase funding and improve access to inpatient rehabilitation services.
	8.6.	The ratio of outpatient rehabilitation centres per 100,000 population was 1.78 (11th place nationwide; 19% lower than the national average). Outpatient rehabilitation centres were not present in 5 districts (including two where such centres were located in cities with district rights). For stable cases, the waiting time for	Very long waiting times for day rehabilitation services, despite a higher-than-average number of day care beds per 100,000 population.	Adjust the service funding stream to the demand for the type of benefit that will reduce wait times for day rehabilitation services.

		the provision of services in February 2020 was 405 days (the second-longest in Poland). The number of day care beds per 100,000 population was 157.59 (the third-highest value in the country; 44% higher than the national average).		
	8.7.	The ratio of home rehabilitation centres per 100,000 population was 0.68 (14th place nationwide; 51% lower than the national average). There were no home rehabilitation centres in 10 districts (including one city with district rights). The waiting time for home physiotherapy services in the province is the longest in the country (145 days).	The supply of home rehabilitation services in the province is insufficient in relation to the demand for them.	Increase funding and improve access to home rehabilitation services.
Long-term care	9.1.	The number of long-term care centres per 100,000 population was 3.99 (the second-lowest value in the country; 23% below the national average). The number of long-term care centres per 100,000 population was 2.72 (the second-lowest value in the country; 35% lower than the national average), whereas for long-term inpatient care centres, it was 1.44 (the fifth-highest value nationwide; 19% higher than the national average). The care coefficient in the province reached the third lowest value in the country (9% less than the national average).	The reduction in the care coefficient (informal care potential) combined with limited long-term home-based care centres puts the accessibility of care to elderly dependents at risk.	Increase the number of centres providing long-term home-based care services.

Palliative and hospice care	9.2.	Long-term inpatient care centres were not available in such districts as Kolno, Łomża, Suwałki and Zambrów. In the case of Łomża and Suwałki districts, the centres were located in adjacent cities with districts rights. The number of beds in the above centres was 12.7 (in Łomża) and 31.5 (in Suwałki) per 100,000 of the population. The average number of inpatient beds per 100,000 population in the province was 60.42 (11th place in the country; 26% less than the national average).	Inpatient long-term care services were not available in Kolno and Zambrów districts. The Łomża and Suwałki districts had no centres either; the centres were located in the cities of Łomża and Suwałki, however, the number of beds per 100,000 population was significantly lower in these cities than the provincial average. The number of inpatient beds in the province is significantly lower than the national average.	Improve access to inpatient long-term health care services.
	10.1.	Podlaskie has only a single outpatient palliative medicine clinic (the lowest number of outpatient clinics per 100,000 population nationwide; 80% less than the national average).	There is limited availability of outpatient palliative care services in the province.	Improve access to outpatient palliative medicine services.
	10.2.	There are no palliative-hospice care centres in Suwałki and Łomża districts (there are such centres in the cities of Łomża and Suwałki), nor there are any in Sejny district. The number of centres per 100,000 population in other districts of the province ranges from 1.34 in the Białystok district to 4.69 in the Hajnówka district.	There are clear differences in access to palliative and hospice care services between the districts of the province.	Close the gap in access to benefits across the province.

Medical staff	12.1.	The highest demand for specialisation places, taking into account the needs resulting from generational replacement and the needs in accordance with the recommendations of national consultants, is in such fields as internal medicine (380 places), occupational medicine (101 places), psychiatry (82 places), paediatrics (75 places), geriatrics (66 places), obstetrics and gynaecology (36 places), audiology and phoniatrics (23 places), infectious diseases (19 places), balneology and physical medicine (18 places) and paediatric psychiatry (16 places).	There exist shortages in the number of speciality medical practitioners in selected fields and such shortages are projected to continue.	Launching more specialisation places in deficit areas in the province in the coming years. Creating and implementing an action plan to encourage medical practitioners to specialise within the province in areas where there is insufficient interest.
	12.2.	The number of medical practitioners specialising in psychiatry per 100,000 population was 13.7 (3rd place nationwide), their average age was 54, and the proportion of medical practitioners of retirement age was 21%. The number of medical specialists per 100,000 population is lower than that recommended by the national consultant (20.0).	There are shortages in the number of psychiatrists. Yet another threat is their age and the proportion of medical practitioners of retirement age.	Increase the number of speciality places and accredited psychiatry units.
	12.3.	The number of medical practitioners specialising in paediatric psychiatry per 100,000 population was 0.9 (10th place nationwide), their average age was 56, and the share of medical practitioners of retirement age was 27%.	There are shortages of paediatric psychiatrists. Yet another threat is their age and the proportion of medical practitioners of retirement age.	Establishing an accredited unit to provide speciality training in paediatric psychiatry.

	The number of medical specialists per 100,000 population is lower than that recommended by the national consultant (2.0).		
12.4.	The number of medical practitioners specialising in epidemiology per 100,000 population was 0.3 (4 medical practitioners; 13th place nationwide), their average age was 62, and the share of medical practitioners of retirement age was 75%. The sum of training places needed for generational interchangeability is 2.	Of the four epidemiology specialists, three are of retirement age, and there are no speciality training opportunities available in the province.	Establish an accredited unit to provide speciality training in epidemiology.
12.5.	The number of medical practitioners specialising in palliative care was 1.5 per 100,000 population (9th place in Poland). There were 4 medical practitioners of retirement age; 2 medical practitioners were expected to reach retirement age in the next 6 years. The number of medical practitioners pursuing speciality training was 5. The number of medical specialists per 100,000 population is lower than that recommended by the national consultant (3.0).	Given that the provided number of medical practitioners includes persons of retirement age and those who are about to reach retirement age in the next few years, it must be concluded that there is a serious threat of a significant deterioration in the staffing situation in the field.	Increase the number of speciality places in palliative care.
12.6.	The number of physiotherapists per 100,000 population in May 2020 was 133 (14th place nationwide) and was 23% lower than the average number of physiotherapists in Poland (172).	There are shortages in the number of physiotherapists.	Establish an accredited unit to provide speciality training for physiotherapists.
12.7.	The number of nurses in the province was 684 per 100,000 population (8th place in Poland).	The decrease in the number of nurses and midwives, as projected,	Increase in the number of places available at university nursing

Other areas		As many as 18% of all nurses are aged over 59. The projected number of nurses aged 25-59 shows that the number of nurses will decrease by 31% between 2019 and 2029. The number of midwives in the province is 94 per 100,000 population (6th place in Poland). Midwives over the age of 59 account for 13% of all midwives. Projections of the number of midwives aged 25-59 show that their number will decrease by 33% between 2019 and 2029 (value for Poland - 24%).	will pose a serious threat to the proper provision of health care services.	and obstetrics courses in the province. Take steps to encourage education and entry into nursing/midwifery.
	14.1.	There were 20 orthodontic clinics in the province (11th place in Poland). In February 2020, the average wait time for an appointment was 412.9 days (nationally it was 385.1). The average wait time for braces treatment was 773.2 days, the longest in Poland.	The accessibility of orthodontic treatment is inadequate.	Increase the number of clinics providing orthodontic brace treatment.
	14.2.	There were 28 dental prosthodontics clinics in the province (7th place nationwide); prosthodontic treatment services were provided by a total of 278 entities (12th place nationwide) – prosthodontic treatment was also provided at dental clinics. In February 2020, the average waiting time for a dental prosthodontics clinic appointment was 104.4 days (nationally 316.9); however, the wait time for prosthodontic treatment was 644.8 days (nationally it was 590.9 days).	The accessibility of prosthodontic treatment is inadequate.	Increase the number of clinics providing prosthodontic treatment.

Appendix No. 11

Challenges for the health care system and recommended lines of action in the Pomorskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	The total births per woman rate was 1.6 (Poland 1.4). Among all districts, only the Kartuzy District, with a rate of 2.24, provides a simple generational replacement. The central part of the province is characterised by a higher rate. The lowest value of births per woman rate was observed in Sopot, where it amounted to 1.08.	The province is characterised by the highest natural increase rate in Poland, which amounted to 1.5%.	not applicable
	1.2.	There was a high perinatal mortality rate – 6.3, with the average for Poland being 5.3, which places the province in the 2nd place nationwide. The infant mortality rate was 3.6 per 1,000 live births.	All types and levels of maternal and child care need strengthening.	not applicable
	1.3.	The life expectancy of the residents of the province at age 0 for males was higher than the national average at 74.8 years. Life expectancy for women was equal to the national average at 81.8 years.	The province has seen an increase in life expectancy, particularly in men.	not applicable

Epidemiology and epidemiological forecasting	Average life expectancy will continue to increase and by 2050 it will be 9 years longer for men and 6 years longer for women.		
2.1.	Epidemiological data indicate that ischemic heart disease was the biggest health problem in the province. It is projected that by 2028 the prevalence and number of deaths will not change and ischemic heart disease will remain a significant health problem in the province.	Ischaemic heart disease is, and in the next 10 years will continue to be, a major threat to the health and lives of the province inhabitants.	not applicable
2.2.	The second most severe health problem in terms of DALY value was malignant tracheal, bronchial and lung neoplasm. The forecast for this neoplasm indicates that within the next few years – until 2028 – the situation will continue to deteriorate. Increases in prevalence, incidence and death rates are projected.	Malignant tracheal, bronchial and lung neoplasm will constitute a significant problem for the life and health of the Pomorskie province inhabitants.	not applicable
2.3.	The third most severe health problem in terms of the DALY value was stroke. At the same time, it accounted for 9.5% of all deaths in the province. Forecasts indicate that by 2028, the prevalence and incidence rates of stroke will increase,	With the continuing upward trend in stroke incidence and prevalence rates for the province, it can be assumed that the demand for services	not applicable

Risk factors and prevention		whereas the number of deaths will remain at a similar level.	related to stroke treatment will increase.	
	3.1.	The proportion of the behavioural factor group in DALYs among all risk groups was 49.69%. Considering the DALY indicator, the risk factors responsible for the highest number of healthy life years lost, for both men and women, were tobacco (ca. 5,300 DALY value per 100,000 population) and high BMI (ca. 3,700 per 100,000 population), high fasting plasma glucose levels (ca. 3,600 per 100,000 people). Six smoking prevention programmes were carried out, covering an average of 35 people (12th place in Poland). Activities in this area were conducted only in 3 districts.	The dominant group of risk factors, as in all of Poland, was behavioural. The factors with the highest influence on DALY loss were correlated with lifestyle. In most districts, no activities were carried out in the field of smoking prevention despite smoking being the factor influencing the loss of healthy life years to the highest extent.	There is a need to intensify efforts at the local level in the prevention of tobacco-related diseases. Any activities that promote healthy lifestyles are also important.
Primary health care	4.1.	The most common reason for visits was to receive a prescription (15.03% of visits, compared to 16.04% for Poland). The most common health problems, regardless of gender and place of residence, were spontaneous (primary) hypertension (11.18%), acute upper respiratory infection of multiple or unspecified sites (7.89%), as well as acute rhinosinusitis (6.26%). For women, the fourth most common condition	The health problems of the residents of the province are the same as the health problems prevalent nationwide, so the challenges are analogous.	Take actions similar to nationwide actions.

		was hypothyroidism (2.95). Among children and adolescents, acute rhinosinusitis, acute upper respiratory tract infection of multiple or unspecified locations, acute bronchial infection and acute pharyngitis were the most common reasons for visits to PHC facilities. Among adults, disruption of spinal nerve roots and nerve plexuses was relatively common. Spontaneous primary hypertension was also an increasingly common reason for visits among older patients (the leading cause for patients 41 years and older).		
	4.2.	In 2019, the ratio of the number of medical practitioners working in primary care per 100,000 population of the Pomorskie Province was below the national average (57.81 vs 68.15); this was also the case for paediatricians (61.17 vs 74.29), nurses (60.88 vs 76.22), as well as midwives (8.45 vs 12.82). The lowest number of medical practitioners per 100,000 population was recorded in the districts of Sztum, Kwidzyn, and Człuchów; the largest population was found in the districts of Chojnice and Nowy Dwór. The lowest number of nurses per 100,000. population (significantly below the national average) was in Kwidzyn, Słupsk and Sztum districts, and the highest in Stargard, Chojnice, Sopot and Słupsk districts.	The number of medical staff working in PHC varied significantly from district to district.	Improve the staffing situation in districts with low numbers of medical practitioners, nurses, midwives, and other medical staff members per 100,000 population. This particularly applies to the districts of Sztum, Kwidzyn, Człuchów and Słupsk.

Outpatient specialist care	5.1.	In terms of the number of selected outpatient clinics per 10,000 of inhabitants, the province has obtained some of the lowest index values in Poland: – Endocrinology – index 0.09, – Children's endocrinology – index 0.01, – Preluxation – index 0.01, – Nephrology – index 0.01, – Gastroenterology – index 0.07, – Geriatrics – index 0.01, – Rheumatology – index 0.13. Access to outpatient specialist care services was cumulated between the Tricity and other districts, particularly those located at the edges of the province. This particularly applies to the Słupsk, Sztum and Bytów districts.	Insufficient number of certain types of specialty clinics in relation to demand. There is a wide disparity in the accessibility of OSC. Insufficient accessibility of clinics in outlying districts.	Ensure adequate access to outpatient services throughout the province, especially outside the Tricity metropolitan area. It is vital to focus on the development of OSC-type outpatient health care services in the following districts: Puck, Wejherowo, Kartuzy and Gdańsk. Ensuring greater access to outpatient clinics (by increasing the number of contracts concluded with the National Health Fund, employing more specialists) in terms of specialties characterised by exceptionally long waiting times for health care services in the Pomorskie Province, i.e.: orthopaedics, endocrinology, neurology and geriatrics.

	5.2.	The number of obstetrics-gynaecology outpatient clinics in the province was 134; there were also 2 pregnancy pathology outpatient clinics (one in Słupsk and one in Lębork). Pediatric immunology, urology, gastroenterology and oncology outpatient clinics operate only in Gdańsk (one clinic of each type). In 2019, the Pomorskie Province recorded 26,151 births (including 110 stillbirths).	Health status monitoring for pregnant women remains inadequate. The current resources confirm the low availability of services. The province does not have a multi-speciality health centre providing maternal and child services (in a single location). Demographic forecasts show that Pomorskie, as the only province in Poland, has had a positive birth rate for years and the population in the 0-14 age group will be growing and these growth values will exceed the nationwide average.	It is vital to monitor the access of beneficiaries to health services related to gynaecological-obstetric, perinatal and pediatric care, to increase preventive health care services during pregnancy, to gradually increase access to paediatric services and to adapt the care infrastructure, i.e. to establish a multi-speciality paediatric care centre in the province.
	5.3.	In February 2020, the average waiting time for OSC services in urgent cases was the longest in the case of the neurosurgery outpatient clinic – 269.6 days (for Poland 194.1 days), vascular surgery outpatient clinic – 89.3 days (for Poland 127.7 days) and children's immunology outpatient clinic – 85 days (for Poland 65.3 days).	Very long waiting times for urgent care services at some clinics.	Increase health service accessibility, especially in areas where wait times for patients classified as urgent are the longest.

Hospital treatment	6.1.	Inpatient care was used by 6.86% of the total number of patients. There are 63 registered hospitals in the province with different ownership structures and PHCPS levels. The province has 517 beds per 100,000 population, with the national average being 533.04. The highest 24-hour bed number index per 100,000 population was recorded in rehabilitation wards (63.9 –annual increase by 8.5), internal medicine (38.5 – annual decrease by 3), psychiatry (33.8 – annual increase by 1.3), surgery (29.9 – annual decrease by 0.4), obstetrics and gynaecology (28.4 – annual decrease by 3).	The data presented here confirm that there have been shifts in demand for various types of inpatient care.	There is a need for health centres that provide comprehensive care for patients in different age groups (e.g. geriatrics or paediatric centres providing highly specialised treatment). Establish cancer centres to provide comprehensive cancer care (OSC, REH, hospitalisation, hospice and palliative care, drug programmes). Development of hospital services aimed at providing comprehensive and coordinated patient care, in particular: –Comprehensive care after myocardial infarction ("KOS-ZAWAŁ"), – Coordinated care for patients with spinal disease e.g. deformity, cancer, spinal injury

			(Spine Treatment Center), Coordinated care for pregnant women.
6.2.	In terms of the number of hospitalisations at selected PHC levels, in 2018, the province achieved the following index values: - FIRST-LEVEL – 10 hospitals – 78,640 hospitalisations; index per 10,000 population – 338.3; - SECOND-LEVEL – 4 hospitals – 59,580 hospitalisations; index per 10,000 population – 256.3; - THIRD-LEVEL – 4 hospitals – 385,400 hospitalisations; index per 10,000 population – 1,658.2; - NATIONAL – 5 hospitals – 127,320 hospitalisations; index per 10,000 population – 547.8; - PAEDIATRIC – 1 hospital 6,490 hospitalisations; index per 10,000 population – 27.9; - PULMONOLOGICAL – 1 hospital – 5,550 hospitalisations; index per 10,000 population – 23.7.	The data presented here confirm the rationale for dividing the PHCPS into levels in terms of the delivery of 24-hour care and the need to increase and equalise access to highly specialised services.	Maintain a three-tiered distribution of service delivery to improve patient comfort and service accessibility and reduce hospitalisation time. Provide coordinated care with the use of state-of-the-art equipment and surgical techniques, as well as diagnosis and non-invasive treatment methods, while supporting post-hospital treatment through hospital outpatient clinics and rehabilitation centres. Optimise medical costs by gradually replacing inpatient care with outpatient, day care and home-based care.

	6.3.	As of 31 December 2019, the total number of hospital beds of the province in 24-hour wards was down 2% from 2018. The 2019 bed occupancy rate for the Pomorskie Province was 75.23% while the nationwide value was 82.63%. Excluding EDs, average bed occupancy rates exceeding 100% were recorded for 5 types of wards, with the highest rates for clinical oncology and selected chemotherapy services – 245.7%, allergology – 153.97% and neurology (including stroke) –142.09%. Occupancy rates below 50% were recorded for 14 types of wards. These primarily included children's neurological rehabilitation wards – 36.1%, children's cardiology wards (including incubators) – 27.41% and geriatric wards –16.29%.	It is reasonable to increase the bed base in wards where occupancy exceeds 100%.	Increase the availability of places in wards that record the highest occupancy rates in the province, such as clinical oncology wards, allergology wards, and neurology wards (including stroke wards). Increase the availability of beds in wards that have a much lower average number of beds compared to other provinces. This especially includes palliative care, observation/infectious disease, paediatric otorhinolaryngology, paediatric neurosurgery and clinical oncology/chemotherapy wards. Improve access to appropriate highly specialised diagnosis of neurodegenerative diseases.

	6.4.	In February 2020, the longest queues for stable cases in inpatient care (that is, with the highest average number of waiting days) occurred in the case of the following wards: paediatric ophthalmology – 859 days, trauma and orthopaedic surgery – 420.6 days, same-day care – 303 days. The average waiting time for various types of services during that period was 104.2 days (avg. for Poland: 114.3 days). As for queues for urgent cases in February 2020, the longest waiting times occurred in the case of neurosurgical wards – 154.5 days (avg. for Poland: 222.6 days), obstetrics and gynaecology – 85.5 days (avg. for Poland: 57.8 days) and trauma and orthopaedic surgery – 74 days (avg. for Poland: 185.2 days). The average across queues was 825.11 days (avg. for Poland: 56.4 days).	The data presented confirms the low accessibility to services, which are characterised by extended wait times. It is advisable to expand the bed base and increase financing of services from the National Health Fund.	Increasing accessibility to hospital services characterised by the longest average wait times, especially for knee replacement, paediatric ophthalmology and hip replacement.
	6.5.	The number of medical practitioners working in hospital treatment per 100,000 population was 192.6. As such, the province ranked 12th nationwide.	There exist shortages of medical practitioners in inpatient care.	Measures should be taken to increase the number of medical practitioners employed in inpatient care.
	6.6.	In terms of the rate of inpatient hospital-acquired infections treated per 100,000 population, this rate exceeded the average for Poland (254.53 vs 235.6). The deaths caused by hospital-acquired infections	High rates of nosocomial infections of inpatients and deaths due to such infections are observed in the province	There is a need to improve the quality of services provided and increase access to innovative treatments using

	as a percentage of all patients hospitalised amounted to 0.97% (nationwide average: 0.84).	as compared to the nation as a whole.	state-of-the-art technologies and diagnostics performed as part of inpatient care.
6.7.	The total number of infections with *Clostridium difficile* etiology was 27.56/100,000 population, while hospital-acquired infections amounted to 15.19/100,000 population; these values were lower than the national average (29.33 and 17.89/100,000, respectively). The wards likely to have the highest number of infections in terms of total CDI cases were internal medicine wards, emergency departments, admission rooms as well as surgical wards.	Inadequate infection control systems at medical facilities; failure to adhere to procedures and standards. Shortage of medical staff dedicated to eliminating infections.	Increase sanitary and hygienic surveillance in hospitals by monitoring and evaluating health care-associated infections and increasing the number of isolation rooms.
6.8.	The value of the number of sepsis cases per 100,000 of the population of the province was higher than the average for Poland, and as such, Pomorskie ranked 2nd among all provinces (124.79 persons vs 86.79). A total of 17.16% of sepsis cases were classified as hospital sepsis (a rate of 21.42/100,000 population, with a national average of 21.06). The wards where sepsis was likely to be the most common were internal medicine, anaesthesiology and intensive care and admission rooms.	Inadequate infection control systems at medical facilities; lack of procedures and standards. Shortage of medical staff dedicated to eliminating infections.	It is necessary to comply with the sanitary and epidemiological principles and to develop rules of conduct for the prevention, diagnosis and treatment of infections.

Psychiatric care and addiction treatment	7.1.	The total number of patients who received psychiatric services was 103,240 (1,510,000 for all of Poland). A total of 594,650 consultations were provided along with 15,860 hospitalisations. In terms of psychiatric care and addiction treatment, the province had one of the highest rates of patients residing and treated in the province of residence, i.e. 97.13%. Only three psychiatric hospitals in the Pomorskie Province had general day psychiatric wards. Inpatient care in psychiatric and addiction treatment is characterised by a nearly 100% bed utilisation; this also applies to forensic psychiatry with reinforced security and children's wards. Adult psychiatric care was available in outpatient clinics in all districts/urban areas of the province, with psychiatric wards available in 8 districts, community treatment teams available in 12 districts and psychiatric day wards available in 9 districts. Psychiatric care for children was available in three inpatient wards, i.e. Gdańsk, Starogard Gdański, Chojnice. Child psychiatric/psychological outpatient clinics were available in 9 districts. There were no children's community treatment teams available in the province,	Pomorskie has seen a low out-migration rate. The current infrastructure is inadequate to meet the current and future needs of those requiring this type of care, whether inpatient, day care, community-based or outpatient.	It is recommended to provide equitable, health-appropriate access to adult community treatment by providing such treatment in each district. Develop outpatient psychiatric care, especially in the following districts: Puck, Wejherowo, Kartuzy and Gdańsk. Establish more Centres for Mental Health providing comprehensive psychiatric care as well as day care wards.

	and a psychiatric day ward was available only in Gdansk. The new care model in the scope of child and adolescent mental health services is implemented only at Reference Level I.		
7.2.	In 2019, among patients under 18, the percentage of patients residing and treated in Pomorskie was 93.25% (the maximum value for other provinces was 96.75% and the minimum value was 85.32%). In the case of 11 districts, the percentage of patients residing and being treated in the same area was less than 20%, which is due to lack of access to basic forms of psychiatric treatment in these districts. Three psychiatric hospitals in the province provided services in psychiatric (general) wards for children. These wards had fewer beds per 100,000 population than the national average (2 vs 2.8). Only one inpatient facility had a day care ward for alcohol addiction treatment.	Inadequate access to psychiatric care services for children and adolescents.	It is recommended that a new model of psychiatric care for children and adolescents be implemented and developed as appropriate to meet the evolving health care needs. Contracting 31 level I centres (providing psychological and psychotherapeutic services for children and adolescents in the area of each district and in the Tricity, as well as areas of designated city district groups), reference level II centres providing psychiatric services on an outpatient, community and day care basis, as well as level III centres

			securing inpatient benefits, among others.
7.3.	Seven districts of the province had no psychiatric or addiction wards. Residents of these areas were directed to centres in distant districts, which had a negative impact on the treatment and therapy process, where contact with family and relatives plays a critical role. The province had no hostels for people with mental disorders and had only 3 facilities providing alcohol and substance abuse hostel services. The easternmost districts of the Pomorskie Province, as well as the districts of Człuchów, Kartuzy and Puck, did not have access to day wards or CTTs. There were two Mental Health Centres in the province – in Kościerzyna and Słupsk.	Inadequate psychiatric treatment and care, which should be based on continuous care at a single facility – from inpatient care to day care after the patient's discharge from the hospital or addiction centre.	It is advisable to gradually increase the number of community treatment centres, especially in areas where there are no health care providers rendering such services.
7.4.	The most commonly defined mental disorders among people in care include: depression – 29.99% of all patients treated; anxiety – 23.15% of all patients treated; schizophrenia – 16.32%;	The demand for psychiatric care is increasing, especially during the difficult time of the epidemic.	The epidemic situation in Poland has forced a change in the health care model. It is advisable to maintain the following types of teleconsultations within the framework of guaranteed services financed by the National

Medical Rehabilitation		bipolar disorder – 9.58%; other mental disorders – 9.26% of all patients treated.		medical and psychological services and psychotherapy; it is also recommended to increase the funding for services provided by addiction treatment instructors.
	8.1.	The number of providers per 100,000 population is 5.89; as such, the province ranks second to last in the country, 30% below the nationwide average. There were a total of 3,212 centres, including 839 day centres, 440 inpatient centres, 529 home centres, and 2,629 outpatient centres. Rehabilitation centres were available in every district. The lowest number of them per 100,000 population was recorded in the Kościerzyna District (2.75). Medical rehabilitation services within the National Health Fund, per 100,000 population, were used by 8% more patients than the national average, giving the province 7th place nationwide. Per 100,000 population, the number of persons treated was 9,228, of which the largest group were persons aged 18-64, accounting for more than 50% of all patients. The gender breakdown shows that 65% of them were women, which is in line with the national average. More people with no disability certificate benefited from rehabilitation as well (72.15). The most common diagnoses in medical rehabilitation	The current infrastructure is inadequate to meet the current and future needs of individuals requiring rehabilitation of any kind or scope. Visits to specialists require waiting in long queues; the number of rehabilitated patients is low as well.	Systematic measures should be taken to increase the provision of rehabilitation services aimed at maintaining the number of working-age people. It is advisable to further develop the base of home rehabilitation centres, especially in those districts of the province where such services are not yet available.

Long-term care		(across all benefit types combined) were musculoskeletal diseases (69.9%) and nervous system diseases (21.3%). Home rehabilitation was used by 0.5% of all patients who received medical rehabilitation services. The number of patients per 100,000 population (by place of service provision) was 67% lower than the national average, which gave Pomorskie Province the last place in Poland.		
	9.1.	Among all patients receiving long-term care, patients aged 80+ (54%) constituted the largest group. Starting from 2025, the number of people in the 65+ age group is projected to increase.	The changing demographics of society will necessitate the development of long-term care. Demographic forecasts of Statistics Poland (GUS) show that the ageing of the population of the Pomorskie Province will continue. This will increase the demand for long-term care services. The current infrastructure is insufficient to meet the current and future needs of the population requiring such care.	Increase the availability of inpatient long-term care services by expanding the existing bed base and acquiring new bed base in nursing and care facilities to meet both the current and future needs.
	9.2.	The province had the lowest rate of nursing and care services	The data presented confirm the low availability of inpatient	It is necessary to adjust the availability of

		provided on a long-term basis per 100,000 population in Poland, which was 48% below the national average (150, with the average being 286). The number of centres per 100,000 population in the Pomorskie Province was the lowest in Poland, i.e. 57% below the national average (2.3, with the average being 5.2). A total of 3,512 people received care, including 2,198 patients who received inpatient care. Inpatient care saw 16% fewer patients per 100,000 population than the national average (94, with the average being 111). Lębork, Kościerzyna and Malbork districts had no inpatient care centres.	long-term care services compared to other provinces.	nursing and care services (in all scopes) to the projected unfavourable demographic and epidemiological situation in the province.
	9.3.	In terms of home-based care centres per 100,000 population, Pomorskie had 70% less of those compared to the nationwide average (1.28 with the average being 4.21). A total of 1,352 patients used home-based care. No home-based care was available in the Słupsk District.	The availability of long-term home-based care is inadequate.	It is necessary to increase access to home-based nursing care for the chronically ill as the line of action aimed at transitioning from institutional to community-based care.
	9.4.	In 2019, the most common diagnoses in long-term care were cardiovascular disease (38.2%) and nervous system disease (29.4%), with Alzheimer's disease and dementia diseases being the most prevalent. These indicators exceed the nationwide averages for Poland.	The structure of diagnoses in long-term care indicates the need to secure specialised medical staff, including cardiologists, neurologists,	More medical staff and long-term home-based care teams are needed.

Hospice and palliative care			rehabilitation physicians, physiotherapists and nurses specialising in patient care.	
	9.5.	Supportive care for dependents, especially those over 65, whose health condition requires nursing, care and rehabilitation services but does not require hospitalisation and does not qualify for care at a CTC (due to a high score on the Barthel scale) is provided by Day Care Centres (DCCs). Two such facilities have been established in the Pomorskie Province.	It is advisable to establish day care facilities, e.g. DCCs, and ensure their financing by the NFZ and local governments.	Creating DCCs, increasing the share of expenditures on nursing and long-term care services financed through local government funding.
	10.1.	In terms of the number of palliative and hospice care centres per 100,000 population (including all types of care), Pomorskie ranked last in the country (-28% in relation to the nationwide average – 1.24 vs. 1.73/100,000, respectively). population).	Both inpatient and home-based care need strengthening.	Ensure adequate access to palliative and hospice care health services in the Pomorskie Province.
	10.2.	Inpatient palliative care wards and inpatient hospices operating in the province had 235 beds, which gives the Pomorskie Province the 9th place in Poland.	The analysis of epidemiology and demographics indicates that the number of available hospice and palliative care beds is insufficient to meet current and future needs.	Increase the number of palliative care and inpatient hospice beds to at least the recommended level of 100 beds per 1,000,000 population.

	10.3.	In the case of care services provided in the home setting, 157.8 patients per 100,000 population used such services; this is 3% below the national average, giving Pomorskie the 9th place nationwide.	The accessibility of palliative and hospice care in the home setting is inadequate.	Increasing access to palliative and hospice care in the home environment as a line of action for deinstitutionalisation.
	10.4.	Pomorskie had 10% more home hospices per 100,000 population than the national average, giving it the 5th place nationwide. Home-based health palliative and hospice care services were available in almost all districts (90%). Health services of this scope were not provided in the territory of Kościerzyna and Słupsk districts.	The availability of palliative and hospice services provided in the home setting varies regionally.	Close the gaps in access to care delivered in a home-based setting between districts.
	10.5.	The number of patients who took advantage of outpatient palliative care was 38.74 per 100,000 population, i.e. 3% more than the average for Poland, and in this regard, Pomorskie ranked 8th nationwide.	Outpatient palliative care needs to be strengthened.	Improving access to outpatient care and expanding the base of palliative medicine outpatient clinics in districts where there are currently no such clinics.

Polish Emergency Medical Services	10.6.	There were 6 outpatient palliative medicine clinics operating under contracts with the NHF, which were available in 5 of the 20 counties, i.e. in the districts of Chojnice, the city of Gdańsk, the city of Gdynia, Puck District and the city of Słupsk. The number of palliative care clinics per 100,000 population (0.26) was 35% lower than the national average (10th place in Poland). In the Pomorskie province, 159 people were waiting in a queue for palliative medicine outpatient clinics (both urgent and stable); this accounted for as many as 51% of all patients waiting for this type of service in Poland.	The data presented confirm the low accessibility of palliative medicine outpatient clinics both within the province itself, as well as in comparison with other provinces.	Close the gap in access to care provided in outpatient settings and reducing wait times for services.
	10.7.	The number of palliative care medical practitioners per 100,000 population was 1.7; the average age of such medical practitioners was 53. The medical practitioner availability rate should be 3/100,000 of the population.	The number of medical staff for palliative and hospice care in the Pomorskie Province was insufficient. There was also an insufficient number of nurses, particularly ones specialising in palliative and hospice care nursing.	Recruit palliative care specialists and nurses, particularly ones specialising in palliative and hospice care nursing.
	11.1.	In Pomorskie, there were a total of 67 Emergency Rescue Team (ERT) stations.	Medical protection for the province residents was at the right level thanks to the proper distribution of the ERTs in the cities.	Consideration should be given to the possibility of seasonal activation of the so-called temporary ERTs in areas of high

				tourist traffic – e.g. motorcycle teams.
	11.2.	Time to reach incidents in a city with more than 10,000 residents – travel time was no more than 15 minutes in the case of 91.08% of calls; only for 8.93% of calls did the travel time exceed 15 minutes. Time to reach incidents outside a city with more than 10,000 residents – travel time was no more than 20 minutes in the case of 80.53%% of calls and more than 20 minutes for 19.48% calls.	ERTs comply with the time limit for arrival at the accident scene in most cases; however, the statutory travel time is exceeded in certain circumstances.	Changing the ERT distribution. This could ensure that commute times remain consistent with statutory provisions for incidents outside cities with 10,000 inhabitants.
Medical staff	12.1.	The Pomorskie Province had 357.6 medical practitioners per 100,000 population (avg. for Poland: 341.8), 547.6 nurses per 100,000 population (avg. for Poland: 620.5) and 72.1 midwives per 100,000 population (avg. for Poland: 81.7). Particularly noticeable is the lack of medical specialists working outside the Tricity. The forecasts conducted show that the number of nurses and midwives aged 25-59 in the Pomorskie Province may decrease by 36% and 18%, respectively, within 10 years (by the end of 2029).	The Pomorskie Province records lower-than-average numbers of medical, nursing and midwifery staff per 100,000 of the population.	Provide more places at medical colleges and general universities with departments offering medical courses in the coming years. Developing and launching an incentive system for secondary school graduates to enter nursing and midwifery programmes. Create a system to incentivise working outside the metropolitan area.

Medical equipment	12.2.	In 2020, 2,295 medical practitioners had no speciality; this rate per 100,000 population was 97.9 and exceeded the average rate for Poland by 15.5 (82.4 per 100,000). population). Considering the needs based on generational interchangeability and recommendations, the largest number of speciality places necessary in 2020 was estimated for such fields as internal medicine, family medicine, psychiatry, geriatrics and occupational medicine.	Medical practitioner shortage resulting from generational replacement. The rate of medical practitioners without speciality remains high.	Increase the number of speciality places. Develop and implement a programme to encourage young medical practitioners to pursue specialities in which there is a profound shortage of medical practitioners.
	12.3.	The number of diagnosticians was 880 and their average age was 42.06; the rate per 100,000 population was 36.7 with the average for Poland being 40.58. The average age remained the same.	The number of diagnosticians in the province is insufficient.	Increase enrolment in laboratory diagnostician preparation study courses and increase the number of training slots for laboratory diagnosticians.
	13.1.	Pomorskie had accelerators available in two districts, i.e. Gdańsk and Gdynia. The number of accelerators per 100,000 of the population of the province reached the third-lowest value nationwide (0.26, with the national average at 0.44). Average age of the devices in the city of Gdansk was 12 years, with an average of 820 procedures performed each year.	It is assumed that in 2021, 66% of Pomorskie's accelerators will reach an age that prevents procedures from being performed effectively, and the entire equipment base should be replaced by 2027.	Efforts should be made to make the best use of the currently owned medical equipment. Accelerators should be gradually replaced.

	In Gdynia, the average equipment age was lower at 8 years; however, fewer tests were performed there – about 560 procedures per year. This means that Gdynia's accelerators were not being utilised to their full extent. Due to the low number of procedures performed, 50% of the instruments had a medium replacement priority.		
13.2.	The province had angiographs available in 9 of its districts. The number of angiographs per 100,000 population was 1.15, with a national average of 0.97. The average age of the angiographs in the districts ranged from 2 to 15 years. The oldest angiographs were located in the city of Gdańsk, where as of 2019, as many as 7 out of 9 of them were at least 10 years old. The average annual number of procedures performed in the districts ranged from 500 to 700. The replacement priority was high for 8 angiographs (30%), with as many as 6 of them located in Gdańsk.	Angiograph availability in the province was above the nationwide average. In 2023, approx. 80% of angiographs will reach an age that significantly limits effective testing.	Efforts should be made to make the best use of the currently owned medical equipment. Accelerators should be gradually replaced.
13.3.	Brachytherapy devices were available in two districts, i.e. the cities of Gdańsk and Gdynia. Człuchów District residents had to travel farthest to access such devices (101 km).	The equipment's old age may not allow for efficient testing.	The equipment requires replacement.

	The number of brachytherapy devices per 100,000 population was 0.09, with a national average of 0.14. The devices were 10 and 11 years old and were used to carry out 240 and 370 procedures per year, respectively.		
13.4.	The province had ECMO machines located in two cities: Gdańsk and Gdynia. The average age of the machines available in Gdańsk was 8 years whereas for those in Gdynia it was 2 years.	The old age of the equipment available in Gdańsk may not allow for efficient testing.	Equipment replacement is advisable.
13.5.	The province had gamma cameras located in two cities: Gdańsk and Gdynia. The number of gamma cameras per 100,000 population was the lowest nationwide (0.17, with a national average of 0.42). Gdańsk had only a single camera (9 years old), which performed about 3,200 procedures per year. In Gdynia, the average gamma camera age was 5.5 years, with the average number of procedures performed amounting to 900 per year.	By 2023, 75% of the equipment will be beyond the age enabling effective testing.	Efforts should be made to make the best use of the currently owned medical equipment. Equipment replacement is advisable.
13.6.	The province had mammography machines available in 13 districts. The number of mammography units per 100,000 population was the lowest nationwide.	Considering their age and operation intensity, by 2022, 75% of mammograms will be beyond the age enabling effective testing.	Efforts should be made to make the best use of the currently owned medical equipment.

	As of 2019, the age of stationary mammography machines in the province ranged from 1 to 24 years. Equipment operation varied, with the number of tests performed ranging from 200 to 3,000 per year. The lowest average utilisation occurred in the Kwidzyń District and the highest in the Tczew District (the latter had only a single, 19-years-old device).		
13.7.	The province had one PET scanner, which was located in the city of Gdańsk. The area furthest away from the district where the PET device was located was the Słupsk District (118 km). The equipment was 10 years old, performed about 2,700 procedures per year, and its replacement priority was low.	However, its age (10 years old) may prevent effective testing.	Equipment replacement is advisable.
13.8.	The province had MRIs available in eight districts. In each of them, the average MRI device age was below 8.5 years. The average number of procedures performed per annum in these districts ranged from approx. 650 in the city of Sopot to nearly 3,200 in the district of Wejherowo. Due to the large proportion of middle-aged equipment with the relatively low number of examinations performed per year means that the replacement priority is low for 85% of the devices,	Efforts should be made to make the best use of the currently owned medical equipment.	Two MRIs must be replaced due to their age. By 2027, 100% of the current devices must be replaced.

	with only 2 marked for urgent replacement.		
13.9.	The province had CT scanners available in 18 districts. Their average age ranged from 1 year in the city of Sopot and the district of Człuchów to more than 10 years in the district of Kwidzyn. The average CT scanner use ranged from 180 procedures per year (city of Sopot) to 7,000 per year (city of Słupsk).	Efforts should be made to make the best use of the currently owned medical equipment. By 2023, 64% of CT scanners will reach an age that significantly limits effective testing.	It is projected that the replacement priority will be high for 14.3% of Pomorskie's CT scanners and medium for 16.7% of them. By 2030, all remaining CT will require replacement.
13.10.	The province had X-ray machines available in all of its districts. The average age of such machines in half of the districts exceeded 10 years. The oldest machines could be found in the district of Kwidzyn and the youngest in the district of Wejherowo. The average number of tests performed in the districts varied widely from 130 procedures per year in the city of Gdańsk to 2,500 procedures per year in the district of Lębork. The replacement priority was low for 74% of X-ray scanners and high for 25% of them.	Forecasts indicate that by 2023, 55% of X-ray scanners will reach an age that significantly limits effective testing.	Gradual replacement of worn-down equipment.

Appendix No. 12

Challenges for the health care system and recommended lines of action in the Śląskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	By 2050, the population will fall to just under 3,700,000, the highest decline of all the provinces. The Śląskie Province is expected to lose 816,600 residents (a decrease of 18.2%). There will be a significant reduction in the number of people aged 15-64 while the number of the elderly will increase. The percentage of elderly persons aged 65 and up is expected to increase to 33.95% (from 19.2% in 2019), including 11.23% in the 80+ age group. There has been a low births per woman rate for several years, which amounted to 1.36 in 2019 (1.35 in urban areas and 1.39 in rural areas). The continued higher number of deaths than births has resulted in a negative natural increase (natural population loss) of 11,300.	With an ageing population and a declining number of women of childbearing age, the province will be at the forefront of population decline (5th place among Poland's provinces in terms of percentage decline in population), which will result in the continued lack of generational replacement.	not applicable
	1.2.	It is projected that by 2050 the urban population will decrease by as much as 22.5%, while the rural population will decrease by only 3.9%. This is primarily due to migration from cities to suburban areas	Consideration should be given to relocating health care facilities that should be closest to the patient, particularly primary	not applicable

	and the expansion of cities themselves (suburbanisation).	health care facilities. The demand for where to provide such services as elderly day care and other services that require frequent patient interaction will also change.	
1.3.	Men's life expectancy is not far from the national average of 74.1 years, in contrast to women's age, which is one year shorter than the national average and ranks last among all of Poland's provinces.	not applicable	not applicable
1.4.	In terms of the infant mortality rate (number of infant deaths per 1,000 live births), the province ranked 2nd in Poland at 4.62 (nationwide average: 3.77). The rate was higher for inhabitants of cities than for inhabitants of rural areas (4.91 and 3.75, respectively), which was contrary to the general national tendency, where the infant mortality rate is slightly lower in cities than in rural areas. For children aged 1-11 months, this rate was the highest among all provinces (1.68).	Infant mortality remains an issue that requires rigorous research and analysis. The leading causes of neonatal deaths are premature birth, low birth weight, complications at birth and infections such as pneumonia or sepsis. Major factors of infant mortality in the urban-rural cross-section mainly include environmental pollution, labour market situation and housing conditions, as well as the level of health care services.	not applicable

Epidemiology and epid.	1.5.	The number of deaths in the province has remained high for several decades (51,766 deaths in 2019, giving the province the 2nd place in Poland). On the other hand, in terms of the death rate per 1,000 population, the province ranks the 3rd highest in the country (11.4).	One of the reasons behind the trend of increasing deaths, as observed in the long term, is the increase in the share of the elderly in the total population (an increase in the share of persons aged 65 and over from 16.1% in 2014 to 19.2% in 2019). Taking into account the natural increase ratio and permanent migration balance, the Śląskie Province was among Poland's demographically inactive provinces – i.e. ones suffering depopulation. The population decline was more due to negative natural increase than negative migration balance (-11,300 vs 4,700).	not applicable
	2.1.	When analysing the epidemiological situation in the province, cardiovascular diseases and cancer are prominently visible among the most common health problems. Health problems from these two subgroups account in total for 76% of all deaths and 47% of total DALY.	The health problems that place the greatest burden on society are cardiovascular disease and cancer, as well as diabetes and musculoskeletal disorders.	not applicable

	2.2.	Ischemic heart disease has for years been a major health problem in Poland, both in terms of the DALY value and the number of deaths resulting from it. It is the most significant health problem in both Śląskie itself and in Poland as a whole; however, the DALY value for Śląskie exceeded the national average by 9%. The prevalence value is estimated to increase between 2020 and 2028.	Ischemic heart disease is and will continue to be a significant health care challenge in the province.	not applicable
	2.3.	Stroke is one of the health problems that weighs most heavily on the residents of the province – the YLD for stroke was reported to be twice as high as for ischemic heart disease, which is a chronic disease.	not applicable	not applicable
	2.4.	Neoplasms is the second most common cause of death. In this group, malignant tracheal, bronchial and lung neoplasm, as well as malignant colorectal neoplasm, account for about 12% of all deaths in the province. Major causes of death also included malignant breast cancer in women and malignant prostate cancer in men. The number of deaths caused by the latter practically doubled compared to the 1999 figures.	Cancer is and will continue to be a serious problem affecting the lives and health of the residents of the province.	not applicable

	The number of deaths per 100,000 population increased by as much as 35% between 1999 and 2019. Projections indicate that this number will continue to increase; by 2028, it is expected to be as much as 11% higher compared to the 2019 value, along with a 4% increase in prevalence. By 2028, the number of deaths caused by malignant tracheal, bronchial and lung neoplasm and malignant colorectal neoplasm is estimated to increase by 12% and 15%, respectively.		
2.5.	Since 1999, the DALY value for Alzheimer's disease and other dementing diseases has nearly doubled. A similar trend applies to the values of the other indicators - number of deaths, incidence and prevalence. In 2019, they accounted for 5% of deaths. Projections suggest that people will increasingly often die due to nervous system diseases (28% more deaths in 2028 compared to 2019, an increase that is one of the highest compared to other provinces), particularly for Alzheimer's disease and other dementing diseases (up 30%).	The forecasts and the increasing prevalence of Alzheimer's disease and other dementing diseases are alarming.	not applicable
2.6.	In the 15-49 age group, deaths due to cirrhosis and other chronic liver diseases and disorders related to	not applicable	not applicable

		alcohol abuse accounted for 17% of all deaths, highlighting the urgent need to address addiction and the stigma surrounding addicts. Alcohol abuse disorders ranked second in terms of the DALY value (compared to the 9th spot in 1999). It is projected that by 2028 the increase in deaths in this age group for alcohol abuse disorders will be 9.4%, similar to that for cirrhosis and other chronic liver diseases (8.4%)		
	2.7.	The health problems that are the leading causes of living with disabilities are low back pain and diabetes - totalling nearly 20% of YLDs and 6% of prevalence rate. YLD rate for diabetes compared to 1999 doubled, while for the low back pain it increased by 6% Both of these health problems by 2028 will note an increase in prevalence rate, whereby an increase in the number of patients with diabetes compared to 2019	not applicable	not applicable

Risk factors and prevention	will be 32%, while for low back pain it will be 9.6%.		
	2.8. There was a 37% increase in YLD values compared to 1999 for hearing loss related to ageing and other causes. An increasing trend was also observed for prevalence rate. The prognoses show that an 11% increase in prevalence is predicted for this health problem.	Hearing loss related to age and other causes is an escalating burden on society.	not applicable
	3.1. This province was the second ranking province in terms of the contribution of all risk factors in DALY loss (approx. 11% higher than in Poland) and third in terms of contribution in deaths (by approx. 9% more than in Poland).	Risk factors play a large role in DALY loss and death rates in the region.	Health education on the impact of risk factors on health state can positively influence the indicator values (DALY, deaths) The primary health care should play a special role in this regard. Public health interventions should be tailored to the most aggravating risk factors.
	3.2. Tobacco is both the risk factor that most affects DALYs (5,800 per 100,000 of population; ninth place in province ranking) and amount of deaths (approx. 216 per 100,000	Despite the fact that tobacco's impact on DALYs decreases since 1990, it still is the risk factor that most affects it,	Dissemination of information on the dangers of using

	of population; third place in the ranking). For men, tobacco affects nearly 2 times as much in both DALY loss and death rates. Since 2010 tobacco's contribution in DALYs of women increased by about 11%, and in deaths by approx. 17%). Among men, during the same period, the values of the indicators decreased respectively by approx. 9% and approx. 4%. Only one tobacco prevention program was reported in the province.	and among the male population is a major risk factor for DALY loss and death rates. In the female population, the problem of smoking has been increasing in recent years.	tobacco and related products. Implementation of tobacco prevention programs.
3.3.	In the ranking of the share of alcohol consumption in DALYs and deaths, the province is ranked second among all the provinces, just behind the Łódzkie Province (exceeding the values for Poland by approx. 13% i 16%, respectively). Alcohol is the second behavioural risk factor that dominates DALY loss in men (a value nearly 7 times higher than for women).	Alcohol consumption is a common behavioural risk factor, which affects the DALY loss, especially among men.	Conducting informational and educational activities on the risk of alcohol consumption. Expanding and improving offers of alcohol treatment. These activities should be more focused on men.
3.4.	Comparing 2010 and 2019 data it can be observed, that in 2019 There was a significant increase in the effect of high fasting plasma glucose level on DALYs (an increase by approx. 27%; this was the third highest DALY participation factor for men and women combined). The impact of low physical activity have also increased (by about 16%) and low	Risk factors such as high fasting plasma glucose, low physical activity, low bone mineral density, and high BMI have been increasing their impact on DALYs in recent years.	Undertaking initiatives to promote proper nutrition, disseminate knowledge in the community about the principles of healthy eating and physical activity,

	bone mineral density (increase by approx. 16%) on DALYs. High BMI is also a risk factor, which contributes to development of health problems, and its impact on DALYs and deaths has increased since 2010 by approx. 10% and 14%.		and conducting informational and educational activities.
3.5.	Environmental factors account for approx. 15% of all factors affecting DALYs. Since 1990 a decrease in the effect of air pollution on DALYs is observed (by approx. 38%) and deaths (by approx. 30%), however, despite significant improvement, the province still has the highest contribution of this factor in DALYs and deaths among all provinces (deviation from Polish average by 35% and 31%, respectively).	A significant problem in the province is air pollution, which has the greatest impact on DALYs and death rates among all provinces.	Health education on the impact of environmental factors, including the impact of air pollution, will positively affect the health of the province residents. Actions in this area should be conducted in a multi-sectoral manner.
3.6.	The reporting for cytology screening was approx. 21% and was higher than the national average (17.3%). The number of women reporting for screening decreased compared to 2018 from 22.3% to 21.1% of the annual population to be surveyed. cervical malignant neoplasm declined by 3.8% per 100,000 persons. of women is 19.1 (value for Poland: 16.5). Number of deaths per 100,000 population of women is 12.3 (value for Poland: 10.7).	Reporting for cytology screenings, as in the nation, is very low. Female mammography reporting is lower than the national average. Epidemiological measures of cervical malignant cancer and breast malignant cancer (incidence and number of deaths) exceed the national averages.	Undertaking activities aimed to increase reporting to screening, including cytology and mammography, and cancer prevention activities.

Primary health care		Approximately 61% of women were screened for breast cancer (in Poland approx. 64%). The most common choice was a mobile diagnostic site (approx. 55%). Breast malignant neoplasm incidence per 100,000 women is higher than the national average (109.7 vs. 93.5 for Poland), as the number of deaths per 100,000 women (43.5 vs. 37.6 for Poland).		
	4.1.	In the province, there were 759 medical entities providing services by primary health care medical practitioners (1,147 service sites), 754 medical entities providing services by primary health care nurses (978 service sites) and 684 medical entities providing services by primary health care midwives (847 service sites). The accessibility analysis indicated that there are primary care clinics in all municipalities. In the two municipalities of Irządze and Ujsoły there are no contracted services of a primary care nurse, and in the case of services of a primary care midwife in five municipalities, i.e. Irządze, Jejkowice, Kornowac, Ślemień and Ujsoły.	Access to PHC services was provided in all municipalities in the province.	Maintaining the current level of security for residents to access to PHC services.
	4.2.	Young men listed on active PHC lists use these services least often, both in Poland and in the province (66% of listed men	Young men are least likely to use a primary care medical practitioner.	Actions directed at men's health education should be taken, in order to

Outpatient specialist care	of age between 19-30 and 41-50, and 63% of men of age between 31-40).		break down the barrier to men actively using health care before health crisis occurs. Strengthening the role of PHC in disease prevention and health promotion. So that the patient requires specialized treatment as late in their life as possible.
	5.1. In many Outpatient Specialist Care outpatient clinics, the waiting time to see a specialist is very long. The longest average wait times apply to: - paediatric genetic clinic - 468 days, - endocrinology services - 303.67 days in stable cases, - genetic clinic - 282.6 days, In urgent cases, the queue with the longest average wait time is for: - neurosurgical clinic - 189.8 days, - infectious disease clinic - 184 days, - audiology clinic - 172 days.	Existing restrictions on access to specialist health services. Long waiting times for treatment result in a deterioration of both the health status and the financial situation of patients (sickness absenteeism, rehabilitation and disability benefits).	Increasing the accessibility of OSC services, including by increasing the number of specialists in the field of health services that indicate the greatest need of patients in the provinces, which is determined by the demographic and epidemiological factors (and prognoses in this regard), in particular due to the ageing of the population and projected increased demand for services.

	In the province, between 2015 and 2019, it is possible to observe the decrease in the number of consultations (from 12,100,000 to 11,300,000) and patient treated in specialist clinics that had a contract with National Health Fund Over the past few years, there has been a decline in the number of clinics providing services under the National Health Fund, between 2015 and 2019 their number decreased by 193 clinics		including rehabilitation facilities.
5.2.	The highest number of outpatient clinics per 10,000 of inhabitants occurs mainly in cities with district rights: Katowice (15.3), Piekary Śląskie (11.81), Tychy (11.52). In addition to cities with powiat rights, the following districts are also characterised by a large number of clinics: Myszków (13,4), Bieruń-Lędziny (9,7) and Będzin (9,25) The lowest number of clinic is in the following districts: Kłobuck (2,84), Rybnik and the city of Rybnik (3.51), and Żywiec (3.73).	There are disproportions in access to specialist clinics between cities with district rights and land districts. Highly specialised facilities are concentrated in the very centre of the urban area, while low numbers of medical entities can be observed on the outskirts of the province.	Reducing the inequalities in access to OSC at the district level, especially regarding the clinics with the highest patient demand, i.e. cardiology, ophthalmology, endocrinology, diabetes, urology clinics - under publicly funded health services.

Hospital treatment	6.1.	The province has the largest number of hospitals in Poland. It is the second province with the highest number of hospitals included in the PHCPS. The distribution of beds in inpatient care facilities varies across districts and cities with district rights in the province. In the province, there are health care institutions duplicating services in close proximity, which leads to a decrease in unit National Health Fund contracts concluded with these entities and deterioration of their effectiveness and financial situation.	A significant problem is disproportionate allocation of the resources, which does not entirely meet the local needs of residents. This leads to, among other things, migration of the patients to meet health needs, reduced quality of services and their accessibility. We also observe fragmentation of hospitals, and consequently dispersion of the resources and their inefficient use.	Consolidation of the provision of highly specialist services on the scale of province and the creation of specialist units in order to ensure the high standard of care, reduce the cost of health care services and rationalise use of staff and optimal management of infrastructure.
	6.2.	Number of nurses per 100,000 of the population was 705 (621 in Poland). This value is 24% lower than in the Mazowieckie Province (the highest value among the provinces), but 30% higher than in the Lubuskie Province, which ranks the lowest among the provinces. The medical staff is characterised, in most of the occupational groups, by a relatively high average age. Among nurses and medical practitioners, the average age was approx. 50 years. These values indicate a preponderance of people who have already achieved	Needs and capabilities based concentration of medical staff and equipment at sites providing highly specialist medical services will enable the coordination and optimisation of resources.	Concentration of the medical staff and equipment at sites providing highly specialist medical services will allow coordination and optimalisation of staff resources.

		retirement age, or will reach it within a dozen years. At the same time, this points to the problem of small proportion of young people in the medical staff. Analysing the issues of the gap between medical specialist reaching retirement age, the medical practitioner earning their specialist degree and the recommended number of medical specialists, the greatest need for speciality places in 2020 has been estimated to be within the fields of: internal diseases, family medicine, psychiatry, paediatrics, geriatrics, occupational medicine and emergency medicine.		
	6.3.	Cancer - as measured by the DALY value - is one of the most significant health problems, it is also a second most common cause of death. Number of deaths per 100,000 population of the population due to cancer increased by as much as 35% between 1999 and 2019. The prognoses show that this number will continue to increase.	There are not enough units providing specialist oncological care in the province. The ever-increasing number of patient suffering from oncological diseases has a bearing on longer waiting times for implementation of oncological treatment. Due to the epidemiological situation and the size of the province's population, the scale of the phenomenon will be much greater than in other provinces.	Concentration of oncological care services to provide comprehensive services that also include rehabilitation and palliative care.
	6.4.	Especially the northern part of the province (the area of the former Częstochowskie Province) and	There are disparities in access to services between different	Diversifying the services regionally and adjusting them with

		the southwestern part of the province does not have enough specialist medical practitioners. Large medical centres are concentrated in the very centre of the province (central subregion) and in big urban centres. The peripheries of the province are characterised by low saturation of health care institutions. It should be noted within the territory of Rybnik and Bieruń-Lędziny districts, there are no institutions providing health care services in the field of hospital treatment under contracts concluded with the Śląskie Provincial Branch of the National Health Fund.	regions of the province (the highest concentration of health care units occurs in the area of the so called the Upper Silesia metropolitan area), as well as the division of financial resources designated to secure the health care needs of the beneficiary between the individual parts of the province.	epidemiological needs of the province's residents. Supporting activities aimed at improving the accessibility, adaptation of current actions to the needs of the residents e.g. by expanding the range of services performed, changing the profile of services, training medical staff, improving the quality of the services provided.
	6.5.	There were 1,255 intensive care beds in the province - separated from beds in specialist wards of hospitals for patients requiring intensive care and not meeting the medical criteria for admission to the anaesthetics and intensive care unit - and 237 beds for intensive cardiac care. The number of beds in the Anaesthetics and Intensive Care Wards was 473 (including 85 for children).	The intensive care health needs of the province will steadily increase due to an ageing population. Too low availability of service in Emergency Departments (EDs) is observed for the residents of the province, which is caused by a small number of launched and functioning EDs in comparison with other provinces, including paediatric EDs.	Increasing the level and quality of health care services in the area of life-threatening emergencies, including improving accessibility to services in intensive care, as well as optimalisation of the distribution of beds in the above-mentioned units.

	6.6.	Among the visits to PHC, only 4.84% constituted the visits within night and holiday health care. When compared with data on the number of patients assisted in Emergency Departments and an analysis of the groups of diagnoses with which patients report to EDs, it can be concluded that NHHC is an underutilised form of care.	The ED receives many patients who do not require immediate medical attention and could receive it in primary care or specialist outpatient care, which significantly burdens these wards and leads to a decrease in their efficiency.	Optimising the operation of the emergency departments,
	6.7.	There are 7 functioning infectious disease wards in the province. The average bed occupancy rate in the infectious disease wards was 71.37%. In only 2 providers does the level of bed occupancy indicate full capacity utilisation, the remaining cases indicate a higher performance potential than the level of services delivered. The situation has completely changed due to the COVID-19 outbreak.	The current epidemic indicates the need to increase access to infectious disease wards and to contract an infectious disease ward for children. Increased threats due to the unfavourable epidemiological situation of population migration and deteriorating immunisation rates in the population will lead to increased occurrence of infectious diseases, bacterial and drug-resistant infections in the following years.	Ensuring accessibility to infectious and zoonotic disease services by, among other things, increasing the number of providers outside the PHCPS and establishing a comprehensive centre for diagnostic and treatment of infectious and zoonotic diseases.
	6.8.	Neurology - hospitalisation A48 (comprehensive stroke treatment - JGP group) services are provided at 22 sites. For the residents of the Bielsko - Żywiec subregion	The number of stroke patients in the province continues to increase, leading to significant disability among most patients	Due to epidemiological trends in neurology, it is necessary to increase the number of providers

		are currently For residents of Lubliniec district, access to the services in question was secured by the providers located in neighbouring districts or cities with districts rights. The average bed occupancy rate was 75.46%. Strokes had twice the YLD rate as ischaemic heart disease. Data on waiting queues for inpatient rehabilitation services indicate that the longest waiting times for health care services include neurological rehabilitation (with regard to the location of wards at stroke units).	and at the same time, they are the second leading cause of death. There is limited access to comprehensive stroke treatment including rehabilitation and post-hospital care, which allows return to professional activity.	performing stroke treatment under the contract with the National Health Fund. The number of providers of the above-mentioned services should be increased.
	6.9.	There is limited accessibility to services provided in the following ranges: • gynaecological oncology - hospitalisations (1 provider per entire province), • maxillofacial surgery - hospitalisation (3 providers, all in the central subregion),	The province compares negatively with the country in terms of the incidence of the cervical malignant neoplasm. Population health needs in gynaecological oncology are anticipated to increase. Over the past few years, the number of hospitalisations in the wards increased.	Improving access to services performed in the fields of: gynaecological oncology - hospitalisation and maxillofacial surgery - hospitalisation, paediatric maxillofacial surgery - hospitalisation. Consideration should be given to reducing the number of wards performing

Psychiatric care and addiction treatment		- paediatric maxillofacial surgery (in 2019. no provider performed services in question) Between 2015 and 2019, the number of hospitalisation in maxillofacial surgery wards in the province increased by 11%, the most common cause of hospitalisation was skull and craniofacial bone fractures. In 2020, the efforts to establish subward of paediatric maxillofacial surgery at the Municipal Hospital Complex in Chorzów were finalised.	maxillofacial surgery, we see limited access to the aforementioned services.	surgical procedures in gynaecological oncology and concentrations of the above-mentioned services through the establishment of reference centres equipped with modern medical equipment and highly qualified medical staff.
	7.1.	The availability of treatment for children and adolescents in outpatient psychiatric specialist care is limited by the lack of functioning paediatric substance abuse treatment outpatient clinics, paediatric alcohol and codependency treatment outpatient clinics and paediatric substance abuse treatment. All individuals ages 0-18 are admitted to adult substance abuse treatment clinics. The province lacks or has few highly specialised outpatient clinics: psychogeriatric, neurotic, addiction treatment or sexological and pathological	Low accessibility to psychiatric care and substance abuse treatment dedicated to children and adolescents. Impeded access to highly specialised clinics.	Increasing and equalising the accessibility to outpatient psychiatry care and addiction treatment - especially to child mental health clinic, neurosis treatment clinics, addiction therapy clinics, sexology and pathology of intercourse clinics.

	intercourse. There are only two clinics for sexology and pathology of intercourse in the province. Low accessibility to mental health clinics for children in individual districts and cities with rights of district. In the province in 2020 there were 19 within the aforementioned scope: 14 primarily funded by the NHF and 5 clinics with another primary funding source.		
7.2.	The largest group of individuals aged 0-18 who reported to child mental health clinics were those with pervasive developmental disorders (F84), including childhood autism and behavioural and emotional disorders typically beginning in childhood and adolescence (F90-F98).	There are no outpatient clinics for childhood autism in the province. Children are admitted as part of the child mental health clinic.	Provide access to specialized units for diagnosis and therapy of pervasive developmental disorders (autism spectrum).
7.3.	There is an observed shortage of medical staff. In mental health clinics per over 500,000 counsellings provided by medical practitioners, the number of medical practitioners providing services was 501, including 484 psychiatrists. Per almost 147,000 of people treated in mental health outpatient clinics in 2020, 108 nurses provided services, including 27 nurses specialising in psychiatry and 23 after a psychiatry qualification	Inadequate medical staffing, relative to the number of services provided and the values recommended by the national consultant.	Providing more medical staff in outpatient psychiatric specialist care.

		course. In addiction outpatient clinics per more than 211,000 consultations, the number of therapists, specialists, addiction treatment instructors and other therapists who provided services was over 240. The worst situation can be observed in substance abuse clinics, where out of over 27,000 counsellings provided in such outpatient clinics, accounted for 11 medical practitioners and approximately 32 addiction psychotherapy specialists. There is a great shortage of child and adolescent psychiatrists in the province - the value of the indicator per 100,000 of residents is 0.8 (the rate for Poland - 1.1, the recommended value [1]- 2.0) and is one of the lowest values in comparison with other provinces.		
	7.4.	Average bed occupancy rate in inpatient psychiatric care providers was 306.6 days per year, or beds were 84.0% utilised. The highest utilised beds were located in abuse treatment (100.2%), forensic psychiatry (98.7%) and alcohol withdrawal syndrome treatment centres (98.5%). In 2020, the high bed utilisation	There is insufficient infrastructure in the province to provide adequate care in addiction treatment, forensic psychiatry and alcohol withdrawal syndrome treatment centres.	Ensuring the accessibility to inpatient psychiatric care by adjusting the number of beds due to the increase of patients treated for mental disorders and prognoses for this growth to continue.

[1] Value recommended by national consultant

		in wards designated for addicted patients, e.g. in addiction treatment centres - 93.3% and forensic psychiatry wards - 96.9%[2] continued). Concerning is the fact that 52.42% of adult inpatient admissions are emergency.		in the future. Ensuring the patients have access to comprehensive and integrated health care by creating more and more forms of community treatment.
	7.5.	There were only wards/centres for children and adolescents in the province, with alarmingly high bed utilisation in the paediatric substance abuse treatment centre (88.8%). The average bed utilisation rate in paediatric wards/centres was 82.3%. There were 2 inpatient psychiatric wards for children and adolescents in general hospitals. The average bed utilisation rate for these wards was very high at 95.3% (in 2020 - 86.0%). [3] Among children, as many as 58.7% of all inpatient admissions are emergency (for mood disorders, the percentage is as high as 84%).	Utilisation rates of existing infrastructure indicate an urgent need to address the issue of access to services providing medical assistance among children and adolescents with mental health and substance abuse disorders. It should be noted that the impact of alcohol consumption on the number of deaths in the province is 40% higher than the national average. The situation is similar when it comes to drug abuse - they have a 32% higher impact on the number of deaths in the province, than in the rest of Poland.	Securing access to inpatient psychiatric care for children and adolescents by adjusting the number of beds and day placements. Providing patients with access to comprehensive and integrated health care by creating more and more forms of community treatment.

[2] Data based on the report MZ-30 of the providers of inpatient (and daytime) psychiatric care

[3] Data based on MZ-29 report on general hospital activity

Medical Rehabilitation	7.6.	There are no contracted services in a psychogeriatric outpatient clinic or psychogeriatric ward in the province.[4]	Epidemiological and demographic prognoses clearly indicate that it is necessary to provide specialist assistance to the elderly, including psychogeriatric services.	Securing access to mental health care for the elderly population of the province.
	8.1.	The number of patients receiving rehabilitation services (all forms of the rehabilitation) was 379,000 (8,384 per 100,000 of the population, 11th place in Poland). Outpatient rehabilitation, the most used by patients form, had an annual patient number of 325,000 (7,202 per 100,000 of population) and it is 8% lower than the national average. Day rehabilitation - number of patients per 100,000 of the population is 642. The value of this rate is one of the lowest in the country (25% lower than the national average). Number of day care beds per 100,000 of the population was 63.2, which was 42% lower than the national average (12th place in the ranking by provinces).	Lower accessibility to selected services than nationwide, including in particular day and home-based rehabilitation.	Improving access to rehabilitation services, particularly for patients with clinical indications for rehabilitation coverage at a time and to an extent that allows for optimal support of the treatment process.

[4] On the basis of a guide to contracts concluded by Provincial Branches of the NHF

		Home-based rehabilitation - number of patients per 100,000. of the population is 93, and the national average is 126, which constitutes 26% less patients than the national average. The longest waiting time for health care services concerns the following fields: outpatient physiotherapy, home physiotherapy, systemic physiotherapy in day centre/ward as well as in inpatient setting (including oncological patients), neurological rehabilitation (taking into account the distribution of wards at stroke departments), pulmonic rehabilitation (including services for adults).		
	8.2.	Outpatient rehabilitation has high saturation by site of service based on number of patients per 100,000. of the population in the central part of the province: e.g. city of Katowice - 10,467, cities of Częstochowa - 10,136 and Bielsko-Biała - 9,126. The lowest value was recorded in the Rybnik district - 2,659. In the case of home-based rehabilitation, there is a considerable variation in access to services across the districts in the province - with the sale ranging from 369 to 22 patients per 100,000 of the population in each	The data show variation in access to rehabilitation services, especially in outpatient and home-based settings, for residents of different districts.	Reducing the inequalities in access to rehabilitation, especially outpatient and home-based rehabilitation, for residents of each district.

Long-term care		district. In some districts, there are no such services provided.		
	9.1.	18.6% of the population is in the 65+ age group, and by 2050 this share will increase to 34.0% (including 11.2% in the 80+ age group). In February 2020, over 1,400 patients were waiting for treatment in health care centre. (stable cases), and the average wait time was 239 days. There were 668 patients waiting for admission to a nursing centre, which constitutes 24.9% of all people waiting in queues in Poland. There were 1514 people waiting for long-term nursing home-based care services, which accounts for 37.8% of all people waiting for this service in Poland. The average waiting time was 124.74 days.	Demographic prognoses show that the process of ageing will intensify. The growing number of seniors in the population may increase the demand for long-term health care services. The accessibility of long-term care services is inadequate to meet epidomiological and demographic needs as indicated by both the number of patients and waiting times for treatment.	Ensuring availability of long-term care services, both inpatient and home-based, adequate to meet continously growing demand. It is important to take into account the current and projected demographic situation and the fact that the incidence of diseases, including age-related diseases, is increasing.
	9.2.	In the northern part of the province, as many as 3 districts (Częstochowa, Kłobuck, Lubliniec) do not have a single inpatient centre. In Biała Podlaska, Częstochowa, Kłobuck, Lubliniec, Rybnik, Bieruny-Lędziny districts and cities with district rights: Mysłowice, Tychy, Żory, no inpatient services were contracted	There is great disparity in access to long-term health care services between districts in the province.	There is a need to increase the number of services and to even out the differences in access to long-term care, as not all regions have been secured in terms of inpatient care.

	due to the lack of providers of such services in the area. The migration balance of patients using long-term health care is negative (-121), and for northern districts of the province it was a follows: Częstochowa - 216, Kłobuck - 155, Zawiercie - 154.		
9.3.	The Care Coefficient was 235, but it is anticipated to decrease to 169 in 2030 (the care coefficient will drop below 200 as early as 2026).	The anticipated decline in the Care Coefficient indicates the need for additional support for informal caregivers.	Support informal caregivers by, among other things, organizing and conducting local trainings for informal caregivers of older people who need support in daily functioning.
9.4.	The DCCs provide assistance in the care for dependent people, especially those over 65, who, due to their health condition, require nursing, care and rehabilitation services and continuation of treatment but do not require hospitalisation and do not qualify for care in a CTC due to a Barthel scale score above 40.	In view of expected increase in demand for various forms of long-term care, it is recommended to develop day care facilities, such as Day Care Centres, for dependent people, who do not, however, require inpatient hospital or long-term care.	Developing long-term day care, allowing support dependent people, including people over 65, who do not require hospitalisation and do not qualify for care in a CTC or NCC.

Hospice and palliative care	10.1.	The prognosis shows an increase in demand for palliative and hospice care beds from 18,200 in 2020 to 22,600 by 2050. In terms of the number of palliative and hospice care centres per 100,000 of the population (including all types of care), the province ranks 15th place in the country, with rate of 1.33 (rate for Poland is 1.73/100,000 population). There were 20 centres providing inpatient palliative care services in the province (0.44 per 100,000 of the population, 12th place in the country) within 16 of the 36 districts. In February 2020, the people waiting in queue for a palliative care ward constituted 66% of those waiting for this type of service from all over Poland. There were 53 home hospices operating under contracts with NHF (1.17 per 100,000 of the population, 14th place in Poland). Not all districts in the region were secured in terms of availability of home-based care - no home hospice services in the Rybnik District and in the following cities with district rights: Jastrzębie-Zdrój, Świętochłochowice and Siemianowice Śląskie.	The demand for palliative care and hospice care beds is expected to increase due to demographic and related epidemiological developments. Not all districts in the region were secured in terms of accessibility, including home and outpatient care.	Ensuring the adequate access to palliative and hospice care by increasing the number of provided health services and nullifying the differences in access to them across the province due to the dynamics of the ageing process in the province and the epidemiological situation

	10.2.	The province does not provide minimum number of inpatient palliative care as specified by European Association for Palliative Care (100 beds per 1,000,000 inhabitants) (the average number of beds per 1,000,000 inhabitants was 98.06).	In the province, there are still unmet needs for inpatient palliative care, which will increase due to ongoing demographic changes.	Increasing the bed base in inpatient palliative care, as indicated by the European Association for Palliative Care (100 beds per 1,000,000 inhabitants).
	10.3.	The number of palliative care medical practitioners per 100,000 of the population is 1.6, and the average age of medical practitioners is 53. The medical practitioner availability rate should be 3 per 100,000 of the population. One major issue is the impending decline in the number of nurses in the coming years. According to the MZ-89 report on specialists working in health care providers, the number of nurses specialising in long-term care per 100,000 of the population was 22.3, while in 2016 - 24.1. Number of nurses specialising in palliative care per 100,000 of the population was 9.1 and in 2016 it was 7.0.	The provision of medical staff in palliative and hospice care centres is not sufficient, especially in view of the expected demographic and epidemiological changes.	Securing palliative and hospice care in terms of staffing - including ensuring generational replacement of specialist medical practitioners and qualified nursing staff, recruiting psychologist specialising in clinical psychology and psycho-oncology to work in palliative and hospice care centres and addressing the shortage of medical caregivers required especially in palliative care wards and inpatient hospices.

Emergency Medical Services	11.1.	The province has the lowest ratio of medical rescue teams per 100,000 of the population at 3.603, the national average is 4.228 and the highest ratio is 6.22 (almost twice as high).	The number of operating emergency rescue teams is too small in relation to the current needs of the province.	There is a need to increase the number of emergency rescue teams and ensure adequate funding in order to relieve the emergency rescue teams of incidents handled and to ensure access to this type of service at least at the level of the national average.
	11.2.	Medical rescue teams in approx. 90% of the cases maintain maximum arrival times from the moment the medical dispatcher accepts the call (15 minutes) in a city of over 10,000 residents and in approx. 87% of the cases outside the city of 10,000 residents (20 minutes). In cities with over 10,000 residents, the primary teams have exceeded the median (statutory 8 minutes) arrival time (which is 9 minutes), for speciality teams the arrival time is maintained. In addition, medians outside cities of over 10,000 residents, whether by primary or speciality teams, are not exceeded.	In most cases, arrival times are observed by ERTs, but sometimes the statutory time is exceeded.	Additional efforts to reduce the longest arrival times for emergency rescue teams, including by the translocation of teams.

Medical staff	11.3.	Too low accessibility of services in Emergency Departments (EDs) for the province's residents due to a small number of launched and functioning EDs in comparison with other provinces, including paediatric EDs.	Residents of the province have difficult access to services provided in the ED.	There is a need to increase the number of EDs, including paediatric EDs.
	12.1.	Number of nurses per 100,000 of the population was 705 (621 in Poland). It is estimated that over the next 10 years the number of nurses aged 25-59 in the province will drop by 36% (in Poland by 33%) and the number of midwives by 24% (in Poland also by 24%). Among nurses, the average age was approx. 50 years.	An overwhelming number of nurses have already reached retirement age or will reach it within a dozen years, which will create a shortage in their numbers.	Increasing the number of places on the nursing faculty and creating an incentive system for starting the nursing studies. Taking measures to motivate those who have left the nursing profession to be professionally active again.
	12.2.	Specialist medical practitioners - the greatest need in terms of number of speciality places (estimated for 2020 considering the number of training places needed to ensure the alternation of generations and the recommended number of specialists) are in the following priority areas: internal medicine (1,858), psychiatry (398), paediatrics (278), geriatrics (187) and infectious diseases (22).	Insufficient number of specialists places in some faculties, which prevents the education of an adequate number of specialists necessary to maintain the alteration of generations and respond to the health needs of the population.	Creating more speciality places in the fields where the need for speciality places has been estimated. Initiating a plan for creation of specialist places with the aim of achieving the optimal number of specialist medical practitioners in the province within a few years.

Medical equipment				particularly in priority areas.
	13.1.	The average number of examinations performed in districts with the use of angiographs is in the range between 0 and 2,500 examinations per year. In the provinces, there were 51 angiographs of which 10 were a high priority for replacement (19.6%), 2 were a medium priority for replacement (3.9%) and 39 a low priority for replacement (76.5%). High priority for replacement applies to 10 devices (19.6%) in the following districts: city of Bielsko-Biała - 2, city of Bytom - 1, city of Częstochowa - 2, city of Katowice - 2, city of Sosnowiec - 1, city of Zabrze - 1, Cieszyn - 1 The following districts are most distant from angiographs: Zawiercie 37 km, Myszków 33 km, Żywiec 33 km.	The distribution of equipment utilisation, indicates inefficient operation. According to the adopted reference values, the equipment utilisation rate should be at a higher level. Currently, the high priority for replacement applies to 19.6% of angiographs in the province.	Efforts should be made to maximise the utilisation of current medical equipment based on the reference number of procedures performed on a single machine, and to replace angiographs that have a high priority for replacement.
	13.2.	The average number of examinations performed in districts with the use of brachytherapy machines is in the range between 0 and 2,000 examinations per year. In the province, there were 10 brachytherapy machines, of which 2 were a high priority for replacement (20%), 4 were a medium priority for replacement (40%), and 4 a low priority for replacement (40%). High priority for replacement applies to 2 machines (20%) in City of Gliwice - 2.	The distribution of brachytherapy equipment utilisation in the province indicates inefficient operation of this equipment. Currently, the high priority for replacement applies to 20% of brachytherapy machines in the province.	Efforts should be made to maximise the use of current medical equipment and to replace brachytherapy machines that have a high priority for replacement.

	The following districts are most distant from brachytherapy equipment: Zawiercie 60 km, Wodzisław 48 km, Racibórz 46 km.		
13.3.	The average number of examination performed in districts with the use of gamma cameras is in the range between 0 and 5,000 examinations per year. There were 17 gamma cameras in the province, of which 6 were a high priority for replacement (35.3%), 1 a medium priority for replacement (5.9%), and 10 a low priority for replacement (58.8%). High priority for replacement applies to 6 devices (35.3%) in the following districts: Częstochowa - 1, city of Gliwice - 2, city of Katowice - 1, city of Tychy - 1, Cieszyn district - 1. The following districts are most distant from gamma cameras: Żywiec 41 km, Zawiercie 37 km, Lubliniec 36 km.	The distribution of gamma camera use in the province indicates inefficient use of this equipment. Currently, the high priority for replacement applies to 35.3% of gamma cameras in the province.	Efforts should be made to maximise the use of currently owned medical equipment and to replace gamma cameras that have a high priority for replacement.
13.4.	The average number of examinations performed in districts using mammographs is in the range between 0 and 8,000 examinations per year across the province, excluding the city of Gliwice, where the average number of examination performed is 9763. There were 62 mammography machines in the province, of which 35 were a high priority for replacement (56.5%), 7 were a medium priority for replacement (11.3%) and 20 a low priority for replacement (32.3%).	The distribution of mammography machines in the province indicates the inefficient operation of this equipment. The current high priority for replacement in the province applies to the significant number of mammography machines (56.5%).	Efforts should be made to maximise the use of the currently owned equipment and to replace mammography machines that have a high priority for replacement.

	High priority for replacement applies to 35 devices (56.5%) in the following districts: city of Bielsko-Biała - 2, city of Bytom - 1, city of Chorzów Cieszyn district - 6, city of Częstochowa - 1, city of Dąbrowa Górnicza - 2, city of Katowice - 7, city of Ruda Śląska - 2, city of Rybnik - 1, city of Sosnowiec - 3, city of Zabrze - 1, Będzin district - 1, Bieruń-Lędziny district - 1, Lubliniec district - 1, Pszczyna district - 1, Wodzisław district - 2. The following districts are most distant from (stationary) mammography machines: Żywiec 33 km, Racibórz 24 km, Gliwice 13 km.		
13.5.	The average number of examination performed in districts with the use of MRIs is within the range between 500 and 6,000 of examinations per year. In the province, there were 41 MRIs, of which 1 was a high priority for replacement (2.4%), 6 were a medium priority for replacement (14.6%) and 34 a low priority for replacement (82.9%). High priority for replacement applies to 1 device (2.4%) in the city of Piekary Śląskie - 1. The following districts are most distant from MRI: Zawiercie 39 km, Lubliniec 36 km, Żywiec 33 km.	The distribution of mammography machines used in the province indicates the inefficient operation of this equipment. According to the adopted reference values, the utilisation rate of MRIs should be at higher level throughout the province, excluding the cities of Katowice, where the average number of examinations performed was 6,413.5 and Tychy, where the average number of examinations performed was 6,275. The current high priority for replacement in the province is for 2.4% of MRIs.	Efforts should be made to maximise the use of the currently owned equipment and to replace MRIs that have a high priority for replacement.

	13.6.	X-ray machines are very common diagnostic devices, available in all districts of the province. The average age of equipment in the districts ranges from 6 to 16 years. In the province, there were 1002 x-ray machines in the province, of which 246 were a high priority for replacement (24.6%), 14 were a medium priority for replacement (1.4%), and 742 a low priority for replacement (74.1%). The high priority for replacement applies to 246 machines (24.6%) in the following districts: city of Bielsko-Biała - 17, city of Bytom - 11, city of Chorzów - 5, city of Częstochowa - 16, city of Dąbrowa Górnicza - 8, city of Gliwice- 10, city of Jastrzębie-Zdrój - 4, city of Jaworzno - 3, city of Katowice - 39, city of Mysłowice - 3, city of Piekary Śląskie - 2, city of Ruda Śląska - 7, Rybnik - 5, city of Siemianowice Śląskie - 9, city of Sosnowiec - 13, city of Tychy - 4, city of Zabrze 18, city of Żory - 2, Będzin district - 9, Bielsko-Biała district - 13, Bieruń-Lędziny district - 1, Cieszyn district - 10, Częstochowa district - 3, Gliwice district - 3, Lubliniec district - 1, Mikołów district - 2, Myszków district - 1, Pszczyna district - 5, Racibórz district - 3, Tarnowskie Góry district - 3, Wodzisław district - 3, Zawiercie district - 6, Żywiec district - 7.	Due to the significant increase in medical imaging equipment and retrofitting of medical entities in this regard in 2020 2021in relation to the fight against epidemics, this should be included in the replacement priorities of the aforementioned devices.	Efforts should be made to maximise the use of currently owned equipment and to replace x-ray machines that have a high priority for replacement.

	13.7.	The average number of examinations performed in districts with the use of CT scanners ranges between 250 and 11,250 examinations per year. In the province, there were 92 CT scanners, of which 21 were a high priority for replacement (22.8%), 11 were a medium priority for replacement (12.0%), and 60 a low priority for replacement (65.2%). High priority for replacement applies to 21 devices (22, 8%) in the following districts: city of Bielsko-Biała - 1, city of Bytom - 1, city of Częstochowa - 1, city of Dąbrowa Górnicza - 1, city of Jaworzno - 1, city of Katowice - 10, city of Ruda Śląska - 1, Cieszyn district - 1, Kłobuck district - 1, Lubliniec district - 1, Pszczyna district - 1, Tarnowskie Góry district - 1. The following districts are furthest from a CT scanner in the province: Częstochowa 22 km, Bieruń-Lędziny 13 km, the city of Mysłowice 12 km.	The distribution of CT scanner utilisation in the province indicates inefficient use of this equipment. The current high priority for replacement applies to 22.8% of CT scanners in the province. Given the significant increase in medical imaging and retrofitting of such equipment to health care providers in 2020 2021 in relation to the fight against the epidemic, this should be included in the replacement priorities of the a devices.	Efforts should be made to maximise the use of the currently owned equipment and to replace CT scanners that have a high priority for replacement.

Appendix No. 13

Challenges for the health care system and recommended lines of action in the Świętokrzyskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	The province is experiencing adverse demographic changes affecting the organisation and operation of health care. An intergenerational support rate (i.e. the number of people over the age of 85 per 100 people of age between 50 and 64) determines family caregiving capacity. Additionally, the downward trend in population growth continues. That puts the province in last place in the country.	The intensification of negative demographic trends will lead to a significant depopulation of the province and a clearly weaker population potential. The ageing population is reflected in the demand for nursing and care services, which does not match with the supply of this range of services.	not applicable
Epidemiology and epidemiological	2.1.	Ischaemic heart disease (IHD) has been a major health problem for years. This situation, concerning both the province and Poland, remained unchanged between 1999 and 2019, although values of both the DALY and the number of deaths were higher than the national average.	not applicable	not applicable

	Based on estimates of prevalence and death rates, it is believed that by 2028 the situation will not change, and ischaemic heart disease will still be the biggest problem in the province.		
2.2.	The second most severe health problem in terms of the DALY value and the mortality rate was stroke. In addition, they were responsible for almost twice as many years of life in disability as ischaemic heart disease. A similar trend was observed for Poland. In the case of DALY, the value of the index was characterised by a higher value in the province than the national average. By increases in the prevalence, incidence, and number of deaths from stroke are projected.	not applicable	not applicable
2.3.	Cancer is also a significant group of health problems in the province. Of these, malignant neoplasms of the trachea, bronchus, and lung were responsible for the highest DALYs and the highest number of deaths, ranking third for both indicators. When considering the number of deaths caused by a subgroup of cancers, in addition to the above-mentioned types of cancer,	not applicable	not applicable

	colorectal, rectal as well as pancreatic malignancies were responsible for the highest number of deaths. While analysing cancer-related mortality by gender, it was observed that among women, the highest number of deaths was caused by malignant neoplasms of the colon and rectum.		
2.4.	Among the five health problems characterised by the highest DALYs rate in the province was diabetes. The prognosis for diabetes is unfavourable. From 2019 up to 2028, the value of the prevalence rate will increase by 20.28%, and the estimated growth will be the third largest increase among all health problems, after depressive disorders and lower respiratory infections.	not applicable	not applicable
2.5.	Alzheimer's disease and other dementia diseases are another health problem. Epidemiological prognoses show that this problem will grow, with prevalence, incidence, and death rates projected to increase by 2028.	not applicable	not applicable

Risk factors and prevention	3.1.	The province had the highest proportion of metabolic factors in deaths nationwide (17% higher than the national average). In the province, risk factors such as smoking, high blood pressure, and inadequate eating habits were responsible for the greatest loss of number of healthy life years and deaths.	The risk factor that weigh most heavily on the population are related to lifestyle. The province has a high proportion of metabolic factors in deaths.	Targeting prevention efforts at the risk factors that have the greatest impact on the population. Development, implementation, monitoring and evaluation of health policy/health programmes addressing the important health needs of the residents of the province.
	3.2.	Cervical cancer screening in the province was performed by approx. 29% of women from the annual population to be screened, and this was the second highest rate in the country. The proportion of screened women in the population to be screened is increasing each year (in 2018 it was 26,800 per 100,000 of the annual population to be tested, and in 2019, 28,600). Screening for breast malignant neoplasm in the province was performed by approx. 59% of the annual population to be screened, and it is a lower rate than national average (approx. 64%). The proportion of women screened in the population to be screened increased compared to 2018 (up from 53,200 per 100,000 of the annual population to be screened to 58,600). For further improvement	Despite growing trends in admissions for cytological examinations in Poland and in the province as well, it still remains at a low level. Admissions for mammography are lower than the national average, with high epidemiological rates of breast malignant neoplasm compared to the rest of the country.	Improving admissions for mammography and cytology screenings is an important issue. Additionally, it is vital to develop, implement, and monitor prevention programmes aimed at eliminating risk factors that contribute to breast and cervical malignancies.

Primary health care		A strong argument in favour of mammography screening is a fact that the incidence of breast malignant cancer per 100,000 of women is higher than the national average (93.7 vs 93.5 for Poland), as the number of deaths per 100,000 of women (38.8 vs. 37.6 for Poland).		
	4.1.	Active use of PHC service among patient registered on active lists: young men were the least represented group (71.32% of those registered aged 19-30 years and 73.8% of those registered aged 31-40 years). Young women were also less likely to use PHC services, but the proportion of active patients in the population was less than 4 percentage point higher than among men.	Men are less likely to feel the need to take care of their health.	Raising awareness, especially among young men, of the important role of prevention and the need for periodic health examinations.
	4.2.	Night and holiday health care services were performed by 20 providers. The average number of patients per 1 medical entity with NHHC services varies, ranging from 26,000 in Opatów district to 109,000 in Ostrowiec district.	This form of health care is inefficiently utilised, as it is across the country. Patients often end up in Emergency Departments instead of NHHC, even without a medical emergency that qualifies for ED services.	Strengthening the role of NHHC to improve patient admissions to relieve Emergency Departments of cases that do not require health and life-saving so that ED staff can focus their attention on patients,

			who need their help the most.
4.3.	The age structure of the patients did not differ from the nationwide - the largest group of patients constituted of people aged between 61 and 70 years. The same was true for the average number of visits - the structure was almost identical, with slightly higher values for the province, with maximum values in the 81-90 and 90+ age groups.	As in Poland, the province faces a major challenge in providing care to elderly patients with use of PHC.	Adapting health care infrastructure to meet the needs of an ageing population. Modernisation of infrastructure for provision of guaranteed health services in the area of PHC (supplying medical providers with necessary medical equipment and apparatus).
4.4.	The majority of visits to the PCP were classified in accordance to ICD-10 as Z76, a group called "persons coming into contact with health care in other circumstances" i.e. e.g. reissuing their prescription.	Most visits concerned health services not directly related to patient care - diagnosis and treatment that do not require highly specialist medical staff.	Improving digital accessibility through the development of digital and telemedicine services, as well as the development of digital competencies of medical staff providing guaranteed primary health care services, especially in the area of activities that do not require appearance of the patient.

Ambulatoryjna Opieka Specjalistyczna	5.1.	There is uneven access to clinics - in Kielce district 2.13 per 10,000 of the residents, in Pińczów 3.85 per 10,000 of the residents, in Kazimierza Wielka 3.87 per 10,000 of the residents, and in the city of Kielce 15.86 per 10,000 of the residents. (309 out of 876 located in the province).	Access to specialist clinics is provided mainly in the large cities of the province (mostly in the city of Kielce), while at the same time there is a visible need of patients in smaller towns, which contributes to migration of patients to facilities located in other areas.	Ensuring that residents of smaller districts have better access to services under the OSC.
	5.2.	The longest waiting times or lack of clinics occur in the fields of: endocrinology, cardiology, HIV/AIDS treatment, paediatric oncologic surgery, plastic surgery, paediatric neurosurgery, allergology, rare inborn metabolic defects in children, toxicology, diabetology.	An insufficient number of clinics providing outpatient care contributes to significant waiting queues for health services.	Increasing the number of outpatient clinics with the longest wait times that provide outpatient care, or increasing contracts for existing clinics.
	5.3.	Inadequate availability of emergency services (late evenings, weekends), especially for the services such as: ophthalmology/paediatric ophthalmology, general surgery/paediatric surgery, orthopaedics and traumatology of the musculoskeletal system/orthopaedics and paediatric traumatology of the musculoskeletal system.	There are problems with providing continuity of care during non-emergency hours at selected specialty clinics.	Increasing the number of medical staff who can provide emergency health services.

Hospital treatment	5.4.	The most common health problem for which residents use the OSC services are as follows: musculoskeletal and connective tissue diseases, urinary - genital tract diseases, eye and appendage diseases, respiratory diseases, cancer, cardiovascular diseases, trauma and poisoning, nervous system diseases.	Orthopaedic and urologic diseases were the most common reasons for using OSC.	Linking specialist outpatient clinics to a hospital ward of the same medical speciality (outpatient wards or outpatient clinics) that should provide patients with coordinated and comprehensive specialist medical care.
	6.1.	Among the residents of Świętokrzyskie province, the following were the most common causes for hospital stay: open wounds (17.93%), contusions of any body part (12.55%), pain and hypersensitivity in the abdominal region (12.52%), followed by diseases of the genitourinary system (9.75%).	Emergency conditions are the most common cause of hospitalisation.	Considering the need to adapt hospital care to the needs of an ageing population, it is necessary to develop the bed base in line with the projected growing demand for beds of a relevant profile. Improving the efficiency of many wards, especially surgical wards, regardless of their speciality, by increasing the proportion of

				surgical services in individual wards. Modernisation of infrastructure for providing guaranteed health services in hospitals aimed to change the structure of particular hospital services and supply medical entities with specialist equipment and apparatus necessary at this level of care.
	6.2.	The number of hospitalisations indicated an upward trend, up to 11% compared to 2014.	not applicable	Actions aimed at inverting the pyramid of health problems.
	6.3.	Out of 387,000 of hospitalised patients, only 33% were over the age of 65. From a total of 675,000 of hospitalisations, only 2,200 (0.3%) were hospitalisations in geriatric wards.	Most conditions, especially among the elderly patients, are chronic in nature, hospitalisation is only an orientation of treatment, follow-up must be done on an outpatient, long-term basis (e.g. post-stroke).	Development of community treatment.

	6.4.	not applicable	not applicable	There is a need for new dialysis stations or to increase the number of beds in existing ones. The establishment of an endoscopy procedure room for paediatric urology is recommended.
	6.5.	There is a problem with ageing medical equipment and apparatus and the infrastructure of medical entities. 40% of the hospital space in the Świętokrzyskie Province was in inadequate and inappropriate condition, meaning that they require renovation work within 2 years. At the same time, the percentage of space in an inadequate condition (requiring renovation immediately) was the highest in Poland. It should be noted that only the providers included in the PHCPS participated in the survey, so the actual condition of all hospitals in the province may be worse.	An important challenge for years to come is to ensure access to high quality medical equipment and apparatus (including renewal of the current base and its expansion in areas that will require it)	Modernisation of infrastructure for providing guaranteed health services in hospitals aimed to change the structure of particular hospital services and supply medical entities with specialist equipment and apparatus necessary at this level of care.
	6.6.	The bed occupancy rate was 106.56% (82.63% for Poland). Excluding EDs, average bed occupancy rates above 100% were recorded for 5 types of	There is strong variation in the bed occupancy rate of hospital wards in the province. There are overloaded	Rationalisation of the number of beds in each ward based on projected

		wards: neurology (including stroke) - 150.2%, nephrology for children - 120.74%, clinical oncology and selected services within chemotherapy - 117.47% In addition, according to estimates, the demand for inpatient beds for vascular diseases is expected to increase by approx. 30%. Occupancy rates below 50% were recorded for 3 types of wards, of which the lowest were for: anaesthesiology and intensive care for children - 42.69%, ophthalmology - 38.54%, rehabilitation (including musculoskeletal) for children - 36.99%.	wards (above 100%), for which demand will increase, and those with occupancy rates even below 50%.	changes in the number of hospitalisations and the assumed achievement of a standard bed occupancy rate of at least 70% in paediatric wards and 80% in other wards.
	6.7.	Considering stable cases, the longest queues for inpatient care in February 2020 (i.e., with the highest number of wait days) occurred in the following wards: otorhinolaryngology - 166.5 days, surgery for children - 105 days, allergology - 83 days. Queues for other wards were equal to or shorter than 77 days. The average waiting time to a ward during that period was 45.42 days, while nationwide it was 114.33 days. Considering urgent case queues in February 2020, the longest waiting times were in wards such as: allergology - 189 days, otorhinolaryngology - 28.3 days, cardiac surgery - 26 days.	It is necessary to increase and equalise access to health services in deficit areas in the province to reduce waiting times for hospital treatment.	Creating same-day surgery wards, which do not need to have 24-hour access to an operating theatre. Support for the development of "same-day" health care services in various areas due to very high capacity utilisation. Improving access to hospital services

			with the longest average wait time. Striving to reduce patient wait times for ENT procedures under general anaesthesia by increasing operating days in laryngology wards and creating a paediatric laryngology ward and a paediatric post-operative recovery room.
6.8.	Arguments in the epidemiology and epidemiological forecasting section.	Projections based on demographic trends assume an increase in demand for hospitalisation of patients requiring care for cardiovascular diseases, including cardiac infarction or cardiac failure.	It is appropriate to increase the availability of the above-mentioned services and thus to early cardiac rehabilitation. Striving to increase emergency admissions to non-invasive treatment wards so that their percentage is at least 30% of all admissions to an individual non-invasive treatment ward. There is an urgent need to implement modern cardiological, cardiac surgery and

				rotablation procedures, complex electrophysiology procedures (mainly PVI), simultaneous revascularisation of intracerebral arteries, necessary for subsequent cardiac surgery, removal of worn or infected cardiac electrotherapy equipment, etc. It deems appropriate to take steps to expand the activities of programme providers, in which patients are treated with transcatheter mechanical thrombectomy of intracerebral or intracranial vessels.
	6.9.	not applicable	not applicable	It is recommended to increase the number of contracts for the provisions of services in the pilot programme of care for beneficiaries within the oncology network and to improve the access to diagnostics by

			establishment of day-care and/or outpatient chemotherapy centres with good diagnostics facilities and the capability to hospitalise the patients if necessary on the basis of district hospitals of the province.
6.10.	not applicable	not applicable	It is recommended to establish an immunology ward for adults, currently there is no such ward in the province, which could take care of the patients with multiple immune disorders, whose number in the era of intensively developing biological oncologic treatment will gradually increase.
6.11.	There are no neurological wards in the districts of Włoszczów, Jędrzejów, Pińczów, Kazimierza Wielka, Kielce, Busko-Zdrój.	Limited accessibility to neurological services, including stroke in the southwestern area of the province, where there is a blank spot in terms of neurology wards.	Expand access to neurology services, including stroke, in the southwestern area of the province.

	6.12.	A general deterioration in access to renal replacement therapy is reported in the province. The current situation is approaching the limit of dialysis beds. It has been observed that there is lack of beds for haemodialysis patients in case one dialysis station fails. The number of sites for haemodialysis patients has not increased for 10 years, despite a steady increase in the number of haemodialysis patients.	Contracting and securing the current and future needs of nephrology wards and in dialysis stations for dialysis patients with equal access throughout the province.	There is a need for new dialysis stations or to increase the number of beds in existing ones. It is appropriate to contract and secure current and future needs of nephrology and in dialysis stations for dialysis patients with equal access throughout the province.
	6.13.	In the province, the largest number of patients benefited from the neovascular (exudative) form of age-related macular degeneration (AMD) and the multiple sclerosis treatment programme, with 700 and 500 patients respectively. Currently, the access to treatment with transcatheter mechanical thrombectomy of intracerebral and/or intracranial vessels is limited, the patients are treated at only one centre in the province.	Access to thrombectomy in the province should be increased.	It is appropriate to increase access to treatment with transcatheter mechanical thrombectomy of intracerebral or intracervical vessels.
	6.14.	Since 2016, there has been a dynamic increase in the number of inpatient nosocomial infections. In terms of the rate of nosocomial infections	Adherence to specific principles of disinfection and hygiene standards in hospital treatment	Effective monitoring of nosocomial infections.

Psychiatric care and addiction treatment		treated in inpatient setting per 100,000 of the population, the province was ranked 1st in the country with the value of 397.74 (above the national average value of 235.55). The rate of deaths due to nosocomial infections per 100,000 of the population was higher than the national average (9.89 vs. 4.05). In terms of mortality due to nosocomial infections, Świętokrzyskie Province also ranked 1st in Poland.	of patients prevents nosocomial infections. Nosocomial infections are very common in hospitals in the province.	Introducing hospital staff training. Implementing an effective hospital infection control system. An analysis should be made of the reasons for the reaching the highest rates of the nosocomial infections in Poland.
	7.1.	The province has one of the lowest percentages of patients residing and being treated in the same area compared to other provinces. Epidemiological forecasts show that this problem will grow in the future, so it is crucial to promote mental health and improve access to all form of psychiatric care in the region. Within the province, the highest percentage of patients residing and being treated in the same area is in the city of Kielce (adults - 92.01%, children - 96%). For the remaining districts, the above-mentioned rate varies: for adults it ranges from 37.18% to 82.86%, as for children it ranges from 0% to 85.79% This is due to the location of the providers, including the primary forms of	It is reasonable to adapt all forms of psychiatric care and addiction treatment to the current needs of residents of the province, particularly in areas of low accessibility.	Priority action on a provincial scale should be to fill the "blank spot" on the map of resources of inpatient and outpatient psychiatric care in districts by creating centres that offer comprehensive psychiatric services. Developing comprehensive care for the adult patient. In the absence of such a possibility, developing various complementary forms of psychological care. To

		the psychiatric care - for adult psychiatric care, outpatient clinics are located in every district, but day units are only in three districts, community treatment centres are located in seven districts (i.e., seven districts lack such facilities). The hospital wards are located in Kielce district and Sandomierz district. Only one district has a detoxification/alcohol detoxification ward/centre. In psychiatric/psychological outpatient clinics for adults in the Świętokrzyskie Province, there was a high proportion of medical consultations - 72.05% (for Poland it was 68.9%), the proportion of individual psychotherapy was similar to the rate for Poland - 15.13% (15.25% for Poland), the proportion of psychological consultations was lower than in the rest of country - 11.21% (14.01% for Poland).		At the district level, it is advisable to establish new institutions for the mentally ill, i.e. Psychiatric and Addiction Centre, Day Care Centre for Neurosis and Day Psychiatric Rehabilitation Centre, Paediatric Mental Health Outpatient Clinic, Detoxification Ward and Day Psychiatric Ward. It is recommended that more contracts be commissioned by NFZ for psychiatric consultations in order to accommodate more patients. Implementing medical - psychiatric rehabilitation programmes to facilitate return to work for this group of conditions, which is the most common cause of vocational inactivity.

	7.2.	The most frequent diagnoses among adults receiving psychiatric care and substance abuse treatment are anxiety disorders, addictions, organic disorders and mood disorders. Adult psychiatric/psychological outpatient clinics (74.36%), adult substance abuse treatment/therapy clinics (14.84%), adult psychiatric wards (10.53%) were used by the most patients in the province. In total, Poland had a slightly higher proportion of patients treated in psychiatric/psychological outpatient clinics and a lower proportion in adult psychiatric units, with values for Poland with values for Poland of 77.03%, 14.94% and 8.57%, respectively. The province recorded a very low proportion of patients treated in community treatment centres (2.58%) and psychiatric day wards (1.29%).	It is reasonable to ensure equal and adequate access to outpatient, community and day care services located closer to the patient's place of residence, e.g. by developing Centres for Mental Health while reducing the number of hospitalisations.	Development of comprehensive and coordinated psychiatric care for adult patients - establishment of further Centres for Mental Health for adults so that there are at least 7 in the province, development of Centres for Mental Health - expanding the area of responsibility of the already operating Centre. Establishing more adult mental health clinics, adult day care wards and adult community treatment centres, so that their distribution ensures the access to guaranteed psychiatric outpatient, day and community (home-based) services provided in areas not covered by Centres for Mental Health for

				the adults. Establishing general psychiatric wards in district hospitals, located at the site of the Adult Centre for Mental Health. Development of cooperation of psychiatric treatment centres with schools, patient's living environment.
	7.3.	The most common diagnoses among the children and adolescents receiving psychiatric care and substance abuse treatment services are other mental disorders, pervasive developmental disorders, conduct disorders and mixed emotional and behavioural disorders, neurotic disorders related to stress and somatoform and hyperkinetic disorders. The number of patients per 100,000 of the population with diagnoses of other mental disorders in the province is significantly higher than the same ratio for Poland (for the province it is 581.07, for Poland - 414.68). The province has one of the lowest percentages of patients under 18 years of age residing and being treated in the same area	Due to the lack of comprehensive psychiatric care, it is appropriate to create facilities for comprehensive child and family therapy as well as group therapy for minors. The province lacks facilities for comprehensive child and family therapy, as well as group therapy for minors.	Improving the availability of outpatient and community-based care for children (creating a comprehensive model for the prevention of developmental mental disorders). There is a need to establish more mental health clinics for children and adolescents, so that their distribution ensures that children and adolescents have access to guaranteed outpatient psychiatric services provided in areas not covered by

		compared to other provinces (89.27%). Within the province, the highest percentage of patients residing and being treated in the same district is in the city of Kielce (96%). In terms of this indicator to the district level, for most of the districts, the values are much lower than the same indicator in adult patients - in 10 out of the 14 districts, less than 30% of patients under the 18 were treated in the district of residence. This may be due to the much poorer availability of basic forms of psychiatric treatment dedicated to children and adolescents: outpatient clinics were available in only four districts, there was no access at all to day care wards and community treatment centres, hospital care was available in Kielce. Currently, in connection with the reform of psychiatric care for children and adolescents, four centres of community psychological and psychotherapeutic care for children and adolescents (the first reference level) have started operating in the province. Among children and adolescents in the province, most (89.41%) patients were treated in psychiatric/psychological counselling centres for children, followed by psychiatric departments for children (5.27%), then psychiatric/psychological counselling centres for adults		the Centre for Mental Health for children and adolescents services (second reference level) and the Centre for Highly Specialist 24-hour Psychiatric Care services (third reference level). Developing comprehensive and coordinated psychiatric care provided to children and adolescents by establishing 2-3 Centres for Mental Health for children and adolescents (second reference level) and a Centre for Highly Specialist 24-hour Psychiatric Care. Development of cooperation of psychiatric treatment centres with schools, patient's living environment.

Medical Rehabilitation		(4,62%). Patients residing in the province received almost no treatment in children's day wards or children's community treatment centres due to the lack of access to these forms of care in the province.		
	8.1.	The majority of rehabilitation services are used by people residing in cities (57.4%, 69.3% for Poland) and women (almost 65%). Nearly 10% of the population are people with severe disabilities. Musculoskeletal disorders are the main reason why patients seek rehabilitation (72% for the province, 74% for Poland). In terms of the number of centres per 100,000 of residents providing rehabilitation services, the province ranks second among all provinces. This indicator is 54% higher than the corresponding indicator for Poland. The province currently lacks access to services for patients in the following areas: pulmonary rehabilitation as well as rehabilitation of comatose children and adults.	Rehabilitation is primarily used by orthopaedic patients. There are "blank spots" in some areas of rehabilitation.	Ensuring equitable, adequate access to outpatient physiotherapy services by taking steps to initiate rehabilitation in non-covered areas. It is appropriate to contract and secure access to services for patients in the following areas: pulmonary rehabilitation and rehabilitation of comatose children and adults.
	8.2.	In terms of the number of patients receiving outpatient rehabilitation services	Outpatient rehabilitation services	In the case of health services provided

		per 100,000 of the population, the province was ranked 7th among all provinces and exceeded the rate for Poland by 5%. In terms of the number of medical practitioner consultations per 100,000 of the population, the province was ranked quite low, as it was on the 11th place among all the provinces and this rate is 40% lower than the rate for Poland. In terms of physiotherapy visits per 100,000 of the population, the provinces ranked 3rd among all provinces, and this rate is 62% higher than the rate for Poland. Out of 102 municipalities, there are no secured services in 13 municipalities, such as: Bliżyn, Czarnocin, Imielno, Kije, Kluczewsko, Łączna, Mirzec, Moskorzew, Opatowiec, Stopnica, Wąchock, Wojciechowice, Zawichost.	were secured in most districts. There is no rehabilitation clinic in Kazimierza Wielka district.	within the framework of outpatient physiotherapy, it is important to have access to treatments as close as possible to the patient's place of residence; therefore, it is recommended that access be equalized within the province.
	8.3.	Systemic: In terms of the number of centres per 100,000 of the population, the province ranks 3rd among all the provinces, and the rate is 20% higher than that of Poland. Cardiac: In terms of the number of patients per 100,000 of the population, the province ranks 7th	not applicable	Striving to increasing access to cardiac rehabilitation or cardiac telerehabilitation hybrid services in a day centre/ward and in inpatient setting in areas where there is a cardiology ward but no cardiology centre

		of all provinces and exceeds the rate for Poland by 12%. In terms of number of person-days per 100,000 of the population, the province ranks 8th among all the provinces and is 5% below the rate for Poland. Services in this field are provided only in two districts: the city of Kielce and Busko-Zdrój district. In terms of the number of centres per 100,000 of the population, the province is next to last place among all the provinces, and the rate is lower by 54% than the rate for Poland. Neurologic: In terms of the number of patients per 100,000 of the population, the province ranks 12th among all the provinces and is 12% below the rate for Poland. In terms of number of person-days per 100,000 of the population, the province is next to last place among all provinces, and is 29% below the rate for Poland. Neurological rehabilitation services are currently secured at the stroke ward.		, so that the patient has the opportunity to continue treatment after a cardiac infarction. The above applies to Sandomierz and Pińczów districts.

	8.4.	In terms of the number of patients per 100,000 of the population, the province ranks 4th among all provinces and exceeds the Polish rate by 41%. In terms of number of person-days per 100,000 of the population, the province ranks 4th among all provinces and exceeds the Polish rate by 35%. In terms of the number of patients per 100,000 of the population, the province ranks 6th among all the provinces and exceeds the Polish rate by 7%. In terms of number of person-days per 100,000 of the population, the province ranks 10th among all provinces and is 37% below the rate for Poland. In terms of number of patients using these services per 100,000. of the population, the province ranks 8th among all provinces and is 11% below the rate for Poland. In terms of number of person-days per 100,000 of the population, the province is next to last place among all provinces and is 62% below the rate for Poland.	Systemic rehabilitation services are secured in most districts. There are no centres in Kazimierza Wielka and Pińczów districts. Analysing the discrepancies between the place of residence of the patients and the places where the services are provided, it can be observed that the largest number of patients from other areas use the services in Busko-Zdrój district. Cardiac rehabilitation are provided only in five districts: the city of Kielce, Starachowice district, Konecki districts, Ostrowiec Świętokrzyski district and Opatów district. Rehabilitation services for children with developmental disorders are provided only in five districts: the city of Kielce, Sandomierz district, Staszów district, Starachowice district, and Ostrowiec Świętokrzyski district.	Efforts should be made to secure cardiac and neurologic rehabilitation services, particularly in deficit regions. Efforts should be made to increase access to rehabilitation services for children with developmental disorders in a day centre/ward, particularly in the southwestern part of the province.

	8.5.	In terms of the rate of patients receiving home-based rehabilitation services per 100,000. of the population, the province ranked 2nd among all provinces and exceeds the Polish rate by 113%. In terms of the rate of medical consultations per 100,000. of the population, the province ranked 8th among all the provinces and is 5% below the rate for Poland. In terms of the rate of physiotherapy visits per 100,000. of the population, the voivodeship was ranked 4th among all voivodeships, and the rate is 35% higher than the rate for Poland. In terms of the rate of physiotherapy treatments per 100,000. population, the province was ranked 2nd among all provinces, and the rate is 147% higher than the rate for Poland. In terms of the rate of centres per 100,000. of the population, the province ranks 2nd among all provinces, and the rate is 106% higher than that for Poland.	not applicable	Taking measures to ensure that home-based rehabilitation is available to all patient, especially in Końskie and Włoszczowa districts.

Palliative and hospice care		There are no home-based rehabilitation services in Końskie and Włoszczowa districts.		
	9.1.	In the province, palliative and hospice services were used by 298.87 patients per 100,000 of the population (3rd place in the country, 19% higher than the national average). Service type breakdown indicated that 116.94 patients per 100,000 of the population received home-based care services (13th place in the country, 28% below the national average), in case of inpatient care it was 159.97 per 100,000 of the population (1st place, 65% higher than the national average), and in outpatient conditions it was 85.17 per 100,000 of the population (1st place, 124% higher than the national average). In the entire country, as well as in the province, most people are subject to palliative care and hospice care due to cancer (83.1% of patients, nationally 88.7% of patients). Among patients overall, malignant neoplasms of the trachea, bronchus, and lung (16.7%) and malignant neoplasms of the colon and rectum (9.4%) predominated.	Demand for palliative care medicine has been on a steadily upward trend due to demographic and epidemiological changes.	Due to the demographics i.e. the increasing percentage of the residents over age of 65 and the increasing number of cancer patients, it is appropriate to maintain the current structure of health services and even expand hospice and palliative care, including in inpatient setting. It is appropriate to increase funding for all palliative and hospice health care services.

	9.2.	Palliative and hospice care services in inpatient setting were provided by 13 centres (1.05 per 100,000 of the population, 1st place in the country, 110% higher than the national average) in 9 out of the 14 districts. The province also has the highest rate of average number of beds per 1,000,000 population, which exceeds the recommended rate in the European Palliative Care Association guidelines, i.e. 80-100 per 1,000,000 population. In all districts with access to inpatient care, the recommended indicator value was achieved.	Despite very good access to inpatient care in comparison with Poland, the province lacks: inpatient hospices for children and day palliative care centres for both adults and children.	Taking measures to provide palliative and hospice services for children in inpatient setting. Providing day palliative medicine facilities for both adults and children. Securing districts with shortages of palliative and hospice care services by contracting for services.
	9.3.	There were 19 home hospices in the province (1.54 per 100,000 of the population, ranking 6th in the country and 5% higher than the national average), located in almost the entire province. Although the availability rate of home hospices was one of the higher in Poland, home-based palliative services were still not secured in the Opatów District. Services in home hospices for children are provided only by 2 institutions in two districts: Staszów and Ostrowiec Świętokrzyski.	Access to palliative and hospice care in the home setting was not provided in all districts.	Pursue the establishment of home hospices that care for both the patient and their loved ones by providing psychological and spiritual support, including increasing the availability and equitable coverage of home-based services for children.

Long-term care				Securing districts with shortages of palliative and hospice care services by contracting for services.
	9.4.	The province is one of 5 provinces that does not secure services provided in perinatal palliative care.	Because these are benefits designed to support the family from the time of diagnosis of a fetal defect throughout the pregnancy and during childbirth and to help care for the sick child born, efforts should be made to secure them as soon as possible.	It is appropriate to secure services provided in the perinatal palliative care setting by contracting this scope of services.
	10.1.	The demographics of the province is worsening every year - the total population is decreasing. Long-term care is mainly provided to people aged 80 and older - 60.8%. The next group is between 65 and 79 years old - 26.9%. People aged 65 and over accounted for 20% of the population of the province. That value is expected to rise to 25% before 2030.	The current infrastructure is inadequate to accommodate the needs of patients requiring this type of care.	Adapting long-term care infrastructure to current needs. Providing comprehensive care to elderly and chronically or terminally ill patients.
	10.2.	The indicators for individual scopes of services provided in the province are as follows:	Securing long-term care services for mechanically ventilated patients.	Efforts should be made to increase the availability and the equitable coverage of long-term care services provided.

		- long-term nursing home-based care - the indicator is 16% higher than in Poland, - services in a care and treatment centre/nursing and care centre - 32% higher indicator, - long-term home-based care centre for mechanically ventilated adult patients - 43% higher indicator, - long-term home-based care centre for mechanically ventilated children - 2% higher indicator Currently, inpatient care for mechanically ventilated patients is not available. The main diagnoses that affect long-term care patients are: cardiovascular diseases - 37.90% and nervous system diseases - 25.90%.		in a home-based conditions, including for children. Establishing an inpatient centre or contracting services for mechanically ventilated patients. Equalising the availability of long-term care services for patients requiring mechanical ventilation (including children) by long-term home-based care centres, in care and treatment or nursing and care centres.
	10.3.	There are 18 care and treatment centres in the province, i.e. 3 in the city of Kielce, 4 in Kielce district and 1 or 2 each in individual districts, which constitutes a small security for the inhabitants of the province. Although the region has experienced a significant increase in access to the indicated type of long-term care services	Both inpatient and home-based care, equally distributed to the demand of the population of the province, need to be strengthened.	Increasing funding for all long-term care health services. Equal distribution of the above-mentioned services according to need,

		and the long-term care beds rate increased by 21.8%, the availability of medical services provided in long-term care still remains inadequate. The projected increase in hospitalisations for internal diseases will make it necessary to move long-term care provided in the internal diseases ward to non-hospital forms of care.		taking into account close access from the patients' place of residence, including rural areas. Due to the increasing percentage of the population aged over 65 with a simultaneous decline in the number of residents of the province, improving access to nursing and care services in an inpatient setting, especially in the following districts: Kazimierza Wielka, Pińczów, Staszów, Busko-Zdrój, Włoszczowa, Jędrzejów, Opatów.
	10.4.	The migration balance for home-based care is -20 and for inpatient care is -98. This indicates that the availability of services, especially inpatient services is lower than the needs of inhabitants. The contract for long-term care services has been increasing annually, but still falls far short of accommodating the large needs of the population of the province.	The availability of long-term care beds in Poland is insufficient to meet the current and future needs resulting from an ageing population. The migration of patients is a result of inadequate accessibility to long-term care services in the province.	Increasing the number of long-term home-based care centres, developing the bed base in long-term care centres.

Emergency Medical Services	10.5.	not applicable	The availability of long-term nursing care provided to chronically ill patients at home is inadequate to meet the needs of the residents of the province.	It is necessary to establish Day Care Centres and ensure their funding from the National Health Fund. Efforts should be made to increase access to all forms of long-term care, particularly home-based, outpatient and day care services.
	11.1.	On average, per 100,000 residents, there were 4.122 ambulances, and the average ERT occupancy rate was 1,917.63. In terms of the number of calls to emergency medical teams, between 1 April and 31 December 2019, Świętokrzyskie Province was ranked 12th in Poland with the number of 97,799 calls. Time to reach incidents in a city with more than 10,000 residents – travel time was no more than 15 minutes in the case of 98.45% of calls; only for 1.56% of calls the travel time exceeded 15 minutes. Outside the city of more than	A high ERT occupancy rate can have a negative impact on travel times to patients. The smallest number of specialist ERTs in the country may translate into potential problems in providing specialist care by ERTs.	Increasing the use of NHHC to relieve Emergency Departments. It is recommended to establish ED in Busko-Zdrój. There is a need to establish a Paediatric Trauma Centre. It is recommended to purchase an S-type ambulance to

Medical staff		10,000 residents – travel time was no more than 20 minutes in the case of 85.59% of calls and more than 20 minutes for 14.42% of calls. As of 1 September 2019, a total of 49 ERTs operate, including 9 specialist ERTs and 40 primary ERTs.		increase access to specialised patient care. It is recommended to purchase a stroke ambulance with a CT scanner for the needs of patients with suspected stroke, to start the diagnosis and treatment already at the site, due to the unfavourable distribution of neurological wards
	12.1.	The number of nurses, midwives and physiotherapists per 100 thousand residents was higher than the average for Poland. With regards to the number of medical practitioners and dentists, the value of that indicator was lower than the national average. There is a shortage of medical practitioners employed in blood donation centres.	The challenge is to improve access to medical and medical-dental personnel.	Creating a system that would motivate people to work as medical practitioners or dentists in the province, e.g. scholarships for students who commit to work in the province, housing assistance for young medics.

	12.2.	The systematically deepening ageing of the province population means that the need for nursing care is bound to increase. It was estimated that there will be a significant decline in the number of nurses (24%) aged 25-59 years within the next 10 years (by 2029). Problems with the shortage of nursing staff are particularly noticeable in geriatric and neurological nursing, oncological wards, anesthesiology and intensive care units, radiology and diagnostic imaging laboratories and long-term care.	Shortages in the number of nurses are observed and forecasted.	Increasing the number of places on nursing courses and creating a system to encourage secondary school graduates to enter nursing programmes. It is advisable to intensify motivational activities to raise professional qualifications.
	12.3.	The number of palliative care medical practitioners per 100,000 residents is 1.0, and the average age of medical practitioners is 52. The medical practitioner availability rate should be 3 per 100,000 residents. There is also an insufficient number of nurses, particularly ones specialising in palliative/hospice care nursing.	The medical staffing of palliative and hospice care centres is insufficient.	It is reasonable to increase the number of medical practitioners specialising in palliative care in palliative and hospice care centres (at least to the reference value, i.e. 3 medical practitioners/100,000 residents) and nurses, in particular specialising in nursing,

			in palliative and hospice care.
12.4.	In terms of generational replacement of specialist medical practitioners, the greatest differences were between the number of medical practitioners who will reach the retirement age by 2024 and the number of medical practitioners who will obtain the title of specialist by that time in the following fields: internal diseases, paediatrics, general surgery, obstetrics and gynecology. The greatest deficit in terms of speciality vacancies (estimated for 2020, taking into account the number of training places needed for generational replacement and the recommended number of specialist medical practitioners) were in the following fields: internal medicine, family medicine, psychiatry, geriatrics, occupational medicine, paediatrics, emergency medicine. There was a great shortage of medical staff in priority areas such as palliative care, gynaecology, oncology, haematology, emergency medicine, paediatric neurology, paediatric oncology and haematology, clinical oncology, paediatric psychiatry, radiotherapy oncology, paediatric dentistry, paediatric gastroenterology, cardiac surgery, paediatric otorhinolaryngology	There exist shortages in the number of speciality medical practitioners in selected fields and such shortages are projected to continue.	Creating more vacancies in the courses in the fields where the need for specialist staff has been estimated. Creation and implementation of a system to motivate smaller institutions to apply for accreditation to open new training units. Creating a system to encourage working in the province in certain fields, e.g. scholarships for students who commit to work in the province, housing assistance. Increasing employment in psychiatric care units, primarily in

	dermatology and venereology, sports medicine, medical microbiology, pediatric nephrology, neuropathology, metabolic paediatrics. There are speciality places available in the fields such as: psychiatry, clinical transfusion medicine, cardiac surgery.		outpatient care and community treatment.
12.5.	In 5 EDs, there are no managers specialising in emergency medicine; in 10 specialist ERTs, there are 3 medical practitioners specialising in this field, 13 are undergoing speciality training.	There are concerns about the insufficient number of medical practitioners specialising in emergency medicine to secure staffing in the ED, the trauma centre and specialist emergency rescue teams.	Efforts should be made to improve the staffing situation in the ED.
12.6.	There is also a noticeable shortage of psychologists who are specialists in clinical psychology.	There is a noticeable shortage in the number of clinical psychologists.	It is necessary to improve the staffing situation with regards to clinical psychologists
12.7.	Shortage of laboratory diagnosticians in district hospitals. There is a shortage of diagnosticians with immunohaematological qualifications and specialising in laboratory medical transfusiology in hospitals.	There is an observed shortage in the number of laboratory diagnosticians.	Creation of a system to encourage working in the province as laboratory diagnosticians, e.g. scholarships for students who will commit to working in the province, housing assistance for young diagnosticians.

Medical equipment	13.1.	Accelerators were available in Kielce. The greatest distance to that type of equipment is for the residents of the districts of Busko, Ostrowiec (60 km). The accelerators are 7 years old, on average. The fact that the equipment is relatively new and that the average annual number of performed procedures does not exceed 628.75 means that the need to replace 2 out of the 4 accelerators is of a medium priority.	It is estimated that by 2023 50% of the accelerators in the province will be over 10 years old and it will be necessary to purchase new equipment, while by 2029 all available accelerators will need to be replaced.	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	13.2.	Angiographs are available in Kielce and the following districts: Konecki, Sandomierski, Buski. The area located furthest from the district where there is at least 1 angiograph is the district of Jędrzejowice and Kazimierz (47 km). The angiographs are from 1 to 19 years old, on average. The oldest angiographs are in the city of Końskie, where as of 2019, as many as 75% of the devices were 12 - 19 years old. 66% of angiographs in the province are new equipment, 27% of angiographs are considered old equipment.	30% of angiographs in the province have a high replacement priority, while 70% belong to the equipment base with low replacement priority. By 2023, 40% of angiographs will need to be replaced. By 2030, all currently owned angiographs will qualify as old equipment in need of replacement. Note the uneven distribution of equipment utilisation (the lowest average number of examinations per year was performed in Busko District: 3, while the highest number in Sandomierz District: 1329).	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.

	13.3.	In the province, there are only 2 brachytherapy machines, located in the city of Kielce, where the cancer centre operates. In 2019, 405.6 tests were performed with the use of both machines, on average.	The machines are 13 and 17 years old, so they need to be replaced (medium priority for replacement)	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	13.4.	There are 2 ECMO machines in the province for extracorporeal blood oxygenation, and they are located in Kielce. The distance to the nearest machine is the greatest for the residents of the district of Sandomierz (95 km). The equipment is 7 years old, on average; the average number of tests performed per year is 2.5.	Forecasts indicate that by 2023, 100% of ECMO devices will be older than 10 years.	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn out medical equipment.
	13.5.	Gamma cameras were located in Kielce and districts: Kielce and Konecki. The greatest distance to that type of equipment is for the residents of Sandomierz District (95 km). The equipment is from 1 year to 20 years old, on average (in one district, the average age of gamma cameras is less than 20 years). The large share of "old" equipment means that already, at the moment,	There is a high priority to replace 66% of equipment, low priority 34%. It is important to be aware of the uneven distribution of equipment.	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new

		80% of equipment needs to be replaced, e.g., in Kielce. Already, 4 out of 6 gamma cameras in the province have reached an age that significantly limits the possibility of effective testing. Until 2029, all currently owned gamma cameras will need to be replaced.		technological solutions with adaptation of infrastructure.
	13.6.	Stationary mammography machines were in use in 6 districts, including three municipal poviats (Kielce, Ostrowiec Świętokrzyski, Skarżysko-Kamienna, Starachowice, Staszów, Pińczów). Such distribution of mammography machines, supported by mobile devices, demonstrates good accessibility to screening in the province. Stationary mammography machines in the province were from 2 to 19 years old; in half of the districts, the average age of the equipment exceeded 11 years. The replacement priority was high for 71.4% of the equipment and medium for 14.3%. According to the demand forecasts, 93% of the currently used stationary mammography machines should be replaced by 2023. Equipment utilisation in districts was different - from 0 to 2,240 screenings/year; in four districts, average equipment utilisation did not exceed 200 screenings per year (Pińczów, Ostrowiec, Starachowice, Staszów). Low level of utilisation	The replacement priority was high for 71.4% of the equipment and medium for 14.3%. According to the demand forecasts, 93% of the currently used stationary mammography machines should be replaced by 2023.	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.

	did not always apply to the oldest equipment.		
13.7.	There was only one PET scanner in the province and it was 13 years old. The area located furthest away from the district with PET scanners is Sandomierz District (95 km).	The replacement priority of the only PET scanner in the province is high. Average level of utilisation of scanners: 3,600 procedures/year.	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
13.8.	MRI scanners were located in Kielce, Ostrowiec Świętokrzyski, Starachowice, Skarżysko-Kamienna, Sandomierz, Staszów, Busk-Zdrój, Końskie. In 2019, in six districts, the average age of equipment was less than 8 years. In one of the districts, i.e., Skarżysko District, the average age of equipment was more than 12 years (the average age of equipment in the province was approximately 7 years). The average annual number of performed procedures ranges from 2,000 in Busko District to 4,000 in Staszowski District. Due to the large share of new equipment, 86.7% of devices are of medium priority to be replaced	In 2023, 80% of MRI scanners in the province will exceed 10 years and will be qualified as part of the base which requires replacement. In 2030, 100% of the current equipment will have to be replaced.	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.

	and only 2 devices are of high priority with regards to the need to be replaced (Skarżysko- Kamienna - 1, Busko Zdrój -1).		
13.9.	X-ray machines are very popular diagnostic devices, available in all districts. The average age of the equipment in the districts ranges from 7 to 16 years. 30% of the equipment is of a high priority for replacement (the age of the devices ranges from 13 to 36 years), 89 machines in that group were used throughout the province. Replacement priority for 69% of X-ray machines is low .	By 2023, 57% of the X-ray machines in the province will exceed 10 years old and will be counted as part of the base which requires replacement. There was a lot of old equipment in the province on which a lot of procedures were performed, e.g. in the district of Kielce, 1,500 procedures were performed using a 36-year-old device, and in the district of Skarżysko 1,600 procedures were performed using a 33-year-old	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
13.10.	CT scanners were located in most districts of the province except for Kazimierz District. The availability of CT scanners per 100,000 residents was 1.94, which is lower than the national average of 2.02. The average age of the equipment in the districts ranges from 1 to 15 years. 10% of the scanners are classified as "old" equipment and 16.5% of the scanners are classified as new equipment. The average CT scanner use ranged from 776 procedures per year (Opatów District) to 10,700 (Konecki District).	According to the recommendations, 8% of CT scanners in the province are currently of high replacement priority, 75% are of low replacement priority. It is forecasted that by 2023, 80% of CT scanners will reach an age that significantly limits effective performance of procedures, and by 2030 all currently owned CT scanners will qualify as old equipment in need of replacement.	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.

Other areas	13.11.	Ultrasound machines were available in all provinces. The average age of the equipment in the districts ranges from 7 to 13 years (in most districts it exceeds 10 years). The large proportion of "old" equipment is reflected in the recommendations according to which as much as 57% of the machines are of high replacement priority. Uneven distribution of equipment is noticeable (the lowest average number of examinations per year were performed in Jędrzejowski District: 370, the largest number in Kielecki District - 1,060 procedures/year, on average).	By 2023, 75% of ultrasound machines in the province will reach the age of more than 10 years and will be included in the demand base for new equipment (62% of machines should be replaced this year). Most ultrasounds were performed using a 20-year-old machine, which is of a high priority for replacement: 4,649).	First of all, efforts should be made to make the best use of the currently owned medical equipment. Ongoing replacement of worn-out medical equipment, as well as investments in new technological solutions with adaptation of infrastructure.
	14.1.	The value of contracts in the field of paediatric orthodontics has been systematically decreasing. The reason for the above is mainly the lack of medical staff with the above-mentioned speciality. At the moment, in the Świętokrzyskie Province, there is a shortage of emergency dental services in the late evening hours. The above is due to the lack of interest of the service providers to providing the services within the scope of "emergency dental care".	not applicable	Efforts must be made to increase access to dental and orthodontic treatment. Increasing the level of financing of orthodontic services for children and adolescents. Development of dental education programmes for the elderly.

				Introduction of night shifts and holiday dental care in the field of dental surgery. Increasing the number of dental services and services related to the prevention of oral diseases.

Appendix No. 14

Challenges for the health care system and recommended lines of action in the Warmińsko-Mazurskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended directions of actions
Demography	1.1.	The province is the fourth largest region in Poland. Its area is 24,173 km^2, which is 7.7% of the area of the country. The total population of the province was 1,422,737 (as of 31 December 2019), which was 3.71% of the total population in the country. In 2019, in the province, the average population density was 59 persons per 1 km^2 and was more than twice lower than in the country (i.e. 123 persons per 1 km^2 of the area of the country). In the province, the average population density in the cities was 1,366 persons/km^2, and 25 persons/km^2 in the countryside. In 2019, the population of the province was 0.44% lower compared to 2000. The relatively large area of the province (compared to other regions of the country) combined with low population is a problem in terms of	The large size of the province and, consequently, long distances to health care centres, makes the management and operation of the health care system difficult.	not applicable

	ensuring equal access to health services for the residents of the province.		
1.2.	According to the demographic forecasts for the province, over the period from 2019 to 2028, there will be an increase in the number of persons in post-working age (60/65 and older) by 25.31% in the total population of the province. The rapid ageing of the population of the province and the slower increase in the number of years during which a person is in a good health condition in the total number of years of life will result in a decline in demand for, i.a., health services for children, maternity services, and an increase in demand of services offered to the oldest	not applicable	not applicable
1.3.	In the province, there was a negative birth rate, in 2015 (-0.51), in 2016 (-0.44) with an increase in 2017 (+0.08) and further decline in 2018 (- 0.90) and in 2019 (-1.39). The difference between the number of births and deaths was -1,983 persons in 2019 and -1,286 persons in 2018. In 2019, 5.7% fewer live births were recorded than the previous year. Live birth rate per 1,000 persons was 9.05 in 2019 (nationwide 9.77) compared to 9.56 in 2018. Live birth rate was higher in urban areas than in rural areas - 9.24 and 8.79, respectively.	not applicable	not applicable

Epidemiology and epidemiological forecasts	1.4.	In 2019, the number of deaths declined by 0.5%. The death rate, which represents the number of deaths per 1,000 persons, compared to 2018, declined and it was 10.44 versus 10.46, respectively (nationwide 10.67 in 2019 versus 10.78 in 2018). The death rate for cities was 10.61, while for rural areas it was 10.21. In 2018, The death rate was higher in rural areas than in urban areas in the province, with 208 more deaths in rural areas per 100,000 persons. The phenomenon of excess male mortality was still observed (male deaths accounted for 52.7% of all deaths in the province). The death rate for men under 60 years old was 2-3 times higher than in the case of women of that age. In 2019, the difference between male and female life expectancy was 8.2 years.	not applicable	not applicable
	2.1.	The highest values of the DALY index in the province concerned the cancer subgroup. At the same time, the Daly index was the highest for malignant tumours of the trachea, bronchus and lungs. The situation in the province was worse compared to the situation in the country.	not applicable	not applicable

	2.2.	The highest number of deaths was caused by coronary artery disease. The number has been increasing since 2014 and by 2028, further increase is forecasted.	not applicable	not applicable
	2.3.	According to DALY index, there was a significant increase in the cases of diabetes in the province. The values of DALY index per 100,000 persons were the highest among all provinces in 2019 (7th place in 1999 and 4th place in 2019).	An increase in the intensity of that health problem will result in an increase in the demand for health care services, with a particular emphasis on outpatient services.	not applicable
	2.4.	According to DAILY index, the highest number of deaths, from 12th position to 7th position, was due to malignant colorectal neoplasm. According to forecasts, by 2028 the number of deaths will continue to increase by 10.53%.	Taking into account the demographic data for the province, the number of elderly people with many diseases of the digestive system and coexisting diseases, including malignant tumours of the digestive tract and abdominal cavity, will increase. Implementation of the Screening Programme for Early Detection of Colorectal Cancer within the National Programme for Combating Cancer.	not applicable
	2.5.	According to DALY, one of the greatest health problems in the province is	Increasing number of civilisation diseases, sedentary lifestyle, low physical activity	not applicable

Risk factors and prevention		lower back pain, DALY index of 5.	and an increasing number of elderly persons are the reasons for the increased number of cases of lower back pain and a trend of declining quality of life in the community. The necessity to improve access to benefits limiting the inability to work and disability.	
	3.1.	According to the DALY index, the proportion of all risk factors was 17,200 per 100,000 persons (17,000 for Poland). Behavioural factors were the dominant group of risk factors. The largest share in DALY index for men and women combined were: tobacco (approximately 6,100 per 100,000 persons vs. approximately 5,700 per 100,000 for Poland), high fasting plasma glucose level (4,000 vs. 3,600) and high BMI (3,900 vs. 4,000). The largest number of deaths was due to: tobacco (approximately 230 deaths per 100,000 persons; it is approximately 216 for Poland). The share of tobacco in DALY index and female deaths has increased since 2010 by approximately 16.3% and 23.3%. In the field of tobacco prevention, 4 programmes were carried out which covered an average of 140 persons. The activities in this area were conducted in only 4 districts.	In the province, the proportion of risk factors for DALY was higher than the national average. The risk factors associated with lifestyle are the most common. The problem of smoking is more severe in the case of women. In many districts, there are no prevention activities related to smoking and tobacco use.	Introduction of prevention activities targeting the most common risk factors. Ensuring equal access to preventive care. Provision of comprehensive, integrated and universally accessible health care to people, including children and teenagers.

	3.2.	According to the epidemiological forecast, there is an increase in the number of cases of, i.a.: cardiovascular diseases, diabetes and kidney diseases, diseases of the sensory system, musculoskeletal diseases, digestive system diseases.	The value of epidemiological indicators is forecasted to increase in the case of many important groups of diseases that are a burden for society.	Preventive measures should be implemented to reduce the impact of risk factors that contribute to the occurrence of significant health problems.
	3.3.	Wit regards to cervical cancer, 26% of the population targeted to be screened was screened. The proportion of screened women in the population to be screened is declining each year (in 2018 it was approximately 26,600 per 100,000 of the annual population to be tested, and in 2019, 25,500). By 2017, the number of cases of cervical malignant neoplasm declined by 3.8% per 100,000 persons. In the province, it was 18.7 vs. 16.5 for Poland and the number of deaths per 100,000 women was12.2 vs. 10.7 for Poland.	The level of enrolment for cervical screening in the province is low. Cervical cancer incidence and mortality rates are higher than the national average.	It is necessary to intensify efforts to improve the level of enrolment for cervical screening. Implementation of activities to promote screening.
	3.4.	The share of screened women in the population to be screened for malignant neoplasm of the breast was 71%. The number of the cases of that neoplasm is forecasted to increase - by approximately 16% by 2028, and the number of deaths is also forecasted to increase by approximately 11% in the corresponding period.	not applicable	It is advisable to intensify efforts to screen as many women as possible for a malignant neoplasm of the breast. Implementation of cancer prevention programmes is recommended.

Primary health care	4.1.	In the province, the number of visits to PHC of persons below 18 years old increased. with chronic conditions requiring active care increased (bronchial asthma, spinal deformities, refraction and accommodation eye disorders, obesity, anaemia).	Increase in the number of cases of bronchial asthma, skin and food allergies, anaemia, thyroid diseases, developmental disorders, diseases of the urinary system, posture defects and obesity among children and adolescents. Insufficient education and inadequate health programmes.	Prophylactic and educational activities should be intensified, which will be carried out by a nurse and a PHC medical practitioner in cooperation with a nurse from the teaching and upbringing environment. Efforts should be made to strengthen the role of family members in implementing health-promoting habits.
	4.2.	The share of working medical staff per 100,000 residents in the province compared to the national figures was as follows: medical practitioners 54.49 vs 68.16, paediatricians (54.7 vs 74.3), midwives (9.56 vs 12.82) and nurses (76.61 vs 76.22).	There is a shortage of midwives in the districts of Kętrzyn, Mrągowo, Działdowo and Olsztyn, a shortage of PHC nurses in the districts of Gołdap, Bartoszyce and Węgorzewo and primary care medical practitioners in the districts of Elbląg, Działdowo, Bartoszyce, Lidzbark, Pisz, Nidzica, Mragowo and Gołdap.	Efforts should be made to increase the number of PHC medical staff in the districts of the provincial where the situation is difficult, to ensure equal access to PHC services with special attention to rural areas.
Outpatient specialist care	5.1.	In 2019, there was no ophthalmic clinic providing health care services under the National Health Fund in the districts of Bartoszyce and Węgorzewo;	Inadequate access to outpatient health care services for adults and children mainly in the field of dermatology	It is important to ensure optimal access to services in the field of: ophthalmology for children and adults, dermatology and

	no Otorhinolaryngology outpatient clinic in Gołdap District, no Dermatological outpatient clinic in the districts of Iława, Gołdap and Olecko, no Neurological outpatient clinic in the district of Węgorzewo, no Urological outpatient clinic in the districts of Węgorzewo, Ostróda and Elbląg. In the province, the waiting time for medical consultations was too long compared to other provinces; it concerned mainly the ophthalmology outpatient clinics - the waiting time for stable cases was 245 days, and it was the longest among all provinces, the average for Poland was 139 days. With regards to stable cases, the waiting time longer than180 days was recorded for the following clinics: metabolic diseases, a genetic clinic for children, genetic testing and a phoniatric clinic. With regards to urgent cases, the waiting time longer than 60 days applied to infectious disease clinics, endocrinology services, neurosurgery clinics and services in the field of cardiology. The longest waiting time for consultation applied also to an orthodontic clinic for children and adults, and orthopaedics as well as traumatology of the locomotor system.	and venereology, cardiology, neurology, neurosurgery, otolaryngology, orthopaedics and traumatology of the musculoskeletal system, diabetology, endocrinology, speech therapy, ophthalmology, orthodontics, gynaecology and obstetrics, metabolic diseases, genetic diseases for children. Increasing the availability of specialist outpatient health care services will contribute to the implementation of the diagnostic and therapeutic process at an early stage of the disease, which will improve the effects with regards to the health condition.	cardiology, neurology, neurosurgery, otolaryngology, orthopaedics and traumatology of the musculoskeletal system, diabetology, endocrinology, speech therapy and ophthalmology, gynaecology and obstetrics, orthodontic outpatient clinics, metabolic diseases counselling and genetic counselling for children in all districts.

	was the case of the districts of Pisz, Nidzica, Giżycko, Węgorzewo and Bartoszyce.		
5.2.	The province is a highly endemic area for tick-borne diseases. The incidence rate was higher than the national rate for that type of diseases. In 2019, the incidence rate for Lyme borreliosis was: 41.29, and in Poland: 17.35, while the incidence rate of tick-borne encephalitis in Warmińsko-Mazurskie Province was 0.63 and in the country it was 0.16.	Availability of infectious disease clinics is inadequate.	There is a need to increase access to infectious disease clinics due to the high incidence of tick-borne diseases (Lyme borreliosis, tick-borne encephalitis).
5.3.	In the province, in 3 districts out of 21 districts (Szczytno, Olsztyn and Elbląg and cities with district status, i.e., the city of Olsztyn and the city of Elbląg), there were lung disease clinics. The longest waiting time for health services was 107 days. The death rate per 100,000 persons due to lung diseases in rural areas was the highest in the country.	In terms of the number of pulmonary clinics, the province was second to last in the country. The large distance to clinics results in limited access to health services, especially for residents of smaller towns or rural areas. In 2018, The death rate was higher in rural areas than in urban areas in the province, with 208 more deaths in rural areas per 100,000 of the population.	Efforts should be made to increase the availability of outpatient pulmonary specialist services and to even out the discrepancy in their availability among districts, with a particular emphasis on residents of rural areas.

Hospital treatment	5.4.	The ratio of OSC consultations due to diabetes per 1,000 persons was 48.69, it was 58.57 for Poland. There were 22 diabetes clinics in operation. The rate of clinics per 10,000 residents was 0.15, while it was 0.19 for Poland. There were only 2 diabetic foot clinics in the province. The longest waiting time in diabetes clinics was 219 days.	The clinics in operation did not sufficiently cover the constantly growing needs of the province. A significant problem was the insufficient number of diabetes clinics - no clinics in Ostróda, Biskupiec and Olecko. The number of diabetes specialists and dietitians in the province was insufficient.	Provision of comprehensive care for patients with diabetes, based on, i.a., the establishment of a network of diabetes clinics in the province, increasing the number of diabetic foot clinics, employment of dieticians in diabetes clinics.
	6.1.	The ratio of the number of intensive care stations per 100,000 residents was 8.3, the lowest in the country. Individual hospitals reported a permanent lack of vacancies in intensive care stations - mainly in third-level hospitals of the basic hospital system providing health care services in the province and in the oncology centre performing highly specialised procedures, e.g. liver and pancreas procedures.	The number of intensive care stations is inadequate - based on a comparison of the ratio to the national average and hospital reports.	Efforts should be made to increase the number of intensive care units mainly in third-level hospitals of the basic health care system and in the oncology centre.
	6.2.	Long waiting time in vascular surgery clinics (stable case - average waiting time - 249 days, in urgent cases - 127.7 days), results in the fact that in the province vascular disease treatment was administered	Inadequate, considering the health needs of the provinces patients, accessibility to hospital treatment in the field of vascular surgery.	Improving the treatment of patients with peripheral vascular diseases.

		in the advanced stage of the disease, which, combined with comorbidities, worsened patient outcomes. This is evidenced by the constantly increasing number of limb amputations due to ischemia and diabetes in the province - an increase by 30.7% compared to the previous year. According to the forecasts, demand for hospital beds for patients with vascular diseases is expected to increase by 30% between 2018 and 2029. The long-term trend is an ageing population and an increase in the prevalence of risk factors that promote vascular diseases. The diabetes epidemic promotes vascular complications in the population, including peripheral arteriosclerosis and the so-called diabetic foot syndrome, which is the most common cause of lower limb amputations.	Currently, treatment of patients with vascular diseases is administered at a too advanced stage, which, combined with comorbidities, worsens patient outcomes. Early surgical outcomes are worse than the national average, with too many primary limb amputations and an increase in the number of people permanently unable to work and requiring care due to peripheral vascular disease. Endovascular treatment has a lower mortality rate and improved patient outcomes. There is a lack of prevention and screening programs in the area.	Increasing access to vascular surgery health care services and reducing waiting times for diagnosis and surgical treatment. Organising the provision of vascular surgery services to ensure continuity and comprehensiveness of services for patients.
	6.3.	The ageing population and the age-related increase in the number of people with osteoarthritis and trauma patients is causing the increased demand for orthopaedic services.	Increasing the number of procedures performed, mainly hip and knee joint endoprosthesis surgeries, will allow for shortening the periods of inability to work, reduce the number of	Increasing the number of procedures performed per centre. Purchase of up-to-date equipment.

	The waiting time for planned surgeries in the departments of orthopedics and traumatology of the musculoskeletal system in stable cases was, for example, knee joint endoprosthesis - 658.3 days, hip joint endoprosthesis - 414.8 days.	complications, impact professional activation of the patients, and reduce the involvement of caregivers.	Providing early rehabilitation.
6.4.	The proportion of older people in the population is increasing every year and further increases are forecasted. There is one geriatric ward in the province.	The health needs of the elderly are large due to multimorbidity and taking multiple medications. The demand for health benefits for people in this age group is increasing every year, due to the demographic makeup of the country. The largest sums of money fully expended to health care services are spent at the end of life.	Improving health and functional efficiency of the elderly. Providing holistic care for geriatric patients in inpatient care in the wards of internal medicine, orthopaedics, ophthalmology and cardiology, among others. An essential aspect of health care is the promotion of health in old age, improvement of the quality of life, prevention/delaying of disability, reducing unnecessary costs for medical consultations/procedures that are often only a burdensome therapy, while planning

			the optimal management of chronic diseases in an outpatient setting.
6.5.	Increasing incidence of malignant tumours, especially bronchial and lung, colorectal, gastrointestinal and abdominal cancers, pancreatic, bladder, prostate, and breast, Prostate cancer ranks high among the most common causes of death, and in the case of bladder cancer, the SMR value is significantly higher in the province than in the country. Hospitalisation in highly specialised and comprehensive centres will contribute to early diagnosis, which offers the possibility of curing cancer.	Hospitalisation in highly specialised and comprehensive centres will contribute to early diagnosis, which offers the possibility of curing cancer. The need for cancer screening and diagnosis of the developing disease in the asymptomatic, preclinical stage. Implementation of Health Programs. Striving to treat patients in the field of oncologic gynaecology and oncologic urology in highly specialised centres that enable comprehensive diagnostics and treatment.	Ensuring comprehensive oncological treatment at individual centres. Ensuring equal access to health services in the fields of radiotherapy and oncological surgery for the residents of the province. Providing rehabilitation services for these patients as part of the comprehensive and continuous oncological treatment. Implementing primary cancer prevention education and health programs. Striving to be a part of interdisciplinary teams and providing services of a clinical psychologist for patients and their families.

	6.6.	Ischemic stroke is the second cause of death and the first cause of disability in adults. There were 12018 people treated for nervous system diseases, including almost 2800 people hospitalised due to ischemic stroke.	There is a need to reduce post-stroke mortality and disability by improving the availability and quality of treatment for patients with nervous system diseases.	Improving the availability and quality of treatment for patients with nervous system diseases. Introduction of a stroke patient management system.
	6.7.	The most common causes of vision loss in the elderly include cataracts, glaucoma, age-related macular degeneration and diabetic retinopathy. The ophthalmology wards treated 12,335 patients.	The need to remove the financial limit for vitrectomy and glaucoma surgeries. The need to implement a drug programme for diabetic macular oedema. Maintaining an unlimited number of benefits for cataract surgery.	Undertaking activities aimed at reducing health effects caused by eye diseases.
	6.8.	Due to poisonings, the standardised mortality rate per 100,000 people was 65 (the national average was 52 deaths), of which for the rural population it was 79 and for the cities 56 deaths. There is no toxicology centre in the province.	The increasing number of people with poisoning after ingestion, use of pharmaceuticals, drugs, substitutes, so called designer drugs and other chemicals makes it necessary to establish a clinical toxicology centre, as currently patients with severe poisoning are transported	Establishing a toxicology centre

		to centres in neighbouring provinces.	
6.9.	Cardiovascular diseases were the most common illnesses among the province's population and the leading cause of premature mortality and disability. Cardiovascular diseases were the group of diseases with the highest number of deaths in hospitals operating in the province, including heart failure and acute myocardial infarction. According to the NFZ programme, each patient after acute coronary syndrome should remain under the supervision of a cardiology centre for the period of one year. Thus, all invasive cardiology centres in the province and cardiac rehabilitation centres should provide specialised care.	Efforts should be made to provide coordinated and comprehensive care to patients after acute coronary syndrome by all centres related to this health problem.	Implementation of specialised care by all invasive cardiology centres in the province and cardiac rehabilitation centres.
6.10.	In the province, mortality due to complications after thoracic surgery was higher than the national average in Poland, and morbidity and mortality due to respiratory diseases, including chronic obstructive pulmonary disease and lung cancer, was higher than in other regions of Poland. Standardised mortality rate per 100,000 people was 89 (the national average was 72). The province had the highest	The province has inadequate access to up-to-date treatment methods for patients with severe asthma and COPD, with particular emphasis on non-invasive ventilation (NIV).	Activities targeting early detection of respiratory diseases, with a focus on cancer and chronic obstructive pulmonary disease, should be conducted. Improving access to diagnostics, treatment

		difference in deaths in the country (22 more deaths per 100,000) to the disadvantage of rural residents. There is no pulmonary and thoracic surgery centre in the province that provides comprehensive and coordinated patient care.		and rehabilitation of adults and children with respiratory system diseases, including allergic diseases. The need to establish a pulmonology and thoracic surgery centre providing comprehensive and coordinated care for patients with respiratory system diseases, including allergic diseases. Expansion of the Sleep Apnoea Laboratory. The need for establishing Non-Invasive Ventilation Subwards.
	6.11.	The DALY rate for diabetes for the province was 82.28% (the national average was 80.69%). There were 33,309 people treated for diabetes, including 2,256 inpatients.	There is no functioning diabetes ward for adults in the province. The patients are hospitalised in the internal medicine wards.	Establishing diabetes ward(s).
	6.12.	According to the epidemiological forecast for the years 20192034 for the province, the health problem - gastrointestinal diseases rates per 100,000	Efforts should be made to reduce the morbidity and mortality due to gastrointenstinal,	Improving accessibility to and conditions for diagnostics

		people is as follows: prevalence rate was 32201.10, forecast for 2034 is 35244.56, incidence: 9003.50, forecast for 2034 is 9398.83, deaths: in 2019 it is 46.80, forecast for 2034 is 55.02. In 2019, incidence rate per 100,000 people for upper gastrointestinal diseases in the province was 7,395.1, from 1999 (6277.8) increased by 1172.2. In contrast, the prevalence rate per 100,000 people was 17637.1 and it is also increasing compared to 1999 (14728.1), while in Poland the ratio has remained constant. Another challenge is gastrointestinal neoplastic diseases. Colorectal cancer is the second leading cause of death among neoplastic diseases.	pancreas and liver diseases, through early diagnosis and implementation of the latest diagnostic and therapeutic techniques. There is a need to increase the health-promoting awareness of the population, as well as to implement preventive programmes and endoscopic therapies of precancerous conditions.	and specialised treatment in gastroenterology. Improving the accessibility and conditions of specialist gastroenterology treatment for adults.
	6.13.	The perinatal mortality rate for the province was 6.0 and the national average was 5.3. In the province, the percentage of deliveries by caesarean section was 46%.	The need to guarantee high quality maternal and neonatal care by, among other things, ensuring the comprehensiveness and centralisation of pregnancy pathology. Striving to reduce the number of deliveries by caesarean section.	Improving maternal and neonatal care by ensuring its continuity i.e. outpatient and inpatient care. Developing and improving the performance of perinatal care based on a three-level referral

			Reducing the number of premature births.	system, with special emphasis on tertiary and secondary levels. Reducing the effects of neonatal pathological condition resulting from prematurity. Reducing perinatal mortality resulting from pathological factors during pregnancy limiting normal fetal development and following a premature birth with low and extremely low birth weight. Establishing the Mothers' Milk Bank.
	6.14.	The average mortality rate in children due to cardiovascular diseases in the province is 2 times higher than the national average.	There is no comprehensive centre - a supra-regional centre for the treatment of heart diseases in children (with interventional cardiology and cardiac surgery). It is difficult to treat children with multimorbidity who are admitted to the hospital in Olsztyn for surgery of the spine or craniofacial defects, and cannot be treated because they have a heart defect or	The need to increase access to diagnostics and comprehensive treatment and minimising premature mortality due to heart disease in children by establishing a regional (interprovincial) Children's Heart Disease Treatment Centre (with interventional cardiology and cardiac surgery)

			cardiac arrhythmias. Therefore, they should undergo surgery at a centre with available cardiac surgery, but in turn these centres do not have the capacity to treat spinal or craniofacial defects.	as part of a centre that provides comprehensive and interdisciplinary treatment for children.
	6.15.	Inflammatory bowel diseases, especially Crohn's disease and ulcerative colitis, are among the most urgent contemporary challenges due to their increasing incidence, leading to disability and inability to perform social functions. These conditions require modern treatment, including the most intense types of immunosuppression, and if there are complications or pharmacological treatment is not effective - surgical treatment. Gastroesophageal reflux disease is already referred to as a civilization disease, "the epidemic of the 21st century". It affects approx. 10-20% of the population. In addition to proper treatment at each referral level, the responsibility of referral centres is to treat the complications of the problem, including oncology prevention.	Gastroenterology health care is inadequate, which will become increasingly evident in the future - the incidence of diseases in this area is forecasted to increase.	Implementation of the latest diagnostic and therapeutic techniques in referral centres. Development of gastroenterology specialist facilities. Building public awareness, promoting a healthy lifestyle model. Striving to provide gastroenterology services in a comprehensive manner according to the latest standards. Raising public health awareness, implementing Preventive Programmes and providing endoscopic therapies for

				precancerous conditions can change this situation.
	6.16.	Neurodevelopmental disorders affect 5-10% of the paediatric population (for the province, an estimated 10-20,000 children), and rare diseases are a priority for the treatment of children. In up to 40-50% of paediatric patients with neurodevelopmental disorders, especially those of a complex nature, it is possible to establish the genetic basis of the symptoms using multi-scale molecular analyses. The number of hospital admissions for children with newly diagnosed epilepsy is about 400 per year, and this accounts for approximately 40% of admissions in the ward, with headaches accounting for another 40%. Other nervous system disorders account for 20%.	The incidence of epilepsy is 1% in the general population with 60% of cases beginning by age 18 and is a statistical constant. Neurological problems in children are trending upward and are associated with increasing numbers of premature births (including extreme prematurity).	Improving conditions and access to treatment for children in the field of neurology and neurogenetics and with rare neurodevelopmental diseases.
	6.17.	The province provides comprehensive treatment for rare diseases, i.e: - children with isolated craniosynostoses eligible for surgery - we are the only centre in Poland that treats all types of craniosynostoses, using all available methods, both minimally invasive and classic procedures. - we treat all children with syndromic craniosynostoses	not applicable	It is necessary to adapt and strive for the development of ward's facilities and diagnostic base, including radiological base, as well as the operating block' equipment. Improving conditions and increasing access to treatment for children with craniofacial malformations

Providing psychological care and treatment of addictions		using all available methods. No centre in Poland has such capabilities. The most common of those include: a) Apert syndrome; b) Crouzon syndrome; c) Pfeiffer syndrome; d) Muenke syndrome; e) Saethre-Chotzen syndrome. The crucial information is that most children require multi-stage (2-5 procedures) surgical treatment in terms of neurosurgery and craniofacial surgery alone. Furthermore, they often require several additional ones, such as maxillo-facial surgery, plastic surgery, as well as ENT and ophthalmology treatment and more. Defects of the central nervous system are also treated at several paediatric neurosurgery centres in Poland. The rarest and most difficult condition is the meningoencephalocele of the skull base.		including rare diseases of this type.
	7.1.	The incidence of mental disorders among children and adolescents is on an upward trend. A total of 5,440 children and adolescents were treated, of which 5,260 received psychiatric care and 260 received addiction treatment .	Inadequate provision of both inpatient and outpatient health services in the province in the field of child and adolescent psychiatry.	There is a need to increase access to child and adolescent psychiatry services proportionate to

		Among mental disorders, pervasive developmental disorders predominated: 1327 people were treated. The next largest group of conditions were hyperkinetic disorders (831 children), stress-related neurotic and somatoform disorders (659 children). One of the major health problems in the 10-14 age group were depressive disorders, the DALY index per 100,000 residents was 259.3 and increased compared to 2009. (246.0). One paediatric psychiatry ward operated in the province with 100% bed occupancy. The province lacked a paediatric day ward and a psychiatric rehabilitation ward for children and adults. There were only four paediatric mental health outpatient clinics, one psychological outpatient clinic and two paediatric autism outpatient clinics in the province. In February 2020, the average waiting time (for stable cases) in child mental health clinics was 86.1 days and in children's autism clinics was 118.6 days.	Mental health projections show that this is a serious and growing health problem in the province and it will be necessary to provide services for children and youth with mental disorders, including addictions.	the patients' health needs. Providing continuous and comprehensive treatment through diverse organisational forms of health care. Establishing facilities that provide day unit services for children and adolescents. Considering the prevalence of physical and mental comorbidities, it is reasonable to establish an infant ward at the inpatient facility for children so that the interdisciplinary team can diagnose them in the early stages of life, minimising the effects of mental illness on later adults life.

	There were no community mental health teams for children in the province.		
7.2.	The prevalence and incidence of mental disorders are projected to increase. According to the forecast for the years 2019-2034, the value of the incidence and prevalence rate of mental illnesses per 100,000 people in 2034 (11149.56) will increase by 456.26 compared to 2019 (10693,3). 3 psychiatric hospitals operated in the province. In the province, only one entity participated in the Centre for Mental Health's pilot programme. In the province, waiting times for services (for stable cases) in February 2020 for general psychiatry inpatient treatment was 29 days, for alcohol addiction treatment department was 30.2 days, for psychiatric day unit (general) was 17.5 days, for community mental health team (home) was 61 days, for psychiatric care facility/department was 93 days. Number of psychiatric hospital beds in 2019 increased compared to 2018 decreased by 4 beds. The average bed usage was 90.4%.	In the province, there was inadequate access to psychiatric services, realised in a comprehensive manner with the use of various organisational forms of health care (from inpatient, day, outpatient, to community-based care). The distribution of hospitals and availability of inpatient services in the area of psychiatric care related to it was unbalanced. Due to the growing number of people with mental disorders, including addictions, there were too few educational activities and programmes for promotion and prevention of these disorders in the province.	The efforts of entities to provide comprehensive and continuous psychiatric services through Centres for Mental Health should be supported. Efforts should be made to increase access to psychiatric services, with a particular focus on the elderly.

	7.3.	In the province, three general hospitals had psychiatric treatment wards with a total of 247 beds. Bed usage in 2019 was 85%. There were 12 inpatient psychiatric and drug addiction treatment providers in the province. The number of beds in psychiatric and addiction treatment day units in 2019 increased compared to 2018 (166 vs 81). The province had the lowest in the country percentage of patients residing and treated in the same province (92%). The province is also the area with the lowest absolute surplus value (-1450 patients) and relative surplus value (0.97), meaning that many more patients migrated from the province to seek treatment than migrated from other provinces to be treated in the province.	Migration of patients for treatment to other provinces is evidence of inadequate availability and quality of mental health care in the province. Due to the population structure in the province and population ageing, the need for geriatric psychiatry will increase.	It is necessary to continue to create, also in general hospitals, specialised wards such as neuroses, geriatric psychiatry, detoxification, psychogeriatric rehabilitation, psychiatric day care departments and mental health centres. Efforts should be made to minimise waiting times for health care services by gradually increasing the value of contracted services for outpatient, community and day care.
	7.4.	The total number of psychiatric, drug and addiction as well as psychological counselling centres (for adults as well as for children and adolescents) in the province was 86, including: 31 mental health clinics, 8 mental health clinics for children and adolescents, 23 rehab clinics, 5	Inadequate provision of outpatient psychiatric services can be observed in the province. Long waiting times for counselling delay diagnosis and administration of	Access to outpatient psychiatry and paediatric psychiatry services should be improved.

		psychoactive substances addiction clinics and 19 psychological counselling centres. In the above-mentioned clinics, 454,900 consultations were given to 52,800 patients. The number of patients per 100,000 people was lower than the national average (province - 3,700, Poland - 4,400), while the number of consultations per 100,000 people was higher in the Warmińsko-Mazurskie Province than in the country (province - 32,000, Poland - 23,200). The waiting time for counselling at a neurosis treatment clinic in 2020 was 72.4 days, at a psychological counselling clinic was 75 days, and at mental health clinic was 60.3 days.	proper psychiatric treatment.	
	7.5.	In the province three community mental health teams operated in municipalities: Olsztyn, Elbląg and Ełk. Crisis intervention teams, hostels and psychiatric day wards functioned only in 6 districts of the province.	Insufficient number of indirect forms of care such as community mental health teams, crisis intervention teams, hostels, psychiatric day wards, as well as psychiatric care facilities and inpatient care facilities for chronically ill patients who require long-term institutional support.	Efforts should be made to ensure comprehensive and continuous treatment for people with mental disorders through diverse forms of care, including increasing the number of community mental health teams, crisis intervention teams, hostels, psychiatric day wards, as well as psychiatric care facilities and inpatient care facilities for chronically ill patients who

Medical Rehabilitation				require long-term institutional support.
	8.1.	The most common groups of diseases due to which patients required rehabilitation were musculoskeletal and nervous system diseases. By type of health care service, the ratio of patients per 100,000 people in outpatient care was 9% lower than the national average, in inpatient care - 3% lower, home-based care - 40% lower, and day care - 13% lower. In February 2020, the average waiting time for inpatient general rehabilitation was 183 days (stable case), inpatient neurological rehabilitation 58 days (stable case) and inpatient pulmonary rehabilitation 60 days (stable case). In February 2020, the average waiting time for outpatient physiotherapy in stable cases was 77 days. In February 2020, the average waiting time for access to inpatient day rehabilitation facility/centre for stable cases was 285 days. Outpatient rehabilitation was used by 90.4% of all patients who	The data presented confirm the inadequate, considering the needs of residents, availability of rehabilitation services. The needs for medical rehabilitation of the province's residents are steadily growing, which is primarily due to population ageing as well as accidents, injuries and an increasing number of cancer cases. In the current demographic situation, there has been an increase in the need for neurological rehabilitation after acute cerebral incidents and for systemic rehabilitation after planned surgical treatment of large joint alloplasty. There is a need to provide comprehensive and continuous rehabilitation and physiotherapy services to patients.	The accessibility and quality of rehabilitation and physiotherapy services should be improved. Efforts should be made to ensure an appropriate number of providers of neurological medical rehabilitation for stroke patients, as it is necessary in order to ensure continuity of therapeutic management. With a view to eliminating the existing "blank spots" in the Warmińsko-Mazurskie Province in the area of therapeutic rehabilitation and equalising access to health care services per 100,000 people living in the area to the provincial average, then the national average. Ensuring that patients can be referred for rehabilitation without delay,

		received medical rehabilitation services in the province, inpatient rehabilitation was used by 7.4%, day rehabilitation by 9.2%, and home rehabilitation by 1% of patients.		which is especially important for patients after acute medical incidents or injuries who, due to their condition, should receive rehabilitation services in the shortest possible time to ensure the effectiveness of previously performed surgical procedures. Striving to establish a Medical and Physiotherapy Centre with Cardiac Rehabilitation. Expansion and further equipping of rehabilitation facilities. Efforts should be made to expand the rehabilitation facilities at the region's leading children's rehabilitation hospital to enable the stay of children with caregivers.

Long-term care				Implementing education and health programmes for the rehabilitation of neurodevelopmental disorders in children. There is a need for systematic, ongoing review of bed base demand in inpatient rehabilitation and day centres. Transition from (formal) institutional care to formal care provided at home, by gradually increasing the number of services provided in the home setting in communes with low (compared to the district, province, country) proportion of home-based care.
	9.1.	There were 69 long-term service providers in the province, including 15 CTCs/NCCs (approx. 600 beds) 14 of which signed a contract with the NFZ. Long waiting queues for admission were reported by all facilities.	Inadequate number of CTC/NCC facilities (number of beds) and the resulting long waiting times for health care services.	Efforts should be made to expand the bed base in long-term care centres. Supporting efforts to provide adequate infrastructure to meet current and future needs

	Patients who scored 0 on the Barthel scale, as well as those on enteral nutrition or mechanical ventilation, are admitted first. The average waiting time for admission to a CTC for the aforementioned patients is approx. 30 days. Other patients wait much longer for admission - up to 2 years at some facilities. The average wait time is approx. 1 year. At the end of the year, the number of people waiting for admission was approx. 260, including about 125 persons who scored 0 on the Barthel scale and about 15 mechanically ventilated patients.		of people requiring long-term care, by developing all forms of long-term care.
9.2.	Nursing and care services under long-term care in total per 100,000 people were used by 24% fewer patients compared to the national average. Dividing by type of health care services, in the case of care provided in a home setting per 100,000 people 26% fewer patients used the services compared to the national average, and in the case of inpatient care, 20% fewer patients.	Inadequate access to long-term care.	Striving to improve and equalise access to health care services by place of residence, per 10,000 people (municipality, district) with the provincial, and then national average. In order to ensure the continuity of treatment, especially after hospitalisation, it is necessary to enable the creation of out-of-hospital forms of care: day wards, hostels, community treatment teams.

	9.3.	Number of long-term care centres per 100,000 people was 7% lower than the national figure. The number of long-term care centres per 100,000 people was comparable to the national average. The number of long-term inpatient care centres was 19% lower than the national average. In the 65+ population, the availability of long-term care beds per 1,000 people was 40% lower than the national average.	There is no system of services for patients and their families, including the provision of quality, effective community-based and long-term care, both inpatient and in the patient's home environment.	Striving for a transition from formal institutional care to formal care provided at home, by gradually increasing the number of health services provided in a home setting in communes with a low (compared to the district, province) proportion of home-based care, which will translate into reduced queues and shorter waiting times.
	9.4.	There is one geriatric ward in the province that can support and relieve the CTC in terms of elderly patient care and treatment. The most common disease groups in long-term care were skin and subcutaneous tissue diseases (36.30% of patients, mainly decubitus ulcer and bacterial infections), cardiovascular diseases (26.40%), chronic respiratory diseases (16.40%), and nervous system diseases (7.90%).	Patient migration due to lack of access to services for patients requiring treatment in a geriatric ward.	Establishing geriatric wards that provide an interdisciplinary process of multidimensional and standardised assessment of vital functions necessary for planning treatment and care for the elderly.

Palliative and hospice care	10.1.	In total, 6% more patients per 100,000 people used palliative care and hospice services compared to the Polish average. In the case of inpatient palliative and hospice care per 100,000 people, 28% fewer patients benefited from it compared to the national average, so it ranked 15th in the country. According to the European Association for Palliative Care, the recommended number of palliative and hospice care beds in the region (as recommended by the EAPC) should be between 114 and 142. At the end of 2019, the value of the index was 67.48 and it was the lowest value in the whole country. 6 centres provided inpatient palliative and hospice care (0.42 per 100,000 population, 13th place nationally; -16% in relation to the average for Poland).	The province has seen limited access to inpatient care. The number of inpatient care centres is inadequate to meet health needs. The province's resources are also inadequate, and with the ever-increasing number of people requiring palliative care, the future needs will be even greater.	Allocation of inpatient hospice sites according to patient health needs. Increasing the number of inpatient hospice beds and distributing them evenly across the province would provide holistic palliative care for patients.
	10.2.	The proportion of oncology patients among those receiving palliative and hospice care was 93.5% (compared to 88.7% nationally). Among patients overall, malignant tumors of the trachea, bronchus, and lung (17.3%) and malignant tumors of the colon and rectum (11.9%) predominated.	The increase in the number of people with cancer and the prospect of ongoing demographic changes (growing number of elderly people in the province), will increase	Pursue the establishment and contracting of palliative medicine outpatient services in every district of the province.

		the need for palliative and hospice care services. The demand for palliative and hospice care beds is projected to increase from 5,178 in 2020 to 7,232 in 2050.	
10.3.	The province had 30% more home hospices per 100,000 population than the national average. Palliative and hospice care provided in the home setting per 100,000 were used by 17% more patients than the national average.	The province was one of 3 provinces where home-based palliative and hospice care services were provided in every district.	Despite the good availability of home hospices, this form of care should be further developed in the province due to the projected increase in demand associated with demographic and epidemiological changes.
10.4.	In the province, palliative-hospice care was used more often by urban residents - 66.2% of patients, than rural residents - 33.8% of patients. More than 95% of patients were treated in urban centres.	The patients' place of residence had an impact on the access to palliative and hospice care.	Strive to improve access to palliative and hospice care for rural residents (establishment of additional outpatient and home-based care facilities in smaller towns).

Emergency Medical Services	11.1.	The province had 11 emergency departments (ED) ready to provide health care services on a 24-hour basis to persons in a medical emergency, of which 3 were located in Olsztyn, and the remaining 8 provided health care services to residents of other areas. Out of the 11 EDs, 24-hour helipads were available at 9 health care entities; 2 entities did not have a 24-hour helipad, i.e. Szpital Mrągowski im. Michała Kajki Sp. z.o.o and SP ZOZ Szpital Powiatowy in Pisz. This was due to the lack of funding for their construction. The number of admissions in emergency departments in the province was 171,857.	No helipads at EDs in Pisz and Mrągów Districts. The wear and depreciation of the equipment available in 11 EDs in the province and the deteriorating infrastructure of EDs are due to the high volume of health services provided.	Strive to ensure that hospital emergency departments enable the proper organization of services based on the health needs of residents in terms of their architectural conditions. Establish new EDs in the province or upgrade existing buildings/facilities and/or replace equipment in EDs. Improve the operation of the hospital emergency facilities through the construction of a new ED due to the growing health needs of patients. It is necessary to build a new ED ward in Olsztyn. It is advisable to retrofit ED wards and the Trauma Centre with medical equipment (purchase of new equipment and replacement of worn out equipment) and to provide financial assistance for the construction

			and refurbishment of the existing helipads.
11.2.	In terms of the number of calls to emergency medical teams, between 1 April and 31 December 2019, the province ranked 13th in the country with the number of 97,219 calls. The average ERT occupancy rate was 1,092.35. In terms of the time to reach incidents in a city with more than 10,000 residents – 94.53% of calls with a travel time of up to 15 minutes and 5.48% of calls exceeding 15 minutes were recorded, which is 8th position in the country In terms of the time to reach incidents outside a city with more than 10,000 residents – 77.93% calls with a travel time of up to 20 minutes and 22.07% calls exceeding a travel time of 20 minutes were recorded, which is 15th position in the country. To sum up, in the case of 22.07% of calls outside of cities over 10,000. residents, emergency medical teams took longer than 20 minutes to arrive at the scene.	The structure and condition of roads, as well as the excessive number of emergency calls, can have a negative impact on the arrival time of ERTs. Moreover, out of 78 ambulances included in the system, 20 vehicles were more than 5 years old, which could have had an impact on the proper functioning of emergency rescue teams and their time of arrival at the scene and transporting the patient to the nearest emergency department. A too long time of transfer of a patient by ERTs to the hospital also had a negative impact on the arrival time.	The number of ERTs in the province should be increased. Replacement of ERT ambulances along with equipment to maintain the appropriate standard for a given type of ambulance (P or S) and to maintain appropriate arrival times according to the provisions of the Act on EMS, at an average rate of approximately 7 units per year. There is a need to prepare and implement a procedure for transferring a patient by an ERT to a hospital.
11.3.	There was a shortage of medical practitioners willing to work in specialist EMS.	Insufficient number of medical practitioners working in specialist EMS.	Addressing the issue of shortage of medical practitioners willing to work in specialist EMS.

Medical staff	12.1.	The number of palliative care medical practitioners per 100,000 persons was 1.5 in the province, and the average age of medical practitioners was 57. There was also an insufficient number of nurses, particularly ones specialising in palliative and hospice care nursing.	The medical practitioner availability rate is too low and it should be 3/100,000 residents. According to indicators, the problem will grow as the number of people requiring palliative care continues to rise.	Increasing the number of medical practitioners specialising in palliative care at palliative and hospice care centres (at least to the reference value indicated by the national consultant on palliative care), as well as the number of nurses, particularly ones specialising in palliative and hospice care.
	12.2.	The greatest negative discrepancy between the number of medical practitioners recommended by national consultants and the actual number of medical practitioners in the province was in the following fields: internal medicine, geriatrics, occupational medicine, emergency medicine, family medicine, psychiatry, paediatric psychiatry, radiology and diagnostic imaging. In terms of generational replacement of specialist medical practitioners, the greatest differences between the number of medical practitioners who will reach the retirement age by 2024 and the number of medical practitioners who will become specialists by that time were in the areas:	There are shortages in the number of medical practitioners specialising in selected fields and such shortages are forecasted to continue.	Creating more vacancies in the courses in the fields where there is a need for specialist staff. Implementation of additional measures in the province to encourage medical practitioners to continue their education, start training and stay in the province after completing their education. Enabling interested persons to continue education in

	internal medicine, paediatrics, obstetrics and gynaecology, family medicine, endocrinology, otorhinolaryngology, general surgery.		other provinces with a simultaneous incentive system to work in the particular province after completing education.
12.3.	There are no accredited units in the province to run specialities in such fields as: angiology, balneology and physical medicine, clinical pharmacology, clinical genetics, geriatrics, clinical immunology, paediatric cardiology, perinatology, clinical transplantology, clinical psychology. Too few training units in relation to the recommended indicators, moreover, not all available units are used because there is a lack of people willing to start a speciality.	There are shortages in the number of medical practitioners who are specialised in selected fields and such shortages are forecasted to continue.	It is necessary to cooperate with local governments at all levels and with administrative bodies and the National Health Fund to motivate medical entities in the province to apply for accreditation or increase the number of beds in the existing ones. Financial or organisational support as well as decision-making at the provincial level to improve the infrastructure necessary to create accredited units for speciality training.
12.4.	The shortage of nursing staff was particularly noticeable in small districts, in outpatient care units	Shortages in the number of nurses are observed and forecasted.	Increasing the number of vacancies in nursing and midwifery courses.

		as well as in inpatient units. According to forecasts, there is going to be a significant decline in the number of nurses and midwives aged 25-59 by 2029 (nurses - decline by 41%, midwives - decline by 60%).		The necessity to take steps towards, among others, promotion of the profession, promotion of the region and its medical entities to ensure the necessary staffing. Creation of a system to motivate nurses and midwives to work in the province, e.g. scholarships for students who will undertake to work in the province, housing assistance for young medics.
	12.5.	In 2019, in the province, the ratio of professionally active physiotherapists per 100,000 residents was lower than the average for Poland. In the province, only 1 unit was authorised to conduct training for physiotherapists. According to the forecasts, by 2030, the total number of professionally active physiotherapists aged 25-59 will continue to increase.	There are shortages in the number of physiotherapists.	Supporting the efforts to increase the number of physiotherapists providing services in the province.

Medical equipment	13.1.	The machines are located in two districts (city of Olsztyn, city of Elbląg). The travel distance to access this type of equipment is the most considerable for the residents of the Gołdap District (162 km).	Difficult access to the equipment, mainly for residents of the Gołdap District. The number of the accelerators in the province is too small. It is estimated that by 2023 33.3% of the accelerators in the province will be over 10 years old and it will be necessary to purchase new equipment, while by 2028 all available accelerators will need to be replaced.	Monitoring the status of the equipment base and successful replacement of older equipment.
	13.2.	angiography machines were found in five districts (i.a., Elbląg, the city of Olsztyn, Iławy, Mrągowo, Ełk). The area located furthest away from a district with at least 1 angiography machine is Bartoszyce District (67 km). The average age of the equipment in the districts ranges from 3 to 12 years. The oldest angiography machine is in Iławy District, where as of 2019, 1 machine was 12 years old. 10.1% of angiography machines in the province is new equipment, 22.2% of angiography machines are considered old equipment. In the province, 10% of angiography machines is of high priority for replacement, another 10% are	By 2023, 33.3% of angiography machines will reach an age that will require them to be replaced with new units. By 2028, all currently owned angiographs will qualify as old equipment in need of replacement. The residents of Bartoszyce District have difficult access to angiography machines.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

	of medium priority, the remaining 80% are of low priority for replacement.		
13.3.	There is only 1 brachytherapy machine in the province, in Olsztyn. The machine is 11 years old, so it is already in the demand base for new equipment.	The only brachytherapy machine in the province is over 10 years old.	New equipment needs to be purchased due to the age (11 years) of the currently owned equipment.
13.4.	9 gamma camera machines are located only in Olsztyn. The travel distance to access this type of equipment is the most considerable for the residents of the Gołdap District (162 km). The average age of the equipment in Olsztyn is 11 years. In 2019, 56% of the equipment was of a low priority for replacement and 44% of high priority.	The demand for gamma camera machines was 77.78%.	Access to gamma camera machines should be increased for the inhabitants of the province, in particular for the inhabitants of Gołdap District.
13.5.	In the province, the age of the only PET machine is 11 years. The area located furthest away from Olsztyn, where PET machine is located, is Gołdap District (162 km). The average usage of the machine is approximately 1,500 procedures/year.	The demand for this type of equipment is 100%. In the province, the availability of PET machines per 100,000 residents was 0.08 in 2019, while in Poland it was 0.07.	Efforts should be made to maximise the use of PET-CT.
13.6.	The equipment is located in Olsztyn, Elbląg and in Iława District and Ełk District	By 2025, almost all magnetic resonance machines in the province will be older than 10 years	After 2025, magnetic resonance machines will need to be replaced.

	In 2019, in none of the districts, the average age of the equipment exceeded 10 years (the average age of equipment in the districts was approximately 7 years). The large proportion of moderately aged equipment with a relatively low number of examinations performed per year means that 90.9% (11) of the equipment is of a low priority for replacement and only 1 machine is in the group of high priority for replacement (Elbląg).	and will be counted as part of the equipment that needs changing.	
13.7.	X-ray machines are available in all districts. The average age of the equipment in the districts ranges from 5 to 16 years. 25.4% of equipment is of a high priority for replacement (the equipment is 13-35 year olds). The replacement priority of 72.9% of X-ray machines is low.	By 2024, most of the x-ray machines in the province will reach the age of more than 10 years and will be counted as part of the base which requires replacement.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used). Due to the fact that the equipment base is changing in the province, it is important that decisions are made based on the most recent data and in accordance with the performed analyses.

	13.8.	CT scanners are located in a large number of districts in the province: the city of Elbląg, the city of Olsztyn, and districts of: ostródzki, iławski, nowomiejski, działdowski, bartoszycki, kętrzyński, mrągowski, giżycki, nidzicki oraz ełcki. The density of CTs is 1.62 and it is lower than the reference value of this indicator (2.19) and the average for the country (2.02). In terms of the availability of CT scanners, Warmińsko-Mazurskie province ranks second to last in the country. The average age of the equipment in the districts ranges from 2 to 10 years. 8.7% of the scanners are classified as "old" equipment and 26% of the scanners are classified as new equipment. Based on the recommendations, the replacement priority of 8.7% of the scanners in the province is currently high while 13% of such scanners are of a medium replacement priority.	Forecasts indicate that by 2024, more than half of CT scanners will reach an age that significantly limits effective testing, and by 2030, all currently owned CT scanners will qualify as old equipment in need of replacement.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used). Due to the fact that the state of the equipment base in the province is changing, it is important that decisions are made based on the most recent data and in accordance with the performed analyses.
	13.9.	Ultrasound machines were available in all districts in the province. The average age of the machines in the districts ranges from 5 to 16 years. The large proportion of "old" equipment is reflected in the recommendations according to which as much as 60.9% of the machines are of high replacement priority.	In the province, there is equipment the replacement priority of which is high or medium.	Action should be taken to replace ultrasound machines, starting with those whose replacement priority has been determined as high, followed by those with medium replacement priority. By 2023, a significant part of the ultrasound machines in

Other areas				Warmińsko-Mazurskie province will be more than 10 years old and will be counted in the demand base for new equipment (75% of the equipment should be replaced this year).
	13.10.	There is only 1 brachytherapy machine in the province, in Olsztyn. The machine is 11 years old, so it is already in the demand base for new equipment.	The only brachytherapy machine in the province is over 10 years old.	New equipment needs to be purchased due to the age (11 years) of the currently owned equipment.
	14.1.	There was limited availability of general dentistry services. The waiting time for orthodontic clinics for children was 1,098 days, for braces clinics 1,239 days, for dental surgery clinics 107 days, while the longest waiting time for advice in the province was 3,673 days and concerned prosthodontic treatment. The province experienced long waiting times for consultations and implementation of treatment in general dentistry, orthodontics, dental surgery and prosthodontics.	In the province there was inadequate accessibility to health care services in the following areas: dentistry, orthodontics, dental prosthetics, dental surgery.	Improve access to dental services.

	14.2.	Due to the natural and geothermal deposits in the area of Warmia and Mazury, which are used in balneology and other health resort areas, health resort protection areas are created in the area of the province in order to protect the potential and actual health resort values giving the possibility of conducting health resort treatment. At the moment only the Gołdap municipality has a status of a health resort, and four municipalities have a status of a health resort protection area – Miłomłyn, Frombork, Lidzbark Warmiński and Górowo Iławeckie. Orthopedic and traumatic diseases, rheumatological diseases, peripheral vascular diseases and nervous system diseases can be treated in Frombork. Lidzbark Warmiński enables the treatment of cardiology and hypertension diseases, as well as orthopaedic and trauma, nervous system and rheumatology ailments. In Miłomłyn, orthopaedic-trauma, rheumatology, upper respiratory tract and lower respiratory tract diseases can be treated. Finally, orthopedic-trauma, rheumatology, upper and lower respiratory tract diseases can be treated in Górowo Iławeckie.	The availability of health resort treatment in the province is limited.	Creation of more health resort infrastructure so that resorts can be established in place of spa protection areas, which will translate into better accessibility to rehabilitation services after illnesses.

Appendix No. 15

Challenges for the health care system and recommended lines of action in the Wielkopolskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended directions of actions
Risk factors and prevention	3.1.	The risk factors with the highest contribution to DALYs were tobacco (on par with the national average), high blood pressure (less important than the national average), and high BMI (also less important than the national average). A downward trend has been observed since 1990 in terms of the contribution of tobacco to DALYs, with this decrease amounting to ca. 28%, but since 2010, there has already been a 2% increase (for women and men combined). In 2019, 19 smoking prevention programs were carried out, covering an average of 637 participants (7th place in Poland). As many as 25 district did not conduct such activities. The proportion of alcohol use as a cause of death has increased since 2010, for men and women combined, by ca. 4.7%.	Risk factors significantly affecting the loss of DALYs in the province are related to healthy lifestyles. Of concern is the increase in tobacco's contribution to DALYs in recent years and the lack of smoking prevention programmes in some districts.	Prevention programmes should be tailored to the risk factors that most burden the population based on the analysis of the situation in the subregions – in terms of the problems of smoking, high BMI, high blood pressure. Attention should be paid to the factors for which an increase in the proportion of DALYs and deaths is observed.

	3.2.	No caries prevention programme was implemented in the province, even though oral disorders were ranked 3rd in terms of incidence in the province.	Oral disorders are a significant health problem in the region.	It is necessary to provide oral disorder preventive measures in the province, including ones focused on caries.
	3.3.	Only 11.4% of the province's annual population to be screened was screened for cervical cancer. Since 2017, the number of women screened has been declining (in 2017, it was 11,800; in 2019, 11,400 per 100,000 annual population to be screened), and the number of women screened at the in-depth diagnostic stage is increasing (in 2017, it was 10,500; in 2019, 29,200 per 100,000 annual population to be screened).	The number of women reporting for cytology screenings is low. Adverse trends occurred in recent years in the reporting and referral of women for in-depth diagnosis.	Measures should be taken to increase the reporting for cytological examinations, which would lead to detection of cancerous lesions at early stages. Development of malignant cervical cancer prevention activities.
	3.4.	In terms of mammography, the province is at the 2nd place in the ranking of provinces in terms of the number of total women screened per 100,000 annual population to be screened. Nearly 80% of the annual population to be screened was actually screened, though this number decreased since 2017 (2017 – 88,600; 2019 – 79,700 per 100,000 annual population to be screened). The incidence of malignant breast cancer was about 98.1 per 100,000 population (national average: 93.5), and the number of deaths was about 39.5 na 100,000 population (national average: 37.8).	Although the province is characterised by a high percentage of screened women compared to other provinces, it should strive to achieve the highest possible number of women reporting for mammography screenings. This is supported by the unfavourable values of epidemiological indicators compared to the average values for the country.	The good trend in the number of women reporting for mammography screening should be maintained while striving to screen as many women as possible. Breast cancer prevention activities are recommended.

Primary health care	4.1.	92.61% of the population was enrolled in active PHC lists. The rate was significantly higher in the age groups that use PHC the least (males aged 31-40 years – 73.79%). In the 19-30 age group, there was a relatively high difference between urban and rural populations (99.69% versus 78.32%).	There is low use of PHC, especially among males aged 31-40.	Take steps to encourage PHC use, especially among men.
	4.2.	The MZ-06 report indicates that in 2019, 303 schools were reported as not having access to a preventive health care office for students. On the other hand, 569 schools reported deficiencies in dental services.	Limited accessibility to preventive medicine and pre-hospital treatment rooms in schools.	Increase accessibility to preventive and pre-hospital care offices at schools, especially for dental care.
Outpatient specialist care	5.1.	In 2019, publicly funded services were provided by 2,139 clinics. The most limited access to OSC services occurred in the districts of Leszno, Kalisz, Konin, Chodzież and Międzychód. However, it is noteworthy that specialist clinics for the residents of the Leszno, Kalisz and Konin Districts are available in the city of Leszno, the city of Konin and the city of Kalisz. Deficiencies in the provision of services across districts particularly concern the treatment of lung diseases, cardiology, neurology and ophthalmology, and in the case of	There is low accessibility of specialist services in some districts.	Improve access to specialty clinics with the longest average wait times and wait times exceeding the national average, and for patients in counties with markedly low access to clinics.

		subregions, diabetes, endocrinology and haematology treatment services. As of February 2020, the queues with the longest average waiting times for stable cases in OSC were for outpatient clinics for the treatment of chronic hepatitis C with non-interferon therapy (349 days), treatment of Crohn's disease (312 days), and outpatient clinics for endocrinology (272 days). With regard to urgent cases, the queues with the longest average waiting times were for neurosurgery outpatient clinics (156.8 days), gastroenterology outpatient clinics for children (124.5), and nephrology outpatient clinics for children (121.7 days).		
	5.2.	One of the most common health problems for which residents use OSC services is cancer (3,196). In 2019, total cancer deaths accounted for nearly 35% of the total number of deaths. It is estimated that by 2028 the number of cancer patients per 100,000 population will increase by 4.11% (similar to the nation as a whole). The same goes for incidence rates, which will be up 3.75% compared to 2019.	Neoplastic diseases are and will continue to be in the next 10 years a serious threat to the health and lives of the province inhabitants.	There is a need to improve the level of services in the current oncology therapy treatment processes.

Hospital treatment	5.3.	In 2017, the number of medical consultations per 1,000 population concerning diagnostic imaging (CT, MRI) was 48.15; in 2018, it was 51.45, and in 2019, 62.47.	The noticeable increase in services provided in the field of diagnostic imaging (CT, MRI) is a result of the introduction of a no limits policy in regard to these examinations.	Efforts to relieve the CT and MRI imaging burdens that hospitals struggle with and shift them toward outpatient activities should continue.
	6.1.	Injuries, poisoning and other specified effects of external factors were the most common cause of hospital stay at 19.67%, followed by cardiovascular diseases at 12.26%.	not applicable	Access to comprehensive care after myocardial infarction should be increased (KOS-ZAWAŁ).
	6.2.	There are 2 geriatric wards, located in the district of Gniezno – where 733 patients were admitted – and the district of Ostrów, where 475 patients were admitted. The average bed occupancy rate is 65%.	There are too few geriatric wards, especially considering the population ageing process.	Improving care for the elderly and optimising the number of geriatric beds.
	6.3.	There is a significant dispersion of paediatric service facilities across the province.	Facility dispersion causes difficulties in the diagnostic and treatment process for paediatric services.	Comprehensive paediatric care should be provided.

	6.4.	Bed occupancy averaged 82%. The wards with the highest occupancy included neurological (including stroke - 137%), clinical oncology (112%) and diabetology for children (105%) while the ones with the lowest occupancy were the wards of paediatric same-day care (10%) and plastic surgery (2%).	Uneven bed occupancy resulting from the demographic situation (ageing population, reduced number of births per woman), long waiting times for services, staff unavailability, insufficient OSC load.	Optimisation of the number of beds resulting from the demographic situation, in particular in maternity, neonatology and pediatrics wards as a consequence of declining birth rates in individual hospitals and staff availability.
	6.5.	The province sees low occupancy rates in the following wards: same-day care, at 50% for adults and 10% for children, and plastic surgery at 2%. Queues for trauma and orthopaedic surgery wards - 1057.9 days; paediatric trauma and orthopaedic surgery wards - 642.7 days, The queues of urgent cases were longest for the following wards: paediatric trauma and orthopaedic surgery - 218.6 days, trauma and orthopaedic surgery - 167.5 days.	The data presented here confirm the low occupancy of same-day care beds and long wait times for paediatric and adult trauma and orthopaedic surgery services.	Profiling medical entities due to the structure of services provided in surgical wards and internal medicine wards. With respect to surgical wards – if there is a high proportion of same-day services, the mode of delivery should be changed from inpatient to same-day surgery or elective hospitalisation.

			Optimising the number of trauma and orthopaedic surgery beds.
6.6.	The low number of beds in CTC/NCC; in late 2019, bed availability per 1,000 population aged 65 and over was 2.31. This is the lowest value nationwide.	The data presented here confirm the low bed occupancy rates in CTC/NCC.	A structural and organisational change is advisable, i.e. transformation of a part of hospital beds into a care and treatment centre/nursing and care centre in case of internal medicine wards, when the structure of reported services indicates treatment of elderly patients and chronic diseases.
6.7.	Low number of surgical services in hospitals, among others, of oncology, vascular and childbirth services.	There is a low number of surgical services performed in hospitals.	Closure of service provision sites that do not guarantee access to experienced surgical teams due to the insufficient number of surgical services performed, e.g., oncology, vascular, childbirth services, is recommended.

Psychiatric care and addiction treatment	6.8.	In 2019, 82 drug programmes were implemented at 54 entities. The number of people covered by the programmes was 12,900. Migration of patients from all over Poland is observed, in particular from western provinces: Lubuskie (500 patients, Dolnośląskie (200 patients) and Zachodniopomorskie (200 patients).	Over the 2016-2019 period, there was a significant increase in the number of drug programmes and patients using them, with a slight decrease in the number of providers.	Maintain the trend of high availability for drug programmes and ensure residents have access to programmes specified in the guaranteed medical service range.
	7.1.	13.7% of patients under 18 years of age were treated in adult psychiatric/psychological outpatient clinics. In the case of more than half of the province's districts, less than 30% of patients were treated in their district of residence. There is no contracted psychiatric treatment of any kind for children and adolescents in the Piła subregion.	Lack of availability of outpatient psychiatric services for children and adolescents in most districts of the province results in the need to treat children in adult or out-of-home mental health outpatient clinics.	There is a need to increase the availability of outpatient psychiatric services for children and adolescents, particularly in the Piła subregion.
	7.2.	There are no hostels for narcotic addicts in the entire province. A hostel for alcohol addicts is available in Konin. Access to addiction treatment day units, which are available in 11 of the province's municipalities, is limited as well.	Lack of hostels for substance abuse, alcohol and day wards for addiction therapy for children and adults.	Development of paediatric and adult and addiction day care hostels and centres.
	7.3.	The average bed occupancy rate for paediatric psychiatry was 104% and 90% for adult psychiatry. The number of beds per	High bed occupancy rates, especially in paediatric psychiatry.	Monitoring the availability of treatment-oriented services for children and adolescents in psychiatric care

	children's psychiatric (general) ward was 2 per 100,000 of the population.		and addiction treatment. In the case of increased demand for health services among children and adolescents - increasing financial outlays (the value of concluded contracts) to the actual level of reported services.
7.4.	The primary form of patient care was outpatient services provided in adult psychiatric/psychological clinics and substance abuse treatment clinics. A total of 131,000 people used them (i.e. 4,658 per 100,000 of adult population). There is a noticeable small proportion (2.2%) of patients who received services provided by community treatment teams. In the province, CTT services were contracted only in 9 districts.	Insufficient number of CTTs in the province.	Increase accessibility to home-based care services by contracting Community Treatment Teams in districts that are furthest from the currently operating centres, especially in the northern part of the province.
7.5.	There is a significant concentration of psychogeriatric care in two cities: Gniezno (day and inpatient care) and Poznan (day care).	Insufficient number of psychogeriatric care centres in the face of changing demographics.	Provide greater access to psychogeriatric services.

Medical Rehabilitation	8.1.	Migration of patients to cities with district rights has been recorded (especially in the northern part of the province), e.g. the migration rate for the city of Poznań was 9,521, the city of Konin – 5,268, the city of Kalisz – 2,976. Positive migration balance occurred also in the following districts: Pleszew, Chodzież, Oborniki, Gostyń, Leszno, Kościan, Wolsztyn and Kępno. The migration balance for the entire province was negative, the fourth lowest nationwide.	Patient migration is a result of inadequate accessibility to rehabilitation services and the concentration of medical care centres in large cities.	There is a need to increase accessibility to rehabilitation services in the Piła subregion, in particular in the areas of services provided in day wards (general system rehabilitation, cardiac rehabilitation or hybrid cardiac telerehabilitation, rehabilitation of children with developmental disorders).
	8.2.	Projections for 2020-2028 indicate an increase in cardiovascular disease prevalence and an increase in heart failure deaths. The main diagnoses in medical rehabilitation (in all types of services combined) were musculoskeletal diseases (70.3%) and nervous system diseases (17.4%).	not applicable	There is a need to increase the availability of inpatient cardiac rehabilitation at day centres/wards as well as cardiac rehabilitation and hybrid cardiac telerehabilitation in inpatient settings.
Long-term Care	9.1.	Twelve of the province's districts lack access to nursing or assisted living facilities.	Uneven access to long-term care services in the province.	Provide access to services in nursing and residential care facilities

Palliative and hospice care				in districts where no such facilities are available.
	9.2.	In the province, the number of long-term care teams for mechanically ventilated patients, including children and adolescents, is provided by only 6 entities (0.17 entity per 100,000 population).	Insufficient number of long-term care teams especially for mechanically ventilated patients.	Create an inpatient centre for mechanically ventilated people, including children and adolescents.
	10.1.	There were 48 home hospices in the province (1.37 per 100,000 population). Lack of accessibility to home centres was also noted in the following districts: Chodzież, Leszno, Szamotuły, Krotoszyn, Kalisz, Turek and Konin. In addition, there was a low percentage of children's home hospice services rendered. There are 9 contracted centres, but there is a lack of medical entities providing services in this area in the Piła subregion (comprising the Chodzież, Czarnków-Trzcianka, Piła, Wągrowiec and Złotów districts).	There is uneven access to palliative and hospice care in the home setting.	Strive to provide care in the home setting in every district.
	10.2.	Based on monitoring of reporting, there is no (or negligible) delivery of services in hospice care in the home setting by physical therapists and psychologists.	Palliative services in the home setting are not provided comprehensively because they do not include support from psychologists and physiotherapists.	Take action to implement services by a physical therapist and psychologist in the home setting.

	10.3.	There were 7 palliative care clinics in 5 of the 35 counties (0.2 per 100,000 population). The availability of palliative care outpatient clinics in the province was very limited. No outpatient palliative and hospice care services are provided in rural areas. Such services were provided only in the city of Konin (345 patients), the city of Poznań (291 patients), Słupsk District (106 patients), Piła District (28 patients) and the city of Kalisz (13 patients). The remaining districts did not provide outpatient care in this area.	There is limited availability of palliative care outpatient clinics across many districts, and rural areas lack outpatient palliative and hospice care services.	Development of outpatient palliative and hospice care and establishment of new outpatient palliative medicine clinics especially in rural areas
	10.4.	The number of medical practitioners specialising in palliative care in the Wielkopolskie Province was 42 (1.7 medical practitioners per 100,000 patients). Among the nursing staff, 61 persons had a specialist degree in palliative care nursing. There were 20 medical practitioners undergoing speciality training in palliative care, and 10 medical practitioners are expected to reach retirement age within six years.	The number of palliative care specialists and palliative care nurses is insufficient. Although the number of medical practitioners in speciality training exceeds the number of peri-retired medical practitioners, so generational replacement for this area of medicine is not a significant problem, the ratio of medical practitioners per 100,000 population remains too low (national consultant recommendation: 3.0 per 100,000. population).	Promote the training of palliative care specialists and nurses in palliative care nursing. Increase the number of units organising courses for medical practitioners in accordance with the palliative care speciality programme.

Polish Emergency	11.1.	The ratio of ERTs per 100,000 population is 3.67. In terms of the time to reach incidents in a city with more than 10,000 residents, travel time was no more than 15 minutes in the case of 90.25% of calls; the travel time exceeded 15 minutes for 9.75% of calls. Outside cities with over 10,000 residents, travel time was no more than 20 minutes in the case of 83.73%% of calls and more than 20 minutes for 16.28% calls.	The ratio of ERTs per 100,000 population is very low. This increases the time for ERTs to arrive at the accident scene. There is also the problem of the extended arrival time of the ERTs outside of cities with 10,000 residents.	It is necessary to successively increase the number of ERTs and modify their distribution to sufficiently cover the operation areas while increasing the number of ERTs in the province.
Medical Services	11.2.	Nearly 13% of all ED patients were paediatric patients, meaning one in 7 patients reporting to the ED was under 18 years of age. There is no paediatric emergency department.	A significant problem is the lack of an ED providing services exclusively for children. Because of the nature of treatment, paediatric patients should have access to dedicated specialists.	It is recommended that an ED providing services exclusively for children be established along with a paediatric trauma centre.
	12.1.	The number of nurses per 100,000 population is 595 (621 in Poland). A projection of the number of nurses aged 25-59 over a 10-year period illustrates the risk of a significant 29% decline in this professional group.	Shortages in the number of nurses are observed and forecasted.	Increasing the number of nursing degree vacancies and creating an incentive system to encourage people to undertake nursing majors. Taking measures to motivate those who have left the nursing profession to be professionally active again.

	12.2.	Estimations indicate that the biggest differences between the number of medical practitioners who will reach retirement age by 2024 and the number of medical practitioners who will obtain the title of specialist by that time are in the following fields: internal medicine (258), paediatrics (95), general surgery (60), obstetrics and gynaecology (46), pulmonary diseases (40) and nephrology (40). According to national consultants, the greatest shortage of specialists in the province is in internal medicine, family medicine, psychiatry, occupational medicine, geriatrics, emergency medicine and radiology and diagnostic imaging. To be able to ensure generational replacement with the recommended number of professionals, it was estimated that in 2020, the largest number of speciality vacancies is needed in internal medicine (1,740 speciality places - the number of medical practitioners reaching retirement age is more than double the number of medical practitioners undergoing specialist training), family medicine (773), psychiatry (352), occupational medicine (302), geriatrics (237), emergency medicine (135), paediatrics	Insufficient number of specialists places in some faculties, which prevents the education of an adequate number of specialists necessary to maintain the alteration of generations and respond to the health needs of the population.	It is advisable to monitor medical specialities and allocate an appropriate number of speciality places as needed. Create more speciality places in areas where the greatest need has been estimated. Creating a system to encourage working in the province in certain fields, e.g. scholarships for students who commit to work in the province, housing assistance.
	12.3.	Speciality places are available but are not selected by applicants in the interview process.	Lack of appropriate incentives to take advantage of existing speciality places.	It is advisable to create appropriate motivators to take advantage of

			already existing speciality places.
12.4.	In 2019, there were 3,922 medical practitioners with specialties that met the qualifications of PHC (family medicine, internal medicine, paediatrics), including 1,460 (37.22%) medical practitioners who had reached retirement age. The rate of medical practitioners working in primary care was 25.72 per 100,000 population, which was the lowest in the country. The lowest indices were found in the districts of Wągrowiec (2.84), Kościan (8.84), in five districts the value was between 10 and 20, in another 16 between 20 and 30, in the remaining districts between 30 and 62.26 (Koło District). The number of paediatricians working in primary care per 100,000 population was 26.77. There were 0 physicians working in the districts of Wągrowo and Piła. In 10 districts, this number was between 5.56 and 17.82; in 13 districts, it was between 22 and 37.82. In 10 districts, it exceeded 40 and also exceeded the above-mentioned average in 2 districts – Koło and Grodzisk Mazowiecki.	There is a problem of ensuring an adequate cadre of specialist medical practitioners working in PHC.	Create more speciality vacancies in the above fields. Create a system to encourage working in PHC in the province in certain fields, e.g. scholarships for students who commit to work in the province, housing assistance for young physicians.
12.5.	The rate of nurses working in primary care per 100,000 population was 28.44 and was also at the lowest level in the country. Indicators below 20 were present in 8 districts (including the district of	There is a problem of ensuring an adequate cadre of nurses and midwives working in PHC.	Creation of a system motivating people to take up work in PHC in the province, e.g.

		Poznań and the city of Poznań). The lowest number of nurses working in primary care in relation to the population was recorded in the districts of Wągrowo (5.69) and Krotoszyn (7.76). The highest number, was in the district of Złotów (79.2). In 17 districts, the index was between 20 and 40, and in another 8, between 40 and 54. The number of midwives per 100,000 population was 4.49. In 5 districts (Krotoszyn, Gostyń, Wągrowo, Leszno, city of Leszno) the number was less than 2; in 9 districts, it was between 2 and 4, in 6 districts between 4 and 6, and in the remaining 15 between 6 and 10.59 (Nowy Tomyśl District).		scholarships for students who commit to working in the province; housing assistance for young physicians.
Medical equipment	13.1.	Accelerators are available in two districts (city of Poznań, city of Kalisz). The travel distance to access that type of equipment is the most considerable for the residents of the Złotów District (101 km). The average age of accelerators in both districts is 8 and 16 years. Both districts show a relatively low average number of tests performed. It is estimated that by 2023 60% of accelerators will be counted toward the new equipment demand base, while by 2029, all	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks. The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing

	available accelerators will need to be replaced.		
13.2.	Angiography machines were available in eight districts (city of Poznań, city of Kalisz, city of Konin, city of Leszno, Pleszew District, Poznań District, Oborniki District, Gniezno District). The area furthest from the district where there is at least 1 angiograph is the Międzychód district (71 km). The age of the devices in the district ranged from 2 to 10 years. 3.2% of angiographs in the province have a high replacement priority, while the remaining 96.8% belong to the equipment base with low replacement priority. By 2023, 42% of angiography machines will reach an age that will require them to be replaced	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks. The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing
13.3.	The province has only 3 brachytherapy machines, located in the city of Poznań. The average age of the equipment is 14 years. All brachytherapy machines in the province have a medium priority for replacement.	The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing.

	13.4.	There are 2 ECMO machines in the province for extracorporeal blood oxygenation, and they are located in Poznań. The travel distance to access the nearest machine is greatest for residents of the city of Kalisz (122 km). The average age of the equipment is 8 years. In 2019, 66.7% of equipment had a low priority for replacement; 33.3% had a medium priority.	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks. The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing.
	13.5.	The machines are located in two districts (city of Poznań, Piła District). The travel distance to access this type of equipment is the most considerable for the residents of the Ostrów and Ostrzeszów Districts (162 km). The age range of the equipment owned is wide: from 5 years to 22 years. The large proportion of "old" equipment means that 50% of the instruments are already eligible for replacement. By 2023, 80% of the province's gamma cameras will reach an age that significantly limits effective testing.	The equipment is not being used optimally. The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing.

	13.6.	Stationary mammography machines operate in 18 districts: Czarnków-Trzcianka, Gniezno District, Grodzisk District, Kępno District, Kościan District, Krotoszyn District, Międzychód District, Ostrów District, Piła District, Pleszew District, Słupca District, Szamotuły District, Turek District, Września District, city of Kalisz, city of Konin, city of Leszno and city of Poznań. The average age of mammography machines in the districts ranged from 3 to 17 years. In 2019, the replacement priority was high for 39% of the equipment and medium for 11% of it. According to the demand forecasts, 53% of the currently used stationary mammography machines should be replaced by 2023.	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks. The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing.
	13.7.	PET machine There are 2 PET machines located in the province, located in the city of Poznań. Their average age is 7 years. The district located furthest away from the district with PET scanners is the city of Kalisz (122 km). According to the recommendations, PET devices in the province currently have a medium to low priority for replacement.	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly

			limits the effective performance of testing
13.8.	The machines are located in the Gniezno District, Nowy Tomyśl District, Piła District, Pleszew District, Śrem District, Września District, city of Kalisz, city of Konin, city of Leszno and city of Poznań. In 2019, in none of the counties did the average age of the equipment exceed 10 years. The average annual number of procedures performed in most districts is relatively high. 7% of machines have a high replacement priority.	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing
13.9.	X-ray machines are very popular diagnostic devices, available in all districts. The average age of the equipment in the districts ranges from 6 to 15 years. The replacement priority is high for 31% of equipment. Replacement priority for 68.0% of X-ray machines is low.	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks. The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing.

	13.10.	CT scanners are available in most districts of the Province. The district most distant from the nearest CT scanner is the Kalisz District (14 km). The average age of such across all districts ranges from 3 to 14 years. Based on the recommendations, the replacement priority for 15% of the scanners in the province is currently high while 7% of such scanners are of a medium replacement priority. The average CT scanner use ranged from 853 procedures per year Grodzisk District) to 9,618 (Piła District).	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing.
	13.11.	Ultrasound machines are very popular diagnostic devices, available in all districts. The average age of the equipment in the districts ranges from 7 to 15 years (in most districts it exceeds 10 years). The large proportion of "old" equipment is reflected in the recommendations according to which as much as 63% of the machines are of high replacement priority. By 2023, 81% of the X-ray machines in the province will exceed the age of 10 years and will be counted as part of the base which requires replacement.	One can identify districts with the potential to perform more procedures based on comparison to other districts/benchmarks. The equipment base includes very old equipment or equipment that is relatively old and heavily used, which has a high priority for replacement, and equipment whose age significantly limits the effective performance of testing.	Efforts should be made to make optimal use of currently owned medical equipment, but also to renew the equipment base with respect to instruments that have a high priority for replacement, as well as instruments whose age significantly limits the effective performance of testing.

Appendix No. 16

Challenges for the health care system and recommended lines of action in the Zachodniopomorskie Province based on 2019 data

Scope	Item	Information/diagnosis	Health care system challenge	Recommended lines of actions
Demography	1.1.	The population of the province was 1,700,000 and according to Statistics Poland, by 2050, it will continue its downward trend. These dynamics will be different for some districts. In 2022, there will be an increase in population in the following districts: Police (by 3.4%), Goleniów (by 0.4%) and Koszalin (by 0.4%). In the long term, population growth will only occur in Police District. In 2050, it will be as high as 26.9%. All other districts will have a declining population trend.	The population will increase in the districts surrounding capitals of provinces and decrease in the cities themselves and districts away from them.	not applicable
	1.2.	The shape of the age pyramid of residents indicates a significant proportion of older people. The percentage of the population aged 65 or more exceeds those under 14. According to Statistics Poland data, in the following years, these disproportions will continue to	The rapid ageing of the province's population is causing an increase in the number of people requiring ongoing medical care while the number of young people is decreasing. This means that there may be significant shortages of medical staff, with	not applicable

		increase. In 2050, the dominant age will be as high as 67. The percentages of economic age groups also confirm this trend. In 2019, 16.92% of the population was in pre-working age, 60.43% in working age and 22.65% in post-working age. According to forecasts, by 2022, these shares will change little; however, by 2050, these differences will be significant. The share of people in the pre-working age will decrease by less than 3 percentage points and the share of people in the post-working age will increase by almost 15 percentage points, while the share of working-age people will decrease by almost 12 percentage points and will constitute less than half of the total population of the province.	the simultaneous increase in people requiring active medical care due to chronic diseases.	
	1.3.	Just like in all of Poland, life expectancy information by gender shows that men have a significantly shorter life expectancy than women. At birth, men had a life expectancy shorter than women by about 7 years – i.e. 9%. For the elderly, these differences have increased even further. Life expectancy in men was about 20% shorter. In addition, the shape of the population age pyramid indicates a consistent surplus of women over the age of 55.	Both the values of the rates of further life expectancy and the shape of the age pyramid indicate that men are dying excessively often. Despite higher life expectancy values than men, women living in rural areas fare particularly badly in this regard.	not applicable

Epidemiology and epidemiology forecast	Indicators of further life expectancy, regardless of gender, were lower than the average in Poland. Compared to other provinces, the indicator, both with regards to birth and women at age 60 reached the lowest values in the country. In the case of men, the indicator was 5, counting from the end, for men over 60 years old and it was 6, counting from the end at the beginning of life.		
1.4.	The female fertility rate, defining the average number of children who would have been born during the entire reproductive period, decreased compared to the previous year and amounted to 1.3 (1.33 in 2018) The province is third from the end in the country. The highest values of fertility rate (above 1.4) were recorded in Koszalin and Stargard District, while the lowest (below 1.23) in the following districts: Świdwin, Koszalin, Police, Myślbork, Gryfino and Szczecinek.	Assuming that the values of the indicator between 2.10 and 2.15 ensure simple replacement of generations, it means that in it has not been achieved in the province. There is a greater decline in births and thus a decline in demand for obstetrical services and paediatric care in the region.	not applicable
2.1.	An assessment of the dynamics of major health problems showed that since 1999, the highest values of the DALY index were for: ischemic heart disease, stroke and malignant neoplasm of the trachea, bronchi and lungs. The above is confirmed by an analysis of the dynamics of deaths, as the aforementioned	The major health problems of the residents in the province, taking away the largest number of years of a healthy life, have not changed in 20 years. As in the rest of the country, those are: ischemic heart disease, stroke and	not applicable

	issues were also the most common causes of death. According to forecasts for 2019-2028, this situation will not change and those health issues will still be responsible for the largest number of deaths.	malignant neoplasm of the trachea, bronchi, and lungs.	
2.2.	By 2009, according to the DALY index, malignant cancer of the trachea, bronchi and lung ranked third. In the last ten years, those health issues turned out to be so severe for the inhabitants of the province that it moved to the second position in the ranking, ahead of strokes. Among the listed health problems, malignant neoplasm of the trachea, bronchus and lung was the only one to record an increase in the value of the DALY index in the period 1999-2019. This was mainly due to the increase in the number of years of life lost due to premature death, while for both stroke and coronary heart disease, the YLL index decreased.	Cancer is a significant health problem for the residents of the province, especially malignant tumours of the trachea, bronchi and lungs.	not applicable
2.3.	The incidence rate of mental illnesses, especially depressive disorders, will increase. The death rate due to alcohol-related disorders in the case of both men and women will also increase. Also, an increase is forecasted in the incidence, morbidity and number of deaths among women from the province	Forecasts indicate that by 2028, the number of mental health issues will increase in the province.	not applicable

	due to disorders related to the use of psychoactive substances, with a simultaneous decrease of the indicators in the case of men.		
2.4.	Alzheimer's disease and other dementia diseases have doubled their share in the total number of deaths in the last 20 years. That increase is particularly noticeable among women, accounting for the third leading cause of death in that group. Also, the forecasts with regards to that health problem are worrying, in 2020-2028 an increase in the number of deaths by 30.53% is forecasted, and the estimated increase will be the largest of all health problems.	Increase in the share of Alzheimer's disease and other dementia diseases in the causes of death of the residents of the province.	not applicable
2.5.	Over the past 20 years, the DALY value for diabetes increased by 62%, and for malignant colorectal cancer by 46%. In the case of diabetes, the result was influenced by the YLD index, which nearly doubled from 1999. There was a significant increase in the values of YLL index for colorectal malignancy and rectal cancer. According to forecasts for 2020-2028, diabetes will become the greatest problem,	Increase in the significance of problems related to diabetes and malignant neoplasms of the colon and rectum among the health problems of the inhabitants of the province.	not applicable

Risk factors and prevention	an increase in the prevalence rate, by 23.49%.		
	2.6. The epidemiological forecasts for 2020-2028 assume the largest increases in the death rate due to the following groups of diseases: diseases of the nervous system (+ 27.42%), cancer (+ 12.26%), diseases of the digestive system (+ 10.4%), as well as the greatest increase in the death rate due to the following subgroups: Alzheimer's disease and other dementia diseases (+ 31.76%), atrial fibrillation and flutter (28.46%), prostate cancer (+ 20.87%), and hypertensive disease (+ 20.47%).	not applicable	not applicable
	3.1. In the province, the proportion of risk factors for DALY was higher than the national average, approximately 17,300 per 100,000 persons (for Poland, it is approximately 17,000). The proportion of deaths was slightly lower and it was 686.2 per 100,000 persons (690.1 for Poland). The dominant group of risk factors, just like nationally, was the behavioural factor group; nonetheless, the situation in the province (in terms of share in DALY) was worse than the national average.	Large share of behavioural risk factors in DALY and deaths.	Health education on the impact of risk factors on health.

	3.2.	On average, 477 people were covered by tobacco prevention activities in the entire province. In 11 districts, no smoking prevention campaigns were conducted. Between 2010 and 2019, there was an increase in the contribution of smoking to deaths especially in the case of women (approximately 14%; in the case of men - approximately 3% increase). In the same period, the share of tobacco in DALY also increases in the case of women (an increase by approximately 9%; in the case of men - a decrease of approximately 1%). Compared to the national average, the province ranked second (after Łódzkie Province) in terms of the highest share of tobacco in DALY and deaths (the deviation from the average value for Poland is 15% i	Smoking is one of the most common factors that contribute to the number of deaths in the province. For women, the share in the number of deaths and DALY has been increasing in recent years. In 11 districts, there were no tobacco prevention campaigns.	Adaptation of smoking prevention programmes and their promotion. Some programmes should be addressed to women as the problem in that particular group is growing. Sharing information on the risks arising from the use of tobacco and related products, including implementation of information and education campaigns.
	3.3.	Over the past 10 years, the share of high BMI index and dietary risks in deaths has increased by approximately 15% i 8%.	Analysis of the trends over the past 10 years indicates an increase in the impact of diet-related risk factors. The growing obesity among the population of the province could result in an epidemic of type 2 diabetes and other diseases**.**	Introducing prevention programmes on proper nutrition and physical activity (especially among children and adolescents). Promotion of weight management activities such as the creation of support groups for people with obesity (local government units

			selected in a competition announced by the Ministry of Health). Promoting physical education by providing accessibility to sports facilities and activities involving physical activity, and promoting and improving pedestrian and bicycle safety.
3.4.	Nationally, the provincial branch of the National Health Service in 2019 incurred the largest financial outlays for alcohol dependence and co-addiction treatment services. Despite the observed decline in the impact of alcohol use on DALYs (in the 2010-2019 perdiod, there was a decrease of approx. 5%), there is a persistent impact on deaths (up nearly 1% over the same period).	Despite the NHF maintaining high expenditures for alcohol treatment, the high impact of alcohol consumption on death rates in the province persists.	Conducting prevention programmes and their popularisation concerning the fight against excessive alcohol consumption.
3.5.	The incidence of malignant cervical neoplasm per 100,000 women is higher in the province than in Poland (18.6 vs. 16.5 for Poland). The same is true for the number of deaths (12.3 vs. 10.7 for Poland). Unfortunately, the number of women reporting for preventive screenings, both cytology and mammography, is decreasing. In 2019, approx. 32% of the annual female population	Cervical cancer and breast cancer have been a major epidemiological problem in the province for many years. Insufficient number of preventive examinations (mammography and cytology) among the inhabitants of the province.	Continuing efforts to increase enrolment in screening tests contracted and funded by the National Health Fund. First and foremost, it is essential to improve women's attendance at the cytological screening as

Outpatient specialist care		to be screened was not screened for breast cancer, and approximately 75% were not screened for cervical cancer.		the epidemiological situation is worse in this regard than nationwide, however, it is also important to increase the number
	3.6.	Colorectal cancer is one of the most common causes of death over the past 10 years. In 2019, despite an observed increase in the number of endoscopies performed for colorectal cancer, the province saw about 846 deaths due to this reason.	The high rate of colorectal cancer deaths may have been due to patients presenting too late for testing and not being diagnosed with the disease until it was in an advanced state.	Work with local authorities to organise screening tests; carry out preventive programmes and promote them.
	5.1.	The number of outpatient clinics decreased from 2015 to 2019 as a result of terminated contracts at previously operating clinics. In 2015, the number of consultations was: 3,779,606, while in 2019, it was already 3,561,977 (a decrease of ca. 6%). In 2015, the number of patients in the province was 804,326, and in 2019, as little as 769,566 (down 4.3%).	The province has seen a decrease in the number of consultations given per 1,000 inhabitants.	1) Intensification of activities aimed at equalising health inequalities by increasing access to all outpatient health care services with even distribution of outpatient clinics/outpatient clinics across the province. 2) Create a system to promote outpatient specialist care work in areas subject to shortages

			in terms of access to health care services.
5.2.	In terms of the number of clinics per 10,000 population, the province ranked 10th, while in 2015, it ranked 8th. Most terminated contracts were in rheumatology and obstetrics-gynaecology outpatient clinics, but contracts were also terminated in neurology, ophthalmology, dermatology, and others.	The number of outpatient clinics per 10,000 population decreased in the province.	1) Creating conditions for the establishment and operation of outpatient clinics, especially in the deficit areas of the province, enabling diagnosis and care as close as possible to the patient's place of residence. 2) Adaptation of the outpatient specialist care infrastructure, including medical rehabilitation, to the requirements stipulated by the law in force, including in particular sanitary, occupational health and safety, fire-fighting, necessary repairs and modernisation of premises and replacement of outdated and used equipment and machines.
5.3.	In terms of consultations provided per 1,000 province population,	In comparison with the rest of the country, the accessibility of the province inhabitants to the mentioned	It is necessary to increase the availability of clinics in the province, the number of which

	the following indicator values for the clinics were achieved: 1) Cardiology for children - rate 4.74 (16th lowest value among all 16 provinces) 2) neurology for children - rate 7.12 (15th lowest value among all 16 provinces) 3) rheumatology - rate 24.38 (15th lowest value among all 16 provinces) 4) endocrinology - rate of 45.29 (14th lowest value) 5) haematology - rate 9.52 (14th lowest value)	clinics is particularly low. Indicators relating to the number of consultations given in these clinics per 1,000 population give the province one of the lowest spots nationwide.	per 10,000 population is the lowest compared to the rest of Poland, or whose number of consultations per 10,000 population unfavourably deviates from the national averages.
5.4.	In the province, the longest waiting time for stable cases occurs in the following outpatient clinics: vascular surgery and vascular treatment, infectious diseases, endocrinology, neurosurgery, metabolic diseases, hepatology, genetics, pain management, paediatric gastroenterology, haematology, ophthalmology, cardiology, nephrology, gastroenterology. The longest waiting times for urgent cases occur in the following outpatient clinics: infectious diseases, neurosurgery, gastroenterology for children, endocrinology, haematology, hepatology, pain management,	Wait times vary considerably at the above outpatient clinics. Hospital outpatient clinics are usually staffed by specialists from the departments, which ensures the highest level of treatment and access to better equipment and comprehensive diagnostics, but often wait times for services are significantly increased.	Provide greater access to outpatient clinics in specialties with extremely long wait times for services. Transfer stabilised patients treated in specialist outpatient clinics to PHC and frees up beds for new patients.

	vascular diseases, nephrology, general surgery, colonoscopy, vascular surgery, medical resonance, neurosurgery for children, rheumatology.		
5.5.	Lower service security in the eastern part of the province. Waiting times at the outpatient clinics attached to these wards are significantly longer. Patients are forced to wait longer than for an analogous outpatient clinic at another facility.	The province has areas with lower access to outpatient specialist care services.	Even distribution of outpatient clinics, successive increase of availability, especially in areas with the lowest number of outpatient clinics, e.g. the Koszalin District, has no specialist outpatient clinics except for general surgery and obstetrics and gynaecology. Other specialist outpatient clinics are located in the city of Koszalin itself.
5.6.	The province ranks second in the country in terms of average waiting time for metabolic disease outpatient clinics, which is: 188 days for stable cases, with a national average of 118 days. Currently, there are only two outpatient clinics operating in the province, located in Szczecin, which service a total of about 300 patients each month.	Too few outpatient clinics for metabolic diseases located in one place hinders accessibility to this type of service for all residents of the province.	1) Increasing the number of metabolic clinics due to the increasing obesity of the population, which results in cardiovascular diseases; diabetes requires the elimination of inequalities in access to

		The average waiting time in these outpatient clinics is: from 228 days at the Independent Public Clinical Hospital No. 1 and 167 days at the Polyclinical Hospital. 64% of patients admitted at the outpatient clinic are children, including 12% of young children under 3 years of age (data source: NHF - own elaboration).		services within the province. 2) Improve accessibility in the eastern and southern parts of the province to secure patient needs; take preventive measures, including changing dietary habits, proper lifestyle and regular examinations.
	5.7.	The incidence of diabetes, often detected too late, is increasing. The DALY indicator shows diabetes as a growing health problem, which has advanced from the 9th to the 5th position. Inadequate access to early diagnosis and comprehensive treatment and health education promotes diabetes complications. In terms of diabetes outpatient clinics, there is a lack of availability of services in 4 districts: Kamień, Koszalin, Świdwin and Wałcz. There are 32 diabetes clinics in the province and only one entity has a diabetes nursing service. The data of the Centre for Postgraduate Education of Nurses	Failure to secure comprehensive outpatient specialist care for patients with diabetes - "Comprehensive Outpatient Specialist Care for Patients with Diabetes (KAOS-cukrzyca)" which is contractable by the National Health Fund.	1) Increase efforts to intensify diabetes care by providing speciality consultations, patient monitoring and surveillance along with necessary diagnostics to reduce hospitalisations related to diabetes and its complications. Contract KAOS care services for patients with Diabetes. Establish and work with the designated

	and Midwives indicates that as of 19 July 2018 there were 61 nurses with a specialist degree in diabetes nursing in the province.		coordinating centre for chronic wound care. 2) Establish more outpatient nursing care (AOC) contracts in diabetes, which will improve access to education for diabetics, but also their families.
5.8.	In terms of rheumatology outpatient clinics, the province ranks 15th in the country in terms of the number of outpatient clinics per 1,000 inhabitants. There was a lack of such services in 9 districts: Gryfice, Kołobrzeg, Koszalin, Łobez, Police, Pyrzycki, Świdwin, Wałcz and in the city of Świnoujście. The longest waiting time is shown in the rheumatology outpatient clinic at the Independent Public Clinical Hospital No. 1 in Szczecin – January 2025. This hospital provides the largest number of services in the province – nearly 20% of the total performed in the province. In terms of the number of rheumatologists, the province ranks 13th nationwide.	There continues to be a marked centralisation of rheumatology services in urban centres and a shortage of staff in regions outside the urban area.	It is recommended to create conditions for the establishment and functioning of rheumatology outpatient clinics, especially in deficit areas, enabling diagnostics and rheumatology care as close to home as possible. Very long waiting times for admission to the outpatient clinic prevent early proper diagnosis and effective treatment of patients. This generates the risk of developing disability, as well as the need to bear burden of providing disability benefits and the cost of

				surgery (alloplasty) and care services.
	5.9.	In terms of cardiological and paediatric neurological outpatient clinics per 1,000 population, the province ranks last nationwide. A similar problem is observed in the field of nephrology for children and otolaryngology for children – 12th place in the country.	In the field of cardiology for children, there is a lack of services in the eastern part of the province. The services there are provided by the Regional Hospital in Koszalin as part of cardiology services. In the field of paediatric neurology, there is a lack of services in the southern part of the province. Services in the scope of otolaryngology for children are contracted only in Szczecin; in the remaining area, no such clinics are available and services are provided as part of otolaryngology. Among the paediatric outpatient clinics, there is a lack of provision in the eastern part of the province for paediatric endocrinology; the average waiting time for this clinic is 255 days in stable cases, giving the province 6th place nationwide in terms of the longest waiting times.	Improving the quality of child care. Equalising health care disparities within the province. Improving appointment wait times.
	5.10.	According to forecasts, the proportion of the population aged 65-79 in Poland is expected to increase	Uneven distribution of geriatric clinics	Increase access to geriatric care by

		is expected to double by 2060, whereas the proportion of people aged 80 and over is expected to triple. An ageing population means an increase in the number of chronically ill and dependent people, necessitating geriatric care. The province has 4 contracted geriatric outpatient clinics in the western part and none in the eastern part.	in the province causes difficulties in access to this type of medical services for all residents of the province.	ensuring even distribution of clinics in the province (especially in the eastern part). Improving the quality of care for the elderly, including improving the availability and quality of the province's geriatric services or creating interdisciplinary teams to treat seniors with multimorbidity in the areas of cardiology, neurology, diabetology, rheumatology.
	5.11.	Clinical immunology is a very dynamically developing speciality, which results from the progress of medical knowledge, but primarily from the increasing number of patients who often require highly specialised diagnostics and treatment. (data source: request from the provincial consultant on clinical immunology). There is a lack of clinical immunology clinics in the province and the lack of contracted services in this area in	Lack of protection for province inhabitants in terms of clinical immunology specialised medical care.	It is recommended that benefits in this area be secured within the province.

	the neighbouring provinces as well (Lubuskie and Wielkopolskie provinces).		
5.12.	The province is ranked 4th in the country for the longest average waiting time in pain management clinics, which is: 168 days, with an average of 120 days for Poland. Currently, services are provided by 4 clinics in the province, located in 3 districts.	Insufficient accessibility for the province's residents to pain management clinics and neurosurgery clinics.	Improvements needed in the effectiveness of pain management. Raise awareness among patients and decision makers about the validity of appropriate pain management, which will allow for better functioning of patients, both physically and psychologically. Medical practitioners should be equipped with knowledge of modern treatments and more Pain Management Clinics should be established. Increase the availability of effective pain management, establishing facilities in locations enabling accessibility for all in need.
5.13.	Osteoporosis mainly affects people over the age of fifty, primarily women. Forecasts indicate that by 2035, nearly 30% of women and men in Poland will be at risk of osteoporotic fracture.	Lack of protection of the inhabitants of the province in specialised medical care in osteoporosis treatment clinics.	It is recommended to ensure the availability of specialised osteoporosis clinics with access to professional equipment.

Hospital treatment		Poland has a total of 66 osteoporosis clinics and 8 endocrinological osteoporosis outpatient clinics, which signed a contract with the National Health Fund to provide services in this area. There is no specialised osteoporosis treatment clinic in the province. Services in this area are provided in the following clinics: trauma and orthopedics, rheumatology, endocrinology.		
	6.1.	The most common reason for hospitalisation among the inhabitants of the province were injuries, poisonings and other specific results of external factors - 18.7% (for Poland 15.1%), followed cardiovascular diseases - 10.8% (for Poland 12.1%); tumours ranked third - 9.4% (for Poland 9.2%).	According to the epidemiological forecast, the disease prevalence in the province will increase by 8.9% in 2028. compared to 2019, in terms of cardiovascular disease, with incidence remaining constant.	Strengthening the role of coordinated care for patients with cardiovascular disease, which gives patients the assurance of rapid and effective assistance provided by specialists and comprehensive, fully personalized care and monitoring for one year after a dangerous incident, along with complete education about coronary heart disease and risk factors.
	6.2.	The indicator of the number of hospital beds per 100,000 population in the province amounted to 554	A large number of hospital beds, in accordance with the existing regulations, requires an increased number of medical staff	1) Aiming to reduce the length of hospitalisation.

	and was higher than the average national indicator which was 533.	i.e. medical practitioners and nursing staff in order to maintain the appropriate quality of services provided.	2) Reducing the number of hospitalisations for chronic diseases of patients under 75 years of age, performing most diagnostic tests as part of outpatient care.
6.3.	The bed occupancy rate in the province was below the national average (82.63%) and reached 76.98%. Not including Hospital Emergency Departments, average occupancy rates above 100% were recorded for 5 types of wards, the highest for wards such as: psychiatric (general) - 111.28%, other psychiatric wards for adults - 107%, treatment of neurotic disorders - 105.41%. Occupancy rates below 50% were recorded for 14 types of wards, the lowest for the following wards: allergy - 15.23%, same-day (surgery and treatment) - 12.83%.	Inadequate number of hospital beds in particular wards to meet actual patient needs.	1) Reduction of hospital beds, adjusting the number to actual needs. 2) Improve access to services with the highest rate of hospital bed utilisation. 3) More efficient use of beds or re-profiling of wards as long-term care centres would be reasonable. 4) Adjustment of the infrastructure of hospital treatment, including in the field of medical rehabilitation, to the requirements specified

			by the law in force, including in particular sanitary, occupational health and safety, fire-fighting, necessary repairs and modernisation of premises and replacement of obsolete and used equipment and
6.4.	In 2018, the number of intensive care beds in the total number of hospital beds in the region amounted to 5.9%, the highest rate in Poland.	Due to the lack of an adequate number of nursing and care centres and care and treatment centres, patients are subject to prolonged hospitalisations in intensive care units.	The development of long-term care is recommended, which should include patients requiring intensive care rather than intensive therapy.
6.5.	Two districts of the province (Myslibórz and Goleniów) each have two first-level hospitals with overlapping wards: internal diseases, general surgery, obstetrics and gynaecology, paediatrics, neonatology, admission room. Hospitals in Myślibórz District have internal medicine ward occupancy rates below 65% (Barlinek 62.32, Dębno 52.75).	In the province there are two hospitals with the same wards in each of the two districts, which results in insufficient bed occupancy rates.	Restructuring of hospitals is recommended, especially in districts where there are two hospitals with duplicate wards and gynaecological-obstetrics wards due to the number of deliveries.
6.6.	In Poland, the share of people aged 65-79 in the population is expected to double by 2060, whereas the proportion of people aged 80 and over is expected to triple.	Insufficient accessibility for the inhabitants of the province to geriatric services.	It is recommended to increase access to geriatric services, due to the population ageing, by creating one

		The national indicator for the number of beds available in geriatric wards per 100,000 population amounts to 3.27, while the indicator for the province was much lower and amounted to 2.0. There is one geriatric ward with 26 beds in the province. The indicator of assurance of beds per 100,000 inhabitants ranks the province 13th nationally (out of 15 provinces with contracted geriatric inpatient services).		more geriatric ward in the province (except Szczecin) or other forms of geriatric care. Training a staff of specialist medical practitioners in these wards, which in the future will support internal medicine wards throughout the province in the field of geriatric consultations, in order to implement the procedure: comprehensive geriatric assessment of patients treated in given hospitals.
	6.7.	There were two haematological wards in the province: in Szczecin and in Kołobrzeg. In comparison with other provinces, the province is on the 3rd position in terms of waiting time for a haematological ward. For stable cases in Kołobrzeg, admissions take place on an ongoing basis and in Clinical Hospital No. 1 in Szczecin it takes 118 days (as of February 2020) compared to an average waiting time in Poland of 32.7 days.	Migration of patients from Myślbork District, Koszalin District and Wałcz District to other provinces in order to receive haematological treatment.	It is recommended to increase access to haematology services in the south-eastern part of the province.
	6.8.	There was one paediatric otorhinolaryngology ward in the province offering same-day surgery services in Szczecin. The waiting queue for the provision of removal of palatine tonsils	Due to the lack of paediatric otolaryngology wards, children are also treated in adult wards - seven wards in the province,	Increase accessibility to paediatric otolaryngology. Establishment of a ward providing 24-hour hospitalisation services,

	(procedure possible to perform only in specialist paediatric wards) was 196 days in February 2020, the First Date Available February 2021. In the field of paediatric otolaryngology, there are 3 specialists in the province.	27% of patients were under 18 years of age. The highest share of children was in the hospital in Wałcz - 44%. The smallest percentage equaled 21% in the hospital in Stargard. In the Clinical Hospital No. 1 in Szczecin, 60% of all children aged 0-3 years are treated. However, the procedure of removal of palatine tonsils is performed only in Szczecin hospitals: Hospital in Zdroje and Independent Public Clinical Hospital No. 1 (in the paediatric surgery ward).	as the current same-day surgery ward does not fully secure the needs of the province. An increase in the number of specialists in this field will allow the creation of a dedicated ward.
6.9.	Considering the availability of services expressed in queues, i.e. the waiting time for treatment in a specific ward, for stable cases, the longest were in the following wards: otorhinolaryngology - 331.5 days, trauma and orthopaedic surgery - 308.1 days and burn treatment - 230 days. The average waiting time for different types of services in this period was 75.4 days and was shorter than the national average (114 days). When considering the queues regarding emergency situations in February 2020, the longest were for trauma and orthopaedic wards - 83.2 days (Poland 185.2 days), vascular surgery - 57 days (Poland 86.9 days), burn treatment - 55 days (Poland 55 days). The average	There are two specialist centres for the treatment of burns in the province: at the hospital in Gryfice (for adults) and at the paediatric hospital in Szczecin-Zdroje (for children). The queues are not related to the treatment of burns, but to plastic surgery procedures.	Improvement of accessibility to hospital services with the longest average waiting times.

	value for the queues as a whole was 25.1 days (56.4 days for Poland).		
6.10.	Clinical immunology is a multidisciplinary speciality, i.e. the aetiopathogenesis of many diseases has an immunological background, which creates the need to consult a clinical immunologist for many patients treated by other specialists (paediatrics, internal medicine, neurology, haematology, gastroenterology, gynaecology and obstetrics, oncology, rheumatology, infectious diseases, clinical transplantology). In Poland the Clinical Immunology Ward was contracted in 7 provinces - in the Zachodniopomorskie Province and in Lubuskie and Wielkopolskie provinces there was no such ward. In the province, there were 4 medical practitioners specialising in clinical immunology, according to the recommendation of the National Consultant on Clinical Immunology the expected number is 17 specialists.	The lack of a hospital ward with contracted services in this field (additionally the lack of such services in the nearest provinces contributes to the fact that patients have to travel long distances to receive consultations, diagnostics or immunological treatment. Lack of appropriate security of specialised medical staff.	Clinical immunology is a very dynamically developing speciality, which results from the progress of medical knowledge, but primarily from the increasing number of patients who often require highly specialised diagnostics and treatment. The creation of a centre/ward with contracting services in the field of clinical immunology, which will allow speciality places for training medical staff to be organised.
6.11.	The number of medical practitioners working in the province in hospital treatment per 100,000 population amounted to 196.7. It was the 10th indicator in the country.	There is a shortage of medical staff in the province, especially in district hospitals. As of 2017, suspensions of wards have been observed due to the lack of sufficient medical staff.	Introduction of mechanisms that will encourage medical staff to take up employment in the province especially in district hospitals.

	6.12.	The incidence of diabetes, often detected too late, is increasing. The DALY indicator shows diabetes as a growing health problem, which has advanced from the 9th to the 5th position. According to forecasts, by 2028 the incidence (19.74%) and prevalence (25.1%) of diabetes are projected to increase in both Poland and in the province. The death rate is projected to increase by 10.94%. The total number of inpatient hospitalisations in 2019 decreased compared to 2015 by 2.4% which means 11,375 fewer hospitalisations. The largest decrease in the number of hospitalisations occurred in diabetes wards (by 50.9% the closure of the Diabetes Ward in Koszalin).	Increase in the incidence and prevalence of diabetes in the province may cause a significant increase in deaths related to this cause. Lack of equitable provision of inpatient diabetes care for the inhabitants of the province.	1) Full provision of diabetology services is only available to residents of Szczecin and the surrounding area. There is a noticeable lack of the closed Diabetology Ward in Koszalin. Increase access to diabetes treatment in the eastern part of the province. 2) In addition, it becomes necessary to use modern glycaemic monitoring systems, which provides an opportunity to improve diabetes control and reduce the number of hospitalisations associated with severe hypoglycaemia, and in the long term, with the development of chronic complications of diabetes. The reimbursement of modern glycaemic monitoring systems should be significantly expanded to include more patient groups.

Psychiatric care and addiction treatment	7.1.	Among adult patients in the province, the most common groups of disorders were anxiety disorders, addictions and organic disorders. The number of patients per 100,000 population in the case of anxiety disorders (1,653.1) and organic disorders (789.44) was slightly lower in the province than nationwide; in the case of addictions, the value for the province was higher than nationwide (province - 951.76; Poland - 841.38). Community/home treatment in the province was delivered in 5 areas: Szczecin, Stargard, Gryfice, Koszalin and Sławno. Despite the fact that the indicator of the number of patients covered by community treatment ranks the province third nationwide; this is an insufficient number of centres, as there should be at least one in each of the 21 districts. Day wards are located in 6 districts - in the northern and western part of the province; Hospital wards are located in 8 districts, mainly in the northern part of the province; Psychiatric/psychological clinics are located in all districts, except for Drawsko District and Koszalin District, except that Koszalin District is included in the area of responsibility of the Centre	Too low availability of community and day care in the province, and consequently limited access to comprehensive psychiatric care.	1) There is currently one Centre for Mental Health in the province. It is recommended to open further Centres of Mental Health (CMH), evenly distributed across the province, to facilitate access to comprehensive medical care for as many inhabitants as possible. 2) Better access to day care centres and community care, especially in the eastern part of the province. 3) Adjustment of the psychiatric care infrastructure to the requirements specified by the law in force, including in particular sanitary, concerning occupational health and safety and fire-fighting, necessary repairs and modernization of premises

	for Mental Health with its seat in Koszalin (this is the only CMH in the province).		and replacement of obsolete equipment and machinery.
7.2.	The most frequent groups of disorders among children and adolescents in the province were behaviour disorders and mixed behavioural and emotional disorders (the province - 501.42 patients per 100,000 population; Poland - 331.23), neurotic disorders associated with stress and somatic forms (the province - 330.64; Poland - 406.78) and hyperkinetic disorders (the province - 302.91; Poland - 377.25). The indicator of the number of patients per 100,000 population is the lowest among all provinces (1,588; the highest value among the provinces is 3,361). It may result from limited access to proper diagnostics. For two thirds of the districts the indicator of the number of patients treated in the district of residence is below 10%, this indicator was high only for Szczecin (96.95%) and Koszalin (90.89%). Mental health clinics for children and adolescents in the province function in 5 districts (Białogard District, Kołobrzeg District, Stargard District and in the cities of Szczecin and Koszalin), in the Sławno District and in Koszalin there are clinics for persons with childhood autism. A large area in the central part of the province as well as	Inadequate access to paediatric psychiatry care - limited access to outpatient clinics, lack of access to day wards and CTTs.	It is recommended to develop paediatric psychiatry by opening community psychological and psychotherapeutic care centres for children and adolescents - first reference level, ultimately in each district or group of districts of the province; as well as centres of second reference level, ensuring access to day care and CTTs for minor patients.

	the westernmost districts have no clinics available. There is only one psychiatric ward for children and adolescents in the province, located in Szczecin. There are no day wards or community treatment teams for children and adolescents in the province.		
7.3.	The indicator for the number of medical practitioners of adult psychiatry per 100,000 population recommended by the national consultant equals 20. The indicator for the province amounts to 8.9 (it is also lower than the indicator for Poland - 10.2). The indicator of number of paediatric psychiatrists in the province is 1.0, the indicator recommended by the national consultants is 2.0 (the value for Poland is 1.1).	Restrictions on establishing further outpatient clinics dedicated to children and adolescents are attributed to staff shortages - lack of an adequate number of medical practitioners specialising in paediatric psychiatry.	Promoting the formation of specialists in psychiatry, as well as paediatric psychiatry.
7.4.	There were no hostels for people with addiction in the province, as regards day wards, there were only day wards for people with alcohol addiction located in four cities in the north-western and north-eastern parts of the province (Świnoujście, Szczecin, Koszalin, Szczecinek).	No access to hostels for people with addictions, limited access to day care for the addicted.	Increase the access to day addiction treatment centres, the establishment of hostels for people with addictions.

Medical Rehabilitation	7.5.	The proportion of medical consultation provided in outpatient clinics is in the province (as in the country) opposite to that recommended, with the proportion of medical consultation being even higher in the province (province - 76.2%; Poland - 68.9%), with a lower proportion of psychological consultation and individual psychotherapy.	The structure of consultations provided in psychiatric/psychological outpatient clinics is based on medical consultations.	Change the structure of counselling provided in outpatient clinics, i.e. increase the share of psychological consultation and individual psychotherapy in relation to the number of medical consultations.
	8.1.	In all inpatient rehabilitation services in the province, the largest group of patients are people aged 65 or more. This is the age range in which, according to projections, the number of people is expected to increase significantly by 2060. The most common diseases among patients undergoing rehabilitation in inpatient rehabilitation wards and centres are musculoskeletal system diseases, nervous system diseases and cardiovascular system diseases. According to forecasts, the incidence and prevalence of these disease groups will increase.	Considering the demographic and epidemiological forecasts, it would be desirable to increase the availability of inpatient rehabilitation services to a level enabling coverage of all patients for whom clinical guidelines indicate that inpatient rehabilitation is an essential element of therapy.	Improvement of accessibility to inpatient rehabilitation services by expanding the existing as well as the new base of available beds, with particular emphasis on the equal distribution of service providers across the province.
	8.2.	There is no security of pulmonary rehabilitation services in inpatient setting in the province.	There are no bids in the announced competition for pulmonological rehabilitation services.	Aiming at contracting the guaranteed services performed in inpatient wards/centres, which have not been secured in

				the province (pulmonological rehabilitation).
	8.3.	1) Rehabilitation of children with developmental age disorders in a day centre/ward: - the indicator of the number of patients per 100,000 population and the indicator of the number of person/days per 100,000 population ranks the province in the last, 16th position in the country; - the indicator of the number of centres per 100,000 population ranks the province in the 13th position in the country out of 15 (0.47), below the Polish indicator (0.79). There is an uneven distribution of service providers (8 centres in 21 districts). No security in the central part of the province. 2) Cardiac rehabilitation in a day centre/ward - the indicator of the number of patients per 100,000 population ranks the province on the 10th position in the country (out of 15 positions); - the indicator of the number of person/days per 100,000 population ranks 7th (out of 16 provinces); - the indicator of the number of centres per 100,000 population ranks the province 9th in the country (out of 14 positions) (0.24), below	Due to the specific nature of the services provided in day centres/wards, they should be located in the closest possible proximity to the patient's place of residence. Ultimately, they should be provided in each district of the province. The problem in the province is a small number of centres providing day rehabilitation, mainly specialist ones (rehabilitation of children with developmental age disorders, speech and hearing rehabilitation, cardiac rehabilitation and no vision rehabilitation) and uneven distribution of service providers.	Aim to secure services in day centres/wards, in all areas of contracting, with particular emphasis on an even distribution of providers across the voivodeship and a gradual increase in access to services, especially in the area of rehabilitation of children with developmental age disorders in day centres/wards (last position in the country).

		the indicator for Poland (0.33). There is a problem of uneven distribution of centres within the province. Services are rendered by three providers, in two districts (out of 21 districts). 3) Speech and hearing rehabilitation in a day centre/ward: - the indicator of the number of patients per 100,000 population ranks the province 6th in the country (out of 12 positions - the same indicators in different provinces); - the indicator of the number of person/days per 100,000 population in 8th place (out of 16 provinces). In both cases below the national indicator. - the indicator of the number of centres per 100,000 population ranks the province 7th in the country. In the province, the services are provided by three centres in two districts (out of 21 districts in the province). 4) Systemic rehabilitation in a day centre/ward: - the indicator of the number of patients per 100,000 population ranks the province 9th in the country (out of 16 provinces), and the indicator		

		of the number of person/days per 100,000 population ranks 10th; - the indicator of the number of centres per 100,000 - the indicator of the number of units per 100,000 population ranks the province 10th in the country (1.18), below the indicator for Poland (1.38). Providers are located in 12 districts (out of 21 districts in the province)		
	8.4.	There is a shortage of provision of rehabilitation services for visually impaired persons.	There is no offer meeting the requirements specified by the regulations in the announced competition for rehabilitation services for people with visual impairment.	Aim at contracting the guaranteed services provided in day centres/wards, which could not be secured in the province (rehabilitation of persons with visual impairment).
	8.5.	Rehabilitation in home-based settings has been carried out in the province since July 2019. The indicator of the number of centres per 100,000 population ranks the province 9th in the country. Services are secured in 19 out of 21 districts. Most patients undergoing rehabilitation in home conditions are people in the age range of 65 and over (69.8 % in the province -	Accessibility to rehabilitation in home-based settings should be ensured as close to the patient's place of residence as possible, in particular in each district. The upcoming demographic changes indicate that the demand for this type of service will increase.	Securing availability of rehabilitation services in home conditions in all districts of the province.

		including severely disabled with 64.1 %; 72.2 % in Poland - including severely disabled with 59.8 %). This is the age range in which, according to projections, the number of people is expected to increase significantly by 2060. The most common diseases among patients undergoing home rehabilitation are nervous system disorders (47.60% in the province; 44.60% in Poland), followed by cardiovascular diseases (21.60% in the province; 22.40% in Poland). According to forecasts, the province will see an increase in the prevalence of these disease groups. Diseases of the musculoskeletal system rank third (20.70% in the province; 26.20% in Poland). According to forecasts, by 2028 both incidence and prevalence of this group of diseases will increase both in the province and nationally.		
	8.6.	Rehabilitation provided in outpatient settings (outpatient physiotherapy and outpatient medical rehabilitation care); - the rate of rehabilitation patients in outpatient settings per 100,000 population, the rate of physiotherapy appointments per 100,000 population and the rate of physiotherapy procedures per 100,000 population ranks the province in	Outpatient rehabilitation is the most poorly developed on the national level. Taking into account demographic and epidemiological forecasts, the demand for these services will increase.	Increase accessibility to outpatient physiotherapy services (last position in the country). Securing the availability of services for patients from all districts of the province within the framework

		the 16th, last place in the country. However, the rate of medical consultations per 100,000 population places the province in 12th place, - outpatient physiotherapy services in the province are provided in every district. However, outpatient rehabilitation services are delivered in 17 out of 21 districts. Within rehabilitation provided in outpatient settings, patients aged 65 or more constitute 42.3% in the province (38.0% in Poland). This is the age range in which, according to projections, the number of people is expected to increase significantly by 2060. The most common diseases in outpatients rehabilitation are musculoskeletal diseases (76% in the province; 78% in Poland). According to forecasts, by 2028 both incidence and prevalence of this group of diseases will increase both in the province and nationally. Diseases of the nervous system rank second (the province 15.60%; Poland 15.30%). According to the forecasts, the province will experience an increase in the prevalence of this group of diseases.		of outpatient medical rehabilitation care (clinics).
	8.7.	The indicator of the number of physiotherapists employed under the NFZ contracts per 100,000 population	Insufficient number of medical rehabilitation specialists and	Increase the number of medical practitioners specialising in the field

Long-term care		ranks the province 10th on the country scale (out of 16 provinces) and amounts to 95.3. The indicator of the number of medical practitioners specialised in the field of medical rehabilitation employed under the NFZ contracts per 100,000 population ranks the province in the 7th position in the country (out of 13 positions - the same indicators for provinces) and equals 5.7.	physiotherapists in relation to the needs.	of therapeutic rehabilitation and the number of physiotherapists.
	9.1.	The availability of services in Nursing and Care Centres or Care and Treatment Centres is one of the lowest in the country. This is evidenced by the number of patients per 100,000 population (88) - 21% lower than the national average, the number of person/days per 100,000 population (15,428) - 28% lower than the national average and the low number of centres per 100,000 population (0.84) -22% lower than the national average.	Reduced access to long-term care.	Increase of accessibility to services provided under inpatient long-term care by expanding the existing as well as the new base of available beds in Nursing and Care Centres or Care and Treatment Centres (including for mechanically ventilated patients).
	9.2.	In the province no security of services is provided from the scope of guaranteed services such as: - services in a Nursing and Care Centre or Care and Treatment Centre for children and adolescents	Shortage of providers to render services in the field of inpatient long-term care for children and adolescents and for mechanically ventilated children.	Aim to contract all guaranteed services that could not be secured in the province.

	services in a Nursing and Care Centre or Care and Treatment Centre for mechanically ventilated children.		
9.3.	Services in Nursing Home Long-Term Care are provided in every district of the province. The indicator of the number of patients per 100,000 population and the indicator of the number of person/days per 100,000 population rank the province in the 7th place with respect to the country (out of 16 provinces).	The largest percentage of people using nursing home long-term care services are in the group aged 65-79 (28.7%) and 80 or more (54.6%). This is the age range in which, according to projections, the number of people is expected to increase significantly by 2060. Also within Nursing Home Long-Term Care, the most common diseases are cardiovascular diseases (34.60%) and diseases of the nervous system (34.30%). Thus, these are the disease entities with a forecast increase in prevalence in the years to come. Taking into account the demographic and epidemiological forecasts, the demand for Nursing Home Long-Term Care services will increase in the coming years.	Gradual increase in the availability of long-term care services provided in home conditions and aim for an even distribution of providers (this is due to the specific nature of services provided in home conditions, i.e.: providers should be located in the closest possible proximity to the patient's place of residence).

	9.4.	Negative migration balance within the province and between districts.	Uneven distribution of institutions in the province, there are areas in the territory where there is a shortage of providers.	Increase in access to inpatient services with particular emphasis on the even distribution of providers throughout the province.
	9.5.	Also in Nursing or Care Centres or Care and Treatment Centres for mechanically ventilated patients, the availability of services is low, as indicated by the rate of patients per 100,000 population (1.41 -60% compared to the national average), the rate of person-days per 100,000 population (217 -44% compared to the national average).	Uneven distribution of providers (there are only two providers in the province, the eastern part of the province is covered and the remaining area lacks providers who would provide services in this respect).	Improvements in the accessibility of services in the rest of the districts.
	9.6.	Moreover, in the province, the Care Coefficient is projected to decline from a value of 264 in 2018 to a value of 95 in 2050. The declining care coefficient illustrates the decreasing potential of informal care and the need for an increased role of public administration in providing care to dependent seniors. Furthermore, demographic and epidemiological projections show that the demand for	There is a shortage of innovative forms of support in telemedicine and in policies to help informal caregivers. Support is particularly important in view of the fact that informal caregivers often already belong, or soon will belong, to the category of the elderly. With the decreasing	Establishing forms of assistance for informal caregivers and improving caregivers' competencies in the field of care of elderly and disabled persons (e.g. conducting trainings, providing informal caregivers with psychological support and professional information and advice on the disorders

Hospice and palliative care		long-term inpatient care services will increase in the years to come.	Care Coefficient, this phenomenon will intensify.	of persons under their care).
	10.1.	In the province, inpatient palliative and hospice care has the lowest availability of services compared to other provinces. - number of patients per 100,000 population (the lowest rate, 16th position in the country); - number of person/days per 100,000 population (one of the lowest rates in the country; 15th position in the country); - low number of centres per 100,000 population (one of the lowest rates in the country, well below the Polish rate); - uneven distribution of centres within the territory of the province; - negative migration balance per 100,000 population; units in the province with contracts to provide services in palliative care wards/inpatient hospices according to the registers have a total of 137 beds. A total of 125 beds have been allocated for use under contracts with the NFZ.	According to forecasts, the proportion of the population aged 65-79 in Poland is expected to double by 2060, whereas the proportion of people aged 80 and over is expected to triple. The majority of palliative and hospice care patients are elderly, aged 65-79 (47.7 %) and 80 or more (25.5 %). In view of the ongoing demographic and epidemiological changes, the number of people in need of palliative care will increase.	Improvement of access to inpatient palliative and hospice care, taking into account an even distribution of centres in the province. According to the recommendation, there should be 100 beds per 1,000,000 inhabitants, i.e. about 171 beds in the province.
	10.2.	In the province, palliative-hospice care provided at the patient's home has the lowest	In home hospices in the province, the largest group of patients is in	Increase in the availability of services in palliative care and hospice care provided

		availability of services compared to other provinces. - number of patients per 100,000 population (15th position in the country); - number of person/days per 100,000 population (14th position in the country); the number of centres per 100,000 inhabitants ranks the province 4th in the country, above the national rate (the rate for the province being 1.59; the rate for Poland being 1.38).	the age group of 65-79 years and 80 years and over. This is the age range in which, according to projections, the number of people is expected to increase significantly by 2060. The most common medical diagnosis among people undergoing home-based hospice care are neoplasms (a higher percentage of people with neoplasms in the province than nationally). The projections of the death rate due to neoplasms for both the province and Poland demonstrate that this rate will increase in the following years, but it will be higher for the province than for Poland. A large number of centres, located in every district of the province (except Koszalin District) does not correspond to good accessibility of services for patients, which is evidenced by other indicators.	in home conditions and aim for an even distribution of providers across the province. This is due to the specific nature of home-based services, i.e. providers should be located in the closest possible proximity to the patient's place of residence.
	10.3.	In palliative medicine clinics, the rate of patients per 100,000 population and the rate of centres per 100,000 population rank the province above the Polish rate. However, there is a problem	According to the specific nature of services provided in palliative medicine clinics, providers should be located in the closest possible proximity to the place	Aiming at even distribution of entities providing services in the province. Ultimately, services should

	of uneven distribution of service providers in the province. The western part of the province is covered. In the remaining part of the province, there is no provider of consultations in the field of palliative care.	of residence of the patient. Ultimately, the aim should be to provide services in every district of the province.	be provided in every district of the province.
10.4.	In home hospice for children, there is a problem of a shortage of providers and an uniform distribution of providers across the province. There is one provider in the province, rendering services at two health care units. Moreover, it should be noted that neoplasms, which are the primary diagnosis in palliative and hospice care in the group of patients under 18 years of age, represent a small percentage of diagnoses (10.5 % of patients in the province; 8.30 % in Poland). The remaining diagnoses are diseases with which the patient has been functioning for many years and these diagnoses do not qualify for palliative care in hospices for adults.	According to the specific nature of home hospice services for children, providers should be located in as close proximity as possible to the patient's place of residence. In addition, patients of home hospices for children with diagnoses other than neoplasms are deprived of further palliative and hospice care when they reach the age of majority. A form of care for children with diagnoses other than neoplasms should be considered that would make it possible to provide long-term specialist care for such patients.	Increase in accessibility to home hospice services for children and aim for an even distribution of providers on the territory of the province.
10.5.	There is a shortage of provision of perinatal palliative care services in the province.	No bids in the announced competition for perinatal palliative care services.	Aiming at contracting the guaranteed services for perinatal palliative care.

	10.6.	There are 34 medical practitioners specialising in palliative care in the province. All 34 medical practitioners work under NFZ contracts, whereas only 25 medical practitioners provide palliative-hospice care. Further analysis of palliative and hospice care leads to the conclusion that the same medical practitioners work in different districts at the same time; with different service providers and within different scopes of services (analysis by unit type): palliative care outpatient clinic - 12 medical practitioners - with a rate for the province of 0.7 medical practitioners per 100,000 population (8th position in the country out of 14 positions); home hospice for children 1 medical practitioner - with a rate for the province of 0.1 medical practitioner per 100,000 population (4th position in the country out of 5 positions); home hospice 16 medical practitioners - with a rate for the province of 0.9 medical practitioners per 100 population (8th position in the country out of 11 positions); inpatient hospice - by type of unit - not available in the province; inpatient hospice/inpatient palliative care centre 11 medical practitioners - with a rate for the province of 0.6 medical practitioners per 100 population (4th position in the country out of 8 positions); palliative care ward 2 medical practitioners - with a rate for the province of 0.1 medical practitioner per 100 population (5th position in the country out of 5 positions).	palliative care is often medical practitioner's second or third speciality. In many cases, medical practitioners do not work within palliative and hospice care, despite their speciality, hospice care, but provide other types of services, for example, hospital treatment. In the field of palliative and hospice care, medical practitioners work simultaneously for different providers and in different service areas, most often in part-time positions.	Increase the number of palliative care specialists.

Emergency Medical Services	10.7.	In the province the total number of nurses per 100,000 population is 556.3, which ranks 14th nationwide. In palliative and hospice care, the ratio of nurses per 100,000 population is 13, ranking the province on the 12th position nationwide.	According to forecasts, the number of nurses aged 25-59 will decrease both nationwide and provincially. In the province, the total number of nurses aged 25-59 is estimated to decrease from 7,360 in 2019 to 4,554 in 2029.	Adoption of measures to increase the number of nurses employed in palliative and hospice care centres.
	11.1.	The following system units operated in the province: 1) Emergency Rescue Teams (ERTs) - 89 teams, including 16 specialist teams (16% of all ERTs), i.e. teams with medical practitioners and 66 basic and 6 basic seasonal teams; 2) Air Ambulance Stations (HEMS) - 2 (including 1 seasonal); hospital emergency departments - 10.	The shortage of medical staff (medical practitioners) makes specialist emergency rescue teams unavailable - teams intervened without the presence of medical practitioners.	Consideration of a solution enabling complete liquidation of specialist medical rescue teams in exchange for launching the so-called rendez-vous system or an on-line medical practitioner, as is the case in western countries - a medical practitioner will arrive at the scene of an incident when necessary. Reducing the number of specialist emergency rescue teams in favour of basic teams.
	11.2.	Medical rescue teams are distributed within a radius of 20-25 km from each other, so that they can	The problem of the system's operation is the long time necessary for the ERT to reach a patient outside	In order to improve the time of arrival of a ERT to a patient,

		provide services to patients in a state of sudden threat to life and health in the shortest possible time specified by law. In the analysed period, emergency rescue teams intervened 145,154 times. 75% of all departures were completed under Code 2. The main reason for calling the emergency rescue team was injuries/traumas. The main diagnosis posed by the team of the disease entity at the scene was 'Abdominal and pelvic pain - R10'. In cities with over 10,000 inhabitants, the Emergency Rescue Teams in 94% of cases reach patients within the time compliant with the law. The problem arises for incidents outside cities with more than 10,000 inhabitants - 17.51% of departures exceed the time specified in the Act.	a city with more than 10,000 inhabitants.	the establishment of new Emergency Rescue Teams should be considered (e.g. Szczecin, Borne Sulinowo and prolongation of the operation of a seasonal ERT in Świnoujście to a year-round unit), as well as, after completion of construction of the S6 and S3 expressways, launching a Motorcycle Emergency Rescue Teams for the holiday season in the Goleniów area at the junction of the expressways. It is necessary to undertake actions for a more efficient distribution of ERTs.
	11.3.	- Helicopter emergency medical services in the province intervened 204 times. One of the two medical rescue teams in the province operates only seasonally.	The highest number of HEMS interventions in comparison with other provinces.	Adoption of measures to enable the operation of HEMS in Zegrze Pomorskie throughout the year.

	11.4.	5 of 10 EDs are located in the provincial city of Szczecin (4) and the former provincial city of Koszalin (1). Services in EDs were provided to patients from the same district (68%). On average, every third patient received care outside their own district.	Non-uniform availability of medical services provided in the ED in individual districts.	The establishment of new EDs in Kołobrzeg, Świnoujście and Wałcz should be considered.
	11.5.	There were 376,970 patients admitted to Emergency Departments (EDs), the largest number of whom had "other disorders of the musculoskeletal system".	Reporting for medical assistance to the ED by patients with conditions that do not pose a threat to their health or life is an important issue because the number of services provided in the ED increases in relation to previous years.	mechanisms should be pursued to support the conversion of the hospital's Emergency Room to an ED. Taking into account the services provided in EDs, it is important to support the provision of Primary Health Care and Outpatient Specialist Care, as well as Night and Holiday Health Care, in order to relieve Emergency Departments from providing services to patients who are not in a medical emergency.

Medical staff	11.6.	On average approx. 9% of services in the ED were provided to children.	Insufficient number of services provided to children in the ED	Efforts should be made to ensure that minor paediatric injuries are attended to in each ED to eliminate the need for transport by an ERT to another hospital of a higher reference level. Due to the different nature of treating children, young emergency patients should have access to dedicated specialists.
	12.1	Calculated per 100,000 inhabitants in the province there were: - 7 medical practitioners less, - 13 more dentists, - 65 nurses less (the third from the end in the country), - 7 midwives less (fifth from the end in the country), - 8 more physiotherapists (sixth in the country) than the national average.	The access to medical personnel in the province is worse than the Polish average in the case of: medical practitioners, nurses and midwives. The access to medical personnel in the province is better than the country average in the case of dentists and physiotherapists.	Increase in the number of places on the nursing, midwifery and medical faculties. Establishing a system to encourage secondary school graduates to enter nursing and midwifery programmes in the province. Creating a system encouraging people to work in the area

				of the province for nurses, e.g. scholarships for students who commit to work in the province, housing assistance.
	12.2	Regarding the number of medical staff of retirement age, the province was ranked as follows: - the second place in the country for medical practitioners - 25% (against the background of other districts in the country, the Łobez District had the highest percentage (65%), - the ninth place in the country for dentists - 16%, - the first place in the country for nurses - 21% (in comparison with other districts in the country, the districts of Kołobrzeg (28%) and Łobez (27%) were ranked second and third), - second place in the country for midwives - 20% (against the background of other districts in the country, the Łobez district had the highest percentage (70%), - for physiotherapists, the province was one of the three with the highest percentage (6%) (as of May 2020),	Compared to other provinces, almost all professions (except dentists) have the largest number of staff of retirement age. The challenge is to minimise the risk of a decrease in the number of medical staff (per 1 resident).	Developing support programmes for medical graduates to facilitate their entry into the profession. Increase in the number of places on the nursing, midwifery and medical faculties. Establishing a system to encourage secondary school graduates to enter nursing and midwifery programmes in the province. Creating a system encouraging people to work in the area of the province for nurses, e.g. scholarships for students who commit to work in

	the sixth place in the country for diagnosticians - 13% (Koszalin district is one of three districts in Poland where 100% of diagnosticians were of retirement age).		the area of province, housing assistance.
12.3	Keeping up with the trend of young nurses and midwives entering the labour market in 2019, the number of nurses and midwives in 10 years' time aged 25-59 was estimated. Compared to 2019, forecasts indicate a decrease of 38% in the number of nurses and 31% in the number of midwives aged 25-59 in 2029. The forecasted dynamics of change will be higher in both cases compared to the national average.	There is a significant shortage of nurses and midwives in the province, which could become even worse in the upcoming years.	1) A radical change both in terms of the number of educational venues, as well as guaranteed wages. 2) An adequate provision of nursing services at the patient's home, both in long-term care and in palliative care. Inadequate funding that does not recognise the high costs associated with the provision of this type of service by nurses results in severe staff constraints. Adequate funding will be an incentive to work in this area.

				Increasing the number of places in nursing and midwifery studies. Establishing a system to encourage secondary school graduates to enter nursing and midwifery programmes in the province. Creating a system to encourage nurses to work in the province, e.g. scholarships for students who commit to working in the province, housing assistance.
	12.4	On average, there were 2.1 dentists specialising in paediatric dentistry per 100,000 residents in the province. Access to this type of health service was not evenly distributed. There were paediatric dentists in only 9 districts of the province, with the highest number in the city of Szczecin - 64% of all specialists in the province.	Inadequate provision of specialist dental care for children.	The number of accreditation places in the field of paediatric dentistry should be increased primarily in the smaller cities of the province.

	12.5	Access to physiotherapists for the residents of the province is better than the Polish average. Keeping up with the trend of young physiotherapists entering the labour market in 2019, it has been estimated that their number will increase by 37% in 10 years (aged 25-59).	The province has good provision of physiotherapy specialists for its inhabitants.	Maintaining the current trend.
	12.6	The average age of a medical practitioner in the province was 49 years, with the average age of medical practitioners without speciality (26% of all medical practitioners) being 33 years. There were four specialities with 100% of medical practitioners in retirement age - military aviation medicine, military maritime medicine, tropical medicine and neuropathology. Each of these specialities was held by 1 or 2 medical practitioners in the province. Eleven specialities had more than/equal to 50% of medical practitioners of retirement age - epidemiology, laboratory diagnostics, marine and tropical medicine, public health, occupational medicine, hygiene, sexology, paediatrics, dermatology and venereology, clinical genetics and metabolic paediatrics. For 33 fields of medicine, the number of medical practitioners who will reach retirement age within 6 years (by 2024) was greater than the number of medical practitioners who will obtain a specialist	There exist shortages in the number of speciality medical practitioners in selected fields and such shortages are projected to continue.	Creating more training venues in areas of medicine where there are (or will be in the future) significant staff gaps. Introducing programmes to encourage entry into a speciality in disciplines where there was a lack of applicants in previous years. Developing a system to motivate medical practitioners to specialise in smaller centres, especially in those regions where there is a shortage of specialist medical practitioners. Creating and implementing an incentive system

		may affect internal medicine, where 126 more medical practitioners will reach retirement age than will obtain a specialist title. Situation will also be poor in the following areas: paediatrics (32 medical practitioners short), general surgery (30 medical practitioners short), lung diseases (24 medical practitioners short), midwifery and gynaecology (15 medical practitioners short), allergology (14 medical practitioners short), public health (12 medical practitioners short), balneology and physical medicine (10 medical practitioners short) and diabetology (10 medical practitioners short). The province has fewer specialists in 39 medical fields than it is recommended. The situation is worst in the following disciplines: internal medicine - there is a shortage of 49.0 doctors per 100,000. residents, family medicine - there is a shortage of 14.6 medical practitioners per 100,000 residents, psychiatry - shortage of 11.1 medical practitioners per 100,000 residents, occupational medicine - shortage of 8.2 medical practitioners per 100,000 residents, geriatrics - there is a shortage of 7.2 medical practitioners per 100,000 inhabitants and emergency medicine - there is a shortage of 3.6 doctors per 100,000 inhabitants. Considering the recommendations of national consultants and the generational interchangeability, the largest number of speciality places in the province should be created in the following fields:		establishments to apply for accreditation to open new training venues. Creating a system to encourage working in the province, e.g. scholarships for students who commit to work in the province, housing assistance. Creating a centre with contracting for clinical immunology services, which will allow speciality places for training medical staff to be organised. The profitability of specialising in forensic medicine needs to be improved. Consideration should be given to centralising the employment of haematology medical practitioners in a single thriving centre with the highest level of referral and

		internal medicine (991 places), family medicine (270 places), psychiatry (170 places), occupational medicine (148 places) and geriatrics (123 places). The province had 4 medical practitioners specialising in clinical immunology, the fifth lowest position in the country. The national consultant's recommended number of specialist medical practitioners in this field is 17. The Independent Public Regional Hospital in Szczecin conducts a lung transplantation programme as one of three reference centres in the country. Residents who plan to devote themselves ultimately to lung transplantation are required to specialise in thoracic surgery. According to the provincial consultant on surgery, there are not enough speciality places in this field in the province. There were 9 medical practitioners specialising in forensic medicine in the province, the sixth lowest position in the country. No medical practitioner is undergoing speciality training in this discipline. There were 25 medical practitioners specialising in haematology in the province, which ranks ninth in the country.		introducing an incentive system to encourage to work in wards and clinics according to their speciality. Before new haematologists are trained, there is an urgent need to engage those specialising in this field who do not work for patients with blood diseases.

Medical equipment		The number of specialist medical practitioners in this field recommended by the national consultant is 42.		
	13.1.	The province has 8 accelerators. They were distributed in two districts: the city of Szczecin - 6 and Koszalin - 2. The distance from the nearest equipment is the most considerable for inhabitants of Wałcz district (113 km). The number of accelerators per 100,000 population is 0.47 compared to a national average of 0.44. The average age of the equipment in the districts is 7-8 years. In Szczecin, however, as many as four machines are over 10 years old, and additionally they perform the largest number of examinations in the country, on average 8500 procedures per year.	The availability of equipment for the inhabitants of the province is at the national level. The equipment is very well used, but due to its age, the efficiency of the tests performed may decrease in the upcoming years. There are currently 4 machines with high priority for replacement, all located in Szczecin. It is assumed that in 2023, 7 of 8 accelerators in the province will reach an age that makes it impossible to perform procedures effectively and will need to be replaced.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
	13.2.	The province has 12 angiographs. They were located in three districts : the city of Szczecin (9), the city of Koszalin (2) and the district of Szczecinek (1). The area furthest away from the district where there is at least 1 angiograph is the district of Choszczno (90 km). The number of angiographs per 100,000 population is 0.71 with a national average of 0.97.	Accessibility to equipment for the inhabitants of the province is lower than the average in other provinces - the fourth lowest score. Currently two machines due to their age of 24 and 19 years have a high priority for replacement. The other equipment, due to the rather low	Efforts should be made to make the best use of the currently owned medical equipment. In the upcoming years it is necessary to focus on the renewal of the equipment base with regard to machines

	The average age of equipment in district varies from 3 years in Szczecinek district to 12.5 years in the city of Koszalin. The city of Koszalin also has the highest average number of examinations performed - 1,060 procedures/year.	average number of procedures performed, have a low priority for replacement. Forecasts indicate that by 2025, 60% of angiographers will reach an age that significantly limits effective performance, and by 2029 the entire equipment base should be replaced.	with high replacement priority (very old or relatively old and heavily used equipment).
13.3.	The province has 4 brachytherapy machines located in Koszalin (2) and Szczecin (2). The distance from the nearest equipment is the most considerable for the inhabitants of Wałcz district (128 km). The number of brachytherapy machines per 100,000 population is 0.24 with a national average of 0.14. The average age of equipment in districts is 7 years for the city of Koszalin and 10 years for the city of Szczecin. In Szczecin, however, there is a machine that is 15 years old and has a medium priority for replacement. The machines perform relatively few examinations, on average 100-300 per year.	Accessibility to equipment for the inhabitants of the province is higher than the average in other provinces - the highest score. None of the machines had a high priority for replacement. According to the demand forecast, the entire equipment base should be replaced by 2024.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.4.	The province has 3 ECMO machines, all located in Szczecin. The distance from the nearest machine is the most considerable for inhabitants of Koszalin district (171 km).	The availability of equipment for the inhabitants of the province is at the national level.	Efforts should be made to make the best use of the currently owned medical equipment.

	Number of ECMO machines per 100,000 population is 0.18, which is consistent with the national average. The average age of the machines is 7 years. The machines perform 5 examinations per year on average - similar to other provinces.	According to the demand forecast, the entire ECMO base should be replaced by 2023.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.5.	The province has 7 gammacameras, all located in the city of Szczecin. The distance from the nearest equipment is the most considerable for the inhabitants of Sławno district (151 km). The number of gamma cameras per 100,000 population is 0.41 with a national average of 0.42. The average age of the equipment is 11 years and 4 machines are over 10 years old. The equipment performs 1150 procedures per year on average.	The availability of equipment for the inhabitants of the province is at the national level. Due to their advanced age, 3 machines have a high priority for replacement, for the rest it is low. Forecasts indicate that by 2025, the entire gammacamera base needs to be replaced.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.6.	The province has 19 mammography machines in 9 districts. The number of mammography units per 100,000 population is 1.12 with a national average of 1.97.	Accessibility to equipment for the inhabitants of the province is lower than the average in other provinces - the second lowest score.	Efforts should be made to make the best use of the currently owned medical equipment.

	The average age of stationary mammography machines in the province ranged from 4 to 22 years. The average age of equipment is the highest in Choszczno district - 17 years. Equipment exploitation varies, from 0 to 3,200 examinations/year. The lowest average usage occurs in Białogard district and the highest in the city of Szczecin.	Due to the relatively old equipment, as many as 10 out of 19 machines have a high priority for replacement. Currently 75% of mammograms are over the age for effective examination, and by 2025 the entire equipment base should be replaced.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.7.	The province has one PET machine located in the city of Szczecin. The area furthest from the district where the PET machine is located is Koszalin district (171 km). The equipment is 6 years old and performs nearly 2,000 procedures a year.	Accessibility to equipment for the inhabitants of the province is lower than the average in other provinces - the third lowest score. The only machine in the province has a low priority for replacement. According to the demand forecast, equipment should be replaced by 2024.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.8.	The province has 15 MRI units located in four provinces: the city of Szczecin (9), the city of Koszalin (4), provinces of Gryfice (1) and Kołobrzeg (1).	Accessibility to equipment for the inhabitants of the province is lower than the average in other provinces - the fifth lowest score.	Efforts should be made to make the best use of the currently owned medical equipment.

		Number of MRI machines/100,000 population is 0.88 with a national average of 1.05. The age of the equipment ranges from 2 to 14 years. The oldest equipment is located in the city of Koszalin and only that one has a high priority for replacement. The average age of equipment in districts is between 5 and 8 years. On average, the highest number of procedures is performed in the district of Gryfice - almost 3,500/year and the lowest in the district of Kolobrzeg - 500/year	The large proportion of moderately aged equipment with a relatively low number of examinations performed per year means that 73% (11) of the machines are low priority for replacement and only 1 machine was in the group of high priority for replacement. Nevertheless, this does not make a difference that in 2024 perspective, 56% of MRI machines in the province will exceed the age of 10 years and will be classified as part of the demand base for new equipment. In 2028, 100% of the current equipment will have to be replaced.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
	13.9.	The province has 497 X-ray machines, distributed in all provinces. The number of X-ray machines per 100,000 population is 29.3 with a national average of 22.42. The average age of equipment in half of the districts exceeds 10 years. The oldest machines are found in Świdwin district - on average 14 years old, and the youngest in the districts of Gryfice, Gryfino and Łobez - 4 years. On average, 19 out of 21 districts perform fewer than 1,200 procedures per year. Only in two district the exploitation is more significant: the district of	Accessibility to equipment for the province inhabitants - the third highest score. 75.5% of X-ray machines have a low priority for replacement, 24.1% have a high priority. Forecasts indicate that by 2023, 60% of X-ray machines will reach an age that significantly limits effective examination.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).

	Myślibórz district 2,000 procedures/year on average and Gryfice district 4,700 procedures/year.		Additionally, within the scope of thoracic surgery, the purchase of a new machine for surgery with X-ray scopy viewing is recommended, and the fluoroscopy equipment urgently needs to be replaced (it falls within 24.1% of the equipment recommended for replacement).
13.10.	The province has 25 CT scanners located in 12 provinces. Number of CT scanners per 100,000. population is 1.47 with a national average of 2.02. The average age of a CT scanner in the province is 7 years. The highest number of procedures is performed in the district of Kołobrzeg 7500/year on average, the lowest in the city of Świnoujście 770 procedures/year.	The availability of equipment for the inhabitants of the province is the lowest in the country. 20% of the machines have a high priority for replacement; these are old and heavily used machines. 64% of the machines have low priority for replacement. Forecasts indicate that by 2023, 50% of CT scanners will reach an age preventing them from performing examinations effectively.	Efforts should be made to make the best use of the currently owned medical equipment. Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
13.11.	The province has 604 ultrasound machines, distributed in all districts.	Accessibility to equipment for the inhabitants of the province is slightly lower than the average in other provinces.	Efforts should be made to make the best use of the currently owned medical equipment.

		The number of ultrasound machines per 100,000 population is 35.61 with a national average of 36.86 - slightly below the national average. In half of the districts, the average age of the machine exceeds 10 years. The oldest machines are found in Koszalin district - an average age of 17 years, and the newest in Choszczno district - 7 years. In half of the districts, the average number of procedures performed does not exceed 1,000 per year. Most procedures are performed in the district of Wałcz - 1,700/year on average, and the least in the district of Drawsko Pomorskie - 32/year	Due to the advanced age of the equipment, up to 56% of the machines have a high priority for replacement. The remaining 40% - low. 61% (371) of ultrasound machines will exceed the age for effective examination soon. Whereas by 2023, 80% of the machines should be replaced.	Over the coming years, it is necessary to focus on the renewal of the equipment base as regards machines that have a high priority for replacement (very old equipment or equipment that is relatively old and heavily used).
Other areas	13.12.	Due to the high demand for cardiac perfusion scintigraphy, there are long queues for this type of examination in the province. It is a non-invasive examination, well suited for assessing coronary artery disease in patients at various stages of its progression - from suspicion of disease, assessment of indications for invasive treatment, to evaluation of treatment effectiveness.	Excessive waiting time for examination.	The purchase of a specialist gammacamera for heart examinations.
	14.1.	The province provides health resort services in 4 seaside health resorts (Świnoujście, Kamień Pomorski, Kołobrzeg and Dąbki) and in 1 lowland health resort (Połczyn-Zdrój) in all types of guaranteed health resort services.	Demographic analyses indicate a steady trend towards an increase in the post-working age population and a slight increase in the number of new births, which determines the increased	The recommended actions in terms of improving the quality of health services in spa health services should be oriented towards increasing in the NFZ plan

		in terms of spa treatment. Such treatment is provided in 5 districts. Health resorts in the province have a capacity of around 10,000 beds, which places them in first place in the country in this respect. The vast majority of medical services provided in 2019 in the province (approx. 76%) are covered by spa treatment for adults, while the other extreme is the spa outpatient care of children and adults (about 0.9). In 2019, 9.5% of patients were treated in spa hospitals, while 89.6% of patients referred by the NFZ in spa sanatoriums.	demand for spa treatment services.	the financial resources allocated to them and shortening the waiting time for spa inpatient rehabilitation, spa inpatient care, spa sanatorium treatment and spa outpatient care, as well as modernisation of the existing infrastructure and replacement of worn-out equipment.
	14.2.	The performance of NFZ contracts on the territory of the province in all types of services ranged from 66% (spa outpatient care of children and adolescents) to almost 100% (other) in 2019. The deficit of referrals for spa inpatient care of children is a problem, especially in the post-holiday period, which is associated with the 'freezing' of staff resources in this profile.	Among the major problems for health care providers are the so-called no-shows of patients (up to about 32% in the summer of 2020 in the field of paediatric spa inpatient care) and the under-valuation of health care services.	Referring and qualifying patients for spa treatment on the basis of current health status, current medical knowledge and consideration of medical contraindications.
	14.3.	There are currently no doctors specialising in balneology and physical medicine and there is also a lack	There are staff shortages in the province among the personnel who	Creation of at least two units in the province

		of speciality places, while by 2024 10 medical practitioners specialising in this field will reach retirement age. According to the Ministry of Health, for the autumn qualification procedure for medical specialities (1-31 October 2020), only 2 resident vacancies have been allocated nationwide.	provide medical care as part of spa treatment.	to educate medical personnel for the needs of health resorts.