In collaboration with:

Commissioned by:

Netherlands Enterprise Agency

Polish Healthcare Sector

Overview, evolution and opportunities

Prepared by: Hubert Bukowski / Katarzyna Pogorzelczyk

April 2019

Table of contents

Executive summary

Healthcare system development in Poland has already started and is expected to continue in upcoming years. Poland has a resilient economy that has seen uninterrupted growth for over quarter of a century. Economic growth is expected to continue its impressive streak in upcoming years. However long-term economic forecasts are highly influenced by demographics. Polish population is expected to fall steadily from current 38,4 million 34,0 million in 2050. In consequence healthcare system development is crucial in the face of these trends.

Although the level and the structure of health care financing have undergone substantial changes, the share of GDP devoted to health has remained one of the lowest among developed nations. Underfunding has been and remains the main problem for the Polish healthcare sector. In 2017, Poland spent 6.7% of its gross domestic product on health, which is the seventh lowest result among OECD countries, caused mainly by insufficient public funding. Although given that Poland has modest financial, human and material health care resources at its disposal, it has to be said that it achieves relatively satisfactory health outcomes. The high healthcare financial efficiency comes at a cost of overall need for system frugality. The general practitioner annual salary in 2016 was by far the lowest among developed countries with available data. In effect Polish healthcare system lacks personnel, including specialists.

Insufficient public funding causes availability issues for formally guaranteed public healthcare entitlements, thus the private healthcare popularization. Private medical sector is continuously increasing its competitiveness by providing high, uniform and continuous level of services, which also draws significant number of medical tourist into Poland. The sector is more effective and offers better quality than the public sector. Most importantly it eliminates the problem of queues, which patients indicate as the most annoying drawback of public

health care. The main segments of the private healthcare market are out-of-pocket payments and voluntary insurance schemes. Out-of-pocket payments significance in the compositions of all private financing schemes is predicted to diminish while both voluntary health insurance and enterprise financing schemes will continue to develop at double-digit pace. Though approximately half of private healthcare expenses are incurred on medical goods the rest of the private healthcare market value is predicted to grow at a comparatively faster pace. This concerns curative and rehabilitative care in particular, especially the outpatient type as well as ancillary services and preventive care. Most of the private healthcare is provided by retailers and ambulatory healthcare providers. Private hospitals importance growth observed in recent years could diminish in the face of unfavourable regulatory developments.

To answer public healthcare sector financial needs the Parliament voted to increase the public spending on healthcare from the current 4.6% to 6% of GDP by 2024. In the event the private sector growth path seen in the last decade would not be altered the healthcare expenses could reach over 8.5% of GDP by 2024, an indicator which is on par with such countries as Italy, Spain and Portugal today. This will be supported by sizable EU funding which is expected to rise, with a possible peak in 2019-2021.

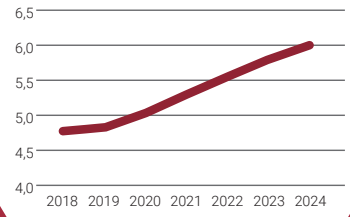
The growth in public healthcare expenses and EU funding could support healthcare infrastructure development. The Polish medical devices market is immature compared to other developed nations, thus a gradual growth of healthcare devices is predicted. Additionally the process of increasing the number of devices may be imminent in the light of new governmental programme to enhance access to specialist diagnostics and available EU funding for such projects. Furthermore, infrastructure development will take the form of hospitals and other healthcare facilities restructuring and modernization. The process will result from aging population that will cause wards reorganization or changing the orientation of entire hospitals. The switch from inpatient to outpatient care, which already has started in private sector may result in further reorganization and modification in the use of some departments. Also in this case EU funds which will stimulate hospital modernization and expansion efforts.

Medical and health research is expected to develop at a fast pace fuelled primary by business enterprises. Among sectors in which medical innovation takes place, business enterprise show the strongest growth which is forecasted to continue in upcoming years. This growth, coupled by EU fund inflows should be the engine for medical R&D growth in Poland until 2022. Furthermore Medical Research Agency establishment foreruns a possible development of state financed medical research in Poland, especially clinical trials. The Agency will have a considerable budget – the expenditure limit for 2020 is twice the size of governmental medical R&D expenses for 2016. Expected clinical trials developments could further strengthen Poland as the leader of such projects among Central and Eastern European countries.

There is a number of forthcoming large-scale healthcare digitalization projects in near future. The government has inscribed basic e-health developments into the law with additional projects being announced, this concerns electronic prescriptions, referrals, patients accounts, medical leaves etc. Except for the upcoming state-wide programmes there is a significant number of individual entities who plan to implement e-health solutions. Telemedicine and e-health continue to be a robustly growing segments of healthcare in Poland. Paneuropean programmes will continue to support those initiatives in Poland.

Seizing opportunity in Polish healthcare sector

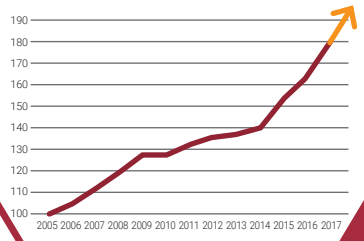
Unprecedented public healthcare expenses growth



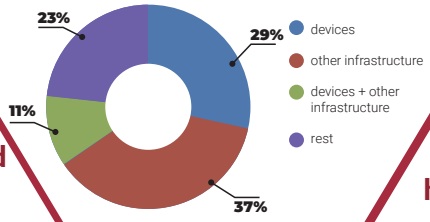
Expected increase in EU funds flow to the healthcare system in years 2019-2022.

EUR 2.8 bln from 2014-2020 EU framework

Steep growth of private healthcare expected to continue.



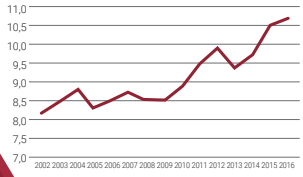
Ongoing process of healthcare infrastructure modernization fuelled i.a. by EU funds.



Healthcare system reorganization due to population aging is around the corner.

Population of 38,4 million in 2017 to fall to 34,0 million in 2050

Switch from inpatient to outpatient care already started in private healthcare and is expected in the public sector as well.



Considerable number of digitalization projects to come.

...

2018 E-prescription

2018 E-medical leave

Electronic medical records exchange

E-referrals

...

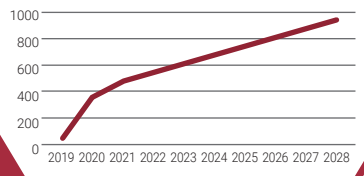
Attempts to increase systemic efficiency to be continued in the future.

2017 Network of hospitals

2022 Oncology network

2022 Cardiology network

Medical and health sciences R&D expenses are bound to grow in upcoming years.



High financial efficiency of healthcare sector will continue to fuel medical tourism.

155 thousand patients medical tourists market valued at EUR 100 million in 2016

1
Introduction

Poland has a resilient economy that has seen uninterrupted growth for over quarter of a century. Since Poland completed its transition to democracy in 1991, by 2017 its economy has increased almost threefold in real terms, with CAGR equalling to 4.1%. The growth resulted in a considerable improvement of Polish economy international relevance - it is currently the 23rd biggest market in the World[1].

Economic growth is expected to continue its impressive streak in upcoming years. According to latest projections Poland will rank as the sixth fastest growing economy in the EU, being surpassed only by smaller but not as economically stable countries[2]. The growth is assumed to visibly surpass 3% annual levels until 2020 mainly due to significant investments contribution, partially financed by EU funds.

Long-term economic forecasts are highly influenced by demographics. According to the latest economic projections Poland will see a slight decline in economic growth dynamics in the next decade as CAGR is expected to reach just over 2%. However in the following years GDP growth will continue to decelerate and is expected to decline to ca. 0.5% by 2060[3]. This is mainly due to unfavourable trends in demographics, specifically the dwindling population and its aging. Polish population is expected to fall steadily but gently from current 38,4 million to 37,1 in 2030. Afterwards the decline will somewhat accelerate causing the population to fall to 34,0 million in 2050. Simultaneously Poland will see a rapid growth of proportion of 65+ population rising from ca. 17% in 2017 to 32,7% in 2050[4]. The main underlying reason for these forecasts are low fertility

1. Calculation based on World Bank data.
2. European Economic Forecast; Winter 2019 (Interim); INSTITUTIONAL PAPER 096; February 2019; European Commission.
3. Calculation based on World Bank forecast.
4. Population projection 2014-2050; Główny Urząd Statystyczny (2014).

rates for Poland, equalled to ca. 1.5 children in 2017, which is expected to fall in coming years[5]. Furthermore senior population is facing considerable problems on the labour market or chooses to abstain from participating in it. The employment rate in the 55-64 age group is 48.3% compared to the average of 57.0% for the EU and 60.4% for OECD countries[6].

Healthcare system development is crucial in the face of unfavourable demographic trends. The overall low levels of healthcare financing are bound to rise to meet the growing needs of an aging population. Long-term care underdevelopment together with low accessibility of some procedures (e.g. joint replacement, cataract operation) are a burning issue. So is preventive care, which has seen improvement in recent years, but needs further enhancement.

Healthcare system satisfaction needs to be addressed. The public sector gets the lowest scores in satisfaction among the OECD countries. In 2016, on average, 70% of citizens in OECD countries reported being satisfied with the availability of quality health care in the city or area where they live. This is comparable to the percentage of satisfied citizens before the financial and economic crisis (71%). It is not the case in Poland, today about 43% of Poles declare being satisfied with healthcare while in 2007 it was 51%. Only three countries have lower scores among OECD members: Estonia, Chile and Greece. Dissatisfaction with public healthcare is a strong booster of self-medication as well as development of a private sector for the middle and upper-class.

Barriers on the labour market and slow innovations' implementation suppress the quality and access to healthcare. Medical professionals, especially at the beginning of their career, have relatively low wages. In result some of them decided to migrate to other counties, mainly EU ones. This is a major problem as the supply of new personnel is almost entirely depended on domestic medical graduates. Consequently shortage of personnel translates to longer waiting times for medical procedures. This together will slow adoption of technological advancement in healthcare result in an unfavourable healthcare system satisfaction.

There is a number of forthcoming large-scale healthcare digitalization projects in near future. The government has inscribed basic e-health developments into the law with additional projects being announced, this concerns electronic prescriptions, referrals, patients accounts, medical leaves etc. Except for the upcoming state-wide programmes there is a significant number of individual entities who plan to implement e-health solutions. Telemedicine and e-health continue to be a robustly growing segments of healthcare in Poland. Paneuropean programmes will continue to support those initiatives in Poland.

5. The current fertility rate is the presumably an effect of a demographic boom echo. In upcoming years the fertility rate is expected to fall to the levels seen in the last decade (slightly above 1.3 according to Eurostat).
6. data.oecd.org

Table 1
Key figures on Poland and its healthcare sector (2017 or stated otherwise).

Population	**38.4 million**
Gross Domestic Product (2018)	**496.6 billion EUR**
Language	**Polish**
Currency	**Polish Złoty (PLN)**
EUR - PLN Exchange Rate (March 7 2019)	**1 EUR = 4.30 PLN**
Demographic profile:	**younger than 20: 20.0% 20-64 years: 63.0%, 65 years and over: 17.0%**
Life expectancy at birth:	**male: 74.0 years, female: 81.8 years**
Infant mortality rate (2016):	**4.0 / 1 000**
Deaths from cancer (2015)	**2.4 / 1 000 population**
Health expenditure:	**6.7% of the GDP, of which: Public: 4.6% Private: 2.1%**
Total health expenditure per capita in EUR:	**1 628**
Doctor consultations per capita (2016):	**7.5**
Average hospital stay, in days (2016):	**6.7**
Physicians density (2016):	**2.4 / 1 000 population**
Nurses density (2016)	**5.2 / 1 000 population**
Hospital beds density (2016):	**6.6 / 1 000 population**
Overweight or obese, population 15+ (2014):	**53.3%**
Daily smokers, population 15+ (2014):	**22.7%**
Alcohol consumption, litres per capita, population 15+ (2016)	**10.4 litres**

2

Polish healthcare system overview

2.1 Background

Polish healthcare system has been constantly evolving since the transition to democracy took place. Before the political and economic reorganization that followed the collapse of communism Polish health system was strongly hierarchical and predominantly funded from the central budget. The strongly centralized system was replaced with a decentralized system of mandatory health insurance, complemented with financing from central and local budgets. During the 1990s, the administration of most health care services and the ownership of most public health care facilities were transferred from the Ministry of Health to local governments.

A radical healthcare system reform that did not met society's expectation has been introduced in 1999. The law on the universal health insurance replaced the tax-financed system based on budgetary rules with a system of financing from health contributions, based on social health insurance rules. A network of 16 health insurance institutions (so called sickness funds) for each voivodship and a separate institution for the uniformed services (members of the police, the military and the state rail) was established. The lack of both common contracting principles for the sickness funds and a unified healthcare strategy as well as the application of various payment mechanisms for contracted services resulted in substantial regional disparities in the access and quality of health services. These differences were further exacerbated by the limitations stemming from the economic slowdown.

The regional healthcare system was quickly replaced by a single central insurance institution. Head Office of National Health Fund (NFZ) along with 16 regional branches were introduced in 2003. To eliminate regional differences in access to

health care, the law introduced uniform contracting procedures and point limits for contracted services. The new law specified a list of services excluded from public financing. The regulatory amendment that came in to force six years later obliged the Ministry of Health to define the medical services baskets financed from public sources instead of excluded items.

Recent modification of the healthcare system diverted previous efforts to decentralize and commercialize healthcare in Poland. Since 2015 government introduces tougher conditions for private entities i.a. by limiting private hospitals and clinics access to NFZ funds, putting a halt to hospital commercialization and forcing some commercial entities to work under non-profit formula. The reform introduced a new institution, the so-called hospital chain, into the healthcare system. It changed the financing of such entities: hospitals receive their funds in advance, not – as it was up to this point – after treating their patients. Furthermore open-tender financing for those entities was substituted for a lump-sum, or a fixed-amount funding.

Further centralization of the healthcare system is possible but uncertain. The Ministry of Health plan involves transferring the payer function from the NFZ to the Ministry of Health and to Regional Health Offices. Health insurance contributions will be retained, however entitlement to health care services will no longer be based on insurance status. 2019 parliamentary elections would be decisive for this plan to come into fruition.

2

Polish healthcare system overview

2.2 System outline

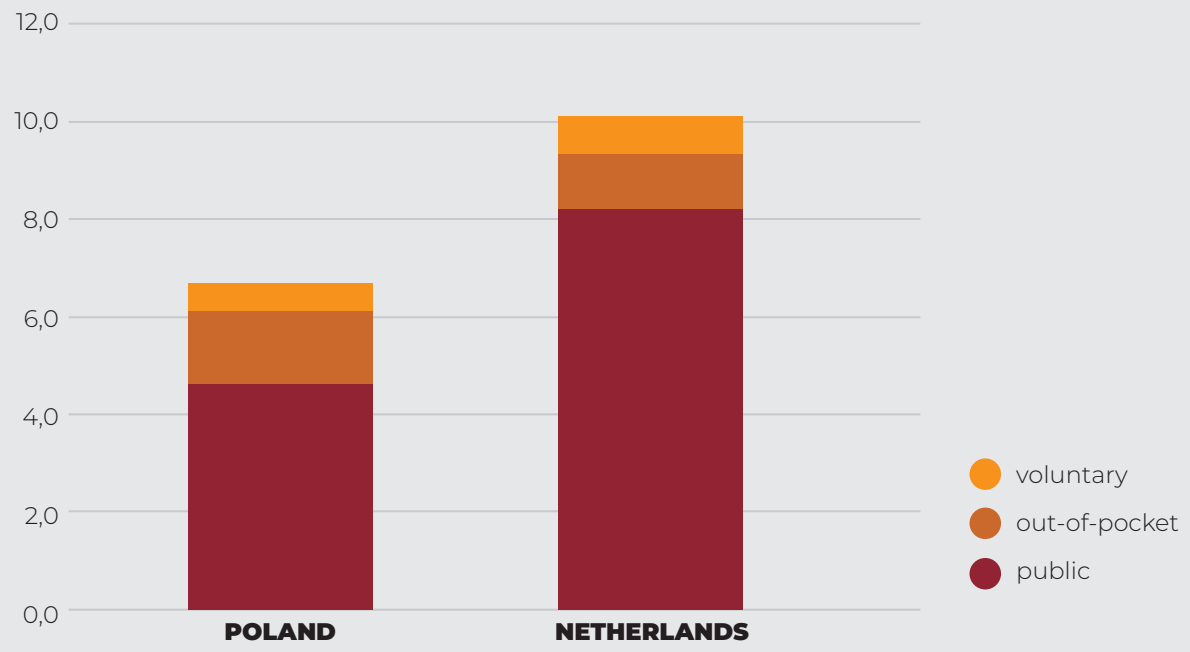
Polish citizens have the constitutional right to equal access to health services that are financed from public funds. Approximately 91,5% of the population is covered by the system of compulsory health insurance as of 2016[1]. This includes persons paying insurance contributions and their family members. The health care contributions for those who are not receiving wages, other labour income or receiving pensions are financed from the public funds, following the notion of universal coverage. The government is obliged to provide free healthcare to young children, pregnant women, disabled people, and the elderly.

Compulsory health insurance formally guarantees access to a very broad range of health services, with no need for out-of-pocket payments. Around 69,1% of health expenditure came from public sources (4.6% of GDP as of 2017). Except for cost-sharing for pharmaceuticals and certain health resort services the public system does not typically require the insured to participate in health services financing. However out-of-pocket payments from private households accounted for a sustainable part of total healthcare expenses, approximately 22.6%. More than 65% of these expenses (as of 2016) are for medical goods, including medicines (i.a. co-payments) and other non-durables.

1. Source: stats.oecd.org

Figure 1

Healthcare system financing in Poland and the Netherlands in 2017

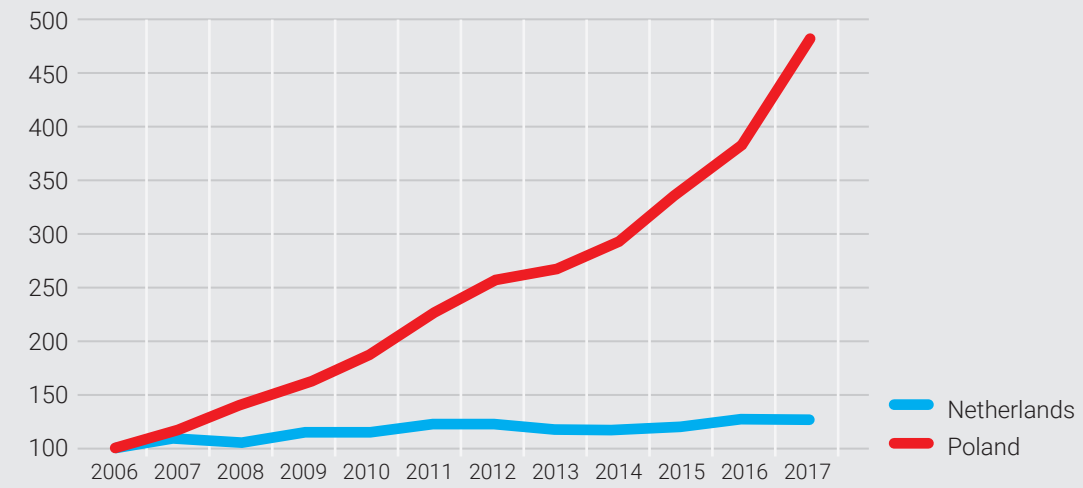


Source: OECD

Voluntary health insurance is not common although it is gaining prominence. Voluntary health insurance does not yet play an important role and is largely limited to medical subscription packages offered by employers. However it has seen considerable growth throughout recent years. The voluntary payments share in total healthcare payments has soared from 3.6% in 2005 to 8.2% in 2017. The private institutions are booming providing standard, basic services for the middle and upper class citizens (most advanced procedures are still performed by the public healthcare system).

Figure 2

Voluntary healthcare payments dynamics (2006=100; in current prices)



Source: OECD

Public entitlements guaranteed on paper are not always available, thus the private healthcare popularization. There is little waiting period to visit e.g. a general surgeon, paediatrician or obstetrician. However in some cases, e.g. endocrinology, queuing can take months. Mean waiting time on lists for a number of procedures can be over a year according to 2016 data, as is the case in cataract surgery (480 days), hip (732 days) or knee replacement (776 days). Although, it should be stated, that recently the Ministry of Health has taken effective measures to decrease waiting time for these treatments.

Long-term care remains highly underdeveloped as there is no systemic approach to the problem. Long-term care is considered mainly a family responsibility, for reasons which include the poor provision of services, early retirement of women, and tradition. Long-term care has not been separated as a sector, with services fragmented in the health and social sector, thus it is difficult to clearly assess its size. Total long-term care expenditures in health sector amounted to 0.4% in 2016 while e.g. in Netherlands the number stood at 2.7%. Some of the barriers for long-term care development are: low coverage of care services, low availability of public residential care, expensive private sector services that are often provided in the grey economy.

2

Polish healthcare system overview

2.3 Key entities

The role of the Ministry of Health has evolved from healthcare funder and organizer to health policy-maker and regulator. The Ministry of Health has the overall responsibility for governance of the health sector and its organization. It is responsible for national health policy, major capital investments and for medical research and education. The Ministry is also responsible for supervising the training of health care personnel, regulating medical professions, for funding very expensive medical equipment (the responsibility in this area is shared with territorial self-governments) and for setting and monitoring health care standards. The Ministry also finances certain emergency medical services. The Ministry also has a number of supervisory functions.

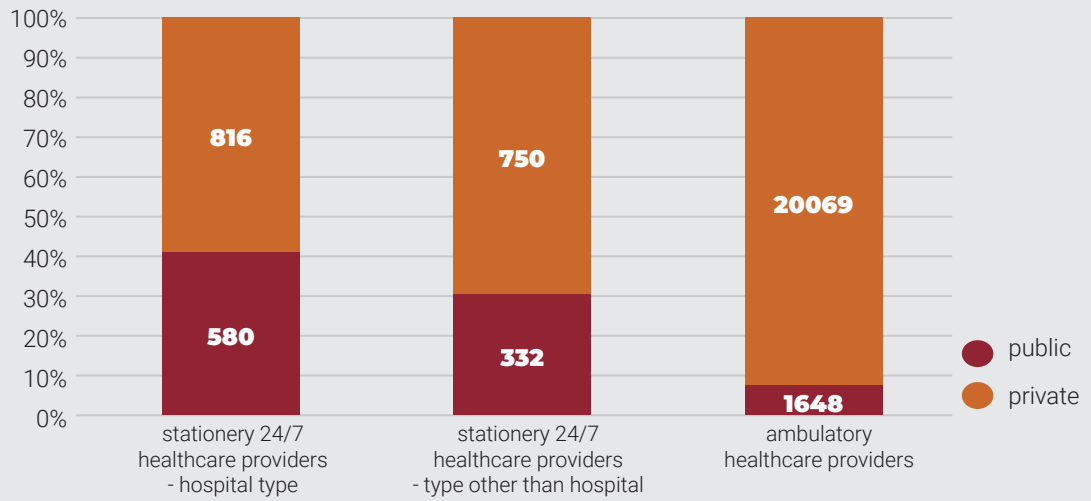
The major task of the National Health Fund is to finance health services provided to the publically insured population. It negotiates and signs contracts for service provision with health care providers (setting their value, volume and structure), monitors the fulfilment of contractual terms and is in charge of contract accounting. The NFZ has limited regulatory powers because these are generally held by the Ministry of Health, yet the NFZ has some influence on prices of contracted services. It also develops, implements and finances health programmes. Furthermore, it is also tasked with health promotion, monitoring of medical prescribing and maintaining the Central Registry of Insured Persons.

The self-governments typically are the owners of public hospitals and clinics. Territorial self-governments at each level also have a so-called quasi-owner position (they are the establishing bodies) for the majority of public outpatient clinics and some hospitals. Local governments are responsible

for maintaining capital investments and perform a range of supervisory and control functions but have virtually no influence on their contracts with the NFZ and in consequence on their revenues and the overall financial situation. They are also responsible for health promotion and prevention, the assessment of the adequacy of healthcare services as well as medical emergency services in their region.

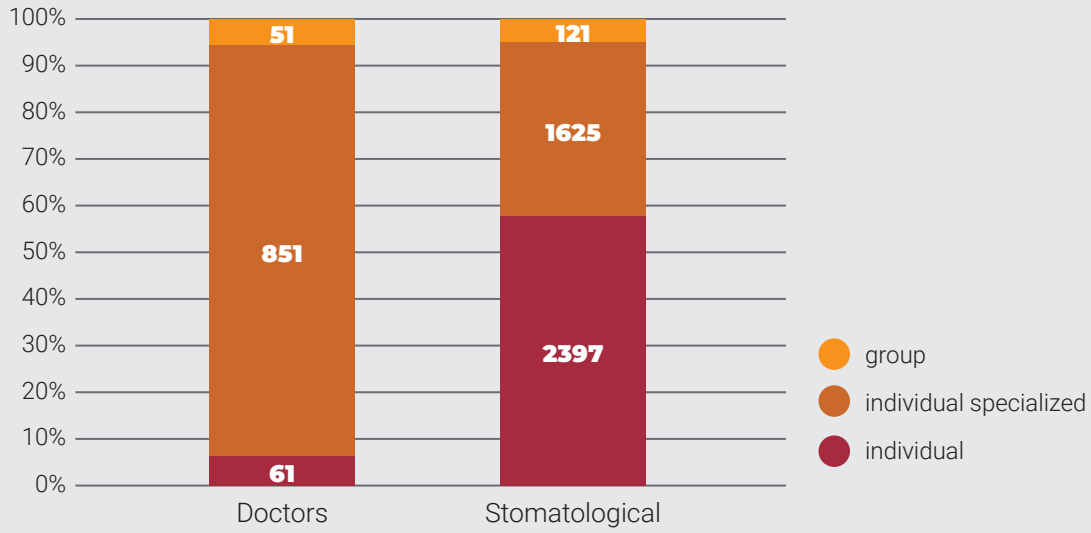
The healthcare providers are public and non-public healthcare units as well as individual and group medical practices. Non-public providers dominate in ambulatory care (92,4% of total ambulatory healthcare providers). Their role is considerably smaller in stationary healthcare services sector. Here it is the public entities that dominate the picture. According to OECD latest data public hospitals provide 73.2% of total hospital beds in Poland. Out of publicly held hospital type providers Independent Public Healthcare Centres (SPZOZ) constitute the vast majority, i.e. 73,2%. These entities operational independence was not matched by an adequate financial responsibility, and their supervision by the territorial self-governments was limited. This resulted in the SPZOZs accumulating debts. A number of experts saw privatization as a potential remedy for their unsound financial management. Therefore there have been many attempts to transform SPZOZs into Commercial Code companies. These attempts have been halted in recent years. Individual and group medical practices are the other categories of healthcare providers. Medical practices may be established only by persons who have a licence to practise a medical profession and a permission to run a medical practice and they must be registered with a regional chamber of physicians and dentists.

Figure 3
Number of healthcare units as of 15 March 2019



Source: rpwdl.csioz.gov.pl

Figure 4
Number of medical practices In 2017



Source: stat.gov.pl

Physicians, dentists, pharmacists, nurses and midwives, and laboratory diagnosticians are associated in professional chambers. They represent their interests by providing expert opinion or arbitrating on matters of professional responsibility. Chambers make sure that provision of health care services is consistent with ethics and medical knowledge, additionally they develop ethical codes of practice and may impose disciplinary measures on their members. They oversee education standards and maintain registers of professionals. Membership in the chambers is compulsory for all practising professionals.

The Polish Agency for Health Technology Assessment and Tarification has an advisory role for the Ministry of Health. The main responsibility of the Agency is to prepare analyses based on which decisions on the inclusion of health care services into the list of guaranteed services and the level and method of their financing and pricing are made.

The Office of Patient Rights Ombudsman was established to protect patients' interests. The competencies of the Patient Rights Ombudsman include investigating infringements of collective or individual patient rights, initiating new legislation or changes in the existing legislation concerning protection of patient rights and promoting awareness in that matter.

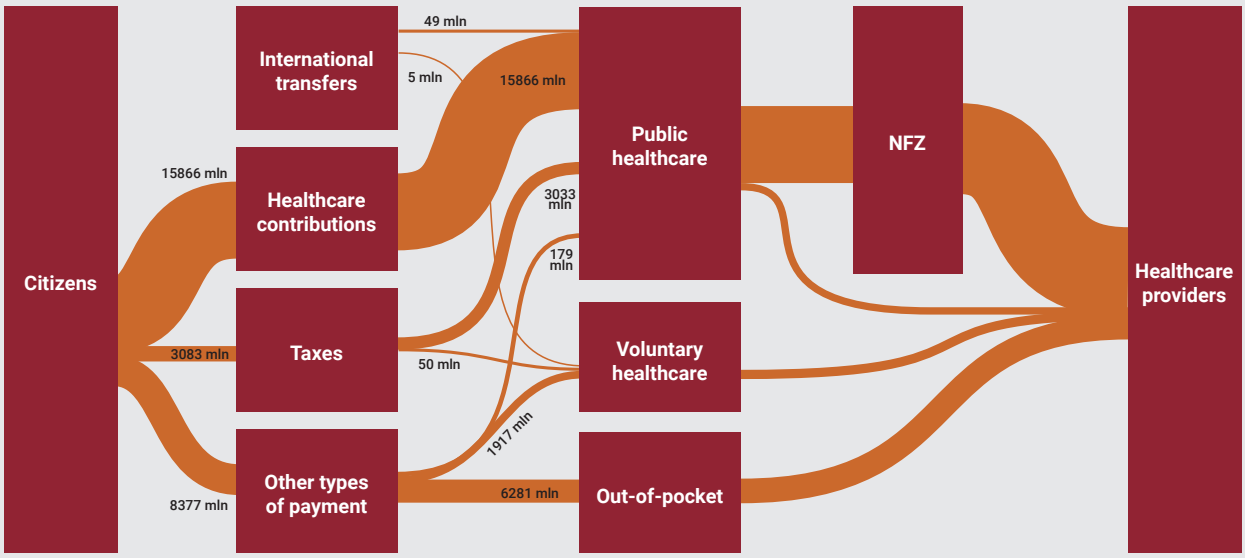
Medical Research Agency has been established to support and enhance medical research. The agency that came to being in 2019 has four basic priorities. It finances research projects in the field of medical and health sciences. Medical Research Agency initiates and develops international cooperation on those matters. It also publishes opinions and expertises commissioned by other entities (e.g. public administration). Lastly, it initiates and executes its own research studies.

2

Polish healthcare system overview

2.4 Financial flows

Figure 5
Simplified financial flow in Polish healthcare system (in EUR).



Source: Author, calculation based on stat.gov.pl and nfz.gov.pl data for 2016.

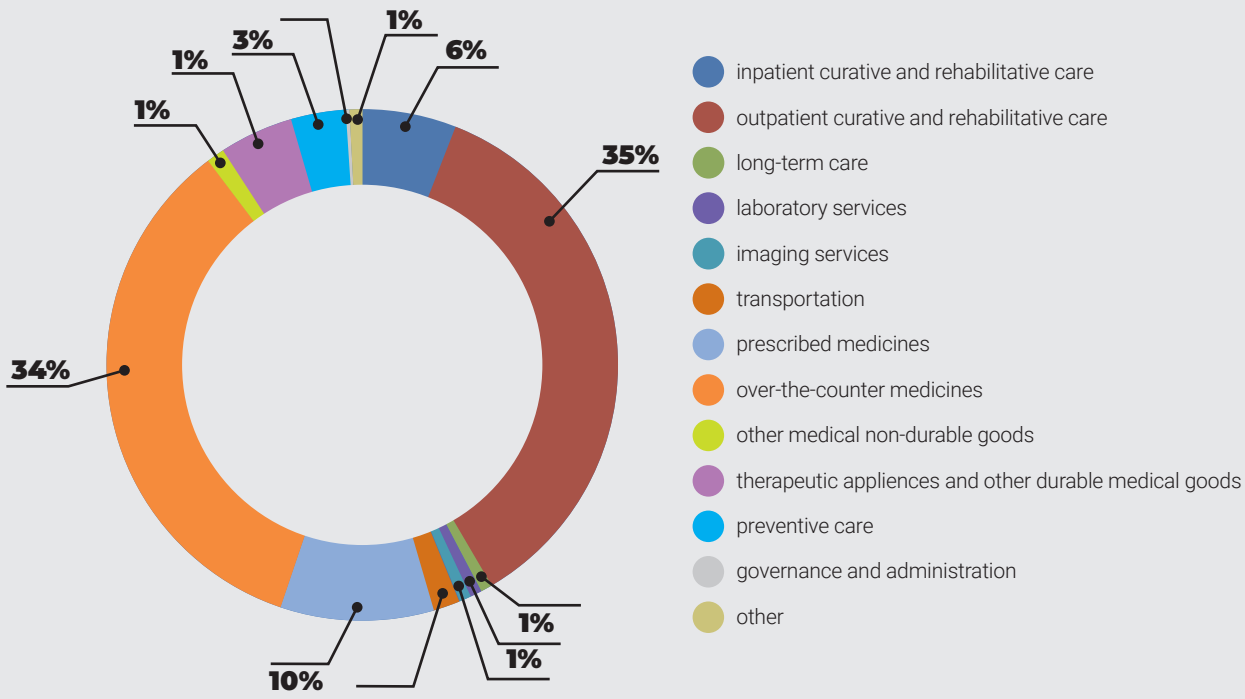
Public Healthcare system is mainly financed from health insurance contribution. The contributions finance the Polish healthcare system in almost 58% (83,0% for public sector alone). They are collected from people employed in non-agricultural sector by Social Insurance Fund (ZUS) while farmers' contribution is collected by Agricultural Social Insurance Fund (KRUS). The NFZ pays ZUS and KRUS for collecting health insurance contributions and the involvement of those funds in the sphere of health is limited to collection of those contributions.

The public healthcare system is financed supplementary by taxes trough central and local governments. In 2016, financing from the local government budgets covered 3.9% of public healthcare system revenues, while analogous indicator for public financing from sources other than health contribution in total amounted to 15.9%. The central and local governments are responsible

i.a. for emergency services, payments for medicines for the elderly, payment for treatment and diagnosis that took place abroad. Central budget is a more important source of funds for the Polish healthcare system than local governments' budgets. Even though the local governments' budgets are not a significant source of financing for health care, it needs to be stated that after the introduction of the universal statutory health insurance, the importance of local governments increased in this matter while the state budget's importance decreased.

Private healthcare spending takes the form of direct payments, cost-sharing or voluntary private insurance. As of 2016 approximately 30,2% of health expenditure came from private sources. Over half of those expenditures were medical goods' costs. Among medical goods over-the-counter medicines expenses proved to be the most costly category. This category amounted to ca. 10.4% of all health expenses (0.7% of GDP), which is by far the highest indicator among OECD countries. 10% of all private payments resulted from prescribed medicines' costs, partly co-payments. Second most important category was curative and rehabilitative care, specifically the outpatient type. Other notable private healthcare costs categories were preventive care and transportation expenses.

Figure 6
Private Healthcare expenses composition In 2016

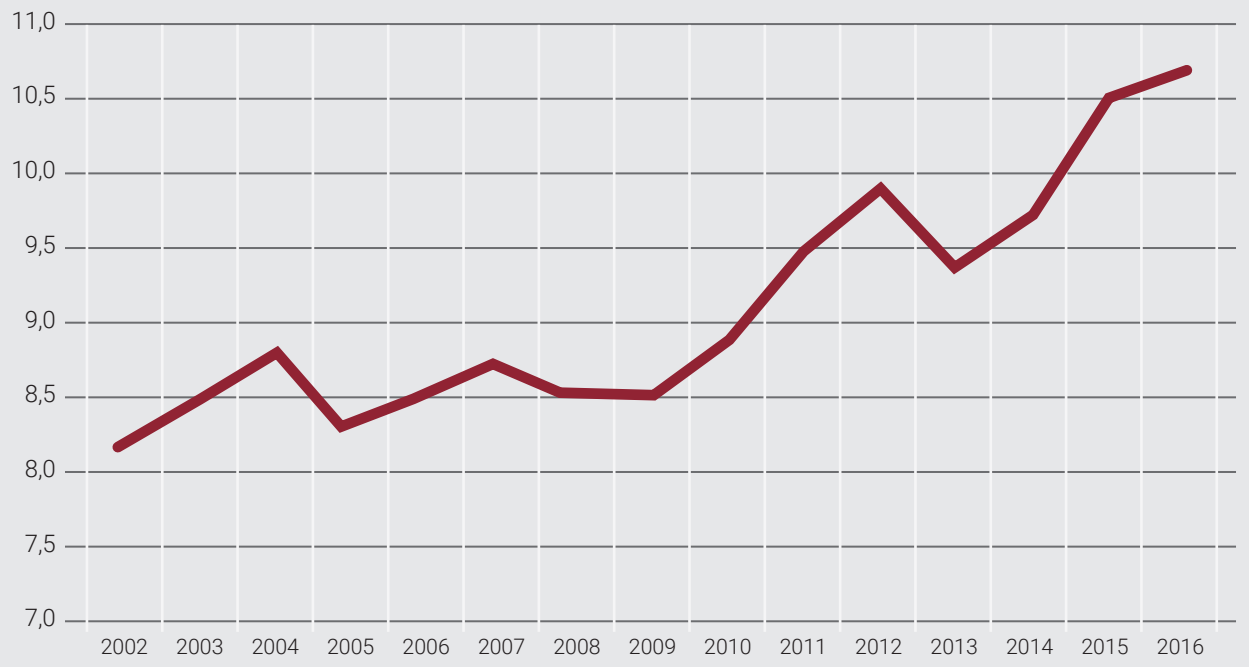


Source: OECD

Private financing of healthcare is booming due to a number of factors. Due to public healthcare patients' low satisfaction and long queues for specialty doctors and a number of surgical treatments, Poles (a wealthy part of the population in particular) are more and more determined to pay for doctor's appointments, one-day hospital stays and rehabilitation treatments. Due to these reasons Poland has seen a steady rise in private curative and rehabilitative care expenses, specifically the outpatient type.

Figure 7

Private outpatient curative and rehabilitative care costs as a share of total healthcare costs



Source: OECD

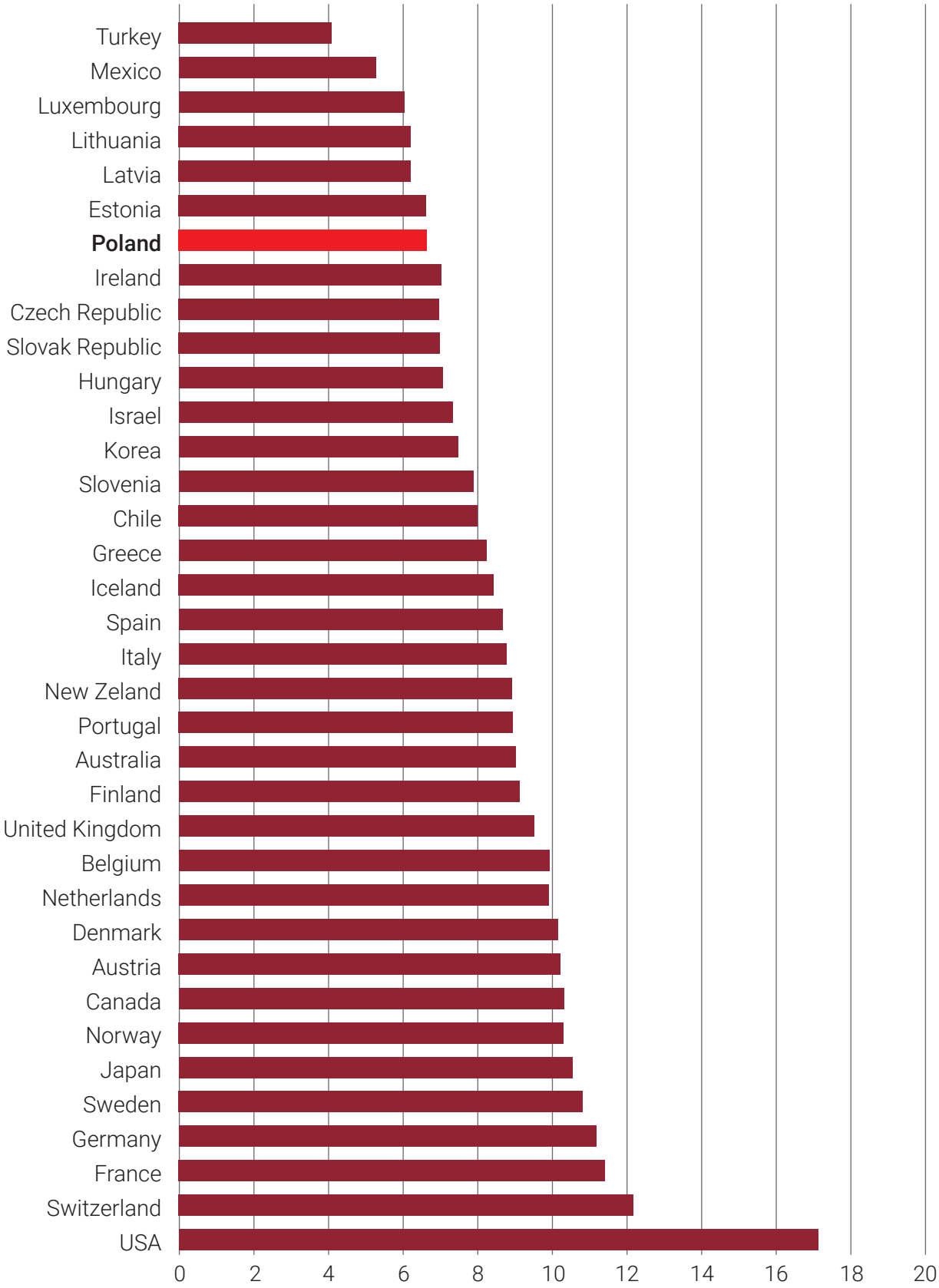
2

Polish healthcare system overview

2.5 Current expenditures and trends

Underfunding has been and remains the main problem for the Polish healthcare sector. The level of healthcare sector financing from public sources is one of the lowest in Europe. In 2017, Poland spent 6.7% of its gross domestic product on health, which is the seventh lowest result among OECD countries. This result could have been even lower if it have not been for the relatively high share of private expenses in total healthcare costs (12th highest among OECD countries).

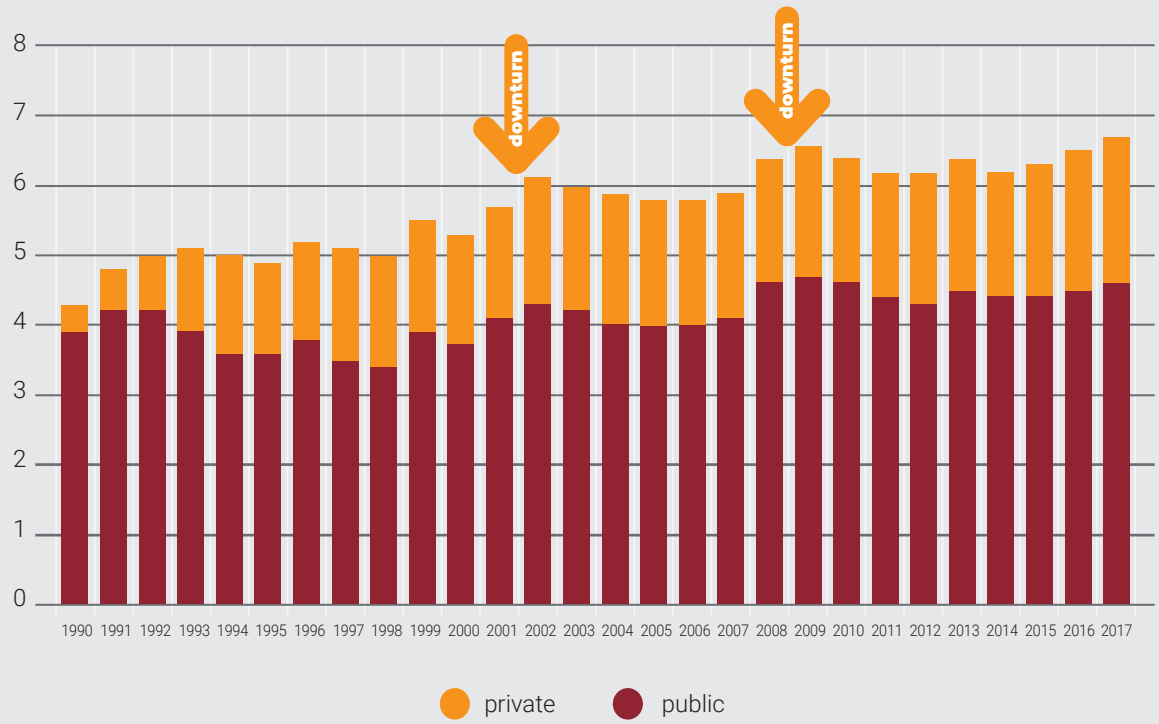
Figure 8
Healthcare expenditure as % of GDP In 2017



Source: OECD

Polish public healthcare expenditure as a share of GDP is dependant from the economic cycle. Since the transformation to market economy took place the healthcare expenditure seem to have an inverted relationship between healthcare expenses and economic conditions. In 2001 and 2008 we have seen a considerable rise of healthcare costs (as % of GDP) stemming from public expenditures. This is a result of relatively stable public healthcare costs in nominal terms, even during an economic downturn. In effect healthcare expenses in Poland should be assessed as a valuable countercyclical economic instrument.

Figure 9
Polish Healthcare expenditures as % of GDP



Source: OECD

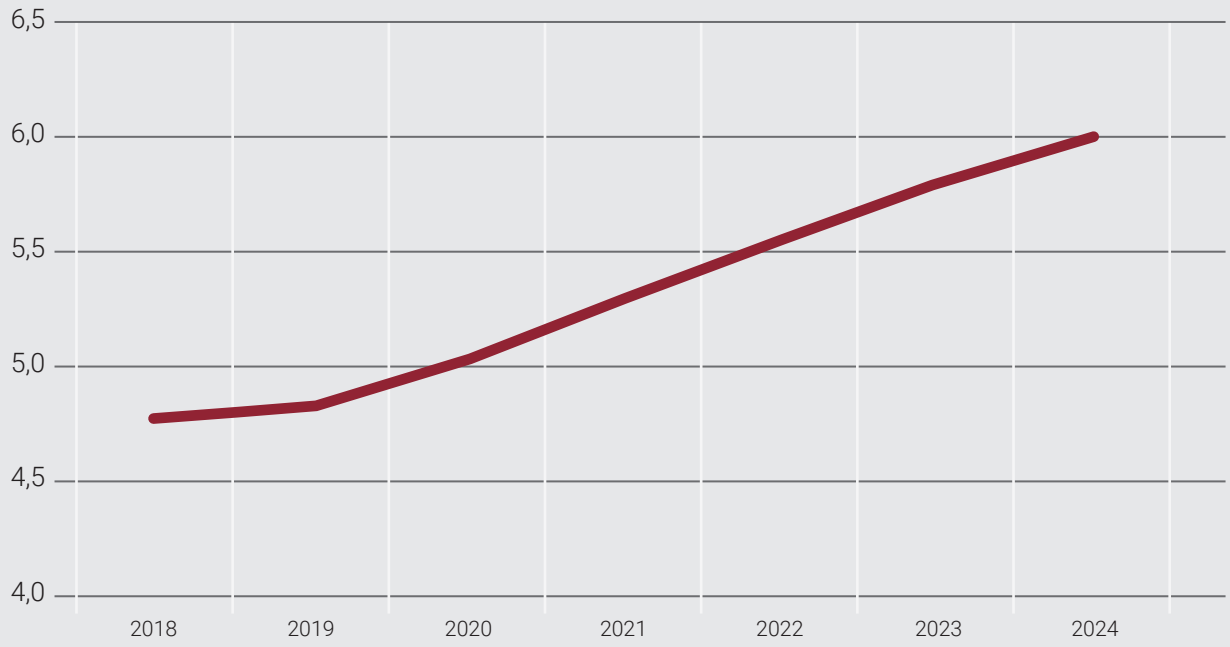
Although the level and the structure of health care financing have undergone substantial changes, the share of GDP devoted to health has remained on a steady but slow growth path. Based on OECD data, the 1990–2017 period was characterized by an almost 14-fold increase in health care expenditure in constant prices. As GDP also grew considerably, but not as steeply, the percentage of GDP devoted to health increased by only 2.4 percentage points in the same period. Over 2/3 of this rise was due to private healthcare expenses growth.

Poland was among the OECD countries with the lowest health expenditure per capita measured in US dollars PPP in 2017, with only Latvia, Chile, Turkey and Mexico ranking lower. Low initial levels of per capita health spending have been only part of the problem. The comparatively low level of per capita health spending in Poland is not only a consequence of lower GDP but also of the relatively low share of GDP devoted to health, a situation which Poland shares with a number of eastern European countries (see Figure 7).

The Parliament voted to increase the public spending on healthcare from the current 4.6% to 6% of GDP by 2024. This is an unprecedented growth as in the 1990-2017 period we have only seen a 0.4 percentage point growth. Those funds would be used to increase the quality of public healthcare, raise wages for in the sector and decrease accessibility issues. In the event the private sector growth path seen in the last decade would not be altered the healthcare expenses could reach over 8.5% of GDP by 2024, an indicator which is on par with such countries as Italy, Spain and Portugal today.

Figure 10

Parliament voted minimal requirement for public health expenditures in % of GDP



Source: Healthcare services financed from public resources act (Ustawa o świadczeniach opieki zdrowotnej finansowanych ze źródeł publicznych; Dz. U. 2004 Nr 210 poz. 2135).

2

Polish healthcare system overview

2.6 Role of EU funds

Poland is the biggest beneficiary of EU funds in 2014-2020 framework. The current EU Financial Framework gives Poland EUR 82.6 bln, a growth of almost EUR 13 bln compared to the previous 2007–2013 framework. This means that in the years to come Poland will be the largest beneficiary of the EU cohesion policy funds among all Member States.

The Polish healthcare system is to receive EUR 2.8 bln from EU funds. Those funds will be used to meet four overarching priorities. Firstly, to enhance quality and accessibility of preventive care among Polish population. Secondly, to limit population aging effects through development of mother and child as well as elderly care. Thirdly, to increase system efficiency, support scientific research, innovation and technological advances in healthcare. Lastly, to support medical professionals' education.

Co-funding for the Polish health care system comes from regional operational programmes as well as central operational programmes – the "Knowledge, Education and Development Operational Programme", "Infrastructure and Environment Operational Programme" and "Digital Poland Programme". As healthcare is not a separate operational program most projects in the range of investments and infrastructure can fall in "Infrastructure and Environment", some connected with IT and technology to the "Digital Poland" programmes and those that raise professional knowledge and skills fall to "Knowledge, Education and Development" programme. Many other could be co-financed by the regional operational programs. Other, less prominent, international financial resources used in healthcare sector are Norwegian Financial Mechanism and EFTA Financial

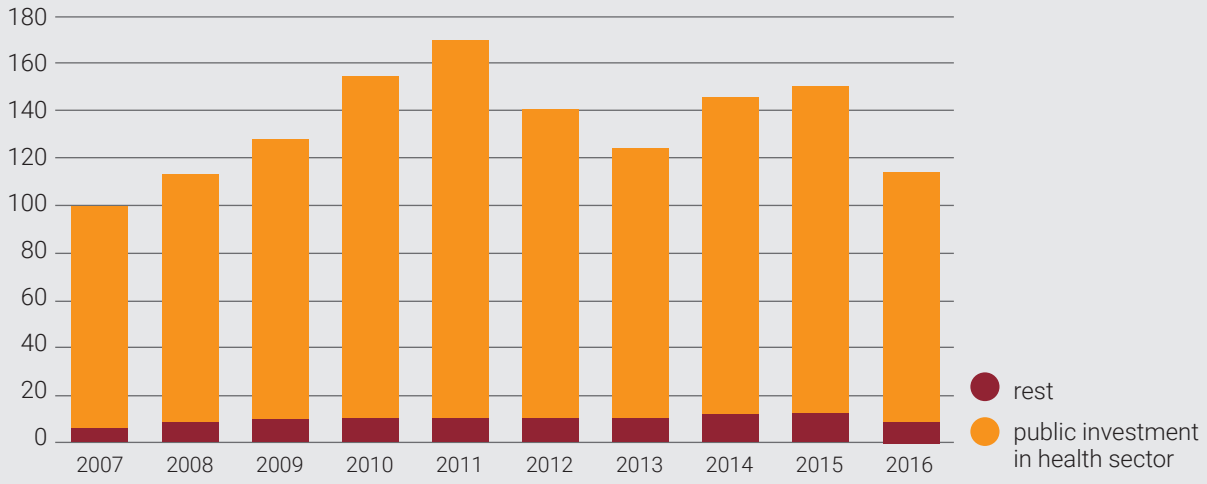
Mechanism. In order to be eligible for a cash grant from EU funds, applications have to be made within calls for proposals. Depending on the support scheme, calls are organized in the form of either closed or open calls.

According to the Ministry of Health[1] in the 2015-2016 period EU projects concerned mainly infrastructural and e-health investments. However this is only the start of the 2014-2020 financial framework and a relatively small amount of funds were already disposed. In consecutive years the number of health projects is expected to rise, with a possible peak in 2019-2021 (judging on the previous budgetary framework), when projects regarding preventive care and healthcare services would be more abundant.

The investment costs in the health sector is relatively stable but nevertheless dependant on EU funds budgeting frameworks. The total public investments, and health related investments in particular, seem to fluctuate with the financial frameworks. Although the volatility of health related public investments is much lower than for total investments. The lowest investment expenditures are observed at the beginning of the framework – for the 2007-2013 framework the lowest point was 2007 and for 2014-2020 framework it was 2016 (as both frameworks were overlapping during 2014-2015 during accounting reasons). In 2016 over 8% of all public investment costs were related to health. Those expenses were mostly borne by the local governments, which are the establishing bodies for a vast number of Polish public hospitals.

Figure 11

Public investment In Poland In current prices (2007=100)



Source: OECD

1. http://www.zdrowie.gov.pl/epublikacja-50-ocena_realizacji_planow_dzialan_w.html

2

Polish healthcare system overview

2.7 Health determinants and healthcare system efficiency

Obesity remains one of the biggest threats to the health, causing or encouraging the development of hypertension, coronary heart disease and many others. As of 2014, over 60% of men had problems with weight (44.8% were overweight and 16.6% had obesity), while less than half of the women population were overweight or obese (respectively 30.1% and 15.6%). These indicators' levels were higher than the EU average (obese or overweight population of 57.3% for men and 43.7% for women).

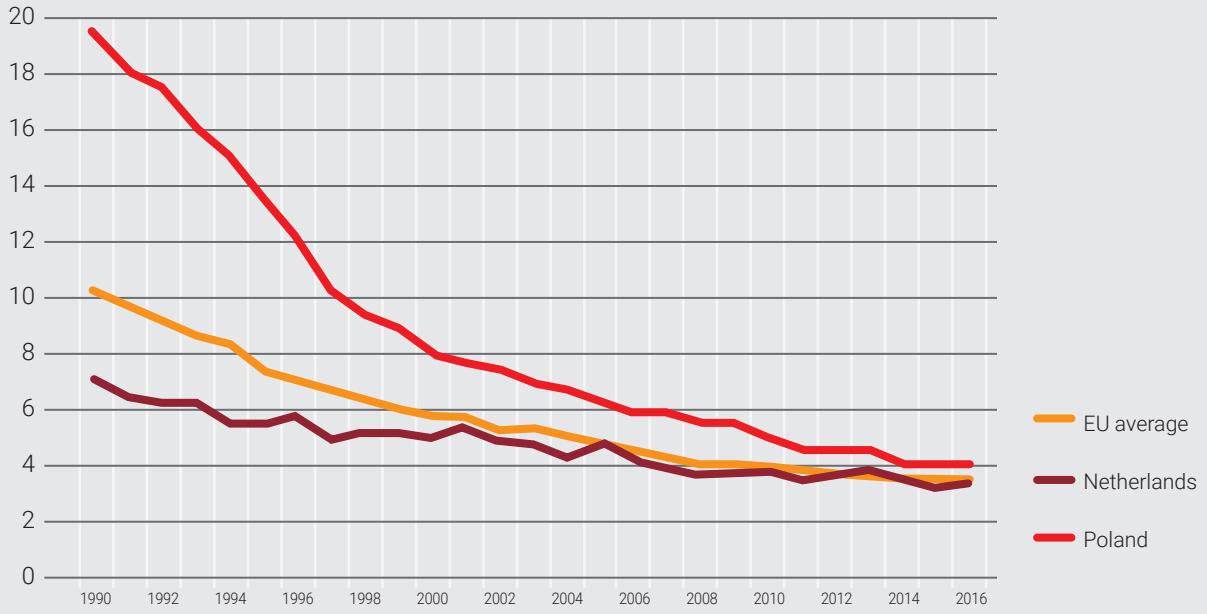
Smoking is losing popularity though alcohol consumption remains stable. The share of daily smokers fell to 22.7%, compared to 23.8% in 2009. Alcohol consumption has risen in 2009-2016 period, but only slightly, i.e. from 10.2 litres per year to 10.4 litres.

Over the last few years, a subjective health assessment of Polish citizens has slightly improved. According to the European Health Interview Survey (EHIS) results, in 2017 58.8% of Poles described their health as "good" or "very good", exhibiting minor improvement compared to 2009 (56.1% of such responses). Despite the improvement in the health status of Poles, it is worth mentioning that comparative indicators for the whole EU is almost 70% (76,1% in the Netherlands). In the EU, only residents of Baltic countries and Portugal have seen lower levels of the analysed indicator.

The average life expectancy in Poland has improved significantly. For women at birth, it has grown from 75.2 years to 81.8 years in the period of 1990 to 2017, while for men it increased from 66.2 years to 74.0 years. However, life expectancy in Poland is shorter than the average value of this measure for the EU countries (83.5 for women and 78.3 years for men).The difference is especially significant for the male population.

Infant mortality rates have fallen gradually and now are almost on par with EU average. Since 1990 there has been an almost 5-fold decrease in infant mortality rate in Poland. The first decade after transformation had been decisive in this matter as infant mortality fell sharply in result of healthcare quality and accessibility enhancement. Currently this indicator for Poland is almost equal to the EU average (4.0 compared to 3.6).

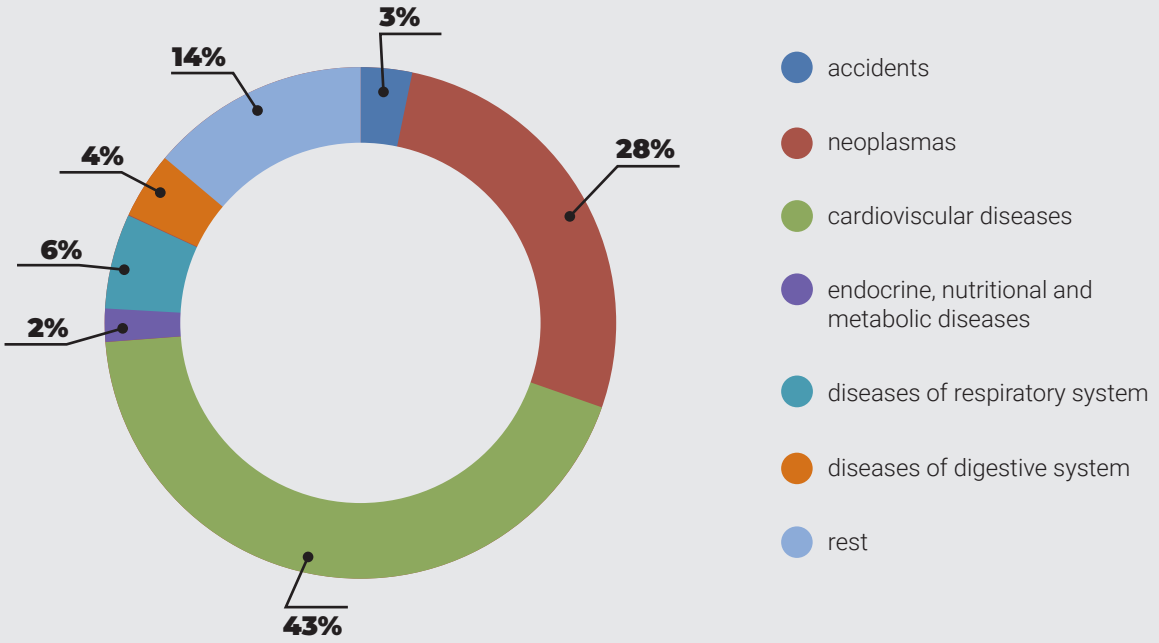
Figure 12
Infant mortality rate



Source: Eurostat

The most common causes of death in Poland are cardiovascular disease and cancer. These causes are responsible for 71% of total number of deaths in 2016. Respiratory diseases, digestive system diseases and accidents also are important death causes. Cancer mortality is one of the main causes of concern for the healthcare system as standardised death rate from neoplasms is the fifth highest among EU countries.

Figure 13
Causes of death In Poland In 2016



Source: Eurostat

The overall healthcare system efficiency is favourable due to relatively high health outcomes acquired using limited financial resources. Given that Poland has modest financial, human and material health care resources at its disposal it achieves relatively satisfactory health outcomes. The Polish system is able to provide a comprehensive set of health services for the population at a relatively low total costs. In result , the overall financial efficiency of the health system is assessed positively. Poland healthcare system has been assessed as the most efficient in Europe during 2011-2014 period along with Ireland and Portugal[1]. These countries better than other use material and human resources to ensure a healthy population. Relatively highest efficiency of Polish healthcare system is confirmed by other recent studies[2]. It needs to be stated that efficiency rankings depend to a great extent on methodology used. Other authors rank Poland at 10th or 11th place among 35 OECD counties also suggesting high efficiency[3] [4].

The high healthcare efficiency comes at a cost of suppressed healthcare professional wages and the overall need for system frugality. Among studies that positively assess the efficiency of Polish healthcare system there is a consensus that the relatively high scores are the effect of low resources, not outstanding health outcomes. This low cost stem in part from low wages for medical professionals, that are the cause for strikes and increased migration – Polish doctors' migration in EU accounted for ca. 4% of total doctors migration, while in 2017 the analogous indicator rose to 15.5%[5].

1. Io Storto, C., Goncharuk, A.G.(2017).Efficiency vs Effectiveness: a Benchmarking Study on European Healthcare Systems. Economics and Sociology, 10(3), 102-115.
2. Goncharuk, A.G. (2017). Socioeconomic Criteria of Healthcare Efficiency: An International Comparison. Journal of Applied Management and Investments, 6(2), 89-95.
3. Lee S., Kim C.; Estimation of Association between Healthcare System Efficiency and Policy Factors for Public Health; Appl. Sci. 2018, 8(12), 2674.
4. Behr A., Theune K.; Health System Efficiency: A Fragmented Picture Based on OECD Data; PharmacoEconomics Open (2017) 1:203–221.
5. Own calculation from EU Regulated Professionals Database (http://ec.europa.eu/growth/tools-databases/regprof/index.cfm).

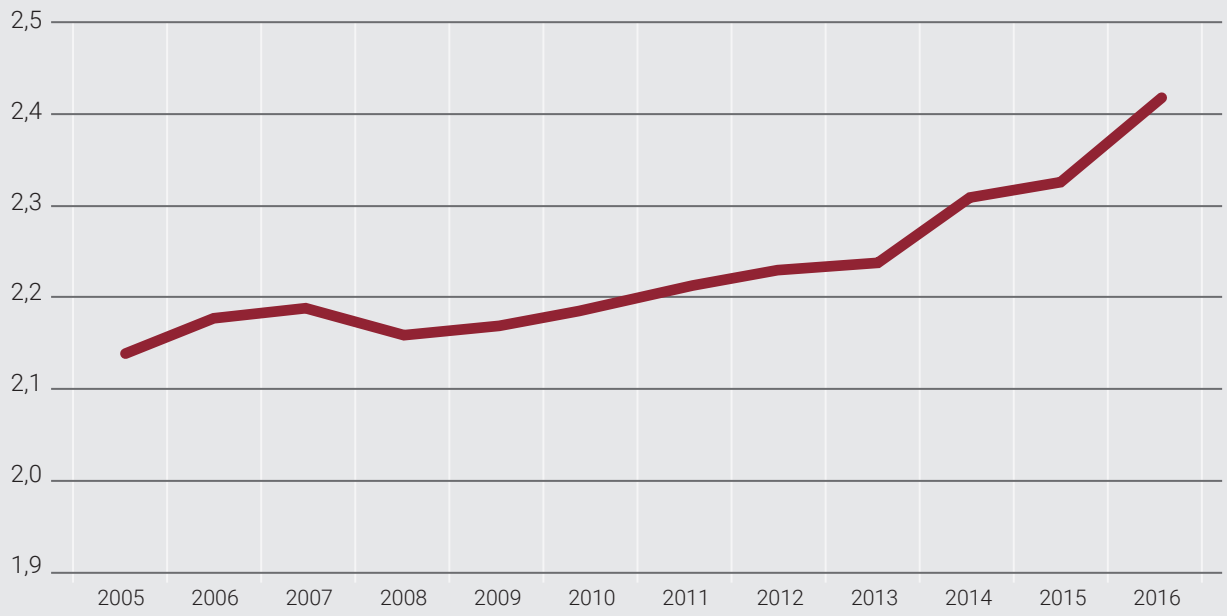
3

Healthcare system evolution

3.1 Professionals

Polish healthcare system lacks personnel, including specialists. According to OECD in 2016 Poland had the third lowest number of practicing physicians per thousand inhabitants among member countries. The number has been growing since 2005, when the lowest head count of physicians was recorded, nevertheless the growth is too slow to address societies' needs. At this pace, the 3 physicians per thousand inhabitants (current indicator many CEE countries) would be attained in 2040. Up until this point the increasing demand for medical services (Poles are one of the fastest aging population in the EU) could exacerbate the problems of inadequate access to medical services and their quality.

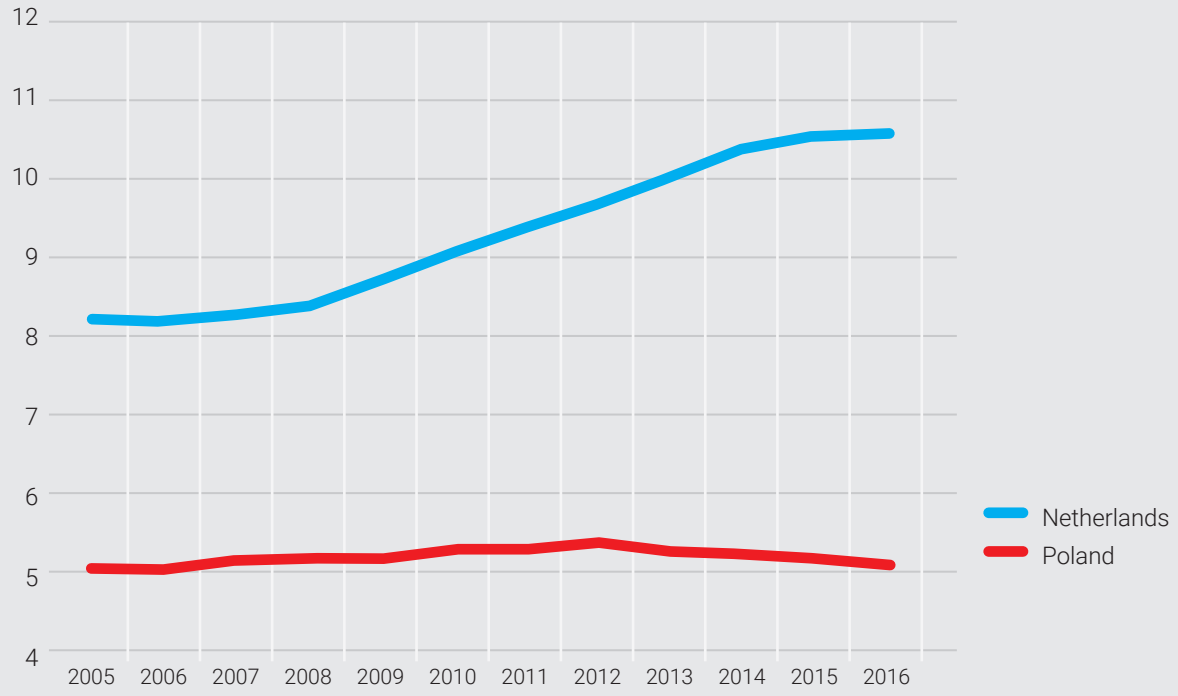
Figure 14
Number of physicians in Poland per 1000 inhabitants



Source: OECD

Even greater problem concerns nurses as their number remain stable despite growing needs. Though the number of nurses per thousand inhabitant situates Poland on the fifth lowest place among OECD countries, the dynamics of this indicator is even more troubling. While in countries with similarly low indicators (e.g. Latvia, Hungary) there seems to be a gradual growth of the number of nurses in Poland the analyzed indicator is stable (falling slightly since 2014).

Figure 15
Number of practicing nurses per thousand inhabitants



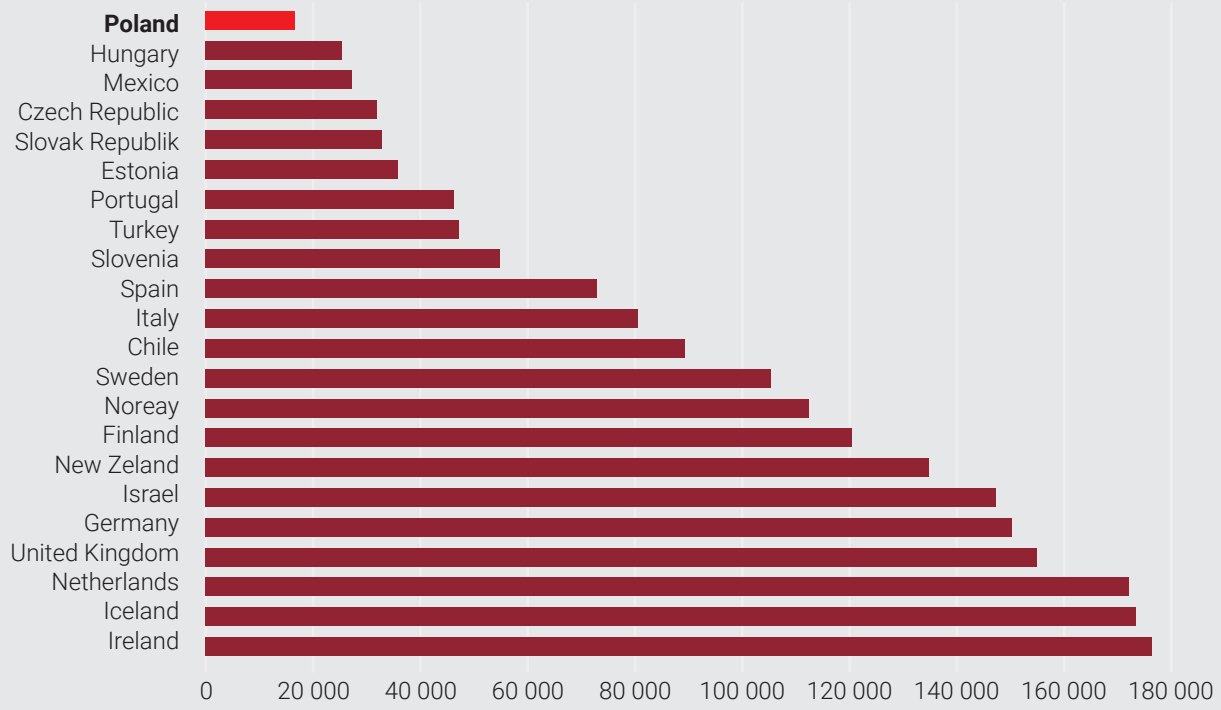
Source: OECD

The shortage of personnel in Polish healthcare is partly caused by inadequate remuneration. The general practitioner annual salary in 2016 was by far the lowest among OECD countries with available data. The same problem applies to nurses, whose salaries are second lowest only to Hungarian nurses.

Low salaries in Polish healthcare result i.a. in a high proportion of medical personnel that is eligible to practice their profession but chooses not to. Approximately 37% of eligible physicians worked outside the healthcare system in 2016. The dynamic of this indicator is also a cause for concern as since 2007 it has diminished by 3 percentage points.

Figure 16

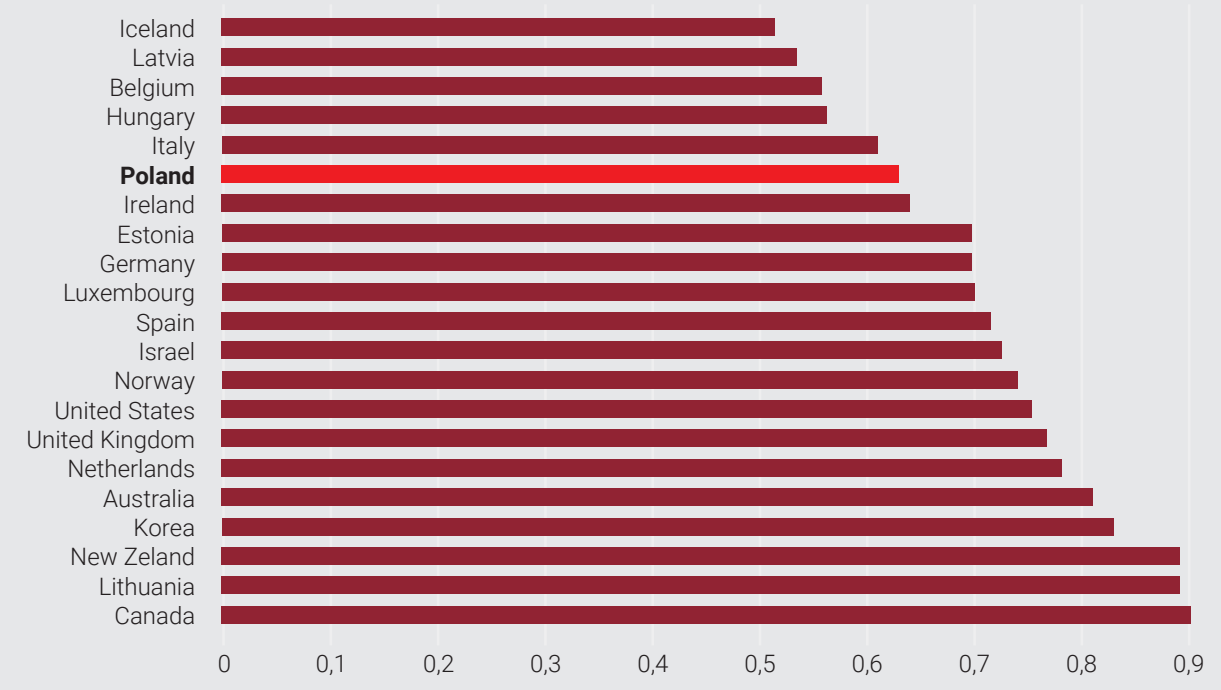
Average yearly salary of general practitioner in USD in 2016.



Source: OECD

Figure 17

Proportion of physicians practicing their profession in 2016

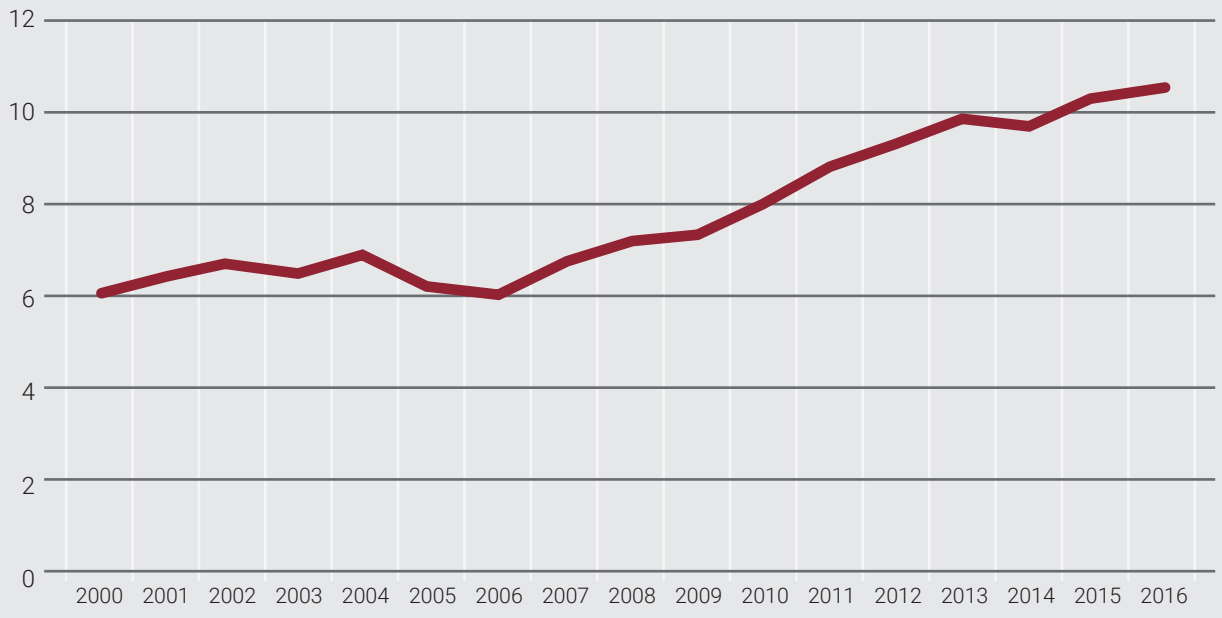


Source: OECD

The age structure of Polish medical staff as well as its migration is also highly troubling, being possible reasons for exacerbation of personnel shortages problem. At the end of 2018 almost one third of professionally active doctors were over 60 years old, and over 11% were over 70 years old[1]. In few years time this statistics may prove to be detrimental for the stability of healthcare sector in Poland. Additionally Polish doctors' migration is on the rise. In the EU Polish' doctors outflow accounted for ca. 4% of total doctors migration, while in 2017 the analogous indicator equalled to 15.5%[2]. The main reasons for the decision to move include are bureaucracy issues, difficulty in obtaining specialization, and, lastly, financial matters.

The supply of new personnel is almost entirely depended on domestic medical graduates. In 2016 there were almost 4 thousand medical graduates , which translates to 10.5 graduates per 100 thousand inhabitants annually. One of the ideas of the Ministry of Health to tackle the problem of staff shortage is to increase the number of admissions in medical schools. Indeed there are many examples of the growing admissions limits at Polish Universities in recent years. This approach has proved to be somewhat successful, as current indicator is on par with a number of OECD countries.

Figure 18
Number of medical graduates per 100 thousand inhabitants In Poland



Source: OECD

1. Polish Chamber of Physicians and Dentists data; https://www.nil.org.pl/rejestry/centralny-rejestr-lekarzy/informacje-statystyczne
2. Own calculation from EU Regulated Professionals Database (http://ec.europa.eu/growth/tools-databases/regprof/index.cfm).

3

Healthcare system evolution

3.2 Infrastructure development

For several years, the number of beds offered by Polish medical clinics has been among the highest in Europe. In the last quarter of 2017, based on information from Polish Statistical Office, 951 Polish general hospitals were offering almost 220 000 beds. The rate of beds in general hospitals to 1000 inhabitants was 6.6 compared to 6.1 average for EU.

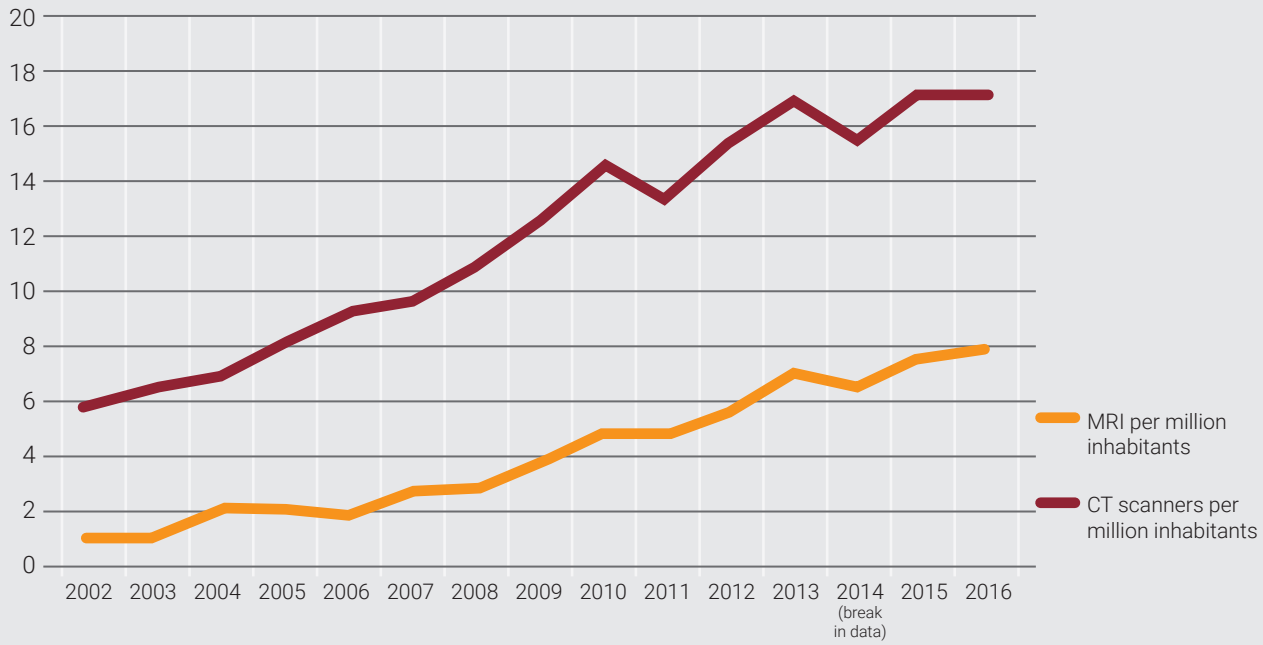
Even though the government is aware of the need for hospital beds' optimization the process has not yet begun. The decline of epidemic diseases along with rising efficiency, results in a systematically diminishing number of beds in Western Europe. Poland, however, shows in this area some backwardness, with the number of beds relatively stable. The current bed-day occupancy ratio equalled 69,6% in 2016[1] while the standard desired level is 80%. Amid the tendency to shift procedures from hospital wards to ambulatory centres (one-day surgeries), as well as more common use of telemedicine the fall in the number of hospital beds seems imminent. In Europe, this trend is already clearly visible as number of hospitalizations decreases at a double-digit rate.

The level of access to advanced diagnostic methods is increasing. Tomography scans and magnetic resonance imaging usually take place in high-financed public or private hospitals. The current number and usage is still insufficient as queues for these type of services are typical. In the end of 2017, total number of computed tomography (CT) scanners in hospitals and in ambulatory care providers, per million inhabitants, was 17.3. In comparison to 2007 the indicator grew by 45% and is now on par with a number of European countries. Based on OECD

1. Mapa potrzeb zdrowotnych w zakresie lecznictwa szpitalnego dla Polski. Ministerstwo Zdrowia (2018).

data, in 2016 there were 7,9 Magnetic Resonance Imaging (MRI) scanners per million people. This constitutes an 8-fold increase since 2002, but still places Poland on the 4th place from the bottom among OECD member countries. Based on the above and the need of increasing the MRI and CT level accesses, Polish government has decided about non-limited, fully complimentary (financed by National Health Fund) accessibility as of April 1st, 2019. However this resolution concerns only medical institutions that have signed the agreement with National Health Fund.

Figure 19
Medical devices saturation In Poland



Source: OECD

Modern technologies are exclusively reserved for the process of in-depth diagnostics. Poland, unlike other European countries, does not implement them to screening programs. The reason are process and limited access to them. For example in Germany, non-invasive computed tomography is used in the screening of colorectal cancer. Poland, basing its decision on costs, uses colonoscopy.

The implementation of the network of hospitals may result in lower access to part of medical devices. Underfunding medical facilities that have not entered the hospital network contributes to closing hospitals or medical facilities that have so far provided services in the field of advanced imaging diagnostics. However this process is not certain.

Most of the medical devices used in Poland are imported, however importers face high demands to establishing a new product in the Polish market. The most popular products succeed by word-of-mouth, thus medical device importers that are new to the market will need to invest heavily in marketing strategy and distribution efforts. Manufacturers must also make their products readily available in the market to compete with other European importers. Medical devices must be listed in the 'Register of medical devices and bodies responsible for their launch and usage" prior to marketing the device or its use by patients. The first step to get the medical device registered is an application supplied by the manufacturer directly or a company authorized to do business with the manufacturer and registered in Poland. Registry staff may require additional documents special form needed for this application. Given the speed of local bureaucracy it is recommended to double-check the application before submission to avoid being rejected. 'Medical incidents' register, which are described as defects in a medical device's functioning, a change of specification, improper marking or user's manual descriptions which might cause hazards to the patient is being kept. In each case the manufacturer or their representative is responsible for carrying out an investigation for the cause of concern otherwise the product/company risks being delisted from the 'Register of medical devices and bodies responsible for their launch and usage'.

There are no restrictions in Poland on sales or imports of used medical equipment but market opportunities for used medical equipment is relatively small. Medical equipment for the public hospitals is purchased through a competitive bidding process, where price plays the biggest role. All tenders are announced in a public procurement bulletin "Biuletyn Zamowien Publicznych". There are no comparable purchasing process rules for private healthcare providers. There is a growing prominence of medical equipment leasing in Poland, especially among an increasing number of private clinics and private medical facilities.

3

Healthcare system evolution

3.3 E-health

Telemedicine and e-health continue to be a robustly growing segments of healthcare in Poland, although with considerable delays in its implementation. Poland and its Ministry of Health, has aimed for total digitalization of polish medical care institutions. IT infrastructure for the healthcare sector covers both systems for healthcare units, as well as data systems and diagnostic support systems. The huge amount of data and their diversity make it almost impossible to manage organizations operating in this sector without advanced IT systems. At the same time it makes the IT infrastructure difficult to implement, in regards to security, standardization and access to data in particular.

Since the beginning of the century there were actions to implement e-health solutions into Polish healthcare systems. In 2000, the Minister of Health established the Centre of Information Systems for Health Care - CSIOZ. Its main tasks were to enhance organization and health protection and support the management decisions of the minister competent for health on the basis of conducted analyzes. To attain this goals planning and implementation and then monitoring of ICT systems at the central and regional level are crucial. The most important projects implemented or in the process of implementation by this institution are programs P1, P2, P3 and P4.

Table 2

Main public e-health projects

Project	P1 Project - Electronic Platform for the Collection, Analysis and Access of Medical Resources.	P2 Project - Platform for online access to digital services for medical entrepreneurs and services	P3 Project - Improving the quality of management in health care	P4 Project – Domain information and communication systems
main assumptions	implementation of IT systems that will enable streamlining of processes related to planning health services, monitoring and reporting on their implementation, access to information on benefits provided and publishing information in the area of health protection.	building an IT platform enabling and integrating the provision of e-government services to entrepreneurs in the area of the healthcare sector.	Improving the quality of management in health care, popularizing knowledge about IT technology among professionally active employees of entities performing medical activities.	Improvement of business processes related to access to statistical data, the effects of adverse medical treatment events, circulation of medicinal products, status of health and medical personnel resources.
completed activities (examples)	e-prescription, e-medical leaves	The IOWISZ system	a series of 24 trainings among professionally active employees	Healthcare statistics system (SSOZ), Registry of healthcare resources system

Source: own study

The development of e-health is observed in each of the health care subsectors. In 2018 and in the beginning of the 2019 for the first time, e-prescription was introduced to polish pharmacies. That project, as the first one in the country, although with many mistakes and problems, is referred to as a significant progress for Polish telemedicine. E-medical leaves are also already implemented. From 1 December 2018 medical leaves are obligatory issued in electronic form. The main purpose of the shared e-medical leaves functionality is to facilitate the process of sick leaves, reduce errors, optimize time on the part of doctors and patients and eliminate the problem of illegible services.

E-health solutions enhance Polish public health sector administration and resource usage. The P2 Project, the IOWISZ system (Instrument for Investment Applications Assessment in the Health Sector) was launched in September 2016. It allows to complete the application for an opinion on the purposefulness of the investment. It is used by provincial offices, National Health Fund and the Ministry of Health to evaluate applications and give opinions. The substantive basis of the assessment is compliance with Priorities for Regional Health Policy and Health Needs Maps. The implemented solutions are to ensure rational development of health care infrastructure and increase the efficiency of spending public funds in the area of financing investments and health services.

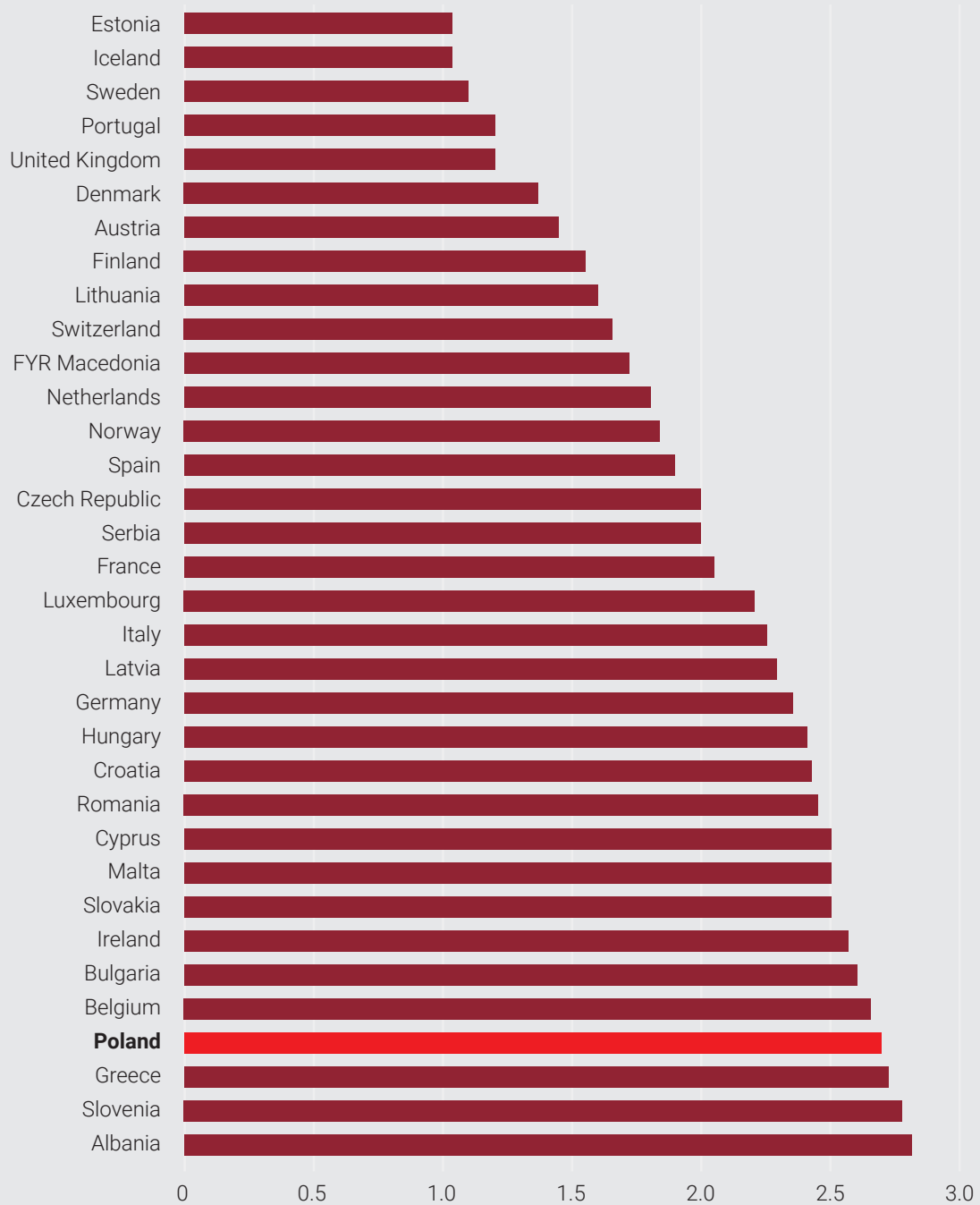
The teletransmission system for cardiac data has been intensively developing in Poland for several years. The number of receiving stations in hospitals and ambulances supply with ECG recording equipment continues to grow. For example, thanks to the possibility of teletransmission of an ECG record, a patient with suspected acute coronary syndrome, to which an ambulance team reaches, can be diagnosed remotely by a specialist from a cardiac centre. In addition, doctors undertaking cardiological intervention may prepare in advance for surgery. According to the manufacturers' data, these systems are already present in more than two thousand ambulances and ambulances of emergency medical services in Poland.

The National Register of Blood Donors is a digital platform that collects relevant information about blood donors. The system enables fast and secure exchange of information in mutual contacts between public blood service units, i.e. Blood Donation and Blood Treatment Centres and the Institute of Haematology and Transfusiology.The system is a central element of the blood donation network in Poland, which collects donors' data from the 23 Blood Treatment Centres.

There is an increasing importance of (private) medical teleconsultations. For the patients with health subscriptions and insurance, teleconsultations are very common. This is the domain of private health networks. As part of the state payer, the offer of medical teleconsultation is limited to 65+ patients. They are aimed at assisting patients who are being treated by Internists or Family Physicians in centres - mostly in rural areas, far from specialist clinics. During the 2 years of operation of the service, less than 300 patients have used it.

Figure 20

Patient knowledge of interactive 24/7 healthcare info service (1.0= all yes, 3.0=all no, or don't know)



Source: Euro Health Consumer Index; Health Consumer Powerhouse; 2018

Many new telehealth technologies are already available in Poland. That's the result of cooperation between public and private sectors. One of the most notable examples is a cardio-telerehabilitation. KOS-infarction (KOS; pol. Kompleksowa Opieka po Zawale Mięśnia Sercowego, comprehensive care after a heart attack) is an unlimited provision of post-infarction care, which includes one-year treatment support for patients after a cardiac event. Under the KOS-infarction, the beneficiary may implement various types of rehabilitation either directly or through subcontractors: daily, stationary and hybrid. In turn, as part of the hybrid rehabilitation, patients can independently exercise in home conditions using a cardiac telerehabilitation system.

In Poland, e-health solutions are also supported at regional levels within specific health programmes. Their funding is often done based on EU funds or other foreign funds. An example of such projects is the development of nationwide network of auditory tele-rehabilitation centres. The project allowed to create a modern telemedical system of a network of auditory telerehabilitation centres equipped with modern rehabilitation equipment. The aim of the project was to improve the quality of life of people with hearing impairments and speech in Poland. Other recent example concerns EU-funded eCareMed platform in the Silesia region that will provide many new functionalities and allow to design and implement innovative organizational, decision-making and diagnostic processes based on modern ICT solutions.

3

Healthcare system evolution

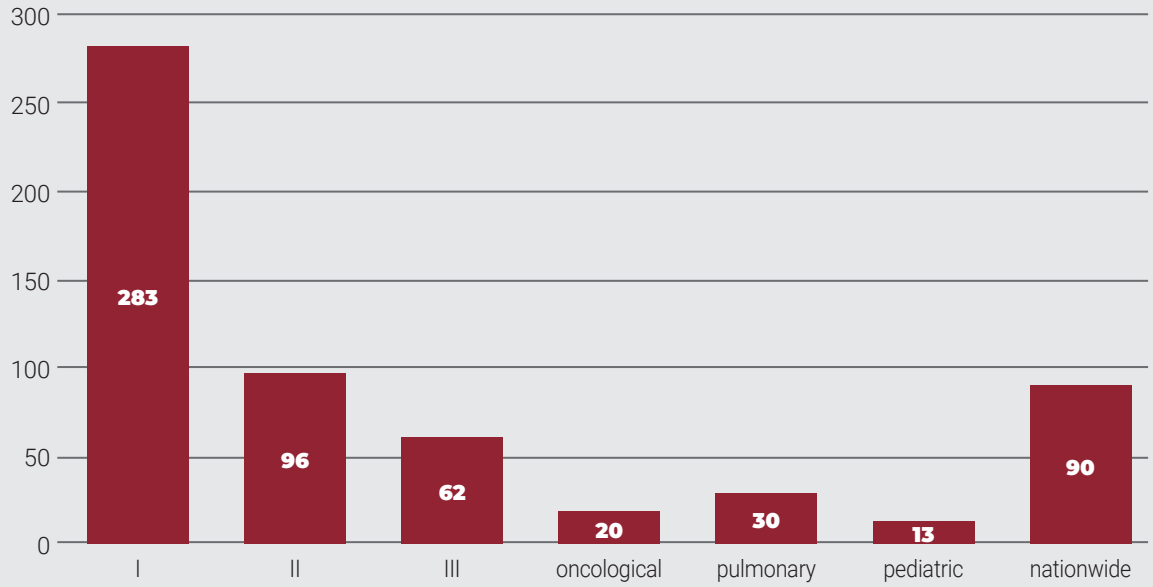
3.4 Network of hospitals

Since the transition to market economy took place there have been ongoing attempts to enhance healthcare system organization. This attempts were often short-lasting (e.g. 1999 reform) or unfavourable for a part of the sector (e.g. recent ban on hospitals privatization), nevertheless the overall quality of healthcare system and its workings has improved significantly since 1990.

Another such attempt pursued since 2017 is the Network of hospitals. It has been created to guarantee the comprehensiveness and continuity of services provided. This means that hospitals qualified for the network are to provide full health care throughout the entire treatment cycle. A patient referred to the hospital should receive, in addition to hospital services, outpatient specialist services and rehabilitation services, according to their health needs. Access to services should be dictated by the treatment cycle, and not by the accounting aspects. The introduction of lump sums, which will allow to increase the flexibility of management, is to serve this purpose. Qualification to the network is also to ensure the continuity and stability of financing by guaranteeing the conclusion of a contract with the payer.

A vast majority of hospitals included in the network are public ones. 594 hospitals were included in the network among which 516 were public ones. Qualification for the network classifies the hospital in one of six groups, indicating profiles, ranges or types of benefits provided. Three basic groups (1st, 2nd and 3rd) will cover hospitals with local or regional coverage. One specialist level will be separated for oncological and pulmonary hospitals, and the other for paediatric hospitals. The highest nationwide level was foreseen for research institutes and clinical hospitals.

Figure 21
Hospitals that have entered the network



Source: Ministry of Health.

The Network of hospitals will be allotted ca. 93% of funds used for total hospital financing. Furthermore hospitals in the network are financed in the form of a lump sum with a guarantee of financing continuation. This has led to an increase of significance of hospitals inside the network. In the fourth quarter of 2017, the number of services provided by those hospitals increased by almost 5% compared to the same period of 2016.

According to the Ministry of Health, the Hospital Network has many advantages[1]. It assures better coordination and comprehensiveness of patient treatment. A hospital in the network will provide hospital treatment, appropriate specialist counselling and rehabilitation, simplifying the patients' path to achieving full health. Furthermore a significant shortening of queues at emergency medical centres and admission rooms should take place.

Original aim of improving the quality and access to medical care, proved to be somewhat misguided. By implementing the network of hospitals a financing centralization process took place. The flow of funds to the biggest medical care institutions has increased. On the other hand many smaller hospitals were

1. The Ministry of Health, http://siecszpitali.mz.gov.pl/

pushed to the margins. In result patients experience limited access to medical help in the areas where working hospitals have limited National Health Fund's funding. Not including them into the network resulted in immediate limitation of financial liquidity. The most frequently discussed issue is the deprivation of specialist care of people who have so far benefited from the services of smaller hospitals. In the situation of threat to life and health, the patient must be transported to a hospital located further than in previous conditions. The result is increased costs of medical transportation and being exposed to loss of health and life to a higher extent than before.

Hospitals, who have not entered the network, because of low level public funding, have been forced to commercial activities. Those hospitals, that are outside of the network are forced to take part in the offer procedures to compete for the remaining public funding. However in many case public funding proves to be too little. To assure a continuation of such hospitals existence commercial activity is indispensible.

Another problem connected to the hospital network introduction is "the lost patient" issue. The introduction of the hospital network was not preceded by an information campaign. As a result, patients wishing to receive specialist medical assistance cannot quickly find an appropriate facility. Quality of healthcare services and its outcomes diminish in the process.

Except the general network of hospitals, currently two pilot projects for oncology and cardiology network are taking place. The chosen fields of medicine include two primary causes of death in Poland that have considerable room for improvements (see chapter 2.7). These projects aim is to assess the efficacy of using network of hospitals in oncological and cardiological treatment to increase the safety and quality of treatment, patient satisfaction and to evaluate possible cost-optimizing. Both pilot begun in the end of 2018 and end in 2020, with considerable funds allotted to each one of them (respectively PLN 48 million and PLN 43 million). After the pilots' conclusion with positive results the oncology and cardiology networks could become state-wide networks.

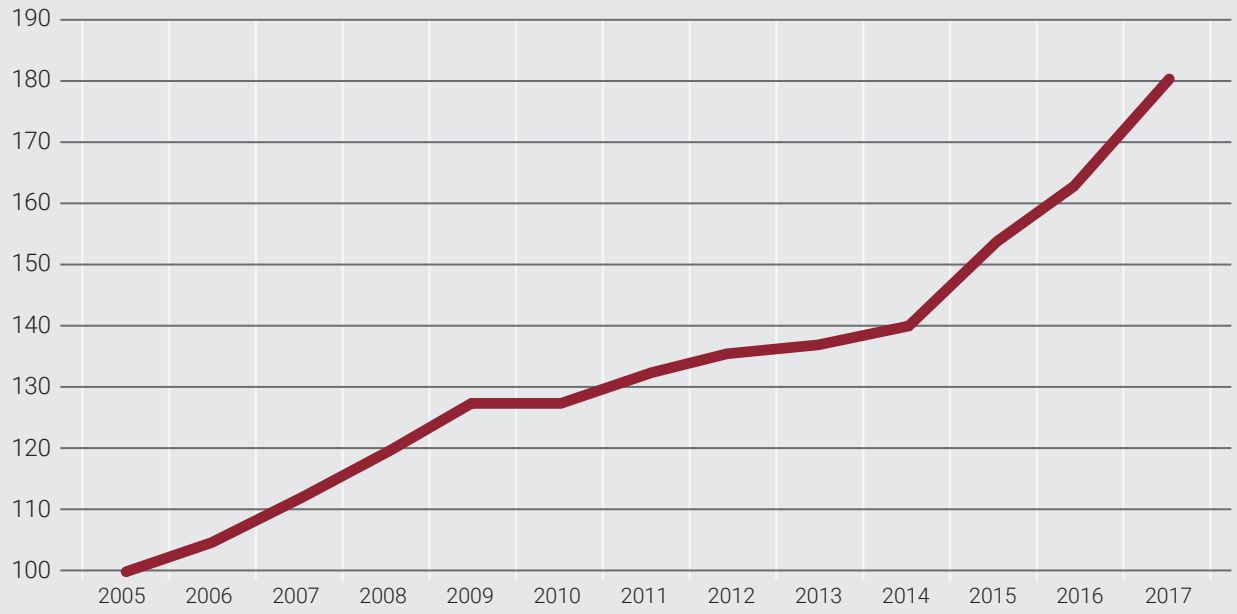
3

Healthcare system evolution

3.5 Private sector development

Development of the private healthcare will continue in upcoming years. Currently, non-public sector is dominant for many of the healthcare market branches, e.g. primary healthcare, rehabilitation, spa- and long-term treatment. Most relevant reasons are underfunded public medical services and limited access. Private medical sector is continuously increasing its competitiveness by providing high, uniform and continuous level of services. The sector is more effective and offers services at a level significantly better than the public sector, and most importantly, eliminates the problem of queues, which patients indicate as the most annoying drawback of public health care.

Figure 22
Private healthcare expenses In Poland (real values, 2005=100)

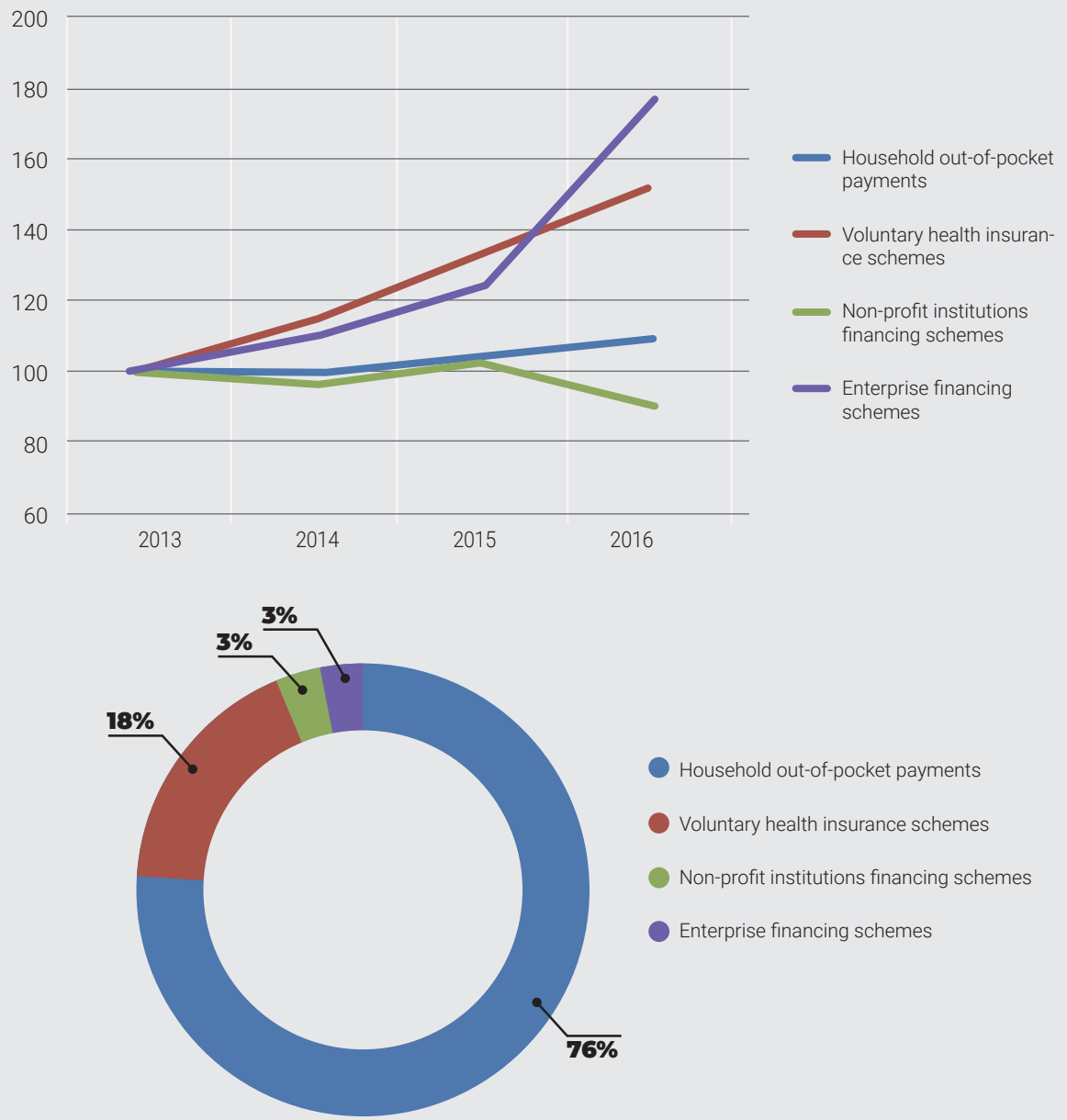


Source: OECD

The main segments of the private healthcare market are out-of-pocket payments and voluntary insurance schemes. Out-of-pocket payments significance in the compositions of all private financing schemes is predicted to diminish in upcoming years due to higher growth of other categories. Both voluntary health insurance and enterprise financing schemes will continue to develop at double-digit pace, with insurance scheme remaining the main form of corporate medical care in Poland. Enterprise financing scheme will also continue to grow in the long term, though having only ca. 3% of the private healthcare market (in 2016) their short-term dynamics will be more volatile.

Figure 23

Private sector financing schemes dynamics (2013=100; constant prices) and 2016 composition

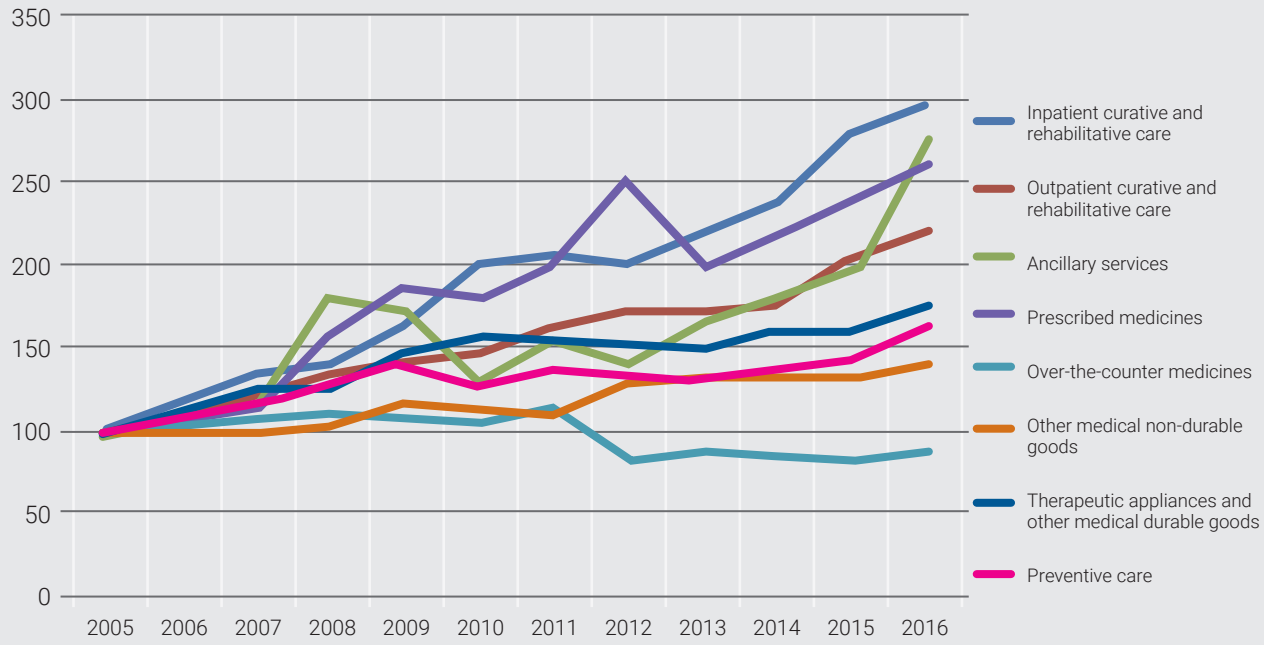


Source: OECD

Though the most sizable chunk of private healthcare expenses are incurred on medical goods (ca. 50% in 2016) the rest of the private healthcare market value grows at a comparatively faster pace. This concerns curative and rehabilitative care in particular, especially the outpatient type. The inpatient type has grown faster in the last decade which is a result of low base values due to underdevelopment of private inpatient healthcare in Poland. However since 2010 it is the outpatient care that shows higher dynamics and its share in composition of all private healthcare growing from 31.3% in 2010 to 35.6% in 2016, compared to 5.2 and 5.9 respectively in case of inpatient care. Other notable types of services that are predicted to grow at significant pace are ancillary services (e.g. laboratory services) and preventive care. Especially the latter category has seen considerable average growth of almost 15% year on year in the last five years. This growth could be explained by both increased health awareness of Poles and their rising disposable income.

Figure 24

Private healthcare dynamics by function (2005=100; constant prices)

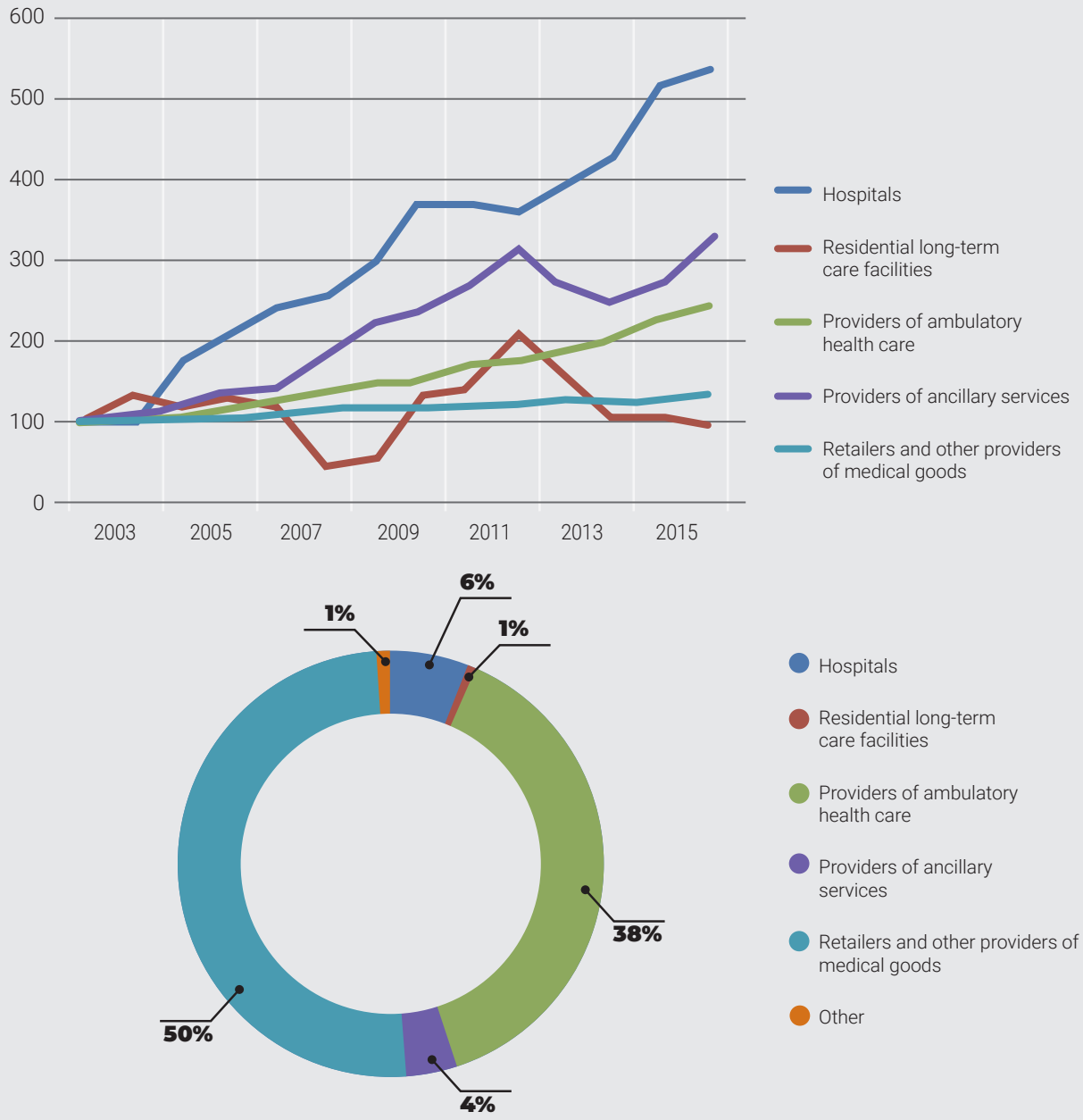


Source: OECD

Most of the private healthcare is provided by retailers (pharmacies in particular) and ambulatory healthcare providers (see figure 6 for 2016 composition). However neither of two categories show considerable growth numbers. The private hospitals are by far the fastest developing providers of private healthcare services, growing 5-fold since 2003. Though, it has to stated, that the main cause of their fast growth was there underdevelopment (hospitals provided ca. 6.0% of private healthcare in Poland in 2016, compared to 14.5% in the Netherlands). Private ancillary healthcare providers continue to show significant growth, while long-term care did not gain any momentum during the analyzed period.

Figure 25

Private healthcare dynamics by provider (2003=100; constant prices) and 2016 composition



Source: OECD

Private healthcare in Poland is also supported by medical tourism. Over 155 thousand foreigners came to Poland in 2016 for medical reasons[1]. The main objects of their interest are cheaper prices for dental care, spa and long-term treatment institutions, as well as specialty medicine (e.g. plastic surgeries, cardiological and oncological treatment). The foreigner's health care market was estimated at almost PLN 430 million in 2016 (ca. EUR 100 million).

1. Białk-Wolf A., Arent M.; Medical tourists in Poland in the international context; Instytut Badań i Rozwoju Turystyki Medycznej (2018). cejsh.icm.edu.pl/cejsh/element/bwmeta1.element.../c/06-Turysci_medyczni.pdf

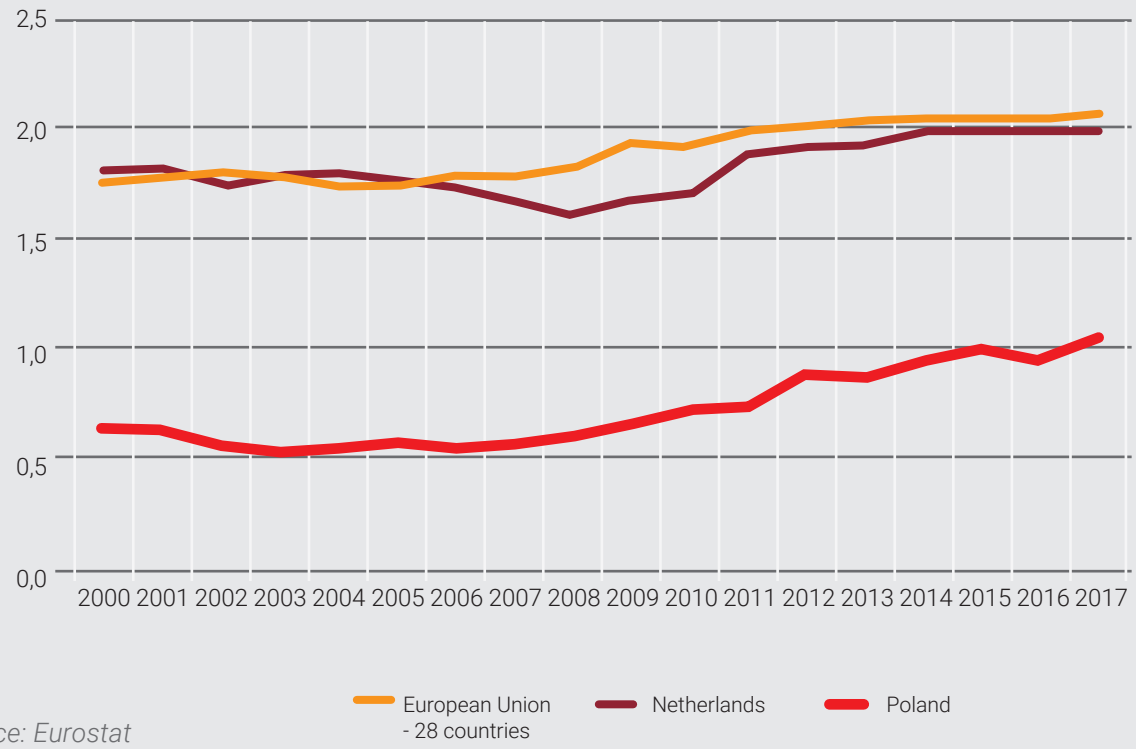
4

Opportunities in Polish healthcare system

4.1 Research

Research and development expenses are bound to grow in the coming years. According to government plans, in connection to Europe 2020 goals, total R&D expenditure should equal at least 1.7% of GDP in 2020. This value probably would not be attained, however the growth path observed in the last decade should be sustained.

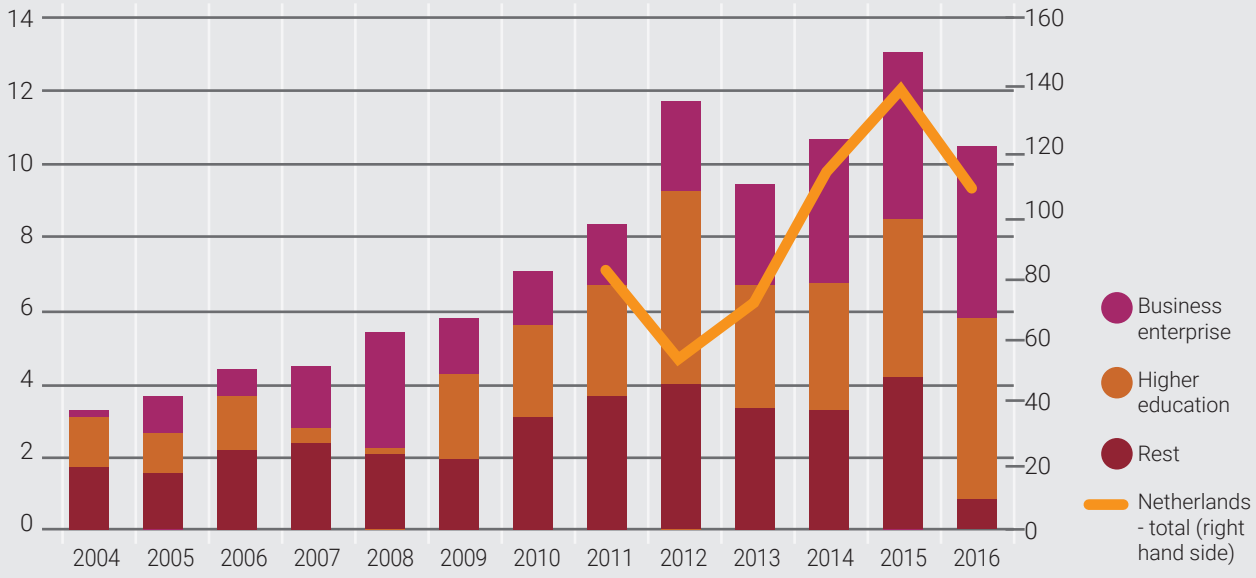
Figure 26
Total research and development expenses as % of GDP



Source: Eurostat

Medical and health research is expected to develop at an even faster pace fuelled primary by business enterprises. Medical R&D has seen considerable growth in recent years with 2013 and 2016 being only exceptions in the last two decades (these falls were mainly due to EU funds fluctuations). Among sectors in which medical innovation takes place, business enterprise show the strongest growth which is forecasted to continue in upcoming years. This growth, coupled by EU fund inflows should be the engine for medical R&D growth in Poland until 2022. That year EU funds from 2014-2020 framework cease to inflow while the consecutive financial perspective funds would only start to be available.

Figure 27
Medical and health sciences R&D expenses (EUR per inhabitant)



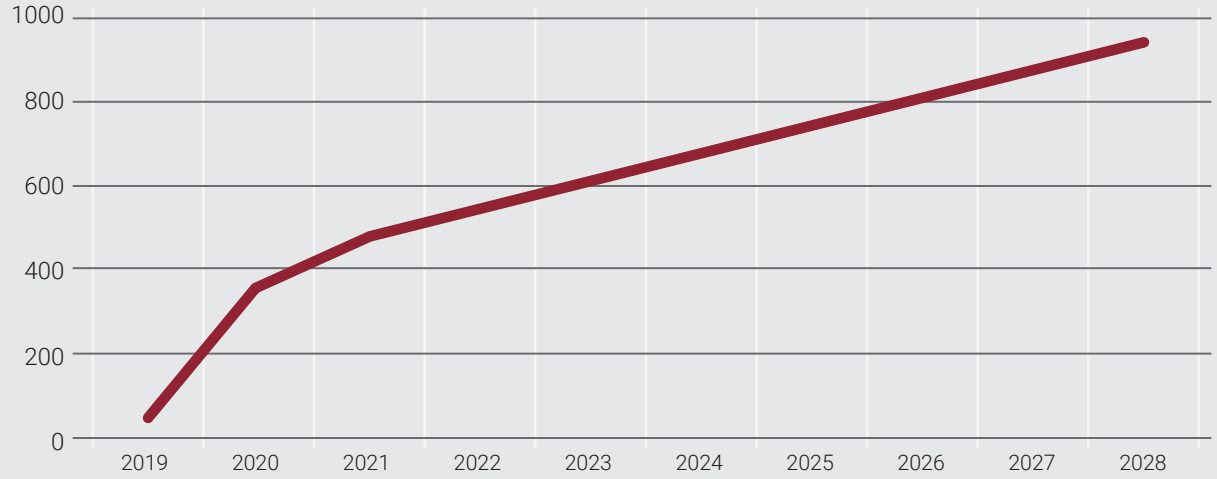
Source: Eurostat

Medical Research Agency establishment foreruns a possible development of state financed medical research in Poland, especially clinical trials. Up until now healthcare research projects did not have a separate program or agency (National Centre for Research and Development was one of the entities supporting innovation, also in medicine). From 2019 such agency exists. Medical Research Agency will support clinical trials in Poland, both commercial and non-commercial ones. Currently, non-commercial clinical trials only 1% of the total market, while the plan is to raise this number up to 30%[1]. The Agency will also be an economic partner for companies carrying out commercial trials. Medical Research Agency will also support commercialization of new technologies. Currently there are few examples of successful Polish medical innovations placed on the market. The Agency will have a considerable budget – the expenditure limit for 2020 is twice the size of governmental medical R&D expenses for 2016. In consecutive years it is expected to grow by 12,6% on an annual basis.

1. http://orka.sejm.gov.pl/Zapisy8.nsf/wgskrnr/ZDR-160

Figure 28

Medical Research Agency expenditure limit (million PLN)

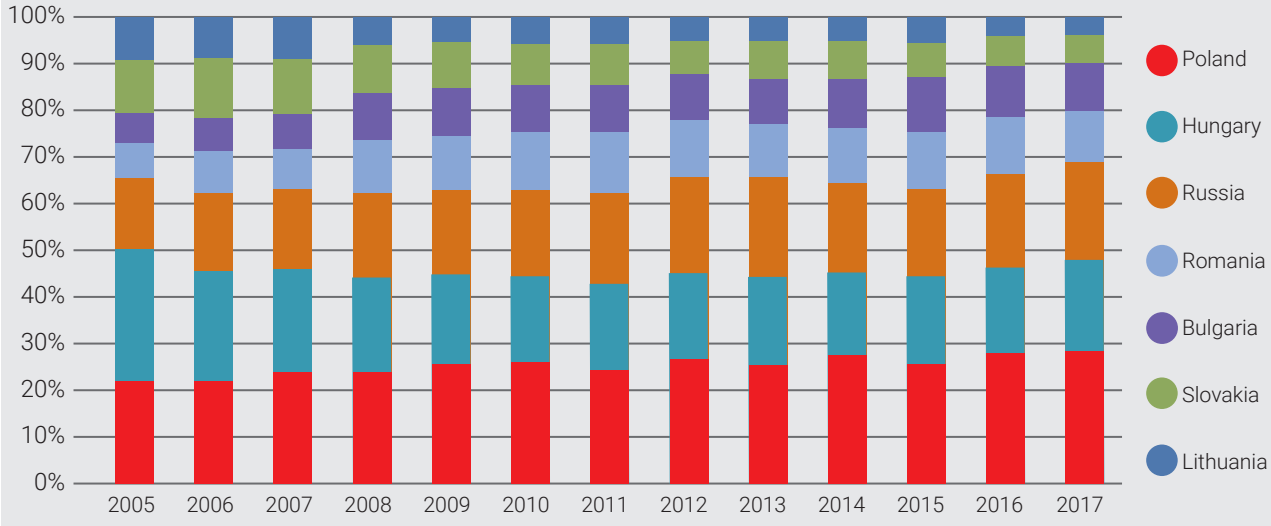


Source: Ustawa z dnia 21 lutego 2019 r. o Agencji Badań Medycznych

Expected clinical trials developments could further strengthen Poland as the leader of such projects among Central and Eastern European (CEE) countries. Poland is success in clinical trials among CEE countries may be attributed to i.a. a large population of patients, size and maturity of the market, attractive level of clinical trial costs. However, according to World Health Organization data, due to a number of reasons global and European number of clinical trials has begun to diminish. This unfavourable developments have also reached Poland and other CEE. The establishment of Medical Research Agency could hopefully spur new growth into clinical trials market in Poland.

Figure 29

Number of clinical trials in chosen CEE countries



Source: Global observatory of Health R&D; WHO

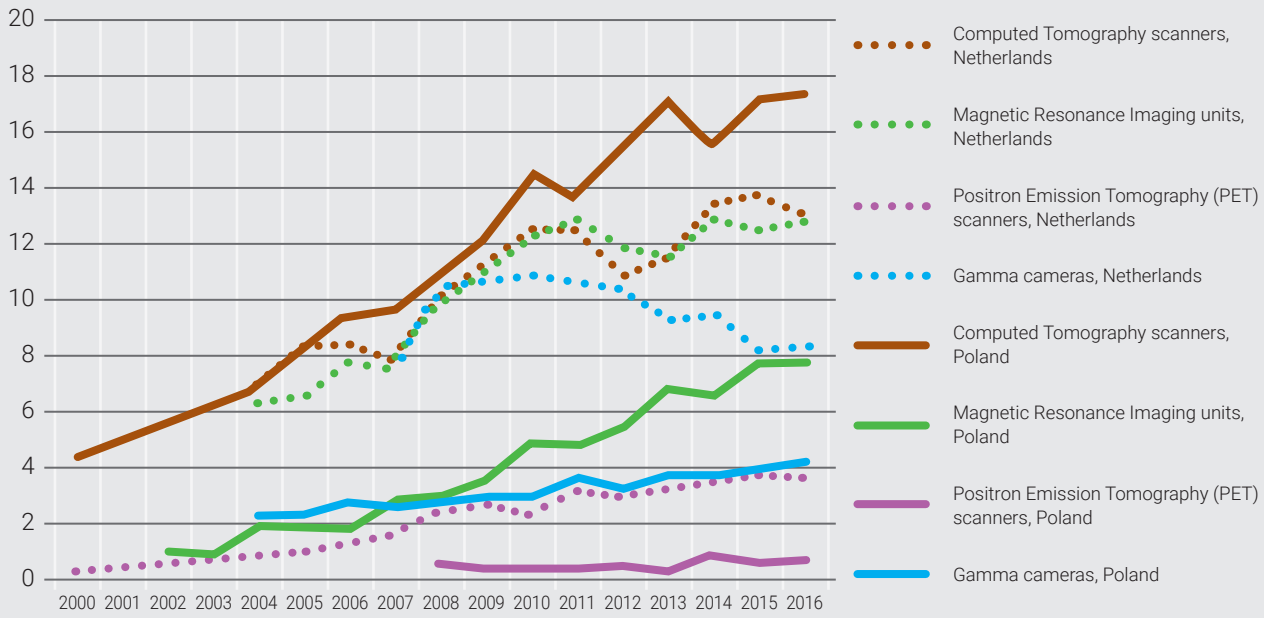
4

Opportunities in Polish healthcare system

4.2 Devices

The number of available healthcare devices is unsatisfactory though it shows a favourable development that will continue in upcoming years. The Polish medical device market is immature compared to other developed nations. Basing on the saturation level seen in other countries it seems that only CT scanners number can be assessed positively. Number of other types of devices is still expected to increase considerably. It may help to change the current situation where advanced services in medical diagnostics are techniques that are used in advanced stages of the diagnostic process, mainly due to the price and limited access.

Figure 30
Devices per milion inhabitants



Source: OECD

The predicted growth of medical devices will be fuelled in part by EU funds. As these types of purchases proved to be the easiest to acquire EU funding for, in the past around 40% of all EU-funded healthcare projects incorporated device purchases of some form. This proportion is forecasted to stay roughly the same in upcoming years, with the peak of such purchases in years 2019-2021. In the past there were many cases of skewed application for devices and infrastructure funding that needs to be addressed in the current financial framework[1].

The government plans to increase access to specialist diagnostics will be hard to manage without increasing the number of instruments. According to the new government regulation, from 1st April 2019, the benefits of advanced imaging examinations will be unlimited. However, this is not related to the increase in the number of apparatus and operating personnel. The process of increasing the number of devices may be imminent in the light of new governmental programmes.

The ageing Polish population also creates increased demand for medical technology, particularly in the home-care market. Other opportunities exist in the areas of diagnostic equipment, surgical equipment, cardiovascular, oncology, and nuclear medicine.

1. See https://www.nik.gov.pl/aktualnosci/zdrowie/nik-o-zak-upach-aparatury-i-sprzetu-medycznego.html

4

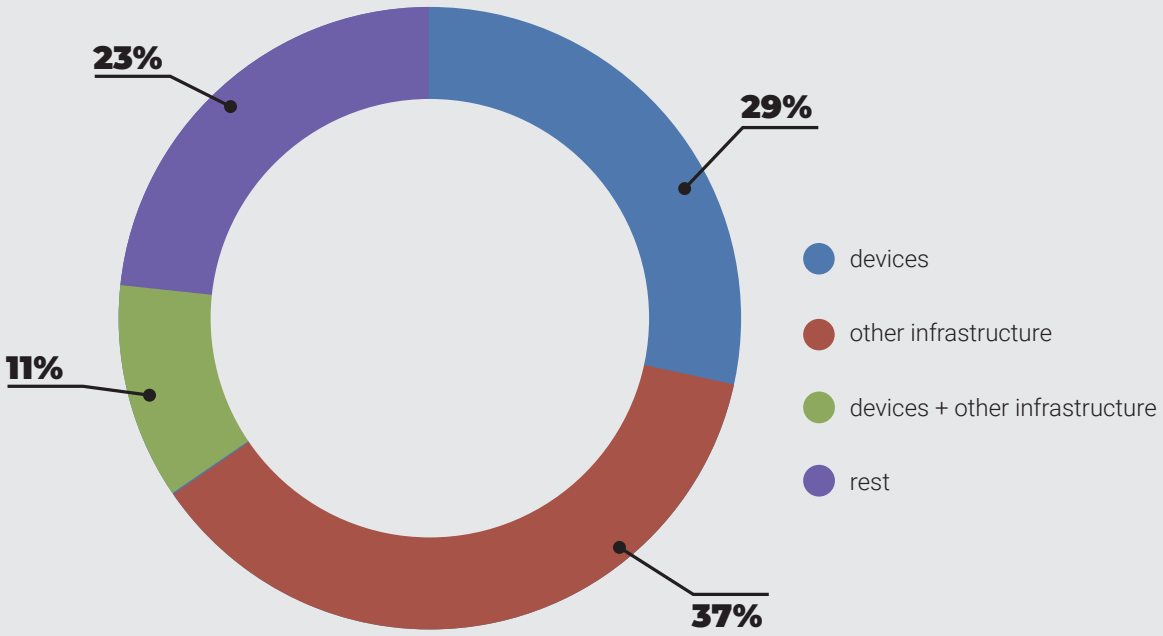
Opportunities in Polish healthcare system

4.3 Other infrastructure

Hospitals and other healthcare facilities are due for restructuring for a number of factors. Most notably aging population will push the process of wards reorganization, e.g. switching from gynaecology and obstetrics or paediatrics departments into geriatrics departments or changing the orientation of entire hospitals, e.g. focusing on long-term care. The process of procedures being moved to outpatient care may result in further reorganization and modification in the use of some departments, sometimes even closing debt-ridden hospitals.

As in case of devices, infrastructure developments in upcoming years would be fuelled by EU funds which will stimulate hospital modernization and expansion efforts. Ca. 48% of EU funds allocated to healthcare funds were used for hospitals' modernization or the construction of new wards and facilities. In many cases those projects were combined with the purchases of new devices. The composition of EU financed healthcare projects is predicted to stay relatively stable in upcoming years, with infrastructure projects being the main component.

Figure 31
EU funds inflow on healthcare projects in Poland since EU accession until March 2019



Source: Own calculations based on mapadotacji.gov.pl data.

There are voices for increased funding for small hospitals that may precede their development. The introduction of the hospital network has contributed to the detection of many problems. One of them is insufficient funding for small hospitals. Based on this experience, the Polish government will possibly reform the financing processes once again. These activities will aim to minimize the differences in access to public funds. The result will be definitely higher-quality patient care and possibly the infrastructural development of those types of hospitals.

4

Opportunities in Polish healthcare system

4.4 Digitalization

There is a number of forthcoming large-scale healthcare digitalization projects in near future. The government has inscribed basic e-health developments into the law. According to the 2017 bill[1] there are new deadlines for keeping medical records in electronic form. Medical records specified by the Minister of Health should be held in electronic form from 2019, their electronic exchange must be available by 2021. Electronic prescription should be obligatory since 2020. E-referrals should enter into force from 2021. The latest idea in the field of e-health - the Patient's Internet Account, was presented at the beginning of March 2019. Via the Patient's Internet Account, it will be possible to obtain information on the value of benefits (e.g. treatment, medication or rehabilitation). This will allow an increase in public awareness of the economics of the functioning of the public health service. Access to those accounts will be possible via the government-run Trusted Profile system. The proposed solution guarantees full data security.

Additionally National Health Fund has decided to finance three telemedicine services. Geriatric tele-senior staff, cardiac tele-senior staff and hybrid cardiac telerehabilitation will answer patients' needs in two of the most pressing areas of healthcare in Poland: geriatrics (due to an aging population) and cardiology (with cardioviscular diseases being the main cause of death in Poland).

Except for the upcoming state-wide programmes there is a significant number of individual entities who plan to implement e-health solutions. According to a CSIOZ survey over 50% of

1. Bill from July 20th 2017 „o zmianie ustawy o systemie informacji w ochronie zdrowia oraz niektórych innych ustaw".

medical services providers in Poland already has infrastructure necessary to carry-out electronic medical documentation. In ca. 20% of entities such systems are either implemented or planned. E-registration services are less popular, though they will be gaining prominence in the future. Already in 2018 ca. 10% of medical entities were planning to implement or were in the process of implementing such services. Around 15% of them considered such investments.

Figure 32
Availability of infrastructure necessary to carry out individual records electronic documentation in 2018

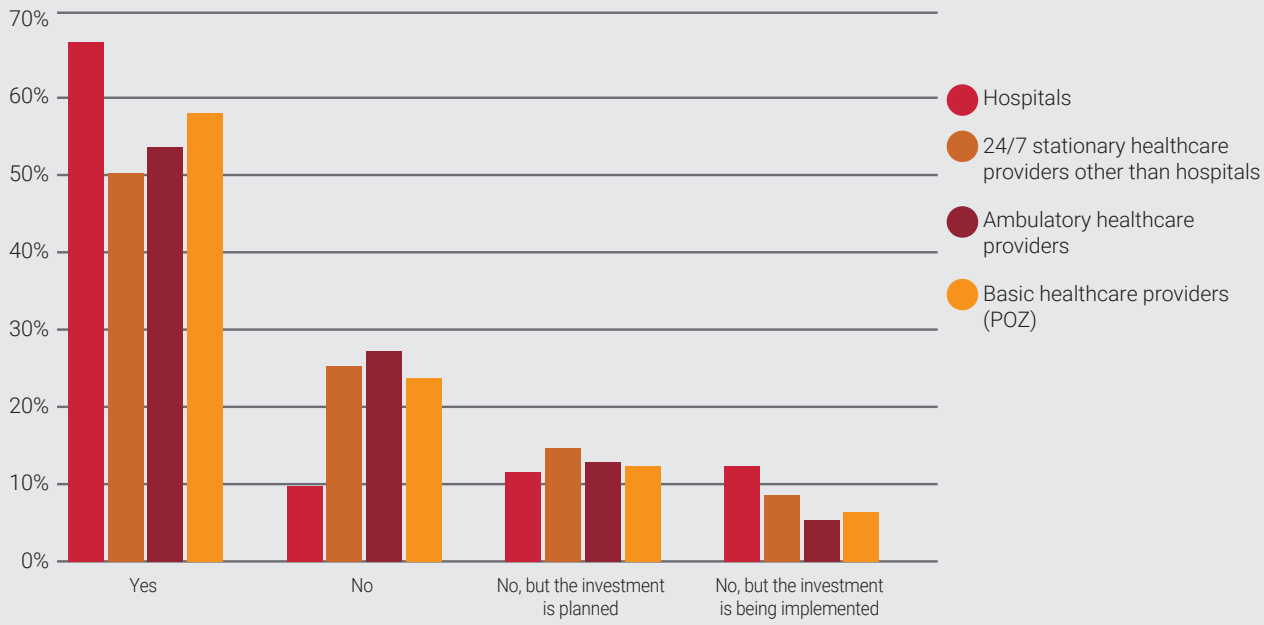
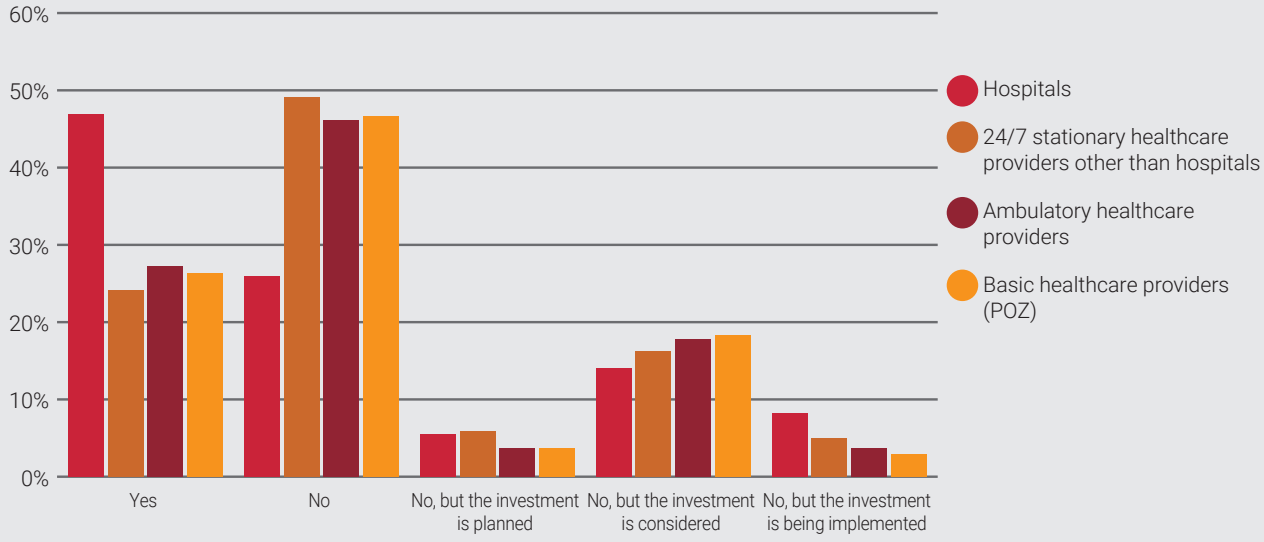


Figure 33
Availability of e-registration In 2018



Source: Badanie stopnia informatyzacji podmiotów wykonujących działalność leczniczą, III edycja; CSIOZ, 2018.

The growth in telemedicine services will continue in upcoming years. As it was mentioned, telemedicine have been known to Polish patients for several years. The next stage will be the introduction of those types solutions in the public area. This includes medical teleconsultations in particular. These developments are imminent as, according to CSIOZ survey[1], only 16.3% of healthcare providers used telemedicine tools in 2018. However this constitutes almost a two-fold increase compared to 2016 survey (8.3%). It is predicted that the steep growth of telemedicine use will persist, with telediagnosis being the main component (available at ca. 52% of all entities with telemedicine services), followed by cardiological applications. However, according to the survey, to stay on the growth path either public financial support or the improvement of entities' financial situation is necessary.

The growth of Polish healthcare digitalization will be supported by the European Union programmes. Launched in 2015, the Digital Single Market (DSM) aims to open up digital opportunities to people and business, also in the healthcare sector. This process is based on three pillars. Firstly, to provide cross-border healthcare access in all EU countries by 2020. Secondly to facilitate tailored diagnosis and treatment, help health services to be better prepared to respond to cross-border health threats, and improve the development and surveillance of medical products. Lastly to improve prevention and management of chronic conditions, and allow patients to provide feedback to healthcare providers. To implement those plans Polish healthcare will need additional new investments in infrastructure, education and administration.

The introduction of an increasing range of e-health solutions should be accompanied by employees specific training and society education. Therefore the project focused on expanding the knowledge about technology, specific applications and new duties among employees of medical facilities (P3) should be continued. This is particularly necessary to ease the problem connected with the aging medical staff. The aging society is an equally big barrier during the digitization of the health care sector. In the context of this demographic issue, it seems advisable to increase teaching activities and make patients aware of telemedicine as well as its positive effects.

1. Badanie stopnia informatyzacji podmiotów wykonujących działalność leczniczą, III edycja; CSIOZ, 2018.

Conclusions

Polish healthcare sector has developed extensively since economic transformation, however convergence to European standards have not been attained yet. There have been numerous attempts at optimising healthcare system in Poland that have been somewhat successful. In result main health indicators among Polish populations, as life expectancy or infant mortality, have improved considerably. However health outcomes have not met European standards yet, the underlying problem being the insufficient healthcare funding, especially in the public sector.

In upcoming years additional healthcare improvements are expected as a result of the growing financing from the government, EU funds as well as private sector. Public healthcare sector financing is expected to grow at an unprecedented pace, not seen since Poland's transition to market economy. This will be supported by an inflow of EU funds, used in ca. ¾ of the case on device purchases and other infrastructural investments. In view of those developments even continuing the growth path the private healthcare sector finds itself today would be sufficient to reach health expenses levels and hopefully health outcomes attained by developed European countries.

Public authorities have started projects aimed at healthcare quality and efficiency improvement. One of such attempts is recent implementation of the network of hospitals that may result in increased comprehensiveness and continuity of services provided. Additionally a number of e-health projects will be put into service in upcoming years. The expected growth of medical personnel' remuneration could also result in an increase of quality and accessibility of medical services.

Private entities provide higher availability and quality than public ones, thus they have developed at a considerable faster pace than public sector. In view of governmental plans public sector development may surpass the private healthcare dynamics. However private sector will still show significant gains fuelled by voluntary insurance financing and growth of outpatient care, preventive care and ancillary services.

Healthcare system evolution has to happen to answer problems connected with unfavourable demographical developments in upcoming years. The population aging will result in an increase need for healthcare services, especially long-term care and geriatrics. These problems could be somewhat mitigated by digitalization development and infrastructure modernization. This concerns telemedicine, optimization of healthcare administration, devices purchases as well as wards and hospitals modernization.

A feedback loop between healthcare system development and economic convergence could accelerate quality of life in Poland. Increase in health levels among the Polish populations in result of the forecasted changes may result in higher portion of population attaining the labour market (especially among the elderly), lower costs of avoidable diseases and growth in healthy life years lived. The outcomes of such changes may result in continuation of robust economic growth, accompanied by an increase in quality of Polish citizens. In consequence additional health gains may be realized for the benefit of Polish society.

Appendices

Appendix 1: Trade events

Name of event: SALMED

Location: Poznan
English language website: http://www.salmed.pl/en/
Description: The largest event for the healthcare/ medical industry sector in Poland held biannually at the Poznan MTP fair ground. The next edition of SALMED will take place in spring 2020.

Other exhibitions and conferences in the medical equipment and supplies sector are:

Name of event: CEDE

Location: Poznan
English language website: https://www.cede.pl/2019/en/
Description: The Central and Eastern European conference and exhibition for dental industry sector held annually at the Poznan MTP fair ground. The up-coming show will be held September 2019.

Name of event: International Hospital and Healthcare Conference

Location: Warsaw
English language website: https://www.termedia.pl/Konferencja-13th-International-Conference-Hospital--Intro,999,6397.html
Description: International Hospital and Healthcare Conference, organized annually by the Polish Hospital Federation, is the largest of its kind in Poland, and is attended by senior level hospital executives, policymakers, experts and industry leaders.

Name of event: Warsaw International Healthcare Exhibition

Location: Warsaw
English language website: https://www.tradefairdates.com/WIHE-Warsaw-International-Healthcare-Exhibition-M11019/Warsaw.html
Description: The WIHE presents the latest achievements of medicine and medical technologies. The exhibition spans through variety of categories ranging from medical equipment of diverse specialties, IT solutions in medicine and telemedicine through medical furniture and disposables to disinfection and sterilization. The up-coming show will be held October 2019.

Appendix 2: Government links

The Ministry of Health

http://www.mz.gov.pl/- change to English

Government Health Plans:

- National Health Plan 2016-2020: https://www.gov.pl/web/zdrowie/npz-2016-2020
- National Health Programs:https://www.gov.pl/web/zdrowie/programy-polityki-zdrowotnej

Agency for Health Technology Assessment and Tariff System (AOTMiT, Agencja Oceny Technologii Medycznych i Taryfikacji):

http://www.aotm.gov.pl/

Appendix 3: Most important medical distributors associations

National Chamber of Commerce of Medical Devices POLMED

http://polmed.org.pl/ - only in Polish

Chamber of Manufacturers and Distributors of Laboratory Diagnostics. Union of Employers

http://ipddl.pl/ - only in Polish

Polish Chamber of Pharmaceutical Industry and Medical Goods POLFARMED

https://polfarmed.com.pl/

Appendix 4: Most important health organizations

GEmployers of Poland
http://pracodawcyrp.pl/ - only in Polish

Employers Confederation “Lewiatan”
http://konfederacjalewiatan.pl/ – only in Polish

Polish Hospital Federation

http://www.pfsz.org/english/

The Union of Employers of District Hospitals

http://ozpsp.pl/ – only in Polish

Federation Healthcare Employers “Zielona Góra Agreement”
http://www.federacjapz.pl/ - only in Polish

Appendix 5: National and Multinational medical product companies in Poland

National Medical Product Companies in Poland

- Asonik
- Balton
- Chirmed
- Emtel
- ERG Klobuck
- Famed Lodz
- Farum
- Medicalgorithmiths
- Mercator Medical
- Sanus

Multinational Companies with manufacturing in Poland

- Aesculap-Chifa
- DGS Poland
- Fresenius
- Stiegelmeyer
- MacoPharma

Multinational Companies without manufacturing in Poland

- Becton Dickinson
- Boston Scientific
- BTL
- GE Healthcare
- Johnson & Johnson
- Medtronic
- Philips HealthTech
- Siemens Healthineers
- Smith & Nephew
- Stryker

ISBN: 978-83-953359-3-8