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Structure, Processes and Results in Healthcare System in Slovenia

Valentina Prevolnik Rupel and Dorjan Marušič

Abstract

Achieving high quality in the provision of healthcare services represents a basic factor in meeting the healthcare needs of the individuals. Accessibility to health services in Slovenia over the last two decades has been presented according to some of the core values of quality and safety: performance, quality and patient-centeredness. The focus of the chapter is on three pillars of health system quality: structure, processes, and outcomes. In each part, we presented the standard practice and state of the art, but also the main achievements in the last decade. In the structural part, we highlight the investment in equipment and human resources and in the process part, the role of the primary level as a gatekeeper with the secondary and tertiary level. The results section concentrates on the measurement of the results in health care; the use of quality indicators and PROMs is discussed, the role of quality strategy and health technology assessment in the Slovenian health care system is presented.

Keywords: health-related quality of life, patient-centeredness, integrated care, strategy, structure, processes results, indicators

1. Introduction

Basic motivation for health care system upgrading should be citizen's centeredness. By positioning citizen in the center, the whole chain of health care from promotion, prevention, and protection to diagnostics, treatment and rehabilitation is challenged to meet real healthcare needs of individuals. Immediate access to health care services with highest possible quality is crucial to achieve high health-related quality of life.

We decided to review provision of health care services in Slovenia in this millennium from the quality perspective. Considering performance, safety, timeliness, efficiency, equality and patient-centeredness as main values of quality and safety of health care system we projected them in the three pillars: structure, processes, and outcomes.

In the selection and description of the structural indicators, we aimed to highlight financing, equipment and human resources as the basis for physical accessibility – the availability of services enables the citizens to reach them within reasonable distance from home and within relatively short time. The analysis of the financing system presents the economic dimension acting as a support to physical accessibility and describes people's ability to pay for services without financial hardship.

With procedural indicators our focus was on the major processes in Slovenia which can act as good practices in the implementation of integrated health care

through a specific role of the primary level as gatekeeper and forming integrated care pathways with the secondary and tertiary level. Cases are presented which offered the solutions and supported the move of the health care towards more result-oriented system, such as accreditation process and introduction of RheumaHelper application.

The final part of the chapter concentrates on the measurement of the results in health care. Quality indicators and PROMs are presented; existing registries containing data on patients' health status, medical and case-mix variables that can serve as source to obtain useful information and ensure the baseline comparability of treatment populations and intervention factors. Quality strategy and status of health technology assessment is presented as well as a pilot project to implement outcome indicators through national tender.

Throughout the chapter we tried to objectively present the main structural, procedural and result-oriented developments and on the other hand, present the main achievement and implemented solutions in the last decade that are exceptional when evaluating them in the current moment with a critical time distance.

2. Structure

2.1 Financing

The financial and economic crisis starting in 2008 significantly affected Slovenia. The crisis resulted in a severe economic contraction of 7.8% of real gross domestic product (GDP) in 2009 in comparison to 4.4% across the EU28. After 2013, GDP grew continuously. According to Eurostat database, Slovenia's GDP increased for 47.1% in a period 2005–2017; in 2017 reached 43 billion EUR. In comparison, in the same period GDP of EU countries increased for 32.6%.

Total health expenditures (THE) as a percentage of GDP have been increasing steadily since 2000. In 2000 they amounted to 7.8%, and then increased to 8.8% in 2013 and start decreasing thereafter, reaching 8.21% of GDP in 2019. The main explanation for the decrease was the strong growth of GDP after 2013, which was not followed with the comparable growth of THE.

Three main sources of financing the health care system are compulsory health insurance, transfers from the central and local budgets, voluntary complementary health insurance and out-of-pocket expenditures paid directly by the citizens. Compulsory health insurance is carried out by a single payer Health Insurance Institute of Slovenia (HIIS) and represents the main public sources of financing; it accounted for 66% of THE in 2019. Complementary health insurance premiums (13.5% of THE) and out-of-pocket payments (13.6%) represent the main private sources of funding.

Public health expenditures as a share of THE have decreased slowly; they ranged between 70 and 74%, reaching 71.8% in 2019. The most important part of public health expenditures is compulsory health insurance, representing between 91 and 96%.

Consequently, there has been an increase in private health expenditure. The slow increase started in 2000 where they amounted to 27.1% of THE, and then reached as high as 28.9% in 2014 and 29% in 2018. In 2019, they amounted to 28.2% [1].

OOP payments as % of THE do not have a clear trend and have been relatively stable amounting to around 12% between 2000 and 2019. In 2018, they amounted to 11.9% [2].

The role of complementary health insurance has been unclear and source of numerous debates as it acts as co-insurance, covering share of each healthcare

service in the basic benefit package. Although this makes the basic benefit package largely undefined (as almost each healthcare service from the package is partially covered also from complementary insurance) and causes inefficiencies in the healthcare system, complementary health insurance acted as a protection in economic downturns. In recession, the share of coverage from complementary insurance increased for many healthcare services, enabling complementary insurance to act without loss; the consequences are of course higher premiums for complementary insurance causing higher inequities as the premiums are in absolute terms and equal for all [3]. These inequities, however, have largely been counteracted with a measure introduced in 2012, when the automatic coverage of claims by socially vulnerable are directly covered by central budget [4].

2.2 Payment mechanisms

The total budget for health services is divided among the providers through the negotiation process with main stakeholders, being Health Insurance Institute of Slovenia on behalf of the patients, Ministry of Health on behalf of the Government and the providers of health care services. When the allocation of the funds is agreed, the defined models are applied for fund allocation. This procedure clearly defines provider budgets as well as the health care services they have to provide and which will be paid for by compulsory health insurance. In contrast, there are no pre-defined limits for private health expenditure. The general agreement with special agreements for different groups of health care providers are the key products of the first phase of contracting processes, which create the fundament for direct contracting negotiations between the Health Insurance Institute of Slovenia and each provider.

The second stage of purchasing of health services involves Health Insurance Institute of Slovenia and the specific provider within the public health care network. Definition of the general agreement includes special agreements for various groups of health care providers, on basis of which the contracts between the Health Insurance Institute of Slovenia and each provider are concluded. The contracts specify the type and volume of services, but also the prices, methods of payments and other important elements, such as supervision and quality monitoring. With the exception of some of the programs (outpatient care, surgeries, dialysis services and the transplantation program), the reimbursement of provided services is prospectively defined and capped in way that health care services exceeding the negotiated amount are not paid by the Health Insurance Institute of Slovenia. If a provider produces fewer services than determined by the contract, he is reimbursed according to the actually provided services. Voluntary health insurance companies do not participate in the negotiation process to define the general agreement and special agreements for different groups of health care providers, but are mandated to reimburse the total value of the provided health services covered by complementary health insurance according to the annual plan negotiated in the general agreement. The relative value of voluntary health insurance coverage for different health services is defined by law.

Payment mechanisms used in Slovenia differ according to the health service category. In primary health care, a combination of capitation and fee-for-service is used. The planned income of the family medicine in the amount of 132,000 EUR at the annual level is divided into the capitation income (approximately 50%) and fee-for-service income (approximately 50%).

The capitation income is defined according to the number and age structure of the registered persons. Doctors with an above-average number of registered persons

(more than 29,231 capitation coefficients per year) receive more funds than family physicians with a below average number of persons registered. Capitation is paid in a flat rate.

The other half of the income - the service part - depends on the services provided. Although the program of services is planned (27,488 coefficients per family physician per year), however, in order to obtain the whole service part of the revenue, it is sufficient to perform half of the planned services (13,000 coefficients). The acute care services (coefficients – relative prices) are listed in a catalog. One coefficient is worth around 2.5 EUR, depending on the value of the total annual budget for family physicians [5].

Outpatient care is paid on a fee-for-service basis. The payment is based on the planned (and realized) number of “points”, which historically reflect the estimated costs of the provided services. Each specialty has a defined set of services (short visit, expanded visit, ultrasound etc.) and each service is assigned a cost weight expressed in the number of points. These points reflect the labor costs (medical doctor specialist, nurse, administrative and laboratory staff), material costs, depreciation, and a separate informatization costs.

Acute inpatient care is paid on DRG basis and non-acute inpatient care on bed day of stay.

2.3 Network of providers

The Slovene health care system remains relatively centralized, as the responsibilities of municipalities have not been fully implemented. The Ministry of Health has the task of planning health care ensuring equal access to health care services and equal patient rights for all citizens. All administrative and regulatory functions of the system are managed at the national level, whereas municipalities have a task to execute the policies and strategies in the area. Compulsory health insurance is centrally managed and administered by Health Insurance Institute of Slovenia. The professional chambers and organizations also operate at the state level or through their regional branches. Municipalities seem to be making limited use of autonomy they gained to plan health services. Consequently, the de facto devolution in planning primary health care from the central government to local communities has not yet occurred.

Primary care falls under the jurisdiction of municipalities, which are responsible for health policy development at the local level. Municipalities are the owners of the community-level primary health care centers that occur all over the country. Primary health care centers are established and owned by municipalities, which are responsible for their functioning and for ensuring sufficient funds for the maintenances of the centers. All employees receive their salary in line with the general contract, which is valid for all employees in the public sector. Primary health care centers provide emergency medical aid, GP/family medicine, and health care for women, children and teenagers, community nursing, laboratory and other diagnostic facilities, preventive and curative dental care for children and adults, physiotherapy and ambulance services. Primary care practitioners in Slovenia include family physicians, pediatricians, gynecologists, community nurses, midwives, dentists, pharmacists, therapists, psychologists or psychiatrists and other profiles necessary to deliver care. Family physicians and nurses are the initial contact with patients, who are in need of care. Community nurses support the patients through health promotion and prevention activities, curative, long-term and palliative care. Patients are entitled to select their own physician from among the physicians operating at the primary health care level (i.e. in primary health care centers). Slovenia operates a typical gatekeeping system, and patients need a referral from their family

physician to be treated by a specialist. International organizations (such as the WHO and the World Bank) have played a key role in establishing a family medicine model based on the English and Dutch models. The International Survey on the Benefits of Primary Health Care “Monitoring Primary Health Care” assessed 77 indicators for 2009 and 2010 and included, among others, the areas of governance, staff development, accessibility, continuity, coordination and scope. Indicators for Slovenia show that primary health care is very good and better than in neighboring countries [6].

A total of 30 public and private hospitals provide care in Slovenia. There are 10 general hospitals, 2 university hospitals, 5 mental health hospitals and 13 specialized hospitals (3 of them are private). Upon the referral by family physician, the patients can freely choose their secondary care provider. Most of outpatient care and inpatient care is offered in the hospitals. Most of the hospitals are public owned by the state. They are non-profit organizations. Private hospitals, on the other hand, are profit organizations, privately owned. They can receive concession from the Ministry of Health and can make a contracts with the Health Insurance Institute of Slovenia, who would pay them for the care provided. Tertiary care is provided by University Medical Centers located in Ljubljana and Maribor, the Institute of Oncology, the University Clinic of Respiratory and Allergic Diseases Golnik, the Psychiatric Clinic Ljubljana and the University Rehabilitation Institute [7].

According to the number of beds for acute treatment per 1,000 inhabitants, Slovenia has been close to EU-15 average since the early 1990s, in contrast to the countries of Central and Eastern Europe, which have drastically reduced the number of beds. The number of acute hospital beds and the average length of stay have decreased since the early 2000s. Such a development is due to many factors: the introduction of new payment systems, (e.g. bed-days payment was replaced by Diagnosis-Related Groups (DRG) payment in inpatient care); during the economic crisis the prices of health care services were reduced; and there was a significant increase in the provision of day care (from 11.1% of all hospital cases in 2005 to 30% in 2013). The number of beds is currently similar to the EU average and the average length of stay is low at 6.8 days. Still, bed occupancy rates are below the EU average, indicating an overextended network at the secondary level. The data would require urgent strategic measures to streamline the network, subspecialize and connect operators [7].

With regard to the number of days in acute treatment, the number of dismissals and the number of outpatient visits, Slovenia does not deviate from the EU-15 average. Slovenia has the lowest number of private beds for acute treatment per 1,000 inhabitants in the EU28.

Outpatient specialist services are paid on a fee-for-service basis, whereas inpatient care is covered (in theory) by fixed allocations and DRG. In practice, however, hospitals are still financed according to historical volumes, meaning that they are not really limited by the DRG-based budget limit. Although the primary care system is strong, particularly since 2011 when the government upgraded family medicine practices and increased the emphasis on prevention and care coordination, service organization and delivery overall are highly fragmented. Waiting lists represent the biggest challenge, and they have translated into an elevated unmet need due to waiting. Share of people reporting unmet needs was higher than EU average according to Eurostat data: 3.5% of people in 2017 and 2.9% of people in 2019 reported unmet needs [8]. The large increase of unmet needs in 2017 is not due to sudden change, but rather to a change in question supporting the calculation of the unmet needs indicator. Presumably, the unmet needs were higher than reported already before 2017.

2.4 Human resources

Despite a steady increase in the number of physicians, partly driven by migration from neighboring countries, Slovenia has one of the lowest physician densities in the EU. In 2018, Slovenia ranked a modest 17th among the twenty-one Member States with 326 physicians per 100,000. In terms of the numbers of nurses (383 per 100,000) medical technician (645 per 100,000) and graduate midwife, Slovenia ranked in the first third among the EU countries and in terms of the number of dentists (72.5 per 100,000 inhabitants) just below the EU average. There are high geographical variations among the number of medical staff: while the number of physicians is highest in Central Slovenia statistical region (463 per 100,000), it is lowest in the Coastal-Karst region (136 per 100,000) [9].

In 2020, the number of general practitioners and pediatricians still lagged behind most EU countries, leading to problems of access and over-referrals to specialist care in some parts of the country. Nurse density was slightly above the EU average. Slovenia tried to solve the lack of medical doctors by opening second medical faculty Maribor in 2003. Also, provision has been made for foreign doctors to practice in Slovenia. Still, the issue of lack of physician has not been solved, especially in some defined specializations, such as primary care and anesthesiology. Due to these difficulties, the question of task-shifting has been analyzed and the scope of practice for community nurses has been widened to optimize patient-centered care. The model practices were introduced, described in the processes, unfortunately the evaluation of their introduction has never been conducted.

2.5 Health information structure

According to the Digital Economy and Society Index (DESI), Slovenia performs very well. More specifically, it ranks very high in the use of provision of access to open data and e-health services (it ranks 6 among EU members) and in the area of electronic prescriptions (number 3 among EU member states). Electronic prescriptions are used by 98% by all family physicians [10]. The e-prescription system has improved interoperability and transparency. The e-registry of patient data and patient summaries the registry of health care providers, e-referral system and the e-booking system are implemented. zVem patient portal, which enables patients to see their own medical data is active and used. The current epidemics further increased the use of the implemented solutions, especially zVem portal, which is used for vaccination applications, alongside other lists.

3. Processes

3.1 Referral system

Slovenia operates a gatekeeping system whereby patients require a referral from their family physician in order to access specialist care. Family physicians may refer their patients to a particular outpatient specialist or to hospital diagnostics and treatment units. Physicians may also advise patients on which specialist or institution they would recommend, but, ultimately, patients make the final decision themselves. Patients can choose their secondary or tertiary provider anywhere in the country every time they are given a referral. Specialist services without referral by family physician are paid out of pocket. The same goes for family physicians and other private providers without contract with HIIS or for those services not included in the basic benefits package covered by the compulsory insurance scheme.

If patients select a private provider who does not have a contract with the HIIS, they are required to cover the cost of these services in full themselves [11].

3.2 Integrated care and model practices

The National Health Plan [12] “seeks to strengthen primary care and provide greater access to comprehensive and quality treatment through better care integration and a more adequate professional skill-mix across care levels”. The upgrading of family medicine practices in 2011 was an innovative government initiative to improve care coordination and the management of chronic diseases. Upgraded primary health care teams or ‘model practices’ include a designated nurse who has a part time responsibility to screen for chronic disease risk factors, preventive counseling and care coordination. Additional nurse received specific training including screening for chronic disease risk factors and preventive counseling for patients aged 30 and over, as well as the care coordination of all registered patients with a stable chronic disease. Following the asthma and chronic obstructive pulmonary disease (COPD) modules [13], training was expanded to include the arterial hypertension, coronary disease, diabetes [14], and osteoporosis and prevention modules [15]. The purpose of family medicine “Model practices” operation is to improve the quality of work with an active approach in the promotion of health, screening for the most current health problems of the adult population and systematic management and monitoring of patients with stable chronic diseases. The new way of increased the accessibility of the whole population to high-quality and safe health care.

By 2014, about half of all primary care provision was in such ‘model practices’ and by 2018 most practices included an additional nurse. Annual costs for model practices are estimated to 13 million EUR, the effects of their functioning have not been evaluated yet.

3.3 Transitions from inpatient to outpatient care

Many of the diagnostic and treatment procedures that years ago required hospitalization may be performed today on an outpatient basis: day hospital, outpatient surgery, home hospitalization, tele-health, etc. This is a trend that can increase efficiency and lower costs without losing quality.

Secondary care services are provided by specialists’ office in hospitals, private specialists with concessions and in health centers on primary level. On average, a patient has 6.7 outpatient contacts per year. Between 2006 and 2015, this number increased by 0.1 contacts or by 1.5%. Slovenia reaches 88.8% of EU23 [16].

The number of acute hospital beds and the average length of stay have consequently been decreasing since the early 2000s. In 2017, Slovenia had 450 acute hospital beds per 100,000 inhabitants (504.3 in EU 28) with the average length of stay 7.0 days (7.5 days in EU15) [16]. There are more reasons for this besides shift from inpatient to outpatient care, among them also the shift from bed-day payments to case-based (DRG) payments, tariff reductions and rationalization during the crisis; however, shifting from inpatient to outpatient care is one of the reasons. To replace inpatient care with outpatient care forms, various financial incentives have been introduced since 2010. The percentage of day-care cases has risen from 11.1% in 2005 to 30% of all hospital cases in 2013. A particular success re transition from inpatient to outpatient care has been a cataract surgery - with 97.9% cases in outpatient care Slovenia is among the highest in the EU [14]. The quality indicator of the share of one-day surgery determines the number of procedures performed as one-day surgeries (excluding overnight hospitalizations) according to the total

number of procedures performed in hospital. One-day surgery helps to redirect resources to less intensive care environments and to reducing the occupancy of hospital beds. At the same time, it brings faster recovery and return to work as well as lower proportion of hospital infections. The indicator shows the shares of one-day surgeries in some selected procedures: the proportion of one-day surgery in knee arthroscopy has increased from 41.3% in 2009 to 54.4% in 2019; in operations of inguinal hernia from 11.6% in 2009 to 15.0% in 2019; tonsillectomy and/or adenoidectomy from 0.25% in 2009 to 0.82% in 2019; cholecystectomy from 0.12% in 2009 to only 0.21% in 2019 and varicose vein surgery from 3,6% in 2009 to 49,2% in 2019 [17].

3.4 RheumaHelper, mobile assistant for rheumatology

In 2013, the mobile application RheumaHelper was implemented as a tool to easily and quickly check the disease activity and with a classification criterion for main rheumatological diseases. In Slovenia it is used by virtually every rheumatologist.

Each year the application is upgraded with new criteria and disease activity calculators, thus expanding the range of usability. Continuous updates of the application with new criteria and disease activity calculators give the doctor access to the latest treatment guidelines and new methods in practice, leading to faster training of doctors and better-quality care. The doctor's app monitors everywhere, allowing you to make quick but quality decisions regardless of the situation, as the source with verified information is available in your pocket. Care decisions are thus always well supported, ensuring a higher quality of work. In the future, the aim is to add integration with hospital systems, where calculated values could be stored in an electronic medical card.

In Slovenia, the app has been used more than 700,000 times by 2016. The app is translated into 6 languages and active in more than 120 countries. In just 3 years, the app has become a global leader, with more than 4,500 rheumatologists using it in more than 40,000 times a month. Nowadays, it is used by more than 7.000 rheumatologists worldwide.

In 2015, the app also received the portal award Healthline.com in the category of best applications for rheumatoid arthritis [18].

3.5 Patient engagement and empowerment

There are numerous patient organizations in Slovenia, and they often actively participate in the drafting of policies and regulations in their specific area. All proposed laws and regulations in Slovenia, also in health care area, undergo a public debate phase, in which individuals can participate directly. Patient organizations play a crucial role in public debates and often bring issue in the debates, based on own experiences which result in improved legislation.

Decisions about purchasing of health care services are made through negotiations between the key partners in health care: providers of health care services, the HIIS and the Ministry of Health. HIIS acts on behalf of the patients; however, as a main buyer and payer of health care services, it often has to follow the goals that may not be completely in line with the patients' interests. Patients hence participate in the process only indirectly, bringing their suggestions and concerns in the debate through any of the partners.

Every person covered by compulsory health insurance has the right to choose a personal physician without administrative and/or territorial constraints within the country. Moreover, insured people also have the right to choose a personal gynecologist and dentist. There is only one insurer offering compulsory health insurance,

the HIIS. Complementary insurance is offered by three insurance companies, which patients can freely choose from. These companies also offer supplementary insurance packages, as do other insurance companies; however, the supplementary insurance market in Slovenia is rather small.

The Patient Rights Act [19] is mainly concerned with individual rights which must be respected by all health care providers, public or private. Patient Rights Act importantly limits these rights by stating that their execution must take into account the right to health care services as determined in other laws and by taking into account modern medical doctrine and standards. There are 13 patient rights representatives in Slovenia as well as the Commission for the Protection of Patient Rights. They report regularly to Ministry of Health which monitors the protection of patients' rights.

Health literacy is an important determinant of health. It encompasses the knowledge, motivation, and competencies of individuals to access, understand, judge, and apply health information to day-to-day decisions related to health promotion, disease prevention, and health care. Health literacy is a key to empowering and actively participating individuals in caring for their own health.

Since October 2019, the project Raising Health Literacy in Slovenia (ZaPiS) has been running. It is implemented by the Ministry of Health of the Republic of Slovenia and the National Institute of Public Health. The purpose of the project is to raise the health literacy of the population of Slovenia, with an emphasis on connecting all key structures that can contribute to better health of the population. With the planned activities, we will be able to adequately address the changed health needs of people and make better use of new communication opportunities. Project activities will include both the health literacy aspect at the individual level and organizational health literacy. The latter involves the implementation of strategies in health care institutions that make it easier for patients to understand health information, navigate their health care system, integrate into the health care process and take care of their own health [20].

3.6 Accreditation process

The accreditation procedure of health care providers in Slovenia is voluntary. Providers are accredited by internationally recognized organizations independent of the Ministry of Health or the HIIS (e.g. Det Norske Veritas International Accreditation Standards, Accreditation Canada International). The accreditation processes are financially supported by HIIS. The accreditation is valid for three years and then needs to be renewed. All hospitals in Slovenia obtained internationally acquired accreditation; the last hospital obtained it in 2018. Additionally to hospitals, accreditation is becoming more popular also among providers of outpatient care and in health care centers at primary level. The data on accreditation is published on the Ministry of Health website [21].

4. Results

4.1 Quality indicators and PROM

Slovenia introduced health care quality indicators in 2010. The chosen indicators were selected from a number of sources, such as OECD Health Care Quality Indicators project and WHO Performance Assessment Tool for Quality Improvement in Hospitals. Additionally, some indicators were proposed and developed by the Ministry of Health and the Medical Chamber. The results are published

every year in a special report on quality indicators and are publicly accessible on the Ministry of Health webpage; the last report covers year 2019 [15]. Altogether, there are 30 indicators; one in patient-centered care, four in promotion, prevention and primary care (hospital admissions), seven in communicable diseases, 12 in health-care efficiency, five in patient safety and an indicator for hand hygiene. Patient-reported outcome measures have been launched in 2009 and 2010 in National Tender, but later on not systematically introduced [22].

4.1.1 Patient-centered indicators

The share of exclusively breastfed newborns has decreased significantly, by almost 17 percentage points, in the last decade. In 2019, the share of exclusively breastfed healthy newborns in Slovenian maternity hospitals was thus only 69.9%. The differences between hospitals are large; they range from 16% of exclusively breastfed newborns in Postojna to 96% in Ptuj, while the shares in most of the hospitals range between 60 and 80%.

4.1.2 Promotion, prevention and primary care indicators

Hospital admission rate due to chronic diseases is used in pulmonary disease (COPD), heart failure, asthma and arterial hypertension. These indicators reflect the quality of primary care. In 2019, the hospital admission rate for asthma was 32.7 and has been declining since 2016. The hospital admission rate for COPD was 113.1, heart failure 285.9 and arterial hypertension 47.9. In all chronic disease a general downward trend can be noticed in the last decade.

4.1.3 Communicable diseases

The indicators on communicable diseases report proportions of vaccinated children against measles, diphtheria, tetanus, whooping cough and hepatitis B. Vaccination against these diseases has been relatively high at the national level for several years in a row, higher than 90% (except for hepatitis B), there are no major deviations. This provides good protection against the spread of the aforementioned infectious diseases in Slovenia. The vaccination of elderly aged 65 years and more reached 12.9%, which is among the lowest levels in EU.

Further indicators in this category report incidence rates of measles, whooping cough and chronic hepatitis B. While the incidence rate in measles and chronic hepatitis B are low, the incidence rate for whooping cough was relatively high in 2017 and 2018, above 10%. Among the possible causes relatively rapid decline in immunity after vaccination, change in the causative agent, and lower performance of a newer (acellular) whooping cough vaccine are mentioned. Therefore, many countries have introduced boosting doses in adolescence, booster doses at least once in adulthood and vaccination of pregnant women.

4.1.4 Healthcare efficiency

The pressure ulcer quality indicator shows the rate of hospital ulcers. The differences in the percentage of ulcers acquired differ widely among hospital and ranges from 0 to 23%. Further indicator in this category refer to waiting times for computer tomography – the legal framework for monitoring waiting times was established in 2008 by the Patient Rights Act [19] and the Regulation on maximum waiting times for individual health rights [23]. On 1 May 2011, National Institute for Public Health published data on the waiting lists for selected healthcare services

for the first time. There were 24,819 patients waiting for 60 defined services. The list of 60 services was slightly changed on 1 September 2012, and then there were no further changes until 1 May 2016, when one more service was added to the list. In August 2018, the whole operational system of reporting was replaced, and at the same time, the list of services, their coding and the reporting methodology have been completely changed. For example, data on physiotherapy treatment are no longer monitored and 58 services from previous system now correspond to 400 new services. The service code translator has not yet been officially published; however, the data could potentially be compared if it existed.

Between 1 January 2015 and 1 January 2020, the number of patients waiting for first visit increased by 54.1%. There were total of 403,811 patients on waiting lists on 1 January 2020, among them 165,201 or 40.9% waited longer than allowed. 71.3% of all patients were waiting for outpatient specialist services and the rest were waiting for diagnostic procedures or day care. The estimated financial value for provision of services for all patients on waiting list was 120.4 mio EUR, and the estimated value of service provision for patients waiting longer than allowed was 44.7 mio EUR [24].

A series of indicators on efficiency of the surgical processes include utilization of operating theaters for hospital and outpatient procedures, share of canceled procedures, average length of stay for selected procedures (cholecystectomy, pneumonia, hip replacement etc.), indicators connected to diabetes (hospital admissions because of diabetes, amputations due to diabetes), indicators connected to newborns. The first one is injuries in vaginal delivery: in 2019 a total of 17 cases of third- or fourth-degree of such injuries were reported during childbirth. The share of cesarean sections has increased significantly in the last decade, but remains below EU average. Both the proportion of elective and emergency cesarean sections increased. In 2019, the proportion of Cesarean sections at the gestational age of 37 was 17.2 percent, lowest in general hospital Jesenice (9.1%) and highest at 30.5%, in Trbovlje.

Very important indicators are post-surgical deep vein thrombosis and lung embolism. The rate of cases of pulmonary embolism per 100,000 admissions due to hip or knee endoprosthesis has been decreasing constantly in the last decade while the data on the lung embolism are less clear, stills showing a slight general decreasing trend. The use of antimicrobials is monitored as well.

4.1.5 Patient and personnel safety

Patient and personnel safety report data on the injuries with sharp objects, falls, foreign bodies in the body after the surgery, methicillin resistant *Staphylococcus aureus* (MRSA) and post-surgical sepsis. Hand hygiene has been improving, but can improve further: overall consistency of hand hygiene has reached 77.5% in 2019.

4.2 Quality strategy

The first National Strategy for Health Quality and Safety was launched in 2010. Its aim was to assure systematic and continuous development of improvements in health care system. The strategy defined numerous strategic objectives, such as the development of quality management systems, the development of a clinical culture of safety and quality within and the development and implementation of education programmes in quality and safety. During the period of the strategy, most hospitals and many other providers accredited their quality management systems through one of the international standards. According to the evaluation [25], National Strategy did not play a sufficient role in the practical implementation of other

measures. A new strategy has not yet been formed, also due to a lack of political will. On a positive note, the National Health Care Plan includes several objectives in the area of quality, such as strengthening of training in quality and safety and patient communication and an update of the quality indicators. Furthermore, several projects, such as ZaPIS [20] or a standardized patient experience measurement in outpatient consultations was set up and survey of patient experiences in hospital care was updated [26].

4.3 Registries

Cancer registries are a service for the systematic collection, storage, analysis, interpretation and presentation of data on cancer patients, their disease and treatment in Slovenia. Cancer reporting is mandatory and legal. More detailed information can be ordered by doctors, researchers and the general public using a special form.

The Cancer Registry is one of the oldest population registries in Europe. It was established in 1950 at the Ljubljana Oncology Institute as a special service for collecting and processing data on all new cases of cancer (incidence) and on the survival of cancer patients. The Cancer Registry of the Republic of Slovenia has been a regular member of the International Association of Cancer Registries since its establishment in 1968, and from the very beginning also of the European Cancer Registry Association [27].

The Health Care Databases Act entered into force in August 2000. The list of databases and registers is defined as an annex, which facilitates the possible amendment of the lists. The annex includes 40 records and 35 registers. Each collection has a defined purpose, reports, data reporter, controller, and data delivery method and data retention time [28].

The endoprosthesis registry contains extended information about the patient, the provider, the prosthesis, the operation, or the reoperation. The collection is managed for: monitoring the survival (time from insertion to removal) of inserted hip and knee endoprostheses, ensuring quality control of endoprosthetic operations, enabling rapid detection of lower quality endoprostheses, indirect reduction of costs of primary and revision hip and knee endoprostheses and as a basis for clinical and epidemiological studies and expert analyzes. The registry manager is hospital Valdoltra, which prepares an annual report on the basis of data sent on an ongoing basis by all providers and other legal and natural persons, regardless of the concession, who perform the arthroplasty medical activity [29].

4.4 National tender and health-related quality of life

The national tender for hip, hernia, varicose vein and carpal tunnel operations was introduced as a mechanism for lowering prices, measuring outcomes and increasing the efficiency of performed health services. The national tender conducted in 2009 increased the availability of tendered health programs, as 13% more services were provided for the same funds due to lower prices offered by the providers. The effects of the national tender 2009 were the basis for further activities of the HIIS in the implementation of purchasing function. Namely, even in the years of the relative lack of additional financial resources, the HIIS tried to increase the accessibility of insured persons to health services in various ways. Based on the tender HIIS managed to increase the number of the surgeries by 6.6% (increase in the number of surgeries from 12,695 to 13,536) and achieve 4.5% savings. At the same time, national tender enabled control over the safety and quality of health services as for the first time a generic measure for health-related quality of life (EQ-5D) was

used to measure changes in the health status of the patients [30]. Further quality indicators were introduced as well, but were unfortunately never analyzed. The results of the EQ-5D analyses represented a very good concept for national implementation, but could not offer deep enough insight to provide recommendations on the reorganization of the health network or the limitation of the scope of services at an individual provider. Unfortunately, HIIS abandoned the national tender after two years of pressure from public providers, and today it does not monitor the results of treatment and the quality of treatment when distributing funds.

4.5 Health technology assessment (HTA)

HTA framework in Slovenia has not been established at the national level. The need to formalize HTA for all health technologies has been known and various initiatives have been present in the system to introduce it. The most developed level of HTA is present in the area of pharmaceuticals, while with other health technologies, HTA process is much more unclear, irregular and unsystematic [31]. HTA in pharmaceuticals is conducted by HIIS. HIIS passed the Rules on inclusion of medicines in the list [32], which define the types of the analysis that can be used, timelines, and decision criteria that are to be followed in the assessment process. The criteria, according to which the pharmaceuticals are evaluated, are clinical effectiveness, safety and cost-effectiveness. Adaptation of the study results to Slovenian setting is demanded and the analysis should use Slovenian data as much as possible.

Consulting body to HIIS, called Pharmaceutical Reimbursement Commission, makes recommendations on the placement of the pharmaceuticals on the positive or intermediate list [31]. These are based on the presented relative therapeutic value and incremental cost-effectiveness ratio of the drug. The latter must be expressed in marginal costs per quality-adjusted life-year (QALY). The threshold for the acceptance of the pharmaceuticals into the public financing is set to 25,000 EUR [33]. The Pharmaceutical Reimbursement Commission members are physicians and clinical pharmacists as well as other experts with systemic knowledge in the field of drugs. Their recommendations are independent.

Other healthcare technologies, especially health care services programmes, are introduced through Health Council. Health Council is the highest advisory body to the Minister of Health. It gives recommendations on introducing new technologies to the Minister, who makes the final decision on their introduction. Upon his decision, the suggestion is made to the HIIS for its public financing and HIIS can make a decision to reimburse the use of new technology or not. The recommendations to the Minister of Health are based on the criteria defined in Procedures on handling the applications for new healthcare programs [34]. The protocol is quite complex and long and consists of several questions on the technology, its safety, target population, clinical effectiveness, costs, and organizational issues. Cost-effectiveness is not included in the protocol.

5. Conclusion

Slovenia is committed to universality, accessibility, solidarity and equality, which are all fundamental values of EU health systems. In the last two decades, measures to maintain the achieved level of development and attempts to accelerate the introduction of innovative solutions to move upwards from the position of the golden mean of the development of EU health systems have continued. Given the high level of development of the health care system in Slovenia, the chapter focuses on the presentation of success in introducing pilot solutions, lack of perseverance in

evaluating pilots before their national implementation and persistent maintenance of implemented system practices. While promoting the quality and safety of the health system and ensuring greater prosperity and faster development, it will be necessary to ensure more appropriate investment in health. Taking into account all the successful steps of upgrading the health care system, investments in staff, knowledge and innovation will be needed in finding a balance between the wishes and real health needs of citizens. Healthcare is a complex system, so comprehensive and systemic solutions are needed; most of them already exist at home.

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Author details

Valentina Prevolnik Rupel^{1*} and Dorjan Marušič²

1 Institute for Economic Research, Ljubljana, Slovenia

2 Health Centre Celjenje, Koper, Slovenia

*Address all correspondence to: rupelv@ier.si

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