Health System Performance Assessment Framework for the Czech Republic

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Foreword

Health System Performance Assessment (HSPA) frameworks have been developed and used increasingly across countries and regions, as a way to bring together stakeholders in the health sector to share common health system objectives and to support their work towards better health system performance. In 2021, the Ministry of Health of the Czech Republic requested technical assistance from the European Commission and the OECD to support the process of developing a national HSPA framework that would enable the national Czech authorities to institutionalise the reporting of health system performance indicators.

An effective HSPA framework should be comprehensive, encompassing all aspects of a health system and its performance. It should incorporate both quantitative and qualitative indicators and should be able to serve as a basis for comparison and benchmarking with other countries, as well as for monitoring regional and socio-economic differences. The framework should also be flexible enough to adapt to changing circumstances, such as changing policy priorities, developments in strategic policy objectives and plans, and developments in the health system itself, such as technological advances and changing population and health needs.

The HSPA framework for the Czech Republic fills a gap in the Czech health system to support an overview of performance, policy planning, monitoring, and decision taking. It was designed via a highly consultative and iterative process, creating an ownership of the developed framework among national authorities and healthcare stakeholders. It is hoped that this will lead to improvements in data use, transparency and accountability among stakeholders, and public awareness of health system performance.

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The author team thanks all the people who shared their views, made suggestions, provided data and feedback during the whole project of developing the Czech HSPA framework and during this report preparation process. Special thanks go to the members of the Principal Working Group and participants of the technical focus groups, and to the members of the High-Level Advisory Board. They include representatives from the Ministry of Health, Ministry of Finance, National Public Health Institute, Institute of Health Information and Statistics, the Czech Statistical Office, statutory health insurance funds and their Association, as well as various other health system stakeholders, including provider and patient representation, health labour unions, and academia.

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Abbreviations and acronyms

MoH	Ministry of Health of the Czech Republic
MoF	Ministry of Finance of the Czech Republic
SZÚ	National Public Health Institute *[Státní zdravotní ústav]*
ÚZIS	Institute of Health Information and Statistics of the Czech Republic *[Ústav zdravotnických informací a statistiky ČR]*
CZSO	Czech Statistical Office *[Český statistický úřad]*
EUROSTAT	Statistical Office of the European Union
VZP	General Health Insurance Fund *[Všeobecná zdravotní pojišťovna]*
HIF	Health insurance fund
SZP	Association of Health Insurance Funds [*Svaz zdravotních pojišťoven*]
HSPA	Health system performance assessment
OECD	Organisation for Economic Co-operation and Development
WHO	World Health Organization
SÚKL	State Institute for Drug Control *[Státní ústav pro kontrolu léčiv]*
KZP	Health Insurance Bureau *[Kancelář zdravotního pojištění]*
EU	European Union
CZE	Czech Republic
EHIS	European Health Interview Survey
SHARE	Survey of Health, Ageing and Retirement in Europe
NRHZS	National Registry of Reimbursed Health Care, a claim data registry [*Národní registr hrazených zdravotních služeb*]
SES	Socio-economic status
PaRIS	Patient Reported Indicator Survey
EU-SILC	European Union Statistics on Income and Living Conditions
NOR	National Oncology Registry [*Národní onkologický registr*]
HLAB	High-Level Advisory Board of the Czech HSPA framework project

Executive summary

Health system performance assessment (HSPA) plays an integral role in ensuring that health systems are high-performing and delivering quality care to their patients. It is a critical tool for healthcare policy makers and is used to ensure that services are meeting the needs of the population, patients, and healthcare providers. The Czech Republic lacked a HSPA framework, and national authorities regarded its development as a valuable approach for measuring and evaluating their health system. The project "Setting up a Framework for Health System Performance Assessment in the Czech Republic" fills this gap by developing a country specific HSPA framework, tailored to the Czech Republic needs and recognised by all health system stakeholders.

The HSPA framework for the Czech Republic is designed to help the Czech health system improve policy planning, monitoring, and decision taking. It resulted from close co-operation between the Czech authorities and health system stakeholders, supported by the technical assistance of the OECD and funded by the European Commission. This report describes the HSPA framework for the Czech Republic, its development process, governance structure and implementation roadmap. It further provides details on the Czech HSPA framework domains, populated by indicators selected through a comprehensive and stakeholder-inclusive review process.

The purpose of the Czech HSPA is to enable the assessment of strengths and weaknesses of the Czech health system, also in the context of international comparisons, and to assess progress made over time. Its implementation will increase the accountability of national authorities and main health system stakeholders, improving public involvement, facilitating the flow of information across the health sector, and allowing reform planning and monitoring. A high-level advisory board, composed of main Czech health system stakeholders, regularly took note of the development of the HSPA framework, and approved its final version and related governance structures and implementation roadmap.

The Czech HSPA framework is composed of 12 domains grouped into 4 areas: Outcomes, Outputs, Processes, and Structures. The domains are further detailed into 28 subdomains, covering different aspects of the Czech health system to align with the defined HSPA purpose and scope. In total, there are 122 indicators populating the Czech HSPA framework, which were selected via a comprehensive multi-stage selection procedure and further clarified with health system stakeholders and health data custodians through written procedure and individual consultations. Most of the indicators are existing and often reported to international databases; there are some further 30 placeholders in different stages of development, missing either a developed methodology, or relevant national data, or both.

The selection process of indicators assessed both their fitness-for-use (data availability and readiness), and fitness-for-purpose (meaningfulness in terms of HSPA framework), along with their benchmarking possibilities for international comparison, regional comparison, and/or time series availability. Considering national health objectives and policy priorities, some HSPA indicators are directly related to strategic priority monitoring.

A governance structure for HSPA was designed to facilitate the co-operation of stakeholders beyond the initial project that designed the framework. The implementation and daily use of the HSPA will be followed by three governance levels, with the Executive Steering Board on the top, formalised through a decree from the Ministry of Health and involving main health system stakeholders and data custodians. The co-ordination body at the Ministry of Health will be complemented by technical groups established at the HSPA indicator custodian institutions. Annual stakeholder conferences should then ensure the continuous involvement of all health sector stakeholders in the HSPA.

The HSPA implementation roadmap is designed for the first 1.5 years of the implementation process, leading to the launch of the first full Czech HSPA report in January 2025, and for subsequent 4-year cycles. The continuity of HSPA has been stressed in its design, allowing for activities taking place regularly. Sustainability of the HSPA process is to be achieved via regularly provided feedback and further HSPA framework refinement to respond to changing policy priorities.

The list of indicators selected in the comprehensive process during the Setting up of the Czech HSPA Framework project shall serve as an input for the HSPA implementation phase. Therefore, this is to serve as a reference guide, providing detailed information on each indicator's possible data disaggregation, benchmarking, methodology, primary data source, data custodian, and indicator custodian, accompanied by identifications of areas where further discussion is needed. Further discussions among HSPA stakeholders are foreseen to develop detailed indicator technical sheets during the implementation phase.

In its effort to establish a national HSPA, the Czech Republic is joining other countries which have been using, or are developing, their own HSPA frameworks. Due to the decentralised nature of the Czech health system, a broad stakeholder involvement in the framework development process was identified as a critical success factor. The report thus takes stock of the Czech framework development and the indicator selection process, which all contributed to the necessary HSPA capacity building in the Czech Republic.

1 Introduction

Health system performance assessment plays an integral role in ensuring that health systems are delivering quality care and health services to their patients. It is a critical tool for healthcare policy makers and is used to ensure that services are meeting the needs of the general population, patients, and healthcare providers. A health system performance assessment involves a routine assessment of performance of the health system overall – health outcomes, healthcare outputs, processes, and structures – in order to identify areas that need improvement, where resources can be allocated more efficiently, and if policy objectives are being met.

The Czech Republic lacked an HSPA framework, which had been considered by the national authorities a valuable approach for measuring and evaluating their health system. Due to the decentralised nature of the Czech healthcare system, in which healthcare responsibilities are shared across the central government, regions, insurers, and healthcare providers, an agreement on the governance structure of the Czech HSPA, together with a broad stakeholder involvement in the framework development process, was identified as a critical success factor from the very beginning of the project.

In mid-2021, the EU-supported project on development of HSPA framework for the Czech Republic was launched. The action was funded by the European Union via the Technical Support Instrument, and implemented by the OECD, in co-operation with the Directorate-General for Structural Reform Support of the European Commission. The expected project outcome was to develop the Czech HSPA framework to enable the national authorities to implement an institutional framework for reporting health system performance indicators.

The present report is one of the key outputs of the Setting up a Framework for Health System Performance Assessment in the Czech Republic project. It describes in detail the final project version of the Czech HSPA framework, its domains and subdomains, and the indicators that were selected for the implementation of the first the Czech HSPA, which should follow up on this project. In addition, the report outlines the HSPA governance structure, agreed on by the main stakeholders, and details out the next steps in the HSPA implementation roadmap. Finally, the report takes stock of the Czech framework development process and the indicator selection process, which all contributed to the necessary HSPA capacity building in the country.

1.1. The Czech HSPA framework project

The Health System Performance Assessment (HSPA) frameworks have been developed and used across countries and regions in the previous decades and have brought stakeholders in the health sector together to share common health system objectives and support them to work together towards attaining higher health system goals. In its effort to establish a national HSPA, the Czech Republic is joining other countries which have been using, or are developing, their own HSPA frameworks. Most recently, the development of national HSPA frameworks has been systematically supported by the European Union (Albreht et al., forthcoming[1]).

The international experience suggests that to serve its purposes, several steps need to be taken to develop an operational country HSPA framework (for more information on concepts behind HSPA frameworks' development and international practices, see Annex A). First, clear HSPA objectives must be defined, together with the scope of the HSPA analysis dimensions and units. Data availability should be reviewed, and policy priorities mapped to HSPA objectives. After an HSPA framework is developed, domains must be populated with relevant indicators that enable regular data updates and reporting in a timely manner. The selection should also consider the requirement of data accessibility and indicator usefulness to multiple stakeholders. Furthermore, the framework should be implemented in an objective, transparent, and consistent manner, and include quality assurance mechanisms, such as stakeholder review and consultation. Finally, each HSPA needs to be tailored to the needs of the specific country where it is implemented, so that the framework is relevant and meaningful for national priorities.

The Czech project of setting up an HSPA framework followed this international experience and practice. Moreover, the framework development and the indicator selection processes were managed in an inclusive, highly consultative, and iterative manner to support the feeling of ownership of the developed framework among national authorities and healthcare stakeholders. Figure 1.1 shows the overview of the Czech HSPA framework development project and Figure 1.2 depicts the project teams. The project was launched in September 2021 and ended in June 2023. The official launch event of the newly set the Czech HSPA framework took place on 24 May 2023, in Prague.

Figure 1.1. Overview of the Czech HSPA framework project

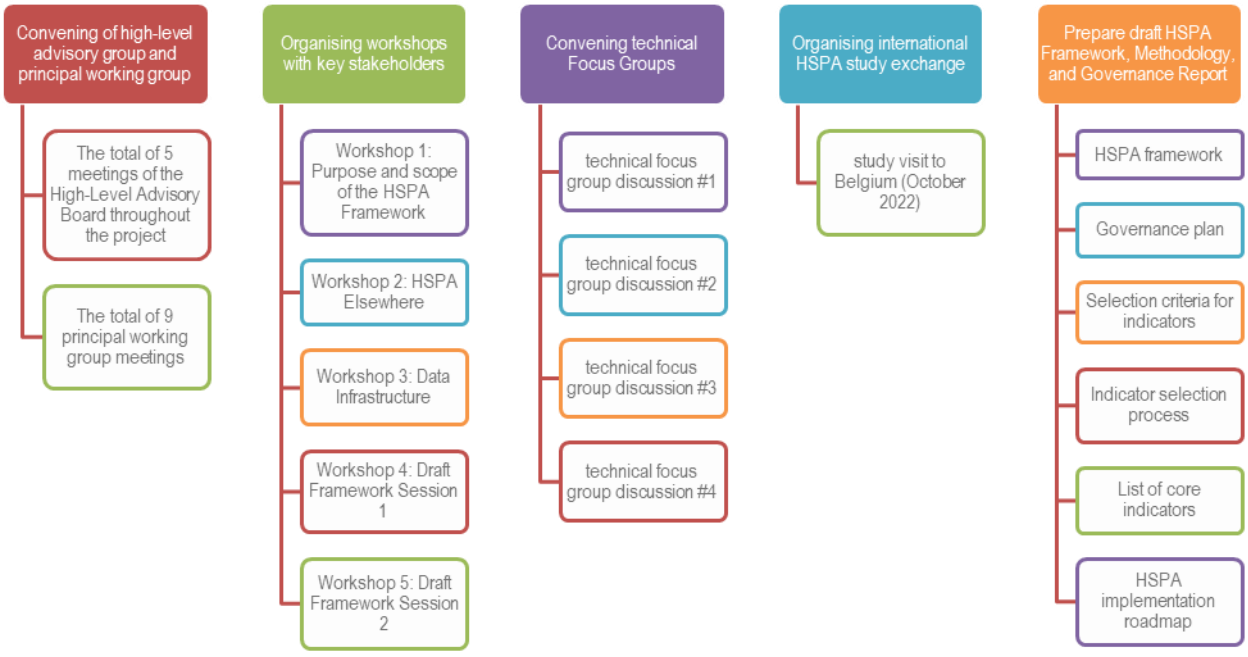
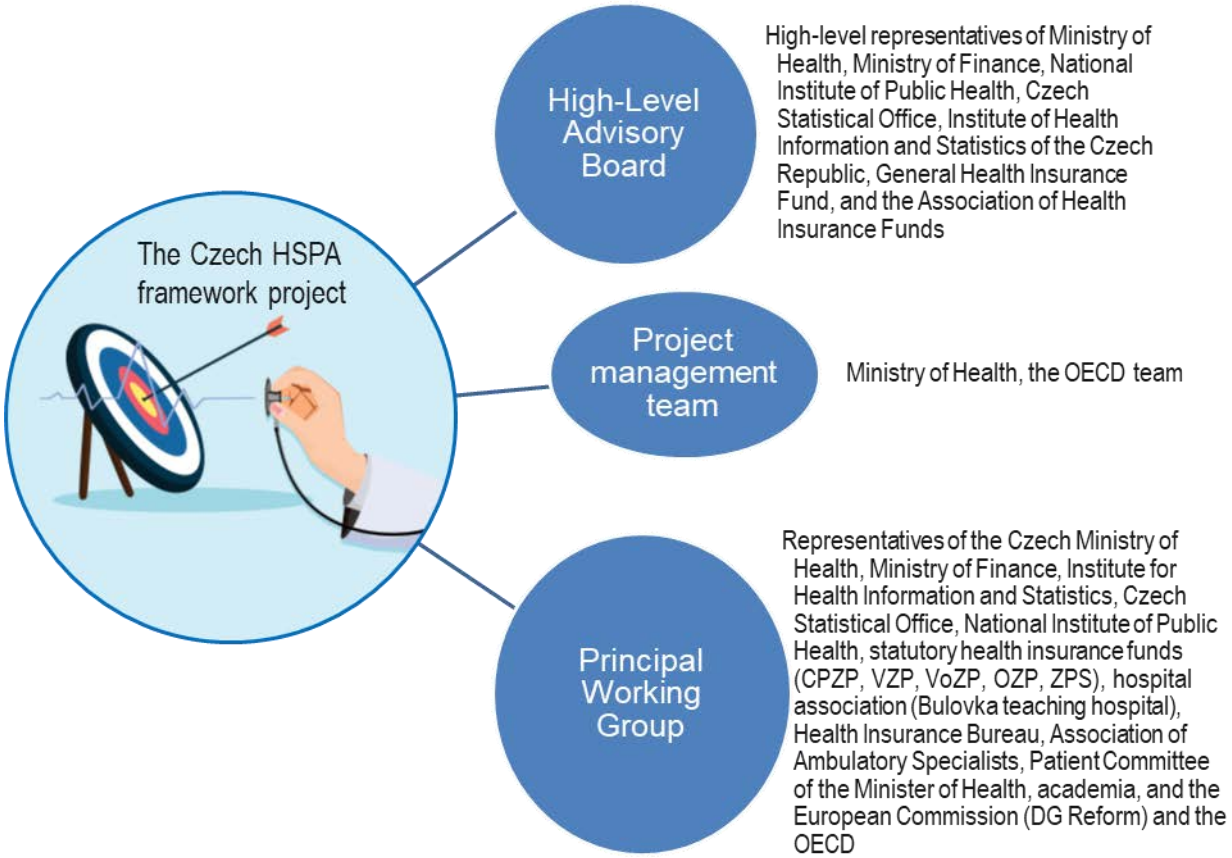


Figure 1.2. Project teams and their members



The project was steered by a high-level advisory board (HLAB). Its members included high-level representatives such as deputy ministers, directors, and heads of departments of involved stakeholders. The HLAB overviewed the whole project and oversighted its development. While following the project progress, it provided organisational perspectives and inputs on developed materials, and agreed on project intermediate and final outputs.

The project management team was composed of representatives of the Ministry of Health and the OECD team, and it met regularly during the whole project, prepared meeting agendas and meeting documents, and formulated proposals to be discussed during the working group and HLAB meetings. The OECD team provided the international expertise and knowledge, steered and moderated stakeholders' discussions, and conducted review of available Czech health and health system data and its infrastructure, inter-institutional data flow and information sharing.

During the project, the total of 9 principal working group meetings took place (Table 1.1). Five of these meetings took the form of a dedicated workshop. As part of the project, the OECD also analysed the current the Czech health data landscape, carried out a series of 4 technical focus group discussions, and supported an international HSPA study exchange. These activities supported the development of the HSPA framework and were part of the inclusive indicator selection process (see Annex C).

Table 1.1. Principal Working Group meetings and workshops

Date	No of participants	Topic of the meeting
1 October 2021	35	The purpose and scope of the HSPA Framework in the Czech Republic
9 November 2021	40	HSPA Elsewhere – experiences with HSPA in other countries
27 January 2022	35	Czech Health Data Infrastructure – review of available health and health system data infrastructure, inter-institutional data flow and sharing
4 April 2022	30	Draft Framework Session 1 – searching for HSPA themes and domains search
5 April 2022	30	Draft Framework Session 2 – HSPA framework drafting
25 January 2023	27	HSPA framework update and next steps
24 March 2023	25	Populating the framework (part I)
27 March 2023	25	Populating the framework (part II)
24 April 2023	25	Finalising the framework

For additional information

Annex A: Concepts behind HSPA framework development and international practices.

Annex C: Process of determining the Czech HSPA framework domains.

- HSPA framework development workshops
- Technical focus groups
- Study visit to Belgium

2 The purpose and scope of the Czech HSPA

This section describes the scope and purpose of the Czech HSPA and the process that led to its definition and mutual recognition among the involved stakeholders. It also shows the links the HSPA has with regard to the national strategic priorities in health and health policy. More information on operationalising the HSPA and the Czech strategic development Health 2030 is provided in Annex B.

2.1. The process

The purpose and scope of the Czech HSPA was developed through consultations with the members of the principal working group and the high-level advisory board (HLAB). A dedicated working group workshop was held on the topic on 1 October 2021. Based on this workshop and subsequent consultations, the HLAB members noted the first draft of the HSPA Purpose and Scope during its meeting in January 2022 and the detailed version of it during the meeting in June 2022. This detailed version profited from further refinements and clarifications, mainly in accordance with the gradual development of the HSPA framework, the technical focus groups, and consultations with working group members.

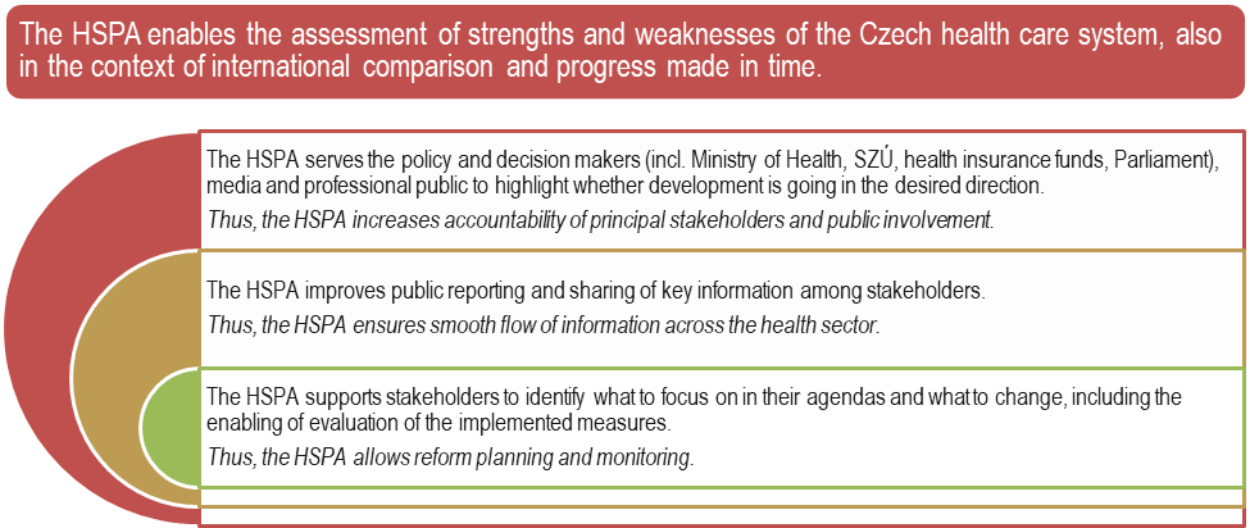
From the very beginning of the project, project participants identified a significant value in having a dedicated the Czech HSPA and stressed the need to create a sustainable HSPA governance from the very start of its implementation. In January 2023, the HLAB approved the proposed HSPA governance structure which clearly links the HSPA main outputs to the defined HSPA purpose and scope (see Section 5.3).

2.2. The Czech HSPA purpose

The approved purpose of the Czech HSPA is illustrated in Figure 2.1. The Czech HSPA aims to support healthcare stakeholders in their effort to attain the ultimate goal of the Czech healthcare system. This goal is defined by the Strategic Framework for Health Care Development in the Czech Republic to 2030 (the so-called Health 2030) as follows: "*The health status of all population groups is continuously improving.*" This is further detailed out in the strategic document's introductory section (MZČR, 2020[2]).

The HSPA implementation is aimed at increasing accountability of principal stakeholders, improving public involvement, ensuring smooth flow of information across the health sector, and at allowing reform planning and monitoring. Overall, the HSPA framework will enable the assessment of strengths and weaknesses of the Czech healthcare system.

Figure 2.1. The purpose of the Czech HSPA



Source: The Czech HSPA project.

2.3. The scope of the Czech HSPA

The HSPA primarily serves as a tool providing for an overview of (un)desirable development in health sector domains of interest. The HSPA is not intended to substitute a specific analysis on a given issue, however. It may indicate causes of a particular development, but not necessarily provide analysis of the cause itself.

According to the Czech HSPA purpose, the HSPA shall also improve the information disclosure on state of the Czech healthcare sector, on the population health status, and on healthcare outcomes, enabling country comparisons, time trend analyses, and population subgroups overview. In line with this, the scope of the framework shall provide an overview for the assessment in the following categories:

- health status development,
- changes in health sector performance,
- healthcare quality development,
- outcomes and impacts of health policy measures and health system investments both in public health domain and in healthcare provision,
- the accessibility of healthcare for population subgroups in terms of geography, time, and financing.

2.4. Linking the Czech HSPA to national strategic priorities

The Czech HSPA purpose and scope explicitly addresses the need for the framework to monitor policy priority areas. Thus, the HSPA domains and indicators were selected (see Sections 3 and 4) taking the national health objectives into account and some of the indicators are in direct match with the indicators included in the strategic priority monitoring.

The Strategic Framework for Developing Healthcare in the Czech Republic to 2030 (called “Health 2030”) was first approved in 2019 and revised in 2020 due to the COVID-19. The Ministry of Health and its subsidiary bodies are responsible for its delivery until the end of 2030. The Health 2030 strategy builds on and includes previous national health strategies, including the Health 2020 strategy, the National eHealth

Strategy, Primary Care Reform and Psychiatric Care Reform. For goals of the Health 2030 strategy, please see Annex B. Other recent health policy strategic documents include for instance the National Oncology Plan, approved by the government in June 2022.

During the indicator review and selection process, special attention was thus paid to indicators related to the primary care, mental health care, dental care, cancer care, and palliative care. Access, quality, integrated care delivery, prevention, and workforce feature among the Czech health policy priorities and at the same time are an integral part the HSPA framework itself (see Section 3.2).

To monitor policy priority achievements and reform progress for mentioned types of care, the Czech HSPA framework offers multiple assessment perspectives across its domains. For instance, strengthening of primary care can be monitored across several HSPA domains' perspective: the accessibility to care provision, the level of care continuity, the quality of care co-ordination, appropriateness of care, workforce capacity, and equity in service provision. Other policy priorities, such as quality of care, are directly aligned with a particular domain of the framework.

For additional information:

Annex B: Defining the HSPA scope and purpose in line with national health priorities.

- Operationalising the Czech HSPA scope and purpose
- The Health 2030 strategy goals

3 The Czech HSPA framework

This section presents the Czech HSPA framework and describes its domains and subdomains. While taking account of the development process that led to establishing and recognising common HSPA framework across health sector stakeholders, the stock of this project's activities is described in Annex C.

3.1. The process

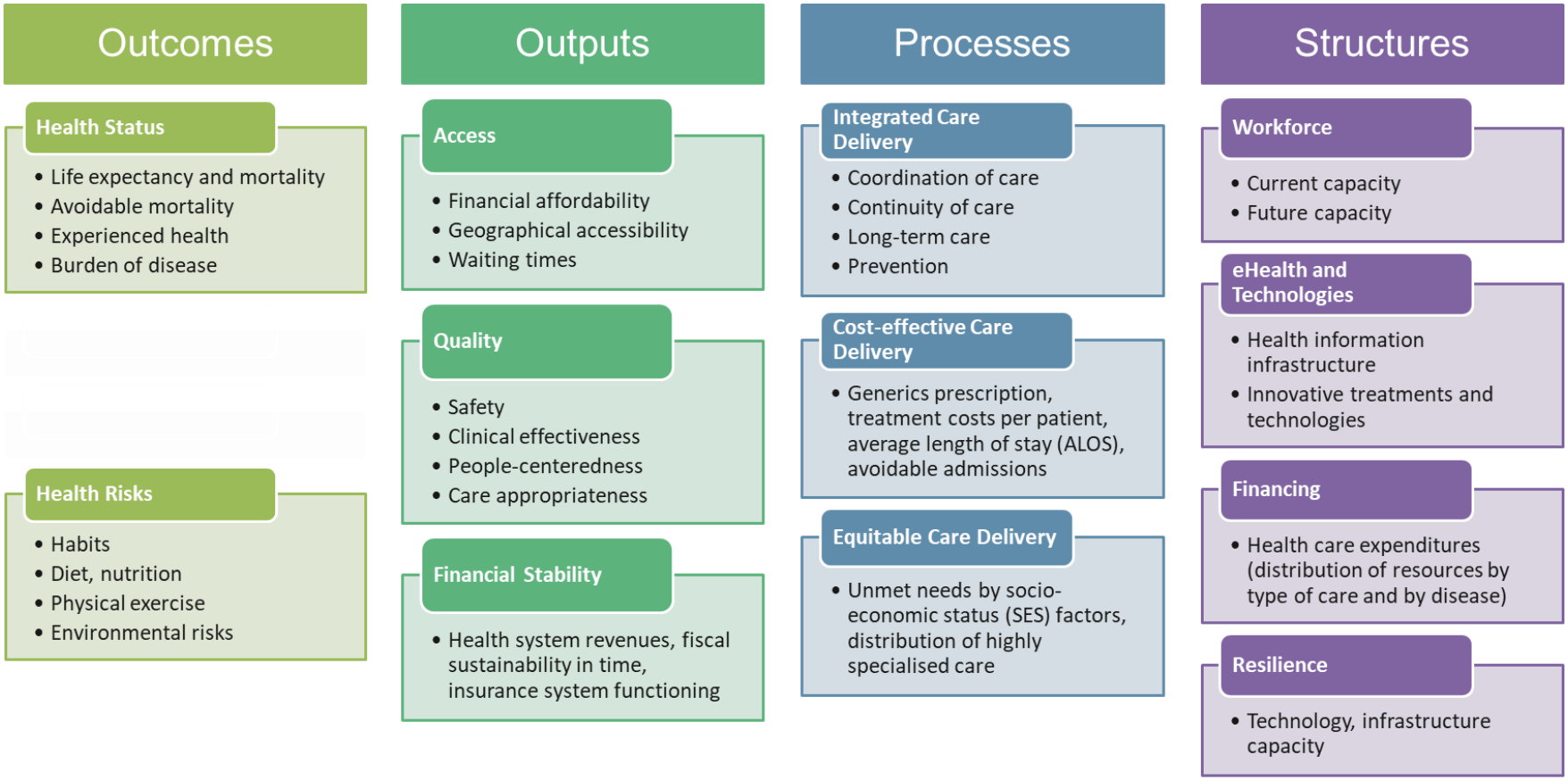
The Czech HSPA framework was developed in several iterations. The first draft was the output of interactive sessions of workshops 4 and 5, held in April 2022 (see Annex C). The working group members generated themes and ideas that were then grouped into common domains.

The framework was further elaborated on and refined throughout the next project phases, following the discussions and suggestions raised during the focus group meetings, the project management team meetings, the indicator selection process consultations, and the inputs from the High-Level Advisory Board members. The later took regular note of the framework development and approved the final version of the Czech HSPA framework on its meeting in April 2023.

3.2. The Czech HSPA framework domains, and subdomains

The Czech HSPA framework is composed of 12 domains grouped into 4 areas: Outcomes, Outputs, Processes, and Structures (Figure 3.1). The domains are further detailed out by 28 subdomains, covering different aspects of the Czech health system to align with the defined HSPA purpose and scope (see Sections 2.2 and 2.3).

Figure 3.1. The Czech HSPA framework



Source: The Czech HSPA project.

The ultimate Outcomes of the health system are covered within the Health Status domain, looking at life expectancy and mortality, avoidable mortality, people's experienced health, and burden of disease. The domain of the Health Risks is placed a little aside because it focuses on people's lifestyle and environment, which is not a direct outcome of a health system, but can be influenced, to some degree, for instance by prevention campaigns and improved health literacy. This domain thus covers topics grouped into lifestyle habits such as smoking and alcohol consumption, healthy diet, physical exercise, and risks imposed by the living environment.

The three domains in the Output area include measurements of the direct outputs of the health system, focusing on healthcare accessibility and quality and health system financial stability. The Access domain involves the three dimensions of accessibility of health services, along the definitions of healthcare financial affordability, geographical accessibility, and waiting times. Complementarily, the Quality domain features topics of healthcare safety, clinical effectiveness, people-centredness, and care appropriateness. Finally, the Financial Stability domain looks at health system revenues, fiscal sustainability, and the public health insurance system functioning.

The area of Processes describes what is happening in the health system to reveal strengths and weaknesses related to healthcare organisation and delivery. Under the Integrated Care Delivery domain, the co-ordination of health services is described as processes involving interactions of various healthcare providers, which are usually required to care for chronically ill people. Simultaneously, the Continuity of Care subdomain describes patient pathways and the smoothness of care delivery for a single diagnose or health event, and the Long-Term Care and Prevention subdomains complement the Care Integration domain. The second domain of Processes involves Cost-effective Care Delivery, focusing on areas where cost-effectiveness measurement is feasible: prescriptions, treatment costs, length of hospitalisations, and avoidable admissions. The Equitable Care Delivery aims to describe the inequalities in healthcare consumptions based on socio-economic status, looking in particular at unmet healthcare needs due to specific reasons and for specific groups of population.

The last area of the Czech HSPA framework covers structures of the healthcare system, ranging from domains focusing on health workforce, to those focusing on eHealth and technologies, financing, and health system resilience.

The detailed description of subdomains of the Czech HSPA framework is provided in Table 3.1.

Table 3.1. Description of the Czech HSPA domains and subdomains

Area	Domain	Subdomain	Description
Outcomes	Health status	Life expectancy	The "life expectancy" area analyses life expectancy, healthy life expectancy and the main causes of death.
Outcomes	Health status	Avoidable mortality	The area of "avoidable mortality" aims at monitoring deaths from preventable or treatable causes.
Outcomes	Health status	Experienced health	The patients subjective experience of their own health
Outcomes	Health status	Burden of disease	The "burden of disease" area analyses the incidence and prevalence of the most common diseases and the occurrence of comorbidities.
Outcomes	Health Risks	Habits	Monitoring of behaviour related to risky lifestyle (i.e. substance abuse)
Outcomes	Health risks	Diet, nutrition	Monitoring of behaviour related to eating habits and diet
Outcomes	Health risks	Physical exercise	Monitoring of behaviour related to active lifestyle (i.e. physical exercise)
Outcomes	Health risks	Environmental risks	Monitoring of environmental risks for health.
Outputs	Access	Financial affordability	Financial affordability of healthcare services for the patients
Outputs	Access	Geographical accessibility	Geographical accessibility of healthcare services
Outputs	Access	Waiting times	Accessibility of health services in time

Area	Domain	Subdomain	Description
Outputs	Quality	Safety	Safety of care may be defined as "the degree to which the system does not harm the patient"
Outputs	Quality	Clinical effectiveness	Effectiveness of care is 'the degree of achieving desirable outcomes and the degree to which care is provided according to evidence (EBM).
Outputs	Quality	People-centredness	The patients' subjective experience with the health system
Outputs	Quality	Care appropriateness	Appropriate care is healthcare that is relevant with regard to the patient's health status, clinical needs and current knowledge (i.e. care provided by a provider with the right expertise or level of specialisation, in the right time)
Outputs	Financial stability		Analysis of the income side of the system, analysis of the financial resources of the system and their stability (and sufficiency) over time.
Processes	Integrated care delivery	Coordination of care	Ongoing co-ordination of multiple providers in the care of a chronically ill patient, including measurement of the consequences of insufficient co-ordination (e.g. avoidable hospitalisations). (E.g., care of an ophthalmologist, diabetologist and GP for a patient with diabetes)
Processes	Integrated care delivery	Continuity of care	It measures the patient's journey through the system (patient pathway), the continuity of patient care between individual providers within a single diagnosis (e.g. early rehabilitation after a heart attack)
Processes	Integrated care delivery	Long-term care	Indicators describing the functioning of long-term care and home care.
Processes	Integrated care delivery	Prevention	Ability of the system to avoid the occurrence of a disease (primary prevention, e.g. using vaccination), or to identify a disease as early as possible in order to initiate treatment without delay (secondary prevention, e.g. screening programmes).
Processes	Cost-effective care delivery		The indicators measure ways of providing healthcare that are considered cost-effective. It also measures the consequences of care failure, such as avoidable admissions.
Processes	Equitable care delivery		Availability of healthcare services to patients regardless of their sex, age, education or income
Structures	Workforce	Current Capacity	Current availability and capacity of medical personnel
Structures	Workforce	Future Capacity	Future availability and capacity of medical personnel
Structures	eHealth and technologies	Health information infrastructure	How fast and how easily are health-information accessible for the patient and for relevant providers
Structures	eHealth and technologies	Innovative treatments and technologies	Availability of hi-tech equipment and innovation in the healthcare sector
Structures	Financing		Analysis of the expenditure side of the healthcare system (e.g. by types of care, diagnoses)
Structures	Resilience		Ability of the healthcare system to absorb, respond to and adapt to unexpected events.

Source: The Czech HSPA project.

For additional information:

Annex C: Process of determining the Czech HSPA framework domains.

- HSPA framework development workshops
- Technical focus groups
- Study visit to Belgium

4 Populating the HSPA framework with indicators

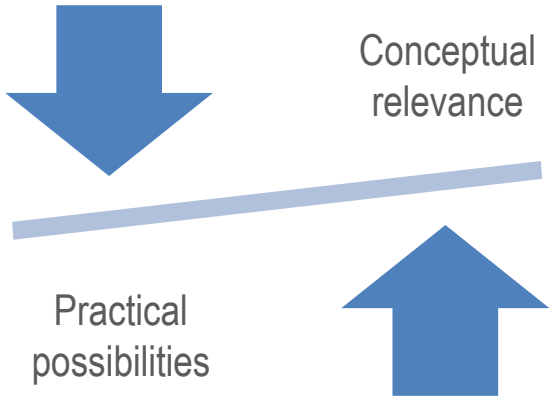
This section reviews the indicator selection process and criteria applied to populate the HSPA framework (Section 4.1). The list of indicators selected and suggested for the first the Czech HSPA implementation is provided in Section 4.2. More details on indicators within each domain and subdomain, including information on possible data disaggregation, indicator methodologies, data sources, data custodians, and indicator custodians is provided in Annex D.

4.1. Indicator selection process and criteria

The selection of indicators for populating domains relies on two main concepts 1) the meaningfulness of the indicator for performance assessment and 2) quality of underlying data and feasibility of measurement. A balance must be reached between the conceptual relevance of indicators and the practical possibilities for measuring and reporting on the selected indicators (Figure 4.1). Not all selected indicators must be fully feasible and usable at the moment of the design of the HSPA – some may be aspirational – but conisation should be given to the commitment and capacity to develop and operationalise these indicators as part of the HSPA implementation plan.

For the purposes of the Czech HSPA, selection criteria for indicators also included an assessment of health system strategic priorities and goals dimensions (e.g. efficiency, resilience, access, person-centredness, and quality of care) and desired performance sub-dimensions. Other considerations included the feasibility of reporting on the indicators, the validity and reliability of selected indicators, and applicability for international benchmarking. In the final selection process, a third aspect was also considered – indicators selected for a specific domain or subdomain were assessed as a group. The criteria applied focused on whether the selected indicators as a group describe the (sub)domain in its entirety. In other words, a group of excellent, relevant indicators calculated from reliable data may not be enough if those indicators describe the given domain, or subdomain, only in part and not entirely. In such case, discussions were held in the principal working group on enlarging the indicator group by another existent or placeholder indicator to capture the full scope of a (sub)domain.

Figure 4.1. Trade-off considered in HSPA indicator selection



Source: The Netherlands HSPA Development.

Box 4.1. International experience with selecting HSPA indicators

Countries have taken different approaches in the selection of indicators to populate their HSPAs during the development process. Malta scored indicators on three criteria: 1) importance 2) feasibility and 3) scientific soundness. The importance criteria accounted for 40% of the score, and the other two criteria accounted for 30% each. Indicators scoring above 60% were considered for inclusion. In Latvia, indicators were scored on value (usability to assess a benchmark/goal) and ability to assess trends. Ireland also assessed indicators on two main dimensions: fit for purpose (alignment to HSPA functions) and if they are fit for use (measurable and methodologically robust).

In Slovenia, indicator selection was achieved via a consensus development process. Indicator performance is then combined with 0-3 "Importance score" in reporting. The Netherlands also used a consensus development process, looking at both the healthcare system's objectives to determine the indicator domains and relevant indicators to be used, while at the bottom the data sources and scientific state of the art determine the data availability and reliability to populate indicators.

The discussion on potential indicators for the Czech HSPA was launched in the working group during its 5th workshop in April 2022, after the first draft of HSPA framework was developed. The discussion has benefitted from an overview of health data availability and data and information flow landscape in the Czech Republic, prepared as a meeting background document by the OECD team; an overview of the Czech health data custodians is provided in Annex E. First ideas on possible indicators were collected from the break-out group brainstorming on possible indicators during this workshop.

Following the first draft of HSPA report, multiple technical focus groups were held to discuss data availability and possible indicators in particular domains in detail, with the OECD team providing international expertise and knowledge inputs into the national experts' discussion; for an overview of technical focus groups see Annex C.

As an initial step for the indicator selection process, a long list of more than 1 400 indicators was composed at the Ministry of Health. The list included indicators reported and published by the main health data custodians in the Czech Republic; indicators reported by the Czech Republic to international databases such as Eurostat and OECD; indicators published by international organisations and projects based on nationally submitted data (such as the OECD's Potential years of life lost, and SHARE survey results); indicators featuring in the Czech health sector strategic documents; and indicators developed as placeholders from the various technical discussions held during this project.

Due to the nature and process of collecting indicators for the long list, some indicators were featuring more than once on the list (drawn from multiple sources) or provided different granularity and/or measuring units for the same data. Hence, the long list was shortlisted by the project management team to approx. 400 indicators. The shortlist was created mainly by removing duplications and by grouping similar and overlapping indicators together under one indicator name. Furthermore, priority was given to indicators reflecting national health system strategic priorities and goals, the availability and feasibility of indicator reporting, the validity and reliability of primary data, and the applicability of international benchmarking.

Majority of those indicators were already in use, regularly reported to Eurostat, OECD, or other international organisations.

The shortlist of approx. 400 indicators was sent to members of principal working group. The members were given several votes in each subdomain that they could use to select indicators that would – in their view – serve the best the purpose of HSPA (Table 4.1). They were asked to assess both the fit-for-use of each individual indicator and the fit-for-purpose of individual indicators as well as the group of indicators that they choose to vote for in each subdomain.

Table 4.1. Number of votes by subdomains assigned in the indicator scoring exercise

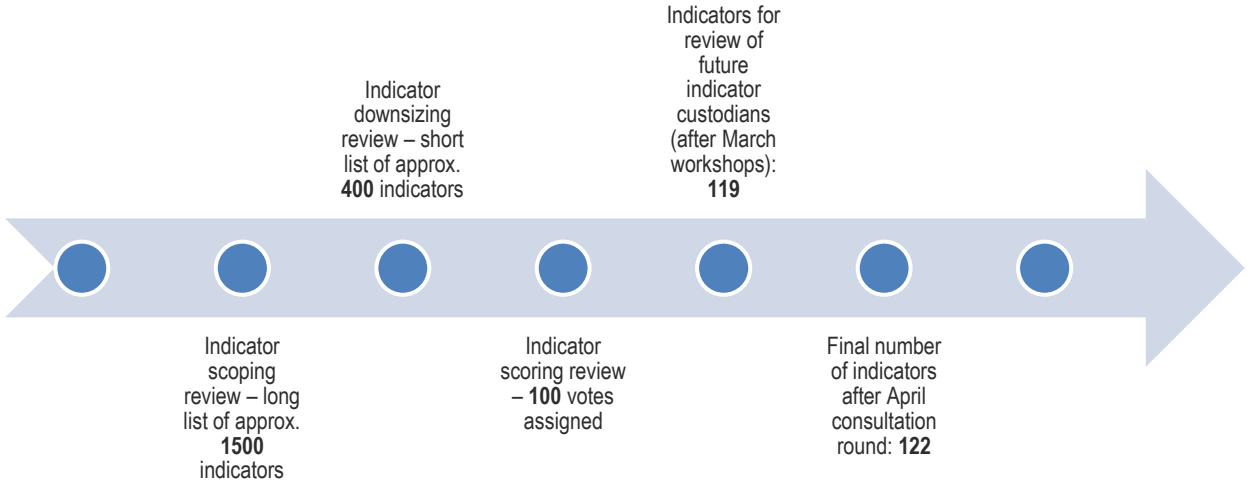
Domain	Subdomain	No of votes assigned for the scoring exercise
Health Status	Avoidable mortality	2
Health Status	Burden of disease	6
Health Status	Experienced health	2
Health Status	Life expectancy	7
Health Risks	Diet, nutrition	2
Health Risks	Environmental Risks	2
Health Risks	Physical exercise	2
Health Risks	Habits	4
Access	Financial access	2
Access	Geographical access	2
Access	Waiting times	2
Quality	Care appropriateness	6
Quality	Clinical effectiveness	4
Quality	People-centredness	2
Quality	Safety	3
Financial Stability		4
Integrated care delivery	Continuity of care	2
Integrated care delivery	Coordination of care	2
Integrated care delivery	Long term care	2
Integrated care delivery	Prevention	6
Cost-effective care delivery		6
Equitable care delivery		2
Workforce	Capacity	6
Workforce	Future needs	2
Workforce	Shortage	2
eHealth and Technologies	Health information infrastructure	3
eHealth and Technologies	R&D and health technologies	1
Financing		7
Resilience		7

Note: The votes were assigned to domains and subdomains according to the draft the Czech HSPA framework as of February 2023. Small adjustments were yet made to the HSPA framework following the results of the indicator scoring exercise and the subsequent expert consultations.
Source: The Czech HSPA project, February 2023.

The total of 24 experts from 16 institutions participated in the indicator scoring exercise, representing healthcare providers (26%), patients (10%), the system view (42%), and health insurance funds (21%). The votes assigned by individual experts were weighted to account for the fact that various stakeholder groups (e.g. patients vs providers) were not equally represented. The choice of indicators across domains was surprisingly unanimous among stakeholder groups, which made the pre-final selection of indicators largely consensual.

The results of stakeholder voting were presented back to the principal working group for feedback and further discussion during workshops 7 and 8 (held in March 2023), providing detailed discussion on each individual selected indicator as well as on the (sub)domain's indicator entirety. A few ideas and suggestions came up during those workshops, which led to further refinement of the HSPA framework and to withholding some indicators and adding few others. The list of 119 indicators was sent for review to the main the Czech data custodians and individual consultations of HSPA project management team were then held with representatives of institutions that shall be the indicator custodians of most of the HSPA indicators. In-depth discussions were held with CZSO, National Institute for Public Health, and UZIS. Various data sources were considered for indicators with data source options, sometimes an indicator was replaced by a similar yet more relevant one; in some cases, an indicator was excluded for known problems with primary data validity. The final list of 122 indicators was sent to the principal working group for a final review and presented during the last principal working group meeting in April 2023.

Figure 4.2. Indicator selection process to populate the Czech HSPA framework

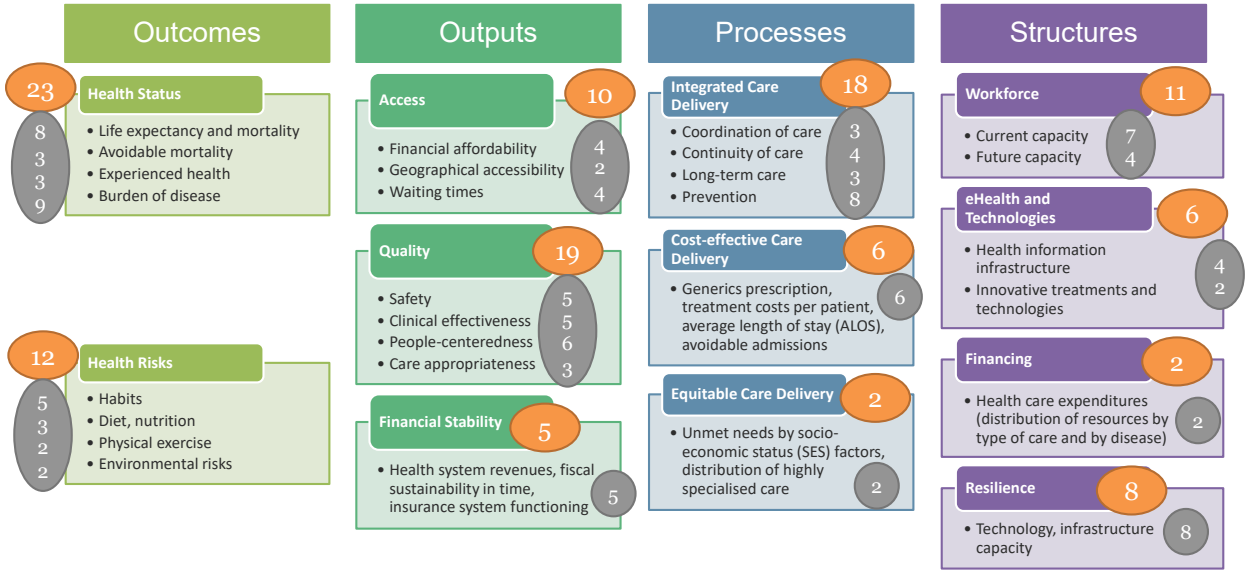


Source: The Czech HSPA project.

4.2. Indicators selected for the Czech HSPA

In total, 122 indicators were chosen to populate the Czech HSPA framework. The choice was made through the iterative process of consultations with the working group's members. This process benefited from the scoping and the scoring exercise as described in Section 4.1 above. As the emphasis was put on data availability, most of the indicators come from existing sources and are ready to be implemented for the first round of the HSPA in the Czech Republic. However, some 32 other indicators are placeholders, where further development is needed. These are of two types. Primary data may be already existent (are collected), but there is not yet a clear consensus on the indicator methodology. Or, alternatively, an indicator has been inspired by an existing indicator methodology in another country or international organisation and its methodology needs to be localised to the Czech content and data availability requires checking and/or further development. Figure 4.3 presents the numbers of indicator in each framework domain and subdomain.

Figure 4.3. The final number of indicators per (sub)domain in the Czech HSPA framework



Note: Number of indicators for domains are in yellow circles, number of indicators for subdomains are in grey circle.
Source: The Czech HSPA project.

The Table 4.2 presents the list of selected indicators by the 12 HSPA framework domains and the 28 subdomains. For each indicator, information is provided on the domain, subdomain and indicator title. Detailed information on indicators is provided in Annex D. Indicators were selected to reflect the scope and depth of individual domains but also to reflect ongoing health-reforms or to shed light on existing problems – such as the state of mental health, financial affordability of dental care, progress in e-health and others. The list of indicators selected during this project shall serve as an input for the next HSPA implementation phase. Further discussions among HSPA stakeholders, mainly the data custodians and suggested indicator custodians, are foreseen and deemed appropriate to develop detailed technical sheets for each individual indicator (see Section 6.2).

Annex D provides detailed information on indicators per framework domains. For each domain, a summary of selected indicators is provided together with a dedicated table. This table includes information on each indicator's possible data disaggregation, possible benchmarking (international, regional, and time series, if available), indicator methodology, primary data source, data custodian, and indicator custodian. Primary data source can be health insurance administrative data (claim data from providers, custodied by the UZIS in the National Registry of Reimbursed Health Care, NRHZS), clinical or population registry data, and various reporting and survey data. In the last case, name of the survey is also provided. Data custodian indicates the institution, which is responsible for collecting the data and its custody, whereas indicator custodian is the institution responsible for contextualising and interpretation of the indicator within the Czech HSPA. In many cases, data custodian and indicator custodian is the same institution, while in other the data and indicator custodians differ.

In certain cases when alternatives exist, decision has yet to be taken on the choice of the data source, which will have a direct impact on the possible indicator disaggregation. Discussions during the HSPA implementation phase are foreseen for instance on the selection of survey data versus administrative (claim) data for particular indicators. While the former allows for socio-economic status disaggregation, the latter are more accurate and allow for regional comparison. Similarly, in case of some other indicators further discussions are to be held on the use of international versus national survey results.

Table 4.2. List of proposed indicators for the Czech HSPA

The list of proposed indicators is the result of iterative consultation process held with the Principal Working Group members and other experts and the indicator scoping and the scoring exercise and shall serve as an input to the HSPA implementation phase.

Domain	Subdomain	Indicator name	Indicator status
Health Status	Life expectancy	Life expectancy at birth, by gender (Years)	Existent
Health Status	Life expectancy	Healthy life years at birth, by gender (Years)	Existent
Health Status	Life expectancy	Life expectancy, by gender (Years)	Existent
Health Status	Life expectancy	Healthy life years at 65, by gender (Years)	Existent
Health Status	Life expectancy	Main causes of mortality (%)	Existent
Health Status	Life expectancy	Peri-neonatal mortality by age of mother, by residence and occurrence (hlth_cd_aperro)	Existent
Health Status	Life expectancy	Mortality from circulatory diseases (specific disease rate per 100 000 population (age-standardised))	Existent
Health Status	Life expectancy	Cancer mortality by cancer site (%)	Existent
Health Status	Avoidable mortality	Preventable causes of mortality (number of deaths)	Existent
Health Status	Avoidable mortality	Treatable causes of mortality (number of deaths)	Existent
Health Status	Avoidable mortality	Potential Years of Life Lost (PYLL)	Existent
Health Status	Experienced health	Limitations due to health reasons (EU-SILC)	Existent
Health Status	Experienced health	Self-perceived health by sex, age and degree of urbanisation (hlth_silc_18)	Existent
Health Status	Experienced health	Patient reported outcome measures based on the PaRIS project	Placeholder
Health Status	Burden of disease	Multiple chronic diseases among people aged 65 and over, by gender (% people aged 65 and over with at least two chronic diseases) (SHARE)	Existent
Health Status	Burden of disease	Standardised trend of causes of hospitalisation per 100 000 inhabitants	Existent
Health Status	Burden of disease	Prevalence of (selected) chronic diseases and disabilities (EHIS)	Existent
Health Status	Burden of disease	Prevalence of diabetes (% of population aged 15 and over)	Existent
Health Status	Burden of disease	People with health disabilities by gender and age and by the help of another person	Existent
Health Status	Burden of disease	Share of adults at risk of depression (% of population aged 18+ at risk of depression)	Existent
Health Status	Burden of disease	Limitations in daily activities among people aged 65 and over (% people aged 65 and over) (SHARE)	Existent
Health Status	Burden of disease	Comorbidity index by UZIS (the share of population with high comorbidity index based on administrative data)	Existent
Health Status	Burden of disease	Incapacity to work (number per sick-insured population and/or average sick leave length) (sick leaves due to illness, CZSO data)	Existent
Health Risks	Habits	Number of deaths by risk factors	Existent
Health Risks	Habits	Smoking	Existent
Health Risks	Habits	Alcohol consumption	Existent
Health Risks	Habits	Estimate of cardio-vascular risks	Existent
Health Risks	Habits	Health literacy	Placeholder
Health Risks	Diet, nutrition	Metabolic syndrome	Existent
Health Risks	Diet, nutrition	Body mass index (BMI) by sex, age and country of birth (hlth_ehis_bm1b)	Existent
Health Risks	Diet, nutrition	Frequency of drinking sugar-sweetened soft drinks by sex, age and body mass index (hlth_ehis_fv7m)	Existent
Health Risks	Physical exercise	Effort involved in performing work-related physical activity by sex, age and degree of urbanisation (hlth_ehis_pe1u)	Existent
Health Risks	Physical exercise	Performing (non-work-related) physical activities by sex, age and degree of urbanisation (hlth_ehis_pe3u)	Existent
Health Risks	Environmental risks	Premature deaths due to air pollution PM2.5 (rate per 100 000 population)	Existent
Health Risks	Environmental risks	Monitoring: air pollution, drinking and bathing water pollution, community noise, contaminants in food chains and dietary exposures, human biomonitoring, occupational health hazards	Existent

Domain	Subdomain	Indicator name	Indicator status
Access	Financial affordability	% reporting unmet medical needs by income	Existent
Access	Financial affordability	Out-of-pocket spending on health as share of final household consumption (%)	Existent
Access	Financial affordability	Share of households with catastrophic health spending by consumption quintile (% of all households)	Placeholder – methodology exists
Access	Financial affordability	Household out-of-pocket spending by type of expenditures (e.g. pharmaceuticals, hospitalisations, outpatient care, dental)	Existent
Access	Geographical accessibility	Average number of patients registered with a GP, by region	Placeholder – data exists
Access	Geographical accessibility	Share of patients for whom primary care is accessible within a geographical limit	Placeholder – data exists
Access	Waiting times	Waiting time of more than two weeks to get an appointment with a specialist (% of population asking an appointment)	Placeholder
Access	Waiting times	Unmet needs for dental examination due to financial, geographic, or waiting time reasons (% of unmet needs)	Existent
Access	Waiting times	Waiting time for a first face-to-face contact in an outpatient mental health care centre	Placeholder
Access	Waiting times	Share of patients for whom primary care is accessible within a geographical limit	Placeholder – data exists
Quality	Safety	Prevalence of healthcare-associated infections (% of patients hospitalised)	Existent
Quality	Safety	Number of hospitals monitoring prevalence of bloodstream infections based on ECDC	Existent
Quality	Safety	Share of selected microorganism resistance based on the EARS-NET methodology	Existent
Quality	Safety	Prevalence of hospital-acquired cat II-IV pressure ulcers (% of patients hospitalised)	Existent
Quality	Safety	Falls in hospitals	Existent
Quality	Clinical effectiveness	Case fatality within 30 days after admission for AMI (pop aged 45+, linked data, percentage)	Existent
Quality	Clinical effectiveness	Case fatality within 30 days after admission for ischaemic stroke (pop aged 45+, linked data, percentage)	Existent
Quality	Clinical effectiveness	Cancer survivals – percentage share by age, sex, and type	Existent
Quality	Clinical effectiveness	Set of indicators on quality of care for patients with stroke	Existent
Quality	Clinical effectiveness	Patients with cancer reviewed by multidisciplinary diagnostic team (% of newly diagnosed cancer patients)	Existent
Quality	Care appropriateness	Datasets on antibiotics use	Placeholder – under development
Quality	Care appropriateness	Caesarean section rate (per 1 000 live births)	Existent
Quality	Care appropriateness	Use of antidepressants (total DDD/1 000 pop/day)	Placeholder
Quality	Care appropriateness	Proportion of adult diabetics with appropriate follow-up (% of diabetic patients under insulin)	Placeholder
Quality	Care appropriateness	Patients who received palliative care (% of terminal cancer patients who died in the year)	Placeholder – methodology exists
Quality	Care appropriateness	Self-reported use of non-prescribed medicines by sex, age and educational attainment level (hlth_ehis_md2e)	Existent
Quality	People-centredness	Doctor providing easy-to understand explanations (%)	Placeholder
Quality	People-centredness	Average rating of healthcare providers in the patient satisfaction survey	Placeholder – data exists
Quality	People-centredness	Patient reported experience measure based on the PaRIS project	Placeholder
Financial Stability		Total revenues of statutory health insurance	Existent
Financial Stability		Total expenditures of statutory health insurance system	Existent
Financial Stability		Health expenditure from public sources as share of total health spending (%)	Existent

Domain	Subdomain	Indicator name	Indicator status
Financial Stability		Health expenditure as a share of GDP (% GDP)	Existent
Financial Stability		Ratio of health insurance funds' reserves to current expenditure	Existent
Integrated care delivery	Coordination of care	Avoidable hospital admissions (diabetes, COPD, CHF, hypertension)	Existent
Integrated care delivery	Coordination of care	Use of emergency care within 5 days after the last visit (after discharge or after outpatient visit)	Placeholder – data exists
Integrated care delivery	Coordination of care	Ratio of GP-registered and GP-nonregistered patients using emergency and out-of-hours care	Placeholder – data exists
Integrated care delivery	Continuity of care	Patient outcomes one year after discharge from stroke and heart failure (crude rate per 100 people)	Existent
Integrated care delivery	Continuity of care	Time from a positive screening for a certain cancer type to treatment	Placeholder
Integrated care delivery	Continuity of care	Timespan between two episodes of care that should follow one another (according to clinical guidelines)	Placeholder – data exists
Integrated care delivery	Continuity of care	General practitioner encounter within 7 days after hospital discharge (% patients 65+)	Placeholder – data exists
Integrated care delivery	Long term care	Long-term care in residential facility (% pop aged 65+)	Placeholder
Integrated care delivery	Long term care	Long-term home nursing care (% pop aged 65+)	Placeholder
Integrated care delivery	Long term care	Polypharmacy among the elderly (5 or more drugs of >80 DDD per year) (% of insured population 65+)	Placeholder – data exists
Integrated care delivery	Prevention	Number of patients attending regular GP check-up	Existent
Integrated care delivery	Prevention	Number of patients attending regular dental check-up	Existent
Integrated care delivery	Prevention	Colorectal cancer screening (% of people screened)	Existent
Integrated care delivery	Prevention	Breast cancer and cervical cancer screenings (hlth_ps_scre)	Existent
Integrated care delivery	Prevention	Vaccination against influenza, people aged 65 (% of people)	Existent
Integrated care delivery	Prevention	Childhood mandatory vaccination	Existent
Integrated care delivery	Prevention	HPV vaccination	Existent
Integrated care delivery	Prevention	% of cancer diagnosed at early stage	Existent
Cost-effective care delivery		Healthcare expenditures from SHI by ICD-10 chapters, by sex by 1 inhabitant	Existent
Cost-effective care delivery		One-day surgical admissions (% of surgical admissions)	Existent
Cost-effective care delivery		ER visits for social, mental or psychic reason (% of admission in ER in general hospitals)	Placeholder
Cost-effective care delivery		Distribution of the number of hospitalisations according to duration and ICD-10 chapters	Existent
Cost-effective care delivery		Hospitalisation and average length of treatment by age group	Existent
Cost-effective care delivery		Use of low-cost medication (% of total ambulatory DDDs)	Placeholder
Equitable care delivery		Self-reported unmet needs for medical examination by sex, age, main reason declared and income quintile (hlth_silc_08)	Existent
Equitable care delivery		Self-reported unmet needs for dental examination by sex, age, main reason declared and degree of urbanisation (hlth_silc_22)	Existent
Workforce	Current capacity	Physicians by sex and age (hlth_rs_phys)	Existent
Workforce	Current capacity	Health workforce migration (hlth_rs_wkmg)	Existent

Domain	Subdomain	Indicator name	Indicator status
Workforce	Current capacity	Practising doctors per 1 000 population	Existent
Workforce	Current capacity	Practising dentists per 1 000 population	Existent
Workforce	Current capacity	Practising nurses per 1 000 population	Existent
Workforce	Current capacity	Share of labour costs due to overtime / contracted working hours / total HR costs	Placeholder
Workforce	Current capacity	Patient-to-nurse ratio	Placeholder
Workforce	future capacity	Medical graduates (per 100 000 population)	Existent
Workforce	future capacity	Nursing graduates (per 100 000 population)	Existent
Workforce	future capacity	Nurses aged 50+ (% of those professionally active)	Existent
Workforce	future capacity	% of physicians aged over 60, or 65, based on [*physicians by sex and age (hlth_rs_phys)*]	Existent
eHealth and Technologies	Health information infrastructure	People searching health information online	Existent
eHealth and Technologies	Health information infrastructure	Share of providers who keep medical records *solely* in electronical form	Existent
eHealth and Technologies	Health information infrastructure	Percentage of physician practices that can share information with hospitals about patients' current medications	Placeholder
eHealth and Technologies	Health information infrastructure	Share of providers who use e-prescription for medical devices	Placeholder
eHealth and Technologies	R&D and health technologies	CT, MRI, and PET exams per 1 000 population	Existent
eHealth and Technologies	R&D and health technologies	State budget expenditures on R&D in healthcare	Existent
Financing		Healthcare expenditure in the Czech Republic by type of care	Existent
Financing		Healthcare expenditure in the Czech Republic by type of care per 1 inhabitant	Existent
Resilience		Long-term care beds in nursing and residential care facilities by NUTS 2 regions (hlth_rs_bdsns)	Existent
Resilience		Supply of ambulatory child- and adolescent mental health care	Placeholder
Resilience		Existence of an early detection drug shortage mechanism	Placeholder
Resilience		Primary care capacity	Placeholder
Resilience		Hospital beds per 1 000 population	Existent
Resilience		Occupancy rate of curative (acute) care beds (%)	Existent
Resilience		Adult ICU occupancy rate (%)	Existent
Resilience		Adult intensive care beds (per 100 000 population)	Existent

Source: The Czech HSPA project, April 2023.

For additional information:

Annex D: List of indicators populating the Czech HSPA framework.

- Overview tables of individual indicators by subdomains, with details on data disaggregation availabilities, methodology, data sources, data custodians, and indicator custodians.
- Infographics showing selected existing indicator and their possible disaggregation, benchmarking, and visualisation.

Annex E: Overview of the Czech health data custodians and data sources

5 The HSPA governance structure

This section describes the proposed the Czech HSPA governance structure that should ensure a smooth implementation of the newly designed and populated HSPA framework into practice. It starts by briefly presenting the context of the Czech health data custodian landscape (Section 5.1). Section 5.2 presents the proposed the Czech HSPA governance structure, which has been approved by the HLAB at its meeting in January 2023. Further, Section 5.3 links the proposed HSPA activities and outputs to the HSPA framework purpose.

5.1. Background on health data custodians

There are various institutions that feel a level of ownership of some health data and databases in the Czech Republic. All of them have been involved in the Setting up the Czech HSPA Framework project from the very beginning, both on the level of High-Level Advisory Board, and on the level of the Principal Working Group. Naturally, the HSPA governance structure is proposed to mirror the governance structure of this project, to build up on the established mutual collaboration and on reached HSPA-related agreements.

A background document was produced by the OECD team for one of the HSPA development workshops. The report described in detail the roles of various institutions within the Czech health data landscape and provided lists of currently reported indicators, by the Czech national institutions and in international context. Further, it analysed data flows and sharing between individual stakeholders and mapped the information landscape. For a summary and an overview of the Czech health data custodians, please see Annex E.

In August 2021, a legislation has been passed, amending the Act on Health Services, which introduced the so-called Resort Reference Statistics (RRS). The law mandates the Ministry of Health to define the RRS statistics in an accompanying legislation act and the RRS statistics will be then published by the UZIS. The by-law has not been passed yet (May 2023) and it has been discussed throughout the HSPA project how to link RRS definition and development to the HSPA framework development. As part of the HSPA project discussions, an agreement has been reached between the MoH and UZIS that HSPA indicators in the custody of UZIS would be listed among the Resort Reference Statistics, while the list of these statistics would be broader, covering areas and statistics also out of the scope of the HSPA.

5.2. HSPA governance proposal

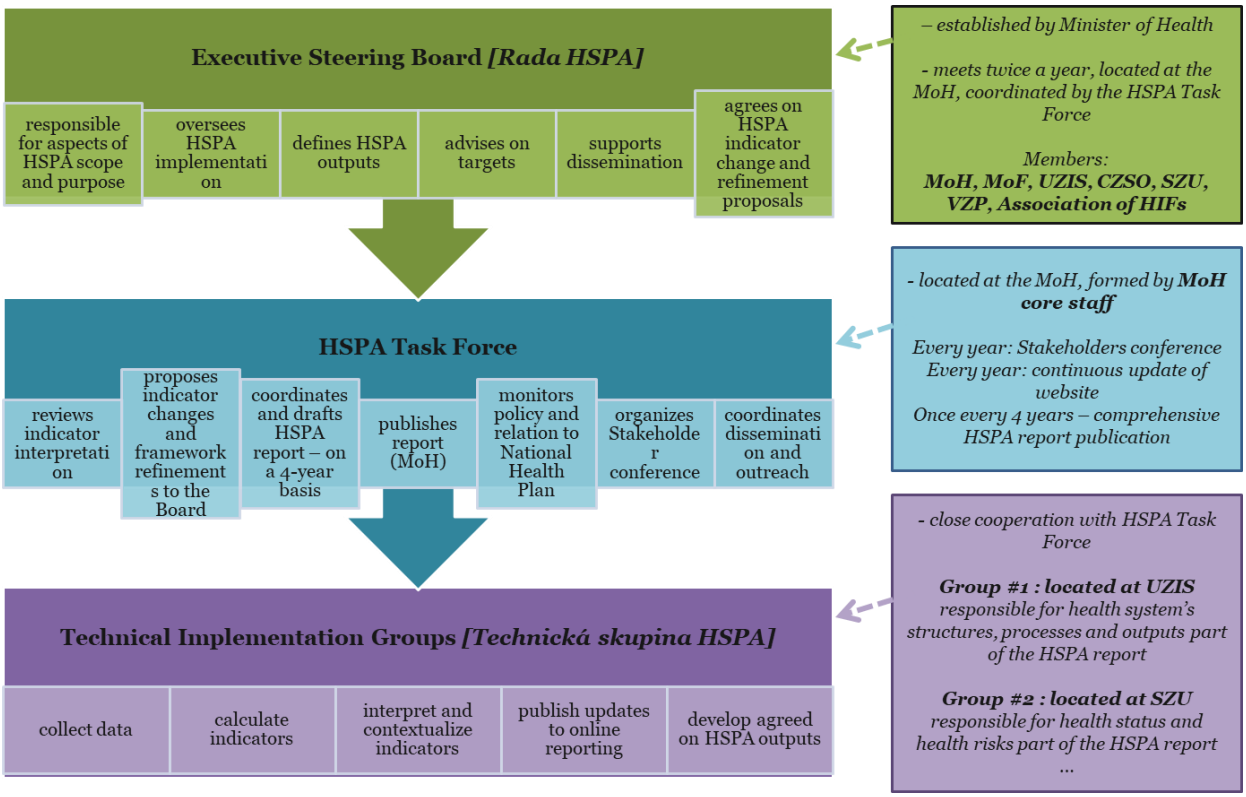
The Czech HSPA framework has been designed to improve public reporting and report sharing, accountability of principal stakeholders, and public involvement, and at the same time to allow for reform planning and monitoring. This purpose has shaped the proposal for HSPA governance structures in the Czech Republic. At the same time, institutional continuity of the HSPA framework development project has been observed, which allows to build the HSPA governance on already established collaboration. Likewise, HSPA shall be a continuous activity, so the governance and its structures are designed to work in cycles.

The HSPA governance structure has 3 levels (Figure 5.1). At the top, there is the Executive Steering Board [*Rada HSPA*]. This body will be established by a Minister's decree, which is a common legislative practice in the Czech Republic for advisory boards to the Ministers, as well as for steering boards of projects that involve more ministries, experts, and interested stakeholders. The HSPA Executive Steering Board would be designed in a similar manner as for instance the CZ-DRG Steering Board, which has a history of almost 5 years now.

The current members of the HLAB will become members of the HSPA Executive Steering Board. These include senior-level representatives from the Ministry of Health (MoH), Ministry of Finance (MoF), the Institute of Health Information and Statistics (ÚZIS), General Health Insurance Fund (VZP), Association of Health Insurance Funds, the Czech Statistical Office (CZSO), and the National Public Health Institute (SZÚ). The main task of the Executive Steering Board would be to define HSPA outputs and support their dissemination; to oversee HSPA implementation and to advise on targets; and to regularly reassess the HSPA scope and purpose. The last one would happen in parallel to approvals of HSPA indicator changes and refinement proposals by the HSPA Task Force (Figure 5.1).

Figure 5.1. The Czech HSPA governance structure

Key bodies and functions of the governance structure



Source: The Czech HSPA project, HLAB meeting in January 2023.

The HSPA Task Force, located at the Ministry of Health and formed by the MoH core staff, would be the second governance layer of the Czech HSPA governance. It will be tasked by supporting the Executive Steering Board meetings and its decisions (by proposing indicator changes and refinements); reviewing indicator interpretation drafted by the Technical Groups; co-ordinating the drafting process of the HSPA report and contributing to it; monitoring the national health policy and proposing changes or updates to the HSPA scope and purpose to the Steering Board; and organising the Stakeholder Conferences annually.

The third layer of the Czech HSPA governance structure is formed by the Technical Implementation Groups. There are more of these Groups, formed by the HSPA indicator custodians, de facto forming one Group at each indicator custodian organisation. In terms of number of indicators in its custody, the biggest Technical Implementation Group will be at the UZIS., followed by a group at the national Institute of Public Health (SZU), the Czech Statistical Office (CZSO), Ministry of Health (MoH), and the Health Insurance Bureau (KZP). There may be, however, particular areas of expertise where the Technical Implementation Group may seek expert advice from other stakeholders, such as the HIFs, MoF, or for instance for mental health the National Institute for Mental Health. The Technical Implementation Groups will develop agreed on HSPA outputs by drafting indicators' technical sheets, calculate the indicators and provide their description, contextualisation and benchmarking, review indicator technical sheets drafted by other Technical Implementation Groups, and possibly also publish updates on the HSPA web platform.

5.3. Linking HSPA governance structures and outputs to the purpose of the HSPA framework

The Czech HSPA framework development process started by defining the national HSPA scope and purpose (see Section 2). To make sure the HSPA is implemented in line with its purpose, and to ensure that this alignment stays in place even during the implementation phase and the subsequent annual and 4-year cycles, a mapping exercise was performed, linking the HSPA purpose to its governance structures and outputs. Depicted in Figure 5.2, this has been discussed with the HLAB during the January 2023 meeting.

Figure 5.2. The HSPA purpose linked to HSPA governance structures and outputs

The table depicts relation of the Czech HSPA outputs (in blue boxes) and the proposed HSPA governance structures (in green boxes) to the Czech HSPA scope and purpose

The HSPA shall serve to assess the strength and weaknesses of the Czech health care system, also in the context of international comparison and time development.

The HSPA serves the policy and decision makers (incl. Ministry of Health, SZU, health insurance funds, Parliament), media and professional public to highlight whether development is going in the desired direction. Thus, it increases accountability of principal stakeholders and public involvement.	• *Stakeholders conferences (opportunity to disseminate information)* • *Comprehensive HSPA report every 4 years*	• *Stakeholders conferences (opportunity to gain feedback)* • *Comprehensive HSPA report every 4 years* • *= increased accountability of institutions participating in HSPA but also those contributing to health system performance*
The HSPA improves public reporting and report sharing among stakeholders. Thus, it ensures the smooth flow of information across the health sector.	• *Comprehensive website for all HSPA indicators, all highlights at one place.* • *Technical sheets define a golden standard of detail when publishing information – across institutions (especially in the healthcare sector).*	• *The existence of various contributors (UZIS, SZU, CZSO) explains the need for a coordinating body at the central level => Task Force at MoH*
The HSPA supports stakeholders to identify what to focus on in their agendas and what to change, including the enabling of evaluation of the implemented measures. Thus, it allows reform planning and monitoring.	• *Task Force monitors ongoing reforms and suggests new indicators for monitoring them.*	• *Steering Board approves HSPA outputs, new indicators and framework refinements that align with ongoing and planned reforms, as institutions represented in the Steering Board are to a great extent policy makers.*

Source: The Czech HSPA project, HLAB meeting in January 2023.

For additional information:

Annex E: Overview of the Czech health data custodians.

- Policy and health data governance context
- Health data infrastructure context

6 HSPA implementation roadmap

Section 6 introduces plan for bringing the HSPA in the Czech Republic alive, after the framework has been set and populated by the indicators. Naturally, the next phase is the HSPA implementation, which should be finalised by the release of the first HSPA report. However, a health system performance assessment is a continuous process, designed in cycles, providing for possibility to adjust the national HSPA to the evolution in the healthcare sector and the changing health policy priorities and objectives. The HSPA implementation roadmap has been discussed by the principal working group during its last meeting in April 2023, and then by the HLAB in April 2023.

6.1. Key components of the Czech HSPA implementation

In the context of the Czech Republic, the HSPA implementation roadmap includes elements of three areas: governance, data management, and HSPA publication and dissemination.

6.1.1. HSPA governance implementation

HSPA ought to be embedded into existing Ministry of Health and its subsidiary organisations' institutional structures with clear governance and responsibilities for different layers of the HSPA governance. The stakeholders have agreed to build upon the foundations laid out during this project- for details on designed HSPA governance structure see Section 5.2.

The HSPA governance structure will follow up on existing structures of the current HSPA project; however, to operationalise the HSPA and ensure HSPA continuity, HSPA main governance structures should be formalised by a formal act – such as a Ministerial decree, a common practice used to set up various advisory bodies to the Minister of Health and working groups at the ministry. A discussion among HLAB members was held on the possibility of having a governmental resolution on the HSPA report publishing in a 4-year cycle; this however was not deemed necessary for the establishing of co-operation among health data and HSPA indicator custodians and setting up the necessary HSPA co-ordinating structures. Further discussion may be held on the potential a governmental resolution may have for the visibility and outreach of the HSPA reports.

6.1.2. HSPA data management implementation

The health information infrastructure in the Czech Republic is robust, but lacks some desired data linkages and information sharing (see Annex E). Within the context of HSPA implementation, data collection, flow, and indicator calculation must have a clear timeline. To populate the Czech HSPA framework, stakeholders have chosen mostly indicators that are already existent. That means that for most indicators the periodicity of data collection and availability of time series is already known. This information should be noted for each indicator (see Box 4.1). Furthermore, there should be a date – either one for all indicators or one for each indicator – indicating a deadline for transfer of relevant data between institutions (should that step be necessary); for developing an indicator technical sheet, including the first update of indicator value and contextualisation; for review by the other Technical Groups and the Task Force; and for final indicator calculation, contextualisation, and technical sheet approval.

The list of indicators selected in the comprehensive process during this project of Setting up of the Czech HSPA Framework shall serve as an input for the HSPA implementation phase. Further discussions among HSPA stakeholders, mainly the data custodians and suggested indicator custodians, are foreseen and deemed appropriate to develop detailed technical sheets for each individual indicator (see Box 4.1).

Box 6.1. Indicator technical sheets properties

The Ministry of Health and UZIS reached an agreement in 2022 that some of the HSPA indicators, the calculation and interpretation of which will be the responsibility of UZIS, will be included by the Ministry of Health in co-operation with UZIS in the MoH's Decree on Departmental Reference Statistics (*Resortní referenční statistiky, RRS*). Furthermore, there is agreement that it is essential that each indicator (both in HSPA and in RRS) has its own "birth certificate", or technical sheet.

This technical sheet will contain at least the name of the indicator, description of the indicator (including the denominator), source of the data and periodicity of data collection, institution responsible for data collection and data processing, method of calculation, indicator disaggregation (e.g. regional comparison, comparison via health insurance companies, age, gender, socio-economic status, etc.), contextualisation of the indicator (e.g. time development, international comparison), existence of a national or international benchmark.

For indicators of which the custody will not be the responsibility of UZIS but another institution, should have the same structure of their technical sheets.

Within the first 1.5 years following the completion of the current project, it is suggested for the Czech Republic to aim to establish the HSPA structures and publish its first HSPA Report at a Stakeholder Conference in January 2025.

6.1.3. Implementing structures for HSPA dissemination

Stakeholders have agreed that the Czech HSPA should be made public via a website, so that indicators can be updated whenever new data are available. This would complement the 4-year cycle of publishing a full HSPA report.

A dedicated website for the online version of the HSPA was preferred by the principal working group. This could potentially also become part of existing platforms, such as the National Health Information Portal www.nzip.cz, managed by the UZIS.

During the HSPA implementation phase, discussions should also touch on the division of responsibilities for regular indicator data updates on the dedicated HSPA website. This has direct technical consequences on the design of the platform: decisions must be taken such as whether indicator custodians should have a direct access to the HSPA platform and publish their indicator updates independently. Alternatively, indicator technical sheets, i.e. the calculated indicators with its full description, context, and benchmarking, can be collected by a single institution that would be then responsible for making it public, also on the website.

During the principal working group's 6th workshop, held in January 2023, stakeholders have agreed that the published HSPA indicator technical sheets should have the following properties:

- All HSPA indicators and related information should be available at one website on the internet.
- Indicators should be updated whenever new data is available.
- The website should provide links to other more detailed information sources with relevant institutions (stakeholders).

- It is preferable to include visualisation of indicators and as many of their various dimensions and disaggregation as possible.

The full HSPA Report should be published regularly, and the period of every 4 years is considered a reasonable frequency. Meanwhile, annual Stakeholder Conferences should be held to provide feedback on existing indicator calculation and context, also within the health policy priorities and objectives, on placeholder indicator development, and to provide input for new indicators and/or framework (sub)domains. The Stakeholders Conference represents a good opportunity for the professional public (including the representatives of patients, healthcare managers, healthcare policy makers, healthcare providers, and health insurance representatives) to gather and to hear updates on the HSPA development and provide feedback.

It has been noted by the Czech stakeholders that having communication experts as part of the HSPA co-ordinating structures is highly advisable. It is recommended the HSPA report is well developed not only in terms of the data it presents, but also in terms of the data visualisation, i.e. how the HSPA indicators are presented and communicated. The latter is even more important for getting a good HSPA outreach to general and expert public and health policy makers. The infographics gathered in Annex D as an example of existing indicator visualisation may serve as a starting point for HSPA visualisation.

6.2. Key steps of the Czech HSPA implementation

Following the end of the current project, on setting up the framework for health system performance assessment in the Czech Republic, there are several necessary steps to be taken and a sequence of actions to follow to reach the first HSPA report publication within a year and half, i.e. around January 2025. These are depicted in Figure 6.1.

Figure 6.1. Implementation roadmap: steps leading to the first the Czech HSPA Report within 1.5 years

MoH	summer 2023	Convert existing HSPA structures: - HLAB into Executive Steering Board - working group into Technical Implementation Groups and Stakeholder Conference - The current HSPA project management team at MoH into Task Force
Task Force	autumn 2023	Reach out to Technical Implementation Groups at UZIS, CZSO, SZU and KZP - Confirm list of indicators and principal indicator custodian - Confirm timeline leading to first HSPA Report
Task Force	autumn 2023 – 1Q2024	Start coordinating work to establish a national portal for HSPA - Defining responsibilities for its establishment and its maintenance
Executive Steering Board	October 2023	Meeting to approve the timeline leading to the first HSPA Report and responsibility split between principal indicator custodians
Task Force + Technical Implementation Groups	Autumn 2023 - 1Q2024	Collect data, produce indicators, draft indicator technical sheets (=indicator contextualisation and data benchmarking)
Stakeholder Conference	January 2024	Receive information about current status on HSPA implementation, what has been achieved and what remains to be done before the first HSPA Report
Task Force + Technical Implementation Groups	1Q2024 – 2Q2024	Cross-validate draft indicator technical sheets by other relevant institutions, Technical Implementation Groups: review within the Task Force and by other joint indicator custodians
Executive Steering Board	October 2024	Meeting to approve HSPA Report Draft, decide on its publication (time and date)
Stakeholder Conference	January 2025	Stakeholder Conference to launch and present the first HSPA Report

Note: Steps to take to achieve the first HSPA report publication in one and half year after the conclusion of this project were discussed with the principal working group and the High-Level Advisory Board in April 2023.
Source: Czech HSPA framework project, HLAB meeting in April 2023.

Once the first HSPA Report is published, the key activities should stay in place and happen regularly, on an annual basis and within a 4-year cycle for the full HSPA report, ideally at the same time of year. These activities and workflows are depicted in Figure 6.2.

Figure 6.2. Recommended workflows for the collection and analysis of HSPA data – the annual cycle

Task Force	January	Organizes a Stakeholders Conference
Task Force	January every 4 years	Publishes an HSPA report, introduces it at Stakeholders Conference
Stakeholders Conference	January	Gives feedback on current HSPA framework
Executive Steering Board	February	Approves changes in HSPA framework
Technical Implementation Groups	Year-round	Collect data, calculate indicators and provide contextualization by updating the indicator technical sheets (for approval of Task Force)
Task Force	February	Communicates a year timeline of the project with Technical Implementation Groups
Executive Steering Board	September	Oversees completion of milestones and compiance with defined timeline
Technical Implementation Groups	Year-round, deadline November	Publish data updates for indicators where available (after Task Force approval)

Source: Czech HSPA framework project, HLAB meeting in April 2023.

The date for publication of the first full HSPA Report was discussed at the Principal Working Group as well as with the HLAB members during the two meetings that took place in April 2023. The January 2025 first publication date corresponds to the political cycle as well and stakeholders agreed to have the report available in January of the year of parliamentary elections. Generally, parliamentary elections take place in October every 4 years and the next election is scheduled for fall 2025.

January precedes the date of election by almost 9 months, meaning that it will be still relevant and up-to date when the new government is being formed and when new health priorities are set and policies are drafted. At the same time, the HSPA report would be released early enough before the general elections not to directly impact the close-to-the-election political debates.

The question of specific workflows was also discussed at April 2023 Principal Working Group meeting. The group confirmed that there was no need for a special workflow for data collection and indicator calculation as the current legislation is sufficient to support an activity such as the one of the HSPA. Stakeholders have also agreed that no special procedure is needed in order to introduce HSPA Report to Parliament, as the parliament can ask for any material from the MoH and has the freedom to discuss it or to ask the MoH for further information. Stakeholders have however suggested that in the future it might be beneficial to send the HSPA Report to the official meeting of the government. This is simply done by the MoH and again no special procedure is needed. However, a governmental resolution may have the potential for the visibility and outreach of the HSPA reports.

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Annex A. Concepts behind HSPA framework development and international practices

HSPA has been developed and used across countries and regions in the previous decades and has brought stakeholders in the health sector together to share common health system objectives and supported them to work together towards attaining higher health system goals. Initial initiatives to develop HSPA frameworks were commenced by the WHO, especially WHO/EUR (Fekri, Macarayan and and Klazinga, 2018[3]). More recently the development of HSPA frameworks has been systematically supported by the European Union. Countries such as England (NHS), Malta, and the Netherlands have developed national HSPA frameworks, joined more recently by Ireland, Croatia, Latvia, Portugal, and Slovenia. In 2021, the Czech Republic and Estonia have initiated new initiatives do develop and implement HSPA frameworks.

In the aftermath of the COVID-19 pandemic, HSPA gained in importance, particularly as a mechanism to develop and monitor more resilient health systems. The COVID-19 crisis led to new inequalities and competing priorities between health stakeholders within health systems. Health systems need support in collectively making the system more resilient to similar or other shocks that may occur in the future. HSPA's system-wide collaboration can bring all stakeholders together to shape a resilient health system.

Several steps need to be undertaken to make an operational HSPA framework. HSPA needs (1) to set its objectives, (2) to set a scope of **H**ealth, **S**ystem, **P**erformance analysis unit and tools, and **A**ssessment functions, and (3) to develop a framework. Then, (4) HSPA needs to be substantiated by regularly updated data and reported in a timely manner.

Setting objectives

First, clear objectives for HSPA need to be set. These objectives are set and shared among stakeholders involved – particularly those whose performance will be assessed through HSPA. For each HSPA, relevant stakeholders may vary depending on the scope and purpose of the HSPA. Meetings represented by relevant stakeholders are usually held to set and share objectives and provide input. In an increasing number of countries, citizens and patient groups/representatives have also been involved in setting HSPA objectives as efforts are made to transform health systems more people-centred (i.e. HSPA Ireland in 2021).

According to the HSPA developed so far, objectives usually include the following:

- Public reporting on the performance of the healthcare system,
- National and international benchmarking,
- Identification of strategic priorities,
- Monitoring of policy reforms, and/or
- Increasing accountability of various parts/services that constitute the healthcare system.

Setting scope of HSPA

Second, the scope of HSPA needs to be set and it needs to clarify each of the following areas:

- **H**ealth (i.e. whether to refer to poor health outcomes, disease prevalence, and mortality, or will include disabilities and well-being)

- **S**ystems (i.e. whether to refer to health system, healthcare systems and/or social care)
- **P**erformance of overarching system, specific services and/or delivery systems
- **A**ssessment functions such as management, policy-making, accountability, and/or improvement.

Like objective setting, the scope of HSPA needs to be identified collectively by relevant stakeholders. A multi-stakeholder consultation process is particularly important for the level of performance assessment and assessment functions because buy-ins and engagement from relevant stakeholders bring successful operationalisation of HSPA and subsequently lead to health system strengthening.

The rest of this section describes various elements to consider when deciding the scope of each of these areas.

Health

HSPA usually includes assessment outcomes, such as deaths and disease prevalence and severity, to assess health system performance. **Mortality and life expectancy** are classical parameters used to measure health system performance from a public health perspective. To use these measures, a well-functioning death registry is needed. **Prevalence and incidence of diseases** are another set of classical parameters of health system outcomes used to assess morbidity of diseases in a country. Related outcome measures of quality of life (e.g. Quality-Adjusted Life Years (**QALYs**)) aim to capture the reduction in morbidity and the outcomes due to specific diseases. Medical/clinical perspective is the dominant way of operationalising these outcome measures, and these measures are dependent on the availability and quality of clinical registries (such as on cancer and diabetes). These measures are often linked to costs (value) at the system level to assess the burden of diseases and to specific services and interventions to evaluate cost-effectiveness.

HSPA can also assess disabilities as part of health systems outcomes. This is because many chronic diseases cause long-term disabilities, and HSPA could address the way a health system deals with disabilities. At the system level, **DALY** (Disability Adjusted Life Expectancy) is the most well-known measure of disabilities, and at health services level, various instruments are available to assess disabilities (e.g. **inter RAI initiative**). These outcomes mainly use administrative databases and surveys as their data sources.

Recently, HSPA includes well-being as part of health systems outcomes (OECD, 2019[4]). So far, health outcomes experienced by citizens/patients (**PROMS**, Patient-Reported Outcome Measures) are mainly tested for clinical procedures and treatments, and they are still under development for chronic conditions. Instead, **EQ5D,**[1] a more generic measure not related strictly to a specific clinical procedure and treatment, is used as HSPA's health systems outcomes. **PREMs** (Patient-Reported Experience Measures) are also used (Fujisawa and Klazinga, 2017[5]), although these instruments (e.g. **CAHPS,**[2] **Picker**) have limited international validation.

Countries are increasingly using **Electronic Health Records** for more detailed assessment of health system outcomes such as safe healthcare. **Data linkage** capabilities based on unique patient identifier (**UPI**) are increasingly enhanced in countries to assess more complex health systems outcomes such as care integration within health systems and between health and social care systems.

System

HSPA can assess different systems and the boundary of system assessed in HSPA needs to be clarified. The health system as a whole is often assessed in HSPA. However, the performance of healthcare systems such as public health, primary care, hospital care, mental health care, community care, long-term care can be also evaluated. Due to a growing number of populations in need of both health and social care, the performance of health systems including social care is sometimes assessed in an HSPA. The scope of systems used for HSPA needs to align with the boundary used for health policy making and also with health system priorities within countries and regions.

Performance

The performance of health system(s) can be assessed at various levels such as overarching system level, specific services or delivery systems levels, or specific provider or professional levels, and the unit of analysis needs to align with the objectives set for a specific HSPA. Health system performance can be assessed at the overarching regional or national health system level if the objective of HSPA includes national and international benchmarking. HSPA often uses the analysis unit of healthcare services such as public health, primary care, hospital care, mental health care, community care, long-term care for national and international benchmarking, to identify strategic priorities for the health system, and/or to monitor health policy reforms undertaken in these subsystems. The OECD analyses as shown in its flagship publication, *Health at a Glance*, include both system-level assessment and analyses of priority healthcare services.

The unit of analysis can be set as specific as provider and professional levels if public reporting commitment requires such details, for example, for population's provider choice or to increase accountability of healthcare delivery at provider and/or professional levels.

Since patients often seek care in various settings, such as primary care, acute care, and long-term care, and they need a smooth transition of care and continuity of care, HSPA can assess the performance of integrated delivery systems. In order to make a crosscutting assessment on integrated care delivery systems covering various care settings, data from different providers and systems need to be linked. This requires UPI and appropriate privacy protection regulations so that the data are used adequately while protecting citizen's privacy (OECD, 2015[6]; OECD, 2013[7]).

Assessment

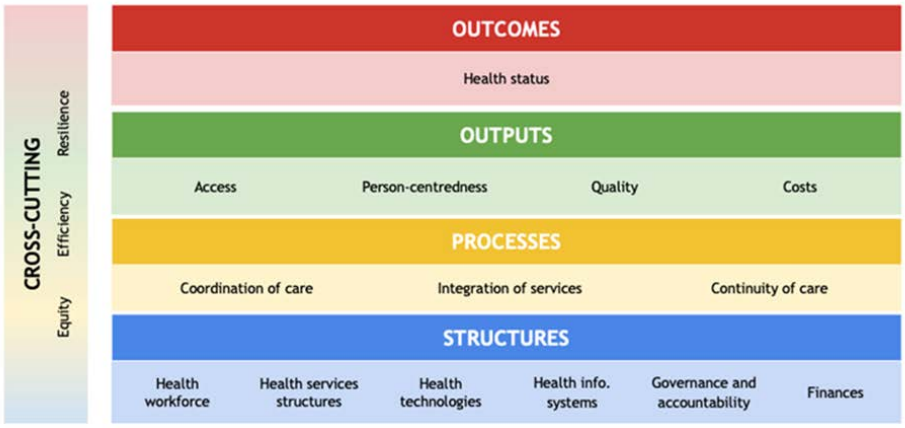
HSPA needs to link measurements and reporting to health system management and policy-making. In order to do so, **clear assessment functions** need to be set based on the objectives identified. HSPA usually has an **accountability function** towards citizens, financiers, policy makers and a **management function** for the entity responsible for healthcare delivery such as Ministries of Health. HSPA can also have an **improvement function** for relevant stakeholders including citizens, healthcare providers, professionals, and industries to learn and improve health systems collectively through performance of each stakeholder. Assessment functions may need to be reviewed. For example, the United Kingdom has a history of developing separate outcome frameworks for public health, healthcare services and social care that have been used for a mix of assessment functions to govern the various NHS services over time. The balance between formative (learning) and summative (accountability) functions has been changing over time.

International practices in developing HSPA framework

HSPA framework needs to reflect objectives and scope set and needs to lay out key domains for health systems assessment.

HSPAs usually have a framework like the one shown in Figure A A.1. Many HSPAs use **structures/inputs**, **processes**, **outputs,** and **outcomes** as key dimensions, and in each dimension, key domains that reflect health policy priorities are identified. Given the COVID-19 pandemic, recent HSPAs have started to include telemedicine as an important sub-domain under the health technologies domain. Given an increasing number of patients with chronic conditions needing care in different settings, care co-ordination, service integration and continuity of care are becoming common domains in the processes dimension. As part of output dimension, access and costs are classical domains included in an HSPA framework, but quality of care is also included recently, as health data infrastructures are strengthened and more complex data are becoming available to assess quality of healthcare (OECD, 2015[6]; OECD, 2013[7]). Even when health systems mature, people-centred care delivery is still considered challenging and hence lately people-centredness is increasingly included as an HSPA domain.

Figure A A.1. HSPAs have a largely similar framework: example from Ireland



Source: Kringos et al. (2021[8]).

Across all domains, a health system aims to tackle and improve crosscutting themes such as equity, efficiency and/or sustainability. As the COVID-19 pandemic brought enormous shocks to health systems, and in order to manage the current crisis and prepare for future shocks, nowadays resilience is also considered an important crosscutting theme to be included in an HSPA framework.

International practices in substantiating and operationalising HSPA

The assessment framework needs to be substantiated with measurements, which are updated regularly to capture changes in health system performance in a timely manner. Measurements can be drawn from existing health statistics and/or newly developed for instance by administering surveys or by allowing secondary use of health data and linking data sources which may require changes in legislations (OECD, 2015[6]; OECD, 2013[7]). For national and international benchmarking, use of international indicators such as those developed at the OECD covering all spectrum of healthcare can be used (OECD, 2021[9]). Depending on the objectives and scope of HSPA, newly developed indicators including people-centredness, patient safety culture, patient-reported experience measures for specific conditions and on patient safety, integrated care, end-of-life care can be considered as measurements for HSPA.

Different types of measurements can be used to communicate health system performance. HSPA can have a number of indicators, dashboards with key indicators or compound index, which summarises health system performance. A decision on the type of measurements depends on the objectives as well as functions of the HSPA. If an HSPA is meant to signal overall performance to policy makers or for health system management, a summarised tool such as dashboards or compound indices may communicate the message better, but if an HSPA is meant to serve many stakeholders, for example, to change practices, more detailed data catered to each stakeholder may be useful. A mix of measurement types can be used since HSPAs often have a mix of objectives and functions.

Annex B. Defining the HSPA scope and purpose in line with national health priorities

Operationalising the Czech HSPA scope and purpose

Table A B.1. Practical applications of the Czech HSPA scope and purpose

HSPA purpose statement	Potential practical applications
Assessing health status development	• Indication whether development is going in the desired direction, i.e. leading to the ultimate goal of improving the population health • For policy and decision makers (incl. Ministry of Health, SZÚ, health insurance funds, Parliament) and professional public to feed public debate on policy priorities • For media and general public to gain better understanding of population health status development
Evaluation of changes in health sector performance	• Increasing accountability of principal stakeholders, namely healthcare providers and health insurance funds • Supporting stakeholders to know what to focus on in their agendas • Enabling stakeholders to evaluate implemented measures
Assessment of healthcare quality development	• Increasing accountability of principal stakeholders, namely healthcare providers and health insurance funds • Supporting stakeholders to know what to focus on in their agendas • Enabling benchmarking among healthcare providers that will lead to higher quality of care • Improved international benchmarking, leading to further boost of care quality increases.
Evaluation of outcomes and impacts of health policy measures and health system investments	Tracking progress on reaching goals stated in the National Strategy document Health 2030 • Assessing the performance of investments to improve health system, including access, efficiency, and resilience • Strengthening the public reporting function
Assessment of healthcare accessibility for everyone (geographical, timely, and financial dimension)	• Increasing accountability of health insurance funds • Enabling evidence-based decisions for workforce planning • Improving equity in access to healthcare • Strengthening financial protection in healthcare consumption

Source: The Czech HSPA project, HLAB meeting in June 2022.

The Health 2030 strategy goals

The Strategic Framework for Developing Healthcare in the Czech Republic to 2030 (Health 2030) focuses on three strategic goals, which are broken down into seven specific objectives (see Figure A B.1).

Figure A B.1. The Health 2030 strategic goals cover population health, health system performance and science and research

Source: MZČR (2020[2]).

The HSPA framework contributes to the goals and sub-goals mentioned in the strategy, particularly in relation to analytical assessments and by including health status and health risk indicators. Details of indicators cited in the Health 2030 are described in Table A B.2; many of these were also selected to populate the Czech HSPA framework (see Annex D).

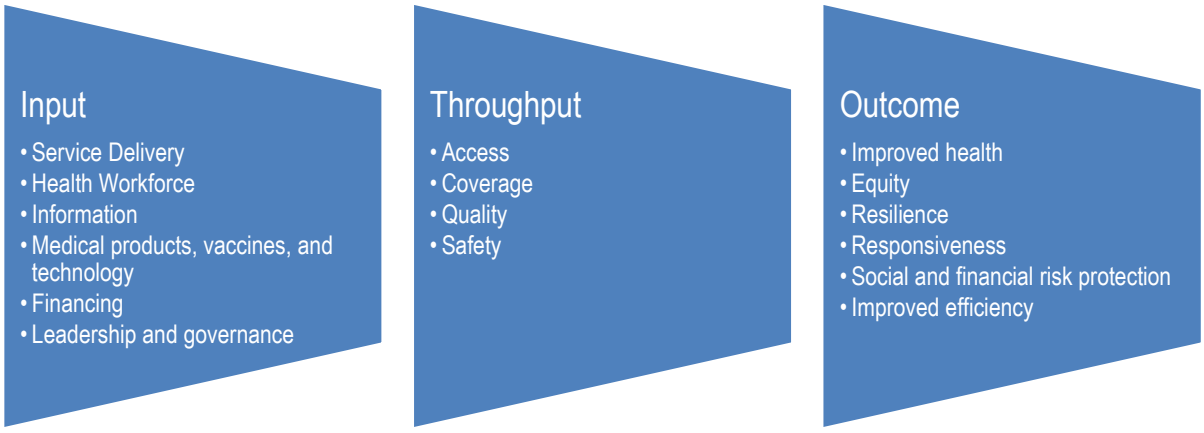
Table A B.2. Indicators discussed in Health 2030 in relation to specific objectives

Specific Objective	Indicator cited in Health 2030
1.1. Primary care reform	Total number of physicians Average age of general practitioners Ratio of outpatient specialists to general practitioners Doctors per 1 000 inhabitants Number of outpatient visits (to specialists) Number of outpatient visits (to GPs) Preventive examination of children Preventive examination in adults
1.2 Disease prevention health promotion and improvement of health literacy	Vaccination coverage Ratio of antimicrobial resistance Health literacy (using a standardised scale) Obesity rates (for children and adults) Physical activity rate Fruit and vegetable consumption (by income level) Adolescent tobacco and cannabis use Current daily smokers Alcohol consumption (for children and adults) Illegal drug use Breast cancer mortality Cervical cancer mortality Colon cancer mortality Rectal cancer morality
2.1 Integration of care models and of health and social care, mental health care reform	Life expectancy Chronic illness Chronic illness in older adults # of diagnosed cancers # of patients treated for chronic respiratory disease # of patients with hypertension # of LTC recipients (older adults) # of LTC recipients (disability) Hospitalisations in the last three months of life for seriously ill patients Cause of death from chronic conditions Integration of health and social care # of recipients of community based mental health care
2.2 Healthcare workforce retention and strengthening 2.3 Digitisation 2.4 Optimisation of the payment system	# of working hours of active doctors, dentists and pharmacists per 1 000 inhabitants # of doctors in the hospital per 100 000 inhabitants Average age of physicians Outpatient surgical care w/ digital infrastructure Share of inpatient expenditure of total health budget # of medical graduates # of outpatient doctors # of dentists # of nurses per 1 000 inhabitants # of nurses in hospital care Average physician salary (public setting) Average physicians wage (private setting) Average nurse salary Access to LTC Percentage GDP on healthcare (international comparison) Effectiveness of health expenditure
3.1 Improvement of science and research in addressing the health sector priority objectives	Impact of research on productivity Research on health status Impact of technology on productivity Use of innovative technologies and medicines

Annex C. Process of determining the Czech HSPA framework domains

The first draft of the scope and purpose of the Czech HSPA, defined in early 2022, provided guidance on selecting the domains and indicators to populate the HSPA framework. Common HSPA functions often relate to accountability and performance monitoring too. Other common purposes relate to evaluation of policies and strategy development, assessment of specific sectors or programs, and providing platform for accountability to the government or general public. Together, these goals typically balance reporting and assessment with learning and improvement functions. A number of common HSPA domains have been used frequently in existing HSPA frameworks in Europe (Figure A C.1).

Figure A C.1. Examples of common domains used in HSPA frameworks in Europe



Source: (Fekri, Macarayan and Klazinga, 2018[10]).

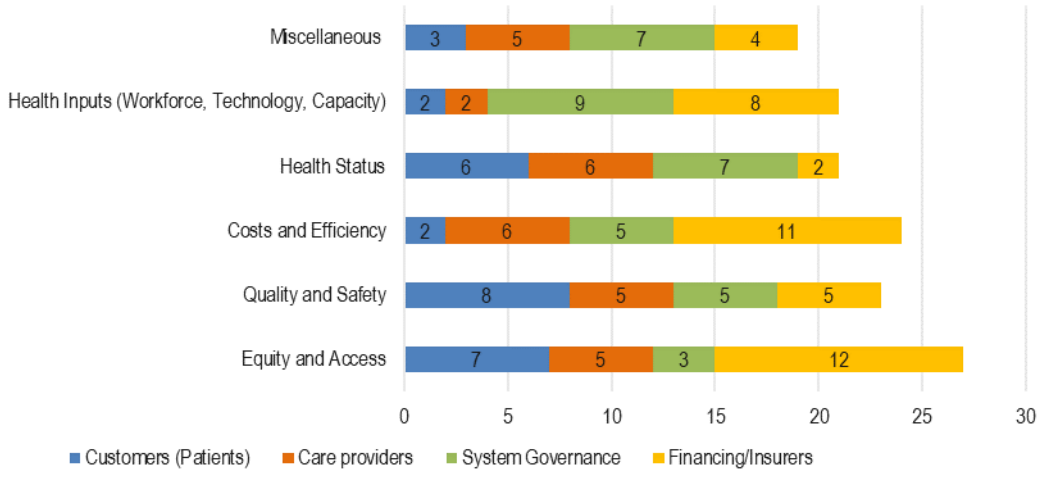
HSPA framework development workshops

During HSPA framework development workshops, held on 7 April and 8 April 2022, in Prague, more than 35 participants representing various government institutions as well as important health sector stakeholders came together to establish the framework structure and begin to identify indicators that would be used in measuring key domains of the HSPA. Meeting participants included representatives of the Ministry of Health, Ministry of Finance, Institute for Health Information and Statistics, the Czech Statistical Office, National Institute of Public Health, representatives of the statutory health insurance funds (CPZP, VZP, VoZP, OZP, ZPS), Health Insurance Bureau, Association of Ambulatory Specialists, representatives of teaching hospitals (Bulovka), patient representatives from the Patient Committee of the Minister of Health, and academia (Charles University). The OECD team was also in person in Prague.

Following a summary of international approaches to HSPA domain definition, participants were asked to write 4-8 potential themes to be addressed in the HSPA on colored sticky notes. Workshop participants then added their sticky notes to posters identifying broad areas of potential domains. In total, 135 proposals for HSPA domains/themes were identified in this exercise (see Figure A C.2).

Workshop participants were assigned into 4 groups based on the perspective and role their institution plays in the health system. The distribution was done via colored sticky notes, which allowed for analysis of preferences based on the generated themes. For instance, while the patient group stressed the most the themes of quality and safety, the insurers put focus on costs and efficiency, but both groups placed strong emphasis on equity and access.

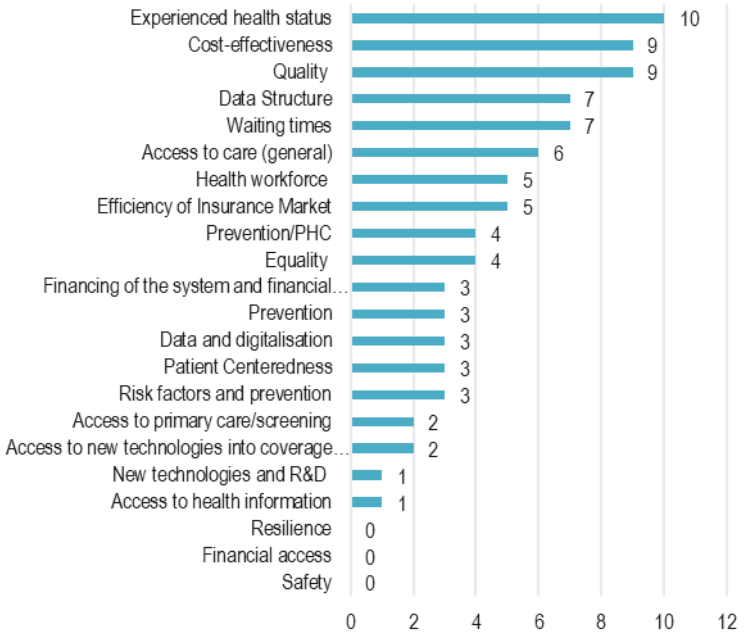
Figure A C.2. The 135 potential themes were identified via the HSPA consensus building process



Source: The Czech HSPA project, April 2022 working group meeting.

Following the exercise to generate themes, the workshop participants participated in a moderated discussion to summarise the flipcharts and emerging domains, clarifying with participants where notes were not clear. The consolidation process aligned the 135 proposed topics into 22 themes, that were further prioritised via a voting exercise to identify the most important ones for representation in the HSPA. Participants gave votes to 19 of the 22 themes, with the themes related to experienced health status, cost-effectiveness, quality, data structure, waiting times, and access to care receiving the highest score (see Figure A C.3).

Figure A C.3. The voting process identified experienced health status, cost-effectiveness, quality, data structure, and waiting times as the top five themes

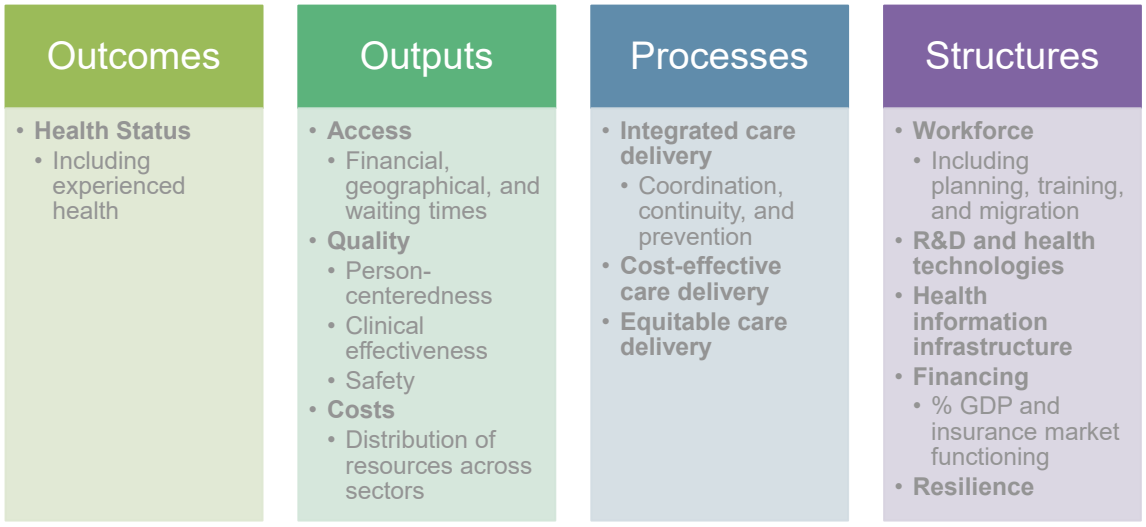


Source: The Czech HSPA project, April 2022 working group meeting.

Following the voting exercise, the domains were organised by the management team of the Ministry of Health and the OECD, grouping related themes as subdomains into common domains. The draft framework was then presented to workshop participants for validation and feedback. Following incorporation of comments from the working group participants, the draft framework was revised to the version represented in Figure A C.4.

Figure A C.4. The Czech HSPA draft framework developed during the April 2022 development workshops

First working draft of HSPA framework as of April 2022

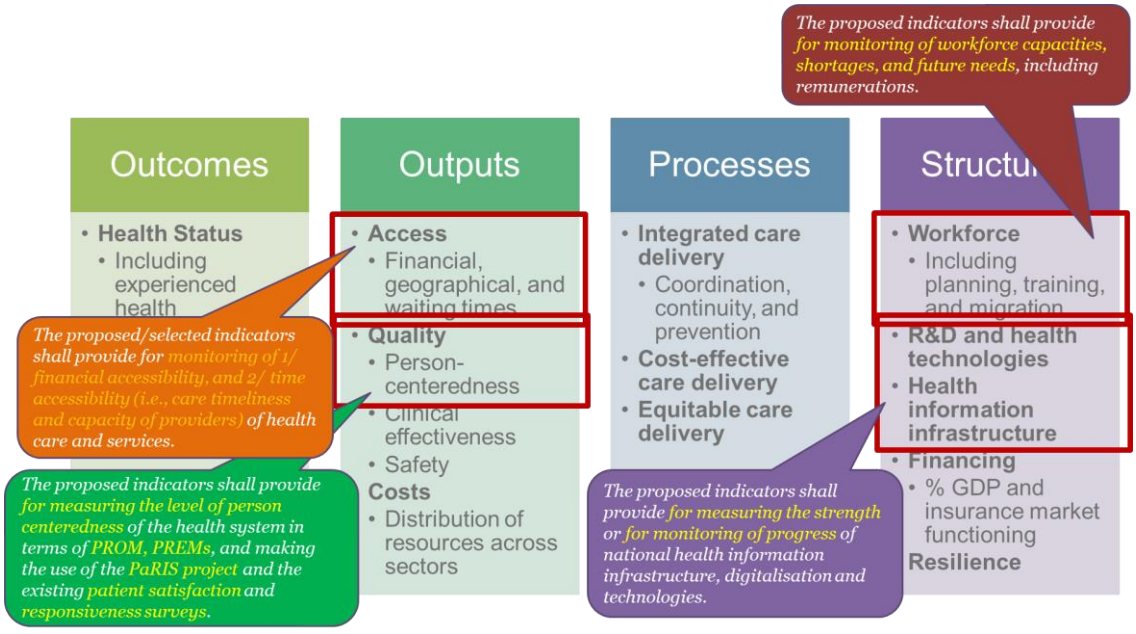


Source: The Czech HSPA project, April 2022 working group meeting.

Technical focus groups

The initial HSPA draft framework was used to determine the themes of the technical focus groups. The April workshops participants agreed to hold separate technical discussions on the topics of Access, Quality, Workforce, and Health information infrastructure and health technologies. These were held virtually in the months of May, June, September, and October 2022 and their particular focus linked to the HSPA draft framework is depicted in Figure A C.5.

Figure A C.5. Linking technical focus groups to the first HSPA framework draft



Source: The Czech HSPA project, HLAB meeting in January 2023.

The technical focus groups served the purpose of detailed technical discussions among selected working group members, OECD experts with expertise in each domain, and other invited the Czech and international experts. The meetings took place virtually and the number of participants was held low, to 10 to 14 people, to allow for thorough discussion and review of existing international practice and indicator methodology and options for the Czech HSPA localisation. The below list provides a summary of the technical focus groups and their discussions.

- Focus Group #1: Person-centredness, within the Quality domain (18 May 2022)

Participants included MoH, CZSO, UZIS, patient representative, national manager of the PaRIS project.

During the focus group, OECD experts shared their expertise regarding the state of the OECD PREMs items data collection and patient reported safety indicators, and the patient reported indicator survey projects (PaRIS), with a special focus on patient reported experience measures (PREMs) – the PaRIS International survey of people living with chronic conditions. During the meeting, it was suggested to also use a summary indicator from the patient satisfaction survey, which is run by the Ministry of Health for inpatient facilities. The hospitals participate in the survey on a voluntary basis, but over the years the number of participating hospitals has grown substantially.

- Focus Group #2: Digitalisation and Health technologies domains (1 June 2022)

Participants included various departments of the MoH, 3 health insurance funds, and patient representative.

During the focus group, OECD experts shared with the participants the current status of the adherence to OECD council health data governance recommendation, the OECD and other country's examples of indicators used in monitoring electronic health record (EHR) systems adoption and maturity, and indicators used in monitoring telemedicine and remote care. Participants agreed that developing a continuous indicator for eHealth adoption measurement would be more suitable for the HSPA purposes than using the Y/N questions.

- Focus Group #3: Workforce monitoring domain (12 September 2022)

Participants included various departments of the MoH (including the nursing and non-medical health professions department), CZSO, UZIS, VoZP, VZP, labour union (OSZSP), National Center for Nursing and Non-Medical Health Professions.

During the focus group, OECD experts shared with the participants the OECD and international experience with indicators used for workforce monitoring. The Czech data submission on health workforce data collected through OECD/ Eurostat/WHO-Europe Joint Questionnaire is generally very good. However, many more health workforce data are required for health workforce planning at national level to guide policy decision-making, including supply-side and demand-side data, past/current/future (based on different scenarios). The Netherlands provides one of the best examples of good national health workforce planning. The discussion then focused on the possible indicators that would allow for monitoring of workforce capacities, shortages, and future needs, including the remuneration. The number of health workforce indicators will need to be limited to the most important/relevant ones.

- Focus Group #4: Accessibility

Participants included MoH, CZSO, various departments of UZIS, health insurance funds (VZP, VoZP), university hospitals (Olomouc, VFN).

During the focus group, OECD experts shared their knowledge on measuring the financial accessibility in OECD countries and internationally, using indicators for monitoring of financial protection, catastrophic spending, and coverage measurement by public finance spending by type of healthcare. The second item focused on measuring time accessibility and waiting times measurement based on OECD experience were shared with group participants. The good practice country example of Slovenia was also presented, focusing on its methodology of waiting lists and waiting time measurement.

Study visit to Belgium

The study visit to Belgium was organised by the OECD team to support knowledge sharing, mutual networking, and bilateral relationship building between the Czech HSPA main authorities and their Belgian counterparts. The decision to visit Belgium was based on the interest of the Czech authorities in Belgian HSPA and the fact that HSPA in Belgium has been well developed and maintained over many years, there are experiences with HSPA implications for health policy proposals and implementation, and there is an in-built process for continuous HSPA refinement and an on-going process of health objectives setting in Belgium.

The study visit occurred over two and half days aiming to explore functioning, maintaining and governance of the Belgian HSPA. It included meetings with the Institut National Assurance Maladie Invalidité (INAMI), The Belgian Health Care Knowledge Centre (KCE), Sciensano, Belgian federal MoH Santé Publique and the European Commission (DG Reform). The Czech delegation included seven senior-level representatives from the Ministry of Health, health insurers (VZP, VoZP), and the National Public Health Institute.

The Czech study visit group learned about the history of the Belgian HSPA, its initial intentions and how it evolved over time. The Belgian counterparts also shared information on the latest evolution in their HSPA framework development and details on how HSPA is embedded in the policy making, how key stakeholders are engaged, and what are the buy-in practices. One of the currently ongoing activities involves the multiannual budgeting process as the output of reflexion on Belgian HSPA, and another one focuses on the process of setting health objectives and methodology of implementing those objectives into Belgian healthcare insurance. Discussions were also held with the KCE and Sciensano on technical development of the HSPA report and the thematic reports, and the indexes review cycles.

Annex D. List of indicators populating the Czech HSPA framework

The list of indicators selected in the comprehensive process during the Setting up of the Czech HSPA Framework project shall serve as an input for the next HSPA implementation phase. Further discussions among HSPA stakeholders, mainly the data custodians and suggested indicator custodians, are foreseen and deemed appropriate to develop detailed technical sheets for each individual indicator (for technical sheet properties see Box 4.1).

In this annex, indicators are provided by each of the 12 domains. In each section, tables detail out indicators selected to populate the first the Czech HSPA and provide information on the availability of data for various perspectives of disaggregation, availability of benchmarks, the primary data source, data custodian, and proposed indicator custodian.

In many cases, the data and indicator custodian are the same for a given indicator. Where it differs, it means a data custodian is responsible for data collection and data processing, as well as for providing the overall calculation of indicator based on the primary data set. The indicator custodian is then responsible for reporting the indicator in the HSPA report while commenting on its wider context, trend development and/or international comparison, and explaining its potential causes and/or consequences on population health or the health system. Typically, the split of the functions concerns survey data indicators, where one institution runs the survey, but the area of interest of the indicator falls within the scope of another institution's responsibilities.

Indicators have been assigned to indicator custodians based on discussions held during the working group meetings and based on written comments received from various HSPA stakeholders. The assignment was then reviewed during individual consultations held with future HSPA indicator custodians. However, the final distribution of indicators to custodians is open for further discussion during the HSPA implementation phase.

Domain: Health status

The total of 19 indicators have been selected for this domain and they are grouped into 4 subdomains (life expectancy and mortality, avoidable mortality, experienced health, and burden of disease).

Life expectancy and mortality

The subdomain of life expectancy and mortality analyses expected length of life, healthy life years, and main cases of death. The total of 8 indicators were selected. The primary data for these indicators come from the Czech Statistical Office (CZSO) for the Czech population data, from the Institute of Health Information and Statistics (UZIS) for the causes of death, and from Eurostat for international comparison. The healthy life years indicator uses the Eurostat/OECD methodology, which builds on a survey question on long-standing limitations in usual activities due to health problem.

The Mortality registry noted in the table stands for the Registry of Causes of Death, which is being populated by information obtained from Certificate of Examination of the Deceased (*List o prohlídce zemřelého, LPZ*). Methodologically, the UZIS is responsible for data on causes of death, despite the fact it is the CZSO that reports these data to international datasets. Thus, UZIS has been noted in the following tables as the primary data custodian, though in practice there is a shared responsibility for the dataset methodology, maintenance, and international reporting.

Table A D.1. Life expectancy and mortality indicators

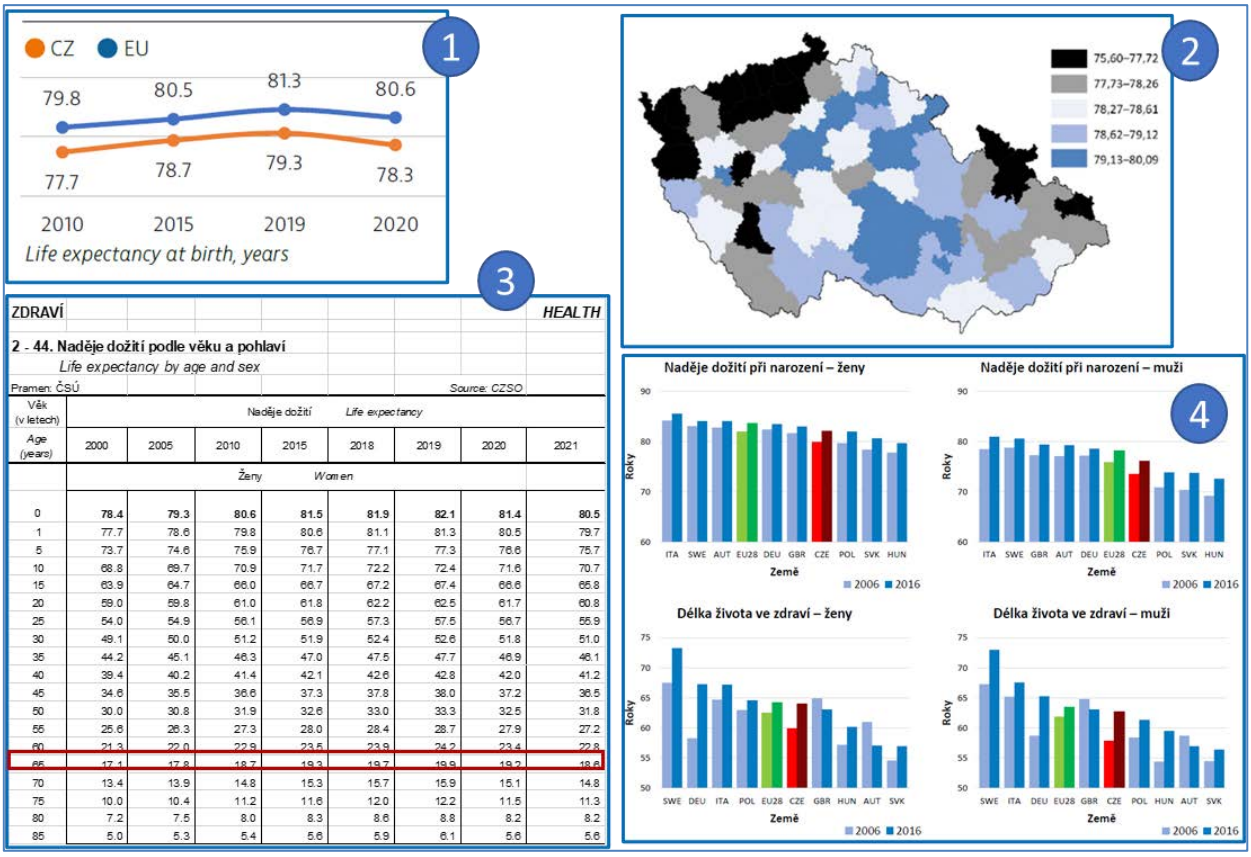
Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Life expectancy at birth, by gender (Years)	gender, region	International, time series, regional	Eurostat	Population registry	CZSO	CZSO
Healthy life years at birth, by gender (Years)	Gender, region	International, time series	Eurostat	Population registry, mortality registry (LPZ), EU-SILC survey	UZIS	UZIS
Life expectancy at 65, by gender (Years)	gender, region	International, time series, regional	Eurostat	Population registry	CZSO	CZSO
Healthy life years at 65, by gender (Years)	Gender, region	International, time series	Eurostat	Population registry, mortality registry (LPZ), EU-SILC survey	UZIS	UZIS
Main causes of mortality (%)	gender, region	International, time series, regional	Eurostat	mortality registry (LPZ)	UZIS	UZIS
Peri-neonatal mortality by age of mother, by residence and occurrence (hlth_cd_aperro)	region	International, time series, regional	Eurostat	Population registry, mortality registry (LPZ)	UZIS	UZIS
Mortality from circulatory diseases (specific disease rate per 100 000 population (age-standardised))	Age, gender, region	International, time series, regional	Eurostat	mortality registry (LPZ)	UZIS	UZIS
Cancer mortality by cancer site (%)	Gender, region	International, time series, regional	Eurostat	mortality registry (LPZ), National Oncology Registry	UZIS	UZIS

Note: Mortality registry stands for the Registry of Causes of Death, which is being populated by information obtained from Certificate of Examination of the Deceased (*List o prohlídce zemřelého, LPZ*).

Infographic A D.1 and Infographic A D.2 show possible visualisation and benchmarking, either regional, by age, gender or international for life and healthy life expectancy and mortality.

Infographic A D.1. Life expectancy

1. Life expectancy at birth, CZE and EU; 2. Life expectancy at birth, regional comparison; 3. Life expectancy by age and sex in CZE; 4. Life expectancy at birth and healthy life expectancy, by sex



ZDRAVÍ — HEALTH

2 - 44. Naděje dožití podle věku a pohlaví

Life expectancy by age and sex

Pramen: ČSÚ — Source: CZSO

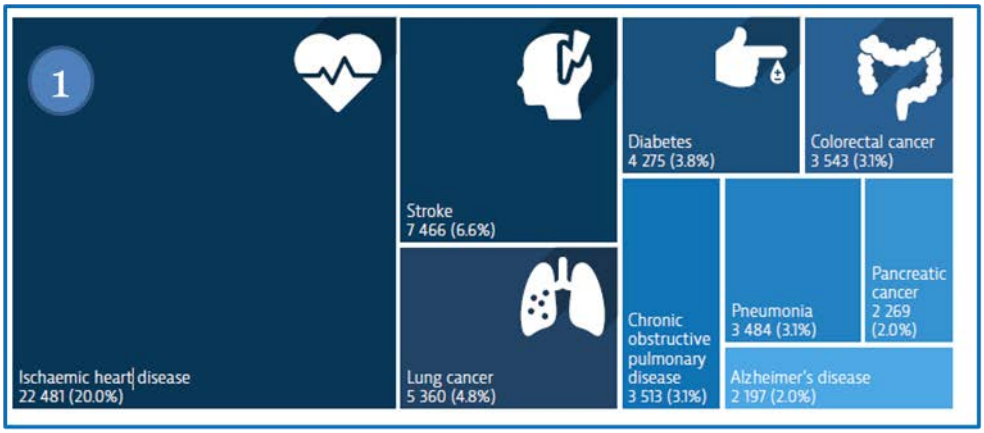
Věk (v letech) / *Age (years)*	Naděje dožití / *Life expectancy*							
	2000	2005	2010	2015	2018	2019	2020	2021
	Ženy / *Women*							
0	**78.4**	**79.3**	**80.6**	**81.5**	**81.9**	**82.1**	**81.4**	**80.5**
1	77.7	78.6	79.8	80.6	81.1	81.3	80.5	79.7
5	73.7	74.6	75.9	76.7	77.1	77.3	76.6	75.7
10	68.8	69.7	70.9	71.7	72.2	72.4	71.6	70.7
15	63.9	64.7	66.0	66.7	67.2	67.4	66.6	65.8
20	59.0	59.8	61.0	61.8	62.2	62.5	61.7	60.8
25	54.0	54.9	56.1	56.9	57.3	57.5	56.7	55.9
30	49.1	50.0	51.2	51.9	52.4	52.6	51.8	51.0
35	44.2	45.1	46.3	47.0	47.5	47.7	46.9	46.1
40	39.4	40.2	41.4	42.1	42.6	42.8	42.0	41.2
45	34.6	35.5	36.6	37.3	37.8	38.0	37.2	36.5
50	30.0	30.8	31.9	32.6	33.0	33.3	32.5	31.8
55	25.6	26.3	27.3	28.0	28.4	28.7	27.9	27.2
60	21.3	22.0	22.9	23.5	23.9	24.2	23.4	22.8
65	17.1	17.8	18.7	19.3	19.7	19.9	19.2	18.6
70	13.4	13.9	14.8	15.3	15.7	15.9	15.1	14.8
75	10.0	10.4	11.2	11.6	12.0	12.2	11.5	11.3
80	7.2	7.5	8.0	8.3	8.6	8.8	8.2	8.2
85	5.0	5.3	5.4	5.6	5.9	6.1	5.6	5.6

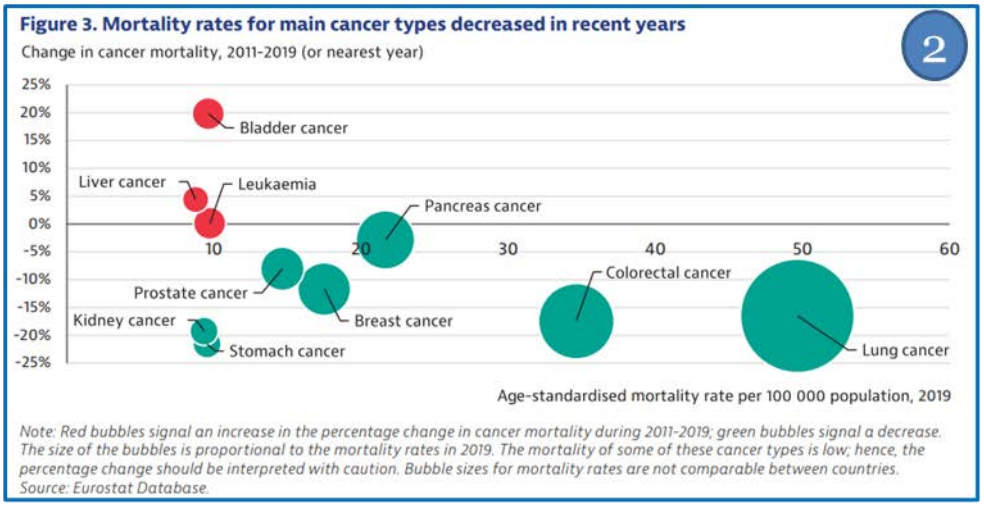
Note: The primary source of data used in depicted graphics is the Czech Statistical Office and Eurostat.

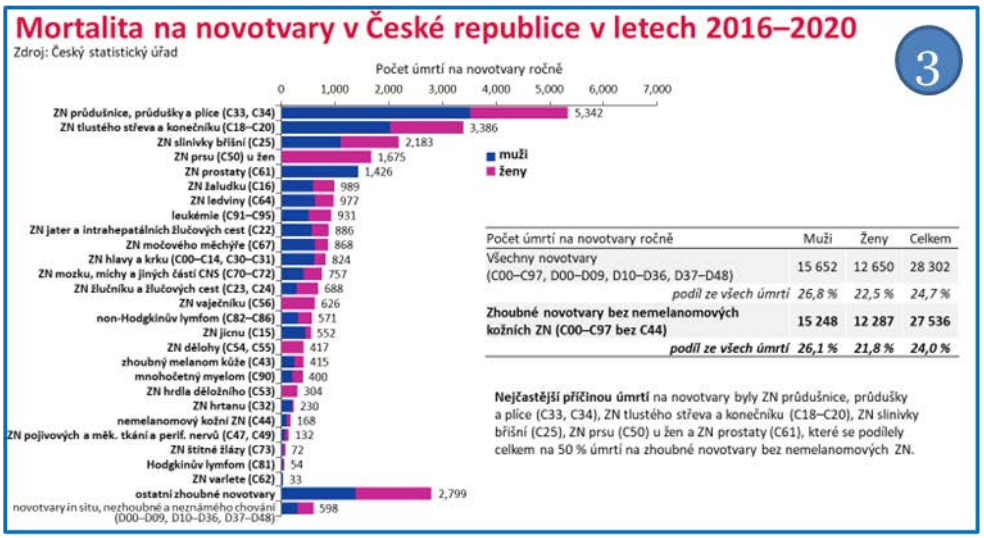
Source: Depicted figures are taken from the OECD/European Observatory on Health Systems and Policies (2021[11]) for number 1, UZIS (2020[12]) for number 2 and 4, and CZSO (2022[13]) for number 3.

Infographic A D.2. Mortality

1. Main causes of death, number and in percentage of all deaths; 2. Mortality rates for main cancer types, age-standardised rate per population and percentage change over given period of time; 3. Number of deaths for solid tumours, by cancer sites and by gender







Note: The primary source of data for the depicted graphics is Eurostat and the Czech Statistical Office.
Source: Depicted figures are taken from the OECD/European Observatory on Health Systems and Policies (2021[11]) for number 1, OECD (2023[14]) for number 2, and UZIS (2020[12]) for number 3.

Avoidable mortality

The subdomain of avoidable mortality includes 3 indicators. It analyses deaths for causes that can be mainly avoided through public health and primary prevention interventions (preventable causes of mortality), and deaths for causes that can be mainly avoided through timely and effective healthcare, including screening/diagnosis and treatment (treatable causes of mortality). The Potential Years of Life Lost (PYLL) is a summary measure of premature mortality which provides an explicit way of weighting deaths occurring at younger ages, which are, a priori, preventable. The calculation of PYLL involves summing up deaths occurring at each age and multiplying this with the number of remaining years to live up to a selected age limit. All three indicators refer to premature mortality (under the age of 75). For the avoidable mortalities, data are based on the revised OECD/Eurostat lists, the PYLL uses OECD methodology. The Czech primary data source is the mortality registry, see note below the table and in previous subdomain.

Table A D.2. Avoidable mortality indicators

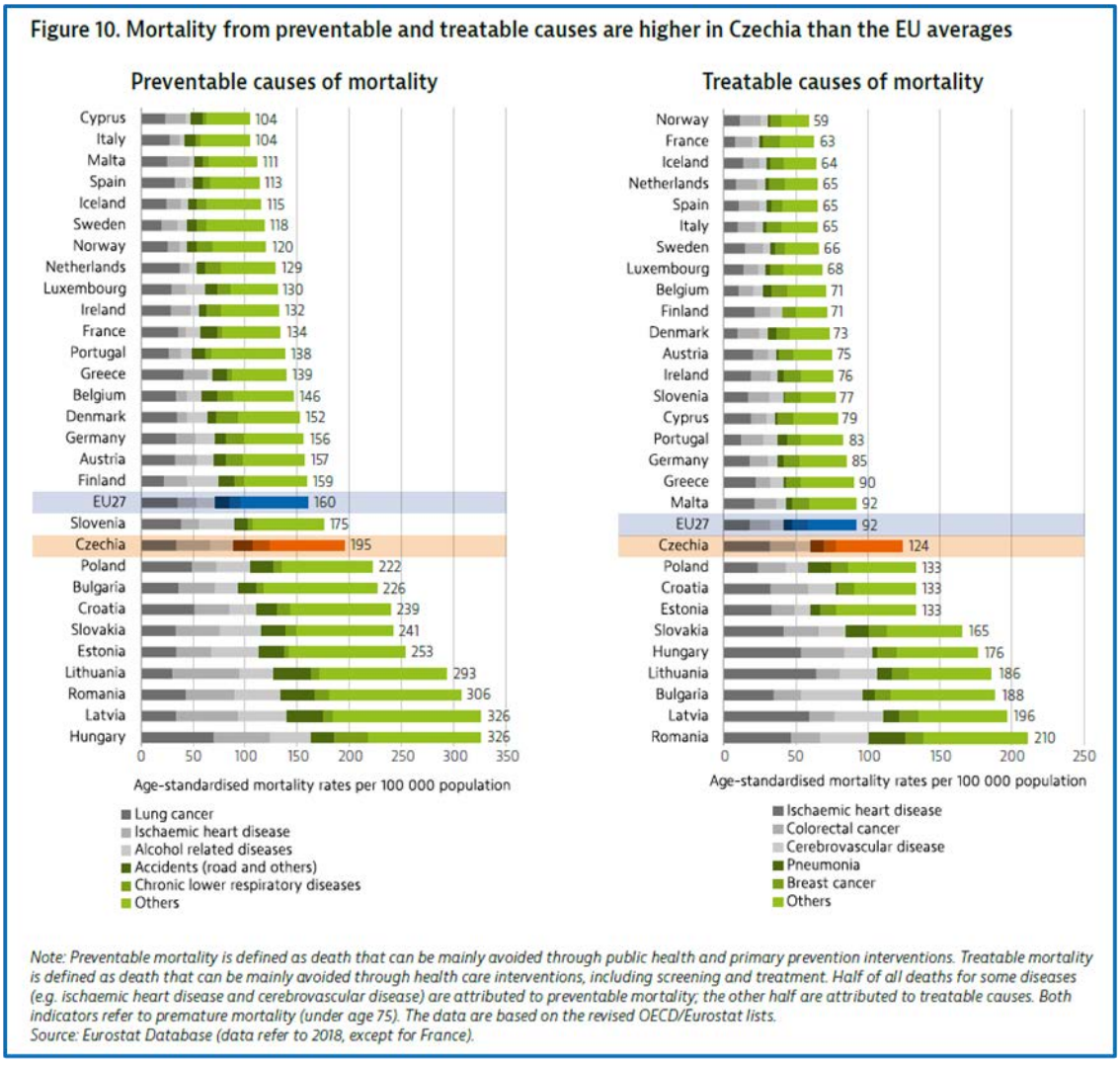
Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Preventable causes of mortality (number of deaths)	gender	International, time series	OECD/Eurostat definition	Mortality registry (LPZ), Eurostat	UZIS	UZIS
Treatable causes of mortality (number of deaths)	gender	International, time series	OECD/Eurostat definition	Mortality registry (LPZ), Eurostat	UZIS	UZIS
Potential Years of Life Lost (PYLL)		International, time series	OECD	Mortality registry (LPZ), OECD Health Statistics	UZIS	UZIS

Note: Mortality registry stands for the Registry of Causes of Death, which is being populated by information obtained from Certificate of Examination of the Deceased (*List o prohlídce zemřelého, LPZ*).

Infographic A D.3 shows possible visualisation of both the treatable and preventable mortality.

Infographic A D.3. Avoidable mortality

Mortality from preventable causes (left-hand figure) and from treatable causes (right-hand figure).



Note: The primary source of data for the depicted graphic is OECD/Eurostat for the European countries and the Czech Statistical Office for the Czech data.
Source: Depicted figures are taken from the OECD/European Observatory on Health Systems and Policies (2021[11]).

Experienced health

The subdomain of experienced health analyses people's subjective perception of their own health. There are 3 indicators in total. The first two indicators are based on EU-SILC survey, which has annual periodicity and can be disaggregated by age, sex, education, and level of urbanisation (hlth_silc_18). Indicators are comparable across EU countries through the Eurostat database; primary data custodian in the Czech Republic is the CZSO. The second indicator monitors subjectively perceived log-term (at least 6 months) limitations in activities of daily living due to health issues. This indicator was originally selected to be based on the European Health Interview Survey (EHIS), managed every 6 years (from 2019 on), but following the consultation process it was changed to the EU-SILC survey data, because of its annual availability. Both statistical surveys follow international methodologies of the Eurostat. The EHIS as well

as the EU-SILC survey offer the possibility of disaggregation based on socio-economic status (SES) such as education level and income.

The two indicators are assigned to the custody of UZIS; however it is recommended (and agreed on with both institutions) that for the purposes of indicator technical sheet drafting, the public health perspective shall be consulted with the National Public Health Institute (SZU).

The subdomain also contains one placeholder, for an indicator to be developed from the ongoing Patient Reported Indicator Survey (PaRIS project), which in its PROMs part focuses on patient reported outcome measures among patients aged 45 and over who have visited their general practitioner at least once in the preceding half a year, primarily targeting the chronically ill patients. The preliminary indicator custody of SZU can be further discussed based on national PaRIS project development.

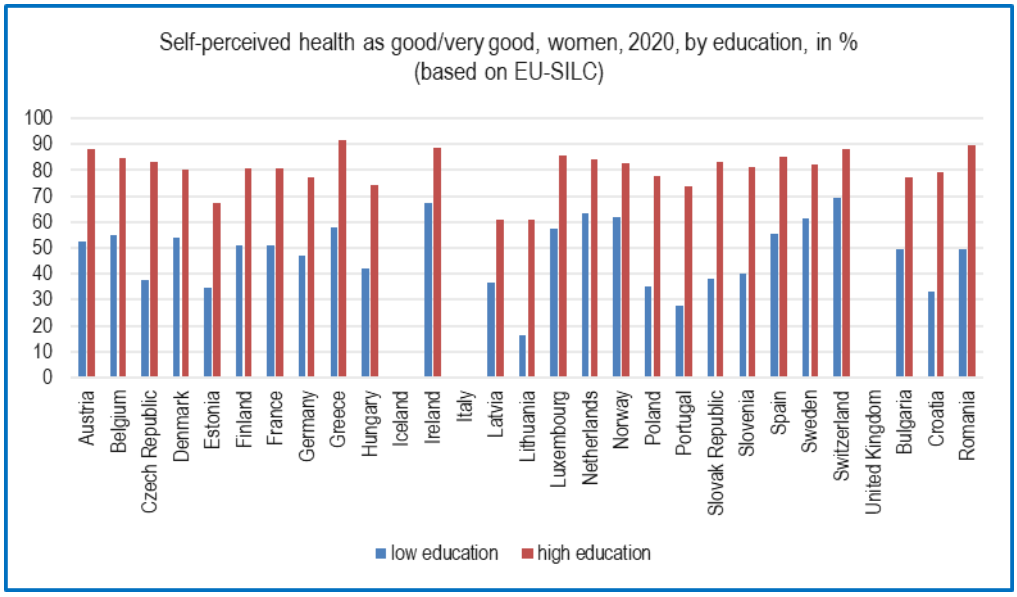
Table A D.3. Experienced health indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Limitations due to health reasons (EU-SILC)	Gender, age, SES	International, time series	Eurostat	EU-SILC survey	CZSO	UZIS
Self-perceived health by sex, age and degree of urbanisation (hlth_silc_18)	age group, sex, and degree of urbanisation	International, time series	Eurostat	EU-SILC survey	CZSO	UZIS
Patient reported outcome measures based on the PaRIS project	*PLACEHOLDER*	international	OECD	PaRIS survey	MoH	SZU

Infographic A D.4 shows possible disaggregation of self-perceived health indicator from the EU-SILC survey.

Infographic A D.4. Experienced health

1. Self-perceived health by gender and education. The primary data for the depicted figure is the EU-SILC survey, in the Czech Republic managed by the CZSO



Source: OECD (2022[15]), OECD Health Statistics (2022).

Burden of disease

The subdomain of burden of disease analyses incidence and prevalence of the most common and/or most serious diseases, and the level of multimorbidity in population. There are 9 indicators in total.

Two indicators, on multiple chronic disease prevalence among the elderly and on limitations in daily activities among the elderly, come from the Survey of Health, Ageing and Retirement in Europe (SHARE). SHARE is a research infrastructure for studying the effects of health, social, economic and environmental policies over the life-course of European citizens and beyond. It is a multi-disciplinary international time-collection database of microdata on health, socio-economic status and social and family networks of individuals aged 50+ from all EU countries, Switzerland and Israel. In the Czech Republic, the SHARE team is based at the Economics Institute of the Czech Academy of Sciences and the CERGE-EI, Charles University, and the survey is run by an agency selected in public procurement by the main project co-ordinator in Germany.

On the prevalence of diabetes, a discussion was held which primary data source to use. It would be possible to use the EHIS survey, which also offers a disaggregation by socio-economic status (SES), but since 2019 it will be carried only with a 6-year period (note, the EHIS survey is run on CZSO sample of respondents, but the primary data custodian is ÚZIS). The claim data at the NRHZS registry, managed by UZIS, do not allow for SES disaggregation, but are available annually and have a potential for regional comparison. Indeed, the claim data involve people cured for diabetes by medicine, while the EHIS data also involve people only on a diet. For these reasons, CZSO, SZU and UZIS supported the use of the claim data for this indicator. In the indicator technical sheet, it is recommended to complement the prevalence indicator based on claim data by the results of the European Health Examination Survey (EHES) which focuses also on non-medicated, potential diabetic patients.

The indicator for adults at risk of depression has been selected due to its policy consequences and the ongoing mental health reform. Either data from Eurofound (European Foundation for the Improvement of Living and Working Conditions) can be used, if the e-survey on Living, working and COVID-19 will continue for future cycles, or the data from Eurostat's EHIS survey can be used – data source to be yet discussed during the HSPA implementation phase.

Two indicators were included in the selection based on the recommendation of the CZSO and agreed on by the working group: indicator on people with health disabilities by age and sex and by the help of a third person, from a sample survey of the CZSO (a sample survey of persons with health limitations, not annual, but in a regular periodicity), and national statistics on incapacity to work, based on sick leaves due to illness data, which are available twice a year. In particular, the later may involve an indicator on the number of sick leaves per sick-insured population and/or average sick leave length in days.

The comorbidity index, calculated by the UZIS based on the methodology of Dey's modification of Charlson's comorbidity index (DCCI), has been presented in the Analytical study of the Health 2030 strategic document. For this reason, the indicator has been selected by the working group to populate the HSPA framework.

Table A D.4. Burden of disease indicators

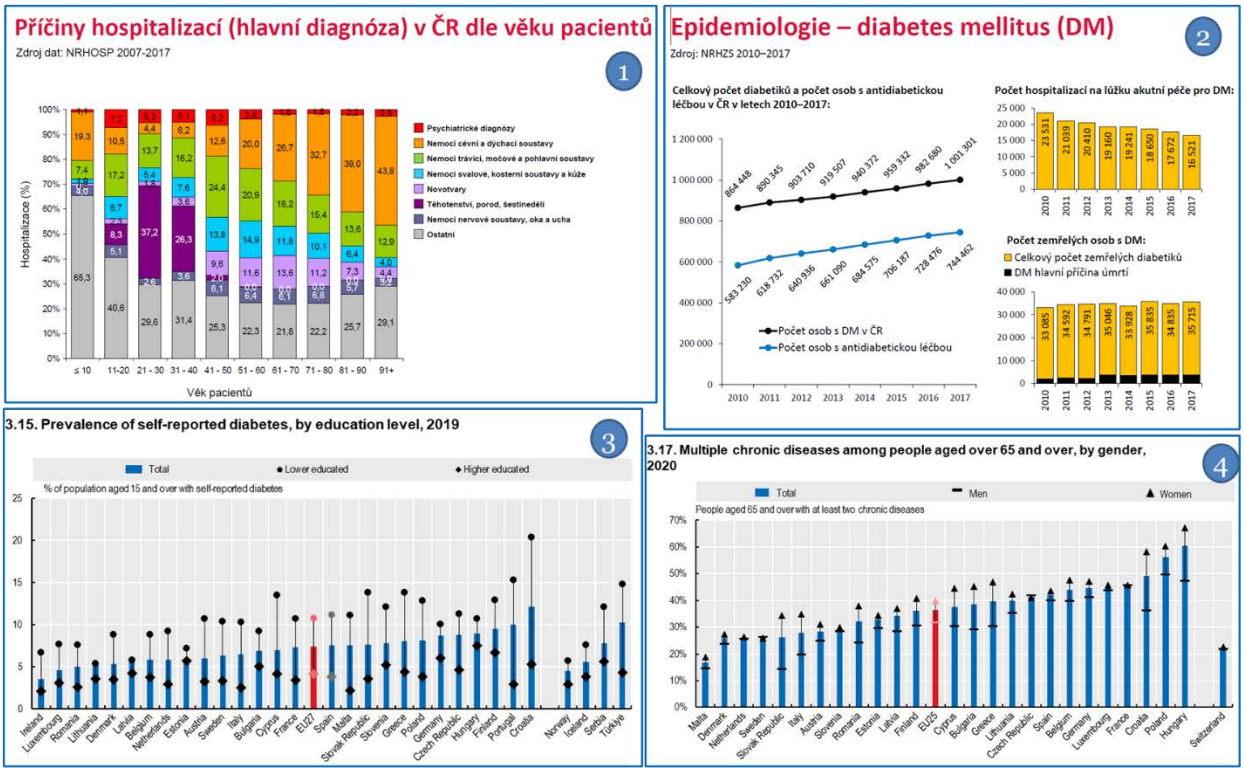
Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Multiple chronic diseases among people aged 65 and over, by gender (% people aged 65 and over with at least two chronic diseases) (SHARE)	Gender, SES?	International, time series	SHARE	SHARE survey	SHARE team	SZU
Standardised trend of causes of hospitalisation per 100 000 inhabitants	Gender, region	International, time series, regional	Eurostat / OECD	NRHZS claim data	UZIS	UZIS
Prevalence of (selected) chronic diseases and disabilities (EHIS)	Gender, age, SES	International, time series	Eurostat	EHIS survey	UZIS	SZU
Prevalence of diabetes (% of population aged 15 and over)	gender, age, region	time series, regional	national (UZIS)	NRHZS claim data (Diabetic Registry)	UZIS	UZIS, alt SZU
People with health disabilities by gender and age and by the help of another person	Gender, age	Time series	national (CZSO)	CZSO sample survey	CZSO	CZSO
Share of adults at risk of depression (% of population aged 18+ at risk of depression) // *TBD out of 2 sources*	Gender	International, time series	Eurofound **or** Eurostat	Eurofound survey **or** EHIS survey	Eurofound **or** UZIS	NUDZ/SZU?
Limitations in daily activities among people aged 65 and over (% people aged 65 and over) (SHARE) // *alternatively based on EHIS*	Gender, SES?	International, time series	SHARE	SHARE survey	SHARE team	SZU
Comorbidity index by ÚZIS (the share of population with high comorbidity index based on administrative data)	Age, gender, region	Time series, regional	Dey's modification of Charlson's comorbidity index (DCCI)	NRHZS claim data	UZIS	UZIS
Incapacity to work (number per sick-insured population and/or average sick leave length) (sick leaves due to illness, CZSO data)	Gender, age, region	Time series, regional	CZSO	eSick-leave administrative data of the Czech Social Security Office	CZSO	CZSO

Note: NUDZ – National Institute of Mental Health [*Národní ústav dusevního zdraví*].

Infographic A D.5 and Infographic A D.6 show possible disaggregation and visualisation of the burden of disease indicators.

Infographic A D.5. Hospitalisation and chronic diseases

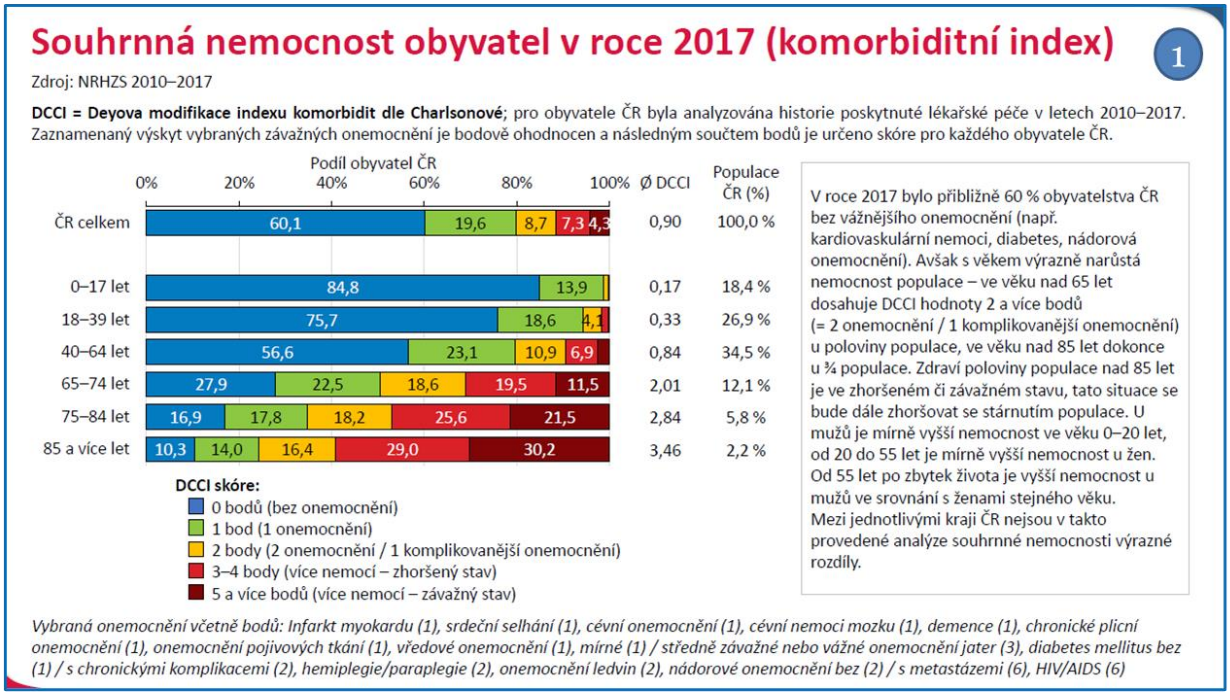
1. Causes of hospitalisations by the main diagnoses (in percentage) and by age of patients; 2. Total number of diabetes mellitus (DM) patients and patients with anti-diabetes treatment, number of hospitalisations due to DM, and number of all deaths of DM patients; 3. Prevalence of self-reported diabetes by education level; 4. Multiple chronic diseases among people aged 65 and over by gender

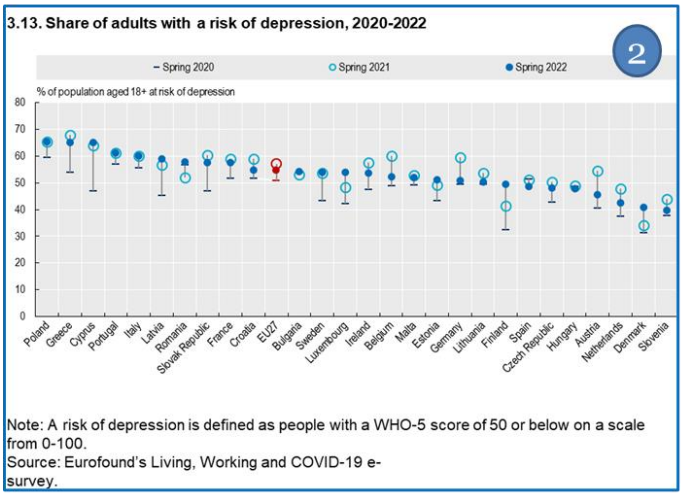


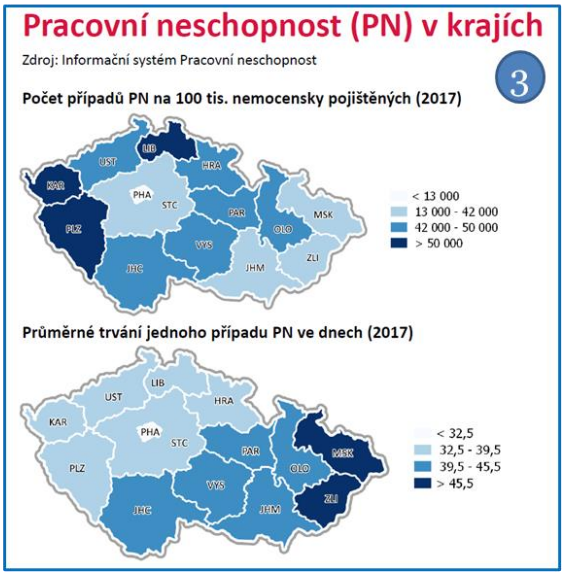
Note: The primary source of data for the depicted graphic is the NRHZS claim data registry at UZIS for number 1 and 2, and OECD Health Statistics for number 3 and 4.
Source: Depicted figures are taken from UZIS (2020[12]) for number 1 and 2, and OECD/European Union (2022[16]) for number 3 and 4.

Infographic A D.6. Sickness rate and risk of depression

1. The comorbidity index based on DCCI (Dey's modification of Charlson's comorbidity index); 2. Share of adults with a risk of depression; 3. Incapacity to work by CZE regions: number of sick leaves per sick-insured population, average sick leave length in days







Note: The primary source of data for the depicted graphic is the NRHZS claim data registry at UZIS for number 1, Eurofound's Living, Working, and COVID-19 e-survey for number 2, and CZSO information system on sick leaves.
Source: Depicted figures are taken from UZIS (2020[12]) for number 1 and 3, and OECD/European Union (2022[16]) for number 2.

Domain: Health risks

The total of 12 indicators have been selected for this domain and they are grouped into 4 subdomains (habits, diet and nutrition, physical exercise, and environmental risks).

Habits

The subdomain of habits monitors behaviour related to risky lifestyle (i.e. substance abuse). The total of 5 indicators were selected. Except for one indicator, on mortality due to risk factors, other indicators' primary data source can be the EHIS and EHES surveys, which have a 6-year periodicity starting 2019 only. Despite the fact the EHIS survey data are in the custody of the UZIS, the indicators are assigned to the custody of the SZÚ, as it is in the scope of its expertise and can be contextualised by using their other surveys as well. Indeed, in between the EHIS rounds, SZU plans to employ the results of the national survey NAUTA, which has been run annually since 2018.

The alcohol consumption area is open for further discussion and decision to be made by the indicator custodian regarding what particular indicator to include. For instance, it can be total consumption of pure alcohol in litres, or the level of engagement in binge drinking, for the adult populations or for the youth. Again, either EHIS data or NAUTA survey data can be used.

Indeed, it is as well possible to include a joint figure on all lifestyle-related health risks such as obesity, nutrition, exercise, smoking, etc, in comparison to other EU countries, for instance.

Table A D.5. Habits indicators

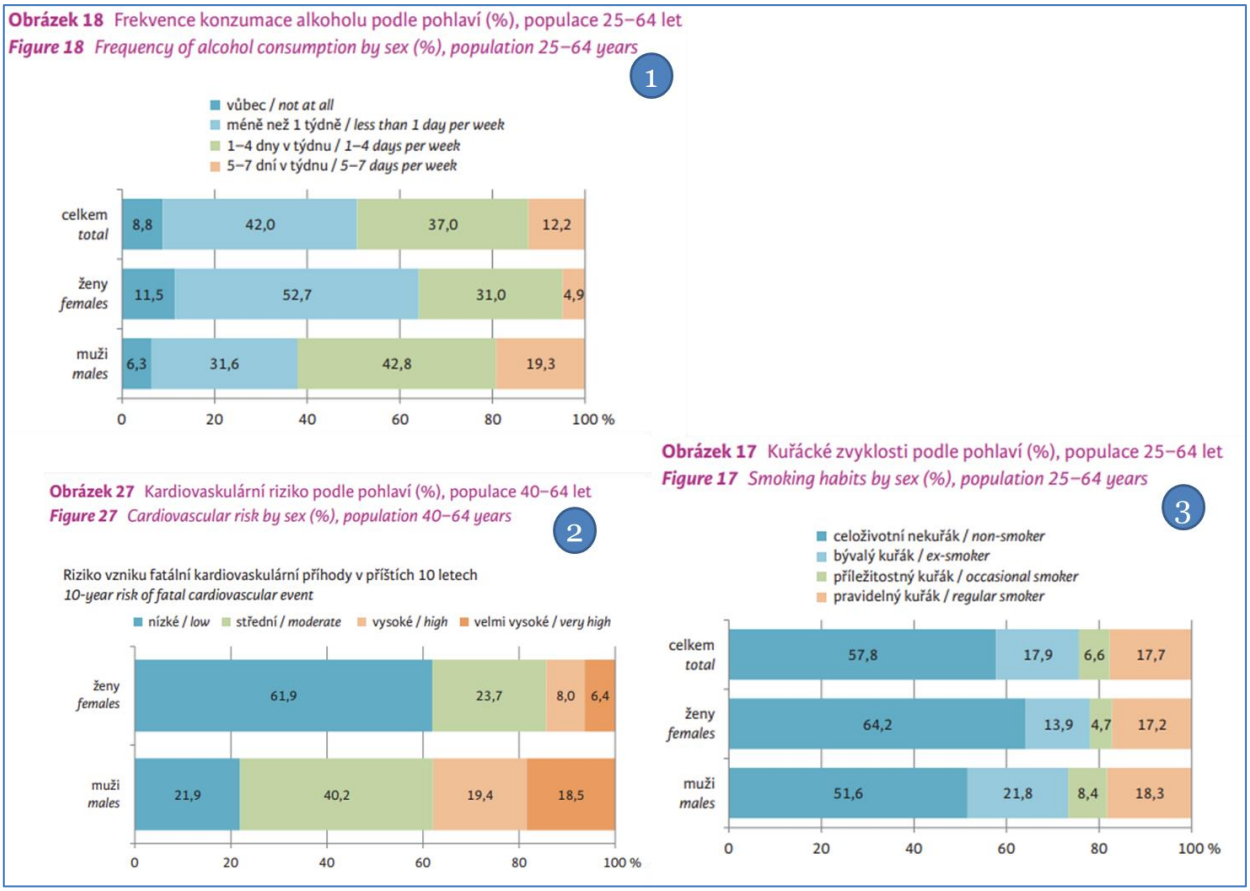
Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Number of deaths by risk factors	gender, age	International, time series	IHME (Eurostat, WHO?)	IHME (primarily CZE mortality registry	IHME	SZÚ
Smoking	Gender, age, SES	International, time series	Eurostat	EHIS survey // NAUTA	UZIS, SZU	SZÚ
Alcohol consumption	Gender, age, SES	International, time series	Eurostat	EHIS survey // NAUTA	UZIS, SZU	SZÚ
Estimate of cardio-vascular risks	gender, age, SES	International, time series	Eurostat	EHES survey	SZU	SZÚ
Health literacy	*PLACEHOLDER*			Survey data	SZU	SZU

Note: Mortality registry stands for the Registry of Causes of Death, which is being populated by information obtained from Certificate of Examination of the Deceased (*List o prohlídce zemřelého, LPZ*).

Infographic A D.7 shows possible disaggregation and visualisation of the indicators related to some lifestyle health risks (habits).

Infographic A D.7. Smoking habits, alcohol consumption and cardiovascular risk

1. Frequency of alcohol consumption by sex; 2. Cardiovascular risk by sex; 3. Smoking habits by sex. Primary data source for depicted figures is the EHIS/EHES survey



Source: Depicted figures are taken from (SZÚ, 2022[17]).

Diet and nutrition

The subdomain of diet and nutrition monitors behaviour related to eating habits. The total of 3 indicators were selected. The primary data source is the EHIS survey, complemented by its European Health Examination Survey (EHES) part for the metabolic syndrome indicator. The EHES survey is managed by the SZÚ.

In the voting exercise, stakeholders selected indicators “metabolic syndrome” and “Body mass index (BMI) by sex, age and country of birth (hlth_ehis_bm1b)”. The indicator describing consumption of sweetened drinks was added based on the working group discussion due to its relevance in the debate of specific taxation of sugar-containing beverages and also due to its relevance for the dental healthcare needs, which has been a current health policy issue.

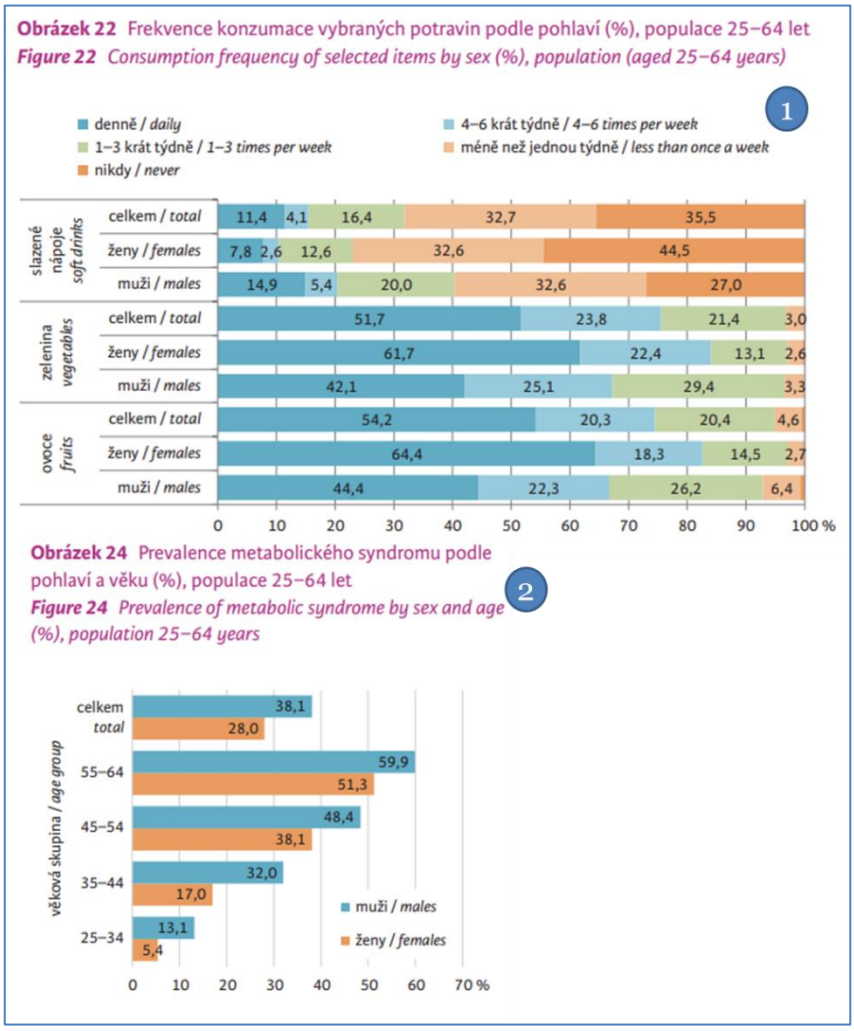
The draft of indicator technical sheets for the two EHIS indicators shall be consulted by the UZIS team for particular disaggregation, e.g. by the socio-economic status.

Table A D.6. Diet and nutrition indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Metabolic syndrome	gender, age	International, time series	Eurostat	EHES survey	SZÚ	SZÚ
Body mass index (BMI) by sex, age and country of birth (hlth_ehis_bm1b)	Gender, age, SES	International, time series	Eurostat	EHIS survey	UZIS	SZÚ (UZIS)
Frequency of drinking sugar-sweetened soft drinks by sex, age and body mass index (hlth_ehis_fv7m)	Gender, age, SES	International, time series	Eurostat	EHIS survey	UZIS	SZÚ (UZIS)

Infographic A D.8. Consumption of selected food and prevalence of metabolic syndrome

1. Consumption frequency of selected food by sex; 2. Prevalence of metabolic syndrome by age and sex. Primary data source for depicted figures is the EHIS/EHES survey



Source: Depicted figures are taken from (SZÚ, 2022[17]).

Physical exercise

The subdomain of physical exercise monitors behaviour related to active lifestyle. The primary data source is the EHIS survey. In the scoring exercise, originally the stakeholders selected three indicators, but only 2 indicators were finally selected. The principal working group agreed on including one indicator describing work-related physical activity and one indicator describing physical activity not related to work.

Table A D.7. Physical exercise indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Effort involved in performing work-related physical activity by sex, age and degree of urbanisation (hlth_ehis_pe1u)	Gender, age, SES	International, time series	Eurostat	EHIS survey	UZIS	SZÚ
Performing (non-work-related) physical activities by sex, age and degree of urbanisation (hlth_ehis_pe3u)	Gender, age, SES	International, time series	Eurostat	EHIS survey	UZIS	SZÚ

Environmental risks

The subdomain of environmental risks monitors health risks related to living conditions. The total of 2 indicators were selected, however only one is a precise one, describing the air pollution. The second indicator is in fact a set of indicators generally referring to regular monitoring managed by the SZU. The monitorings focus on various environmental aspects (quality of water, occupational hazards).

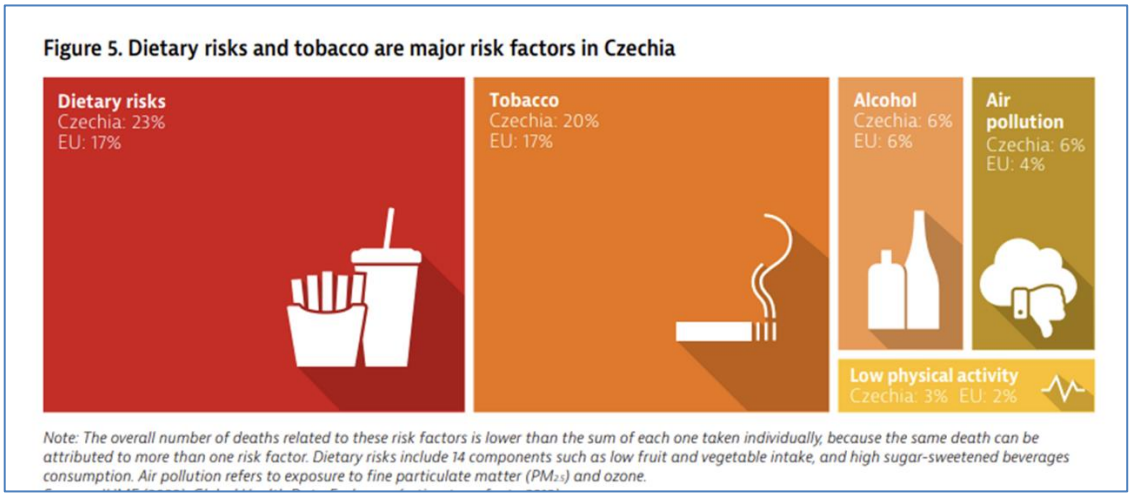
The principal working group suggested to present the air pollution-related deaths in relation to other health risks-related deaths, similar to the OECD figure depicted in Infographic A D.9. Possibly, this subdomain could be merged with the other health risks subdomains, if this way of presenting the environmental indicators is taken on board. An alternative indicator for environmental health risks can be drawn from the Czech national strategy "ČR 2030",[3] which monitors also for the state of the environment, including the air pollution. During the HSPA implementation phase, the SZÚ will further specify what particular indicator to include, or create, for this subdomain in this theme.

Table A D.8. Environmental risks indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Premature deaths due to air pollution PM2.5 (rate per 100 000 population)	age	international	WHO	SZU model	SZU	SZÚ
Monitorings: air pollution, drinking and bathing water pollution, community noise, contaminants in food chains and dietary exposures, human biomonitoring, occupational health hazards	regional	Time series, regional	SZÚ	SZÚ	SZÚ	SZÚ

Infographic A D.9. Air pollution-related deaths

1. Deaths related to air pollution in relation to deaths due other health risks. Primary data source is the EHIS survey



Source: Depicted figure is taken from (OECD/European Observatory on Health Systems and Policies, 2021[11]).

Domain: Access

The total of 10 indicators have been selected for this domain and they are grouped into 3 subdomains (financial affordability, geographical accessibility, and waiting times).

Financial affordability

The subdomain of financial affordability analysis the financial affordability of healthcare for patients in a total of 4 indicators. The unmet need indicator shows the share of respondents reporting the reason for an unmet healthcare need being of financial nature.

The share of households with catastrophic health spending indicator is a placeholder. In 2012, it has been calculated on an ad hoc basis by the WHO Europe based on household budget survey data of the CZSO. The placeholder needs further discussion during the HSPA implementation phase. CZSO stated it would be feasible to provide update to the 2012 data and the WHO Europe methodology can be used as a basis, also allowing for international comparison. When this indicator is developed in the Czech HSPA, it may also offer comparability in time since household budget survey data are regularly collected.

The principal working group supports the inclusion of all three indicators with the highest level of disaggregation possible because of the high placement of the theme on policy agenda. These indicators will thus inform public discussion related to any policy proposals.

The working group also suggested to include the disaggregation of household out-of-pocket expenditures by type of expenditures (e.g. pharmaceuticals, hospitalisations, outpatient care, dental).

Further to this subdomain, the household out-of-pocket spending indicators can be complemented, in the technical sheet description, by an analysis of pharmaceutical expenditures above the annual cost sharing limit, which are then reimbursed to patients by the HIFs.

Table A D.9. Financial affordability indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
% reporting unmet medical needs by income	Gender, age, SES	International, time series	Eurostat	EU-SILC survey	CZSO	CZSO
Out-of-pocket spending on health as share of final household consumption (%)	income quintiles, seniors, families with children	International, time series	OECD	Household budget survey	CZSO	CZSO
Share of households with catastrophic health spending by consumption quintile (% of all households) // *PLACEHOLDER*	By income quintile	International, time series	WHO Europe	Household budget survey	CZSO	CZSO
Household out-of-pocket spending by type of expenditures (e.g. pharmaceuticals, hospitalisations, outpatient care, dental)	income quintiles, seniors, families with children	Time series	OECD	Household budget survey	CZSO	CZSO

Geographical accessibility

The subdomain of geographical accessibility analysis the accessibility of health services within a geographical area. Both indicators are placeholders – meaning they have not been regularly published and used. However, for both indicators the data should be readily available. During the HSPA implementation phase, discussions should focus on indicator methodology development. There are two sources of data available for patient registrations, either the claim data in the NRHZS registry, or the information gathered by the Capitation Center. It has been clarified in the discussions to use the Capitation Center data.

The working group participants also suggested to enlarge the indicator to the whole primary care, i.e. to include also registering dentists, gynaecologists, and paediatricians. The working group expressed some concerns regarding the relevance of data for the dentists as many people are provided the dental care outside of the SHI scope.

If data from the Capitation Center is used, age-standardisation for registered patients would also be possible, similar to the way the Capitation Center applies it for reimbursement purposes.

For the indicator on the share of patients for whom primary care is accessible within a geographical limit, it has been discussed to use the number of people living within an enlarge municipality area [*obce s rozšířenou působností, ORP]*, divided by the full-time equivalents of practicing general practitioners for adults and for children.

Table A D.10. Geographical accessibility indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Average number of patients registered with a GP, by region // *PLACEHOLDER, data exist*	region	Time series, regional	Capitation Center	Capitation Center	Capitation Center	MoH
Share of patients for whom primary care is accessible within a geographical limit // *PLACEHOLDER, data exist*	region	Time series, regional	MoH	Capitation Center	Capitation Center	MoH

Waiting times

The subdomain of waiting times analysis the accessibility of health services in time. Eventually 4 indicators were chosen, three of which are placeholders. The only existing indicator – unmet needs for dental examination due to financial, geographic, or waiting time reasons – is in the reality of the Czech Republic however more suitable for the "financial access" domain, as financial reasons are most often stated by responders as the reason for unmet needs for dental examination. Waiting times for appointments or procedures are not systematically measured in the Czech Republic. The issue could be solved if a three-way electronic referral is introduced (*three-way* for the patient, the referred provider, and the HIF), however that is not currently under any preparation in the CZE.

Table A D.11. Waiting times indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Waiting time of more than two weeks to get an appointment with a specialist (% of population asking an appointment)	*PLACEHOLDER*					
Unmet needs for dental examination due to financial, geographic or waiting time reasons (% of unmet needs)	SES	Time series	Eurostat	EHIS survey	UZIS	UZIS
Waiting time for a first face-to-face contact in an outpatient mental health care centre	Gender, regional *PLACEHOLDER*					MoH
Share of patients for whom primary care is accessible within a geographical limit // *PLACEHOLDER, data exist*	region	Time series, regional	MoH	NRHZS claim data	UZIS	UZIS

Domain: Quality

The total of 19 indicators have been selected for this domain and they are grouped into 4 subdomains (safety, clinical effectiveness, people-centredness, and care appropriateness).

Safety

Indicators in the subdomain of safety explore the "degree to which the health system does not harm the patient". There are 5 indicators in total.

The primary data source for all the 4 indicators is healthcare provider reporting to the Adverse Event Reporting System [*Systém hlášení nežádoucích událostí, SHNU*], managed by the UZIS. The reporting of adverse events is obligatory for all healthcare providers since 2018. The methodology has been developed and described in detail for each of the adverse events. At the time of this report drafting, healthcare providers reported only aggregate data, not individual patient data. International comparability of national data needs to be clarified during the HSPA implementation phase.

Table A D.12. Safety indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Prevalence of healthcare-associated infections (% of patients hospitalised)		International, time series	ECDC	prevalence study (4, 5 years)	SZU	SZU
Number of hospitals monitoring prevalence of bloodstream infections based on ECDC			National (SZU)	SZU provider reporting	SZU	SZU
Share of selected microorganism resistance based on the EARS-NET methodology		International, time series	ECDC, EARS-NET methodology	SZU provider reporting, microbiological laboratories reporting	SZU	SZU
Prevalence of hospital-acquired cat II-IV pressure ulcers (% of patients hospitalised)	regional	International?, time series, region	national (UZIS)	provider reporting to the SHNU system	UZIS	UZIS
Falls in hospitals (ÚZIS)	regional	International?, time series, region	national (UZIS)	provider reporting	UZIS	UZIS

Infographic A D.10 shows available data on some of the safety indicators.

Infographic A D.10. Adverse events

1. Incidence of the adverse event "falls in hospitals".

Tab. 1 *Výskyt NU Pád v ČR za jednotlivá období* (Pokorná a kol., cit. 2022)

Období	Absolutní počet NU	Počet NU na 1000 pacientů	Celkový počet hospitalizovaných pac.	Počet PZS, kteří NU sledují (z celkového počtu PZS)
2018	32 316	47,84	2 706 998	408 (408)
2019	32 834	53,82	2 856 355	430 (430)
2020	29 635	54,72	2 320 850	435 (435)
2021	29 731	49,37	2 364 538	429 (429)

Note: Primary data source is the Adverse Event Reporting System, managed by UZIS.
Source: The depicted table is taken from UZIS (2023[18]).

Clinical effectiveness

The subdomain of clinical effectiveness reviews the degree of achieving desirable outcomes and the degree to which care is provided according to evidence (evidence-based medicine). There are 5 indicators in total.

Case fatality indicators for AMI and stroke within 30 days after admission have international methodologies developed by the OECD. For HSPA, the linked-data indicators were selected, monitoring mortality of patients also outside, or in a different, hospital. Internationally, data are collected once in two years; national data at UZIS are available annually.

The 5-year cancer net survival rates are calculated by CONCORD programme, led by the London School of Hygiene and Tropical Medicine. While for international comparison the data may be published with a delay, UZIS generally has more recent national cancer survival data available, as shown by the analytical study to the National Oncology Plan; these however are not always internationally comparable, especially when disaggregated to regional level or cancer type.

In this subdomain, a placeholder is created for indicators on the quality of stroke care, based on the ongoing initiative of the Health Insurance Bureau (KZP) to develop tailored healthcare quality indicators.

This subdomain also includes an indicator on the use of multidisciplinary diagnostic teams (MDT) in cancer patients, for which UZIS has developed a comprehensive methodology in collaboration with the Czech Oncology Society. The use of MDTs has been part of clinical guidelines internationally. This indicator has also been related to the health policy priorities in the area of cancer care, as defined by the National Oncology Plan.

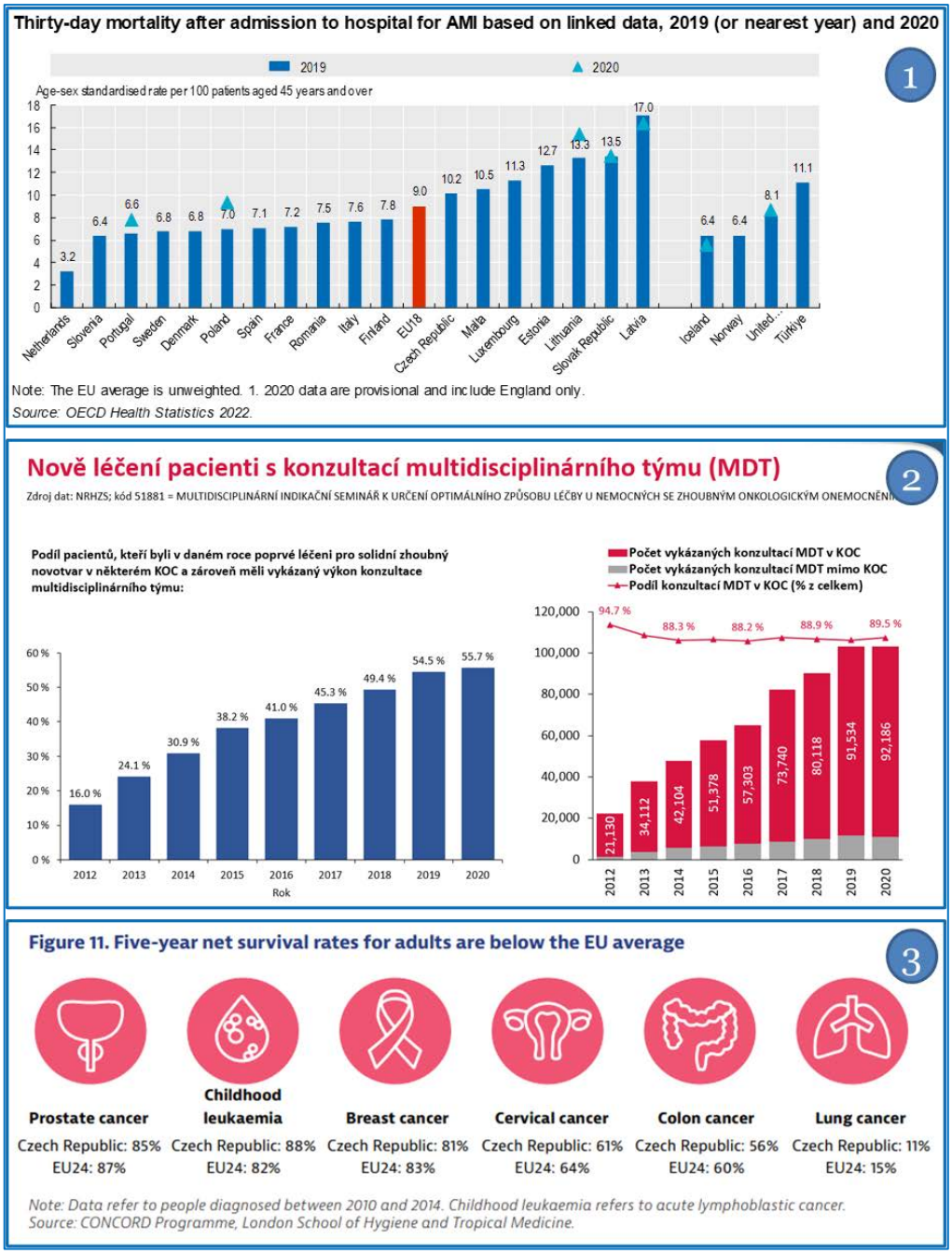
Table A D.13. Clinical effectiveness indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Case fatality within 30 days after admission for AMI (pop aged 45+, linked data, percentage)		International, time series	OECD	NRHZS claim data, mortality registry	UZIS	UZIS
Case fatality within 30 days after admission for ischaemic stroke (pop aged 45+, linked data, percentage)		International, time series	OECD	NRHZS claim data, mortality registry	UZIS	UZIS
Cancer survivals – percentage share by age, sex and type	Age, gender, cancer type	International, time series	CONCORD	National Oncological registry	UZIS	UZIS
Set of indicators on quality of care for patients with stroke		Time series	national (KZP)	claim data from HIFs	KZP	KZP
Patients with cancer reviewed by multidisciplinary diagnostic team (% of newly diagnosed cancer patients)	region	Time series, regional	national (UZIS)	NRHZS claim data	UZIS	UZIS

Infographic A D.11 shows possible disaggregation and visualisation of the clinical effectiveness indicators.

Infographic A D.11. Case fatality, clinical guidelines compliance, and cancer survivals

1. 30-day mortality after admission for AMI, linked data; 2. Newly diagnosed cancer patients reviewed by a multidisciplinary diagnostic team; 3. 5-year cancer net survival rates



Note: The primary source of data for the depicted graphic is the NRHZS claim data registry at UZIS for number 1 and 2, and the Czech Oncology Registry at UZIS for number 3; being linked to the mortality registry for number 1 and 3.
Source: Depicted figures are from (OECD/European Union, 2022[16]) for number 1, (ÚZIS, 2022[19]) for number 2, and (OECD, 2023[14]) for number 3.

Care appropriateness

This subdomain targets issues related to the care appropriateness, which is defined as healthcare that is relevant to the patient's health status, clinical needs, and latest medical knowledge (i.e. care provided by a provider with the right expertise and level of specialisation, in a timely manner and complying to clinical guidelines). There are 6 indicators in total.

Three of the indicators deal with drug consumption. Indicator on antibiotics use has been under development by the SZU, based on health insurers' claim data processed by the Health Insurance Bureau. These can be further disaggregated by regions or lower municipalities, ab by type of antibiotics. Indeed, the OECD disposes of internationally comparable self-prescribing in primary care measure, looking at overall volume of antibiotics prescribed; the Czech Republic has not yet start to report data to this data collection, however.

The indicator on self-reported use of non-prescribed medicine is based on EHIS survey data, which allows for also SES disaggregation, however starting 2019 has 6-year collection period.

Palliative care has been receiving special policy focus in recent years in the Czech Republic, which also resulted in new reimbursement schemes and coding assigned to it. This newly allows for calculating the palliative care indicator on cancer patients receiving palliative care, based on the OECD methodology of palliative care pilot, and the Czech Republic aims to start reporting this data to OECD statistics this year.

Indicators on antidepressant use and appropriate follow-up care for diabetic patients need to be further discussed and developed during the HSPA implementation stage; the Belgian HSPA indicators may serve as methodological examples.

Table A D.14. Care appropriateness indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Datasets on antibiotics use // *under development in CZE*	Region, type of ATB	Time series, regional	national (KZP)	claim data from HIFs	KZP	SZU
Caesarean section rate (per 1 000 live births)	region	International, time series, regional	OECD	NRHZS claim data	UZIS	UZIS
Use of antidepressants (total DDD/1000 pop/day) // *to be developed in CZE*	Age, gender *PLACEHOLDER*	Time series		NRHZS claim data **or** SÚKL	UZIS, alt SUKL	UZIS, after consulting NUDZ
Proportion of adult diabetics with appropriate follow-up (% of diabetic patients under insulin) // *to be developed in CZE*	Age, gender *PLACEHOLDER*	Time series	The Czech Medical Society of Diabetology + HIFs	NRHZS claim data	UZIS	UZIS
Patients who received palliative care (% of terminal cancer patients who died in the year) // under *development in CZE*	region	Time series (in the future), regional	OECD	NRHZS claim data	UZIS	UZIS
Self-reported use of non-prescribed medicines by sex, age and educational attainment level (hlth_ehis_md2e)	Age, gender, SES	International, time series	Eurostat	EHIS survey	UZIS	UZIS

People-centredness

The patients' subjective experience with the health system. There are 3 indicators in total in this subdomain, however two of them are placeholders, i.e. not yet existent.

The indicator on doctors providing easy-to-understand explanations has been inspired by the Commonwealth Fund survey, which however does not include CZE. Discussion is thus needed among the Czech HSPA stakeholders on whether and how to include an extra question in existing patient surveys. One of the options may be to restrict the survey sample to inpatient care only and use the National Patient Satisfaction Survey, managed by the MoH.

The National Patient Satisfaction Survey project is the result of a long-term activity of the Ministry of Health, the main goal of which is to set up a unified system for monitoring and evaluating patient satisfaction in the Czech Republic and to strengthen the patient's voice in the inpatient facilities. The survey targets patients in hospitals and participation of healthcare providers is voluntary. Since 2020, when the survey was first launched, the number of participating inpatient facilities has grown substantially. Originally, the project has been developed to serve informative purposes of hospital management, i.e. as a managerial tool. Based on consultations within the working group, an indicator is proposed for the HSPA framework building on the overall results of the patient satisfaction survey, with possible disaggregation by regions (however, this needs to be yet clarified in the HSPA implementation phase).

The last placeholder indicator shall be based on the outcomes of the ongoing OECD Patient Reported Indicator Survey project (PaRIS), with a special focus on patient reported experience measures (PREMs). Out of the several ongoing initiatives within the PaRIS project, the most promising for this placeholder indicator is the PaRIS International survey of people living with chronic conditions, which focuses on patients aged 45 and over visiting their general practitioner at least once in the preceding half a year.

Table A D.15. People-centredness indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Doctor providing easy-to understand explanations (%)	PLACEHOLDER		Commonwealth Fund		?	?
Average rating of healthcare providers in the patient satisfaction survey // PLACEHOLDER – data exist	region	Time series, regional?	*to be developed by MoH*	Patient satisfaction survey	MoH	MoH
Patient reported experience measure based on the PaRIS project	PLACEHOLDER	international	OECD	PaRIS survey	MoH	MoH

Domain: Financial Stability

The domain of financial stability reviews and analyses the revenues of the health system, with emphasis put on the analysis of health sector financial resources and their stability (and sufficiency) over time. The total of 5 indicators have been selected for this domain.

Two of the indicators are based on OECD international methodology of the System of Health Accounts. The CZSO is generally able to provide updates on these indicators 6 months earlier than the OECD data collection (i.e. in the second half of a year for the preceding year).

Discussion was held among the working group members whether to choose the percent of GDP as the unit of measurement, or for international comparison rather a currency unit, because there is a public perception in the Czech Republic that health sector expenditures in real terms are far below the other EU countries. The group consent was to go with percentage of GDP for the first HSPA implementation, as there is currently an ongoing international discussion on defining a healthcare-specific purchasing power

parity; also, the purchasing power parity calculation is done by the international organisation, not by the CZSO.

The three other indicators are country-specific, looking at revenues and expenditures solely of the health insurance funds (HIF) and at the ration of HIFs' financial reserves to current expenditures. The latter has been used by the MoH and MoF to supervise the financial development of the statutory health insurance system.

The two indicators on revenues and expenditures of HIFs, based on the MoF methodology of National Accounts, are presented in the HSPA as two separate indicators, however it is foreseen that the two will be interpreted and contextualise in mutual connection.

Table A D.16. Financial stability indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Total revenues of statutory health insurance	na	na	MoH, MoF (National Accounts)	HIFs, MoF	MoH, MoF	MoH, MoF
Total expenditures of statutory health insurance system	na	na	MoH, MoF (National Accounts)	NRHZS claim data	MoH, MoF	MoH, MoF
Health expenditure from public sources as share of total health spending (%)	na	International, time series	OECD, EST, WHO (System of Health Accounts)	System of Health Accounts	CZSO	CZSO
Health expenditure as a share of GDP (% GDP)	na	International, time series	OECD, EST, WHO (System of Health Accounts)	System of Health Accounts	CZSO	CZSO
Ratio of health insurance funds' reserves to current expenditure	na	na	MoH, MoF	HIFs	MoH, MoF	MoH, MoF

Domain: Integrated care delivery

The total of 18 indicators have been selected for this domain and they are grouped into 4 subdomains (co-ordination of care, continuity of care, long-term care, and prevention).

Co-ordination of care

The subdomain of co-ordination of care aims to monitor the level of an ongoing co-ordination of multiple providers in the care for a chronically ill patient, including measurement of the consequences of insufficient co-ordination (e.g. avoidable hospitalisations). There are 3 indicators in total in this subdomain, however two of them are placeholders, i.e. not yet existent.

The avoidable hospital admission indicators are being reported by the Czech Republic to the OECD dataset, i.e. internationally comparable data exist. During the HSPA implementation phase it needs to be discussed whether regional disaggregation is possible, and whether to use age-standardisation for these calculations.

The use of emergency care is split into two indicators, both needing a methodology development. One of them aims to measure the (in)adequacy of standard outpatient care, while the other looks at the use of emergency care (both the emergency services and the out-of-hours outpatient service). Data for both exist in the NRHZS claim data registry at the UZIS. If only one indicator would be taken on board during the HSPA implementation phase, the working group participant support the inclusion of the indicator on use of emergency services after the last visit.

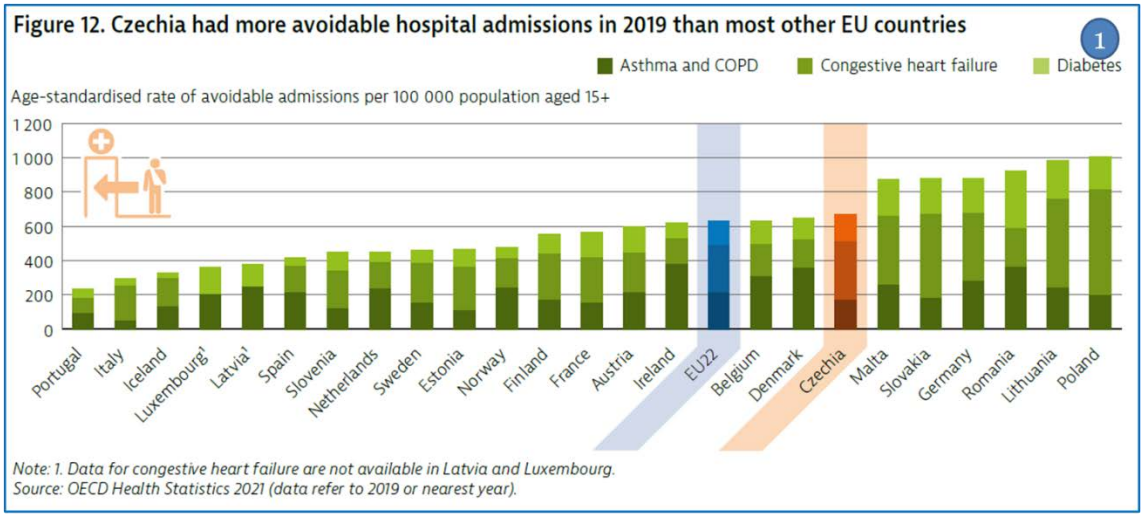
Table A D.17. Co-ordination of care indicators

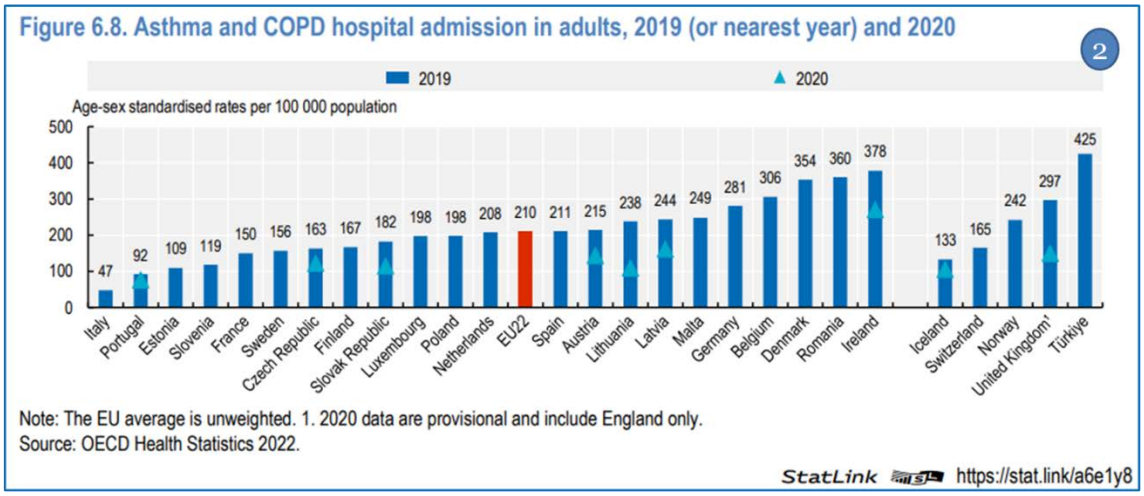
Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Avoidable hospital admissions (diabetes, COPD, CHF, hypertension)	Age?, gender?, region?	International, regional?	OECD	NRHZS claim data	UZIS	UZIS
Use of emergency care within 5 days after the last visit (after discharge or after outpatient visit)	Age?, gender?, region? *PLACEHOLDER*	regional?	*[Belgian HSPA]*	NRHZS claim data	UZIS	UZIS
Ratio of GP-registered and GP-nonregistered patients using emergency and out-of-hours care	Age?, gender?, region? *PLACEHOLDER*	regional?	[*national (MoH)*]	NRHZS claim data	UZIS	UZIS

Infographic A D.12 shows possible benchmarking and visualisation of the co-ordination of care indicators.

Infographic A D.12. Avoidable hospital admissions

1. Age-standardised rate for avoidable hospital admissions for selected diseases; 2. Development of asthma and COPD hospital admissions over certain period





Note: The primary source of data for the depicted graphics is the NRHZS claim data registry at UZIS, and the OECD Health Statistics for the international comparison.

Source: Depicted figures are taken from OECD/European Observatory on Health Systems and Policies (2021[11]) for number 1 and OECD/European Union (2022[16]) for number 2.

Continuity of care

The subdomain of care continuity involves indicators aimed at monitoring patient's journey through the healthcare system (a patient pathway) and the continuity of healthcare provided to a patient for a chronic condition or for a medical episode, which needs to be organised and provided by a multiple of healthcare providers (e.g. an early rehabilitation after a heart attack). There are 4 indicators selected in this subdomain.

Indicator on patient outcomes one year after discharge for selected diseases is being reported by the Czech Republic to the OECD dataset, i.e. internationally comparable data exists. During the HSPA implementation phase it needs to be discussed whether regional disaggregation is possible, and whether to use age-standardisation for these calculations.

Two indicators relate to patient pathways for specific conditions and timely treatment recommendations that are generally included in clinical guidelines. UZIS is currently working on clinical guidelines for these specific health conditions and will be able to define the methodology for these two indicators in relatively near future, on time for the first HSPA implementation. Development of these indicators can also benefit from the ongoing projects of the KZP, which is developing mapping of patient pathways for selected procedures in collaboration with Medical Societies and some of the patient pathways templates should be available already during the year 2023.

The last indicator is a placeholder as well, monitoring the follow-up care of elderly patients after hospital discharge. Discussions on methodology of this indicators are already ongoing between the MoH and UZIS.

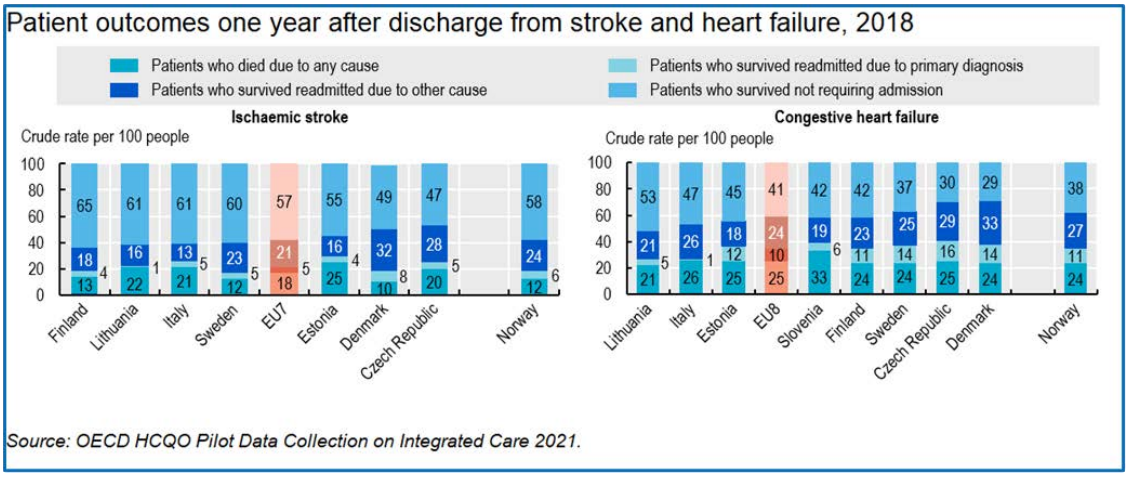
Table A D.18. Continuity of care indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Patient outcomes one year after discharge from stroke and heart failure (crude rate per 100 people)	region?	International, time series, regional?	OECD	NRHZS claim data/hospitalisation registry, mortality registry	UZIS	UZIS
Time from a positive screening for a certain cancer type to treatment	*PLACEHOLDER*		[*UZIS clinical guidelines*]	NRHZS claim data	UZIS	UZIS
Timespan between two episodes of care that should follow one another (according to clinical guidelines)	*PLACEHOLDER*		[*UZIS clinical guidelines*]	NRHZS claim data	UZIS	UZIS
General practitioner encounter within 7 days after hospital discharge (% patients 65+)	regional? *PLACEHOLDER*	Time series, regional?	*to be developed (MoH and UZIS)*	NRHZS claim data	UZIS	UZIS

Infographic A D.13 shows possible benchmarking of the continuity of care indicators.

Infographic A D.13. Continuity of care – patient outcomes

Patient outcomes one year after discharge for specific conditions



Note: The primary source of data for the depicted graphics is the NRHZS claim data registry at UZIS and the mortality registry, and the OECD Health Statistics for the international comparison.
Source: Depicted figure is taken from (OECD/European Union, 2022[16]).

Long-term care

The 3 indicators in the subdomain of long-term care are all placeholders and require further discussion to develop the desired indicators. The only indicator, on polypharmacy among the elderly, has known data source to date, but methodology needs further discussion during the HSPA implementation phase; the UZIS will explore the possibility of this indicator development. Still, using the NRHZS claim data registry has limited interpretation, because prescriptions with zero reimbursement are not included; this could be solved by using the SUKL prescription dataset. Still, over-the-counter drugs are not included in either of the two datasets.

The two indicators on long-term care in residential facilities and home nursing care may potentially be grouped into one joint indicator, provided the two types of long-term care would be visually distinguished in indicator presentation. International comparison for these indicators may be difficult. As several countries use slightly different methodologies/definitions of the long-term care, results may not be completely comparable.

Table A D.19. Long-term care indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Long-term care in residential facility (% pop aged 65+)	*PLACEHOLDER*					
Long-term home nursing care (% pop aged 65+)	*PLACEHOLDER*					
Polypharmacy among the elderly (5 or more drugs of >80 DDD per year) (% of insured population 65+)	*PLACEHOLDER – data exist*			NRHZS claim data	UZIS	

Prevention

There are 8 indicators in this subdomain. 5 of them were selected through the scoring exercise, and additional two were added by the principal working group discussion: one indicator on childhood mandatory

vaccination (for SZU experts to decide on the exact vaccination to select, such as the DPT 3rd dose), and an indicator monitoring the level of early detection of cancer by analysing the share of newly cancer patients diagnosed at early stages, based on the National Oncology Registry data.

An indicator on "Share of spending on prevention in current health expenditure (%)" has been removed from this subdomain, because it is also part of the indicator on healthcare expenditures by type of care in the Financing domain.

Discussions were held on the cancer screening indicators, where there is a possibility of two different data sources. Using the EHIS survey offers the possibility of socio-economic status (SES) disaggregation but has lower data collection frequency and is less precise than the NRHZS claim data on cancer screenings, which does not allow for disaggregation by SES, but there is a possibility of exploring a disaggregation to regions. The members of the principal working group agreed to use the HRHZS claim data for screenings for the first HSPA report; however, the EHIS information from Eurostat and in particular the information it contains regarding the various socio-economic disaggregation and international comparison shall be used to complement the context of the information provided by the screening claim-based indicators.

It has been also discussed to include an indicator on non-mandatory childhood vaccination, which has been however covered by the statutory health insurance, such as HPV or meningococcus vaccination, complementing the mandatory vaccination rates. Based on consultations with the SZU, an indicator on voluntary vaccination, represented by the HPV vaccination coverage, was added.

Information on the mandatory vaccination is included in an annual reporting of UZIS to the MoH and in the future there shall be a vaccination registry established at the UZIS.

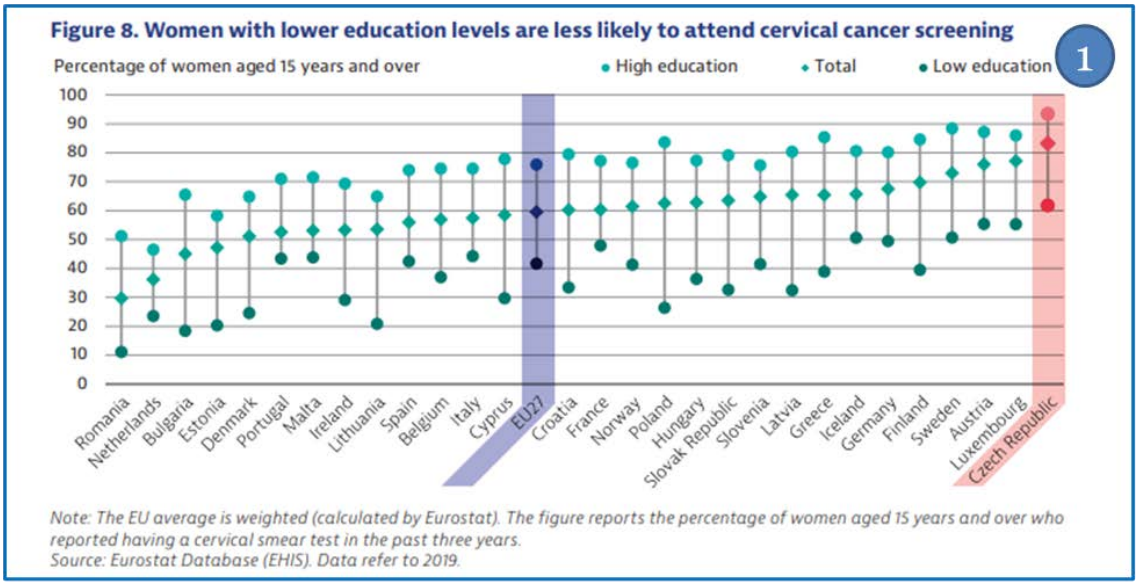
Finally, interpretation of the dental preventive visits may become more difficult over time with more people opting to get the dental care, including prevention, from dentists who do not contract with HIFs, i.e. such care is not reimbursed. Still, the working group agreed this indicator has a value in itself, also to show how many people are still using the reimbursed dental services.

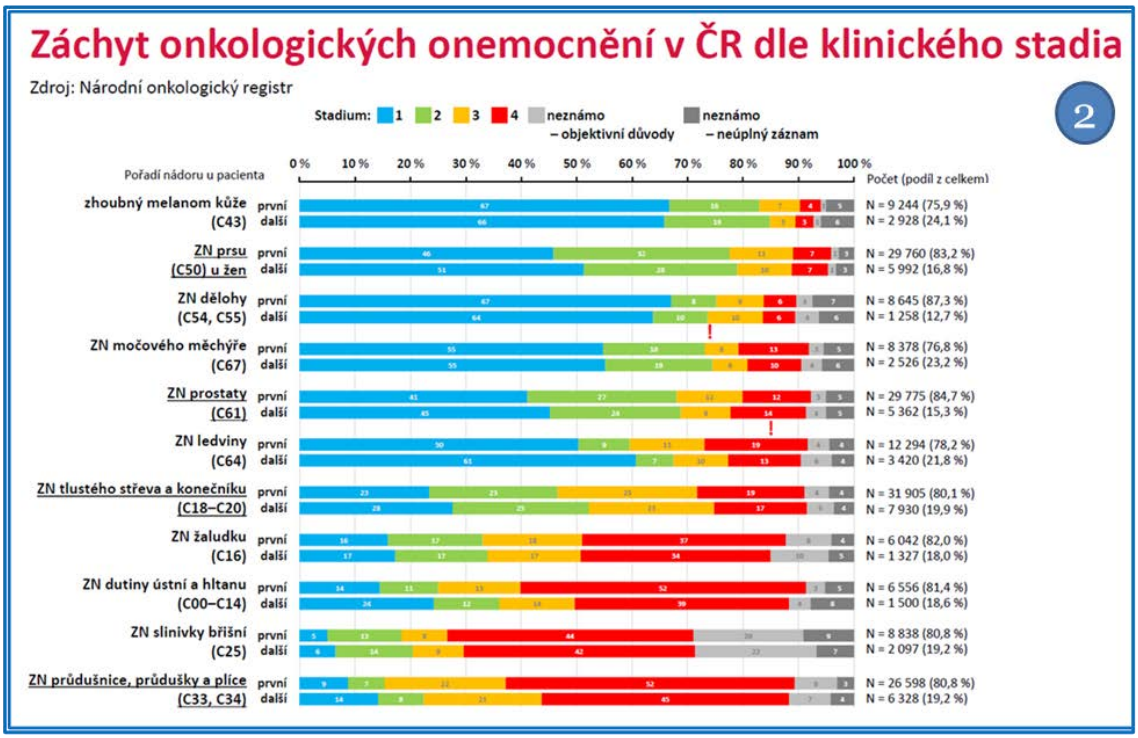
Table A D.20. Prevention indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Number of patients attending regular GP check-up	region	Time series, regional	MoH	HIF reporting to MoH	MoH	?
Number of patients attending regular dental check-up	region	Time series, regional	MoH	HIF reporting to MoH	MoH	?
Colorectal cancer screening (% of people screened), *complemented by EHIS information*	Gender, age, region (*complemented by EHIS for SES)*	Time series (*complemented by EHIS for international*)	UZIS	NRHZS claim data	UZIS	UZIS
Breast cancer and cervical cancer screenings, *complemented by EHIS information*	Age, region (*complemented by EHIS for SES*)	Time series (*complemented by EHIS for international)*	UZIS	NRHZS claim data	UZIS	UZIS
Vaccination against influenza, people aged 65 (% of people)	gender	International, time series	WHO/ECDC	?	UZIS	SZU
Childhood mandatory vaccination	[*to be selected which vaccination*]	International, time series, regional?	WHO?	HRHZS claim data **or** KHS survey	UZIS **or** SZU/KHS	SZU
HPV vaccination	regional	International, time series, regional	[to be developed within an EU project]	NRHZS claim data, vaccination registry [to be established]	UZIS	UZIS
% of cancer diagnosed at early stage		Time series	UZIS	National Oncology Registry	UZIS	UZIS

Infographic A D.14. Cancer screening and early cancer detection

1. Cervical cancer screening rate by education levels; 2. Cancer stage at the time of detection for various cancer sites. The primary data source is the EHIS survey for number 1 and the National Oncology Registry for number 2





Source: The depicted figures are taken from (OECD, 2023[14]) for number 1 and from (ÚZIS, 2022[19]) for number 2.

Domain: Cost-effective care delivery

In the domain of cost-effective care delivery, the indicators aim to monitor ways of providing healthcare that are considered cost-effective. It also measures the consequences of care failure, such as avoidable admissions. The total of 6 indicators were selected for this domain, out of which 2 are placeholders that need further development and one indicator needs further clarification to localise the international methodology for the Czech practice.

Table A D.21. Cost-effective care delivery indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Healthcare expenditures from SHI by ICD-10 chapters, by sex by 1 inhabitant	Gender, age	Time series, regional	WHO	System of Health Accounts	CZSO	CZSO
One-day surgical admissions (% of surgical admissions) // *under development in CZE*		International, time series, regional?	OECD	NRHZS claim data	UZIS	UZIS
ER visits for social, mental or psychic reason (% of admission in ER in general hospitals)	*PLACEHOLDER*					
Distribution of the number of hospitalisations according to duration and ICD-10 chapters		International?, time series, regional?	WHO	NRHZS claim data	UZIS	UZIS
Hospitalisation and average length of treatment by age group		International, time series, regional?	OECD	NRHZS claim data	UZIS	UZIS
Use of low-cost medication (% of total ambulatory DDDs)	*PLACEHOLDER*					

Domain: Equitable care delivery

The total of 2 indicators have been selected for this domain. Both are survey data from the EU-SILC survey. Dental care receives special attention in this domain due to public concerns of limited accessibility to dental services in some areas; evidence however shows the issue may be with unequal opportunities for delivery, also due to financial reasons.

EHIS survey for the indicator on general unmet healthcare needs for various reasons has been considered for its comparability with other indicators selected for the Czech HSPA, however the annual availability of EU-SILC survey data was referred over the 6-year period of the EHIS survey.

For the two indicators the UZIS is available for consultations for the lead indicator custodian, which has been assigned to CZSO.

Table A D.22. Equitable care delivery indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Self-reported unmet needs for medical examination by sex, age, main reason declared and income quintile (hlth_silc_08)	Age, gender, SES	International, time series	Eurostat	EU-SILC survey	CZSO	CZSO
Self-reported unmet needs for dental examination by sex, age, main reason declared and degree of urbanisation (hlth_silc_22)	Age, gender, SES	International, time series	Eurostat	EU-SILC survey	CZSO	CZSO

Domain: Workforce

The total of 11 indicators have been selected for this domain and they are grouped into 2 subdomains. Originally three subdomains were considered (capacity, shortage, and future needs). The principal working group concluded however that future shortage and future needs were too difficult to separate and suggested to merge them into a single subdomain. The domain is thus divided into current workforce capacity and future workforce capacity.

Current capacity

The subdomain of current workforce capacity monitors the latest availability and capacity of medical personnel. The total of 7 indicators were chosen for this subdomain, two of them are placeholders and require methodological development during the HSPA implementation phase.

The other 5 indicators look at total number of physicians and then at the number of practicing physicians and practising dentists separately, health workforce migration, and number of practicing nurses. The data source shall be the National Healthcare Workforce Registry [*Národní registr zdravotnických pracovníků, NRZP*]. However, currently the international reporting of physician data is not ideal and is based on the registry of the Czech Chamber of Physicians (data on all licensed physicians, no information on share of the practising physicians of this registry), healthcare providers' economic reporting to the UZIS, and NRHZS claim data information on contracted full-time equivalents. The Czech Chamber of physicians is also the primary data custodian for physician migration data, e.g. number of physicians who received their medical education abroad.

Table A D.23. Workforce current capacity indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Physicians by sex and age (hlth_rs_phys)	Gender, age	International, time series, regional	Eurostat	Czech Chamber of Physicians // NRZP health workforce registry	UZIS	UZIS
Health workforce migration (hlth_rs_wkmg)	Gender, age	Time series, international	Eurostat	Czech Chamber of physicians // NRZP health workforce registry	UZIS	UZIS
Practising doctors per 1 000 population		International, time series, regional	Eurostat	// NRZP health workforce registry	UZIS	UZIS
Practising dentists per 1 000 population		International, time series, regional	Eurostat	// NRZP health workforce registry	UZIS	UZIS
Practising nurses per 1 000 population		International, time series, regional	Eurostat	// NRZP health workforce registry	UZIS	UZIS
Share of labour costs due to overtime / contracted working hours / total HR costs	*PLACEHOLDER*					
Patient-to-nurse ratio	*PLACEHOLDER*	International? Time series?				

Future capacity

The subdomain of workforce future capacity monitors the future possible availability and capacity of medical personnel. 4 indicators were chosen for this subdomain, with two of them focusing on medical and nursing graduates and the other two the share of older nurses and older physicians in the healthcare workforce. The data source for the numbers of graduates is the Student Registry of the Ministry of Education, Youth, and Sports.

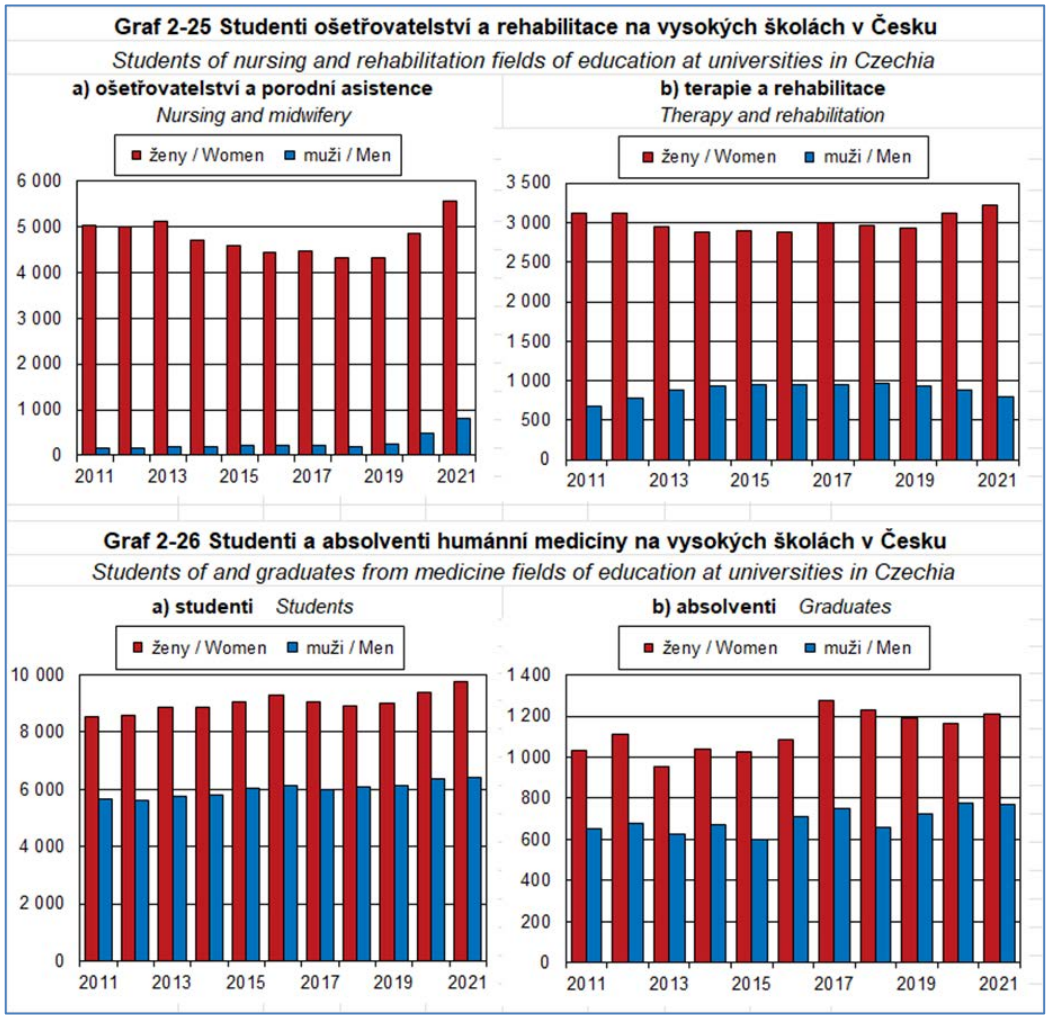
Table A D.24. Workforce future capacity indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Medical graduates (/100 000 population)	Gender, age	International, time series, regional	ISCED F classification	Student registry	MoEdu	CZSO
Nursing and Midwifery graduates (/100 000 population)	Gender, age	International, time series, regional	ISCED F classification	Student registry	MoEdu	CZSO
Nurses aged 50+ (% of those professionally active)	Gender, age	International, time series, regional	Eurostat	NRZP health workforce registry	UZIS	UZIS
% of physicians aged over 60, or 65, based on *[physicians by sex and age (hlth_rs_phys)]*	Gender, age	International, time series, regional	Eurostat	NRZP health workforce registry	UZIS	UZIS

Note: MoEdu – Ministry of Education, Youth, and Sports.

Infographic A D.15. Medical and nursing students

Primary data source is the Student registry of the Ministry of Education, Youth, and Sports



Source: Depicted figures were taken from CZSO (2022[13]).

Domain: eHealth and technologies

The total of 6 indicators have been selected for this domain and they are grouped into 2 subdomains (health information infrastructure and the R&D and health technologies).

Health information infrastructure

This subdomain evaluates how fast and how easily is the health-related information accessible for a patient and for relevant providers. 4 indicators were chosen for this subdomain, two of them are however placeholders and require further methodology development. The indicator on “share of providers using ePrescription for medical devices” was selected as an indicator that shall monitor a voluntary eHealth activity of providers.

The indicator on “people searching health information online” has been taken from the CZSO’s Household survey on ICT use. There are two more survey questions that may potentially be of an interest: people

communication with their physician online; and people who get an appointment online, through the use of an app or webform.

Table A D.25. Health information infrastructure indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
People searching health information online	Gender, age	International, time series	Eurostat	Survey on ICT usage in households and by individuals	CZSO	CZSO
Share of providers who keep medical records solely in electronical form		Time series, Regional	CZSO: ICT in healthcare	Provider reporting to UZIS	UZIS	UZIS
Percentage of physician practices that can share information with hospitals about patients' current medications	*PLACEHOLDER*					
Share of providers who use e-prescription for medical devices	*PLACEHOLDER*	regional				

R&D and health technologies

The subdomain monitors availability of hi-tech equipment and innovation in the healthcare sector. 2 indicators were chosen for this domain – CT, MRI and PET exams per 1 000 population and state budget expenditures on R&D in healthcare. However, further investigation into this subdomain may be needed.

Table A D.26. R&D and health technologies indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
CT, MRI and PET exams per 1 000 population		International, regional		NRHZS claim data	UZIS	UZIS
State budget expenditures on R&D in healthcare		International, time series	NAPS classification	R&D Information System (administrative data)	CZSO	CZSO

Domain: Financing

The domain of Financing analyses the expenditure side of the healthcare system, e.g. healthcare expenditures by type of care. The total of 2 indicators were selected for this domain. However, both indicators are quite broad and comprehensive and include a disaggregation to a number of other indicators. Hence, also the expenditures on long-term care and expenditures on prevention are included within these indicators and thus have been dropped from the respective subdomains of long-term care a prevention.

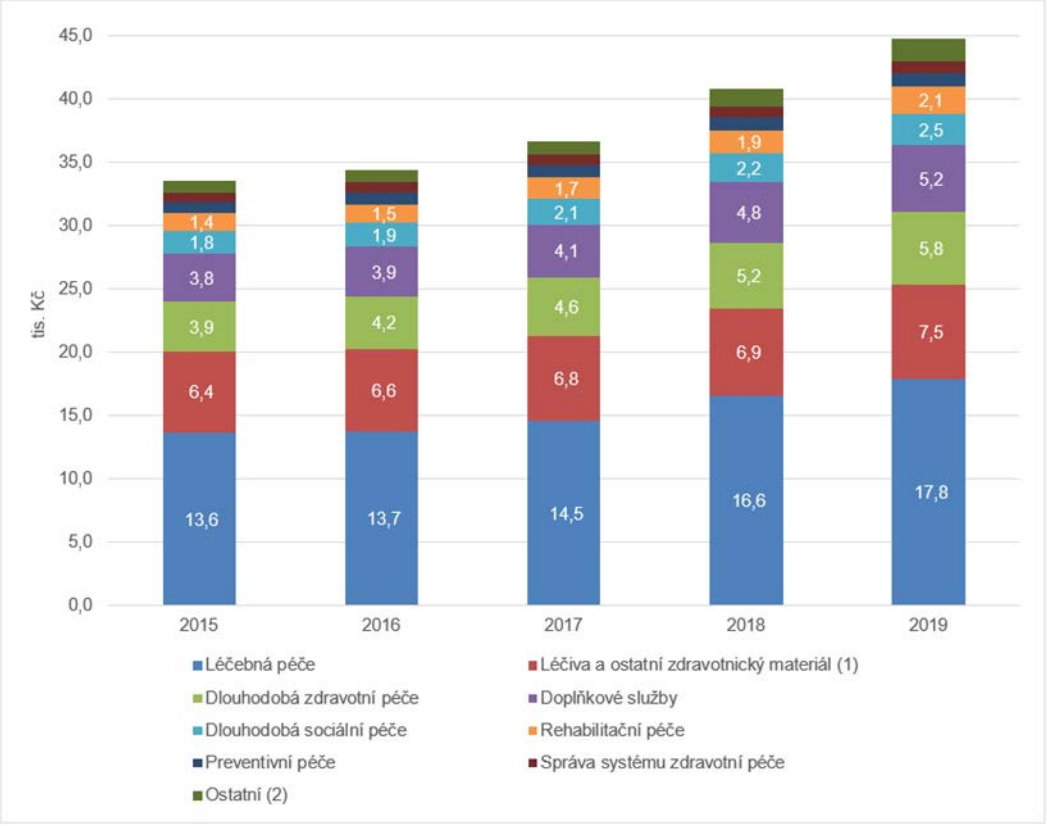
Table A D.27. Financing indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Healthcare expenditure in the Czech Republic by type of care	Type of care	International, time series	OECD/ Eurostat/ WHO	System of Health Accounts	CZSO	CZSO
Healthcare expenditure in the Czech Republic by type of care per 1 inhabitant	Type of care	International, time series	OECD/ Eurostat/ WHO	System of Health Accounts	CZSO	CZSO

Infographic A D.16. Healthcare expenditures per 1 inhabitant by type of care

The primary data source is the System of Health Accounts managed by the CZSO

Graf č. 1.8. Výdaje na zdravotní péči v Česku na jednoho obyvatele podle druhu poskytnuté péče či služeb v letech 2015-2019, tis. Kč



(1) zahrnují léky na předpis, volně prodejné léky a další zboží krátkodobé spotřeby např. obvazy, elastické kompresivní punčochy, inkontinenční pomůcky. **Nezahrnuje**, dle manuálu SHA, výdaje na léky **spotřebované přímo** ve zdravotnických zařízeních.

(2) zahrnuje například výdaje na podporu zdraví nebo výdaje jinde neklasifikované

Zdroj: ČSÚ 2021, Zdravotnické účty ČR 2010–2019

Source: The depicted figure is taken from (CZSO, 2021[20]).

Domain: Resilience

The total of 8 indicators were selected for this domain, which aims to describe the ability of the healthcare system to absorb, respond to and adapt to unexpected events. Most of the indicators focus on the capacity of the health system to provide health services, reviewing its spare capacity. Three other indicators are placeholders that need to be further discussed and developed during the HSPA implementation phase. To date, none of the indicators capture the ability of a health system to absorb an unexpected event, i.e. system's flexibility, adaptability, and the level of easiness by which spare capacities can be deployed where needed.

Table A D.28. Resilience indicators

Indicator name	Disaggregation	Benchmarks	Methodology	Data source	Data custodian	Indicator custodian
Long-term care beds in nursing and residential care facilities by NUTS 2 regions (hlth_rs_bdsns)	region	International, time series, regional	Eurostat	NRHZS claim registry, healthcare provider reporting	UZIS	UZIS
Supply of ambulatory child- and adolescent mental health care	*PLACEHOLDER*					
Existence of an early detection drug shortage mechanism	*PLACEHOLDER*					
Primary care capacity	*PLACEHOLDER*					
Hospital beds per 1 000 population	Region	International, time series, regional	Eurostat	NRHZS claim registry, healthcare provider reporting	UZIS	UZIS
Occupancy rate of curative (acute) care beds (%)	Region	International, time series, regional	Eurostat	NRHZS claim registry, healthcare provider reporting	UZIS	UZIS
Adult ICU occupancy rate (%)	Region	International, time series, regional	Eurostat	NRHZS claim registry, healthcare provider reporting	UZIS	UZIS
Adult intensive care beds (per 100 000 population)	Region	International, time series, regional	Eurostat	NRHZS claim registry, healthcare provider reporting	UZIS	UZIS

Annex E. Overview of the Czech health data custodians and data sources

This annex contains information presented at the 3rd working group workshop in January 2022 and included in the background meeting document for the 4th and 5th workshops held in April 2022. It provides a summary health data infrastructure, data availability, and information and data flows between the Czech health data stakeholders, which are relevant for the HSPA development.

Policy and health data governance

There are various institutions that feel a level of ownership of some health data and databases. Often, institutions use the very same primary data to feed various datasets (i.e. data are clustered or presented from different perspectives, but composed of the same primary data). Generally, there are four main sources of data used within the Czech healthcare system: the healthcare providers' claim data, the healthcare providers' periodical reports (including performance, workforce, and clinical reporting), the health insurers' performance data, and population surveys. These are (but not always) linked to the basic population registry information, such as the deaths and the births; often, the linkage is performed on an ad hoc basis for a specific purpose, including on demand for a specific indicator for an international data reporting. The fifth source of data is the dataset of the State Institute for Drug Control (SUKL); though most (but not all) of their information is included also in the claim data of the health insurance funds; the structured dataset of the SUKL has not been used for policy setting or policy decision making so far.

The main responsible body for health data processing for policy-making purposes is the Institute of Health Information and Statistics (UZIS). While there is a rich information in the data it is in its custody, most of it is not publicly available, and it is available to the Ministry of Health only upon a request. Apart from the COVID-19 related statistics, the Czech Republic is not sharing de-identified health datasets for monitoring and research and has not research data centre or remote data access service (OECD, 2022[21]).

Using information from processed datasets in policy- and decision-making is limited. Often, health data stream does not reach institutions responsible for policy making and/or institutions mandated with decision-making. This is partly due to no back-looping of processed data and/or resulting information-rich indicators has been incorporated in the Czech health data landscape. Ministry of Health does not make any use of, or does not have access to, resulting processed claim data, clinical registry data, and prescription data.

The Health 2030 National Strategy has been the first strategic document supported by an extensive analytical study, produced by the UZIS (see UZIS (2020[12])). Previously, data sharing between the UZIS and MoH has been reported as slow and cumbersome. A change in this approach is signalled by the legislation passed in August 2021 amending the Act on Health Services. This legislation introduced the so-called Resort Reference Statistics (RRS) and mandated the Ministry of Health to define these statistics, or indicators, in an accompanying legislation act. This by-law has not yet been produced and it has been discussed throughout the HSPA project how to link their definition and development to the HSPA framework development. As part of the HSPA project discussions, an agreement has been reached between the MoH and UZIS that HSPA indicators in the custody of UZIS would be listed among the Resort

Reference Statistics, while the list of these statistics would be broader, covering areas and data details also out of the scope of the HSPA (see Section 5).

Health data infrastructure

The currently collected health data in the Czech Republic contains an extensive amount of information and data is routinely being collected through various sources. While claim data show robust data collecting infrastructure, collected clinical information is not always reliable due to missing incentives to report it properly. Outcome data are generally missing, but exceptions exist. However, not all collected information is further processed.

Generally, different datasets within the Czech health data landscape are not being linked automatically, but linkages on an ad hoc basis is usually possible. Such linkages are performed by the Institute of Health Information and Statistics usually for a specific reason or based on a request – for instance for the purposes of international reporting, or, a recent case, to support development of the Strategic Framework for Health Care Development in the Czech Republic to 2030, the "Health 2030" National Strategy, by an analytical study.

The Box A E.1 provides an overview of the Czech health data custodians and the type and content of databases in their custody. The next sections then detail out information on individual institutions' available data and datasets, available as of December 2021/January 2022.

Box A E.1. Overview of the Czech health data custodians

Health Insurance Funds (HIFs)

- **administrative (claim) data** from healthcare providers for reimbursement purposes, connected to population registry;
- health **insurance contributions data** (including employment status).

Ministry of Health (MoH)

- **reporting data on HIFs' overall, mainly financial, performance** (number of members, financial situation, selected healthcare consumption indicators);
- **survey data from care providers** (highly specialised inpatient care data; inpatient quality self-assessment data; costly medical technology aggregate data; some workforce data).

Institute of Health Information and Statistics (ÚZIS)

- survey data provided by **healthcare providers on their structure and workforce** (registry of healthcare professionals and registry of health service providers, economic performance data of hospitals etc.);
- **clinical registry data** reported by healthcare providers on selected diagnoses and hospitalisation (12 national health registries, including 11 clinical, or diagnostically specific, registries + 1 hospitalisation registry);
- survey data provided by healthcare providers within the reference providers' network for the CZ-DRG purposes;
- **population survey data (EHIS,** collected by CZSO);
- **administrative (claim) data** provided by the health insurance funds
- data taken from other institutions and survey data (basic population registry, **death certificate registry**).

Czech Statistical Office (CZSO)

- **population data** (population registry, death registry, other demographics; census data not used in heath policy making so far, but newly small legislative exemption exists);
- **population survey data (**survey management for **EHIS**);
- other survey data (disability, population incapacity to work, student and graduate registry);
- **System of Health Accounts** database (aggregate data submitted by the HIFs, or HIFs via UZIS, and other central and regional government bodies);
- **Health care workforce remuneration** using MoSA survey on wage remuneration and MoF information system on tariffs.

State Institute for Drug Control (SUKL)

- datasets from the electronic prescription system;
- datasets from the electronic system of reimbursed medical devices and aids (since 2022).

National Public Health Institute (SZÚ)

- data from the **EHES survey** (linked to the EHIS dataset provided by the UZIS);
- smoking and tobacco use **(NAUTA) survey data**;
- datasets on antibiotics use (from KZP);
- various monitoring (air pollution, water, noise).

Ministry of Finance

- the same data as the MoH on HIFs overall (mainly financial) performance.

Health Insurance Bureau (KZP)

- data on healthcare consumed abroad and healthcare consumed domestically by other EU nationals (a clearance centre for the Czech SHI system towards other EU countries);
- healthcare quality indicators using selected claim data from the HIFs.

Source: OECD background document to the Czech HSPA framework development workshops held in April 2022.

Health insurance funds' data

The HIFs dispose of a set of claim data from healthcare providers submitted for reimbursement purposes. Generally, **all HIFs have the claim data in the same structure**, based on the VZP data interface, which is publicly available (www.vzp.cz/poskytovatele/vyuctovani-zdravotni-pece). None of the HIFs has, however, a complete set of the claim data – **each health insurance fund has data on health services to be reimbursed only for its members** (insurees). This creates some limitations, because the market is fragmented. Currently, there are seven public self-governed health insurance funds, with the VZP having the highest market share of more than 50% of all insured people.

The HIFs have the **basic demographic information on each of their members**, linked to the State population registry: the permanent address, death information, birth information. On voluntary basis, the members generally provide their HIFs also with the information on their contact address and other contact details. The contact address may better serve the indicative purpose of where a given person is actually living and consuming the health services.

In addition, the HIFs have also **information on each member's socio-economic status** – people are obliged to report to their HIF if they qualify for a defined group of economically inactive population, such as pensioners, students, unemployed, and parents on parental leaves. The health insurance funds have also a complete overview of earnings of the self-employed people and a structured overview of economic situation of employees according to their employers (prior to abolishment of annual contribution ceiling, the HIFs had also an information on high-income individual employees). However, the HIFs generally **do not link the economic status information to the claim data**, because entitlement to benefits is not conditioned upon paid contributions. It **would require further consultations** with HIFs' representatives on the possibility to link healthcare consumption data to individual economic status.

Each insured person has a **unique personal identifier,** the same ID number is used in population registry and is used in healthcare reimbursement claims as well.

Pharmaceuticals – HIFs have information, linked to their individual members, **only on prescribed drugs that have been collected and have a non-zero reimbursement**. They obtain the data from pharmacies (generally on a monthly basis), but can also download data from the ePrescription system of the SUKL (an instant online system). HIFs do not have access to all ePrescription data; they can view and download only data fulfilling the above-stated conditions. This possesses a slightly smaller information than is included in the full dataset of the electronic prescription (ePrescription) system at the SUKL, which contains information on all prescribed drugs, also those with zero reimbursement and those that have not been collected (with clear indication of those that have not been collected). Pharmaceuticals consumed during inpatient stays are not reported in any of the systems (see below).

Medical devices and aids (MDA) – information on prescribed MDA is received by a HIF only when a patient collects it and the provider claims the reimbursement, generally a month later. **Data are often nonreliable until spring of the next year**, till when providers are free to report and claim any additions to the preceding year – the late reporting of some of the reimbursed care and services is especially common with hospitals. Better overview of prescribed MDA might be later available from the electronic MDA prescription record of the SUKL, which is in practice since 3/2022, but on voluntary basis only.

Only information that is valued in reimbursement, is reliable in the claim data.[4] Generally, for any health service, a HIF has an **information on patient identification, date of provision, provider identification, and place of provision**. **Reported diagnosis is highly unreliable, unless it is valued in the reimbursement itself** (for instance, the services provided to patients diagnosed with COVID-19 have higher reimbursement rate than for patients without this diagnosis, thus information on COVID-19 diagnosis is reliable; otherwise, the primary and secondary diagnosis information is meaningless, because reporting methodology is missing, and physicians may also choose not to report any).

For general practitioners for children and adolescents, not all visits (physician contacts) are reported, because most services are paid by capitation. Only provision of FFS-reimbursed services can be obtained from the claim data. These include **prevention, vaccination, blood collection**.

For general practitioners for adults, same FFS-reimbursed services as for GPs for children are captured in the claim data. In addition, **starting 2020, data on GPs for adults visits/physician contacts are reliable from the HIFs' claim data**. FFS per physician contact has been somehow captured in the reimbursement following the abolishment of user fees, but with an annual cap, leading the GPs to stop claiming (i.e. reporting) visits above the reimbursement limit each year (for instance, a GP did not report any patient visit code after September in a given year). **Time series on GP visits from the claim data prior to 2020 are thus inapplicable**. Still, **following the 2020,** obtaining the number of **GP visits from claim data will be more reliable than** the current time series developed by the UZIS **from the healthcare providers' regular reporting**.[5] Besides, the claim data **allows for deeper analysis** of patients' behaviour also on regional level and taking into account other socio-demographic factors. Still, HIFs have no further information on reported GP visits other than when it occurred – the reported diagnosis is unreliable (see above).

For outpatient specialists, HIFs have information on "almost everything": apart from patient identification and date of care provision, **services are reported using the List of Services** (*Seznam zdravotních výkonů)*, an MoH directive with some 4 000 detailed services; rarely, there may be 2 different services under one code, such as the magnetic resonance of an arm and of a leg. Provider information is detailed down to the specific physician office (this information is treated differently by each HIF, because it has no reimbursement consequences, so providers are not motivated to update the information on provision place and their physicians regularly; thus, it depends on each HIF how prudent it is in enforcing a regular update, see also below).

The FFS reimbursement applies also to gynaecologic care and care during the pregnancy; since 2020 the later has changed to capitation payments per trimesters, but some services still must be reported in detail to obtain the capitation payment.

Dental care is reimbursed differently, still preventive care can be explored from the claim data for those stomatologists that have contracts with the HIFs (not all stomatologist do – some are relying only on direct payments from their patients or have contracts only with selected HIFs. In such cases, patients do not get reimbursed from their HIF for prevention and dental treatments). Capitation payment for preventive dental services is under discussion – such change would prevent obtaining the dental prevention information from the claim data.

Acute care hospitals report all services according to the List of Services, though their reimbursement is structured differently (see below). Since the List of Services has been through minimal major changes over past decade, **data on individual inpatient health services provision from this dataset may be a valuable source of information**, with sufficiently long time series. Pharmaceuticals consumed during hospitalisation are not reported (and are not captured in the ePrescription system either); the exemption are the so-called separately charged drugs (*zvlášť účtované léky*), which are reported (and reimbursed) separately – generally, these are **costly innovative drugs, including oncology care drugs, and HIFs have detailed overview of their consumption** based on the claim data. It is assumed that cost of all other drugs is reimbursed within the service reimbursement. For the long-term healthcare facilities, reimbursement is based on per diem payment, with a specific pharmaceutical per diem capitation payment. **Hospitalisation days are known for all types of inpatient facilities** (though not reimbursed explicitly for the acute care hospitals, but length of inpatient stay is relevant for the DRG grouper, hence hospitals are motivated to report it correctly). Since 2021, CZ-DRG grouper is used to measure volume of provided care of acute care hospitals and to reimburse some 44% of their services. Prior to that, the IR-DRG grouper was used, resulting in a non-comparability of the old and new DRG data. Still, the **grouping for reimbursement purposes is done by the HIFs, thus the HIFs dispose of complete set of relevant primary data** – reported based on the List of Services, the length of inpatient stay, and comorbidities. **DRG reimbursements are subject to continuous change**, including the merging of the base rates for different hospital types. For this reason, the DRG overall payment is currently not a suitable input for any indicator calculation.

Regarding reporting of diagnosis in acute inpatient care, caution is needed to interpret claim data in this domain. Often, **physicians tend to report suspected diagnosis that is used for further diagnostics**, instead of the final diagnosis after examination is completed. There is no information on the health status of a patient at the time of patient reception, the same applies to health status at the time of discharge. Only **information on death or transfer to another ward or facility can be tracked**. Some **chronic conditions can be assessed using the information of consumed pharmaceuticals prior to the inpatient stay** – the algorithm used for risk adjustment and redistribution can be used (see information in the section on MoH data regarding the pooling of funds data); alternatively, the "separately charged drugs" during an inpatient stay could be used to assess some chronic conditions of a patient.

There is **no automatic linkage** in the datasets that would allow for instant obtaining of information on, for instance, the **number of patients transferred from acute care to rehabilitation facilities following big**

orthopaedic surgeries or AMI or stroke acute treatment. Still, **such information can be obtained from the claim data upon demand (may be excessively time- and staff-demanding for some HIFs**, however). Similarly, HIFs do not explore on a regular basis whether for instance diabetic patients follow the regular check-ups at the ophthalmologists. **On an ad hoc basis and upon demand, HIFs are able to provide information on a patient consuming the referred care**. However, the **data do not allow for assessing whether a patient was referred** to other specialists **and has not followed the referral**. This could change once the project of electronic referral is implemented (as of early 2022, no implementation phase yet).

Apart from the claim data, HIFs also dispose of an **information on healthcare providers**. As part of their contract with a HIF, a care provider is obliged to report **medical specialty of its staff, number of its personnel, FTEs, health technology equipment, and operating times**. Though providers are obliged to report immediately any change to this information, generally they do not do it.[6] Moreover, each HIF keeps record of its contracted providers on its own; it happens often that information on the same provider differs among HIFs‘ records. The providers have to report similar information to the UZIS as part of their regular annual reports; following the COVID-19 health workforce bonuses, paid based on these records, the UZIS has been undertaking checks between the datasets followed by datasets cleaning.

Data provided by the health insurance funds to the UZIS: Apart from code lists (*číselníky a seznamy*), the HIFs provide UZIS with the following datasets from their databases:

- Data on the provider reported (claimed) and HIF-reimbursed care – list of claimed services (based on the List of Services directive) and pharmaceutical codes, on a quarterly basis with a monthly delay (with accounting clearance taking place after the end of the calendar year), including data on the length of hospitalisation
- Total reimbursement per provider – on a biannual basis.
- The list of their contracted healthcare providers, including information on staffing and health technology equipment of each contracted provider[7] – on a quarterly basis, with a monthly delay.

Data processed by the Health Insurance Bureau:

The Health Insurance Bureau (*Kancelář zdravotního pojištění, KZP*) processes data on healthcare consumed abroad by the Czech SHI members and healthcare consumed domestically by other EU nationals and acts as the clearance centre for the Czech SHI system towards other EU countries.

The KZP acts also as a supporting organisation to the HIFs in different aspects. Recently, the KZP was mandated by the HIFs to carry on the project of healthcare quality indicators. These indicators are constructed from the claim data of the HIFs, in collaboration with the respective medical societies and professional medical associations. Claim data are provided to the KZP by the individual HIFs following a new indicator approval by the KZP’s board and detail data request. Hence, the KZP performs its analysis only on defined part of the claim data information, which has been approved by all the HIFs for a specific quality indicator development, validation, and feedback to the HIFs and to the healthcare providers.

The KZP indicators are age, sex, and morbidity standardised, allowing to compare providers to other providers of similar size. Health care outcomes measured by the KZP indicators can be viewed by health insurance funds as well as by individual providers upon secured access to the KZP‘s portal at https://puk.kzp.cz/.

The KZP continuous working on developing more care quality indicator. In early 2022, the care quality indicators included indicators on surgery treatments, gynaecology and obstetrics, neurology, and antibiotics prescription.

Ministry of Health data

Pooling of funds data.

The risk adjustment and redistribution has long history in the Czech SHI, with several major changes. The most recent one, in force since 2018, introduced the pharmacy-based cost groups (PCGs) as a proxy for selected chronic conditions. Originally, the PCGs were copied from the 2012 Dutch system of risk adjustment; in 2020 minor changes occurred (one PCG was dropped for not meeting the statistical requirements) and in 2022 four new groups will be created and 2 existing groups will be split. This has some consequences for general usability of timeseries but shall not effect greatly the PCG groups that has not changed. Starting 2022, there will be 30 PCG groups. The mechanism of rating the risk of selected chronic conditions has been well established, but till today it is used solely for pooling of funds and redistribution purposes. It has not been used for other purposes, such as reimbursement purposes or health policy decision making.

The relevant data are at the Ministry of Health – all HIFs report on annual basis the cost structure of their members, including their age and sex and a complete list of reimbursed pharmaceuticals per each member. The cost structure of each patient is calculated based on a valuation methodology described in the MoH directive for comparability purposes; the reported costs thus differ from the actual reimbursement costs. The MoH creates one dataset from information provided by all HIFs (merging information on people who switched the HIFs) and calculates the age-sex and the PCG risk indexes for the next year. An anonymised complete dataset is then provided back to the HIFs for their analytical purposes.

This dataset may serve various purposes – besides providing the average costs per age groups, it may well serve for analysing the development of chronic conditions and prevalence or treatment of diseases captured in the PCG risk groups.

The dataset has also some limitations – for instance, if a patient is hospitalised, consumption of pharmaceuticals is not captured in the HIFs claim data (see above in the paragraph on *Health insurance funds' data*), leading to a potential of that patient being ultimately missed from the given PCG risk group. Control analysis of the HIFs show that bias created by this issue is generally negligible (also due to a common practice, especially in LTC facilities, when a patient is discharged to collect his/her pharmaceuticals from a pharmacy and then readmitted into the hospital again).

Data usage above the defined use for risk adjustment and redistribution would either require the approval of the risk-adjustment supervisory body or would require a change in legislation; the first option shall not pose a problem for the MoH being member of this supervisory body.

Data on HIFs' overall performance

Overall performance (mainly financial) of the health insurance funds is monitored by the Ministry of Health and the Ministry of Finance. For this purpose, the HIFs report their **Health Insurance Plans** (*zdravotně pojistné plány*) for next calendar year with expected data on the current calendar year to both the MoF and MoH. **Annual Reports** are submitted after a year is closed. Also, representatives of both Ministries serve as members of the Supervisory boards of each HIF and are provided the financial and performance results on a regular basis throughout the year.

The set of information to be publicly available through the Health Insurance Plans and the Annual Reports is defined in the MoH directive. Information includes:

- information on statutory health revenues, information on insured population, HIF's number of employees and the administrative costs, data on SHI expenditures, and expenditure data divided by type of care. Financial performance indicators include the current expenses and revenues, costs and gains, overdue payables, financial reserves in days of expenditures, etc.

The non-public part of the annual reports also includes few **selected indicators, mainly preventive care consumption indicators, provided for information purposes to the MoH only**, broken down to the level of districts (75, including the capital city of Prague as one single district): the number of general preventive examinations, dental preventive examinations, gynaecological preventive examinations, share of insurees aged 65+ vaccinated against flu, and statistics of complaints about ensuring local and time accessibility of care.

Institute for Health Information and Statistics (UZIS) data

National Health Information System (*NZIS* in the Czech) includes many databases on population health status and health system capacities. Those datasets that are based on patient level data use the same unique personal identifier. The legislation allows for linkages of all datasets in the custody of the UZIS.

The UZIS also custodies data provided by the healthcare providers on their structure and workforce (registry of healthcare professionals and registry of health service providers, economic performance data of hospitals etc.); data provided by healthcare providers on selected diagnoses and hospitalisation (12 national health registries, including 11 clinical, or diagnostically specific, registries + 1 hospitalisation registry); data provided by healthcare providers within a reference providers' network for the CZ-DRG purposes; and data taken from other institutions and survey data (basic population registry, EHIS, death certificate registry).

UZIS also reports health and healthcare indicators to international databases.

National Registry of Reimbursed Health Services (*NRHZS, Národní registr hrazených zdravotních služeb*) contains administrative (claim) data provided by (populated by) the HIFs on reimbursed health services.

National health (clinical) registries and other registries within the NZIS are databases collecting data at the level of individual patients or healthcare providers, usually (but not always) populated by the healthcare providers (see below). The reporting to these registries is done via reports that can but need not to be automatic of the hospital's IT system. The reports have prescribed structure by the UZIS and in certain cases, a hospital's IT system has been adjusted to generate a report directly from the hospital's internal data (which are not necessarily equal to the patient's medical record).

<u>National Health Registries:</u>

National Registry of Hospitalization (*NRHOSP, Národní registr hospitalizací*) – contains patient-level data, populated by healthcare providers, validated (cross-checked) using the NRRHS dataset.

Diagnostically specific clinical registries – currently 11 registries, includes patient-level data.

- oncological registry, cardiovascular surgeries and interventions registry – populated by healthcare providers
- diabetology registry – populated using the NRRHS claim data

National Registry of Healthcare Professionals (NRZP, *Národní registr zdravotnických pracovníků*) includes statistical survey (reporting) data, populated by schools, healthcare providers, professional chambers.

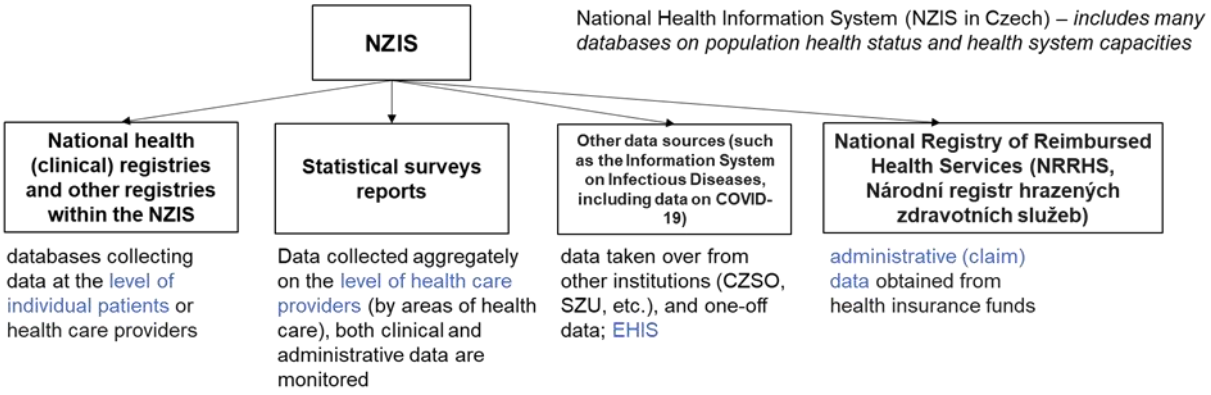
National Registry of Health Services Providers (NRPZS, *Národní registr poskytovatelů zdravotních služeb*) includes statistical survey (reporting) data, populated by healthcare providers.

<u>Surveys</u>:

UZIS is processing data collected through CZSO household survey on health for the EHIS survey. For details on the EHIS survey, see below under the CZSO section and the SZU section.

UZIS also analyses data from the reference providers' network (also for the CZ-DRG purposes).

Figure A E.1. Structure of the National Health Information System



Source: Adapted from (UZIS, 2020[12]).

Czech Statistical Office (CZSO) data

System of Health Accounts (SHA)[8] contains an internationally comparable comprehensive statistics on healthcare expenditures in the Czech Republic according to the ICHA international classification, according to the type of care provided (HC), type of healthcare provider (HP) and source of financing (HF), and in their combination. It also includes part of social care expenditures (social care allowance, senior homes subsidies). Contains aggregate data submitted by the HIFs and other central and regional government bodies (recently, HIFs aggregate data replaced by the UZIS calculations performed on the pooled original claim data). Ministry of Health submits part of the information on type of care distribution of reimbursements that is not clearly indicated in the claim data; the MoH obtains this aggregate information from individual HIFs and reports total numbers to the CZSO.

Population data (population registry, demographics – age and gender structure, mortality). Census data has not been used in the health policy making; only aggregate data can be used as individual data are required by the law to be deleted when census data processed.

European Health Interview Survey (EHIS) – household sample survey, every 6 years (last in 2019, 8 000 respondents aged 15+), shared European methodology. CZSO collects the data since 2014, **data processing is done by the UZIS** (see above). Sample surveys on health status since 1993, since 2008 based on the uniform European methodology (prior to 2014, survey implemented by UZIS on a different household sample). The survey focuses not only on health status, but also on the use of healthcare (doctor's visits, hospitalisations) and selected aspects of lifestyle closely related to health (consumption of fruits and vegetables, physical activity, and smoking). Some results of the survey are included in the Statistical Yearbook of the Czech Republic 2020.[9]

Sample survey on people with disability (*Výběrové šetření osob se zdravotním postižením VŠPO*) – household sample survey. Information on disabled people, not only on those captured in the statistics of state social care allowance and invalidity pension. Includes information on health disabled people's age, gender, economic activity, education, activities of daily living self-sufficiency and caring support usage, quality of life and health status. Results are publicly available.[10]

Incapacity to work statistics[11] – jointly with Česká správa sociálního zabezpečení (ČSSZ), biannually, since 1989. Includes incidence, prevalence, average length of work incapacity. By cause, type of economic sector, by regions and districts, and also by age and gender and by diagnosis. Statistics on fatal injuries are also publicly available.

Statistics on research and development expenditures in the health sector[12] – annual survey (reporting) of all companies, schools and research institutions. Expenditures on research and development are available explicitly for healthcare providers. Number of researchers is available for medical sciences.

Public budget expenditures on health and medical research by socio-economic objectives[13] (international classification Government Budget Appropriations for R&D, GBARD) is based on administrative data. Distribution also according to support founders and support receivers. The dataset includes more areas, one of them is the Protection and Improvement of Human Health.

Health care workforce remuneration is different dataset from the UZIS statistics on the same topic, as the two have different primary data sources. The CZSO dataset builds on two sources: a sample survey on wage remuneration (done by the Ministry of Social Affairs) and on the information system on tariffs' pays (by the Ministry of Finance). Information is publicly available for instance in the newly published CZSO publication *Focus on Women and Men 2022*,[14] in Chapter 2. Health (tables 2-24 to 2-27), (CZSO, 2022[13]).

Information on **medical and health service students and graduates**, the data is taken from the student registry (*systém Sdružených informací matrik studentů, SIMS*). Data for university students always refer to 31 December of the relevant year, data for graduates to the entire calendar year. The healthcare field of study is defined on the basis of the Classification of Fields of Education CZ-ISCED-F 2013, using the narrowly defined field 091 Health care, which includes the following detailed fields of education: Dentistry (0911); Human Medicine (0912); Nursing and midwifery (0913); Medical diagnostics and treatment techniques (0914); Therapy and Rehabilitation (0915); Pharmacy (0916); Traditional and alternative medicine and therapy (0917). Publicly available indicators can be found in Chapter 2. Health of the publication *Focus on Women and Men 2022* (tables 2-19 to 2.23) (CZSO, 2022[13]).

Statistics on eHealth use – derived from the UZIS's providers' annual reporting and processed by the CZSO, focuses on providers' IT equipment and offered eHealth services. The second source of information on this topic is the household sample surveys on ICT use of individuals and households. Publicly available indicators can be found on CZSO webpage[15] and in the annual CZSO publication Information Society in Numbers, chapter G: ICT in healthcare providers.[16]

State Institute for Drug Control (SUKL) data

SUKL is in charge of the datasets on information retrieved from the electronic prescription system; and newly also datasets from the electronic system of reimbursed medical devices and aids and vaccination administration database.

- Medical products database
- Pharmacies database
- Registry of medical devices (*registr zdravotnických prostředků*)
- Electronic prescription system (ePreskripce) – patient-level database
  - individual drug records
  - Includes all prescribed medical products, also the non-collected ones
  - includes prescription drugs with zero reimbursement
- Vaccination administration database – new, obligatory evidence since 1/2022
- Prescribed medical device database – new since 3/2022, voluntary

National Public Health Institute (SZÚ) data

Data from the EHES survey on population health status

EHES (European Health Examination Survey) was piloted in 2010-11 (400 people). The first standard survey round was in 2014. The second regular survey round was carried out in July 2019 – February 2020 (4 000 people), connected to the European Health Interview Survey (realised by the CZSO as part of its household sample survey). The EHES survey was co-ordinated by the SZU and realised by the SZU with the help of Regional Public Health Authorities, the Public Health Institutes (there are 2 such Institutes in the Czech Republic), and selected healthcare providers.

EHES is linked to the EHIS survey: EHIS survey co-ordinated by the UZIS and carried out by the CZSO using its household survey interview network using the CAPI method, but PAPI and CATI[17] are also allowed. In EHES survey, EHIS respondents aged 25-64 were offered a medical examination – including measurement of height, weight and waist circumference, measurement of blood pressure, determination of blood fat level (total and HDL and LDL cholesterol and triglycerides), determination of blood sugar level (HbA1c – glycated haemoglobin) and examination of thyroid hormone (TSH).

Data on EHIS is administered by the UZIS. Data on EHES is administered by the SZU. Respondents' EHES ID is matched to their EHIS IDs, so EHES and EHIS data are linked and pooled together by the SZU. Manual for EHES survey in the Czech Republic is available in the Czech language at the SZU webpages[18] (the same as for the 2014 survey round). Selected 2019 study results are also publicly available.[19]

NAUTA (*Národní výzkum užívání tabáku a alkoholu v České republice*), the National survey on tobacco and alcohol use in the Czech Republic. Regular surveys have been on since 1997, the last one in 2020 (1 769 respondents, representative for the Czech population aged 15+ by age, sex, and regions; results of these surveys enter the WHO Health for All database. Survey results are publicly available.[20] Surveys are based on structured face-to-face interviews; for tobacco use the survey uses the set of key questions of the Tobacco Questions for Surveys (TQS) of the GATS; for alcohol use the survey uses the common method for frequency and quantity use of the Beverage Specific Frequency-Quantity Method of the EU SMART project, adding a question on binge drinking. Details can be found in Csémy et al. (2021).[21]

HAPIEE (Health, Alcohol and Psychosocial factors in Eastern Europe)[22] survey is a population health cohort study focusing on lifestyle and psycho-socio factors. Started in 2002-05 (8 800 respondents) when all respondents filled the survey questionnaire and underwent a medical examination including blood tests. Since 2010, roughly each 2 years a questionnaire is sent to respondents by post. Last survey round finished in 2018.

Regular SZÚ monitoring: air pollution, drinking and bathing water pollution, community noise, contaminants in food chains and dietary exposures, human biomonitoring, occupational health hazards.[23]

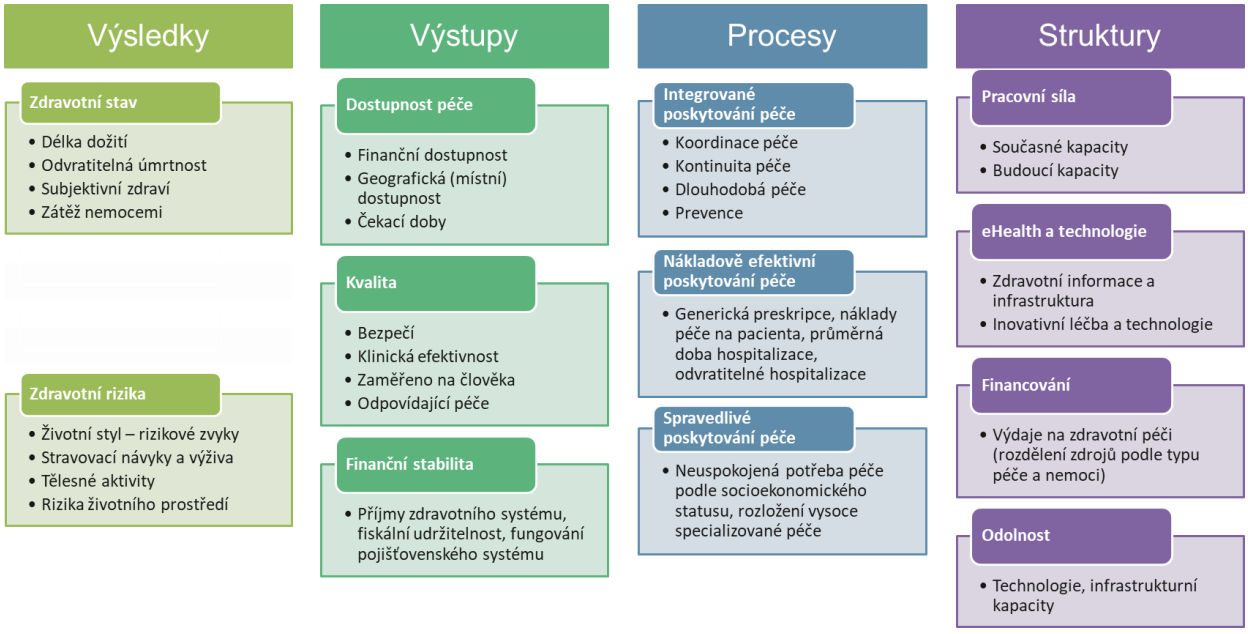
Surveys on allergies in children – since 1996, every 5 years, with the last one in 2016.[24] Details on historical and abandoned surveys can be found at SZU webpage,[25] including for the HELEN survey (abandoned in 2014).

Datasets on antibiotics use. Recently, the SZU was provided data on antibiotics prescription (collected antibiotics only) by the KZP, with the primary data source being the HIFs' claim data. Analysis performed by the KZP allows to track prescription behaviour of individual physicians (only collected prescriptions with non-zero reimbursement are included).

Annex F. The HSPA framework and description of domains and subdomains in the Czech language

Figure A F.1 presents the Czech HSPA framework in the Czech language while the Table A F.1 details the description of its domains and subdomains.

Figure A F.1. The translated Czech HSPA framework in the Czech language



Source: The Czech HSPA project.

Table A F.1. The translated description of HSPA domains and subdomains in the Czech language

Oblast	Doména	Subdoména	Popis domény/subdomény
Výsledky	Zdravotní stav	Délka dožití	Subdoména “life expectancy” analysuje délku dožití, délku života ve zdraví a hlavní příčiny úmrtí.
Výsledky	Zdravotní stav	Odvratitelná úmrtnost	Subdoména “odvratitelné úmrtnosti” má za cíl monitorovat úmrtí na příčiny, kterým lze předcházet prevencí, nebo úmrtí z příčin, které lze léčit.
Výsledky	Zdravotní stav	Subjektivní zdraví	Pacientovo subjektivní vnímání vlastního zdravotního stavu.
Výsledky	Zdravotní stav	Zátěž nemocemi	Subdoména “burden of disease – zatíženost společnosti nemocemi” analysuje incidenci a prevalenci nejčastějších onemocnění a výskyt komorbidit.
Výsledky	Zdravotní rizika	Životní styl – rizikové zvyky	Sledování ukazatelů rizikového životního stylu (např. užívání návykových látek).

Oblast	Doména	Subdoména	Popis domény/subdomény
Výsledky	Zdravotní rizika	Stravovací návyky a výživa	Sledování ukazatelů souvisejících se stravovacími návyky a výživou.
Výsledky	Zdravotní rizika	Tělesné aktivity	Sledování ukazatelů souvisejících s aktivním životním stylem (např. pohybové aktivity).
Výsledky	Zdravotní rizika	Rizika životního prostředí	Monitoring rizikových faktorů životního prostředí.
Výstupy	Dostupnost péče	Finanční dostupnost	Finanční dostupnost zdravotních služeb pro pacienty.
Výstupy	Dostupnost péče	Geografická (místní) dostupnost	Dostupnost zdravotních služeb v místě.
Výstupy	Dostupnost péče	Čekací doby	Dostupnost zdravotních služeb v odpovídající časové lhůtě.
Výstupy	Kvalita	Bezpečí	Bezpečnost zdravotních služeb vyjadřuje skutečnost, že poskytování zdravotních služeb nepřivodí pacientovi újmu.
Výstupy	Kvalita	Klinická efektivnost	Efektivita péče vypovídá o míře dosažení žádoucích výsledků a míře, v jakém je péče poskytována v souladu s důkazy (evidence-based medicine, EBM).
Výstupy	Kvalita	Zaměřeno na člověka	Zkušenost se zdravotním systémem ze subjektivního pohledu pacienta.
Výstupy	Kvalita	Odpovídající péče	Odpovídající péče je taková zdravotní péče, která je relevantní s ohledem na zdravotní stav pacienta, klinické potřeby a současné poznatky (tedy péče poskytnutá poskytovatelem správné odbornosti či úrovně specializace, ve vhodném období léčby)
Výstupy	Finanční stabilita		Rozbor příjmové stránky systému, analýza finančních zdrojů systému a jejich stabilita (a dostatečnost) v čase.
Procesy	Integrované poskytování péče	Koordinace péče	Průběžná koordinace vícero poskytovatelů při péči o chronicky nemocného pacienta, včetně měření důsledků nedostatečné koordinace (např. odvratitelné hospitalizace).
Procesy	Integrované poskytování péče	Kontinuita péče	Měří cestu pacienta systémem (patient pathway), návaznost péče o pacienta mezi jednotlivými poskytovateli v rámci jedné diagnózy, resp. jedné zdravotní události (např. včasná rehabilitace po infarktu)
Procesy	Integrované poskytování péče	Dlouhodobá péče	Indikátory popisující fungování dlouhodobé péče a domácí péče.
Procesy	Integrované poskytování péče	Prevence	Indikátory popisující schopnost systému předcházet nemocem (např. očkováním) a schopnost časného záchytu (např. screeningovými programy).
Procesy	Nákladově efektivní poskytování péče		Indikátory měří způsoby poskytování zdravotní péče, které jsou považovány za nákladově efektivní. Dále měří důsledky selhání péče např. odvratitelné hospitalizace (avoidable admissions).
Procesy	Spravedlivé poskytování péče		Rovnost pacientů v přístupu ke zdravotní péči, bez ohledu na jejich pohlaví, věk, vzdělání či příjem.
Struktury	Pracovní síla	Současné kapacity	Aktuální dostupnost a kapacita zdravotnického personálu.
Struktury	Pracovní síla	Budoucí kapacity	Budoucí dostupnost a kapacita zdravotnického personálu.
Struktury	eHealth a technologie	Zdravotní informace a infrastruktura	Jak rychle a jak snadno jsou klinicky podstatné informace (např. zdravotní záznamy) dostupné pro pacienta a pro relevantní zdravotníky.
Struktury	eHealth a technologie	Inovativní léčba a technologie	Dostupnost špičkového vybavení a rozšířenost inovací ve zdravotnictví.
Struktury	Financování		Rozbor výdajové stránky systému zdravotnictví (např. dle typů péče, diagnóz).
Struktury	Odolnost		Schopnost zdravotního systému odolávat externím šokům, včetně schopnosti šoky vstřebávat a vhodně na ně reagovat.

Notes

[1] EQ-5D is a standardised measure of health-related quality of life developed by the EuroQol Group to provide a simple, generic questionnaire for use in clinical and economic appraisal and population health surveys.

[2] The Consumer Assessment of Healthcare Providers and Systems (CAHPS) is standardised survey of patients' experiences with ambulatory and facility-level care in commercial and Medicaid plans, developed by the Agency for Healthcare Research and Quality (AHRQ) in the United States.

[3] Ministry of Environment, the Czech national strategy "ČR 2030".

[4] Note, all data in the National Registry of Reimbursed Services comes from the claim data and is not tied to the patients' medical records. Diagnosis information included in this dataset is not very reliable, except for few (minor) cases which can be strictly traced to non-zero reimbursement purposes.

[5] Which is the current practice of reporting this indicator to international organisations.

[6] The level of inaccuracies in providers' reporting to the HIFs was revealed when extra bonuses were compensated by the HIFs to the healthcare providers based on the evidence of their employees during the COVID-19 pandemic.

[7] Basically this means the UZIS ends up with 8 different lists of healthcare providers – 7 provided by the HIFs and the 8th from the regular providers' reporting to the UZIS.

[8] CZSO (2021), Výsledky zdravotnických účtů ČR 2010-19. https://www.czso.cz/csu/czso/vysledky-zdravotnickych-uctu-cr-m6hwrlzbbw.

[9] https://www.czso.cz/csu/czso/statisticka-rocenka-ceske-republiky-2020.

[10] https://www.czso.cz/csu/czso/vyberove-setreni-osob-se-zdravotnim-postizenim-2018.

[11] https://www.czso.cz/csu/czso/pracovni-neschopnost-pro-nemoc-a-uraz-v-ceske-republice-1-pololeti-2021.

[12] https://www.czso.cz/csu/czso/statistika_vyzkumu_a_vyvoje.

[13] https://www.czso.cz/csu/czso/prima-verejna-podpora-vyzkumu-a-vyvoje-2020.

[14] https://www.czso.cz/csu/czso/zaostreno-na-zeny-a-muze-s9uoog5djz.

[15] https://www.czso.cz/csu/czso/informacni_technologie_ve_zdravotnictvi.

[16] https://www.czso.cz/csu/czso/informacni_spolecnost_v_cislech.

[17] CAPI – Computer Assisted Personal Interview; PAPI – Paper Assisted Personal Interview; CATI – Computer Assisted Telephone Interview.

[18] http://www.szu.cz/uploads/documents/chzp/ehes/manual_EHES_cely_28042014.pdf.

[19] http://www.szu.cz/ehes/vybrane-vysledky-studie-ehes-2019.

[20] http://www.szu.cz/tema/podpora-zdravi/prevence-zavislosti. For the period 1997-2011, results available at http://www.szu.cz/tema/podpora-zdravi/studie-kuractvi-dospele-populace-cr-2011.

[21] Csémy, Dvořáková, Fialová, Kodl, Malý, Skývová (2021). Národní výzkum užívání tabáku a alkoholu v České republice 2020 (NAUTA). Státní zdravotní ústa, vhttp://www.szu.cz/uploads/documents/szu/aktual/nauta_2020.pdf.

[22] The Czech survey details are available at http://www.szu.cz/hapiee.

[23] Details at http://www.szu.cz/ehes/vybrane-vysledky-studie-ehes-2019, and especially at http://www.szu.cz/uploads/documents/chzp/souhrnna_zprava/SZU_Report_2019.pdf.

[24] http://www.szu.cz/tema/prevence/alergie-deti.

[25] http://www.szu.cz/tema/studie.

Health System Performance Assessment Framework for the Czech Republic

The health system performance assessment (HSPA) framework for the Czech Republic is an initiative designed to help the Czech health system improve policy planning, monitoring, and decision taking. This report describes the HSPA framework for the Czech Republic, its development process, governance structure and implementation roadmap. It also details the Czech HSPA framework domains, populated by indicators selected through a comprehensive review process. As such, the framework enables the assessment of strengths and weaknesses of the Czech health system. Its implementation will increase the accountability of national authorities and principal healthcare stakeholders, improve public involvement, smooth flow of information across the health sector, and allow reform planning and monitoring.

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