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POLICY BRIEF 60

Assessing health system performance

Proof of concept for a HSPA dashboard of key indicators

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This policy brief is one of a new series to meet the needs of policy-makers and health system managers. The aim is to develop key messages to support evidence-informed policy-making and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.

Contents

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Key messages

This brief serves as proof of concept for a Health Systems Performance Assessment (HSPA) dashboard. It paves the way for the development of a policy-friendly dashboard of key HSPA indicators that will help policy-makers to identify and respond to performance issues.

- **HSPA is a tool to support health systems transformation.** It provides an overview of how health systems perform so that policy-makers can pinpoint issues and design appropriate responses.
- **Using selected indicators to explain performance and guide policy responses would help foster understanding of and trust in the health system and support policy change.** Gathering HSPA indicators into a subset with critical policy relevance, focusing on fewer relevant metrics and making policy questions central to the HSPA process, improves policy relevance.
- **The WHO-Observatory global HSPA framework and the OECD renewed HSPA framework allow policy-makers to navigate health systems.** Populating them with policy-relevant indicators makes them more actionable and useful in practice. The two frameworks outline performance linkages between indicators, health system functions and health system goals. They align in identifying key elements of health system performance and both support a policy dashboard.
- **Tracer indicators reflect key policy issues and priority areas.** Workforce, digital health, people-centredness and outcomes of service delivery have been used as they are key policy domains of interest for the WHO, the OECD and the European Observatory, and because they are pivotal to high-performing and resilient health systems.
- **Policy questions are used as a way of framing indicator selection in light of policy-makers' priorities.** Starting with a concrete policy question helps to select system-level indicators that speak to policy-making so that health system performance assessment is relevant and anchored in system policy goals.
- **Tracer indicators are selected with a focus on specific health system areas but also have limitations.** They signal potential systemic issues and flag problems but cannot provide precise measures of performance or define policy responses. When they are understood in context, they signal areas for further in-depth investigation into the root causes of sub-optimal performance.
- **Investment in data collection is key to making HSPA work for policy.** It is important to allocate resources to enhance data collection and resolve ingrained data issues and to develop tools that facilitate the development of adequate data infrastructure supporting information flows at the national and international levels.
- **Making HSPA results more policy-friendly is a continuous process that will have high policy dividends.** Shifting the focus to policy questions, revising existing health data, addressing key gaps and finding innovative ways to use existing indicators cannot happen overnight. Careful collaboration across key international organizations is needed, notably the WHO, the OECD, the EU and the European Observatory, so that methodologies can be aligned to support policy decision-making.

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This brief reflects the agendas of both *the Tallinn Charter 15th Anniversary Health Systems Conference: Trust and Transformation – Resilient and Sustainable Health Systems for the Future and the OECD's Health Ministerial Meeting: Better Policies for More Resilient Health Systems.*

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List of Abbreviations

CAMM	clinical adoption meta-model
CPD	continuous professional development
EHIS	European Health Interview Survey
EHR	electronic health records
GP	General practitioner
HCQO	health care quality and outcome
HIS	health information system
HSPA	health system performance assessment
ICT	information and communication technology
PAHO	Pan American Health Organization
PCHS	people-centred health systems
UHC	universal health coverage

Executive summary

Policy-makers must have an in-depth understanding of how their health system is working if they are to improve it. Health system performance assessment (HSPA) gives them the details they need. It is a process of monitoring, evaluating, communicating, and reviewing how far a health system meets key objectives and supports overarching health system goals. However, HSPA exercises often rely on understanding a multitude of metrics. The sheer number of indicators can be overwhelming and many do little to explain the policy challenges. Policy-makers need to focus on what is policy relevant, which makes a subset of indicators selected to support decision-making a practical asset.

This policy brief tests the concept of 'tracer' indicators that respond to policy questions. It operationalizes the WHO-Observatory global HSPA framework and the renewed OECD HSPA framework and demonstrates the need for (and value of) prioritizing particular information. It builds on the existing health system assessment metrics and methodologies, such as the OECD's Health Statistics database and Health at a Glance reports, the WHO EURO Health for All database and the European Observatory's body of work on HSPA and in the Health Systems in Transition (HiT) reviews.

The two frameworks (WHO-Observatory and OECD) serve as blueprints – linking either to the performance of each discrete health system function or to the performance of the health system as a whole. They are aligned and complementary in that they build on common elements and can both be used to assess health systems performance and set it in the context of broader societal challenges. The WHO-Observatory framework sets out detailed assessment areas and highlights the dynamics of performance pathways between health system functions and goals, while the OECD renewed framework emphasizes key policy elements, the broad categories and main relationships – from which users can "zoom in" as needed. There are many common elements in both frameworks, albeit with different levels of emphasis.

This policy brief uses health workforce, digital health, people-centredness and access and quality as "test" areas. It explores how policy questions for each (Box 1) can be addressed through careful selection of a targeted (sub)set of "tracer" indicators. The indicators are intended to allow policy-makers to navigate performance much more easily. They are therefore selected at a high level and as a starting point for assessing performance. They are not chosen to detail specific processes.

Box 1. Policy questions as entry points for assessing performance

Assessing health workforce:

- Are we building an adequate supply of health workers and ensuring they are distributed equitably?
- Are we investing enough in skill-mix and the primary care workforce?
- Are there adequate recruitment and retention policies in place?

Assessing digital health:

- Are there digital health governance standards in place to ensure digitalization efforts are aligned and outcome-oriented?
- Does the health sector have the right Information and Communication Technologies (ICT) available?
- Is the health system leveraging digital tools to deliver health services?
- Are staff and users well prepared to use digital health services?

Assessing people-centredness

- Does the system support the ability of health service users to act as the co-producers of care?
- Does the system enable people to participate in the development of health policy?
- Can improvements in people-centredness lead to increased trust in the health system?

Assessing access and quality

- Are health services sufficiently accessible?
- Are health services effective?

The brief recognizes the progress that has already been made in moving beyond measuring inputs (financial, physical and human resources) to assessing health objectives and goals and takes a further step in linking indicators to health system functioning and policy options.

Each of the four sections addresses a specific policy area. The workforce section, for example, considers policies to ensure the delivery of high-quality and accessible health services and emphasizes health workforce shortages, skill-mix and retention. Suggested indicators include density and distribution of health workers, migration inflows and outflows, ratio of doctors to nurses, share of GPs in physician workforce, job satisfaction and burnout rates by occupation.

The digital health section explores readiness, utilization, and digital health literacy underscoring the importance of a focused assessment of the role of digital health in the health system. The indicators proposed for this section include existence of digital health governance at the national level, share of health facilities with ICT equipment and access to the internet, use of electronic records, telehealth and e-prescribing, as well as health literacy.

The people-centredness section addresses trust, participation and enabling the co-production of health care because of the significance of health systems in meeting people's diverse needs. This can be measured via share of patients involved in decisions about their care, ability of people to have a formal role in health policy decision-making, as well as share of people who have trust in the health system.

The access and quality section tackles these outcomes of health services through the high-level tracer indicators of avoidable mortality and unmet need. These are "initial explorations": they point the way to policy priorities and options but cannot replace the further investigation needed to understand all the causes of sub-optimal performance.

The selection of tracer indicators is very much a work in progress. The choices made draw on various international and regional reports and datasets, including OECD's Health at a Glance and Health Statistics database and the WHO's Health for All database, and pick those indicators with the best potential to both reflect performance issues and provide a plausible narrative for the interpretation of the indicators. The brief is the beginning of discussions on how to select and use the "best" tracers to assess specific health system functions and outcomes. It does not attempt to offer a definitive list of indicators. Instead, the examples, and the way their use is illustrated, advance the understanding of how indicators for specific areas (workforce, service delivery) can be mapped onto the WHO/OBS and OECD frameworks and of how they can be mobilized to address key policy issues. It demonstrates that tracer indicators, in combination with the HSPA frameworks, can help identify causes of performance problems, identify policy options and monitor change, as well as highlighting data gaps and limitations.

Selected ("tracer") indicators have a valuable contribution to make. They offer policy-makers the chance to use HSPA as a practical, not just a conceptual, tool. Nonetheless, there are significant limitations around data availability, level of disaggregation, timeliness, comparability and quality, particularly at the international level. A caveat stems from the intrinsic nature of tracer indicators. They are reflections of specific health system areas and flag where there may be a systemic issue in a given function, but systems are complex (as captured in the frameworks) so all indicators must be understood within the broader context. Similarly, indicators taken alone are static, while performance issues need to be followed over time. Insights gained from tracer indicators need to be supplemented with more in-depth investigations into root causes of the problems identified, and policy-makers need to grasp these limitations to avoid any inadvertent misinterpretation.

That said, synthesizing the multitude of HSPA indicators into a smaller set with critical policy relevance will help decision-makers. The groundwork in this brief establishes an approach that has four complementary elements:

- **Focusing on a targeted set of tracer indicators** that reflect performance issues in different parts of the health system (supported by appropriate tracers for health system functions and outcomes).
- **Mapping indicators onto the WHO/Observatory and OECD HSPA frameworks**, tracing links and causal pathways between functions, subfunctions, assessment areas, intermediate objectives and final goals, making clear health system performance dynamics.
- **Using policy-relevant questions** as the way into assessment – framing performance and the metrics around practical concerns so that the focus is on the needs of policy-makers and can inform concrete policy actions.
- **Providing a broader narrative for the meaning and scope of each indicator** to prevent misinterpretation and to highlight gaps, limitations and pathways for improved data collection and the development of new metrics.

This brief serves as a proof of concept and represents the first step towards policy-oriented HSPA that will facilitate health systems transformation and the achievement of health and societal goals. There are four concrete lessons for health system leaders for future development in this field:

- **Invest in data:** resources are needed in national systems and at the international level to facilitate efficient, timely, safe, and reliable data collection and information flows. Digitalization can enable faster, better data collection but investment is crucial if systems are to develop capacity to validate and deploy appropriate tools.
- Apply HSPA to practical policy questions: framing HSPA exercises through policy questions, employing tracer indicators and mapping them onto HSPA frameworks can make HSPA a practical tool that identifies system weaknesses and policy options. Expanding the methodology to other health system areas is a logical next step.
- Revise the existing health data body: a comprehensive review of existing health indicators would give a deeper understanding of fitness for purpose and identify data gaps. The development of new indicators could address the crucial data gaps identified in this brief and have huge policy relevance. Going beyond the selection of available indicators to explore innovative uses of existing indicators and to create or expand novel indicators would make tracer indicators more meaningful.
- Collaborate across organizations: close collaboration among key international organizations and bodies working in this field, notably the WHO, the OECD, the EU and the European Observatory on Health Systems and Policies, to align methodologies and develop a shared dashboard of tracer indicators would support policy decision-making.

This brief reflects the agendas of both the *Tallinn Charter 15th Anniversary Health Systems Conference: Trust and Transformation – Resilient and Sustainable Health Systems for the Future and the OECD's Health Ministerial Meeting: Better Policies for More Resilient Health Systems.*

POLICY BRIEF

1. Introduction

Policy-makers need to have an in-depth understanding of how their health system is working in order to improve it. Health system performance assessment (HSPA) gives them the details they need. It is a process of monitoring, evaluating, communicating, and reviewing the extent to which aspects of a health system meet their key objectives and support overarching health system goals, as measured through a comprehensive set of indicators. However, HSPA exercises often rely on understanding of a multitude of metrics. These can be overwhelming for policy-makers who need to focus on a subset of relevant indicators to support policy decision-making.

This policy brief operationalizes the existing WHO-Observatory global HSPA framework (Rajan et al., 2023) and the renewed OECD HSPA framework (OECD, 2024) to address the need for prioritizing information derived from the volume of HSPA metrics. It builds on the existing health system assessment metrics and methodologies, such as OECD's Health Statistics database and Health at a Glance reports (see Box 1.1), the WHO EURO Health for All database (see Box 1.2) and the Observatory's body of work on HSPA indicators in the Health Systems in Transition reviews (see Box 1.3) and frameworks (Smith et al., 2009; Papanicolas & Smith, 2013; Papanicolas et al., 2022).

Box 1.1 OECD Health Statistics and Health at a Glance reports

Since the mid-1980s, the OECD has published health statistics on health expenditure and different aspects of performance (OECD, 1985), and the first electronic edition of the OECD health database was released in 1991.

Since 2001, the OECD has been releasing Health at a Glance, a publication presenting a comprehensive set of key indicators on population health and health system performance in OECD countries and partner countries. These indicators are underpinned by a conceptual HSPA framework first developed in the context of the OECD workstream on healthcare quality and outcomes. The latest edition of Health at a Glance was released in November 2023 (OECD, 2023a). Since 2010, the OECD has also released every even year regional editions of Health at a Glance, including Health at a Glance: Europe jointly with the European Commission covering 38 European countries (OECD/European Union, 2022). Other editions are also available for the Asia-Pacific region and the Latin America and Caribbean region.

All versions of Health at a Glance utilize the OECD Health Statistics database. This database gathers information through two annual joint data collections by the OECD, Eurostat and WHO on health accounts (for health expenditure and financing data) and non-monetary healthcare statistics (for health workforce and healthcare resources and activities data), as well as separate data collections from the OECD (for example for healthcare quality indicators and access to care indicators), Eurostat (such as population-based surveys such as EU-SILC and EHIS), and other sources.

Alongside indicator-by-indicator analysis, an overview chapter in the OECD-wide edition of Health at a Glance summarizes the comparative performance of countries and major trends across key dimensions and indicators.

Explore Health at a Glance and OECD Health Statistics by visiting:
https://www.oecd.org/health/health-at-a-glance/
https://www.oecd.org/health/health-at-a-glance-europe
https://www.oecd.org/health/health-data.htm

Box 1.2. WHO Euro Health for All database of health system indicators

Since the mid-1980s, Member States of the WHO European Region have been reporting essential health-related statistics to the European Health For All database (HFA-DB), making it one of WHO's oldest sources of data. The HFA databases play a pivotal role in consolidating indicators from major monitoring frameworks for the WHO European Region, such as the European Programme of Work Measurement Framework and the Sustainable Development Goals (SDGs). Encompassing a broad spectrum of data, these indicators span basic demographics, health status, health determinants, risk factors, healthcare resources, expenditures, and more.

The comprehensive nature of the HFA databases facilitates a better understanding of health-related trends and patterns, making it serve as a key player in shaping evidence-based decisions, at both national and international levels. To maintain the relevance and timeliness of the data, the HFA-DB undergoes annual updates, collecting information from Member States and other international sources, with the latest being produced in October 2023. These updates ensure that the information presented represents the most current snapshot at the time of publication.

Explore the HFA-DB indicators interactively by visiting:
https://gateway.euro.who.int/en/datasets/european-health-for-all-database/

Box 1.3 European Observatory's Health system in Transition series for country monitoring

Since 1998, as part of its Health Systems in Transition (HiT) series, the European Observatory on Health Systems and Policies has systematically described the functioning of health systems in countries, as well as reform and policy initiatives in progress or under development. The HiT health system reviews cover the countries of the WHO European Region as well as some additional OECD countries. They are updated on a regular basis.

The reviews are based on a template that provides detailed methodology for assessing health systems in a comprehensive and comparable way (Rechel, Maresso & van Ginnekin, 2019). The initial chapters describe the details and evaluate the health system organization and governance, financing, human and physical resources, service provision and the latest reforms. The assessment chapter focuses specifically on how health systems perform over time and compared to other countries. It explores governance, and follows on to analyse the accessibility and quality of health services (including primary and specialist care, as well as service integration), equity and efficiency, and the degree of financial protection, using multiple sources of information, including the OECD, Eurostat and WHO databases, as well as expert knowledge.

The HiT series is complemented by Health System Summaries – concise, engaging and policy-friendly reports on the main elements of a country's health system. They analyse core evidence and data on the organization, financing and delivery of healthcare, and provide insights into key reforms and the varied challenges testing the performance of the health system.

Explore the Health Systems in Transition reports and the Health System Summaries by visiting: *https://eurohealthobservatory.who.int/publications/health-systems-reviews*

This policy brief takes health workforce, digital health, people-centredness and health system objectives and dimensions of access and quality as "test" areas and explores how a given policy question can be addressed through a careful selection of a targeted (sub)set of indicators that could allow policy-makers to navigate

performance much more easily. It also advances the notion of the organization of indicators around policy questions rather than around the mechanics of the system in place. It suggests that certain high-level indicators can help policy-makers to highlight if there are systemic problems, or if the health system performance lags behind other countries, and to point out where they need more detailed information.

The selected "tracer indicators" do not aim to provide all the answers but rather act as an entry point and serve as a valuable diagnostic tool and a way of identifying appropriate types of intervention, as well as working through the implications of a given option. As a result, the brief provides a clear approach to make health systems performance "policy-makers friendly" and captures the relationships between the functions and subfunctions, assessment areas, intermediate objectives and final goals of the health system.

Current HSPA approaches may make it difficult for policy-makers to prioritize action

The selection of indicators is often determined by the availability of data at the national and international levels, rather than by relevance and usefulness for health policy-makers. This can lead to comprehensive but cumbersome HSPA exercises which, however, may lack context, analysis or interpretation. While data availability is a prerequisite, this focus on relevance is crucial because extensive HSPA exercises often leave policy-makers with an overwhelming amount of information that does not help to identify priorities for health system strengthening and says nothing about what possible policy options might have the optimal impact on health system transformation. This is true even for well conducted health system performance assessments that collect high-quality data. Without clarity on the policy objectives or their implications for health system reform, policy-makers cannot identify the options for addressing them or monitor progress of the key performance issues. Establishing a set of key tracer indicators that speak to health system performance at a broad level, organizing them around the concrete policy questions and providing clear guidance on how to interpret them may help policy-makers "see the wood for the trees".

Tracer indicators can support policy-makers to assess and address health systems performance

Health system tracer indicators are specific high-level metrics that are indicative of broader aspects of the health system's functioning and can be used to "trace" (identify and assess) health system performance. They help policy-makers to pinpoint performance issues, understand them in the national context, identify areas for improvement, and monitor the impact of policies and interventions at the health system level, as well as to track progress over time. The idea of tracer indicators then is not just to make the volumes of data more manageable. They are an opportunity to shift the focus of performance assessment from very particular inputs and "micro" processes within a particular health system function to a broader perspective that looks at the system level and at how the health system addresses its intermediate objectives and final goals.

HSPA Frameworks allow policy-makers to see performance linkages between areas measured by indicators

The tracer indicators selected in this brief sit within existing HSPA frameworks, such as the WHO-Observatory global HSPA framework (Papanicolas et al., 2022) or the OECD renewed HSPA framework (OECD, 2024). These frameworks serve as blueprints that link the performance of various discrete health system functions to performance of the health system as a whole, as demonstrated in Health at a Glance (OECD, 2023a). Crucially, these HSPA frameworks can be used to track indicators across functions, subfunctions, assessment areas and health system goals through performance linkages, maintaining the policy-makers' vantage point on wider health system performance issues.

The WHO-Observatory global HSPA framework and the OECD HSPA framework are aligned and complementary in that they build on common elements and either can be used to assess health systems performance in the context of current pressing health system and broader societal challenges (see Appendices 1 and 2). The former provides detailed assessment areas and highlights dynamics of performance pathways between health system functions and goals. The latter emphasizes the key policy elements, showing broader categories and the main relationships that can be zoomed in as needed. Common elements appear in both frameworks, with different levels of emphasis.

How does the WHO-Observatory global HSPA framework work?

The WHO has played a pivotal role in health system performance assessment for several decades. Notably, its landmark World Health Report 2000 (WHO, 2000) laid the foundation for a comprehensive framework that specifically linked health system inputs to the overarching goals of the health system, providing a clear methodology for their measurement. An integral element of the 2000 report was the incorporation of "responsiveness" as a fundamental health system goal, positioned alongside the traditional objectives of health improvement and financial protection, thereby bringing in not only "objective" metrics into performance thinking but also subjective and experiential aspects.

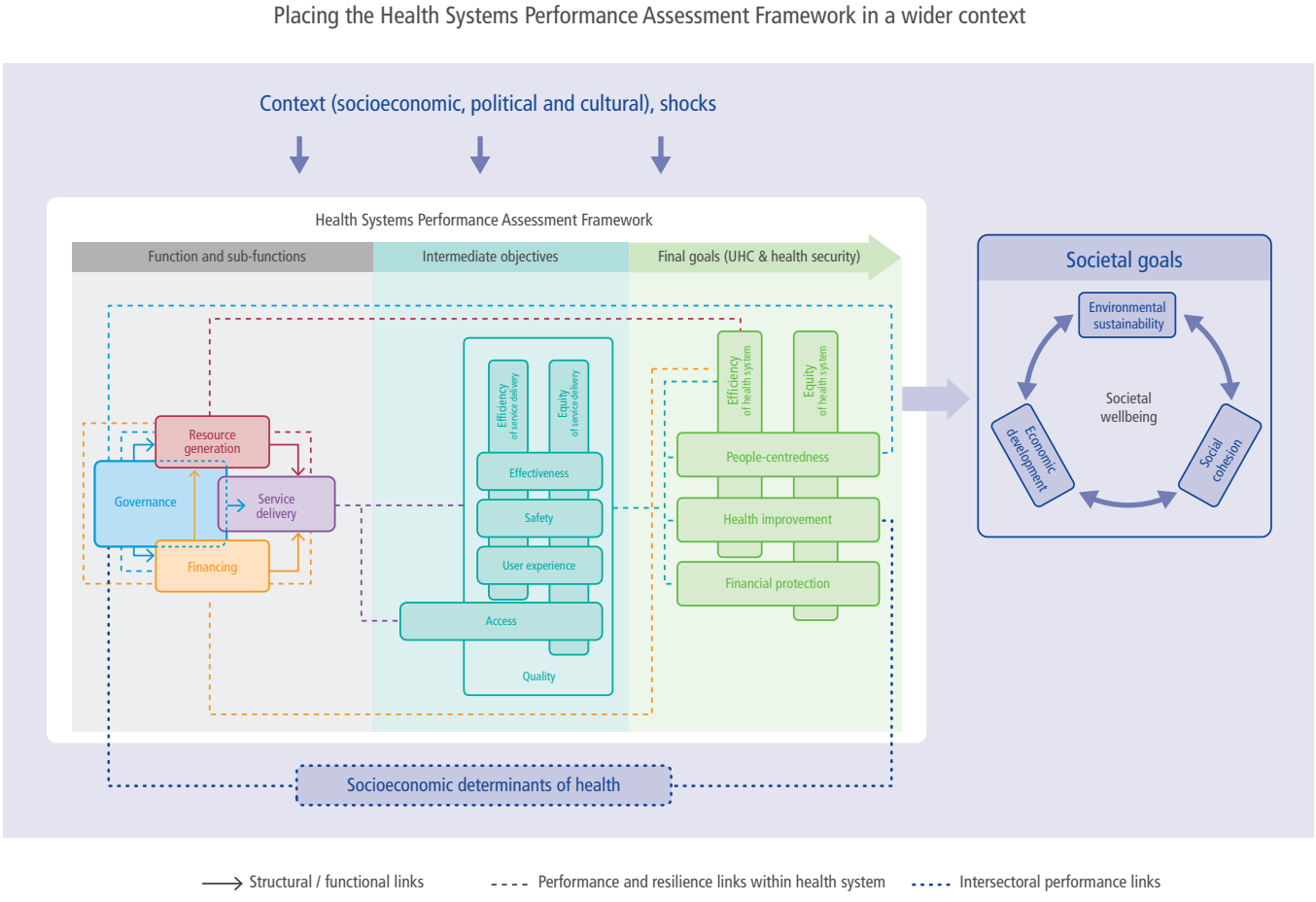
The WHO-Observatory global HSPA framework evolved upon this foundation, expanding and refining it two decades later (Papanicolas et al., 2022). In 2023 the WHO-Observatory framework has been renewed (Rajan et al., 2023); it signposts performance assessment also in light of pandemics, conflict, climate change and other recent major developments. This has resulted in a decided emphasis on environmental sustainability, digital health, data governance, people-centredness, and participation. A key novel element is the elaboration of societal goals, and the recognition of the health system's contribution to them.

In this framework (see Fig. 1.1), each of the four health system functions from the 2000 report (governance, resource generation, financing, service delivery) has been delineated into subfunctions (see Table 1.1). In addition, the linkages between inputs (functions and subfunctions) and outcomes (health system goals) are fleshed out, distinguishing between intermediate objectives and final goals. The intermediate objectives are direct outcomes of the service delivery function (quality, with its subdimensions of effectiveness, safety, and user experience, and access) while the final goals (health improvement, people-centredness, financial protection) are achieved at the systems level principally through the intermediate objectives. Equity and efficiency traverse both intermediate objectives and final goals, depending on whether the analysis is at the service delivery or health system level. All of these health system goals contribute to societal well-being, described through the paradigm of sustainability, which considers a balance of economic, social and environmental domains in pursuit of improved well-being. 'Economic' relates to sustainable economic development, 'social' to social cohesion and 'environment' to environmental sustainability.

Table 1.1 Functions and subfunctions of the WHO-Observatory global HSPA framework

FUNCTION	SUB-FUNCTIONS
Governance	• Policy and vision • Multisectoral collaboration • Population and civil society participation • Information and (digital) knowledge • Legislation and regulation
Resource generation	• Health workforce • Infrastructure and medical equipment • Pharmaceuticals and consumables • Governance of resource generation
Financing	• Revenue raising • Pooling • Purchasing • Governance of financing
Service delivery	• Public health • Primary care • Specialist care • Governance of service delivery

Fig. 1.1. WHO-Observatory global HSPA framework



Source: Rajan et al (2023)

Central to this framework remains its prioritization of people and patients through their inclusion in a governance subfunction (population and civil society participation), as an outcome of service delivery quality (user experience), and a final goal (people-centredness). The concept of people-centredness is seen as a twenty-first-century version of the responsiveness concept, i.e. a measure of how far the system is perceived as responsive to people's and patients' needs and views.

The renewed WHO-Observatory framework also places a nuanced focus on governance, an aspect often overlooked in indicator development and health system assessments. Governance is crucial because it offers policy-makers a potent lever from within the health system to go outside the system (depicted in a dotted line in Fig. 1.1), to collaborate across sectors, and to act on the health determinants. A nuanced view on governance can also be seen in the differentiation between governance linked to other functions (for example, health workforce planning, service delivery facility management) and system-level governance issues (human rights legislation, national health policies) (see Table 1.1).

Fig. 1.2 illustrates the application of the WHO-Observatory global HSPA framework and some of the performance pathways. Here, the novel element of assessment areas adds value by defining key characteristics which are essential for gauging the performance of the functions as well as their broader impact on overall health system performance. They are linked to each of the subfunctions and functions and are measurable through relevant indicators (see Appendix, Fig. A1.1). A policy question can thus be anchored to a concrete subfunction or an assessment area, with the framework guiding the user to root causes of the policy issue (within the functions) or towards the impact of the policy issue on system performance (objectives and goals). More importantly, visualizing the linkages helps to anchor the framework in a policy-maker's day-to-day reality, helping to craft a viable policy solution.

How does the OECD renewed HSPA framework work?

For three decades, the OECD has helped countries to identify the key principles of high-performing health systems and to assess health system performance based on internationally comparable health indicators. This work has contributed to, and been guided by, the development of conceptual frameworks for health system performance developed by the OECD over time (Hurst & Jee-Hughes, 2001; Kelley & Hurst, 2006; Carinci et al., 2015). The original OECD framework was last updated in 2015, with a focus at the time on quality and outcomes. Since then, health systems have been called upon to become more centred around people's needs and expectations, with enduring challenges pressing them on a daily basis. All of this has fostered a major shift in the broader health policy context, and expectations of what a health system performance assessment framework should measure have evolved substantially.

The OECD renewed HSPA framework is also in the final stages of adoption (Fig. 1.3). It places people at the centre of health systems and incorporates new key health system objectives such as sustainability (from both the economic and environmental perspectives) and resilience. It also stresses more clearly the interconnectedness and potential trade-offs across different health systems dimensions (such as balancing efficiency and equity or sustainability and resilience).

The renewed OECD HSPA framework focuses on the health system and does not serve as a conceptual model for determinants of health but acknowledges that the overall context plays a significant role in shaping the functions of all health systems, by either facilitating or restricting their performance.

In the framework, the outcomes of health systems correspond to the consequences of a health system's activities, policies, and interventions on the health and well-being of the population. The framework places people's health needs and preferences at the core of health systems and as such, people-centredness is regarded as an objective of health systems, as well as being instrumental to achieving other policy objectives. The section on health systems resources and characteristics covers the "structural" elements of health systems, i.e. the inputs necessary to enable the health system to function and the context in which it operates. It includes the following six pillars:

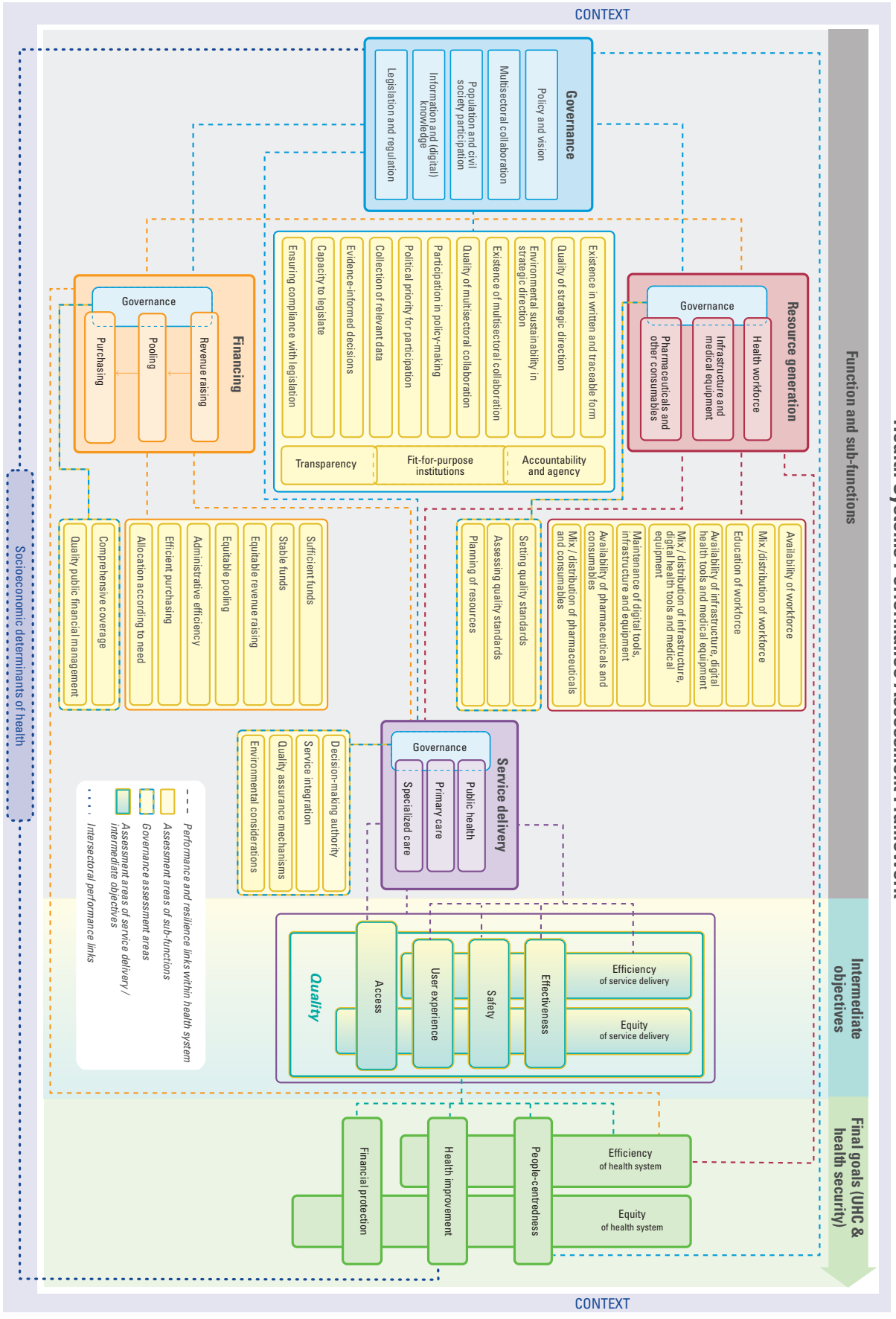
- expenditure and financing;
- workforce;
- technologies and pharmaceuticals;
- governance;
- data and digital; and
- knowledge and innovation.

The framework's section on healthcare services and public health interventions includes all activities that fall under healthcare, such as curative care, long-term care, mental health care, and palliative care, while also including prevention and health promotion interventions, such as screening, vaccination and public health campaigns.

The renewed OECD framework also includes four "cross-cutting" dimensions of health system performance, namely efficiency and equity on one side, and sustainability and resilience on the other. The reason that these are cross-cutting is that they do not belong to one particular block in the framework but relate to them all.

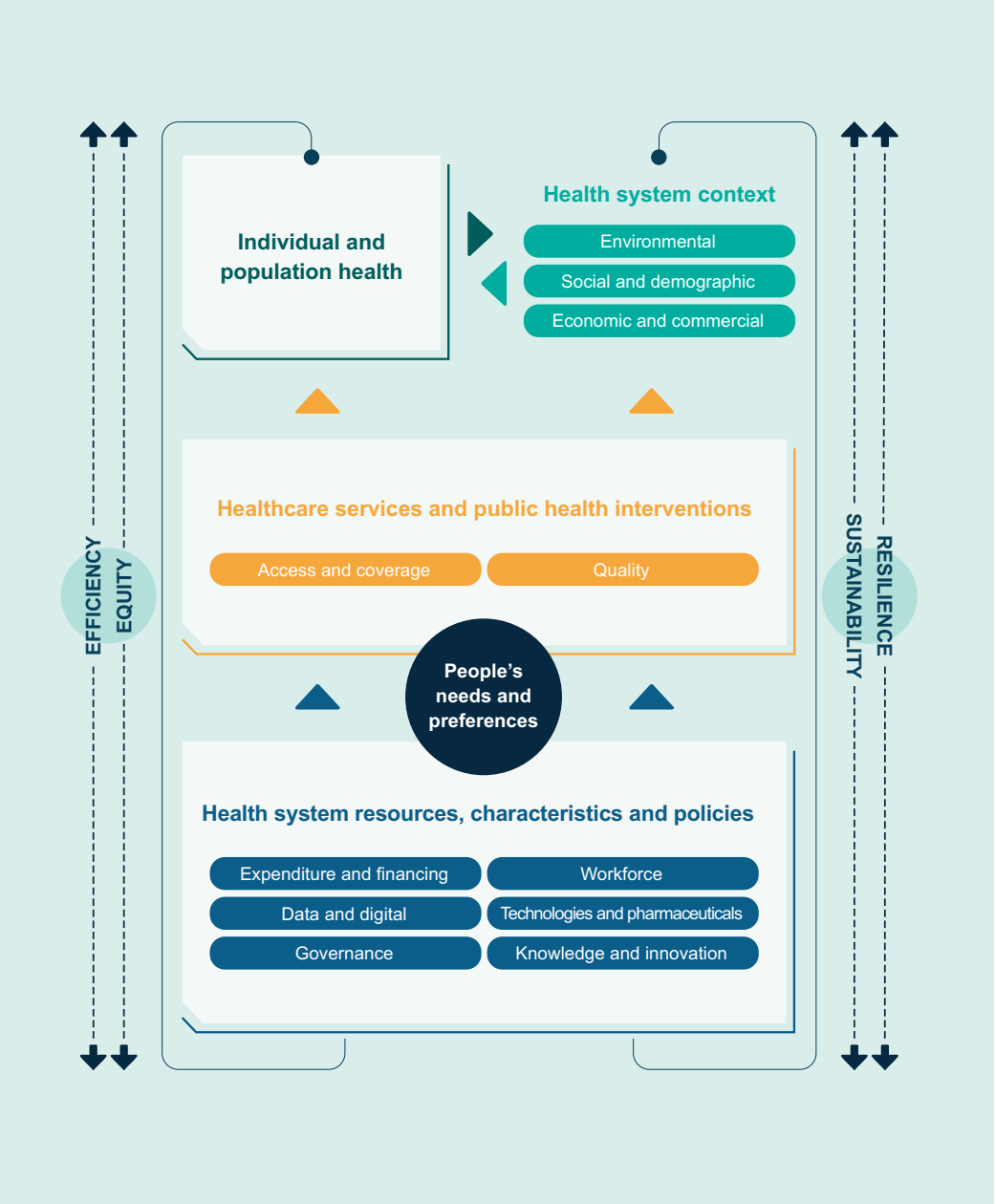
Some relations between concepts are acknowledged in the renewed framework. For example, although different terminology is used, Donabedian's model of structure, process, and outcomes (Donabedian, 1988) remains visible in the framework through the relationships between health system resources, characteristics, and policy (structure); healthcare services and public health interventions (process); and individual and population health (outcomes). Yet the framework remains high level. It shows the main elements in relation to each other at a higher level and is not intended to detail all possible conceptual relationships.

Fig. 1.2 WHO-Observatory global HSPA framework (expanded version)



Source: Rajan et al (2023)

Fig. 1.3. 2024 renewed OECD HSPA framework



Source: OECD (2024)

A policy brief as a proof of concept and a step towards a performance dashboard

There is scope to populate the HSPA frameworks with tracer indicators but this is a major undertaking that requires experts from the different strands to agree which indicators matter most and what they mean. As a proof of concept (see Box 1.4), this policy brief focuses on selected policy questions within the workforce and digital health subfunctions and the health system goal of people-centredness. These areas were chosen in light of the lessons from the COVID-19 pandemic (Sagan et al., 2021; OECD, 2023b), which highlighted the critical importance of the healthcare workforce, the system-level transformation brought by the rapid uptake of digital health, and the importance of people-centred systems in order to gain people's trust. Access and quality were chosen to examine the high-level performance of service delivery and interaction of all health system functions and to illustrate how health system tracer indicators can be used to identify and map system-level performance and issues.

Box 1.4 Scope of this brief: a summary

- This brief is a proof of concept that intends to test how a suite of relevant, high-level tracer indicators from the practical perspective of decision-makers looking to monitor or improve performance can be developed.
- It takes a policy question as the starting point to determine what indicators can help understand the performance of a health system function or subfunction, and their impact on other elements of a health system.
- It demonstrates how a selected set of tracer indicators linked to the HSPA frameworks can help decision-makers explore a policy question, identify performance issues, and make better informed policy decisions.
- It uses tracer indicators to offer insights into potential causes, flag limitations and discuss policy options, as well as serving to support, evaluate and monitor the impact of new policy initiatives.
- Finally, it establishes the foundation for the development of a policy-focused HSPA dashboard of key indicators.

This policy brief has sought to identify key performance indicators that work as tracers for the healthcare workforce, digital health, people-centredness, and access and quality as outcomes of service delivery (primarily using literature review and WHO and OECD expert groups and working parties as described in Box 1.5). This document is in coherence with the programmes and outcomes of the WHO's *Tallinn Charter 15th Anniversary Health Systems Conference: Trust and Transformation – Resilient and Sustainable Health Systems for the Future and the OECD's Health Ministerial Meeting: Better Policies for More Resilient Health Systems*. Its ambition is to support the future development of a HSPA dashboard of indicators that will offer policy-makers easy access to key information including guidance on interpretation, and a clear sense of health systems' relative strengths and weaknesses (across the system and in comparison to other countries).

Box 1.5 Policy questions and key performance indicators: an approach and methods

The brief's identification of key performance metrics starts by establishing a policy question and then selecting a set of tracer indicators that provide system-level information to address that question.

The notion of using "markers" or tracers in health systems is not novel, however, but dates back to Kessner, Kalk & Singer (1973), who advocated using tracer conditions (frequent, well defined conditions with known epidemiology that have agreed pathways of appropriate care) to assess the quality of health services. The concept was taken forward by Nolte, Bain & McKee (2006), using diabetes as a tracer condition in international benchmarking of health systems with a diabetes mortality-to-incidence ratio seen as a simple way of differentiating quality of care for people with diabetes in different countries. There was a clear understanding that tracers could not give precise measures of the scale of a problem but their value as indicators of potential problems and as prompts for further investigation was recognized.

This brief builds on previous thinking and aims to identify some tracer indicators for the key areas of workforce, digital health and people-centredness, as well as access and quality as outcomes of service delivery. The choices of these areas and the elements explored under those headings were based on several factors, including: a) policy priorities presented at the Tallinn Conference and the OECD's 23 January 2023 Meeting of Health Ministers (which in turn were defined in consultation with an extensive range of policy-makers and other stakeholders); b) practical experience of policy-makers and health system transformation during and post-pandemic; c) the insights offered by the international initiatives engaged in the development of the HSPA frameworks (including UHC 2030 Technical Working Group), which highlighted how connections work across functions, subfunctions, assessment areas, and intermediate and final goals; and d) consideration was given to the availability of comparable data, albeit working on the premise that lack of comparable data alone should not preclude inclusion of an indicator that is relevant (rather, this should serve as a call for improved data collection).

The tracer indicators were identified based on a HSPA literature review, including examination of indicators presented in the OECD's Health Statistics database and Health at a Glance and the WHO's Health for All database and reports on the workforce (WHO Euro, 2022) and digital health (WHO Euro, 2023), expert consensus within WHO and OECD working groups, as well as wider consultation. The selected areas and tracer indicators are not exhaustive and the indicators are intended to offer a glimpse at performance, monitoring at system level, and benchmarking where possible. They are not seen as a tool to address all the specifics of the processes within health system functioning but rather as a starting point for identifying key methodological principles and shortcomings, and to present domains that need further analysis.

The brief serves as a proof of concept and establishes the foundations for further work on populating the HSPA frameworks with tracer indicators and on policy dashboards.

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2. Assessing the health workforce

Health systems cannot function without an adequately staffed, skilled and motivated health workforce. Across the region, shortages of certain categories of health workers are reported in all countries, and there is an inadequate skill-mix to meet population health demands. Shortages and skills gaps are especially acute in rural and remote areas, affecting accessibility to and quality of health services, and equity in health outcomes (WHO Europe, 2022; OECD, 2023b).

Addressing issues over health worker availability, density and supply is widely acknowledged as critical to improving health system performance. Strengthening health workforce policy and planning responses is a core component of international and regional reports and strategies including the OECD 2023 report "Ready for the Next Crisis? Investing in Health System Resilience" (OECD, 2023a), the WHO Regional Office for Europe's influential 2022 report Health and care workforce in Europe: time to act (WHO Europe, 2022) and the WHO's 2016 Global Strategy on human resources for health: workforce 2030, among others. In addition, indicator 3.c.1 of the UN Sustainable Development Goals (SDGs) focuses on the "recruitment, development, training, and retention of health workforce[s]".

Various initiatives have been put forward to encourage countries to collect and report on health workforce measures. In Europe, since 2010, the Joint Questionnaire on Non-Monetary Health Care Statistics (JQNMHC), coordinated by the OECD, EUROSTAT and WHO Europe, asks Member States to report on various indicators related to health employment and education, and health workforce migration (OECD/Eurostat/WHO Europe, 2022). At a more global level, Resolution 69.19 (WHA, 2016) urges WHO Member States to consolidate "*a core set of human resources for health data with annual reporting to the Global Health Observatory, as well as progressive implementation of National Health Workforce Accounts to support national policy and planning and the Global Strategy's monitoring and accountability framework*". The WHO's National Health Workforce Accounts (WHO, 2018), launched in support of the 2016 Global HRH Strategy, aims to help countries generate, standardize and use high-quality health workforce data. It proposes 78 indicators for countries to monitor to assess the adequacy of the health workforce to provide universal health coverage (UHC) and to inform the development of evidence-based policies.

This section is informed by these international exercises to improve monitoring of the health workforce. A number of performance indicators are discussed that can serve as tracers to answer three key policy questions:

- **Are we building an adequate supply of health workers and ensuring they are distributed equitably?**
- **Are we investing enough in skill-mix and the primary care workforce?**
- **Are there adequate recruitment and retention policies in place?**

The indicators in each of these policy questions were chosen based on their usefulness in allowing countries to assess the sufficiency of their health workforce to meet population health needs and deliver UHC-oriented services, and to inform effective workforce planning. They do not cover all available indicators intended to assess the health workforce.

Importantly, the inclusion of these indicators was also informed by data availability. Despite health workforce strengthening being high on the international and national policy agendas, there are major limitations in the availability of health workforce data. Even for core indicators, many countries do not routinely capture or report data. This includes indicators on density at the subnational level, for occupations other than doctors and nurses, skill-mix, demographic profile (for example, age, sex), and education and training (WHO Europe, 2022). In addition, few countries also undertake regular staff surveys, and therefore do not capture key information related to retention, such as job satisfaction, rates of burnout, perception of staff shortages on patient safety, and intention to leave, among many others. This limits the current feasibility of monitoring many health workforce indicators, especially for international benchmarking exercises. At the national level, it undermines policy and strategy development, limits the effectiveness of forecasting and planning, and makes it challenging to assess the performance of the health workforce. Given these limitations, this section suggests additional indicators that countries should monitor to inform effective policy development.

2.1 Policy question: Are we building an adequate supply of health workers and ensuring they are distributed equitably?

Countries need to have a sufficient supply and distribution of health workers to deliver high-quality, accessible health services and to progress towards UHC. In the European region, the supply of doctors, nurses and midwives has grown by 10% from 2009 to 2019 (WHO Europe, 2022). Yet in many countries, this growth has not been enough to keep up with rising demand for services as a result of ageing populations, a rise in chronic conditions and multimorbidity, and increased expectations of health services (Zapata et al., 2023). Across the region, shortages of certain categories of health workers are reported in all countries, especially in rural and remote areas, affecting the accessibility, effectiveness and safety of health services, as well as user experience. In order to ensure future supply is sufficient, policy-makers need to know the number and distribution of current workforce stock, the size of current shortages for different categories of health workers, and the inflows – in particular from domestic graduates – and outflows, such as from retirement, outward migration or early exit from the occupation.

As illustrated in the OECD's Health at a Glance (2023b) publication and the WHO Regional Office for Europe's report Health and care workforce in Europe: time to act (WHO Europe, 2022), the indicators below provide a basic understanding of the current supply and distribution of health workers, newly trained health workers and "replacement needs" given the ageing of the health workforce:

- *density of health workers per 10 000 population;*
- *distribution of health workers by geographical area;*
- *number of graduates by occupation;*
- *share of health workers over 55 years old, by occupation; and*
- *migration of the health workforce.*

Density of health workers per 10 000 population

The density of health workers shows the number (physical persons or full-time equivalent) of doctors, nurses, midwives, dentists, pharmacists and physiotherapists per population (usually expressed in per 1000 or 10 000). This is one of the key indicators to assess the supply of the health workforce and to monitor as per the WHO Resolution (WHA69.19). The WHO Global Health Workforce database and the Eurostat and OECD databases provide internationally comparable data on the six main categories of health professionals listed above.

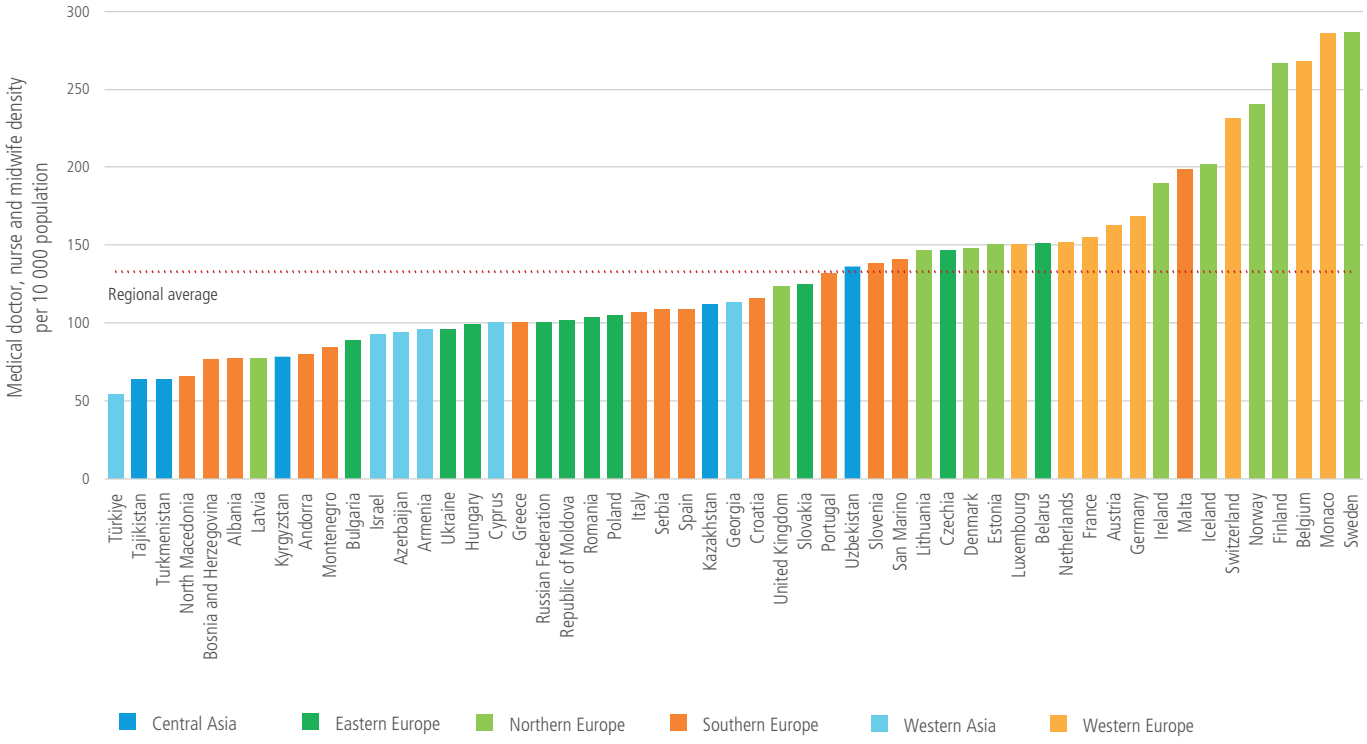
Europe has the highest density of health workers compared to other WHO regions, with 37 doctors, 80 nurses, 4.1 midwives, 6.7 dentists and 6.9 pharmacists per 10 000 people (WHO Europe, 2022). There is nevertheless wide variation between countries, with the density of doctors, nurses and midwives ranging from 54 per 10 000 population in Türkiye to over 200 in Sweden, Belgium and Finland (Fig. 2.1). This reflects differences in investment in education, training, recruitment and retention, and capacity for planning, as well as variations in health system organization and service delivery.

Limitations and challenges of interpreting this indicator

Determining what counts as a sufficient number of health workers in a given country is challenging. It depends on a complex analysis of demand-side factors such as population characteristics and patterns of health service utilization, as well as supply-side factors including health workforce characteristics (for example, numbers working full-time versus part-time).

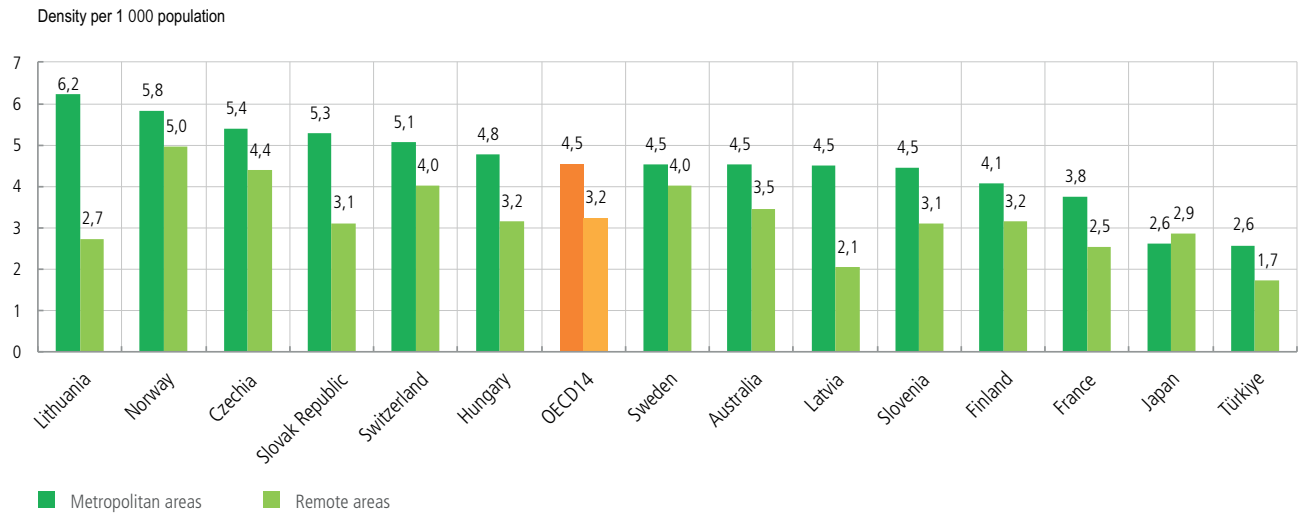
Sufficient density levels will depend on health system objectives and how healthcare is organized and delivered. A country that is focused on delivering team-based care or on prevention may need a wider range of health workers with different skills and competencies than other countries. Expanding the skill-mix of the workforce can reduce the number of doctors and nurses needed to deliver effective care, making it important for countries to monitor the composition (skill-mix) of the workforce and substitution of tasks between occupations (see Section 2.2). Countries that make greater use of digital technologies that improve the efficiency of care delivery may also need a lower density of health workers compared to others (see Section 3). It should also be noted that some countries with lower health worker densities have relatively good health outcomes compared to countries with higher densities, for example as a result of having a younger population or having a more effective welfare state that contributes to better population health.

Fig. 2.1 Total density of medical doctors, nurses, and midwives, 2020 or latest available



Source: WHO 2023, National health workforce accounts database

Fig. 2.2 Physician density, metropolitan and remote areas, 2021 or latest available



Note: Remote areas are defined as regions far from metropolitan areas and regions near small urban areas with a population of less than 250 000 people.

Source: OECD, 2023, Regional Database; *https://stat.link/vfc8il*

Comparisons of density levels across countries are challenging owing to lack of data harmonization. Very often countries report the numbers of health workers without providing information on whether they work full-time or part-time. There are further definitional issues. For instance, the classification of a general medical practitioner or medical specialist may vary between countries. The definition of nursing professionals is not always clear-cut (for example, whether nurses with lower levels of qualifications are counted as nurses or as nursing assistants). Furthermore, even within Europe, not all countries are able to report the number of practising health professionals, and instead report only the number of professionally active or licensed to practice health workers, thus inflating the number of healthcare staff working on the ground. Also, where dual public and private practice is permitted, few countries are able to report the number and activity level of health professionals working in the public sector.

Distribution of health workers by geographical area

Even if density rates are sufficient at the national level, they may be insufficient in certain regions or less populated areas. Indeed, geographical maldistribution of health workers is an issue in most countries, leading to shortages in rural, remote and other underserved areas and contributing to inequalities in access to care and unmet needs (European Commission, 2021; WHO Europe, 2022; OECD, 2023b). Density measures at the subnational level are core indicators for countries to monitor as per the WHO Resolution (WHA69.19).

As shown in Fig. 2.2, disparities in health workers' density by geographic area vary between countries. These variations reflect differences in policies and investment in recruitment and retention in rural and remote areas, as well as differences in care delivery and organization.

Limitations and challenges of interpreting this indicator

This indicator does not provide data on why geographical disparities are present. Many factors influence decisions to work in different geographic areas and these need to be assessed to design effective policies. Due to a concentration of specialist services in larger hospitals in urban areas, some variations in density levels may be warranted and should be taken into account. However, there are well documented disparities in the availability of GPs and nurses that result in lack of availability of certain types of care in underserved areas. This makes it useful to also consider types of skill-mix, especially for delivery of primary care at the subnational level (see Section 2.2). Disparities will also likely be related to challenges around recruitment and retention. Indicators on recruitment and retention (see Section 2.3) – collected through surveys of staff, graduates, and students – are therefore needed to understand these factors in order to develop appropriate policies to address them.

Measuring health worker density in isolation may mask other challenges in accessing services in rural areas. For instance, density levels may be deemed sufficient, but poor transport infrastructure or long distances may impede access to care and also need to be considered. At the same time, the use of telemedicine and other digital health technologies can support the delivery of services in rural areas even if health workers are not physically present. Monitoring the accessibility and use of digital health tools to support care delivery in these areas is thus important (see Section 3).

Some countries may not collect data at the subnational level, or may only do so for doctors and nurses. Even when data are collected, they may often be unreliable. For example, a recent review of the nursing workforce in Lithuania showed that data on numbers of nurses reported by the municipalities differ from those reported by the Ministry of Health five-fold in some areas (OECD/European Observatory on health systems and policies, 2023).

Number of graduates by occupation

Monitoring the number of graduates, particularly medical and nursing graduates, is critical to planning for future supply of health workers (Diallo et al., 2003). These data are needed to understand how new entrants will replace leavers, including those from retirement and external migration (see below) and attrition (see Section 2.3). When compared to estimated rates of people leaving the workforce, it can highlight policy actions that might be needed to increase the supply in the future, such as adjusting the number of admissions. An insufficient or oversupply of graduates may indicate that the health and education sectors are not working together to appropriately plan and train the next generation of health workers.

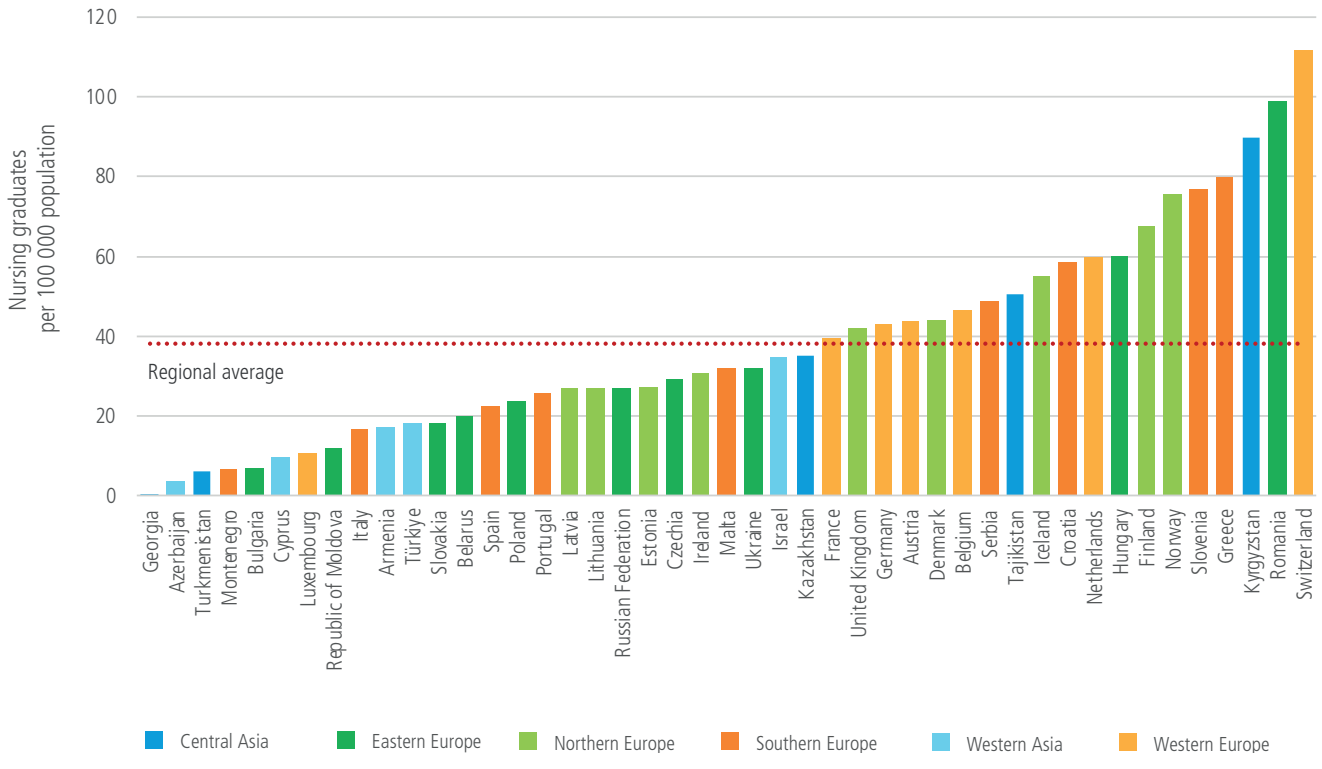
As an example of data on graduate rates in Europe, Fig. 2.3 shows the number of nursing graduates per 100 000 population in 2020. Almost two thirds of countries in the region produced fewer nurse graduates per population than the regional average (38 nurse graduates per 100 000 population). This may indicate that some countries need to increase investment in (and prioritization of) education and training of new nurses. However, graduate rates will inevitably vary between countries as they may be informed by the extent of current shortages, the availability and need for other types of health workers, and an assessment of future demand for care and how care will be organized and delivered.

Limitations and challenges of interpreting this indicator

There are no standard estimates on what the graduate replacement rate should be, as this will be context specific. It will depend firstly on the current stock of health workers (see previous indicator) and retirement patterns. Policy-makers also need to take account of how demand-side factors (for example population health needs, population age structure, etc.) will change in the future. Forecasting will also be needed to assess how care delivery may progress in the future, such as in relation to the advancement of digital health technologies or an increased focus on prevention, and what this may mean for skill-mix requirements (see Section 2.2). The indicator does not capture potential supply from foreign-trained workers (see next indicator), which may be particularly important for those countries that attract a lot of foreign workers, and other sources of recruitment (for example, inactive workers), and should therefore be analysed in combination with data on other potential sources of supply.

Indicators on the number of graduates do not show how many of these graduates will end up working in the health system or for how long, or how many will work in currently underserved areas. Many health workers may not work in the health system after graduation for many reasons, including: not completing their training, not finding jobs sufficiently attractive (in terms of pay or other working conditions), choosing to work in other sectors or other countries; lack of effective recruitment strategies; and

Fig. 2.3 Number of annual nursing graduates per 100 000 population, 2020 or latest available



Source: WHO, 2023, National health workforce accounts database

insufficient effective demand and job offers (McPake et al., 2023). Countries therefore need to monitor and take into account education and training completion rates and attrition rates, especially in the first few years after graduation, to understand supply needs and how to reduce waste in human capital. Finally, this indicator also does not reveal anything about the quality or level of education received; this is important for countries to monitor, such as by assessing whether educational institutions are accredited and provide competency-based learning.

Share of health workers over 55 years old, by occupation

The ageing of health workers is an issue of concern for all countries in Europe. Across countries reporting data, the percentage of the physician (see Fig. 2.4) and nursing workforces aged over 55 years in 2020 was 30% and 18% respectively (WHO Europe, 2022). These workers will likely retire in the next 10 years, exacerbating the shortages unless action is taken to train, recruit and retain the next generation of health workers. Too many workers retiring or leaving the health sector prematurely without an adequate replacement plan contributes to health workforce shortages and skills gaps, undermining access to care, patient safety, user experience, and efficiency of service delivery, and ultimately reduces health improvement (WHO Europe, 2022; McPake et al., 2023).

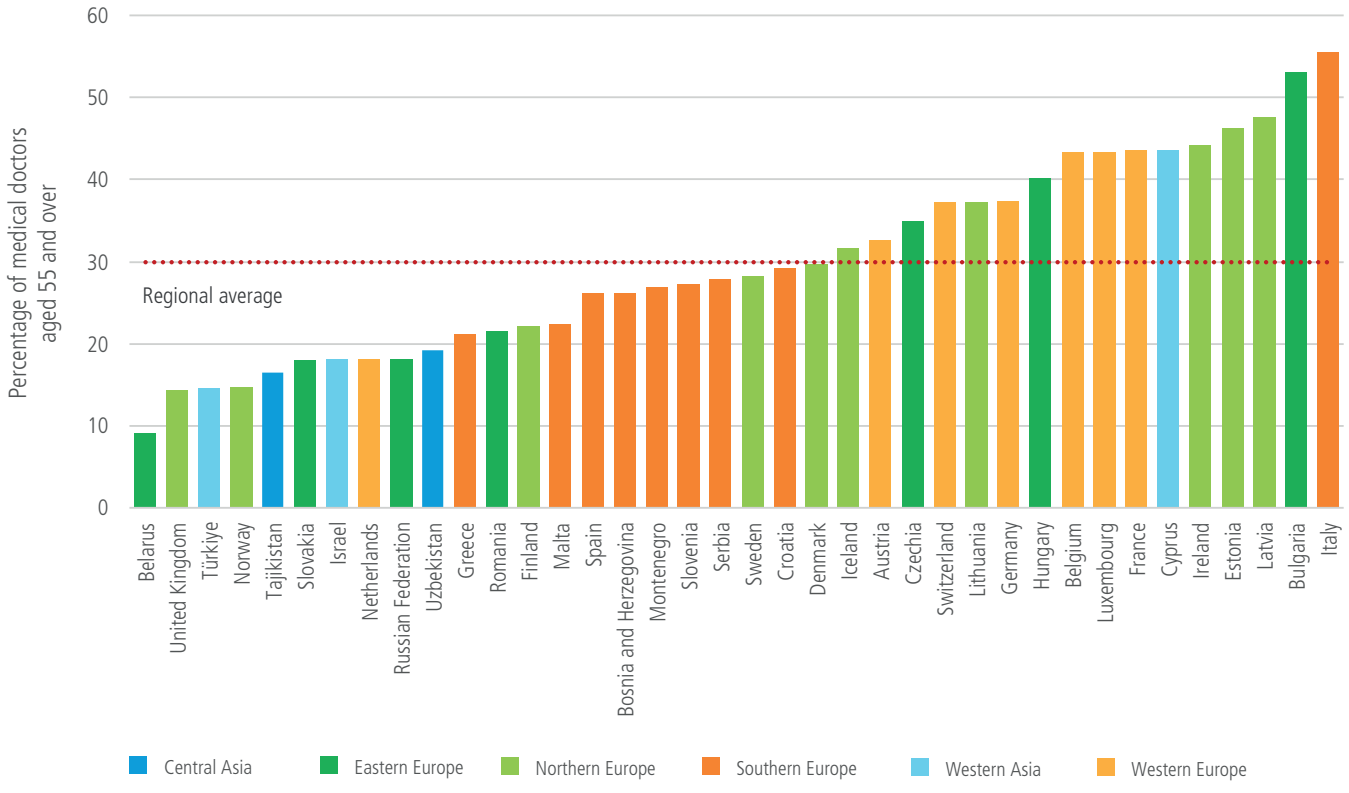
Limitations and challenges of interpreting this indicator

Many countries do not collect data on the age of health workers, or only do so for doctors and nurses and not other health professionals (WHO Europe, 2022). In addition, these data do not capture exactly when workers will retire or why. Further research could help establish more precisely the effective average retirement age in countries, and identify drivers of early or late retirement age. The increased use of digital health technologies may (positively or negatively) affect retirement rates, as may the introduction of age-friendly workplace policies, and their impact on older health workers should be assessed. Retirement rates may also differ according to medical specialty or by geographical area. The indicator does not take into account other reasons for attrition, and is therefore only one input into calculating current and future exit rates from the health workforce.

Migration of health workforce

A number of countries in Europe lose a substantial proportion of health workers to migration each year, while others are "net gainers". In the former group of countries, this undermines access to care and the sustainability of health systems, represents a waste of investment in the education and training of these workers, and needs to be taken into account when analysing sufficiency of current and future supply. However, few countries are able to monitor outward migration of health workers. One method to capture this information is through surveys of leavers or

Fig. 2.4 Percentage of medical doctors aged 55 and over, 2020 or latest year



Source: WHO, 2023, National health workforce accounts database

data on emigration collected in professional registries (for example, as conducted in the United Kingdom). Another method to support countries in understanding rates of outward migration is through collecting immigration data by country of origin of foreign-trained workers who are working in various destination countries. The OECD/Eurostat/WHO-Europe Joint Questionnaire in Europe asks countries to provide this information, although data are only reported for doctors and nurses and not all countries report data on foreign-trained doctors and nurses by country of origin. Table 2.1 provides an example of the results from the Joint Questionnaire on the emigration of nurses trained in Romania to other EU and OECD countries measured in terms of annual outflow.

Because there are often no direct data available on the emigration of doctors and nurses from source countries, the approach of collecting data on immigration from destination countries is in many cases the best way to monitor emigration from source countries on a routine basis.

Monitoring the country of training of health workers is also useful for destination countries. It can help show if countries are relying too much on foreign-trained workers to overcome shortages, potentially due to issues over retention (see Section 2.3) or insufficient investment in education. This is an unsustainable strategy to address workforce issues in the longer term as it is highly susceptible to changes in visa regulations, and is dependent on recruitment and retention policies in other countries that are competing for foreign-trained workers and the motivation of health workers to migrate (Williams et al., 2020). In addition, it deprives other – often poor – countries of health professionals, undermining the sustainability of their health systems and representing a huge loss of investment in training and education. Nevertheless, it should be noted that migration is not a wholly negative phenomenon and can have benefits for health workers as well as source and destination country health systems (OECD, 2015; WHO, 2016).

Table 2.1. Emigration of nurses trained in Romania to other OECD countries, annual outflow, 2010–2022

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Belgium	87	123	269	194	180	163	94	96	159	100	74	92	89
Canada	47	34	41	34	14	22	17	5	10	0	8	6	
Denmark	3	7	3	5	2	6	11						
Finland		1				2	2	1		1	1		
France	30	27	15	7	6	8	4	6	7	10	2	3	
Germany			72	207	465	798	804	795	696	738	777	498	
Greece	0	0	0	0	0	0							
Hungary				19	21	24	26	24	43	18	20	14	
Iceland										1			
Ireland	7	13	6	25	22	37	155	224	107	11	5	10	14
Israel		1		1					3		1	1	
Italy	1122	1045	720	541	521	340	423	190	182	266	335	404	390
Netherlands												5	
New Zealand										1		1	1
Norway	8	6	13	27	26	26	26	32	23	27	44	74	
Poland												1	
Spain	18	39	29	28	10	27	50	42	55	60	54	63	76
Sweden	1	2	4	9	7	4	17	4	10	7			
Switzerland	45	38	36	29	24	31	33	30	34	45	31	30	38
Türkiye	0	1	0	0	0	0							
United Kingdom	308	660	465	458	1215	2344	2411	120	127	115	147	113	
Total	**554**	**952**	**1673**	**1584**	**1298**	**1488**	**1662**	**1569**	**1456**	**1403**	**1506**	**1315**	**608**
Number of countries reporting data	12	14	14	16	14	15	13	13	13	15	14	15	6

Source: OECD Health Statistics (based on results from OECD/Eurostat/WHO-Europe Joint Questionnaire)

Limitations and challenges of interpreting this indicator

Many countries do not accurately report data on location of training for health workers, or only do so for doctors (Williams et al., 2020). This means that relying on information from other countries to assess outward migration trends will often be incomplete. The indicator also does not provide information on why health workers are migrating, making it important to capture this information from surveys of leavers as it will often be tied to poor retention strategies (see Section 2.3). In addition, it may be that domestic students study abroad and return to their country of origin once their education is completed. This cannot be considered a "brain drain". In some cases, countries (or medical schools) deliberately target foreign students as a means to get funding for education institutions and train more graduates than needed for their own replacement rates. Alternatively, other countries (for example, the Philippines) overtrain domestic students in recognition that many will go abroad and send remittances.

How do these indicators help to monitor and transform the supply of the health workforce?

Understanding the current supply and distribution of the health workforce, inflows and outflows is crucial to inform health workforce planning. By monitoring the number of available health workers, it is possible to identify occupations and regions with shortages or surpluses, which can help with the appropriate allocation of resources. If numbers of health workers are insufficient, it likely reflects inadequate policies tied to education, recruitment and retention, and highlights the need for action and investment in these areas. It can also indicate the need for improved health workforce planning and governance and alignment between sectors including health, education and labour. By tracking the outflows from migration, retirement and attrition (see Section 2.3) and comparing them to current supply and estimated demand for services both now and in the future, it is possible to introduce timely policies that ensure adequate supply of health workers in the future.

The impact of future policy options (in health and other sectors) that will affect supply and demand will also need to be considered in tandem with other performance indicators discussed for effective workforce planning and forecasting. For instance, investment in digital technologies may improve productivity and reduce the number of health workers needed. A shift towards prevention and primary care may reduce the need for medical specialists, but increase demand for public health workers. Policy options to increase the number of advanced practice nurses may support task-sharing and reduce the need for doctors (see Section 2.2). Investment to retain doctors may reduce the number of medical graduates needed (see Section 2.3). Other factors such as a shift towards working part-time will also influence the numbers needed. Additionally, collecting data on characteristics such as ethnicity or sex can help ensure the health workforce is representative of and best able to meet population health needs.

2.2 Policy question: Are we investing enough in skill-mix and the primary care workforce?

Achieving UHC and delivering high-quality, patient-centred care depends not only on having a sufficient number of health workers, but also on ensuring the health workforce has the right mix of skills and competencies. Ageing populations, rising chronic conditions and growing inequality mean the old skill-mix focused on physician-delivered specialist care is no longer fit for purpose. Investment in a new mix of skills and disciplines, such as advanced practice nurses, physiotherapists, speech therapists, and many others, is needed to deliver integrated, team-based care founded on strong primary healthcare and public health principles (McPake et al., 2023). Reskilling and upskilling the health workforce can help improve the efficiency of the health workforce, patient outcomes and the cost-effectiveness of health systems.

A number of countries do not report or do not collect data on many types of health workers other than doctors, nurses and midwives. Even where data are collected, it may only be at the aggregate level and not broken down by sector (for example, primary care, specialist care, etc.). This currently limits assessment of skill-mix reforms and the usefulness of many existing indicators. However, two potential indicators that can provide a basic understanding of whether countries are investing in skill-mix reforms, especially to strengthen the primary care workforce, are:

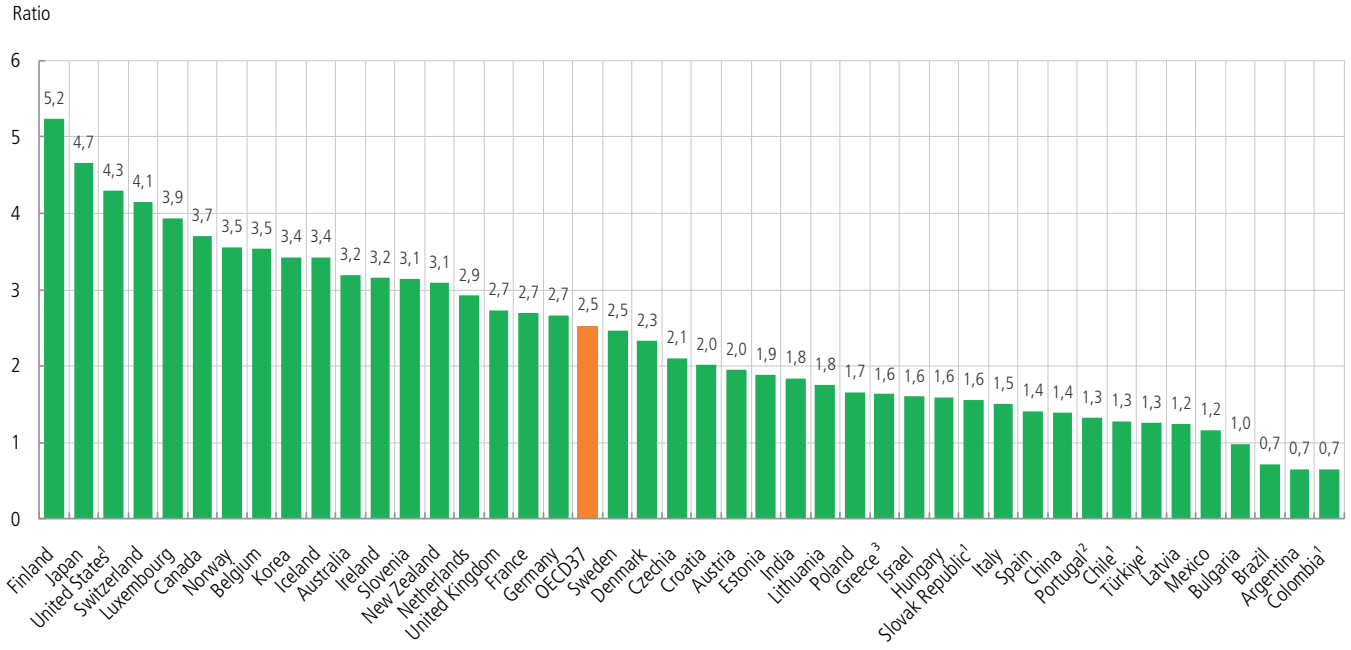
- *Ratio of doctors to nurses*
- *Share of GPs in the physician workforce*

Ratio of doctors to nurses

All countries have invested in expanding the nursing workforce (including midwives) to support the delivery of cost-effective, patient-centred care and to reduce the over-medicalization of treatment. Doctors and nurses have distinct but complementary skills, and ensuring an appropriate doctor to nurse ratio can support the efficient allocation of resources, ensure a more balanced and effective distribution of tasks and responsibilities, and promote team-based working, which can support the delivery of high-quality care.

The ratio of doctors to nurses varies considerably across Europe. Figures 2.5 and 2.6 show two examples of how the ratio can be visualized. A ratio of high numbers of nurses to low numbers of physicians may represent countries with a greater focus on team-based working and task-sharing with physicians. However, it may also reflect a lack of investment in recruiting and retaining doctors (see Section 2.3). Conversely, a ratio of high numbers of doctors to low numbers of nurses may instead represent countries where physician-led care dominates, or highlight challenges in recruiting and retaining nurses.

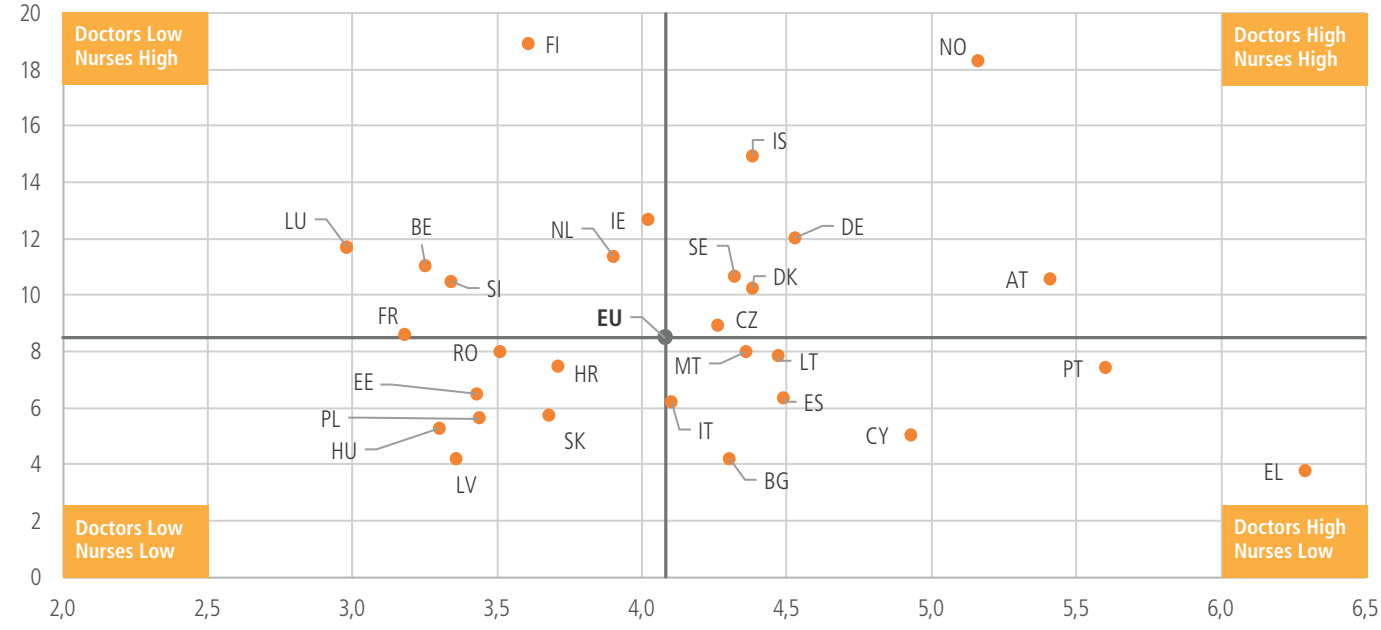
Fig. 2.5 Ratio of nurses to doctors in OECD countries, 2021 or latest available



Notes: 1. For countries that have not provided data on practising nurses and/or practising doctors, numbers relate to the "professionally active" concept for both nurses and doctors (except Chile, where numbers include all nurses and doctors licensed to practise). 2. Ratio underestimated (professionally active nurses/all doctors licensed to practise). 3. Data refer to nurses and doctors employed in hospitals.

Source: OECD Health Statistics, 2023, *https://stat.link/a1ftp7*

Fig. 2.6 Doctors and nurses per 1000 population in the EU, 2021 or latest available



Note: In Greece and Portugal, data refer to all doctors licensed to practice, resulting in an overestimation of the number of practising doctors. In Greece, the number of nurses is underestimated as it only includes those working in hospitals.

Source: OECD/European Observatory on Health Systems and Policies (2023)

Limitations and challenges of interpreting this indicator

This indicator does not provide information on other types of skill-mix reforms in countries. It may be that countries are investing in increasing the number of other professions, such as pharmacists and physiotherapists, to support task-sharing. It is therefore important that countries assess data on a wider range of health workers to gain a better understanding of skill-mix in their workforce. This indicator does not reveal the extent of skill-mix changes in different care areas, for example primary care, making it important that data are disaggregated. It also does not capture information on the scope of practice of nurses; for example, many countries are investing in advanced practice nurses (educated to Master's level) who are able to prescribe and administer vaccines and therefore take on a wider range of tasks from physicians than other nurses.

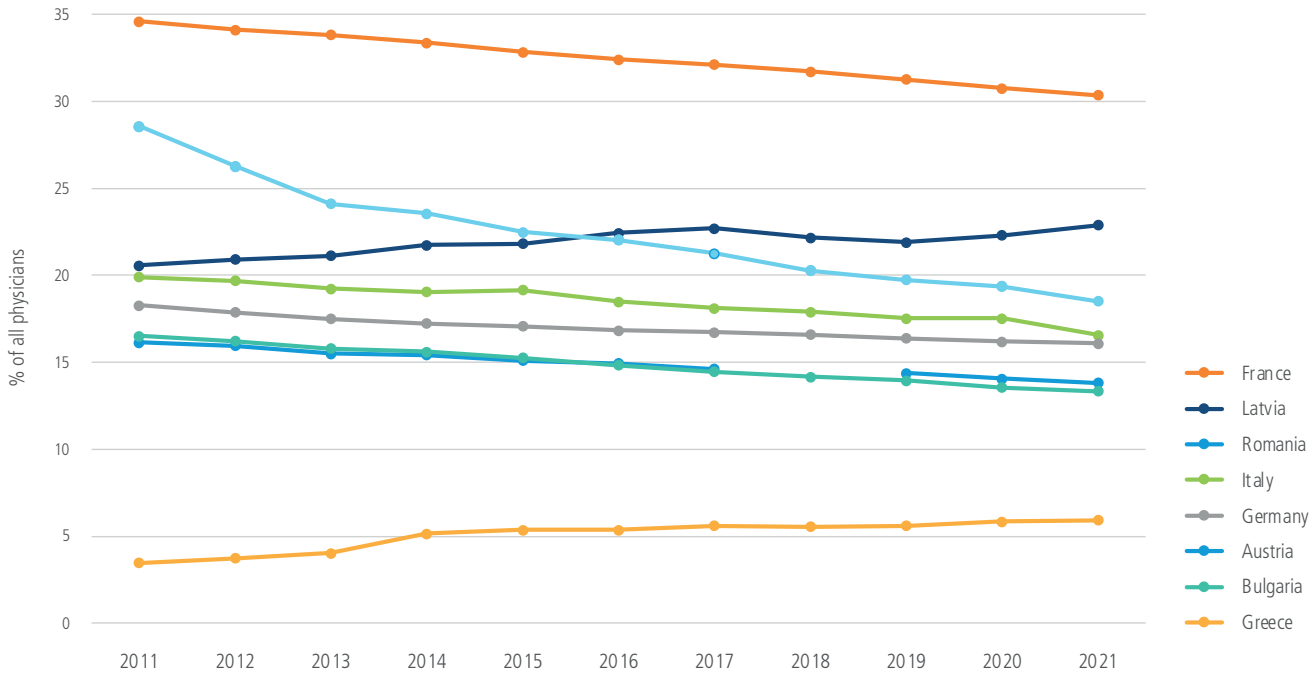
There is also no optimal ratio of doctors to nurses, and the appropriate ratio will vary between countries depending on care organization and delivery (Zapata et al., 2023). Other reasons influencing doctor/nurse ratios need to be considered to determine if any policy action is needed. For example, it may be related to challenges in recruiting and retaining nurses but not doctors (or vice versa). Alternatively, a country may want to introduce skill-mix changes but faces resistance from dominant physician stakeholders, a lack of financial resources, or rigid and outdated regulations defining scopes of practice and division of work.

Share of GPs in the physician workforce

Efficient, equitable and people-centred health systems are founded on strong primary health care and public health principles (WHO, 2016; OECD, 2021). Yet despite many countries implementing policy actions to strengthen the primary health care workforce, the ratio of GPs to specialists has declined in many countries in Europe (Fig. 2.7), and shortages of GPs are now a critical issue in many countries, especially in rural and remote areas (OECD, 2020). While a decline in the share of GPs may reflect decisions to invest in other types of health workers in primary care or specialist care instead, it is very often related to challenges in recruitment and retention. Primary care is often viewed as less attractive to work in compared to specialist care, owing to the work environment, working conditions, remuneration, and work-life balance (Kroezen, Rajan & Richardson, 2023).

Insufficient numbers of GPs can affect timely access to care and early intervention for health issues. GPs also play a gatekeeping role in many health systems, but adequate numbers are required to ensure appropriate utilization and access to specialized care, preventing unnecessary referrals and thus reducing healthcare costs. Monitoring this indicator can shed light on (lack of) investment in primary care, and highlight the need to increase training places in general medicine, implement additional incentives for graduates to work in primary care, and/or increase recruitment in this sector.

Fig. 2.7 General practitioners as a share of physicians (%)



Source: OECD Health Statistics, 2023

Limitations and challenges of interpreting this indicator

This indicator provides no information on the extent of skill-mix reforms in primary health care. It may be that some countries are investing in advanced practice nursing and community pharmacists, or introducing other professions to support task-sharing, reducing the demand for physicians. This makes it useful to also capture information on other primary care workers. The appropriate share of GPs within the physician workforce will also vary between countries depending on population health needs, health care priorities, and organization of care. As such, the ratio of GPs to specialists does not reveal overall shortages in the physician workforce, making it necessary to monitor overall physician density (see indicators in Section 2.1).

How do these indicators help to monitor and transform skill mix?

Addressing skills gaps can help support the delivery of innovative models of team-based care by strengthening primary health care and prevention. Skill-mix reforms that facilitate task-sharing with physicians are generally a cost-effective way to meet population health needs and can also help address physician shortages as other types of health workers can be trained in a shorter amount of time.

The indicators suggested in this section only capture a very high-level overview of skill-mix in the health workforce owing to current data limitations in many countries beyond the EU or OECD. This includes a lack of data on health workers beyond doctors, nurses and midwives, and insufficient disaggregation by geographic location and type of care. Capturing more complete and accurate data on all types of health workers, which should be standardized across countries, is a prerequisite for monitoring skill-mix. Further data disaggregation according to scope of practice (for example, advanced practice nurses versus registered nurses with a Bachelor's degree) could provide more insights for optimizing skill-mix, although various countries are at different stages and taking different approaches in implementing new advanced roles for nurses and related titles (for example, nurse practitioners, community and family nurses, etc.). Improving data on available skill-mix can be used to inform the development of education and training programmes and the use of joint workforce planning and forecasting, which are essential to effectively overcome shortages and skills gaps.

2.3 Policy question: Are there adequate recruitment and retention policies in place?

Many countries in Europe are facing considerable challenges in retaining and recruiting health workers. Poor working conditions, long working hours, lack of work-life balance, lack of career advancement, and lack of support and recognition have led to health workers feeling undervalued and underappreciated, and in some countries facing substantial difficulties in coping with the rising cost of living. These challenges are long standing, but have been exacerbated by the COVID-19 pandemic, which placed considerable mental and physical strain on the health workforce. Multiple strikes have been seen across the region in recent years, and rates of attrition from the public sector are rising rapidly as disaffected health workers seek work in the private sector, in other countries or outside the health sector entirely. Without action to retain and recruit health workers, shortages and skills gaps will worsen even if action is taken to train more graduates, and investment in education and training will be wasted.

The indicators that can provide information on the adequacy of retention policies include:

- *Intention to leave in the next 12 months*
- *Job satisfaction rates by occupational group*
- *Share of health workers experiencing burnout by occupation*

Intention to leave in the next 12 months

Monitoring intention to leave in the next 12 months can help shed light on whether policy-makers at the regional or national level need to take action to address various issues connected to retention, or may need to step up recruitment initiatives to address shortages. However, few countries routinely collect such data. Some exceptions include Belgium, Germany, Ireland, the Netherlands, Poland and England in the United Kingdom.

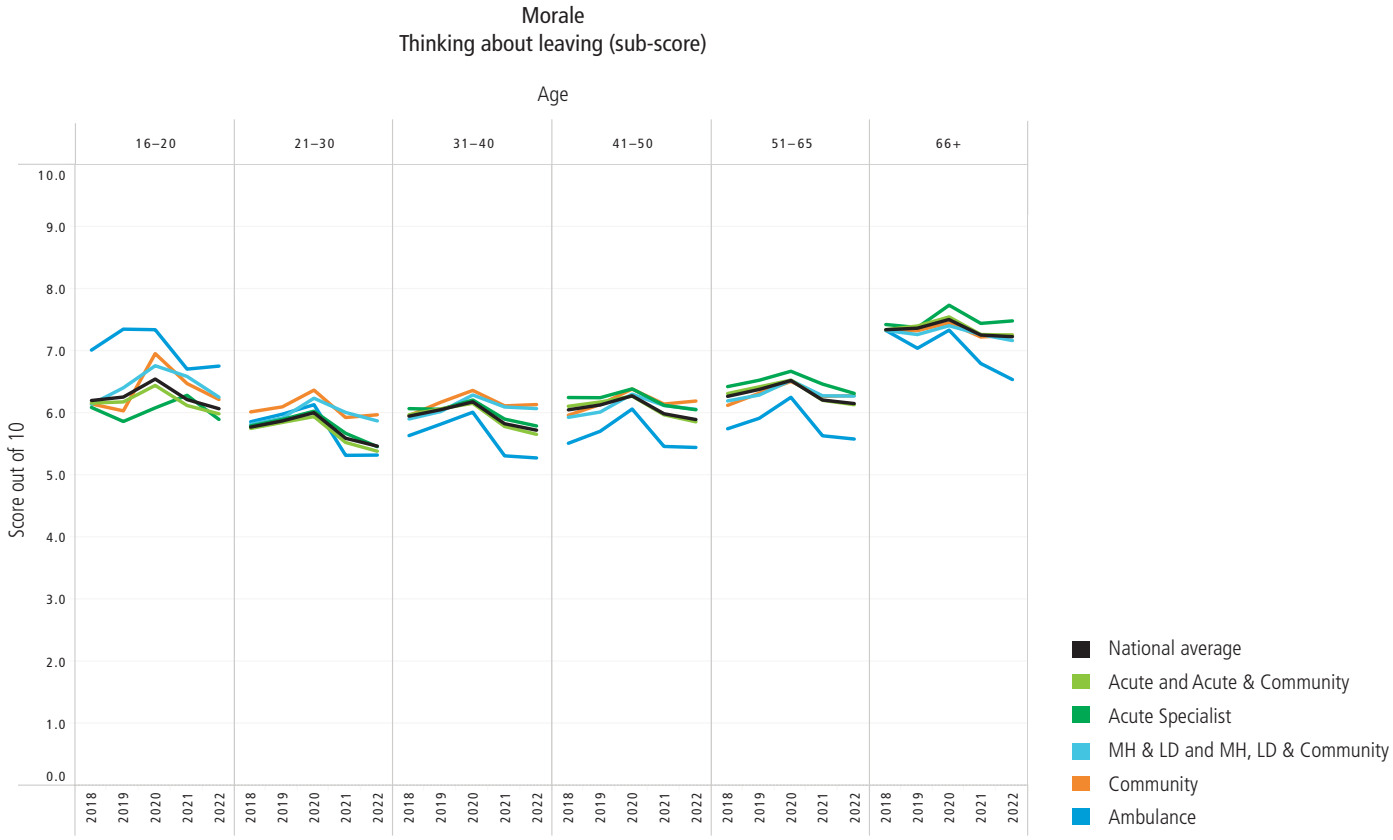
In England, one of the largest staff surveys in the world is conducted annually (since 2003) to understand staff experiences. Interactive results for the national, regional and local levels are published online and are publicly available (NHS, 2023). While the survey contains core questions which must be included, local areas may opt to include other questions of local relevance. In 2022, 46% of the NHS workforce of 1.3 million workers took part in the survey (King's Fund, 2023).

The NHS staff survey is open to all staff and covers a wide range of questions related to retention, including intention to leave (see Fig. 2.8). These results can be broken down by NHS provider, care area (for example, ambulance trusts, community settings, etc.), occupation group, workforce characteristics (for example, gender, ethnicity, childcare commitments, etc). Breaking down data to this level allows policy-makers and managers at different levels to understand where specific retention efforts may need to be targeted. For example, Fig. 2.9 shows that intention to leave for younger age groups is highest among ambulance workers and lowest for acute specialists, with the reverse patterns seen for acute specialists.

Limitations and challenges of interpreting this indicator

This indicator does not show how many health workers will actually leave in the next 12 months. Monitoring exit rates to establish how many people have left the health workforce in the last 12 months is also needed to inform retention efforts and for accurate health workforce planning and forecasting. Data on exit rates can most reliably be collected from professional registers (for example, as in the UK for doctors and nurses), although these have not yet been established for all professions in many countries. Identifying other data sources that provide data on health workers who

Fig. 2.8 Results of the NHS staff survey



Source: NHS (2023) *https://public.tableau.com/app/profile/piescc/viz/ST22_national_full_data_2023_03_09_FINAL/Aboutthissurvey*

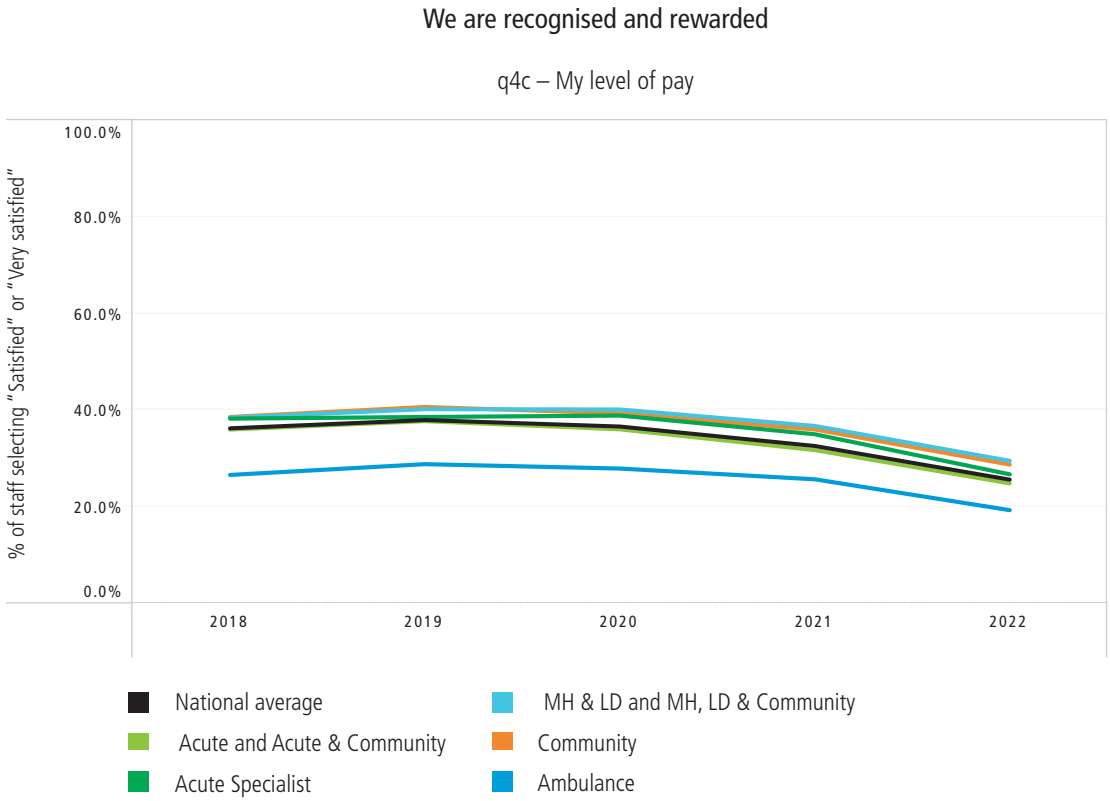
have actually left their job (going beyond the "intention to leave" indicator) would be useful to inform understandings of exit rates.

The indicator on its own also does not enable policy-makers to understand why health workers are intending to leave. Establishing regular staff surveys with questions on reasons for intention to leave are therefore needed as this can inform the development of appropriate policy actions (for example, efforts to improve mental health support, work-life balance, remuneration, etc.). Harmonizing a small set of variables in national staff surveys across countries would be useful to be able to obtain cross-country comparable data. As in England, it is important this information is broken down by different categories, including local area and occupation time, to ensure policy actions can be targeted. Of course, just because this information exists, it does not mean that it will be acted upon by managers or policy-makers. Some level of monitoring of actions to address issues raised by staff surveys could be useful in ensuring accountability for relevant actors. Staff surveys are not likely to be mandatory so efforts may be needed to encourage participation among certain groups who may be less likely to respond.

Job satisfaction rates by occupational group

If health workers are not satisfied with their jobs, they may be more likely to leave to work in other health facilities, outside the health sector, or in another country. Lack of job satisfaction may also lead to loss of morale, and contribute to higher rates of absenteeism and reduced productivity. Understanding whether staff are satisfied with their jobs is therefore important to inform retention efforts at the local and national levels. These data can be captured through regular staff surveys; as noted, however, these are not undertaken regularly in many countries. In the NHS England staff survey, an overall question on job satisfaction is not asked. Instead, satisfaction with different elements – including recognition, feeling valued, opportunities for flexible working hours and level of pay (see Fig. 2.9) – is captured, providing more information on reasons for health workers being satisfied or unsatisfied with their jobs. Fig. 2.10 shows that satisfaction with pay among respondents to the NHS staff survey is lowest for ambulance workers, but has been declining among occupations in all care areas since 2020, likely partly as a result of the cost-of-living crisis and growth of wages below the inflation rate.

Fig. 2.9 Share of respondents to the NHS staff survey 2022 feeling satisfied or very satisfied with their pay



Source: NHS (2023) *https://public.tableau.com/app/profile/piescc/viz/ST22_national_full_data_2023_03_09_FINAL/Aboutthissurvey*

Limitations and challenges of interpreting this indicator

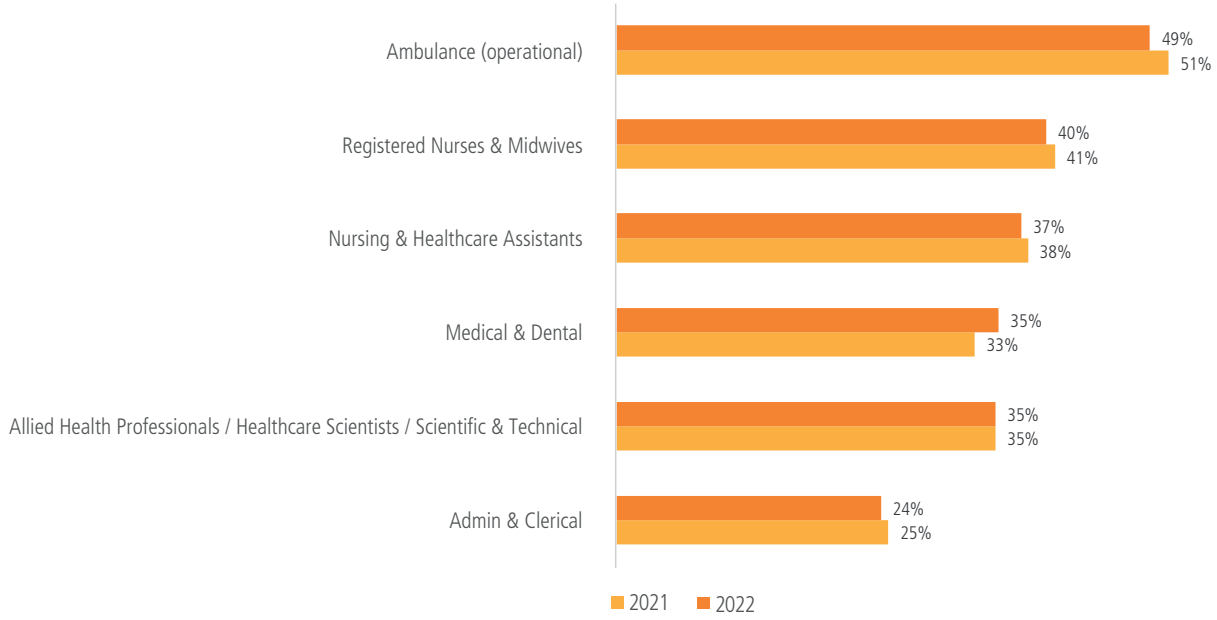
If an overall question on job satisfaction is asked, this does not capture the reasons why workers may be satisfied or unsatisfied with their jobs. For example, one key issue related to retention and satisfaction is remuneration. If health workers perceive they are not being adequately paid for their job, they may be more likely to leave and work in the private sector, in other sectors or leave the country. The OECD has been collecting and reporting data on the remuneration of nurses and doctors (and expressing these data as a ratio to the average national wage), although there are limitations in data comparability that are duly noted (OECD/EU, 2022; OECD, 2023b). However, these data are generally not readily available for non-OECD countries. Data on remuneration compared across countries (adjusted for cost-of-living in each country) could also serve as an indicator of the financial incentives for health workers to migrate, although several other factors affect migration decisions. Asking questions on satisfaction levels related to different areas that affect retention is therefore useful to inform policy actions. As with the previous indicator, it is important that these data can be broken down by occupation and by other workforce characteristics, and accountability mechanisms should be in place to ensure information collected in staff surveys is acted upon.

Share of health workers experiencing burnout by occupation

Health workers have always experienced high rates of stress owing to the nature of their jobs. However, the COVID-19 pandemic has exacerbated rates of burnout and mental health conditions resulting from intensive workloads over a sustained period and the distress of treating COVID-19 patients (Greenberg et al., 2021; Rimmer, 2021; Santabárbara et al., 2021). Fig. 2.10, using data from the NHS staff survey, shows that almost one third of non-clerical and non-administrative staff working in the NHS reported experiencing burnout often or always in 2021 and 2022, with these rates highest among ambulance staff and registered nurses and midwives. This emphasizes the need for employers at local and national levels to understand and take actions to address the causes of burnout for different occupational groups and to provide mental health and well-being support.

Ensuring that health workers are provided with appropriate mental health and well-being support has become a key area of focus for policy-makers across the region and a central pillar of WHO Europe's Framework for Action on the Health and Care Workforce. Providing mental health and well-being support is not just a moral imperative to protect health workers, but can also help reduce absenteeism, turnover and attrition, and improve labour productivity.

Fig. 2.10 Share of respondents to the NHS staff survey reporting often or always experiencing burnout because of work, 2021–2022, by selected occupational group



Source: NHS (2023) *https://public.tableau.com/app/profile/piescc/viz/ST22_national_full_data_2023_03_09_FINAL/Aboutthissurvey*

What are the challenges and limitations of interpreting this indicator?

This indicator does not show the reasons for burnout, which could be connected to a variety of issues including poor working conditions, insufficient staff-patient ratios, long working hours, lack of support from management, experiencing violence, harassment or discrimination, and difficulty managing work-life balance, among many other factors. Capturing data on causes of burnout by occupational group and other characteristics (for example, sex, age, and ethnicity) is therefore critical to develop appropriate and tailored policy responses. It also does not reveal if mental health and well-being support is available or accessible to health workers, and if this is linked to rates of burnout. Collecting data on the availability and the impact of any existing support can help inform the development of more effective support. Understanding the extent to which burnout is linked to attrition, intention to leave and absenteeism is also useful to inform recruitment plans and planning for future supply.

How do these indicators help to monitor and transform health workforce recruitment and retention policies?

Together, these indicators can help provide some indication on whether retention strategies in a country are sufficient. Taking action to retain existing health workers to ensure they do not leave the sector is one of the best health workforce investments that can be made. If health workers are not supported, are burnt-out, overworked and feel undervalued, they will not be satisfied with their job or be able to perform optimally, and may drop out of the workforce entirely. This not only exacerbates shortages, but is a huge loss of skills and knowledge and a waste of investment in education and training. The indicators also help provide some guidance on what level of training and recruitment of new workers may be needed to offset potential outflows from attrition.

These indicators are, however, not sufficient to gain a full picture of satisfaction and morale among the workforce, to develop policy options to improve retention, or to understand rates of current and expected attrition. Many other indicators are also needed to address these evidence gaps, which have been described throughout this section. These include levels of remuneration, monitoring exit rates from the workforce together with reasons for leaving, as well as reasons for low job satisfaction, low morale, burnout and intention to leave among practising health workers. The impact of different policies to improve retention for different occupations and demographic groups should also be monitored and assessed to learn what works. Data on these indicators can be obtained from surveys of leavers and staff surveys of current health workers, as well as from professional registries. However, few countries currently undertake regular staff surveys, while some do not have professional registries or may only have them for doctors and nurses. This undermines retention and recruitment strategies and makes planning and forecasting to overcome shortages and skills gaps challenging.

2.4 Looking to the future

This section has considered some core indicators for countries as tracers to monitor the supply, distribution, skill-mix, and retention of the health workforce. When looked at together, understanding current supply and distribution, the number of entrants, (potential) leavers (both recent and in the next decade) and skill-mix availability can help improve the effectiveness of health workforce planning and forecasting to reduce shortages and deliver high-quality care. The indicators can highlight the need to increase domestic investment in health professional education, align government spending on education with the creation of employment opportunities, expand skill-mix opportunities, and improve retention (McPake et al., 2023).

The indicators discussed here were chosen for their usefulness in assessing the supply of health workers and for informing health workforce planning and forecasting. However, their selection was also informed by data availability across WHO Europe Member States and OECD countries. There are currently major gaps in health workforce data in many countries, which limit the number and types of indicators that can be meaningfully used in a HSPA assessment of the health workforce, posing challenges for policy-making, planning and health service delivery. Investment in data collection systems, the establishment of professional registries for all occupations and undertaking regular staff surveys and surveys of leavers can help improve the accuracy and comprehensiveness of health workforce data to inform monitoring and planning. To support international collaboration and benchmarking, global and regional efforts could be made to support data standardization and to improve reporting to initiatives such as NHWA and the OECD/Eurostat/WHO-Europe Joint Data Collection process.

Improved data (from the public and private sectors) focused on all occupations, not just doctors, nurses and midwives, and covering scopes of practice, can provide a more accurate assessment of numbers, skills and competencies in the health workforce. Disaggregation by area and healthcare setting is important to help determine if geographical distribution is equitable and the health workforce is sufficient in different settings including primary health care. Meanwhile, better data on the number of graduates and education completion rates can improve estimates of future supply. This should be accompanied by monitoring indicators on quality of education and content of curricula to ensure health workers are educated to a high standard. Improved monitoring of exit rates from the health workforce is also needed in many countries, including on outward migration. Capturing demographic data (for example, sex, age, and ethnicity) can improve planning for future retirements, to understand whether tailored retention policies may be needed for different groups, and whether the diversity and composition of the workforce are appropriate to meet population needs. Finally, conducting regular staff surveys or surveys of leavers can help improve retention strategies, provided processes are in place to ensure data are acted upon. Monitoring public expenditure on the health workforce and evaluating efficiency of spending will also be important as a fit-for-purpose workforce cannot be built without stable and sufficient funding that is invested well.

It is also important for countries to go beyond monitoring supply, distribution, skill-mix and retention and recruitment policies to measure their capacity to undertake planning and forecasting that takes into account all professions. This might include qualitative indicators on whether there exists: an up-to-date national (or subnational) health workforce policy or plan; a health workforce unit responsible for developing and monitoring policies and plans; an institutional mechanism to coordinate intersectoral health workforce agenda; or an HRH information system that can report outputs from education and training institutions and track labour market exits per year. This requires an effort at the international level to establish and agree on tracer indicators to help build a fit-for-purpose workforce.

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3. Assessing digital health

Digital technologies can contribute to strengthening health systems functions and improving health system performance (OECD, 2019). They not only are an integral part of the building block "medical products, vaccines and technologies" (WHO, 2007) of health systems, but can and have reshaped health systems to better achieve their intermediate and final goals and make progress on UHC and the SDGs.

Digital tools can support the (remote and/or safe) delivery of services for marginalized and vulnerable groups, thereby also improving access and equity of the health system. They can enhance coordination of care, aid in provider decision-making, and help monitor care delivery processes to improve care quality and safety. They are also deployed to support management aspects to streamline the administrative burden among health professionals. All this impacts health system efficiency and healthcare costs to patients and providers. Digital applications may also ease payment procedures to expand coverage and reduce financial risk, and have contributed to transforming the delivery of health promotion, patient-provider communication, and patient autonomy and self-management. Digitalization of health system-related data also facilitates the generation of data-driven insights to improve patient outcomes and health system performance, for the benefit of patients, providers, and other stakeholders (Tran et al., 2022; Panteli et al., 2023). It can also drive innovation and economic growth, while protecting public health from future emergencies and enabling precision responses in times of crisis (OECD, 2023a).

However, a health system's ability to harness the full potential of digital technologies is dependent on myriad factors, within and outside the system. These include general broadband (internet) coverage, digital infrastructure, data governance frameworks, investment, and the health system's capacity to adapt and deploy such tools and mechanisms (WHO, 2023). Digital transformation in the health sector is not a simple matter of technical change but requires adaptive change in human attitudes and skills, as well as adjustments to legal frameworks and the organization of work (Socha-Dietrich, 2021; OECD, 2023b). Further, health data are essential to modern healthcare delivery, health system management, and research and innovation, and must be well governed to foster their use while protecting privacy and data security (OECD, 2022; Panteli et al., 2023). For example, during the COVID-19 pandemic, countries with wide internet connectivity, adequate funding, more developed digital infrastructure, and robust privacy and data governance frameworks were better able to develop, introduce, and implement and adopt digital technologies, and utilize the data generated to gain insights to further advance treatment and pandemic response (Fahy et al., 2021; Panteli et al., 2023).

Demonstrating how much digital health relies on factors distally related to the health system, a 2015 survey from WHO Europe found that the four main barriers to digital solutions' implementation are 1) lack of funding, 2) competing health systems priorities, 3) lack of legal regulations or legislation on telehealth programmes, and 4) lack of equipment or connectivity for a suitable infrastructure (WHO, 2016, 2023). There is, however, a difference between digital implementation and effective digital adoption. Investing in digital technologies without a strong data and digital foundation – such as introducing policies that govern the interoperability and integration of tools, education programmes to introduce digital tools and incentivize their use, or measurements for how data are improving care and research – results in wasteful investments and failure to achieve the desired objectives of digitalization of the health system. This is because a technology-first approach incentivizes the production and introduction of unconnected widgets and tools, rather than a holistic data and digital approach that prioritizes interoperable and integrated digital solutions that generate, process, and use data to drive individual treatment and evidence-based policy.

The trajectory for the adoption of digital tools for the desired outcomes is long and multidimensional. According to the clinical adoption meta-model (CAMM), it entails four interdependent and time-dependent dimensions after deployment: availability, use, clinical behaviour, and clinical outcomes (Price & Lau, 2014). More indicators are now being developed to monitor the progress of digitalization of health in countries; however, these are derived from a diversity of sources with different methodologies and nomenclatures, and there is not one standard set of consensus-based, international indicators that can provide policy-makers with a comprehensive and balanced view of the situation in their health systems.

Indicators often focus on the status of the foundations within a country that are necessary for the introduction of digital health initiatives (i.e., the availability stage) and perhaps their utilization (i.e., the use stage) but not their overall adoption. Digital health initiatives need to be part of the wider health needs and digital health ecosystem, characterized by robust governance structures, laws, policies and national strategies that support and guide integration of leadership, financial, organizational, human and technological resources, to implement digital health initiatives, the digital health enabling environment. Qualitative and quantitative indicators reflecting these factors are also being considered in different settings (GDHM, 2023). Additionally, indicators to capture and assess the status of implementation and adoption of essential digital health tools, such as electronic health records (EHR), telehealth programmes, mHealth services, and big data and advanced analytics for health, are also crucial for monitoring the progress of digitalization in a health system, but available data sources are limited.

Because of these limitations, and the cross-cutting placement of digital health in the HSPA frameworks, this section outlines only a selection of core indicators that can be used as tracers to signpost areas where action might be needed to advance the adoption of digital health, or where

a closer look would uncover opportunities for policy action. The selected indicators focus specifically on the delivery of healthcare rather than digitalization as a whole (i.e., they do not capture the secondary use of data). They were chosen based on their meaningfulness for driving equitable access to digital health (see WHO, 2022a) and their feasibility given current data options, no matter a country's stage in the digitalization journey, taking into consideration that the WHO European Region encompasses 53 countries with varying degrees of HIS development. Ultimately, it is essential to have indicators capturing the status of all four stages of adoption to meaningfully evaluate the progress of digitalization towards achieving desired goals. However, the initial selection of indicators in this section corresponds to the first two dimensions on availability and system use, and measure the fundamentals within these dimensions. No matter where a country is on its health digitalization journey, these indicators are first horizons to explore towards ensuring sustainable digitalization efforts in health, either by confirming that appropriate resources are in place for adoption and to achieve outcome benefits or to flag where intervention at an early stage is necessary. At the end of the section, we reflect on what future directions for key indicators should strive to capture towards a more fulsome understanding of digital health ecosystems and how they vary across countries.

The selected indicators in this section are grouped according to the following key policy questions related to digital health:

- **Are there digital health governance standards in place to ensure digitalization efforts are aligned and outcome-oriented?**
- **Does the health sector have the right Information and Communication Technologies available?**
- **Is the health system leveraging digital tools to deliver health services?**
- **Are staff and users well prepared to use digital health services?**

3.1 Policy question: Are there digital health governance standards in place to ensure digitalization efforts are aligned and outcome-oriented?

Despite the promise of digital health services, not all health systems make the same use of their potential (OECD, 2022; Panteli et al., 2023). Digital health services, like clinical services, are usually not evenly distributed among the population, leading to inequalities. One possible reason for this is the fragmentation of the landscape of digital health applications, as a result of weaknesses in the enabling environment (for example, related to leadership or governance and funding insufficiencies). Robust governance mechanisms, such as established digital leadership, a national digital health strategy integrating leadership, financial, organizational, human and technological resources and objectives, as well as health data governance frameworks, are crucial for driving the digital transformation of health (WHO, 2023). The WHO global strategy on Digital Health 2020–2025 posits that a country's digital health strategy should be designed to advance the level and quality of a country's digitalization and achieve positive health outcomes, and be aligned with national health plans to promote a country's highest health policy priorities and efforts towards UHC (WHO, 2021). It is thus first important to monitor whether countries have a national (or nationally harmonized) digital health strategy, a digital health policy, or the equivalent (WHO, 2023) that provides standards for how digital solutions are to be rolled out to ensure coherence, connectedness, and interoperability. Given the importance of health data in digital health ecosystems, it is important that digital and data strategies for health are aligned – ideally with integrated governance, metrics, and funding.

Accordingly, the indicator providing a starting point for assessing digital health governance standards is:

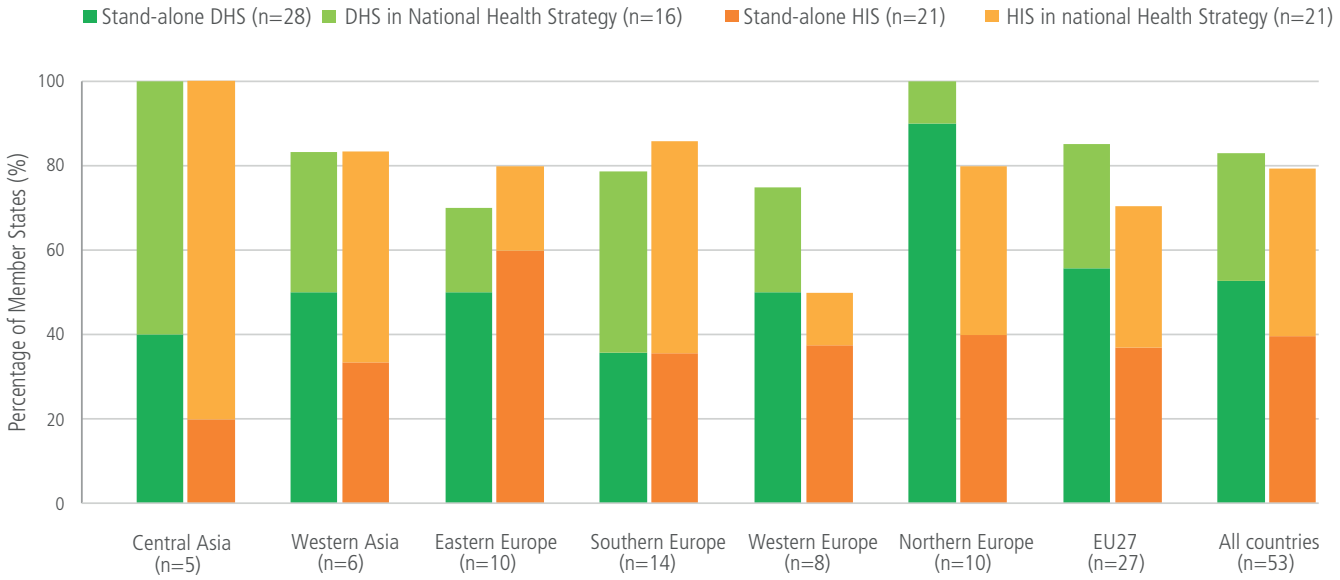
- *National (or nationally harmonized) digital health governance*

National (or nationally harmonized) digital health governance

In practice, this indicator means the existence (in clear, traceable form) of a governance document on digital health with explicit, strategic goals and responsibilities. This can be a significant driver for the successful (or unsuccessful) deployment, implementation, and adoption of digital health and can impact different health system functions and objectives – from the proximal end of the HSPA pathway towards achievement of goals at the distal end (see Fig. 3.1). Health data governance may explicitly be a part of such a document or separate from it, but it must be strongly integrated as data governance is a pre-condition for interoperability and connectability of solutions. An effective strategy for both digital health and data in health are essential to achieve outcomes and fulfil the promises of digitalization within the context of a country.

The WHO Global Observatory for eHealth and the WHO Regional Office for Europe both have monitored the existence of strategies and policies for digital health across countries (WHO, 2023). The results of the 2022 survey on digital health in the WHO European Region found that 83% of Member States (44 of 53) have a digital health strategy (see Fig. 3.1). Of these 44, 28 are stand-alone and 16 are addressed within a national health strategy or policy, or a broader digital strategy. The central Asian and northern European regions show the highest rates of having a national DHS or policy; all but one country in Northern Europe had a stand-alone national strategy. Other possible sources for this indicator include the European Health Information Gateway or national, publicly available sources. This variability is mirrored in work carried out by the OECD, both in terms of overall strategies and specific provisions for data governance (Oderkirk, 2021; De Biennassis et al., 2022).

Fig. 3.1 European Region Member States with digital health policies or strategies, 2022



Source: WHO (2023)

Limitations and challenges of interpreting this indicator

The key limitation in interpreting this indicator if it is collected in a binary response format is that it does not capture the quality or content scope of these documents. It does not cover, for example, integration into the wider digital health ecosystem or enabling environment, or whether data governance is included and to what degree. Further, this indicator does not monitor the extent to which these strategic documents have been implemented. What is more, the content of an effective digital health strategy is generally debated (WHO, 2023); the WHO Regional Office for Europe has acknowledged the importance of providing technical support to its Member States in the development of their strategies (WHO, 2022b).

How does this indicator help monitor and transform digital health governance?

The existence of a strategy for the delivery of digital health services can be considered a proxy for an environment conducive to the introduction of specific measures aimed at enabling the delivery of digital health services, such as the revision of scope of practice of the health professions or payment mechanisms for providers. If policy-makers identify that their health systems are outliers in the regional or subregional context, they can be moved to action and can have insights on potential collaborators for cross-country learning. Stakeholder engagement in the development of such strategies is crucial to ensure that direction and timeframes are realistic and fit for purpose, and that avenues for the participation of patients and providers in the development of individual health tools are embedded to ensure these tools can work to their advantage and are consequently likely to be meaningfully implemented.

3.2 Policy question: Does the health sector have the right Information and Communication Technologies available?

Information and communication technologies (ICT) are a set of technological tools and resources used to generate, store, manage, and share information (UNESCO, 2023). Health ICT, more specifically, is anchored in the development and use of digital technologies, databases, and other applications to prevent, treat, and manage illness, while also providing capacity to the system. The use of ICT in health by providers and patients has expanded rapidly in recent years; it has become essential to improving medical care, including by encouraging patient participation and empowerment and preventing medical mistakes, and providing services. Additionally, a country's ICT environment – what infrastructure exists and what mechanisms are in place for executing digital health interventions, including hardware and digital applications – contributes to a health system's ability to profit from digital health technologies, along with a country's digital enabling environment (WHO, 2021). Underpinning effective deployment and adoption of ICT are two critical aspects: 1) the integration and placement of the right mix of ICT technologies into the larger digital health architecture in line with population health needs; and 2) having the right policies in place that enable timely access to quality data generated by ICT in addition to the technologies themselves (see also the previous policy question). The WHO and the Pan American Health Organization (PAHO), recognizing the importance of ICT, have published recommendations and strategic guidelines for the adoption of ICT in the health sector (PAHO/Nic.br, 2018). Among other elements, these recognize that ICT adoption for the successful delivery of health services fundamentally requires reliable internet access and equipment that is fit for purpose and interoperable. The two indicators chosen to provide a

starting point for assessing the availability of the right ICT basic infrastructure in the health sector focus on health service providers as an entry point for the assessment of the availability of these two elements across a country's territory. They include:

- *Health facilities with internet access*
- *Health facilities with ICT equipment*

Health facilities with internet access

Access to and management of information, services, and support in the health system via online portals and internet-connected tools and hardware are a prerequisite for advancing the implementation of digital health. Therefore, adequate internet access in health facilities is fundamental.

Improvements in broadband (internet) connectivity and ICT infrastructure were the most cited measure by a majority of countries in a 2022 survey in the WHO European Region for ensuring equity in access to digital healthcare services (WHO, 2023). However, internet access is often unequally distributed within and across countries, leading to digital exclusion (WHO, 2023), which contributes to inequality and poor health outcomes. The term is applied more often to individuals – where those in most need (who historically encounter greater care access challenges), such as marginalized groups, those with disabilities, older people, and those living in remote regions, are often those less likely to have access to digital platforms (Park, 2022) – but could be applied in the context of health facilities. In this sense, those facilities without internet access are more likely to face insufficiencies and inequities in terms of funding, staffing, and connectivity otherwise, for example, geographic remoteness. Digital exclusion in this sense impacts on access, quality, coordination, and integration of care, exacerbating existing challenges and inequalities, and contributes to inefficiencies both in individual facilities and the system as a whole. It is therefore important to be able to assess and monitor access to the internet at the subnational level.

The indicator "health facilities with internet access" is defined as the percentage of health facilities by type and region/geography, with internet access. Here, internet access is considered access via a connection owned or paid for by an institution or company. Internet access via devices belonging to (or paid for by) employees is not taken into account. Health facilities are categorized into different types depending on the level of care in which they operate, such as primary care, outpatient specialist care or hospital care, as well as type of ownership (public or private) and management, and size.

Limitations and challenges of interpreting this indicator

Data on the number of facilities with internet access do not capture the quality, stability, or speed of internet available. What is more, unless the indicator is collected and evaluated disaggregated for different regions within a country, crucial disparities would be masked. Given these complexities, an additional, complementary indicator would relate to the percentage of territory that has sufficient mobile or fixed broadband connectivity (and distribution of network). A joint consideration (share of health facilities with internet access by territorial unit with different levels of broadband coverage) would allow for a more nuanced understanding of the progress of digitalization in healthcare.

Information for this first indicator – percentage of health facilities (by type) with internet access (by region or another subnational geographic categorization) – is currently not readily available. It is gathered by labour- and time-intensive surveys conducted at regional, country, and transnational levels, on an irregular basis (see, for example, CETIC.br/Nic.br, 2021) and not available in a central repository. Similarly, data collection on the quality of internet connections is conducted sporadically and via surveys. One for the European region assessed how fast internet connections were in hospitals: with over half (56%) of hospitals having a broadband connection below 50 Mbps, and only 16% having a fast connection above 100 Mbps, hospitals were found not to be well equipped in terms of internet connections (Sabes-Figuera & Mahrios, 2013). Further, contextual issues related to target and reference populations of the survey, and definitions of units of analysis, i.e., how health facilities are defined and inclusion criteria, may make comparability difficult (PAHO/Nic.br, 2018). More generally, the OECD notes that more than 60% of the public use the internet to access public authorities, demonstrating that internet usage is increasing; however, there is still significant progress to be made (OECD, 2023b, 2023c).

Health facilities with ICT equipment

Internet connectivity is a pre-condition for the use of ICT in health facilities but does not provide information on the actual use of ICT solutions in the health system. ICT in health is not accessible in all countries or communities equally, leading to further digital exclusion, contributing to inequalities in access to and quality of care, and inefficiencies in the system. Despite the proliferation of government digital health agendas, there is a lack of internationally comparable, reliable, systematic, and regularly updated data to track the uptake and use of ICT in the health sector (WHO, 2023). A dearth of ICT equipment in health facilities can be due to poor planning, management, budgeting, or other systemic reasons. Exploring the degree to which ICT equipment is available across health facilities is the first step to capturing ICT use and adoption by healthcare professionals. The relevant indicator is defined as the number of health facilities (by type) with ICT equipment (by type) according to region/geography divided by the total number of health facilities by type and region/geography, and helps to understand where and how appropriate action can be taken.

Limitations and challenges of interpreting this indicator

While there is value in assessing the infrastructure and ICT environments available in the health sector to be able to appropriately plan for the adoption of different interventions across settings, this indicator does not capture the quality and functionality of available ICT equipment, or its actual use. However, identifying if health facilities even have the

necessary equipment to begin with is a first step towards understanding what needs must be covered to ensure minimum standards across the territory. As with the previous indicator, geographic breakdown of this indicator would be crucial for a sufficiently granular picture. Meanwhile, it is recognized that while ICT adoption at any level (facility, local, regional, national) requires easily accessible health information and internet access, a coherent systemic adoption of digital health requires that ICT equipment fits into an ideally interoperable digital health ecosystem, which may include data linkage possibilities and assured, safe data access across facilities and platforms; otherwise digitalization can increase the burden on providers instead of alleviating it. Second-level indicators could also include looking at how the ICT available at facility level fits in with given population health needs and within the context of the overall architecture to ascertain whether facilities have the right combination of ICT, or whether the data collected are linked by digital identifier across facilities. This will also consider the integration of ICT into clinical process flows related to the CAMM noted above, along with ensuring sufficient resources to support the effective use of ICT while improving patient outcomes and provider experience measures.

Here, too, key limitations for this indicator include an existing lack of data and the temporal and financial challenges of utilizing surveys. These, as above, also come with contextual challenges, for example, around defining the unit of analysis, facility inclusion criteria, and reference and target populations, which make comparison across countries potentially difficult. The irregularity of surveys can also render longitudinal or time series analyses difficult. Moreover, the quantitative description of the percentage of health facilities with ICT equipment does not speak to the (appropriate) utilization of these tools. Nor does it say anything about the level of connectivity of the ICT equipment. However, taking the previous indicator on share of health facilities with internet access together with this indicator on the share of health facilities with ICT equipment could provide insights into possible barriers to digital health and HIS adoption. For example it can help to understand availability and use, including hardware supply and procurement, or whether levels of IT professionals to connect hardware are sufficient.

At higher levels of digital adoption, it is expected that this indicator will become significantly more nuanced to reflect on the appropriate balance of ICT (in all its forms) and people resources given demands for health services.

How do these indicators help monitor and transform the availability of ICT in the health sector?

These two indicators were presented first because they are meant to capture the infrastructural prerequisites of advancing the implementation of digital health solutions. International benchmarking might be useful, but longitudinal monitoring of individual health systems and the investigation of regional variation within a country might be more meaningful for informing targeted policies. These indicators are complementary in nature (they should be considered in combination); if they are not within the expected or desired range, further investigations, perhaps qualitative in nature, would be necessary to unveil fundamental issues. A wide range of policy options has been identified for introducing better internet connectivity, broadband, etc., across countries. Signposting how many, where or what types of health facilities lack internet connectivity enables prioritization of policy actions. Depending on the dynamic between internet connectivity and availability of ICT equipment in health facilities, policy-makers would be able to explore root causes of less advancement in digital health in a country or subregion and start to take policy action, after an ICT needs assessment among health facilities in a health system. In the medium-to-long term, the measuring of internet access across broader geographies to support populations in rural and remote areas will be important to enable telemedicine services and personal empowerment through access to their health records.

Strong governance frameworks (outside and inside the health system) and robust, targeted financing on overall digital transformation would facilitate a higher share of health facilities with adequate internet access, digital infrastructure and equipment. If used properly, this equipment can contribute to improvements in access to digital applications for healthcare, which have a wide-ranging impact across health system functions and outcomes. ICT equipment can improve accessibility to care, through supporting remote tools, and aids communication and coordination among health professionals, and decision-making and treatment protocols, all of which impacts on healthcare quality and safety. If equipment is connected – across sectors, or in a regional or national system – it can enhance integration of care and system efficiency. When internet connectivity and ICT equipment are not available, digital exclusion is likely, leading to further inequalities and poorer health outcomes.

3.3 Policy question: Is the health system leveraging digital tools to deliver health services?

This policy question and the associated indicators focus on the second stage of adoption of digital health (i.e., CAMM; Price & Lau, 2014), namely its use for the delivery of services. Digital technologies are a critical factor in sustainable health systems and UHC (WHO, 2023), related to digital transformation as an emerging determinant of health (OECD, 2023b). Digital health applications and tools can help transform how medical professionals provide care, what patients do to receive it, and how healthcare systems operate, thereby expanding the delivery of health services and improving access to good quality of care (Cancela et al., 2021). However, these solutions cannot (or should not) deliver services themselves without being integrated in a care pathway.

Indicators that explore the penetration of digital health solutions in service delivery can be used to capture the extent to which digital tools are embedded in the overall health delivery and governance ecosystem, and how sustainable their impact is likely to be (Kluge, Azzopardi-Muscat & Novillo-Ortiz, 2022). While this section focuses on

the health system and provider perspective of the utilization of digital health technologies to deliver health services, it is important to note that (differential) patient access and use are crucially important contributors to the effects digitalization will have on health system outcomes – an aspect we revisit in the subsequent policy issue, below.

The performance indicators providing a starting point for assessing whether a health system is using digital health tools effectively to facilitate the delivery of services and enable access include:

- *Use of electronic health records among providers*
- *Use of telehealth – penetration*
- *Use of e-prescription among pharmacies*

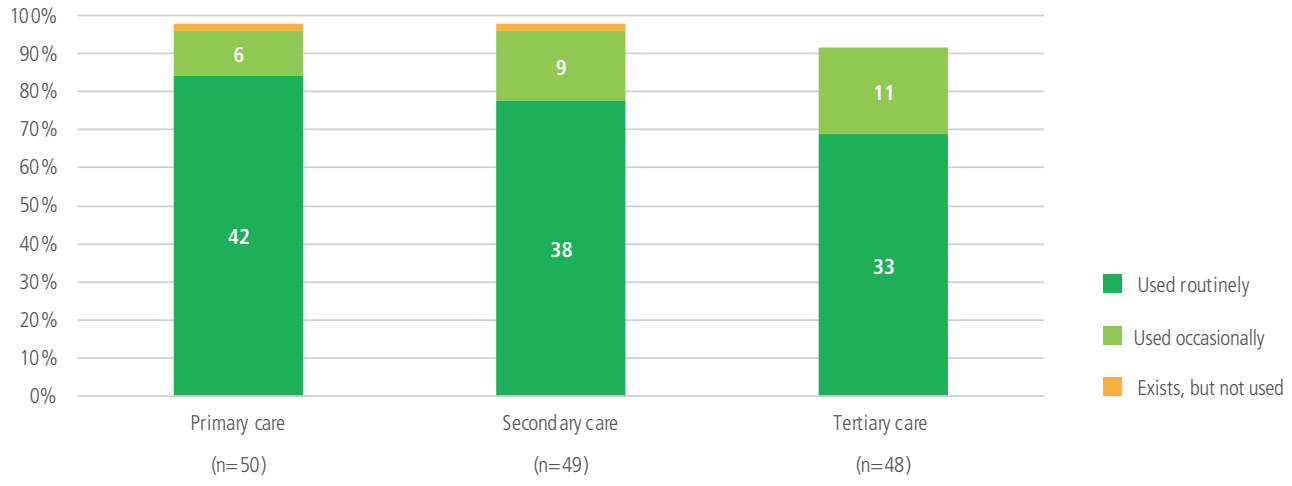
Use of electronic health records among providers

Electronic health records (EHR) are real-time, patient-centred records that allow access to secure information to authorized individuals across all of their health system encounters. They can cover a patient's medical history, diagnoses and treatment, medications, immunization, and imaging and laboratory results. Being digital, they potentially make this information easier to search, analyse and share than via a traditional paper-based medical file. However, EHRs can range from a singular tool based in the local ICT system for health records while being splintered from other local systems to an integrated record for a patient across all health facilities and sectors of care. What is more, who has access to what information in an EHR varies considerably for both providers and patients (see Oderkirk, 2021); from a health system perspective, the number of different records or entry points to a patient's information is crucial for realized access to information. A well designed, integrated, and interoperable EHR system is fundamental to strengthening access, quality, and efficiency of care, and key for the realization of integrated care approaches and for enabling other digital health applications (for example, teleconsultations, e-prescriptions, etc.).

There is increasing data on EHR usage in health systems. The European Health Information Gateway presents information from 2015 on the number of facilities (by care sector: primary, secondary and tertiary) using a national EHR system. Meanwhile, the Monitor EHR study (2019) provided an overview of the development of interoperable EHR systems in the EU, Norway and the United Kingdom (Thiel et al., 2021) and the 2022 Regional Survey on Digital Health for the WHO European Region include EHR as a main dimension for understanding the development of digital health in a country. Fig. 3.2 below summarizes the utilization of EHRs in primary, secondary and tertiary healthcare in the European Region, with EHRs used in primary care by 84% of Member States (42 out of 50), in secondary care by 78% and in tertiary care by 69%.

However, these figures lack detail about the extent of EHR use within the health system. The share of facilities using EHR per sector per country would be a much more useful, if entry-level, indicator to understand to what extent EHR are actually being implemented in practice. Fig. 3.3 from the ICT in Health survey in Brazil shows the share of facilities by type, region and sector that had electronic systems to record patient information in 2021 (CETIC.br/NIC.br, 2021). While electronic systems are not necessarily EHRs, this can be used as a proxy to give an impression of what the visualization of this figure might look like. Therefore, the proposed indicator to monitor the baseline use of EHR in a health system is the percentage of healthcare facilities using EHR, ideally broken down by facility type and region/geography. It is important to stress here that many countries see different providers using different EHR systems that are not necessarily interoperable, and this is detrimental to the goals of digitalization, wasteful, and challenging to undo. We reflect on this further below.

Fig. 3.2 Use of EHR systems in primary, secondary, and tertiary healthcare

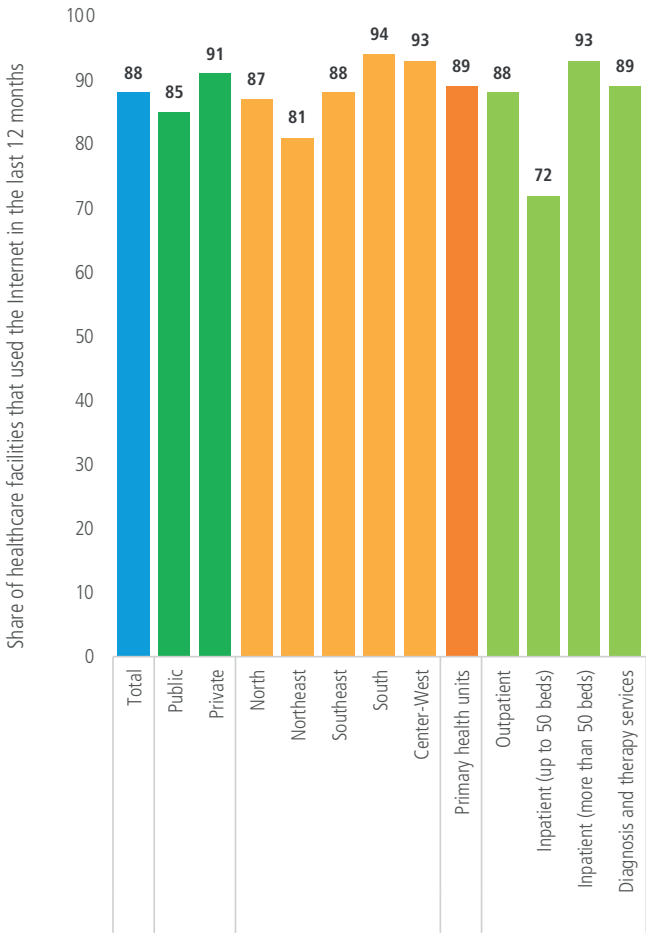


Source: WHO (2023)

Limitations and challenges of interpreting this indicator

As with several of these baseline indicators, measuring whether facilities use EHR does not capture whether these records are interoperable (which would be necessary to meaningfully enable integrated care models and profit from the digital data enclosed therein). As above, it is important to understand the dynamics of interoperability for EHR. One additional indicator could qualify whether EHR reported on are local systems of health records or an integrated patient record across the regional (or national) health system. In the case of local EHRs, there is fragmentation of information and access barriers for both patients and providers to gain a comprehensive view of a person's consolidated health record. Central coordination – incorporating equity considerations – is crucial here, and a fully integrated system presupposes interoperability between different modalities. Provider access to her – through how many channels is information being accessed – is also important to understand to get at the effectiveness of these tools.

Fig. 3.3 Healthcare facilities in Brazil by availability of electronic systems to record patient information, 2021



Source: CETIC.br/NIC.br (2021)

This indicator also does not speak to the usability, timeliness, or quality beyond interoperability of these systems or the level of connectedness, i.e., whether they are ad-hoc, local, regional or national EHRs (as in Fig. 3.4). Furthermore, data collection for this indicator is based on national surveys, which are resource intensive and may not be internationally comparable unless inclusion criteria and methods are aligned.

A complementary perspective of looking at EHR use, particularly when it comes to assessing the extent to which such systems contribute to patient empowerment and ownership of the care process, is measuring the share of patients or citizens who (can) access their health information digitally. This is more complex to capture, and a range of different concepts have been piloted in the European region. Box 3.1 briefly discusses one option of how this could be operationalized for a more rounded view of the issue. This metric may be aided through the measurements of patient-reported experience and outcome measures that are being developed through the OECD's PaRIS initiative (OECD, 2023d).

Box 3.1 How many patients can access their personal medical information through their own digital environment?

Personal health environments are personal digital environments in which patients (or their representatives) have control over their own data. Patients (or their representatives) can collect data from files of different healthcare providers and share these data with other healthcare providers. An EHR can be this environment, if connected nationally, or it can comprise myriad local-based or personal electronic functions. While there is not yet an international indicator set available, several countries do routinely collect data on the state of digital transformation, including the scope of integration and use of EHR (see above) and other personal health environments. The Netherlands is one country in which progress is annually assessed by the annual eHealth Monitor, covering use in general practice, hospitals, long-term care facilities, and among patients and the general population (WHO, 2022a). Collecting the number of patients in a country who can access personal medical information via personal health environments (ideally by population group, for example, income group, education level) divided by the total number of patients by population would provide valuable insights into the extent of patient control of their data. Patient control over and access to health data and medical information supports a person-centred health system model.

Use of telehealth – penetration

Telehealth services are a wide set of technologies that connect patients and providers who are separated by distance (are not "co-located") to improve realized access to care. Telehealth utilizes ICT for facilitating communication, exchanging information for diagnosis and treatment, and management of conditions. Such services include video-mediated consultations, remote home monitoring of patients, and teleradiology, but can also include distance learning and research, interaction among professionals through teleconferences, and the provision of remote clinical services (PAHO/Nic.br, 2018; WHO, 2021, 2023). Telehealth is viewed as one mechanism to strengthen primary care and

address several persistent access challenges such as barriers due to geography, age, and health condition (European Commission, 2017), and in times of crisis when interaction with the health system is minimal, such as during the COVID-19 pandemic when teleconsultations became a preferred mode of primary care delivery (Silva et al., 2021; Carrillo de Albornoz, Sia & Harris, 2022; OECD, 2023e).

The suggested indicator capturing the number of primary healthcare contacts delivered telemedically by population and region/geography as a percentage of total interaction by region/geography provides a useful measure of the penetration of telemedicine into the health system as it focuses on the key service level for equitable access. Fortunately, data on in-person primary healthcare consultations (the denominator) are routinely available for OECD countries and in Eurostat. However, information on the number of teleconsultations delivered annually is not as readily available.

Limitations and challenges of interpreting this indicator

The key limitation of this indicator lies in its level of abstraction: it does not speak to the scope of telehealth functionalities that can be or are being used (for example, teleradiology, telepsychiatry, teleradiology, and teledermatology). This would give a better picture of the uptake of teleconsultations in a health system. Obviously, as a simple quantitative metric, this indicator does not say anything about the quality of the services delivered, their cost or whether they are included in the public benefits basket. Telemedicine consultations may be included in the benefits basket and free as in Slovenia or excluded from the basket as in Bulgaria and thus an out-of-pocket expense, which might undermine the potential of these services to reduce access barriers and will certainly impact on financial protection and risk aspects of care. The PaRIS survey may provide useful insights into this indicator (OECD, 2023d).

This indicator also does not speak to the appropriateness of the use of telemedicine services along with the right balance of services as health systems rebalance activities post-COVID-19.

Use of e-prescriptions among pharmacies

E-prescription is the electronic creation, transmission, and remote filling of a medical prescription. It allows health providers to use ICT to submit a new or renew an existing prescription to a pharmacy electronically. It is meant to minimize the risks associated with traditional prescribing practices, such as poor handwriting, and overcome access barriers. Additionally, it is often an integral component of EHR, where it can facilitate more informed decision-making among providers. For e-prescriptions to be realized across a health system, and for population coverage to be ensured, their embeddedness in EHR systems is not the only prerequisite; a substantial number of pharmacies across a country must be connected to the e-prescription system and able to dispense accordingly (Peltoniemi et al., 2021).

In the 2022 Digital Health Survey in the WHO European Region, 82% of Member States reported making electronic prescriptions routinely available to pharmacies when EHR systems were used to prescribe medications. Less is known about the share of pharmacies filling e-prescriptions. As an indicator, the percentage of pharmacies that dispense medication via an e-prescription (by region/geography) outlines the capacity a health system has to fill e-prescriptions and can act as a proxy for the extent to which this could be leveraged to deliver services. Although there is not yet regularly collected data to generate this indicator, several surveys set out to define the scope of e-prescription integration into the system (see for example, WHO, 2022a). However, solely focusing on the share of pharmacies connected to the e-prescription system does not fully capture utilization (see below).

Limitations and challenges of interpreting this indicator

While this indicator strives to describe the capacity of pharmacies by geography in a country to fulfil prescriptions electronically, it does not provide insight into the extent to which e-prescriptions are filled and thus the potential for patient benefit. As such, the indicator could be supported by an indicator on the share of prescriptions filled electronically in a health system to further support understanding of provider behaviour and patient access. Additionally, understanding whether existing regulations and funding drive the share of e-prescriptions would be a key contextual dimension to point to barriers or enablers of the uptake of e-prescription in pharmacies – and opportunities for policy action.

A key limitation related to this indicator is the dearth of longitudinal or global data. The number of pharmacies that can dispense medication via e-prescription is collected by surveys – with their attending limitations – and most comprehensively recently (Kluge, Azzopardi-Muscat & Novillo-Ortiz, 2022). Without these insights, it is more difficult to determine the equitability of the rollout of new technical innovations.

How do these indicators help to monitor and transform the use of digital tools to deliver health services?

The number of facilities using EHR can be considered over time or in comparison with other countries to provide an impetus for action; a breakdown by sector or level of care can further signal where additional attention might be needed, although a deeper dive would be required to understand potential barriers to implementation (for example, infrastructural, skills-related, etc.). At the same time, a more granular understanding of the uniformity and/or interoperability of EHR applications within and across the system is crucial for ensuring that the desired results of improved quality, safety, efficiency, and equity can be achieved on the way to improving health outcomes and responsiveness in the system as a whole.

Considering the extent to which key services, such as primary care visits and prescriptions, are delivered digitally, ideally with the possibility for a breakdown by region and/or user characteristics, over time can provide a basis for monitoring the progress of digitalization. The use of telemedicine is linked to enhanced system efficiencies by

reducing the number of medical appointments and increasing the availability of services. However, both contextual factors that might increase or decrease the availability of telehealth offers would need to be considered; what is more, health outcomes and patient-reported experience measures would ideally need to be recorded to ensure that the use of such options is meaningful and actually advances health systems goals.

This section provides some foundational indicators for countries at the start of their journeys towards digitalization of health service delivery. As discussed below, work will continue to refine and mature indicators in this space to measure the progress of the digitalization of health systems along with the assessment of value created from such investments.

3.4 Policy question: Are staff and users well prepared to use digital health services?

Even when the necessary infrastructure is in place for digital health solutions, if health professionals and service users are not sufficiently informed and do not possess the right competencies and skills, these solutions cannot be properly implemented or used to achieve wide-ranging benefits to health and health systems outcomes (see above). This results in missed opportunities for health systems strengthening and achievement of the final goals of the health system. It can also be a sign of misplacement of funds and investment.

One construct to describe and capture these competencies and skills is digital literacy, where digital health literacy refers to the ability to search, find, understand, and evaluate health information from electronic resources and to use this knowledge to solve health-related problems (WHO, 2023). Digital literacy includes understanding the importance of the capture and use of quality data. Lack of digital literacy is recognized as a significant barrier to realizing the potential of digital health for many communities.

The importance of digital health literacy for realizing the benefits of the digital transformation of health systems is widely recognized; the WHO Regional Office for Europe suggests making it a core component of national health objectives (WHO, 2023) and is consistent with the OECD policy framework for digital health ecosystems (OECD, 2023b). However, in the recent WHO survey of Member States in the European Region, only 17 of the 52 responding (33%) countries reported having developed digital health education action plans, policies, and strategies, with a further 10 reporting that these were in development. This means that a little over half (52%) of the Member States have formally moved towards advancing digital health literacy in their health systems. Gaps in overall digital literacy – for example, only 56% of Europeans in the EU were found to have basic digital skills (European Commission, 2017) – mean that more foundational work needs to be done in terms of planning and training to increase digital health literacy overall. This is an important area to monitor.

As mentioned, digital health skills and competencies are necessary both for health professionals and health service users. The two performance indicators presented in this section look at the overall intention and preparedness of the health system to advance digital health literacy, focusing on care providers, as the relevant competencies and skills of those working in healthcare are essential to fulfilling national digital health strategies (WHO, 2023). However, ensuring digital literacy of the population, the healthcare users, is obviously also a key consideration, both for 1) building trust in digital health tools and facilitating their integration in delivery models, 2) ensuring optimal use of delivery and user-oriented solutions, such as in telemedicine (for example, teleconsultations) and mHealth, and 3) as a measure to mitigate digital exclusion.

As with previous sections, here we focus on the starting points for digital transformation, looking at whether digital health literacy options are available and used (i.e., CAMM; Price & Lau, 2014). We comment on the limitations of this narrow scope below. The two indicators selected to start assessing the extent to which a health system is preparing the health workforce for the optimal use of digital health technologies are:

- *The existence of digital health literacy plans*
- *Uptake of digital skills training in health workforce*

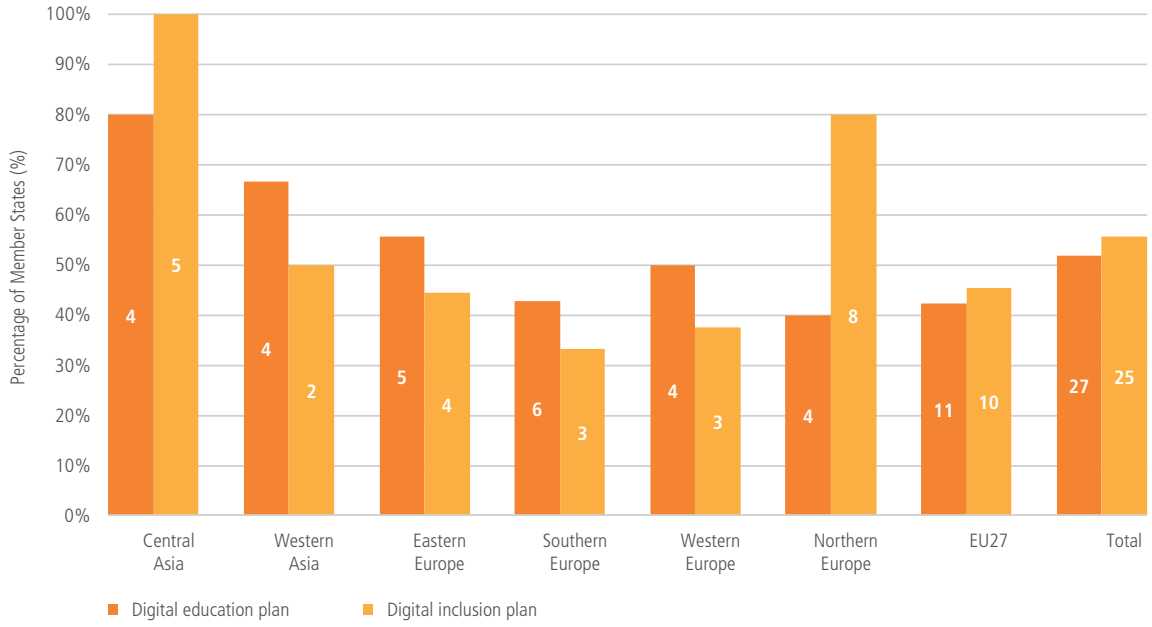
The existence of digital health literacy plans

Whether a country has already established or encouraged the introduction of mandatory continuing professional development (CPD) in digital health for health professionals can be considered a strong indication of 1) awareness of how important digital skills of the workforce are, and 2) recognition that standardization of the content and/or type of skills to be developed can help with a balanced implementation of digital health solutions.

Instead of measuring the extent to which digital health skills have been incorporated into academic curricula for health and social workers, focusing on CPD can provide a snapshot of the penetration of digital skills among the current workforce, rather than the future workforce, and therefore may point to potential policy actions with a more immediate effect. Capturing this binary indicator – the existence of digital health literacy plans – provides not only an opportunity for benchmarking, but also the chance to identify potential candidates for cross-country learning among those countries who have such plans.

In the latest survey on digital health for the WHO Regional Office for Europe, the availability of digital health literacy action plans (see dark columns in Figure 3.4, below) varied by region and within the European Region; similarly, some (sub)-regions were ahead in terms of putting in place digital inclusion plans, i.e. strategies to advance the digital skills of disadvantaged population groups in a targeted manner. Crucially, digital health literacy includes a range of different elements, including learning how to use technology, how to work with data and statistics, how to provide quality data and how to handle digital security and data protection. The content and scope of these plans, for instance in relation to the skills gaps of a given workforce, should also be considered.

Fig. 3.4 Digital health literacy action and inclusion plans



Source: WHO, 2023

Limitations and challenges of interpreting this indicator

The existence of a national intention for skills training does not guarantee that relevant programmes have been implemented, nor their quality, nor that they will be taken up by the workforce. Nor does it provide information on the scope and content of the plans and how they match the skills and competency needs of the workforce. To explore these dimensions further, more granular sub-indicators or uptake metrics (see next indicator) are necessary.

Another key limitation has to do with the definition of ownership of CPD programmes, which influences the implementation of plans. Depending on the health system set-up, it is often professional societies who are in charge of self-regulating when it comes to the definition of CPD curricula and requirements for the different professions; this might not be organized at the national level, and even if it is, it might not be state-owned. This means that the indicator has to be operationalized in a way that accounts for this variability in health system and country administrative set-ups.

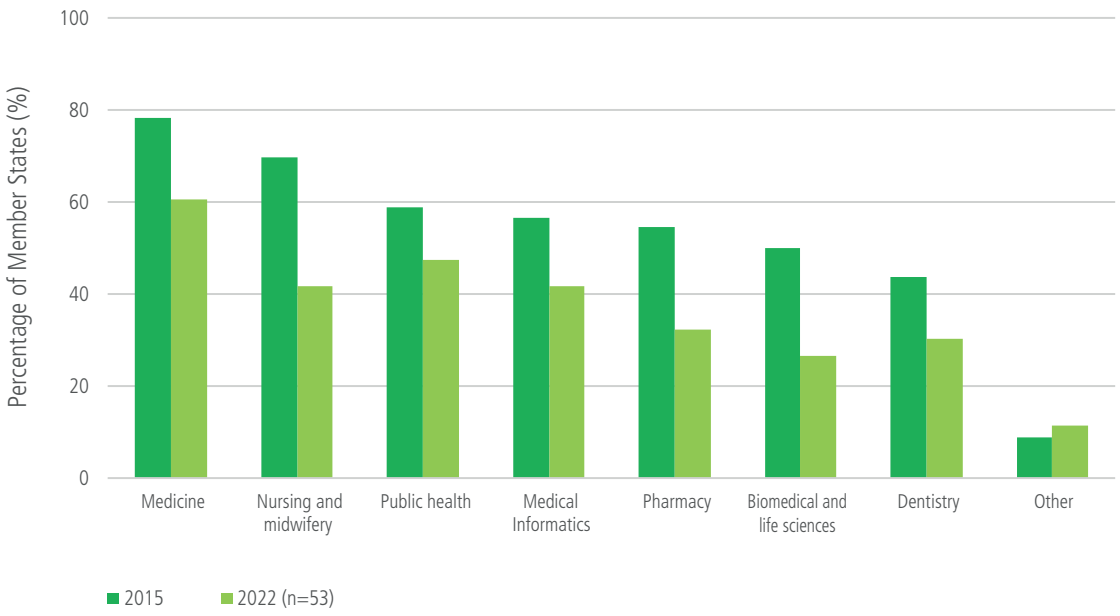
Uptake of digital skills training in health workforce

Digital literacy among the health workforce, health service users, and the general public is critical to the successful implementation of digital health in a health system. For the workforce in particular, being able to manage and navigate ICT systems that support digital health tools is crucial (Reixach et al., 2022). While there is little information on digital literacy levels across the health workforce overall, and the gap between health workforce digital literacy levels and their usage of digital solutions is not fully understood yet (EHP, 2016), good-quality training has been identified as a main factor in overcoming barriers of healthcare workforce utilization of digital health technologies, together with incentives and evaluation of the perceived usefulness of different tools (Borges do Nascimento et al., 2023). Digital literary training should therefore be embedded in the theoretical and practical curricula of the different health and health system professions, as well as in CPD programmes (see above).

The WHO Regional survey 2022 maps out where in-service digital training is offered in the WHO European region. Notably, 29 of 41 responding Member States (71%) reported in-service training in digital health, with even fewer making this mandatory. It also found when looking across professions that in-service training was made more frequently available to medical professionals, followed by nursing staff and public health specialists. Pharmacists, in contrast, seldomly received in-service training (Fig. 3.5), despite the frequent implementation of e-prescriptions (see above). The extent to which these trainings were conducted benchmarked against an implementation plan across professions or geographies or rate of recipient/participant completion was not assessed (WHO, 2023). However, whether such training options can unfold their potential depends on whether they are actually taken up by health professionals – and whether the skills are subsequently used.

The indicator suggested here, share of health workforce by type (for example, health professionals, non-clinical and administrative staff, health informatics) who received a training in the last X years, is a first step to assessing the degree of health literacy in the current workforce and to

Fig. 3.5 Training for health professionals on digital health



Source: WHO, 2023

pinpointing where extra efforts are necessary. When considered together with the previous indicator, it can also provide some insight into the appropriateness of available digital health literacy plans; if they are available but the uptake of training programmes is low, the reasons for this discrepancy should be investigated.

Limitations and challenges of interpreting this indicator

This indicator does not capture any elements of quality, nor does it consider whether training is mandatory, voluntary, or tied to licensing, credentialling, certification, and recertification. While incorporating a time window can increase the likelihood that the trainings represented correspond to relatively up-to-date, relevant content, this cannot be ensured by measuring this indicator alone. If broken down by profession, it can give a sense of which groups have completed the trainings or have shown willingness to participate in the trainings, which can impact (positively or negatively) on the uptake of digital health skills. However, this does not assess whether trained staff put the skills to use. Additionally, this indicator as suggested here for ease of use does not have a geographic component; however, a breakdown by territorial unit would enable a more nuanced understanding of how workforce literacy may or may not contribute to the uptake of digital health solutions and ultimately to health outcomes and health system performance. It would also be helpful for designers of CPD programmes to disaggregate by type of training (see indicator above) to see if certain content and not only specific professional constituencies lend themselves to greater or lesser uptake; exploring why would be a next line path of inquiry. Further, this indicator speaks only to current health professionals and not to the digital literacy levels in the future workforce. Another important complementary aspect that would be important to capture involves the level of perceived usefulness and trust in digital solutions – ideally improved with literacy training – of end users, which could also help contextualize and gauge any change in IT burden (increase or decrease) on the health workforce as a result of trainings and the introduction of digital tools.

There is little information at the international level capturing the share of health professionals who receive in-service training, let alone the share of those using the skills they were trained in. Potential sources for such a figure could be national statistics. In the future, the current DDS-MAP project, part of the EU4 health programme, which is mapping out digital competencies in Europe, and the continuing work of the WHO Europe Office may be able to provide data.

How do these indicators help to monitor and transform the digital skills of health workers and users?

Monitoring digital health literacy is crucial for predicting the likelihood that digital health tools will be taken up and used appropriately and effectively. Ensuring national standards for digital skills training and monitoring the share of the workforce that undergoes such training can both help gauge the extent to which the workforce is in a position to

leverage digital health tools; as with previous indicators in this brief, benchmarking the value of this indicator over time and across countries can provide impetus for action. However, complementary indicators are important to consider in a second step, such as digital inclusion strategies, and a breakdown of professionals with digital skills by occupation, sector, and geographic location, to ensure that the potential to use digital tools effectively is distributed equitably within the territory. It would be worthwhile also to qualitatively assess how far national plans align with digital health action plans of international organizations like the WHO (WHO, 2022b). Finally, because measuring the digital health literacy of health service users in a similar manner is methodologically more challenging and resource intensive, the indicators provided here focus on professional skills to provide an entry point for further considerations. They do not give any insight into the extent to which users are able to benefit from accessing digital services (or which users might be more likely to do so).

3.5 Looking to the future

The indicators suggested in this section as tracers aim to provide an entry point into considering the fundamental building blocks of the digital transformation of health service delivery: effective governance, availability of necessary infrastructure, the health system's formal intent to leverage digital health solutions to provide services and how this intent is realized in practice, and whether the health workforce is likely to possess the necessary skills to benefit from supporting digital applications and delivery solutions to deliver this type of care safely and effectively. These baseline indicators are indicative measures that can be further contextualized by additional (quantitative and qualitative) insights for a more fulsome understanding of the standards and dynamics of the digital ecosystem, as discussed for each individual indicator.

Considering the challenges of digital exclusion, the collection of the discussed indicators in a manner that allows disaggregation by territorial unit and ideally user demographics (where applicable) would be crucial for ensuring policy-makers have information not only about the health system as a whole but also on population groups likely to be left behind. What is more, the indicators suggested here would need to be considered in combination to increase the relevance of the information they provide – for instance, for triangulating whether training penetration matches the facility digital infrastructure level – and to help identify digital deserts, and thus meaningful priority areas for action.

This section has highlighted the lack of agreed core indicators to monitor the successful adoption of digital health (see also Brenner et al., 2023), but also a range of initiatives that have provided impetus for progress in this area. A common limitation of the indicators suggested in this section is their lack of depth regarding the quality (and interoperability and connectedness) of digital health infrastructure, delivery, and skills; while they capture the extent to which they are likely to be in place, they say nothing about their appropriateness for ensuring safe, effective, and more integrated care for patients or reducing the work burden for clinicians, in line also with national priorities and international guidance. Ensuring that health service providers and users are involved in the development of the digital tools with which they are meant to interact is crucial to ensure that they achieve these goals; stakeholder involvement in the development of digital literacy options is equally important. Both elements should be part of new or updated digital health strategies, as argued earlier in the section. One of the most important elements to view from the user perspective (with clinicians and patients both being users in this case) is the extent to which (sufficient) information from EHRs is available quickly and simply through low-threshold, user-friendly solutions that are still secure and consider data privacy concerns.

What is more, both the WHO (WHO, 2022b, 2023), the European Commission's Expert Panel for Investing in Health (European Commission, 2022), and the OECD (OECD, 2023b) have stressed the importance of establishing systems to evaluate how digital health solutions perform themselves. For example, how they are contributing to achieving national health-related objectives and demonstrating benefits for patients in access and outcomes. Importantly, the existence of such mechanisms could also be measured and monitored over time. An example for this would be a qualitative indicator about the existence of formal reimbursement decision pathways for mHealth applications; more meaningful would be the combination of such an indicator with metrics on the number of mHealth applications available to patients through such a mechanism based on robust evidence on benefit, and the breadth of indications they cover that could be contextualized with population health needs.

One particularity of this section compared to others in this brief is that the advancement of digitalization in a health system is often dependent on the wider digitalization ecosystem in a country. Another is that the advancement of health system digitalization can improve data availability and therefore broaden the spectrum of potential indicators that can be collected to assess not only the role of digital health in achieving health system intermediate objectives and final goals, but also broader policy questions like the ones discussed in other sections. Harnessing information from the different types of digital health applications increasingly in use, such as EHRs and patient wearables, could be leveraged to produce indicators that can monitor the deployment of new models of care, such as remote monitoring (for example, share of chronic patients monitored remotely), or related to care coordination. Ideally, as above, such data can also be used to evaluate the performance of such solutions themselves (for example, share of remotely monitored patients achieving diabetes or hypertension control). What is more, interoperable EHR systems across providers and sectors can facilitate the calculation of indicators that consider the patient pathway; digital health applications can be leveraged to collect patient-reported outcome and experience measures that can feed into performance assessment, specifically for digital health and in general.

With the increasing use of artificial intelligence to facilitate processes in healthcare and improve access and outcomes, further indicators could be developed to evaluate the extent of AI-supported functionalities in digital health systems, such as EHRs, as well as the controls, development, and evolution of Responsible AI solutions. However, the attractiveness of exploring such elements should not detract from the main tenets of exploring whether the conditions for the meaningful and equitable implementation of digital health – including the capture, processing, and use of quality health data – are in place to begin with. Beyond the indicators suggested in this chapter, as indicated, a set of indicators on the robustness of constructive digital health data governance and the scope of data usage would be another important horizon for future work, building on the OECD's Recommendation for Health Data Governance (2016). Additionally, monitoring expenditure for digital health services (by financing scheme and territorial unit, for instance), the penetration of digital health solutions in different health sectors (primary, specialist, and long-term care), along with the advancement of integrated care teams, the value generated by investments in digital health and health data, and efforts to increase the digital literacy of both health professionals and the population would also be crucial for maintaining a holistic picture moving forward.

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4. Assessing people-centredness

One of the key goals of a health system is people-centredness: the ability to respond to both the medical and non-medical needs of the population (Papanicolas et al., 2022). In 2015, the WHO highlighted the critical role of people-centred healthcare in achieving UHC and significantly improving the health status of populations (WHO, 2015). In 2017, the OECD Health Ministerial Meeting further emphasized the importance of this theme. In response to the increasing focus on people-centred healthcare, the OECD developed the People-Centred Health Systems (PCHS) framework (OECD, 2021a). The framework defines a broad concept of people-centredness using measurable dimensions and domains that are key to making improvements that are relevant to people and their changing care needs. The OECD PCHS framework was published in 2021 and covers five dimensions for assessing the people-centredness of health systems: *Voice, Choice, Co-production, Integration, and Respectfulness.* These dimensions provide the methodological way to analyse the concept and serve as a strong starting point for assessing the people-centred agenda at the system level. That is, a people-centred approach is advocated for political, ethical, and instrumental reasons and is believed to benefit health service users, their families and carers, health professionals, and the health system in general (OECD, 2021a).

The COVID-19 crisis underscored the need for accountable, people-centred health services by highlighting weaknesses in public communication, disruptions in healthcare delivery, and severe restrictions on family visits. At the same time, the pandemic offered opportunities to improve people-centred care through real-time data sharing, increased public demand for involvement in policy-making, and the establishment of shared responsibility for addressing public health challenges (OECD, 2021c; Bollyky et al., 2022).

As elements of people-centredness are interwoven throughout the health system (Papanicolas et al., 2022), measuring it becomes a complex task, even with the framework at hand. People-centredness would start from the legal framework of the health system and possibilities for citizen participation in health policy-making (the dimension of Voice in the OECD PCHS framework) and stretch to ensuring the people-centredness at the level of service delivery (dimensions of *Co-production* and *Respectfulness* in the OECD PCHS framework) and beyond. Although the domains mentioned are not sufficient to describe the full scope of the people-centredness of the system, they are useful in addressing many practical policy issues that arise when defining people-centredness as a health system goal.

The first thorough exercise in collecting data for indicators on people-centredness was presented in the report Health for the People, by the People: Building People-centred Health Systems (OECD, 2021a), in the form of a scorecard that accompanied the framework. This work, together with that of Nolte, Merkur & Anell (2020), provides a solid basis for measuring people-centredness within the health system performance assessment based on concrete policy examples.

This section addresses the following policy questions:

- **Does the system support the ability of health service users to act as the co-producers of care?**
- **Does the system enable people to participate in the development of health policy?**
- **Can improvements in people-centredness lead to increased trust in the health system?**

Although trust is not an element of people-centredness, approaching this question through the prism of people-centredness explores the notion that the more people-centred health systems are, the more trust they can gain from the population.

Suggested indicators that could be used as tracers to explore the listed policy issues can help track potential improvements in system performance overall and across the HSPA frameworks.

4.1 Policy question: Does the system support the ability of health service users to act as the co-producers of care?

Moving away from the traditional healthcare professional-patient model, in which patients are passive receivers of care, is a crucial step in establishing a co-creative partnership. Achieving this requires policies that address the responsibilities of both parties. While many patient engagement strategies rightly emphasize the role of healthcare professionals in improving communication and fostering a collaborative relationship with their patients, it's equally important for patients to take ownership of their role as co-creators of care (Batalden et al., 2016). For this to happen, healthcare providers should involve patients in discussions about their care and take sufficient time to provide that care (Nolte, Merkur & Anell, 2020). In addition, the information provided by doctors should be comprehensive and easy to understand, as patients need to have the health literacy and information necessary to make informed decisions (Moreira, 2018).

In general, by focusing more on people's needs, people-centred care also encourages patients to co-produce health services, to be more involved in discussions about their treatment and to take more responsibility for their care (Nolte, Merkur & Anell, 2020). Professionals often underestimate patients' ability to take responsibility for their health, although many patients are willing and eager to take on this responsibility if their abilities are recognized, supported, and encouraged, rather than ignored or undermined (Coulter & Oldham, 2016). Therefore, measuring aspects of co-production of health services can indicate the extent to which the health system is able to establish the delivery of people-centred services (Batalden et al., 2016).

Furthermore, healthcare that is equitable and promotes respect and dignity should be the norm, but is not necessarily the practice. A high level of personal attention and respectful and fair treatment are cornerstones of building a people-centred health system.

To address this policy issue, the use of some of the indicators proposed in the *Co-production* and *Respectfulness* dimensions of the OECD PCHS framework is helpful, and adds tangibility to an otherwise broad and philosophical concept of person-centredness overall and at the service delivery level.

While the people-centred components of service delivery can be numerous, the indicators below focus on those aspects of care that promote patient empowerment and co-creation. Performance indicators that help to assess people's perceptions of the quality of services in terms of meeting their indirect needs include:

- *Share of patients involved in decisions about their care*
- *Share of patients receiving easy-to-understand explanations*
- *Share of patients who spent enough time with their doctor*
- *Share of people agreeing that people are treated equally in their area*

Share of patients involved in decisions about their care

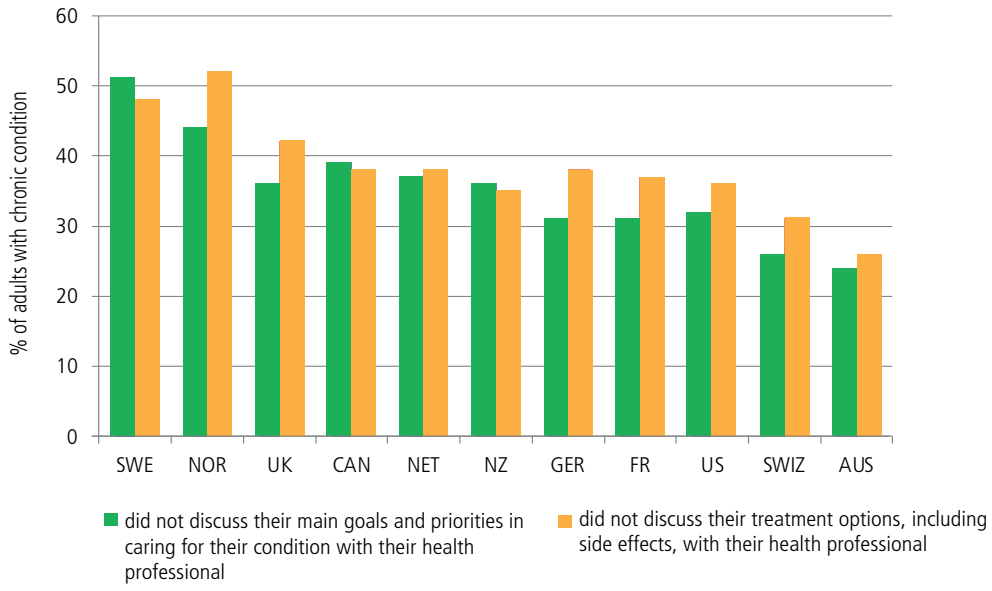
The idea of a more participatory approach to informed decision-making was proposed as early as the 1970s. Shared decision-making gradually became the core of people-centred care. It is defined as an interpersonal, interdependent process in which health professionals, patients, and their carers relate to and influence one another as they work together to make decisions about a patient's healthcare. Together, they consider the scientific evidence and the patient's preferences and values before making a treatment choice (Légaré & Witteman, 2013).

There is evidence that patients generally want more information about their health and to play an active role in decisions about their care (Légaré et al., 2020). However, the underlying health problem, the treatment or care options and the actors involved, including the patients themselves, can influence the extent to which a decision can be shared. Healthcare providers report time constraints or attitudes – such as believing that patients want decisions made for them, or not being in the habit of involving their patients – as barriers to implementing shared decision-making in practice (Légaré & Witteman, 2013). There are also barriers on the patients' side: the role patients want to play in the decision may depend on the nature of the health problem, their personal characteristics, or the level of trust between patient and healthcare professional.

Widespread implementation of shared decision-making in routine practice or at system level is not yet common. Given its crucial role in promoting people-centred health system performance, system-level evaluation is essential. Ongoing efforts include the identification of relevant theoretical models for measuring the impact and potential cost-effectiveness of shared decision-making. However, for a comprehensive assessment of this aspect as an indicator of people-centredness, nationally representative surveys, as suggested by Nolte, Merkur & Anell (2020), may be sufficient.

The Commonwealth Fund's international survey, which includes questions on the practice of shared decision-making in healthcare, provides estimates for ten high-income countries. Fig. 4.1, based on the survey results, illustrates the experience of adults with chronic conditions in shared decision-making about the management of their condition

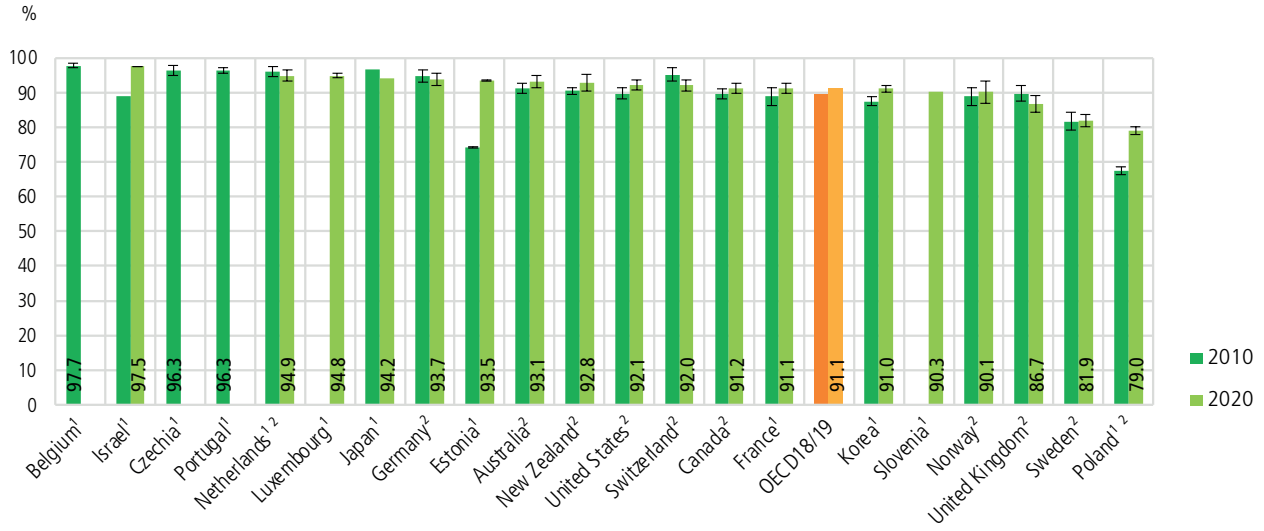
Fig. 4.1 Proportion of adults with a chronic condition who in the past year have not discussed their care goals or options with a health professional



Notes: SWE – Sweden, NOR – Norway, UK – United Kingdom, CAN – Canada, NET – the Netherlands, NZ – New Zealand, GER – Germany, FR – France, US – the United States of America, SWIZ – Switzerland, AUS – Australia.

Source: (Osborn et al. 2016)

Fig. 4.2 Share of patients reporting that they were given easy-to-understand explanations



Note: H lines show 95% confidence intervals. 1. Data from national sources. 2. Refers to patient experiences with regular doctor or regular practice.

Source: OECD, 2021d, *https://stat.link/ahr8jt*, based on Commonwealth Fund International Health Policy Survey 2010 and 2020 and other

or other health issues. On average, more than 35% of respondents said they hadn't discussed their treatment goals or options with their healthcare professionals, which may indicate a need to update, re-evaluate, or strengthen quality standards that include shared decision-making as a foundation for service delivery.

This indicator is also included in the OECD Health Quality Indicators and is being proposed in the dimension of *Co-production* within the OECD PCHS framework. By the end of 2023, crude rates are available in the OECD database for a few countries, including Austria, Belgium, Estonia, Greece, Korea, Luxembourg, New Zealand, Portugal and Slovenia. Notably, only Estonia and Korea appear to collect these data on an annual basis. In 2024, the OECD will publish international patient-reported data for 18 countries, including the same indicator, as part of the Patient-Reported Indicator Surveys (PaRIS) (OECD, 2023).

Limitations and challenges of interpreting this indicator

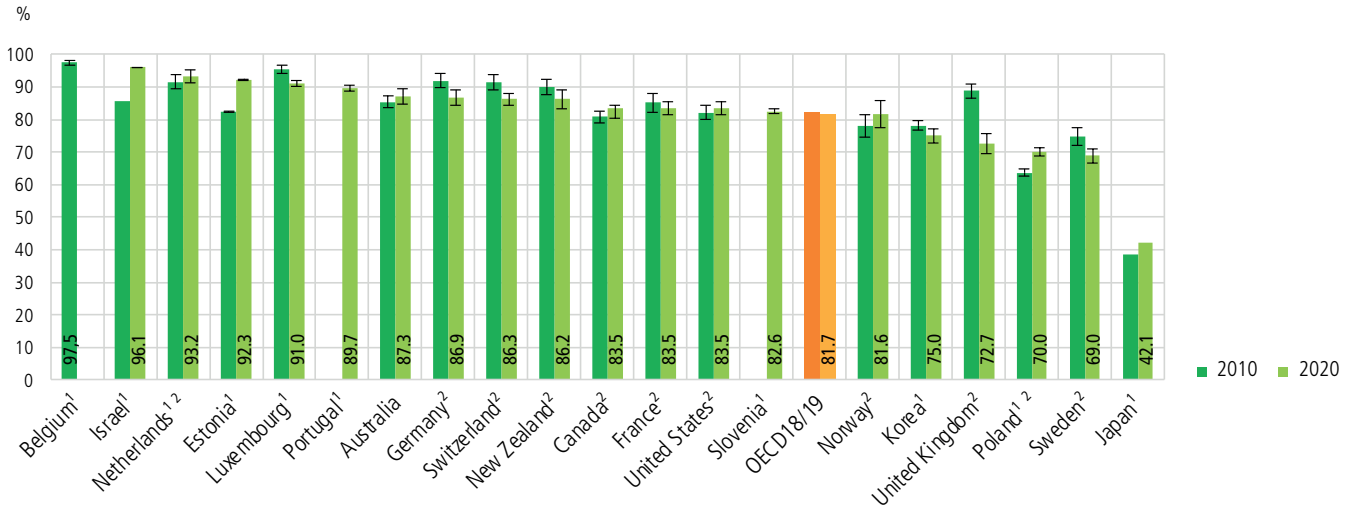
As with any self-reported indicator, it may be affected by the patients' own expectations or tendency to be more or less critical, together with the efforts of healthcare professionals. There are differences in preferences and readiness for shared decision-making, as well as different levels of literacy, and these individual differences can affect the results of surveys and assessments (Mira et al., 2014). In addition, internationally comparable results are highly dependent on comparable samples and the quality of the data collected. The indicator alone can give an indication of the capacity of health professionals to make shared decisions or the incentives in the system to do so, as determinants of people-centredness, but it doesn't necessarily reflect the system of underlying policies and can be distorted by reporting bias.

Share of patients receiving easy-to-understand explanations

Another component of successful co-production and shared decision-making is receiving information that is sufficient and easy to understand. Communication barriers in healthcare can have a serious impact not only on the patient's experience during the visit, but also on their overall health and safety. The whole healthcare system is based on the assumption that patients can understand complex written and spoken information, but communication within the healthcare system is not always organized in a way that enables, responds to, and encourages the participation of people with lower health literacy (Moreira, 2018). Therefore, if health professionals provide explanations that are understandable and appropriate for people with different levels of health literacy, this will not only lead to a gradual improvement in people's health literacy, but also in their health outcomes (Epstein et al., 2005; Moreira, 2018; OECD, 2021c). Measuring whether people find doctors' explanations easy to understand can indicate the system's efforts to promote health literacy. However, the indicator routinely published by the OECD largely reflects the communication skills of health professionals and not the ability of the health system to provide appropriate health advice in different settings (including electronic health records, patient portals, etc.) and thereby promote the health literacy of the population at large. However, it is sufficient to assess people-centredness at the level of service delivery, as also proposed in the dimension of Co-production of the OECD PCHS framework (OECD, 2021a).

For example, in 2010, only 75% of Estonian citizens reported receiving comprehensible information during consultations. By 2020, this proportion had risen to 93.5%, reflecting the efforts to strengthen quality standards and introduce people-centred principles implemented in the 2008 National Health Plan, the main strategic document (Fig. 4.2).

Fig. 4.3 Doctor spending enough time with patient during consultation, 2010 and 2020 or latest available



Note: H lines show 95% confidence intervals. 1. Data from national sources. 2. Refers to patient experiences with regular doctor or regular practice.

Source: OECD, 2021d, *https://stat.link/q1t9zf*, based on Commonwealth Fund International Health Policy Survey 2010 and 2020 and other national sources.

Limitations and challenges of interpreting this indicator

This aggregate indicator doesn't take into account differences in patients' health literacy. However, only such a patient-reported measure can help to assess the extent to which health professionals (for example, doctors) are able to meet these different literacy needs in practice (Epstein et al., 2005). Furthermore, the international comparison is hampered through lack of availability of data, as not all countries monitor this indicator as part of their routine quality monitoring.

Taken together, the proposed indicators of co-production help to measure the quality of service delivery in the area of people-centredness and it mainly reflects the interactions at the micro level of the patient-provider relationship. In addition, these measures assess the actual implementation of basic elements of people-centred care in clinical practice. Each indicator on its own can be traced back to specific arrangements made either at the level of resource generation or at the level of financing of services, but they all have the limitation of being subjective and prone to high scores from people with low expectations of their health service.

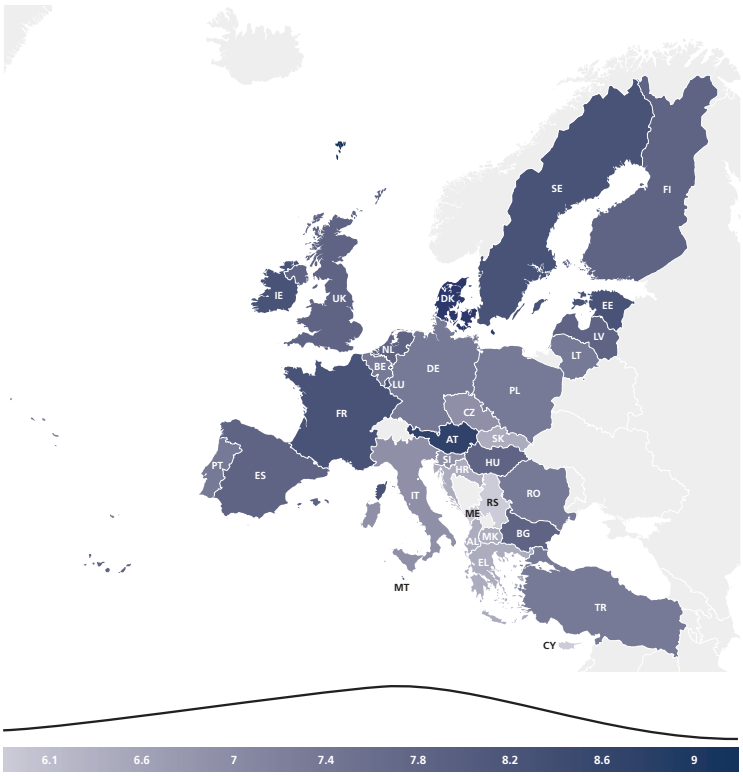
Share of patients who spent enough time with their doctor

Ensuring that the patient is heard, that the consultation is thorough, and that their care is tailored accordingly is fundamental to the delivery of people-centred care. This patient-reported measure tracks the extent to which patients feel the doctor spent enough time with them during the consultation. Time is an asset that enables shared decision-making, the identification of medical and non-medical needs, and the overall quality of healthcare. Data suggest that shorter consultations are detrimental to the care provided. There is evidence suggesting that longer consultations improve health promotion, patient empowerment, and quality of record keeping; they lead to more accurate diagnosis, improved quality of life, and patient empowerment. Many studies have also found that short consultation times are responsible for polypharmacy, overuse of antibiotics and poor communication with patients (Irving et al., 2017). Furthermore, sufficient consultation length not only demonstrates a people-centred focus on service delivery, but is also a quality indicator used by WHO and the International Network for the Rational Use of Drugs (INRUD) to promote safe and cost-effective use of medicines around the world.

Measuring such aspects of care, such as sufficient time for care, can guide policy-makers in reviewing the system of incentives that may encourage the provision of short but frequent consultations and thus, nominally, overuse of health services, or even in addressing the number of health professionals and the availability of resources (Nolte, Merkur & Anell, 2020).

Although there are different ways of measuring the average length of a consultation, for the purposes of assessing the people-centredness of a service and an individual's experience, patient-reported measures are the best reflection of how much was enough for them and their needs at the time (OECD, 2021a). Across OECD countries, the majority of patients reported spending enough time with a doctor during the consultation, except for Japan, which could be associated with a high number of consultations per doctor (Fig. 4.3). However, it is precisely this type of in-depth investigation that is required to determine specific factors that may be influencing these changes.

Fig. 4.4 People reporting that "All people are treated equally in GP services in my area"



Source: (Eurofound 2023)

Limitations and challenges of interpreting this indicator

There are many factors that contribute to international differences in patient-reported measures, including survey coverage, response rates, and cultural differences in response patterns. Furthermore, although the OECD recommends that data on patient experience in outpatient settings be collected through nationally representative population surveys, Japan and Portugal do so through service user surveys. In addition, about half of the countries presented collect data on patients' experiences with a general practitioner, and the other half collect data on experiences with any outpatient physician. At the same time, the Commonwealth Fund's International Health Policy Surveys 2010 and 2020 were used as a data source for 11 countries, although there are limitations in terms of small sample sizes and low response rates. Recently, new methods have emerged to address the limitations of patient-reported measures alone, and have begun to explore the idea of "concordance" of patient and clinician perspectives as an alternative in research of health system performance (Levesque et al., 2020).

Share of people agreeing that people are treated equally in their area

The impact of perceived discrimination by doctors is reflected in patient outcomes, as it has been associated with delaying or forgoing necessary medical care, including mental health services (Hausmann et al., 2011). Equal treatment or lack of discrimination on any grounds is a sign of people-centred care, which is also measured in international surveys (for example, the European Quality of Life Survey 2016). When asked "To what extent do you agree or disagree with the following statements about the GP, family doctor or health centre services in your area? All people are treated equally in these services in my area", on average just over three-fifths of respondents in 22 countries answered in the affirmative, including almost half or less in Czechia, Greece, Italy and the Slovak Republic, and even less in Montenegro and Serbia (Fig. 4.4) (Eurofound, 2023). It is therefore important to collect patient-reported measures of perceived fairness and discrimination in healthcare, as they not only illustrate efforts to strengthen people-centredness, but also focus on improving the health of the population.

If a significant number of people perceive that the quality of care is not fair or equitable, this may indicate a number of systemic problems within the health sector. Such issues could include potential violations of human and patient rights, instances of discriminatory practices during treatment, whether experienced directly or indirectly; it could also be an indication of the overall robustness of the wider health system, reflecting aspects such as adequacy of funding and effectiveness of governance. This indicator can also reflect whether patients feel respected. Therefore, a low score on this indicator, when used to measure the people-centredness of healthcare, should prompt a more in-depth analysis and serve as a fundamental step in identifying relevant policy interventions, whether to improve the quality of service delivery, to strengthen the governance structures of the health system, or to address other relevant areas.

Limitations and challenges of interpreting this indicator

While this indicator may capture patients' experience of service delivery, by design it is not strictly limited to this aspect. The current wording of the question ("To what extent do you agree or disagree with the following statements about the GP, family doctor or health centre services in your area? Everyone is treated equally in these services in my area") may reflect people's perceptions of the governance of the health system and their access to care. This is particularly true when considering media coverage of negative experiences of healthcare that others have had and reported.

It's important to note that the indicator does not focus solely on discrimination, but the format of the question allows it to be included. Comparisons of survey data between countries should be made with caution, as cultural and personal biases may influence reporting. In addition, the indicator doesn't distinguish whether perceived discrimination is based on personal experience or on individuals' perceptions of others' experiences.

How do these indicators help to monitor and transform support for service users to act as co-producers of care?

The discussed indicators serve as valuable tools for monitoring progress towards more people- (patient-) centred healthcare and have the potential to highlight disparities within the system. Despite weaknesses, together these indicators can lead to a deeper understanding of the reasons for the current level of co-production and respect in the delivery of health services. They allow us to assess the determinants of people-centredness, such as whether providers have the necessary skills for dignified communication and shared decision-making, whether they can serve patients with different levels of health literacy, and whether broader system improvements are needed. This could require adjusting appointment scheduling practices, payment models, improving the healthcare workforce, or introducing efficiency strategies to prevent hurried consultations and ensure comprehensive patient care. Additionally, these measures may provide input for policy development and the design of improved healthcare delivery models. If a significant number of patients feel that they are not included in decision-making, strategies could be introduced to require providers to involve patients in the planning of their care. Likewise, if patients experience difficulty in understanding the medical advice, offering additional patient education services or simplifying the language could prove useful.

Transforming a healthcare system to become more patient- and people-centred entails both structural changes and cultural shifts within the organization. It is essential to acknowledge and address the subjective nature of these indicators, interpreting them in light of the broader objectives and values of the health system.

4.2 Policy question: Does the system enable people to participate in the development of health policy?

People-centredness includes, but is not limited to, the extent to which citizens or patients are able to participate in healthcare decision-making, reflecting the overall governance of the health system and the area of population and civil society participation and others (Nolte, Merkur & Anell, 2020). The domain of governance and legal foundation for people-centredness is covered in the dimension Voice of the OECD PCHS framework (OECD, 2021a). The legal frameworks of some countries like Austria and Germany illustrate this. Here, the members of statutory health insurance funds can directly influence payer policy. Alternatively, in Luxembourg patient groups must be consulted in the development of disease-specific national plans. However, formal possibilities for participation in health policy-making don't fully embody the people-centredness of the system (Hoon Chuah et al., 2018).

Thus, in this section we propose assessing the degree of possible participation in health policy by using following indicator:

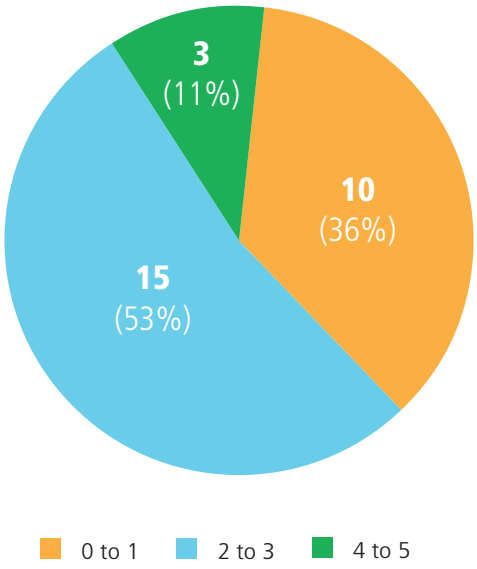
- *People having a formal role in health policy decision-making bodies or processes*

People having a formal role in health policy decision-making bodies or processes

Strengthening the voice of patients and citizens in health system decision-making improves the people-centredness of the system, as health policies are designed with people's needs in mind. However, not all countries involve patients in formal health policy processes. Such processes may include the design of benefits packages, the financing of health services, standards of care, or the planning, development, delivery, and evaluation of health services. A growing body of evidence suggests that increasing the role of patient voices in the development and delivery of health services can lead to services that are more relevant and responsive to users' needs (Bombard et al., 2018). Furthermore, patient involvement in planning has been linked to the creation of novel and tailored services that better serve patients (Crawford et al., 2002).

While the importance of a people-centred health system is widely recognized, the focus has primarily been on its application at the individual (patient) level. To build a health system that is centred on the people it serves, it is essential to recognize the critical role of involving individuals who use the health system, as well as their families and communities, in macro-level decision-making processes (Nolte, Merkur & Anell, 2020). A composite measure proposed by the OECD in the dimension Voice of its PCHS framework (OECD, 2021a) can be used for this purpose. The proposed score is based on countries' responses to five questions that assess whether patients have a formal role in: 1) drug approval, 2) coverage or reimbursement, 3) health technology assessment, 4) service planning decisions, and 5) setting of public health goals. Fig. 4.5 shows the distribution of patient involvement in health policy-making across the 28 OECD

Fig. 4.5 Institutionalization of patients and citizens in decision-making



Note: Assesses whether patients have a formal role in: (1) licensing of pharmaceuticals, (2) coverage or reimbursement, (3) health technology assessment, (4) decisions related to service planning, and (5) definition of public health objectives.

Source: OECD 2016 Health System Characteristics Survey

countries that participated in the Health Systems Characteristics Survey. A higher number of areas that allow for citizen or patient participation doesn't automatically mean a high level of people-centredness in practice, but it does show the historically higher priority and focus on multistakeholder participation in health policy-making.

Limitations and challenges of interpreting this indicator

Giving citizens and patients a role in formal processes recognizes the value of their insights and perspectives and helps to design responsive health systems. The lack of such representation in policy development can lead to a mismatch between the services provided and the real needs and expectations of the population. Thus, systems with limited opportunities for formal participation are, by design, less focused on people-centredness as the ultimate goal (OECD, 2021a).

Although giving citizens and patients a formal role in health policy-making is a sign of stronger people-centredness in the health system, the question is whether this role is large enough to influence the processes. Therefore, this indicator helps to assess the maturity of health system governance in terms of involving citizens in decision-making processes, but not the influence they can have.

How does this indicator help to monitor and transform people's participation in the development of health policy?

Measuring formal opportunities for citizen participation in health policy-making helps in assessing the effectiveness of people-centredness at the ground level of governance and organization as a whole. By institutionalizing the voices of those whom the system serves, a sense of ownership and accountability is fostered within the community which has been involved in decision-making. Therefore, when this indicator shows active citizen participation across multiple domains, it signals a more adaptive system.

4.3 Policy question: Can improvements in people-centredness lead to increased trust in the health system?

People-centredness also includes how those who are not actively involved in healthcare feel about whether the system is meeting their needs. If people had a health need (medical or non-medical), would they trust and follow medical and health advice from the government or healthcare providers? When people trust health professionals, feel cared for, and have confidence in the health system's ability to meet their needs, it promotes social cohesion and harmony, and achieves the goals of the health system (UNDP, 2020). Characteristics such as integrity, communication, confidence, and competence are often captured in measures of trust in healthcare. However, these are often limited to doctor-patient interactions and may not reflect the health system as a whole (Birkhäuer et al., 2017). As the COVID-19 pandemic demonstrated, the emergency response downplayed patients' non-medical needs and used unclear communication strategies, undermining people's trust in the health system's ability to meet their needs and even contradicting key principles of people-centredness (Schloemer et al., 2021). This was compounded by pre-existing weaknesses and failures in the people-centredness of health systems, including the lack of overall quality of health services, accountability of governance structures and clear health communication strategies. This crisis of trust highlights the need to rebuild trust as an integral part of a resilient health system (Bollyky et al., 2022). Improving these areas of people-centredness can help to build trust in institutions and health systems and will be critical to meeting current and future health challenges.

The indicator that is used to describe a potential result of achieving higher people-centredness of the health system in this section is:

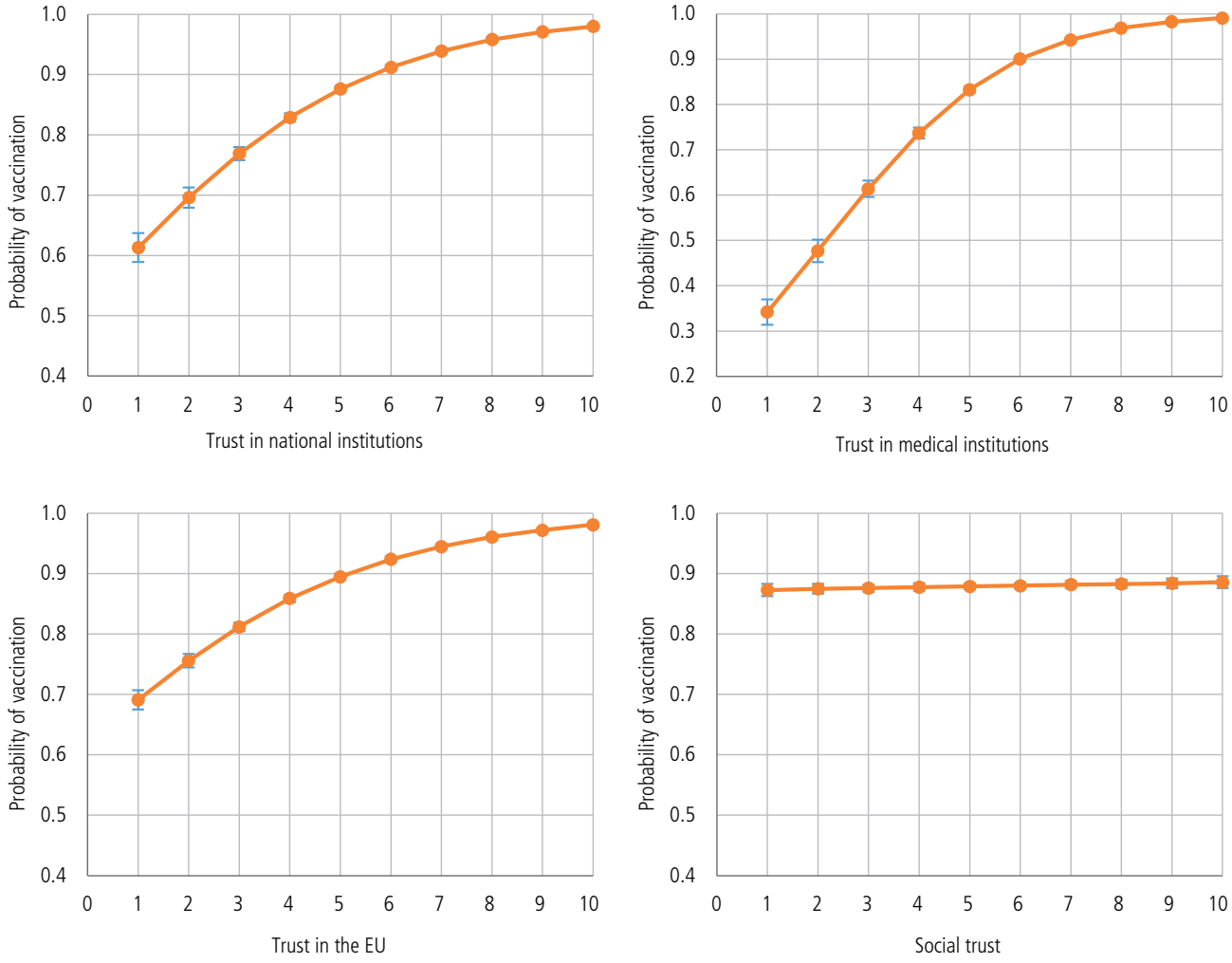
- *Share of people who have trust in the health system*

Share of people who have trust in the health system

Understanding and analysing trust requires recognizing two distinct but interrelated elements: 1) competence, or what concerns operational efficiency, or the ability, capacity, and good judgement to actually carry out a given mandate; and 2) values, or the underlying intentions and principles that guide actions and behaviours (OECD, 2021b).

When healthcare is designed and delivered with a focus on patients' needs, preferences, and experiences, it fosters trust and confidence in the system's commitment to providing care that is people-centred (Ozawa & Sripad, 2013). The importance of measuring trust in health systems has increased in recent years, with the COVID-19 pandemic

Fig. 4.6 Effect of trust in institutions on COVID-19 vaccine uptake



Source: Eurofound, 2022

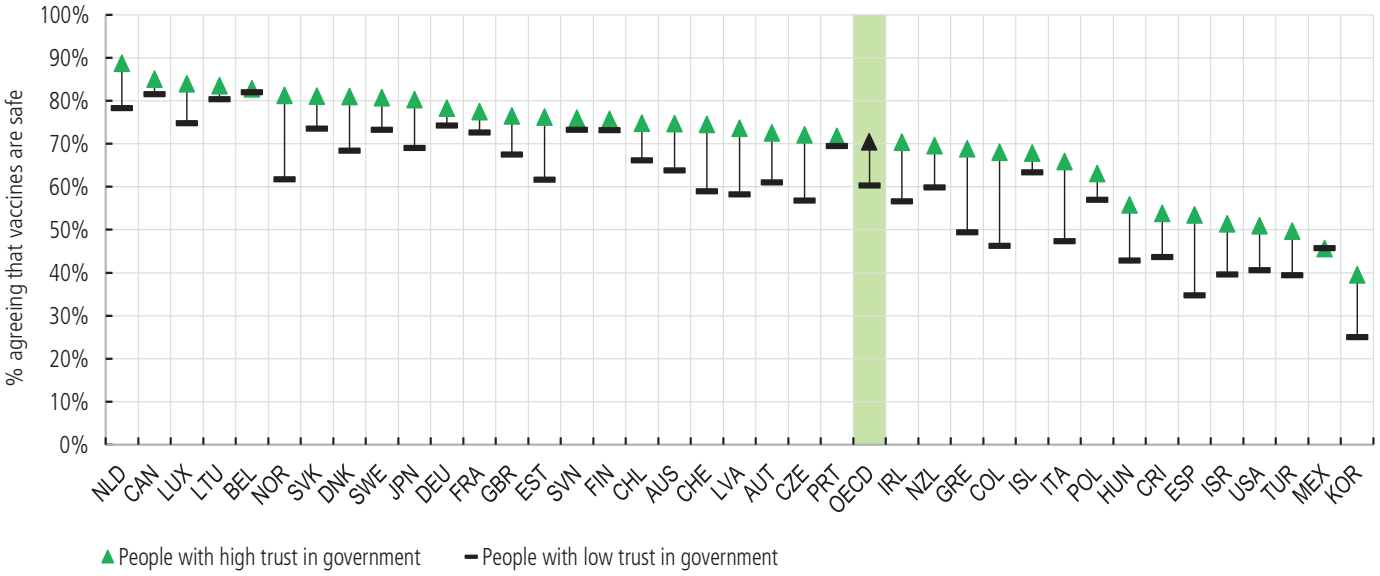
highlighting its critical importance. People with limited trust in the health ecosystem may engage in behaviours and attitudes that are detrimental to their health and well-being (Wesson, Lucey & Cooper, 2019; Beller et al., 2022). Furthermore, as seen in the COVID-19 example, perceptions of vaccine safety and agreement to follow other preventive measures were strongly influenced by the level of trust placed in the government (Eurofound, 2022). Fig. 4.6 shows that levels of trust in national, medical or EU institutions correlated with the likelihood of vaccination against COVID-19, whereas social trust appeared to have little or no effect.

Thus, people who trust institutions less were also less likely to follow official health advice on infection prevention. Of course, the COVID-19 crisis itself was an extraordinary situation that tested every aspect of life and governance. However, in "normal" circumstances, being aware of the level of trust people have in the health system and other stakeholders as a whole can help to promote a feedback loop to policy-makers. Policy-makers can then work to tailor health communication to different population groups or, more generally, to plan policies in a people-centred and participatory way from the outset.

However, data from 28 OECD countries from before the COVID-19 pandemic show that the proportion of people who believe that "vaccines are safe" is higher among those with higher levels of trust in government than among those with lower levels of trust in government. This difference exceeds 15 percentage points in countries such as Canada, Denmark, Lithuania, Luxembourg, the Netherlands, Norway, the Slovak Republic and Sweden (Fig. 4.7) (OECD, 2021b).

In general, the availability of data for international comparisons of trust in health systems can be hampered by fragmented national efforts and non-standardized methodologies for surveys on this topic. However, given the

Fig. 4.7 People with high trust are more likely to perceive vaccines as safe, although there are regional differences



Note: High trust is measured as "A lot" or "Some" trust in national government, and low trust measured as "Not much" and "No" trust in national government.

Source: OECD, 2021b, OECD/TrustGov calculations based on Wellcome Global Monitor 2018 data.

importance of this issue for improving the overall performance of health systems, initiatives are increasingly focusing on it. These range from more health market-focused research studies conducted as part of the Edelman Trust Barometer (Edelman Trust, 2022) to broader initiatives looking at how trust in health systems and governments can affect health behaviours (Wellcome Trust, 2020; Eurofound, 2022), and whether countries that generally have higher levels of uptake of official health advice for prevention could score higher in the area of people-centredness.

Limitations and challenges of interpreting this indicator

In light of recent public health threats, there is an urgent need to measure trust in the health system. This can serve as a barometer of public perceptions and guide efforts to rebuild trust, improve health system resilience, and promote a healthier, more informed and engaged population (Ozawa & Sripad, 2013). Furthermore, although measuring trust in the health system does not indicate the performance of the health system in the area of people-centredness at the macro level, yet it can open up the discussion about whether improving people-centredness would lead to achieving higher trust. This involves looking at different elements of interaction with the health system, including the quality of the patient-provider relationship, the effectiveness of communication and the accessibility of information at all levels, the extent to which people's preferences are taken into account, and the overall quality and experience of care. Trust can also indicate the level of patient engagement in care, satisfaction, and the overall effectiveness of the health system (Gille, Smith & Mays, 2015).

Trust is a complex and multifaceted concept; measuring it through surveys reflects differences in personal experience, socioeconomic factors, and cultural or political nuances. However, individual perceptions of trust may make it difficult to compare even within the same cultural context, let alone across countries. The results of comparative surveys should be used with caution to avoid misleading conclusions.

Robust measures of trust can be used as indicators of health system performance, potentially highlighting the need for policy change, but there is no agreed methodology for measuring population trust in the health system. Ensuring the representativeness of the population surveyed and using standardized methodologies for data collection would be key considerations to address these limitations.

How does this indicator help to monitor and transform the role of people-centredness in increasing population trust in the health system?

By using trust as a measure, policy-makers can identify areas where system transparency and communication need to be strengthened to increase the reliability and responsiveness of the health system. The greater the level of trust, the more probable it is that individuals will partake in health-promoting behaviours, comply with medical advice, and contribute to a more cooperative public health environment. Overall, the indicators of formal participation and trust as a potential result of people-centredness can serve as benchmarks for potential growth. As such they are central to steering the continuing evolution of health systems towards greater transparency, inclusiveness, and trustworthiness.

4.3 Looking to the future

Several policy changes may contribute to improving the people-centredness of health systems, based on the tracer indicators outlined above. An important step would be to move from the traditional health professional-patient model to a co-productive partnership, with this new approach firmly embedded in the governance framework. This shift requires a comprehensive review of the responsibilities of all stakeholders, including a focus on empowering patients and promoting self-management. Healthcare providers must actively involve patients in discussions about their care and ensure that information is not only comprehensive but also easy to understand. This collaborative approach requires healthcare professionals, patients, and their carers to work together to make informed decisions about the patient's healthcare. Overcoming barriers such as time constraints and differing attitudes to shared decision-making between healthcare professionals and patients is essential to achieving this goal. In addition, health professionals need to provide explanations that are tailored to people with different levels of health literacy. Policy-makers need to prioritize the strengthening of health literacy both in the population and in healthcare provision, promote the development of skills for co-creating healthcare in continuing medical education, and include these in quality standards, etc.

In addition to shared decision-making in healthcare, patients could play a more active role as co-creators and advisers in health policy and knowledge development, for example, in prioritizing research funding.

Policies aimed at strengthening the patient-provider relationship, improving communication, and ensuring access to information at all levels can better align health services with people's preferences, thereby improving the quality of care and patient experience. This in turn can have a positive impact on patient engagement and satisfaction, and the overall effectiveness of the health system. Measuring trust in the health system is a valuable tool for understanding public perceptions and guiding efforts to rebuild trust, strengthen the resilience of the health system, and promote a healthier, more informed and engaged population.

Improving people-centredness requires measuring it. Although many promising initiatives are under way, health systems are generally data poor when it comes to patient-reported indicators. In the coming year, 2024, the OECD plans to publish the results of its first Patient-Reported Indicator Surveys (PaRIS)[1], initiative, which will continue the ongoing efforts initiated by the OECD PHCS framework and focus on developing, refining, and improving further indicators of people-centredness and increasing their availability in the countries participating in this initiative (OECD, 2023). The continued and systematic adoption of this narrative by more countries promises improvements in the achievement of people-centredness as a goal of health systems.

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[1] The PaRIS International Survey of People Living with Chronic Conditions is the first international survey of patient-reported health outcomes and experiences of adults living with one or more chronic conditions who are managed in primary or other ambulatory care settings. It is the first of its kind to assess the outcomes and experiences of patients managed in primary care across countries.

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5. Assessing access and quality

Access to and quality of health services are two important dimensions of health service delivery. Access ensures that individuals can readily obtain the healthcare services they need, regardless of their geographical location, financial status, or social/cultural background. Quality, on the other hand, focuses on the standards of healthcare services, their effectiveness, safety, and user experience. Accessing low-quality health services would bring little benefit and high-quality health services are of little use when people cannot access them. All countries are facing challenges in both of these dimensions and there is large variability in accessibility and quality across and within countries.

Assessing health service delivery is a complex task owing to various possible approaches (Papanicolas et al., 2022), and high-level tracer indicators generally serve as a starting point in its measurement. Access and quality feature prominently as central domains of performance assessments in both WHO-Observatory and OECD's HSPA frameworks. Yet healthcare services can also be assessed through the different types of care, such as primary care, specialist care, long-term care, mental health care, etc., and whether and how well services are coordinated and/or integrated. Ultimately, the accessibility and quality of healthcare services contribute to achieving the overarching health system goal of health improvement, as well as equity.

This section focuses on showcasing the use of tracer indicators for assessing access and one specific dimension of quality – effectiveness. While high-quality care requires health services to be safe, appropriate, clinically effective, and responsive to patient needs, the attention in this section is narrowed to one high-level indicator of healthcare effectiveness. Due to the limited scope of this section, a more extensive but targeted set of performance indicators on effectiveness is not explored here (see Section 5.3). However, OECD has been reporting healthcare quality and outcome (HCQO) indicators for the last two decades and the 2023 HCQO indicator set includes 84 unique indicators, designed to assess the quality of primary care, acute care, integrated care, mental health care, patient experiences, patient safety, end of life care, and cancer care (OECD, 2023a).

This section addresses the following policy questions to illustrate the possible use of high-level indicators:

- **Are health services sufficiently accessible?**
- **Are health services effective?**

5.1 Policy question: Are health services sufficiently accessible?

The principle of UHC implies access to high-quality care for the whole population, irrespective of their socioeconomic circumstances. Yet access can be limited for several reasons, including limited availability or affordability of services. People often experience barriers, including financial, physical, geographical, administrative, and cultural. Accessibility of health services is also conditioned by other health system functions and characteristics, such as governance, expenditure and financing, and the workforce and digitalization as mentioned in previous chapters. These resources and characteristics determine which health services are available, where and for whom, and how much financial and human resources are devoted to different types of care.

In a well performing health system, health services need to be accessible to all those in need of them. Access in this regard refers to the extent to which health services are available and accessible in a timely manner. The high-level indicator that provides a starting point for assessing access to healthcare services is:

- *Unmet healthcare needs*

Unmet healthcare needs

The unmet healthcare needs indicator shows the share of people who reported that there was at least one occasion in the previous 12 months where they felt they needed healthcare but were not able to access it. Presence of unmet healthcare need is reported alongside the reason for not being able to access healthcare, such as cost, travel distance, and waiting time. Unmet healthcare need is widely used to capture barriers to accessing healthcare from the people's perspective and has been shown to have validity as a proxy measure for access to health services (Gibson et al., 2019).

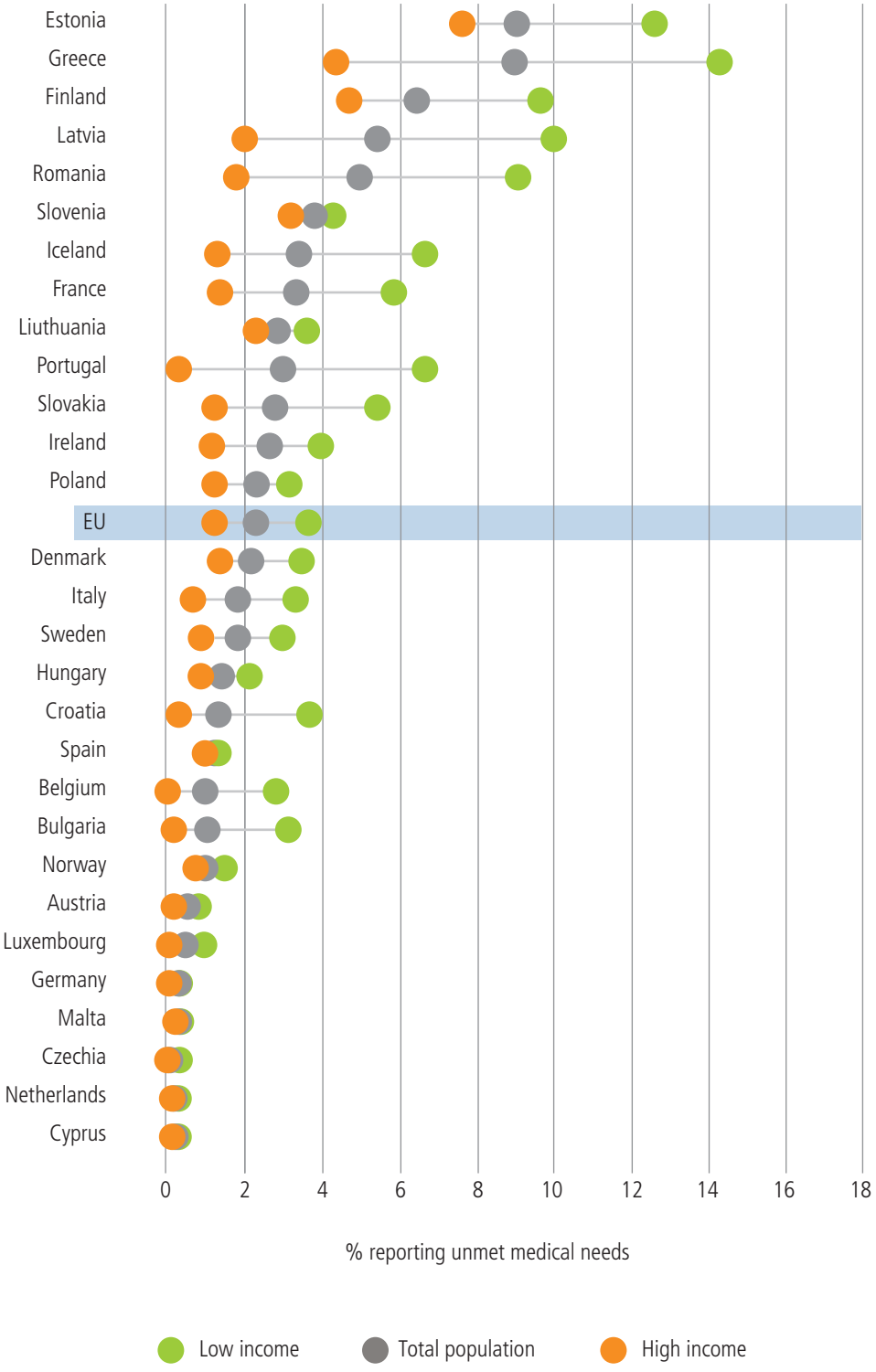
The unmet healthcare need indicator is derived from population surveys. In the EU/EEA countries the question on unmet healthcare and dental care need is included in the annual EU Statistics on Income and Living Conditions (EU-SILC) survey. In addition, the European Health Interview Survey (EHIS) includes a question on unmet healthcare need that provides more detailed breakdown by service type (mental health care and prescribed medicines, in addition to medical and dental care).

Beyond assessing access broadly, the unmet healthcare need indicator provides insight into equity of service delivery. Data obtained from population surveys usually allow breakdowns by income, education, employment status, and geographical region, in addition to the usual demographic strata. It is one of the few system-wide indicators routinely available in EU and some other countries that sheds light on the degree of equity in health service delivery.

Fig. 5.1 shows the levels of unmet healthcare needs due to cost, travel distance, or waiting time by income quintile in EU/EEA countries in 2022 (subset for medical care). In some countries, there is a substantial share of people who experience barriers in accessing care, and in almost all EU/EEA countries there is scope for improving equity, as people in the lowest income quintile often experience much higher levels of unmet healthcare needs.

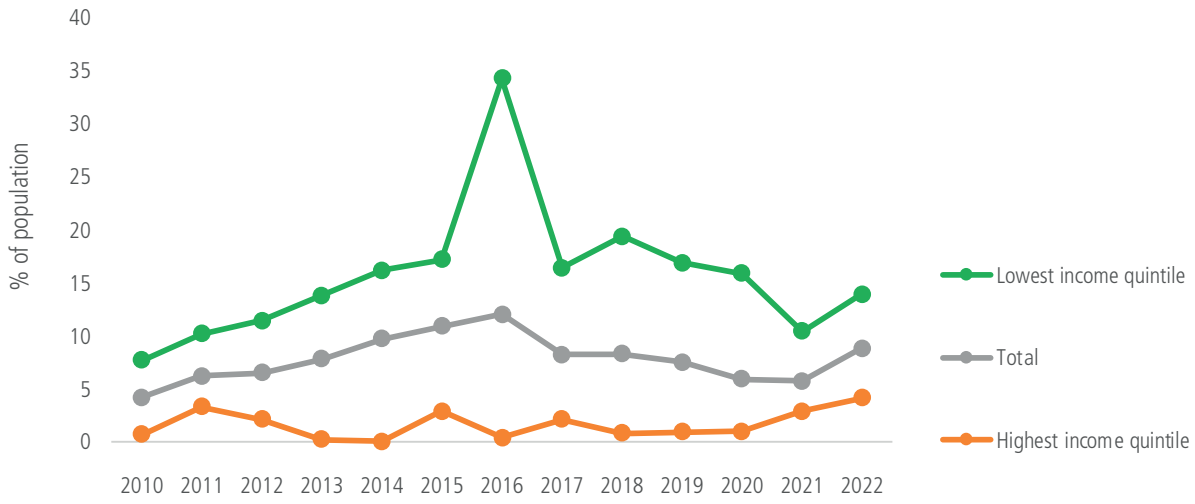
Fig. 5.2 shows the change over time in unmet healthcare needs in Greece by income quintile. In the aftermath of the economic crisis and subsequent introduction of austerity measures, Greece experienced a rise in unemployment and a loss of healthcare coverage among unemployed people. This led to unmet healthcare needs peaking at 34% for people in the lowest income quintile in 2016. At the end of that year separate funding was allocated to cover unemployed people, allowing them access to publicly financed services and thus reducing unmet needs (OECD/European Observatory, 2019).

Fig. 5.1 Self-reported unmet medical care needs owing to cost, travel distance, or waiting time, by income quintile, 2022



Source: OECD/European Observatory, 2023

Fig. 5.2 Unmet medical care needs in Greece owing to cost, by income quintile, 2010–2022



Source: Eurostat (2023)

Limitations and challenges of interpreting this indicator

The main limitation of this indicator is that it is self-reported and self-assessed and may not necessarily reflect real unmet needs (Gibson et al., 2019). Another challenge is the comparison across countries, as cultural factors affect perception of unmet needs. Further, there is some variation in the survey questions across countries, even when methodology is harmonized. There is also ambiguity with regard to the attribution of reasons for unmet needs – for example, identifying cost versus waiting time may not always be clear. Finally, interpretation of unmet healthcare needs in 2020–2021 is complex as a result of the impact of the COVID-19 pandemic on health services, which also affected people's perceptions and healthcare-seeking behaviour.

Eurostat reports unmet healthcare needs from both the EU-SILC and EHIS surveys, and caution needs to be used in the interpretation of these data and their use for comparison, particularly as the former shows share of total population, while the latter only looks at various breakdowns within people who reported presence of unmet healthcare need.

How can the indicator help monitor and transform the accessibility of health services?

The indicator of unmet healthcare needs provides information on equity of health service delivery through exploring barriers to accessing healthcare. The breakdown of the reasons for unmet healthcare needs into cost, waiting time, and distance provides information on service availability in terms of geographical distribution (when time to travel presents a significant barrier), healthcare service capacity (when waiting time presents the main barrier), and healthcare coverage (in case of unmet needs due to costs).

5.2 Policy question: Are health services effective?

In both HSPA frameworks, effectiveness of healthcare delivery is part of the broader domain of quality of care. High-quality care requires that service is not only effective, but also safe for patients, appropriate, and responds to patient needs. When focusing on effectiveness only, it is possible to assess it for different types of healthcare (or for selected interventions), or by looking at levels of coordination or coverage of target population. We can measure the effectiveness of preventive care and primary care, as well as secondary care, using for instance the dedicated set of OECD HCQO indicators (OECD, 2023a). At a more general level, a high-level indicator for effectiveness of healthcare services as a whole that focuses on the extent to which health services achieve the desired outcomes is:

- *Avoidable mortality*

Avoidable mortality

Avoidable mortality indicators provide a starting point to assess the performance of public health and healthcare policies in avoiding premature mortality from preventable and treatable causes of death.

Avoidable mortality is an established, yet evolving concept and it comprises deaths from causes where mechanisms

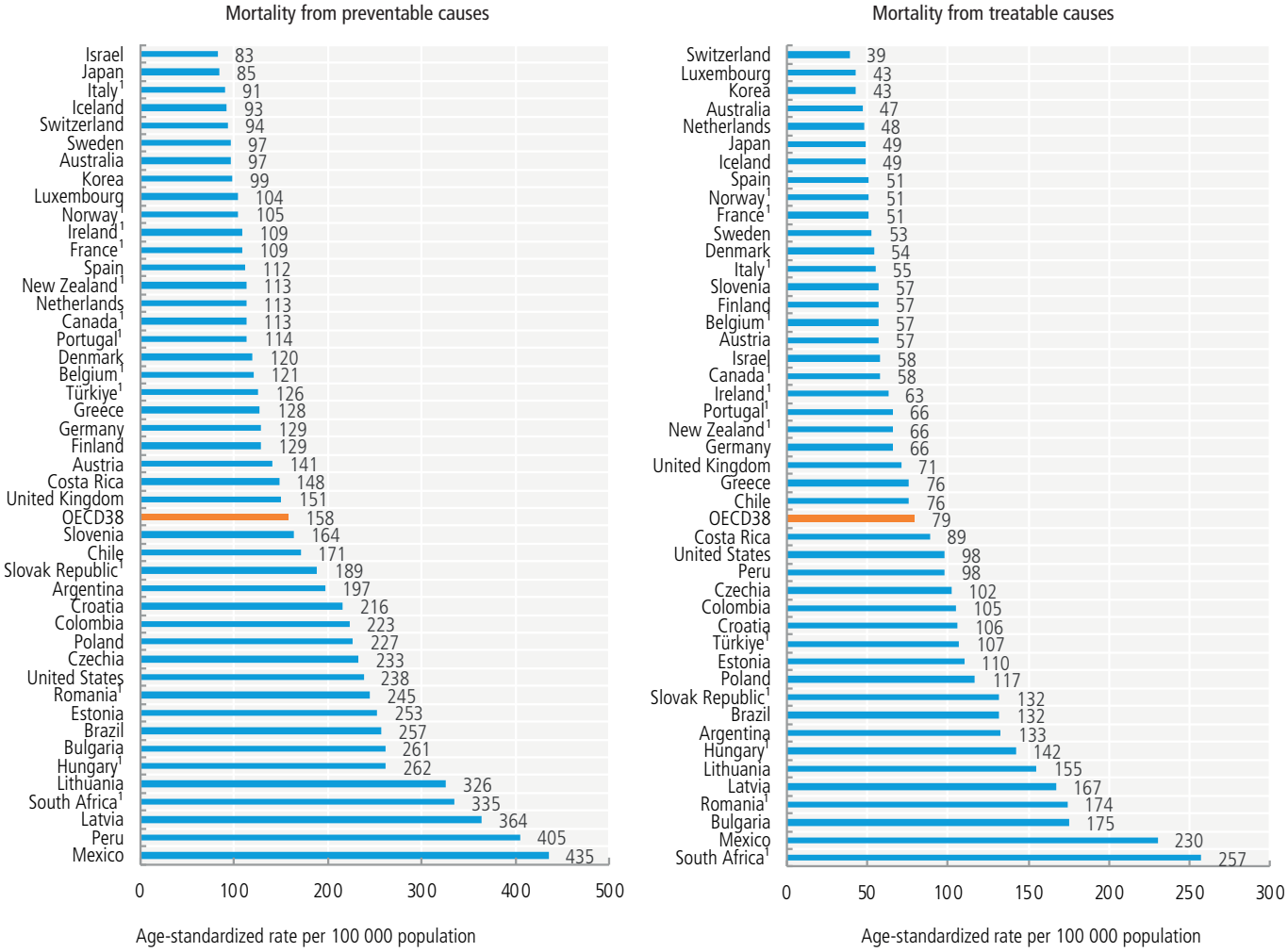
should have been in place to prevent certain health conditions from developing, and if these health conditions do develop, timely and effective care could avoid premature deaths. While there are more concepts to explore relating to avoidable mortality, building on earlier works of Nolte & McKee (2004, 2011), Eurostat and OECD have worked together to develop a revised list of causes of mortality and the age limits, using the following definitions of preventable and treatable causes of mortality (OECD/Eurostat, 2022):

- Preventable mortality: Causes of death that can be mainly avoided through effective public health and primary prevention interventions (i.e., before the onset of diseases/injuries, to reduce incidence);
- Treatable[2] mortality: Causes of death that can be mainly avoided through timely and effective healthcare interventions, including secondary prevention and treatment (i.e., after the onset of diseases, to reduce case-fatality).

The OECD/Eurostat avoidable mortality list reflects current health expectations, medical technology and knowledge, and developments in health policy, and hence is subject to revisions. It was published in 2018 and the last revision took place in 2022; the latter included COVID-19 among causes of preventable mortality (OECD/Eurostat, 2022).

Figures 5.3 and 5.4 below illustrate the use of preventable and treatable mortality indicators as displayed in the OECD's Health at a Glance and in the OECD/European Observatory's State of Health in the EU country health profiles. A cross-country picture (Fig. 5.3) suggests a more than five-fold difference in preventable and treatable mortalities across countries with available data in 2021. This shows that in many countries, major improvements in the effectiveness and timeliness of healthcare are needed to reduce premature avoidable deaths. Fig. 5.4 shows an example of avoidable mortality rates in the Netherlands over time. While the rates are relatively low and have been largely reducing

Fig. 5.3 Preventable and treatable mortality rates in OECD countries, 2021 or latest available

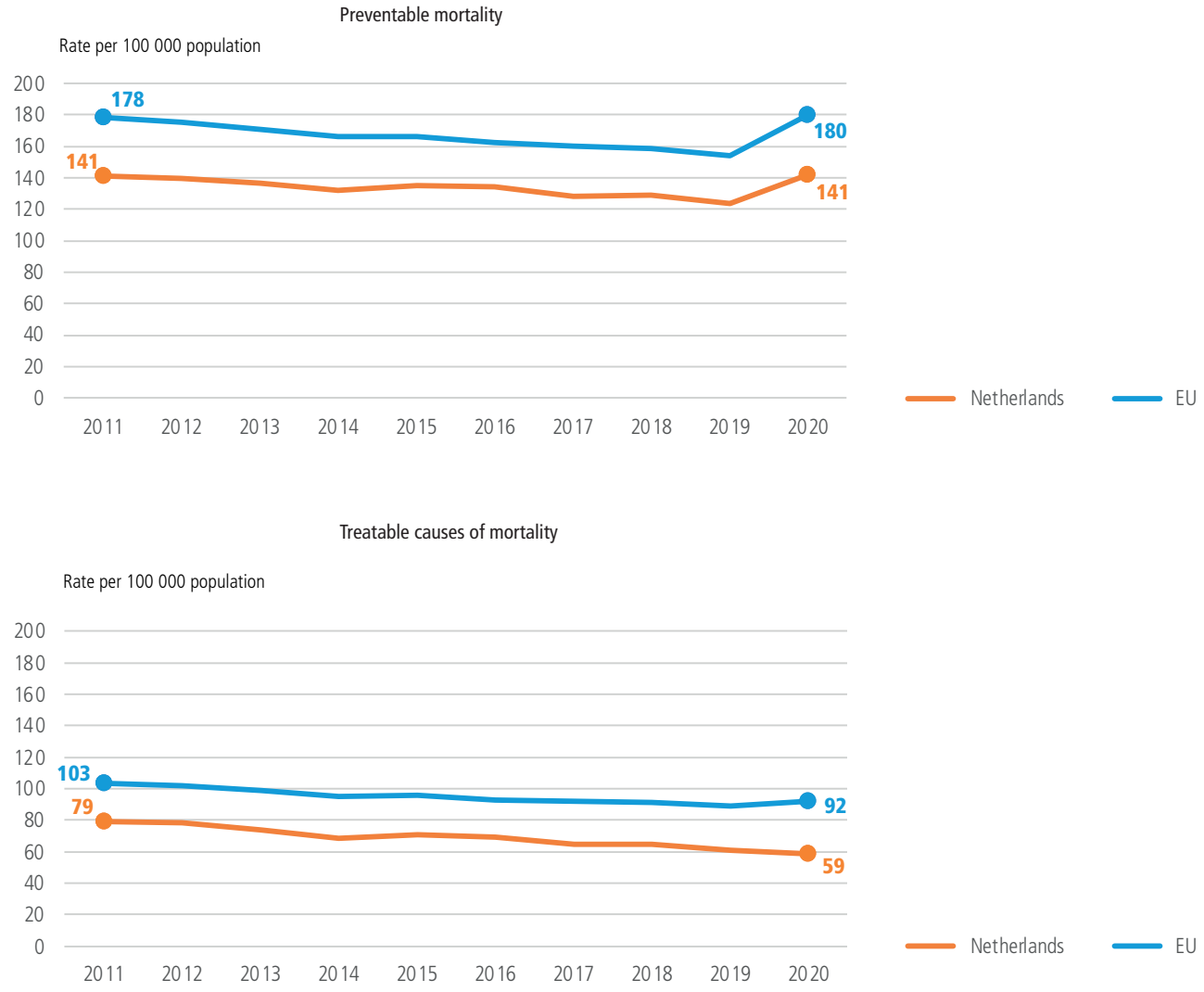


Note: 1.Most recent data point corresponds to 2016-2019.

Source: OECD, 2023b, *https://stat.link/gvxat7*

[2] The label "amenable" mortality was used in previous Eurostat lists. This was changed to "treatable" in the OECD/Eurostat list (2022) to make more explicit the link with healthcare interventions. Amenable mortality remains in use in parallel with the OECD/Eurostat list.

Figure 5.4. Preventable and treatable mortality rates in the Netherlands and the EU, 2011-2020



Source: OECD/European Observatory, State of Health in the EU Profiles, 2023.

between 2010 and 2020, the COVID-19 pandemic prompted an increase in preventable deaths in 2020, as COVID-19 was then included in the list of preventable deaths. At the same time, treatable mortality remained low, suggesting that at least in 2020 access to and quality of healthcare services in the Netherlands did not deteriorate because of the pandemic.

Limitations and challenges of interpreting this indicator

Key limitations in using avoidable mortality as an indicator of effectiveness of healthcare services is that it is not a precise measure, as access to and overall quality of healthcare services also have an influence. Nevertheless, high levels of avoidable mortality suggest that effectiveness of healthcare in those countries may be sub-optimal.

Avoidable mortality is recognized globally as a key indicator of effectiveness of preventive and curative health services. More than one list of avoidable mortality exists, however. Avoidable mortality is technically defined through a list of causes that are considered to be preventable or treatable. These lists, as well as age limits, can and do vary, and they evolve through time (see Rutstein et al., 1976; Nolte & McKee, 2004; Hoffmann et al., 2013; OECD/Eurostat, 2022). Avoidable mortality indicators also rely on high-quality vital statistics for cause of death registration. Standardized preventable and treatable mortality are routinely calculated by Eurostat and OECD, as shown in Figures 5.3 and 5.4. The Institute for Health Metrics and Evaluation used estimates of amenable mortality for calculation of the Health Access and Quality Index globally (Fullman et al., 2018), and the WHO Global mortality database (WHO, 2023) contains data that allow standardized avoidable mortality rates for many countries to be calculated by selecting causes according to a chosen list.

Other limitations in interpreting avoidable mortality indicators involve more technical aspects. Restricting deaths to typically those under 75 years is done because in older age groups attribution to one specific cause of death becomes increasingly difficult, especially with growing multimorbidity. In countries where avoidable mortality is low, there is less potential for improvement, and therefore policy implications become less clear. Finally, measuring mortality only focuses on fatal cases, while the burden of non-fatal conditions remains unaccounted for.

While avoidable mortality is an aggregated indicator, it can be broken down further to understand which causes of death contribute to high rates (or an increase) of avoidable mortality, helping to identify where policy attention is warranted. For example, deaths from lung cancer and alcohol-related deaths are considered preventable through tobacco and alcohol control policies, while road traffic deaths are driven by poor road safety measures (Nolte & McKee, 2004). Premature deaths from many chronic conditions, including ischaemic heart disease, stroke, diabetes and COPD, reflect weaknesses in both prevention (which should help averting conditions from developing) and treatment (where lack of access to services, inadequate chronic disease management in primary care and lack of or poor-quality specialist care lead to deaths). More granular data (for example, by region or socioeconomic status) can provide further information about the equity of the health system, and provide information on the accessibility of health services.

How can the indicator help monitor and transform the effectiveness of health services?

The measure of avoidable mortality provides a bird's-eye view on the overall performance of a health system and signals whether the preventive and curative health services achieve the desired outcome in avoiding premature deaths.

A tailored set of healthcare quality and outcome indicators can provide further insight into the safety and effectiveness of preventive, primary, and secondary care, as well as into care coordination and integration and patients' experience. For instance, avoidable hospital admissions is an indicator that measures the effectiveness of primary care for chronic conditions. Cancer screening rates is an indicator for targeting preventive care, and cancer survival rates together with 30-day mortality following acute conditions such as myocardial infarction and stroke provide information on the effectiveness of secondary care (OECD, 2023a).

5.3 Looking to the future

As this section has illustrated, there is considerable variability in accessibility and healthcare quality across and within (for unmet healthcare need by income quintile) countries. However, to assess access to and the overall quality of health services, and to be able to understand and address the underlying issues, multiple dimensions need to be considered. Ideally, access and quality of healthcare should be considered in interaction, as focusing on only one of them may lead to overlooking where the main challenges lie.

This section reviewed two specific high-level tracer indicators – unmet healthcare needs and avoidable mortality – to explore policy questions of to what extent healthcare services are accessible and of high quality. This by no means does justice to the complexity of health service delivery and the importance of addressing the performance of specific types of health services, such as public health, primary care, specialist care, long-term care, mental health care, etc. These can be explored and assessed through specific metrics, such as the OECD healthcare quality and outcome indicators set reported in the OECD's Health at a Glance (OECD, 2023b). However, the key utility of the chosen indicators in this section is their role as system-level metrics, for which high values flag up that systemic issues in healthcare provision may exist.

Despite the importance of both indicators, good-quality data needed for their reliability are rarely available beyond most EU and OECD countries. It is important to ensure that high-quality mortality registration exists and population surveys contain health-related questions, including on unmet healthcare need, and are carried out on a regular basis with the data made available for research.

The scope of this brief does not allow for examining other key existing indicators that are being used routinely to assess quality, including a closer look at effectiveness, safety, and patient experience. The future expansion of this work could focus on better understanding the strengths and weaknesses of such indicators and finding innovative ways of linking them empirically to other features of the health system.

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6. Discussion and conclusions

HSPA is pivotal for policy-makers, as it provides a clear understanding of how the health system works and how it can be improved. However, HSPA often relies on a plethora of metrics that reduces the relevance for decision-making. This brief is a proof of concept for a policy-friendly HSPA dashboard. It tests how a subset of tracer indicators could be used to understand and address practical policy questions. The brief builds on the recently revised WHO-Observatory global HSPA framework and the OECD renewed HSPA framework (Rajan et al., 2023; OECD, 2024).

The brief reflects the agendas of both the *Tallinn Charter 15th Anniversary Health Systems Conference: Trust and Transformation – Resilient and Sustainable Health Systems for the Future* and the OECD's *Health Ministerial Meeting: Better Policies for More Resilient Health Systems*. It uses four health system policy entry points that are key for resilience – workforce, digital health, people-centredness, and service delivery. They contain a set of policy questions that have been used to test how key metrics can support decision-makers. The brief operationalizes both the WHO-Observatory and the OECD frameworks, and uses them to navigate through certain health system functions, subfunctions, assessment areas, and health system goals, and the causal links between them, to trace the causes of poor system performance and identify possible responses. It serves as the starting point for a development of a policy-friendly HSPA dashboard with carefully curated indicators informing and supporting policy action.

International work on HSPA has informed this brief. It draws on the overarching frameworks such as those of the WHO, the OECD, and the Observatory, as well as more "specific" frameworks that focus on parts of the health system or specific policy purposes. Health system assessment tools (for example, Rechel, Maresso & van Ginnekin, 2019) and efforts to collect and disseminate quantitative and qualitative information on health system performance (see OECD's Health at a Glance and the European Observatory's Health Systems in Transition series, OECD Health Statistics, WHO's Health for All database, and the European Commission's State of Health in the EU country health profiles) initiatives.

At the national level, HSPA processes have also generated key insights although they tend to encompass a wide array of indicators that are difficult to be collected at international level and result in reports that require extensive technical and analytical input. For example, the OECD has recently supported Czechia (OECD, 2023a) and Estonia (OECD, 2023b) in the development or updating of their national HSPA frameworks. Several other countries, including Belgium, Croatia and Ireland, have also recently updated their national HSPA frameworks. International HSPA work is not meant to replace such national processes, but rather to complement them. National HSPAs provide a nuanced, context-specific understanding of healthcare resources, needs, and outcomes. International HSPA work by its turn expands the field of vision to facilitate benchmarking, mutual learning, and cross-country collaboration for the identification of policy solutions that are effective to improve health system performance.

The brief recognizes the progress that has already been made in moving beyond measuring inputs (financial, physical, and human resources) to assessing health objectives and goals and takes a further step in linking indicators to health system functioning and policy options. Each of the four sections addresses a specific policy area. Rather than listing selected indicators, the sections are structured around practical policy questions. The workforce section, for example, concerns policies to ensure the delivery of high-quality and accessible health services and emphasizes health workforce shortages, skill-mix, and retention. The digital health section explores readiness, utilization, and digital health literacy, underscoring the importance of a focused assessment of the role of digital health in the health system. The people-centredness section addresses trust, participation, and enabling the co-production of healthcare because of the significance of health systems in meeting people's diverse needs. The service delivery section tackles the broad question of healthcare accessibility and quality through high-level tracer indicators of avoidable mortality and unmet need, spotlighting outcomes. These are initial explorations but further investigation is needed to further understand causes of sub-optimal performance. Finally, the brief demonstrates how the notion of policy areas and corresponding tracer indicators can be operationalized through the WHO-Observatory and the OECD HSPA frameworks to become practical tools for mapping the causes of poor performance and identifying policy options.

The selection of tracer indicators is very much a work in progress. The authors consider various international and regional reports and datasets like the OECD's Health at a Glance and Health Statistics, the WHO's Health for All database, and others, identifying those with the best potential to reflect performance issues and provide a plausible narrative for the use and interpretation of these indicators. The brief is intended to initiate discussions on the best tracers for assessing specific health system functions and outcomes. It does not attempt to provide a definitive list of indicators. Instead, the examples, and the way their use is illustrated, move forward the understanding of how indicators for workforce, digital health, people-centredness, and service delivery can be mapped onto the WHO/Observatory and OECD frameworks and explores how they can be mobilized to address key policy issues. It shows how the use of these tracer indicators, in combination with the HSPA frameworks, can be an aid in assessing causes, revealing data gaps and limitations, identifying options, and monitoring change.

There is real scope for indicators to make a valuable contribution, as outlined above, but significant limitations have been identified and should be acknowledged, including issues of data availability, level of disaggregation, timeliness, comparability, and quality, particularly at the international level – as elucidated in the respective sections. In terms of data availability, the WHO European Region and the OECD have a number of key databases providing indicators on various aspects of health system performance. The OECD, the WHO Regional Office for Europe, and Eurostat cover

different sets of countries and indicators, but work through the joint data collection questionnaire, with data typically sourced from the national sources, harmonized for cross-country comparisons and over time. Data disaggregation is limited in certain areas, such as the assessment of the various dimensions of health equity.

Timeliness is a particular concern for decision-makers. The data collection and harmonization process typically results in a two-year lag in data availability at the international level, which may extend even longer in certain areas. This is in contrast with the increasing policy needs for real-time data, as evidenced by the response to the COVID-19 pandemic (Sagan et al., 2021; OECD, 2023c). National data sources are necessary to address current health system challenges and monitor change, and they underpin international comparability and benchmarking, but the harmonization process takes time and depends on capacities of statistical teams in international organizations. Despite the overall high quality of data in Europe, relevant quality issues persist across the health sector. Even well regulated areas, such as death registration, face challenges, with some EU countries still reporting a substantial share (5% or more in 2020) of unspecific or ill-defined causes of death (European Commission, 2023).

A further limitation arises from the intrinsic nature of tracer indicators. They are reflections of specific health system areas, indicating whether there may be a systemic issue with the performance of that function. These indicators must be understood within the broader context of the status of the health system at present, but can also be followed over time. Moreover, insights gained from tracer indicators may need to be supplemented with more in-depth investigations into potential root causes of problems identified. It is crucial for policy-makers to fully comprehend these limitations to avoid any inadvertent misinterpretation.

Synthesizing the multitude of HSPA indicators into a smaller set with critical policy relevance is indeed to help decision-makers. The groundwork in this brief establishes an approach that has four complementary elements:

- **Focusing on a targeted set of tracer indicators** that reflect performance issues in different parts of the health system (supported by additional work to select and further develop appropriate tracers for health system functions and outcomes).
- **Mapping indicators onto the WHO/Observatory and OECD HSPA frameworks**, tracing links and causal pathways between functions, subfunctions, assessment areas, intermediate objectives, and final goals, making the performance dynamics of the entire health systems clear to policy-makers.
- **Using policy-relevant questions** as the way into assessment and framing performance and the metrics around practical concerns so that the focus is on the needs of policy-makers and can inform concrete policy actions.
- **Providing a broader narrative for the meaning and scope of each indicator** to prevent misinterpretation and to highlight gaps, limitations, and pathways for improved data collection and the development of new metrics.

This brief serves as a proof of concept and represents the first step in an evolutionary pathway towards policy-oriented HSPA: one that will facilitate health systems transformation and the achievement of their health and societal goals. There are four concrete lessons for health system leaders for future development in this field:

- **Invest in addressing data issues:** resources are needed in national systems and international organizations to enhance data collection and the resolution of ingrained data issues. Digitalization enables faster, more comprehensive, and higher-quality data collection but investment is crucial if systems are to develop capacity, and validate and deploy appropriate tools to facilitate efficient, timely, safe, and reliable information flows.
- **Apply HSPA to practical policy questions:** employing tracer indicators and mapping them onto the WHO/Observatory and OECD HSPA frameworks can assess system weaknesses and identify policy options. Expanding the methodology and its scope beyond the policy issues that are central to policy-makers to other health system areas will be a possible next step.
- **Revise the existing health data body:** a comprehensive review of existing health indicators would give a deeper understanding of definitions, use, and fitness for purpose, and identify data gaps. It would be particularly helpful to focus on the development of new indicators, not least to address the crucial data gaps identified in this brief. Reliable, routinely reported, and internationally comparable indicators on health workforce composition and migration, the health workers' ability to provide digital health services, patients' access to digital services, societal participation in health policy-making, and patients' involvement in their own care all have huge policy relevance. Further work that goes beyond selecting from available indicators to explore innovative uses of existing indicators and to create or expand novel indicators would make tracer indicators more meaningful.
- **Collaborate closely between organizations:** collaboration among key international organizations and bodies working in this field, notably the WHO, the OECD, the EU and the European Observatory, to align methodologies and develop a shared dashboard of tracer indicators would support policy decision-making.

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Appendix 1. An updated WHO-Observatory global HSPA framework

What is new in the WHO-Observatory global HSPA framework?

The global COVID-19 pandemic serves as a stark reminder that a robust and resilient health system is one of the best defences against health threats. However, ensuring a strong system that can build on its strengths and overcome its shortcomings is complex. It involves prioritizing and resourcing policy actions, drawing on the best available evidence, which in turn requires monitoring and regular assessment. The WHO-Observatory global HSPA framework is a policy tool that enables policy-makers to organize and make sense of HSPA. It was the result of international effort and consensus and has been updated to capture the experience of the pandemic and to support policy-makers in a post-COVID world.

The updated HSPA framework (see Rajan et al., 2023)[3] recognizes that performance assessment is ultimately about understanding what drives and shapes the health system and its outcomes so that policy-makers can make informed choices about change. It also understands the challenges around how to adequately interpret country health data to pinpoint the root causes of a health system bottleneck or clearly discern a policy intervention's impact. It provides a clear anchoring structure and evidence-informed and plausible pathways of association that enable decision-makers to take the right policy actions.

The framework in this brief is the version updated in light of the "perma-crisis" which sees health policy-makers steering their national health system while dealing with inflation, regional wars, large refugee influxes, climate change, loss of population trust, more frequent changes in government, and myriad other challenges.

The framework captures more clearly those policy areas that can strengthen health systems resilience

The WHO-Observatory global HSPA framework gives a structured and comprehensive overview of a health system and how it works. It links the four functions and their subfunctions with intermediate objectives and final goals, highlighting the various interlinkages between them and placing everything within the wider socioeconomic and societal context.

- **Governance and multisectoral action**

The governance function has been adapted to better reflect its essence – multisectoral collaboration, i.e., how to ensure that all stakeholders, including the population, engage constructively with one another to steer the sector towards its stated and shared goals. This also captures the heightened need for collaboration across sectors to respond to today's pressing health system challenges – antimicrobial resistance, emergency preparedness, and food security, to name but a few.

- **Digital health**

The realm of digital health has also been boosted and is explicitly shown in the renewed framework, appearing in governance, resource generation, and service delivery as a subfunction because digital health is pivotal in enhancing access and efficiency, catalysing patient-centred approaches, and promoting timely and data-driven decision-making.

- **Environmental considerations**

Environmental health is also emphasized, particularly in societal goals, but also in service delivery. The framework now incorporates the adaptation of health services to climate change and highlights the efforts needed by health system actors to reduce the environmental impact of delivering health services.

- **Health security and resilience**

Health security encompasses all the final goals of the health system, so achieving the health system's overarching goals and having a high-performing system will ensure effective protection against health threats, and achieve health security. Much of health security comes from the intricate network of linkages between the functions, and between the functions and goals, as captured by (and throughout) the framework. These vital interconnections define the essence of the health system and are termed "performance and resilience links" – they are depicted in Fig. 1.2[4] and in appendix figures A1.1 and A1.2 connecting all the elements of the framework. Resilience is thus the system's ability to withstand challenges and rebound, relying on the quality of the connections between different functions, subfunctions, assessment areas, and goals (performance) but applied to health system specific shocks, strains, and challenges, and taking into account the temporal dimension (stages of the shock cycle).

The renewed HSPA framework better understands the health system's contributions to broader societal goals

The renewed global HSPA framework recognizes the significant role of the health system in contributing to larger societal objectives. They are not directly evaluated within the framework, but they need to be considered as the contribution of the health system to societal well-being, through economic development, environmental sustainability, and societal cohesion. The renewed HSPA framework reminds policy-makers of precisely how critical the health system is in advancing the broader societal goals,

[3] For details of the HSPA framework's functions, sub-functions, assessment areas, and links to intermediate and final objectives, please see Rajan D et al. (2023). Health system performance assessment: renewing the global framework to guide post-pandemic policy-making. World Health Organization (acting as the host organization for, and secretariat of, the European Observatory on Health Systems and Policies).

[4] Figure 1.2 is in the Introduction to this brief. Figures in the appendices are labelled A1.1, A1.2 and A2.1.

although the framework also acknowledges boundaries of accountability between the health system and larger societal objectives.

This brief builds on the HSPA framework to present the proof of concept for tracer indicators and a performance dashboard

The framework can be used as a blueprint to explore health system performance assessment. Users can start either from examining how performance of the functions affects health system goals, or from exploring how health system goals can lead to understanding of performance of specific health system functions. One example of the use of the framework is elaborated below.

How do health workforce, digital health, people-centredness, and access and effectiveness fit within the WHO-Observatory global HSPA framework?

All the areas explored in this brief are explicitly covered by the framework.

Health workforce is a subfunction of resource generation. The framework allows users to identify the immediate assessment areas for the health workforce: availability, mix and distribution, and health workforce education, as well as the planning of human resources for health (see Fig. 1.2). The workforce is also enabled by the existing health system infrastructure (also part of resource generation) and other functions. For example, in health system governance, the quality of strategic direction determines whether the workforce is a strategic priority; participation in policy-making ensures policies incorporate the voices of healthcare workers; and capacity to legislate addresses the system's ability to regulate the workforce. These are among the most important elements in ensuring good workforce performance. At the same time, the financing function provides monetary resources through revenue raising (by ensuring there are sufficient funds in the system to invest in the workforce), and through purchasing (paying healthcare workers, ensuring efficient purchasing, and allocating funds according to need). The health workforce underpins the delivery of all healthcare services, and thus the achievement of health system goals.

Digital health is situated in multiple health system functions (see Fig. 1.2), because it covers governance areas (information and digital knowledge collection and use for policy-making) and physical and digital infrastructure (availability, distribution, and maintenance), as well as the way services are delivered (for example, e-health), and integrated and coordinated care. Delivery of digital health services, as enabled through other functions, impacts on health system goals, for example, access and equity (the ability to access telemedicine services or booking systems "counts", albeit there are equity implications as vulnerable groups may not be able to use digital tools in practice), efficiency (where services that do not need physical presence can be delivered remotely), and user experience. In addition, information collected through performance assessment processes should feed back to inform improvement. Differentiating assessment areas for digital health by function is an important addition that the HSPA framework brings to policy-makers, allowing them to assess concrete components of digital health and relate them to the functioning of the entire system.

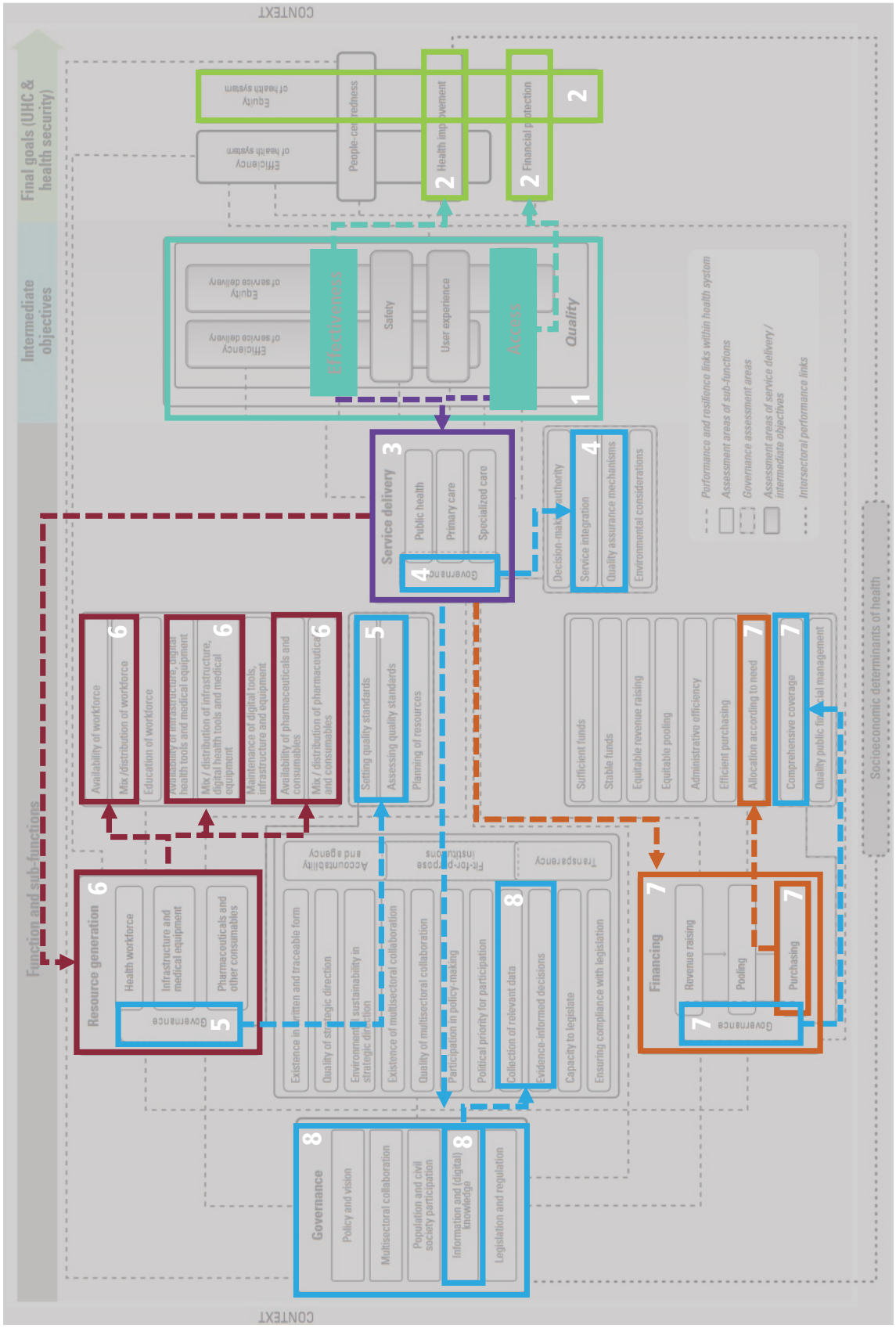
People-centredness is one of the final health system goals (see Fig. 1.2), with the extent to which people-centredness is achieved reflecting the performance of the entire system and contributing to the achievement of other goals, such as equity and health improvement. User experience is a key intermediate health system objective contributing to the people-centredness of the health system. The HSPA framework also shows how people-centredness directly reflects health system governance and particularly its "population and civil society participation" subfunction. The latter can be assessed through the degree of participation of all stakeholders in policy-making and the political priority placed on enabling participation, as well as the system's overall transparency and accountability.

Access and effectiveness are the key intermediate health system objectives. In the HSPA framework (Fig. 1.2) quality is a multidimensional construct that includes effectiveness, safety, and user experience. It also includes the cross-cutting areas of efficiency and equity of service delivery. Access in the framework is depicted both inside and outside the quality boundary because the presence of access is a pre-condition to receiving quality services, while lack of access means service delivery cannot be fully assessed in terms of quality. At the same time, access and effectiveness contribute to health system goals, especially to health improvement, while access also contributes to financial protection and equity. The section below uses access and effectiveness as examples to illustrate how the WHO-Observatory global HSPA framework can serve as a blueprint to identify possible performance pathways between different elements of the health system.

How can the WHO-Observatory global HSPA framework be used in practice?

Assessing access and effectiveness is explored in Chapter 5 of this brief. Appendix Figure A1.1 illustrates the possible linkages that reflect how access and effectiveness relate to performance of health system functions. The WHO-Observatory global HSPA framework (see Figure 1.2) has been greyed in order to highlight specific pathways and some of the relevant areas. The following text is the testing ground for the operationalization of the framework; for more examples, please see Rajan et al. (2023).

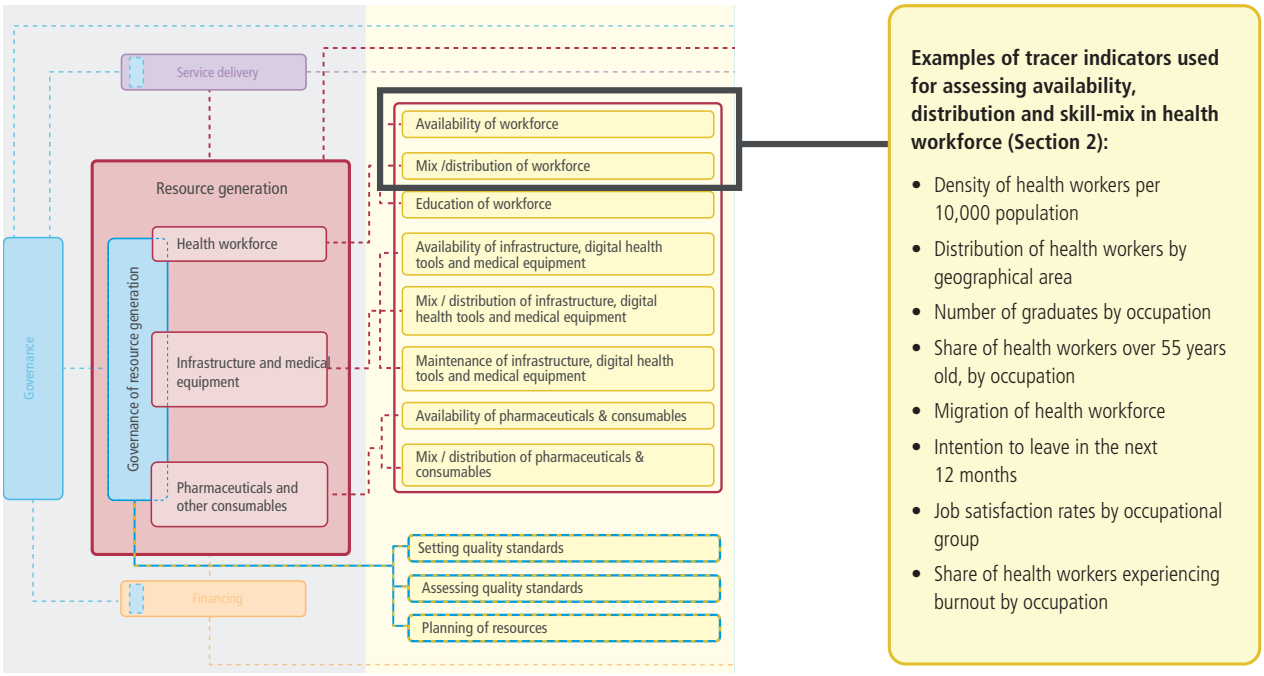
Figure A1.1 How access and effectiveness can be used to measure performance of the functions



The figure is an illustration of some possible performance linkages (dotted lines). Directions of arrows could go either or both ways, depending on the starting point of an assessment, and more (or fewer) boxes could be activated depending on the specific policy question. Colours of the boxes represent their original designation in the HSPA framework.

Source: adapted from Rajan et al (2023)

Figure A1.2 Examples of indicators that can be used as tracers to assess availability, mix, and distribution of the health workforce



Adapted from Rajan et al (2023)

How do access and effectiveness relate to health system functions?

As described above, access and effectiveness are key intermediate health system objectives, and also shape the outcomes of the service delivery function (box 1 in Fig. A1.1), so in this example the pathway arrow goes right to left, towards service delivery. At the same time, access and effectiveness contribute to health system goals, especially to health improvement, with access also contributing to financial protection and equity (boxes 2).

Indicators assessing access and effectiveness are measures of aspects of performance of service delivery (box 3). Tracer indicators, such as preventable and treatable mortality, show performance of service delivery overall (because the indicator combines timely access, effectiveness, and safety of services). Poor performance of service delivery may lie within specific types of care (for example, public health, primary care, specialist care, long-term care, or mental health care). "Poor" tracer indicators could also point to poor governance of service delivery (for example, lack of quality assurance or integration, box 4) or resource generation (setting and assessing quality standards for human and physical resources, box 5). They can also reflect poor performance of other functions, for example, the lack of availability of human and physical resources or of investment in health, or governance failures (boxes 8). In order to better understand the underlying weaknesses of service delivery, more nuanced indicators reflecting specific assessment areas of those functions need to be used (see Figure A1.2 and the example exploring the assessment of selected health workforce areas).

Access also needs to be assessed separately from indicators of quality to ensure that everyone in need of healthcare services can access them. Therefore, there are distinct assessment areas for resource generation (availability and distribution, boxes 6) and financing (allocation according to need and comprehensive coverage, boxes 7), along with a tracer indicator of unmet need for healthcare. The latter allows policy-makers to distinguish whether lack of access to care stems from health system factors (user charges, waiting lists, lack of services in the area), and to identify socioeconomic groups with the highest level of unmet need (highlighting where these lack health coverage).

How do tracer indicators fit within the HSPA framework?

Figure A1.2 shows a more elaborated example for the resource generation function. It also contains tracer indicators related to more than one assessment areas – availability and mix/distribution of the health workforce – to capture one possible driver of challenges for access and effectiveness. The idea here is to illustrate how subfunctions and assessment areas can gradually be populated with tracer indicators that provide crucial information on health system performance.

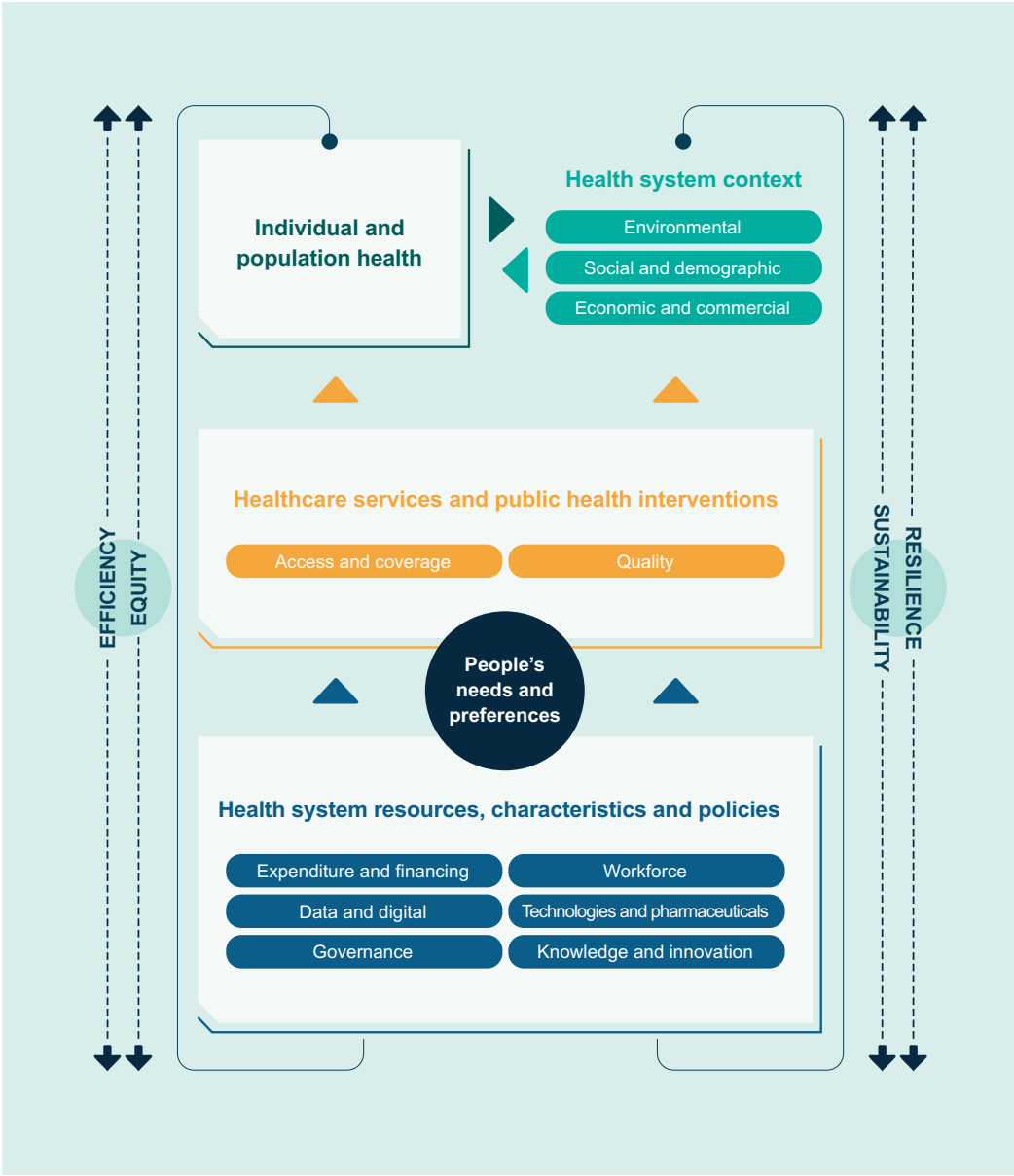
Appendix 2. Rethinking HSPA: a renewed OECD framework

Revising the OECD's HSPA framework

Measures of health system performance have evolved as new evidence from health sector policy and experiences emerged since the OECD first published comparative reviews of health system reforms in 1992. For decades, the OECD has helped countries to identify the key principles of high-performing health systems and to assess health system performance based on internationally comparable health indicators. The pinnacle of these efforts is represented by the OECD's long-running flagship publication, Health at a Glance (OECD, 2023a). This work has contributed to, and been guided by, the development of conceptual frameworks for health system performance developed by the OECD over time (Hurst & Jee-Hughes, 2001; Kelley & Hurst, 2006; Carinci et al., 2015), as well as more recent and focused developments that zoom-in on two specific angles: people-centredness (OECD, 2021) and resilience (OECD, 2020).

Health systems are today under intense pressure to adapt to evolving needs and megatrends driven by population ageing, digitalization, and climate change, as well as to be better prepared to withstand sudden, large-scale natural or man-made shocks such as pandemics, natural and environmental disasters, biological, chemical, cyber, financial and nuclear threats, and social unrest. Additionally, patients' expectations for health systems have evolved considerably to a view of integrated and people-centred systems in which access to and quality of care are crucial features.

Figure A2.1 The OECD's renewed HSPA framework



This evolving policy context calls for a new vision of performance assessment that integrates new dimensions of performance, such as resilience, people-centredness, and environmental sustainability. The renewed framework developed by the OECD Secretariat with the support of the OECD's expert groups and working parties reflects the changing landscape of health systems today and combines several components of other frameworks currently in use.

The OECD's renewed HSPA framework

The renewed OECD framework builds on existing frameworks that guide the OECD's work on health, including the 2015 revision of the HSPA framework (Carinci et al., 2015), the People-Centred Health System Framework System (OECD, 2021), and the Resilience Shock-Cycle Framework (OECD, 2020).

The "classic trio" at the basis of most HSPA frameworks – input, process, and outcomes – is visible in the framework (Donabedian, 2005). Figure A2.1 shows that resources and policy are fed into health services and interventions, which in turn produce outcomes.

The renewed framework places **people's health needs and preferences at the core of the health system**, reflecting the directions from the 2017 OECD meeting of Health Ministers to make health system more people-centred (OECD, 2017). As such, people-centredness is regarded both as an objective of health systems, and instrumental to achieving other policy objectives. Incorporating the elements of the People-Centred Health Systems framework, people-centredness can be expressed through its five subdomains: voice, choice, co-production, respectfulness, and integration. This change implies a ramp-up of efforts in the collection and reporting of relevant indicators, already under way with the OECD's Patient-Reported Indicator Surveys initiative (PaRIS) (de Boer et al., 2022).

Health systems resources and characteristics' six building blocks (workforce; expenditure and financing, technologies and pharmaceuticals; governance; data and digital; knowledge and innovation) sustain access and coverage of quality healthcare services and public health interventions, in order to achieve the outcome of better individual and population health.

The **socioeconomic, demographic, and environmental context** refers to the broader conditions that influence and interact with the health system. The renewed framework stresses its role as a health determinant while acknowledging that health system actions impact the environmental, economic, commercial, and social contexts, thereby presenting a circular interaction model.

The framework also includes four "cross-cutting" dimensions of health system performance, namely **efficiency and equity** on one side, and **sustainability and resilience** on the other. The reason why these are cross-cutting is that they do not belong to one particular block in the framework but relate to them all.

The concepts used in the framework are not necessarily mutually exclusive, and therefore they may overlap. Some relations between concepts are explicitly acknowledged, for instance Donabedian's model of structure, process, and outcomes remains visible. Yet the framework remains high level. It shows the main elements in relation to one another at a higher level and is not intended to detail all possible conceptual relationships. This high-level approach makes it suitable for application to a range of countries with very different geographical sizes, economies and health systems. The various impacts of the health system are also interrelated: individual and public health can affect people's wealth and vice versa; health inequalities can foster other socioeconomic inequalities; health systems have an impact on the environment, for example, through emissions and waste, while the environment also affects people's health.

Endorsing a high-level framework allows for the possibility to "zoom in", unpack, and elaborate dimensions of the framework in more detail, for example, via subdimensions, complemented by a series of accompanying measures and linked indicator portfolios at working level, which can be used to facilitate cross-country analysis and comparisons.

To put the framework into practice, its various concepts need to be broken down into more specific and measurable elements and then populated with indicators. Since various components of the framework draw from existing frameworks, the OECD has already developed many such indicators. Consequently, several dimensions of the renewed framework can already boast a robust collection of indicators. Nevertheless, the HSPA framework revision also presents opportunities for introducing fresh indicators and enhancing the quality of existing ones.

A zoom on workforce, digitalization, people centredness, and quality and access

As for the WHO framework, all the areas explored in this brief are also covered by the OECD's renewed framework.

Workforce

Over the past two decades, the **health workforce** has been under considerable strain, both in terms of numbers and the skills needed to work with new technologies and adapt to new roles. In this renewed framework, the workforce domain includes three dimensions:

- Availability and quantities of health workers;
- Skills of health workers; and
- Health workers' safety and well-being.

The availability and quantities of health workers is a "classic" category on which the OECD has built long-time trends data. Typical indicators are numbers of doctors and nurses, but more granular data (i.e., at specialty level) should be considered for future rounds of data collection.

The focus on skills is from a more recent date. However, skill shortages are a global issue. The COVID-19 pandemic has further aggravated these shortages and emphasized the importance of resilient and well skilled healthcare workforces. Equipping health workforces with the right skills is essential to responding to future health crises, and to

preparing for the increasing use of digital technologies and demographic change, among other trends (OECD/ILO, 2022).

The safety and well-being of health workers is a relevant element of the workforce domain, and OECD work on this topic has recently begun. The COVID-19 pandemic has highlighted this issue. Particularly in times of crisis, it is clear that shortages, skills, and staff well-being are interlinked. Addressing health workforce shortages requires increased investment in education and training, increased recruitment to reduce workload and pressure on existing staff, and improved retention by improving working conditions and pay rates for traditionally undervalued categories of workers (OECD, 2023b). Possible new indicators on health workforce retention will be given great attention in the renewed framework.

Digitalization

The **data and digital** dimension covers health data infrastructure, security, and management. The OECD collects several indicators related to digitalization in health. A few examples are the adoption of electronic medical records and the use of telemedicine and teleconsultations, but perhaps the most structured data collection related to health data digitalization is based on monitoring of the OECD Health Data Governance Recommendation, adopted in 2016 in recognition of a growing need for an international standard to harmonize approaches to health data governance. Some of the indicators on health data governance include:

- Timeliness of key national health datasets;
- Key datasets linked on a regular basis; and
- Record linkage projects used to regularly monitor healthcare quality or health system performance.

More recently, the OECD has been reflecting on the concept of **digital health readiness** (OECD, 2023a), which is a comprehensive measure of a health system's capacity to effectively utilize analytics, data, and technology to improve individual, community, and public health outcomes. It encompasses various aspects (see below), each essential for a well functioning digital health ecosystem, and that could each be populated with new indicators.

People-centredness

In the renewed OECD HSPA framework, indicators to reflect the people-centredness of health systems sit at the centre of Figure A2.1, overlapping the resources and services sections. This has important implications for the revision of the framework, as more data collection and analysis efforts are needed. While some indicators for people-centredness are included in the regular HCQO data collection, and also reported in Health at a Glance, such as doctors spending enough time with patient, providing easy-to-understand explanations, and involving patients' in decisions about care and treatment, good data to assess people-centred health systems remains the exception rather than the rule and more effort is needed in the collection and reporting of indicators related to people-centredness (OECD, 2021).

The OECD's Patient-Reported Indicator Surveys initiative (PaRIS)[5] will further refine and improve the indicators for people-centredness, as well as improve their availability across countries participating in the survey. Examples are PaRIS survey items on co-production of care that are currently being measured in twenty countries:

- I have difficulty understanding a lot of the health information that I read;
- My health professionals and I work together to manage my health;
- I leave it to health professionals to make the right decisions about my health;
- Are you involved as much as you want to be in decisions about your care?
- Do you discuss with the health professionals involved in your care what is most important for you in managing your own health and well-being?
- Do you have enough support from the healthcare professionals to help you to manage your own health and well-being?

Health literacy is another major dimension of people centredness that is embedded in the OECD's renewed framework. Health literacy encompasses the knowledge, motivation, and skills required to access, comprehend, assess, and apply information to make informed decisions regarding healthcare, disease prevention, and the enhancement of overall well-being over the life-course. It has far-reaching consequences for individuals' ability to manage their health, use preventative services, and take part in decision-making regarding their health and well-being. At the societal level, health literacy impacts healthcare use, prevention and health promotion programmes, equity and social justice, as well as productivity.

Quality and access

The framework, in its assessment of healthcare services and public health interventions (ranging from preventive to palliative care), specifically accounts for two fundamental elements: "quality", and "access and coverage".

Quality is a long-standing focus of OECD work with its HCQO indicator set containing 64 indicators that focus on the standards and effectiveness of healthcare services, safeguarding patient safety, and ensuring that care is evidence-based and meets established and validated practices. A key subdimension of quality is effectiveness, which is the degree of achieving desirable outcomes, given the correct provision of healthcare services to all who could benefit, but not to those who would not benefit (Kelley & Hurst, 2006). The second subdimension of quality is safety. Patient safety is the reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum, while an acceptable minimum refers to the collective notions of

[5] The PaRIS International Survey of People Living with Chronic Conditions is the first international survey of patient-reported health outcomes and experiences of adults living with one or more chronic conditions who are managed in primary or other ambulatory care settings. It is the first of its kind to assess the outcomes and experiences of patients managed in primary care across countries.

current knowledge, resources available, and the context in which care was delivered and weighed against the risk of non-treatment or alternative treatment (Slawomirski & Klazinga, 2022).

Under the PaRIS initiative, the OECD has undertaken the collection of Patient Reported Outcome Measures (PROMs) and Patient Reported Experience Measures (PREMs) tailored to specific diseases. These encompass PROMs administered both before and after surgeries for conditions like breast cancer and hip and knee replacements, as well as PREMs related to mental health. Furthermore, the OECD is actively gathering data on safety aspects, considering the viewpoints of both healthcare professionals (including safety culture) and patients (involving the occurrence and nature of safety incidents). Additionally, the organization is reporting indicators concerning the quality of end-of-life care, including metrics like unplanned hospital admissions.

Similarly, there is a broad set of indicators on the accessibility of health services (access) and the extent to which public health interventions reach their target population (coverage). These two concepts are related but not interchangeable. Coverage also refers to the proportion of the population that is eligible to receive certain health services, which in turn affects the (financial) accessibility of these services. Collectively, these elements determine the effectiveness and fairness of healthcare delivery.

Using the OECD's renewed HSPA framework

A fit-for-purpose framework is a tool that will consolidate a collective understanding of high-level policy objectives of health systems and help agree on a common language and terminology. It is not intended to replace national-level HSPA frameworks, but to enable international or regional-level benchmarking and mutual learning.

The renewed OECD HSPA framework will also help in steering indicator development, knowledge integration, international collaboration, and decision-making. It will provide a shared vision of the main elements of health systems that deserve policy attention and will serve the needs of different strands of OECD work on health.

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