THE 2024 REPORT ON "TRANSITIONING TO HIGH-VALUE HEALTH SYSTEMS IN THE G20+ COUNTRIES"

HEALTH SYSTEMS INNOVATION LAB
AT HARVARD UNIVERSITY

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH | HEALTH SYSTEMS INNOVATION LAB

Acknowledgement

About this Report

The 2024 Report on "*Transitioning to High-Value Health Systems in the G20+ Countries*" was developed under the guidance of Professor Rifat Atun, Professor of Global Health Systems at Harvard University and Director of the Health Systems Innovation Lab, Dr. Caroline Bulstra, Research Fellow at the Health Systems Innovation Lab, and Dr. Che L. Reddy, Associate Director and Research Associate at the Health Systems Innovation Lab. The High-Value Health Systems assessment was updated and implemented by a diverse team of researchers and coordinated by Elizabeth Khvatova and Pooja Joshi, Research Scholars at the Health Systems Innovation Lab. Additional HSIL contributors include Luke Brothers, Assel Ibadulla, Ryan Gidda, Senthujan Senkaiahliyan, Elena Avramovic, Mawulorm Denu, Mateo Diaz-Quiroz, Jake Figi, Patrick Walker, Rithika Ravishankar, and Anna Folz. The ideas, insights, and frameworks in this study are drawn from earlier research, publications, and collaborative initiatives led by Professor Rifat Atun at the Health System Innovation Lab at Harvard University.

We would like to express our gratitude to all collaborators who reviewed and verified the findings presented in this report.

Suggested Citation

Khvatova E*, Joshi P*, Brothers L., Ibadulla A., Gidda R., Senkaiahliyan S., Avramovic E., Denu M., Diaz-Quiroz M., Figi J., Walker P., Ravishankar R., Folz A., Reddy C.L.[δ,] Bulstra C.A.[δ,], Atun R. The 2024 Report on "*Transitioning to High-Value Health Systems in the G20+ Countries*". *Health Systems Innovation Lab, Harvard University, 2024, Boston, USA.*

**Shared co-authorship position*

[δ]*Shared co-authorship position*

Table of Contents

Executive Summary

In our second annual report of 'Transitioning to High Value Health Systems', we extend our prior analysis to explore how G20+ countries are embracing a value orientation and the policies, programs, innovations, and institutional arrangements they are introducing to improve the efficiency, effectiveness, equity, and responsiveness of health services, and thereby create value at the system level. Building upon previous work conducted at the Health Systems Innovation Lab at Harvard University (HSIL), this report serves to define the key components of a high-value health system and assess how health systems of the G20+ nations are moving towards creating value at the system level for large-scale population impact.

The major challenges that face G20+ nations, as explored in previous work, include increasing health system costs, rising demand for health services, widening disparities in access to individual and public health services, poor uptake of innovations, and worsening inequalities in health outcomes. Accordingly, many G20+ countries are in the midst of the transformation process as they seek to transition their health systems to deliver both 'value for money and value for many.' While many countries have made moderate progress in this goal, much work remains to be done, especially beyond value- based health care initiatives at institutional or regional level. Most countries have introduced small-scale projects and initiatives at lower levels of the system and have yet to achieve population-level scale.

The Health Systems Innovation Lab developed the Harvard High-Value Health System (HVHS) model that draws upon nearly three decades of research in comparative health systems and health system performance, engagement with large global health initiatives, country case studies and empirical data to analyze and characterize the shift underway from a systems perspective. The HVHS model consists of 10 interdependent components that include (1) digital data systems, (2) analytics, (3) cost measurement systems, (4) outcomes measurement systems, (5) benchmarking, (6) integrated care pathways with

bundled services, (7) value-based payment models, (8) value-based procurement, (9) integrated provider networks, and (10) strategic change and innovation ecosystems.

This study applies the HSIL framework to examine the progress of G20+ countries in transitioning to a HVHS, identify areas for improvement, and share best practices to accelerate progress. The research team surveyed experts, conducted interviews, and performed desk research to build and HVHS dataset that was used to measure progress of G20+ countries in relation to each component. For each component, we ascertain whether a country has demonstrated major, moderate, or some progress that could benefit from accelerated progression.

The study finds that while all countries are embracing some of the 10 components, no single country has yet to advance decisively in all components and to the fullest extent, to achieve the HVHS transition. The components in which countries are experiencing major progress are analytics and strategic change and innovation ecosystems. Meanwhile, components related to digital data systems, cost measurement systems, outcome measurement systems, benchmarking, integrated care pathways with bundled services, and integrated provider networks are experiencing moderate progress. The components of value-based payment models and value-based procurement represent areas in which accelerated progression is needed. For example, uptake of value-based payment models remains limited, with a few countries implementing specific regional models. Only a handful of national efforts toward value-based payment have been identified, while some countries have not begun any detail discussions at the governmental level. Across components, the study identified multiple examples of valuable initiatives that could inspire other governments to focus on areas of distinct opportunity to improve and accelerate their transition to HVHS.

We discuss three strategies that G20+ countries could pursue when transitioning to the HVHS model, and provide examples, namely: (I) Extension: extending *scope*—from one to multiple HVHS components—followed by expansion of *scale*—from a small initiative to a health-system wide intervention—; (II) Expansion: expanding scale followed by extension of scope, and; (III) Transformation: a hybrid approach that simultaneously combines

extension with expansion with the introduction of system level transformations. While most countries appear to follow the expansion and extension strategies, fewer embark on a transformational approach.

In pursuing these strategies, countries should invest in five critical enablers that could help accelerate the transition to the HVHS Model:

- **Development of a National HVHS Transition Strategy (NHTS):** high-level strategic documents that recognize commitment to the HVHS model and align a nation's vision for its health system transformation with national political, economic, and social objectives.
- **Leadership:** the demonstration of distributed leadership across all major stakeholders involved in health systems instead of the zero-sum game that currently characterizes it.
- **Financing:** expanded fiscal space and innovative financing measures to invest in NHTS and potentially transformative demonstration projects.
- **Global benchmarking and cross-learning:** the development of a global HVHS data set and case study library to understand better health system transition in G20+ countries and promote cross-learning about what works and what does not among G20+ nations.
- **Innovation:** the creation of an enabling ecosystem that promotes the design, introduction, and scale-up of value-based innovations in health systems and system level receptivity to innovation uptake and diffusion.

The transition to a high-value health system is a critical goal for all G20+ countries to optimize health system functions and deliver high-value health services to citizens. The findings of this study provide valuable information to inform this transition. We propose that the G20+ countries engage in this collective analysis annually to provide ongoing information about the group's evolution in the path of a value-based health system. There is valuable experience among the group of G20+ countries in different components that should encourage cooperation and cross-learning initiatives to achieve a faster transition to a HVHS.

Introduction

Major contextual shifts are generating new opportunities and risks for health systems across the globe. These shifts encompass aging demographics, complex noncommunicable diseases including cancer, cardiovascular disease, and multimorbidity, the emergence of infectious diseases, increasing inequalities, fiscal space constraints, growing citizen expectations, climate change, and technological disruptions. Health systems worldwide are finding it challenging to adapt to these forces, resulting in suboptimal performance, preventable loss of life, and unsustainable expenses for individuals, economies, and societies worldwide.

Decisively managing these transitions requires more than just continuity of existing policies and practices in health systems. The Group of Twenty (G20) countries are developing new approaches to address these crises by shifting to models that generate greater value in health systems. Following the G20 Health Ministers' Declaration in 2020 at the G20 Summit in Riyadh, Saudi Arabia, which prioritized "improving value in health systems," each subsequent summit has reaffirmed this commitment, highlighting various strategies to promote value creation in health systems.[1] In 2021, the G20 Presidency in Rome, Italy have reaffirmed the importance of strengthening health supply chains and investing in health system resilience and effectiveness.[2] In the 2022 G20 Summit in Bali, Indonesia the G20 Presidency reinstated their commitment towards health system strengthening and sustainable financing solutions for health. The Indian G20 Presidency in 2023 focused on efficient resource use, continuous innovation, digital solutions, and better health outcomes. Meanwhile, the Brazilian G20 Presidency in 2024 has underscored the significance of inclusive, efficient, and responsive health systems. With South Africa hosting the next G20 Presidency, there will be a new opportunity to advance this leadership in creating greater value in health systems, particularly addressing the unique challenges and demands of African continent.

Major changes in health systems are needed, and opportunities exist to generate value at scale. The High-Value Health Systems Model (HVHS), developed by the Health Systems

Innovation Lab at Harvard University (HSIL), provides an evidenced-based framework for countries to transition from small-scale value-based healthcare initiatives to system-wide value creation in health and broader economic and political outcomes. The transition to an HVHS requires the introduction of 10 system-wide changes and capabilities in relation to (1) digital data systems (2) analytics, (3) cost measurement systems (4) outcome measurement systems, (5) benchmarking, (6) integrated care pathways, (7) value-based payment models, (8) value-based procurement, and (9) integrated provider networks, underpinned by (10) strategic change and innovation ecosystems.[3]

As part of an ongoing effort to support G20+ nations—including Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, United Kingdom and United States and two regional bodies- the European Union and the African Union—HSIL spearheads an annual initiative to assess the transition towards the value creation at the health system level.[3] In 2023, the initiative presented its inaugural report on "Transitioning to High-value Health Systems in G20+ Countries." The report (I) outlined the framework for assessing G20+ countries' progress in transitioning to a High-Value Health Systems (HVHS) model; (II) discussed progress for each country, including major gaps and opportunities in relation to the 10 HVHS components; (III) outlined three pathways for transition to the HVHS model, and; (IV) presented the critical factors needed to create an enabling environment to accelerate the transition among G20+ nations. This report extends this by deepening the 10 components HVHS model, developing a dataset to assess each component, and including other countries that are introducing changes for HVHS transformation.

The report comprises four sections. The first section outlines the Harvard HVHS model and elaborates on our approach to defining and measuring value within health systems. The second section details the methodology employed to evaluate the transition to the HVHS model across G20+ nations. The third section presents the analysis results, reviews key trends for each G20+ country, and examines how health systems have adopted and implemented the HVHS components, including specific case studies for each country.

Finally, the fourth section addresses the pathways to transitioning to HVHS and discusses strategies to accelerate this transition.

Section 1: The Harvard High Value Health System Model

The Harvard High-Value Health Systems (HVHS) model consists of 10 independent and mutually reinforcing components, each contributing towards and underpinned by continued Strategic Change and Innovation within the health system (**Figure 1**). The components represent both design and delivery components that characterize the ongoing transition in health systems towards a major transformation that generates "value". The HVHS model is detailed in *Building a High-Value Health System*, *Transition to Health Systems: A* Primer,[4] and a position paper on Rethinking Health System Design: *Towards a High-Value Health System Model*.[5]

Figure 1: The Harvard High-Value Health Systems (HVHS) Model. Source: Authors.

The conceptual model builds on and represents an evolution of several critical HSIL frameworks, notably the HSIL Health System Framework and HSIL Complex Healthcare Innovation Framework[4,6–9] – both of which have been used to examine health system performance and analyze the adoption and diffusion of innovations in health systems and

have been applied in more than 30 countries. This prior knowledge and empirical evidence have helped to understand better how health systems behave in different countries, the major forces that influence their performance, and the policies, programs, institutional arrangements, and interventions designed to enhance system performance and ultimately inform the Harvard HVHS model.

The development of the conceptual model has been highly influenced by HSIL's direct involvement in major health system reforms, large global health initiatives, and various healthcare innovations, which have provided valuable perspectives on why value-based approaches are essential and how value could be created in health systems. Finally, the development of the model was also informed by a literature review of published and grey literature to identify and examine similar frameworks that examine value-based healthcare approaches from a health system perspective.

The HVHS conceptual model was introduced and appraised in two different group settings to review and test each component and its various sub-components. First, the model was used during formal engagement with the G20 group of countries leading to the 2020 G20 Leaders' Summit, which culminated in the adoption of the G20 Health Ministers' Declaration. Since then, the model has been applied regularly with groups of senior health officials during HSIL policy consultations, in several Harvard executive education courses to leaders in government, industry, clinical medicine, and entrepreneurs, focusing on type 1 diabetes, "High-Value Surgical Systems", and High-Value Health Systems, as well as in the development of series of case studies for teaching.

Major Principles underpinning the High Value Health System Transformation

High-value health systems are designed to achieve impact at the system level and contribute towards achieving broader economic, political, and sociocultural outcomes. Three major principles differentiate high-value health systems from existing health systems to enable "value for money and value for many":

- **Value:** We define a high-value health service as any health service at the population level or individual level delivered effectively, efficiently, responsively, and equitably in a health system. The core tenet of a high-value health system is to enable people to attain their highest level of health, capabilities, and to participate actively in their societies, unencumbered by limitations in health. Emphasis is on empowering people to understand and actively manage their wellbeing and to deliver high-value health services using existing resources efficiently.

- **Systems Intelligence:** Health systems can no longer be static and rigid social structures in constantly evolving contexts; high-value health systems use existing data and technology efficiently to exhibit resilience and expand system reach to enable communities to adopt healthy practices in their daily life.

- **Context-driven:** High-value health systems reflect the core values and beliefs of the countries in which they are situated. Thus, the high-value health system promotes well-being and delivers responsive health services that aligns with the characteristics of the population it serves and designs and implements innovations at scale to achieve system ambitions.

The 10 High Value Health System Components

The HVHS model consists of 10 inter-dependent and mutually reinforcing components. Each component consists of several value-enhancing elements. Countries that invest in these 10 design components will unlock greater efficiency, responsiveness, equity, and effectiveness in their health systems over the long-term than countries that do not. We provide a summary of each component and our operational definition for it that we will be using for this report below:

(1) Digital data systems involve the design and development of platforms that enable the reporting, collection, and pooling of relevant healthcare data for all major actors within the system. These data systems may include electronic health record (EHR) databases,

registries, or other major data system utilized within the health system. There are several distinguishing features that we have assessed, primarily focusing on EHR databases.

(2) Analytics entails using digital data systems to deploy advanced data science capabilities on relevant health data. This includes the ability to combine, harness, and analyze health data relating to population characteristics, interventions, cost, process, utilization, and outcomes, using machine learning, artificial intelligence, and advanced simulation modeling to enhance healthcare service delivery, resource allocation, and policy development, and inform innovation.

(**3) Cost measurement systems** entail efforts to harmonize cost definition and measurement, so providers, payers, researchers, and policymakers use an established and common framework and process to measure the cost of care and illness and activities in health systems. Cost measurement systems must also enable comparative benchmarking to provide holistic view of healthcare costs among and between providers, payers, and those incurred by patients. In this report we center several of the value creating elements via a harmonized definition and measurement framework.

(4) Outcome measurement systems involve the development of harmonized indicators, measurement, and comparative benchmarking of outcomes relating to the delivery of health services (coverage, utilization, activities, process, and outcomes achieved), as well as Patient Related Outcome Measures (PROMs). As with cost measurement systems, we centered our assessment and value creating elements around a unified measurement framework (PROMSs) and its utilization.

(5) Benchmarking entails the collection and analysis of data that enables comparison over time in a unit (longitudinal benchmarking), across various units of salience (comparative benchmarking) and in terms of level of the health system, the reason for accessing care, and jurisdictions (national vs subnational). In addition to within-country capabilities, benchmarking involves the capabilities of the health system to be compared with other countries of similar size, economic development, and health system overview.

(6) Integrated pathways with bundled services, entails the way in which health services are delivered and connected with one another, especially when patients need to transfer to different levels of the health system such as when seeking specialist support or in management of chronic conditions.

(7) Value-based payment models relate to the implementation of value-based remuneration so that provider payments are based on improving outcomes and reducing the cost of care delivered and the value achieved across the entire care cycle. Such models may include pay for performance bonuses, risk/reward alignment practices, and performance-adjusted capitation payments.

(8) Value-based procurement measures within supply chain management systems, including inventory optimization, underpinned by a digital data system to track the movement of health goods along its value chain. Such methods may include the utilization of data analytics to calculate value of specified goods and centralized purchasing.

(9) Integrated provider networks describe the extent to which various health services are integrated across and within the health system – from the way that providers can communicate with one another to the way that different specialist and generalized health services are integrated with one another.

(10) Strategic change and innovation ecosystem underpins each component and consists of three value-enhancing measures that should underpin every value-based intervention these include the fostering of an innovation ecosystem through governmental support as well as partnerships with private actors and companies to support development and innovation.

Section 2: Methodology

This section provides a brief overview of the new expanded methodology used to evaluate countries' transition to the HVHS model, focusing on the 10 components. Consistent with the previous report, this study adopted a mixed-methods approach to assess and score health systems across G20+ countries. We utilized quantitative methods, surveys, and desk research to establish country scores and evaluate the health system's alignment with the HVHS model. Quantitative methods assessed the model's validity and reliability, while qualitative methods refined the scorecard development. Prior to data collection, the team defined operational criteria for each component, ensuring they were specific, objective, and measurable. The components and their value-creating elements were initially defined based on the original model. After a thorough literature review for each component, the updated definitions were discussed with the HSIL team in several workshops. This iterative process produced final operational definitions for each component, along with value-enhancing elements, which were subsequently used to develop a scorecard and relevant indicators for assessing each G20 health system (**Figure 2**).

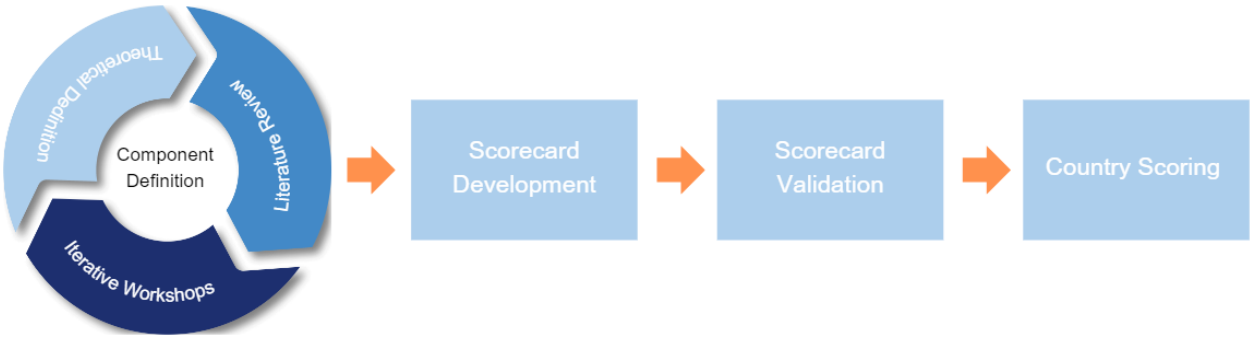

Figure 2: Methodology diagram and description of scorecard development. Source: Authors.

The final scorecard featured 27 value-creating elements, each linked to an indicator from the 10 HVHS components (**Table 1**). Indicators are rated on a scale of 1 to 5, where 5 signifies the highest level of advancement toward HVHS, and 1 suggests a need for additional prioritization and implementation. A score of 0 means that there was no data available to determine a specific score. In contrast to the previous study, all scores were

standardized to a 1-5 range, facilitating simpler comparisons across components and countries, while also allowing for a more detailed analysis.

Table 1: Score Rubric of each HVHS Component and Value-Creating Elements.

Component	Value-Creating Element
Digital data systems	Digital data platforms
	Integrated data sets
	Standardization
	Interoperability
Analytics	Data governance and stewardship
	Reporting
	Reporting
Cost measurement systems	Harmonized definition and measurement
	Adoption
	Reporting
Outcome measurement systems	Harmonized measurement
	Adoption
	Reporting
	PROMS
Benchmarking	Comparative analysis and transparency: in-country
	Comparative analysis and transparency: inter-country
Integrated care pathways with bundled services	Pathways: outcomes
	Pathways and referrals
Value-based payment models	Value-based remuneration
	Risk/reward alignment
Value-based procurement	Value orientation
	Risk/reward alignment
Integrated provider networks	Operational integration
	Structural integration
Strategic change and innovation ecosystem	Strategic public-private partnerships
	Innovation ecosystem
	Innovation ecosystem: research and development

Once a final scorecard has been developed, selected G20+ countries and their health systems were scored. Multiple sources were triangulated to generate component scores for each country. Where possible, existing validated datasets created by consortiums of

global health organizations and experts were prioritized. Where data was unavailable, country-specific sources (e.g., national health strategy documents) were leveraged. Following individual scoring, each country's individual component scores were averaged to generate a composite score for the overall health system.

The research team translated the generated country scores into three categories indicating progression for each HVHS component (**Table 2**). Score of 0 denotes "no data", 1-2 "some progress", 3-4 "moderate progress", and 5 "major progress".

Table 2: Score and its respective definition.

Score Range	Indicator
0	No Data
1-2	Some progress
3-4	Moderate progress
5	Major progress

While our framework allows for benchmarking the country's transition to HVHS, this study does not provide a numerical ranking of health systems concerning the 10 components. Rather, it aims to present a macro-level overview and a snapshot of a health system's advancement at a point in time across these components, to inform G20+ countries in their future efforts to transition to a high-value health system.

Section 3: Results

In this section, we review the major trends of G20+ countries' transition toward a high value health system using the Harvard HVHS model, drawing on results from a range of sources, including surveys, interviews, and desk reviews. This exercise enabled the research team to examine the progress regarding each of the 10 HVHS components. The analysis by country and component provides valuable information about the areas in which G20+ countries could focus their efforts to continue their path toward achieving high-value health systems.

The first part of the Results section reviews the major trends across the G20+ countries in their transition towards the HVHS model and discusses the major trends identified from the analysis. The second part offers a detailed examination of each G20+ member country, highlighting how each nation is adapting to an HVHS within the context of its unique health system design, priorities, and contextual factors. Each country profile includes a case study that illustrates the involvement of stakeholders or groups contributing to the HVHS transition.

This structure facilitates both an analytical overview of the overarching trends in the transition to HVHS among G20+ countries and a more detailed account of each country's specific experiences, including the challenges and opportunities that lie ahead.

Major Findings

Our research indicates that most of the G20+ countries surveyed perform well in specific areas, but major opportunities exist for progress in virtually every component (**Figure 3, Table 3**). Across all countries, major progress was observed for analytics and strategic change and innovation ecosystem. The weakest components, where some progress was observed included value-based payment and value-based procurement, while moderate progress was observed for digital data systems, cost measurement systems, outcome measurement systems, benchmarking, integrated care pathways with bundled services, and integrated provider networks.

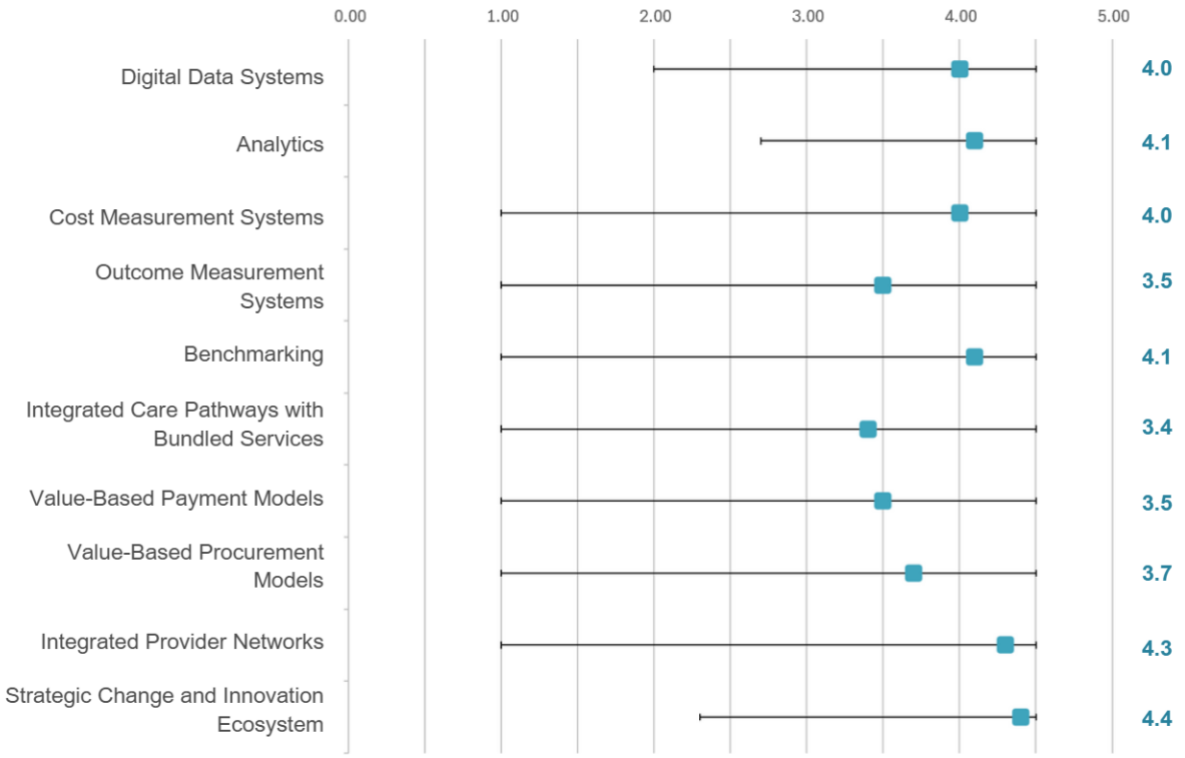

Figure 3: Overview of major findings across the G20+ health systems. Source: Authors.

Digital Data Systems

In relation to digital data systems, all G20+ countries surveyed use some form of digital data system to collect electronic patient record data (average score of 4/5). While most countries use one or multiple data platforms, integration (average score of 3.7/5) and interoperability (average score of 3.5/5) of these systems remain a challenge. In several countries, digital data platforms were not evenly integrated across facilities or multiple platforms were used across facilities, thus hindering data sharing capabilities. Standardization (average score of 3.0/5) also remained a challenge, with only a few countries (Australia, Spain, and Türkiye) having guidelines for standardized reporting. South Korea and Spain have made major progress towards having a unified, standardized and interoperable data system which allows advanced data sharing, communication, and or both patients and providers to easily access necessary data.

Analytics

Seven out of 25 countries have taken the necessary steps and have achieved major progress towards HVHS within the area of analytics (received a score of 4.5 across all of analytical value-creating elements). Every country surveyed has implemented some form of policy on data privacy and stewardship and have a dedicated governmental or organizational body which is responsible for health outcomes reporting (average score of 4.2/5). Several countries had robust data stewardship and protection guidelines with a dedicated organization responsible for outcomes reporting but fell short due to the lack of granular health outcomes data. Countries such as Germany, Netherlands, Saudi Arabia, United Kingdom, and South Korea have performed especially high, strictly enforcing data stewardship policies and producing high quality and regular reporting on health outcomes and health system performance.

Cost Measurement Systems

Most countries have indicated moderate progress towards embracing cost measurement systems (average score of 4.0/5). In our analysis we have identified that most countries have some form of a standardized set of cost indicators which was underscored by a specified measurement framework (average score of 3.4/5). The adoption (average score of 3.1/5) and reporting (average score of 3.3/5) of cost measures varied across countries, with many lacking detailed cost data for some facilities and more rural or low-income regions. Countries such as Spain and South Korea have achieved major-moderate progress across all value creating elements in the area of cost measurement systems, with robust and standardized cost measurement indicators which are consistently used across all regions and levels of the health system.

Outcome Measurement Systems

Most countries have indicated moderate progress towards achieving high value outcome measurement systems (average score of 4.0/5). All surveyed countries have a harmonized measurement framework for measuring outcomes (average score of 3.6/5) with regular reporting (average score of 3.7/5), however several challenges persist. Enforcement of national reporting standards remains a challenge, as low income and rural facilities still lag

behind in reporting granular or standardized data measures. The use of PROMs has been a challenge across all surveyed countries (average score of 2.6/5), as PROMs are often either not used in general or when used, only used in select specialties and facilities. Investment into the implementation as well as the adoption of a standardized measurement system and data reporting format remains a significant opportunity for many countries. South Korea, Germany, and Spain have advanced highly in this area, however, remain limited in their PROM adoption and implementation.

Benchmarking

All G20+ countries performed well in the assessment of the health system's benchmarking capabilities (average score of 4.3/5). All of the countries surveyed have been involved in international reporting of their health outcomes and measures (average score of 3.9/5). Current challenges center around the availability of regional data and facility level data (average score of 3.6/5), arising due to the limitations of the county's outcome and cost measurement systems.

Integrated care pathways with bundled services

Most countries have achieved moderate progress towards having integrated care pathways with bundled services (average score of 3.5/5). Several countries had no available data or achieved some progress in terms of outcomes of patients with complex conditions which require integrated care (average score of 3/5), likely due to limitations in outcome measurements systems as well as due to low levels of integration of specialized, pharmaceutical and primary care services. Most countries have shown moderate progress in establishing and enforcing referral guidelines across facilities (average score of 3.4/5). South Korea and the Netherlands have achieved major-moderate progress in integrating their health systems, indicating low levels of adverse outcomes of patients with complex conditions and enforcing extensive referral guidelines across a range of conditions.

Value-based payment models

A major opportunity in advancing towards HVHS across all countries lies in embracing value-based payment models (average score of 3.5/5). The uptake of value-based

payment models has remained limited, with a few countries implementing specific models in select regions. However, no national efforts have been identified with the exception of China, Japan, Netherlands, and Saudi Arabia which have actively worked towards implementing value-based payment models across the country. Some countries have not begun detailed discussions on transitioning to value-based payment models or have made limited commitments towards its implementation.

Value-based procurement models

Similarly, a major opportunity exists in implementing value-based procurement models (average score of 3.5/5). While most countries indicate commitment towards value-based procurement models, its implementation remains limited, with such models being used in only specific supply chain goods such as pharmaceuticals or within specific regions. Only the Netherlands have achieved major progress in embracing value-based procurement practices, utilizing centralized and green procurement models, Countries such as Germany, Indonesia, Japan, South Korea, and the United Kingdom have exhibited moderate progress in embracing value based-procurement models, however its nationwide implementation remains varied.

Integrated provider networks

Most countries have made moderate progress on the integration of their services and in facilitating structural (average score of 4.3/5) and operational integration (average score of 3.2/5) of their health system (overall score of 3.2/5). Most countries faced challenges in integrating their health systems, in part due to the limited interoperability of digital data platforms which limits communication between providers. Similarly, most countries have faced challenges in structurally integrating their health systems, partially attributed to regional inequalities. Australia has achieved major progress towards integrating their provider networks, enabled by high level of integration of their digital data systems and extensive referral protocols.

Strategic change and innovation ecosystem

Many countries have exhibited a moderate-major level of progress towards creating an innovation ecosystem (average score of 4.4/5). At least 8 G20+ countries have embraced public-private partnerships on a major level to support the development and innovation within the health system, including both foreign and domestic private organizations. Most countries have also invested into the creation of a separate governmental body, dedicated towards supporting innovation and creating partnerships to design and implement new innovative methods within its health system.

Table 3: Assessment of the G20+ countries against the High-Value Health Systems (HVHS) model.

	Component									
Country	Digital Data Systems	Analytics	Cost Measurement Systems	Outcome Measurement Systems	Bench-marking	Integrated Care Pathways with Bundled Services	Value-Based Payment Models	Value-Based Procurement	Integrated Provider Networks	Strategic Change and Innovation Ecosystem
Algeria	2	3	1.3	1	1	2.5	2.5	2	2.5	2.3
Argentina	3.5	3	2.7	3.2	3	3.2	2	3	3.5	3.3
Australia	4.3	4.5	4.7	4.3	4.5	4.5	3	3	4.5	4.5
Brazil	4	4.3	2.7	3.3	4	3.5	3.5	3	2.5	3.7
Canada	3	4.5	2.7	3	3.5	4	1.5	4	2	4
China	3	2.7	3	2.8	3.5	2	4	3.5	3	4.5
Egypt	2.3	3	3.3	2.5	2	2.5	2	2.5	2.5	2.7
Ethiopia	2.8	3	2.3	3.5	3.5	3	1	3	2.5	4
France	3.8	4.5	4.3	4	4.5	4	3.5	3	4	3.5
Germany	4.3	4	4.7	4.5	4.5	4.5	4	4	4	4.5
India	2.5	3.3	2	1.8	3	2	1	1	1	3.3
Indonesia	3.3	3.3	3.7	3.3	4	3	4	4	2.5	3.7
Italy	4.3	4.5	3	4	3.5	2	3	2.5	4	4.5
Japan	4.3	4	3.7	3.5	3	4.5	4	4	3.5	3.3
Mexico	2.3	4.5	3.7	4	4.5	2.5	2	3.5	2	3.3
The Netherlands	4.3	4.5	4.7	3.8	4.5	4.5	4.5	4.5	4	4.5
Nigeria	2.8	4	1	2	3	1	1	1	3	3.7
Russia*	3.3	4.3	3.3	2.8	4	4	3	4	3.5	4
Saudi Arabia	3.5	3	3.7	3.5	3.5	2	3	1	4	4
South Africa	3.3	4.3	2.3	2.8	3.5	4.5	2.5	2.5	3	4
South Korea	4.5	4	4	4.5	4	4.5	3.5	3.5	4	4.5
Spain	4.5	4.3	4.5	4.5	4.5	4.5	4	4	4.5	4.3
Türkiye	4.5	3.5	3	2.5	4	1	2	2	4.5	3.7
United Kingdom	3	4.5	4	4.3	4	4	4	3.5	3.5	4.7
USA**	3.5	4.3	2.3	2.3	2.5	3	4	2	1.5	4.3

*Russia = Russian Federation; **USA = United States of America

Source: Harvard High Value Health System Dataset; HSIL analysis

Country Profiles

Algeria

Health system overview

Algeria's health system is primarily funded by the government, offering free health services at the point of care for all citizens. This system encompasses primary, secondary, and tertiary care levels. A developing private sector serves wealthier individuals who can afford private insurance or pay out-of-pocket for certain services unavailable in the publicly funded system. In terms of health outcomes and financial risk protection, Algeria performs relatively well compared to other North African countries. However, despite its commitment to universal healthcare, the country's health system grapples with challenges like regional health disparities, infrastructure shortages, and workforce constraints.[10,11]

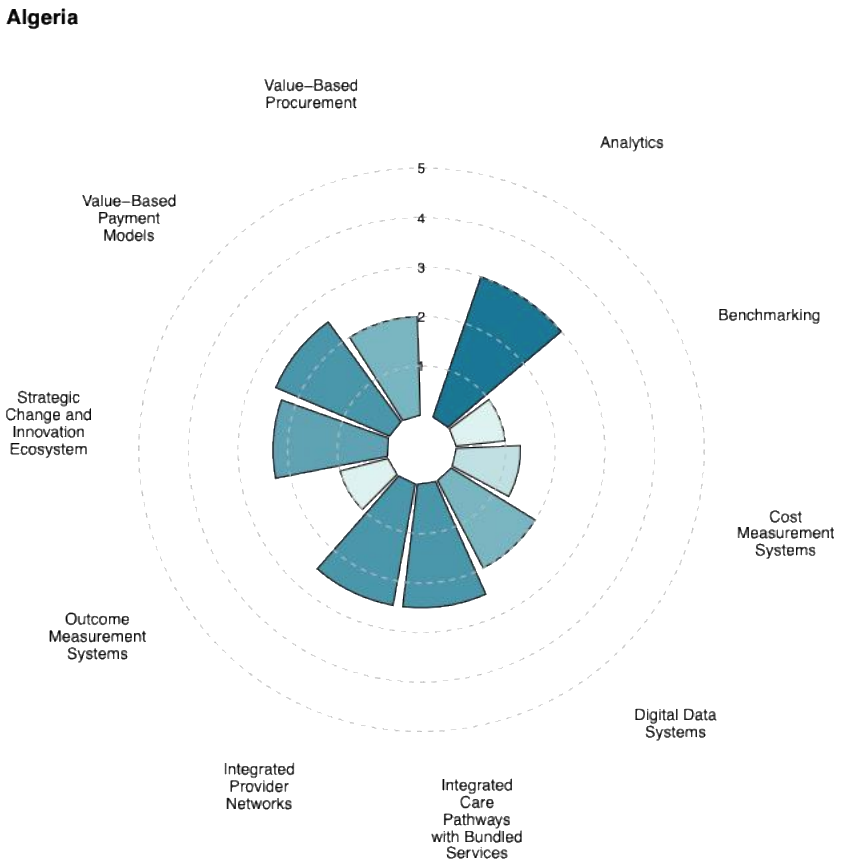

Figure 4: High-Value Health System (HVHS) assessment Algeria. Source: Authors.

Major findings

Overview of progress: Algeria has made some to moderate progress in analytics (score 3/5), integrated care pathways (score 2.5/5), integrated provider networks (score 2.5/5), value-based payment models (score 2.5/5), and the strategic change and innovation ecosystem (score 2.0/5). Algeria has made particularly moderate progress in the area of analytics (score 3/5). Currently, Algeria has no official regulations on data governance; however, the country is in the process of developing regulatory bodies responsible for health data analytics and reporting that are in line with international standards. Algeria has also produced consistent reporting of its health data, with more in-depth data available for select health conditions.

Persistent challenges: Whilst Algeria has made moderate progress towards HVHS, there are major opportunities to prioritize benchmarking (score 1/5), outcome measurement systems (score 1/5), cost measurement systems (score 1.3/5), value-based procurement (score 2/5) and digital data systems (score 2/5). Both cost and outcome measurement systems represent particular challenges. Currently, across the country cost measurement reporting is limited to high-level budgetary data with facility level cost data remaining unavailable. However, efforts are being made to expand and leverage existing data capabilities to report more comprehensive cost measures. The Algerian Ministry of Health is leading initiatives to align health cost data with international standards, but its implementation has been varied by region and facility. Similarly, whilst some reporting of health outcomes exists in the country, Algeria has no national outcome measurement systems or frameworks. Furthermore, very few to no examples of facilities using PROMs have been reported. Low levels of standardization and variation in implementation currently serve as the main barriers for Algeria to carry out widespread cost and outcome measurement initiatives.

Opportunities: Introducing and scaling digital data systems (score 2/5) is a major opportunity for Algeria. Digital health tools and EHRs can greatly enhance the integration of the health system, support data collection, and improve service delivery. Advanced and interconnected EHRs utilizing standardized data collection forms can enhance data

gathering for costs and health outcomes while also improving provider communication and data transfer. Algeria exhibits robust service integration for certain chronic conditions and maternal health. Extending these existing policies to include other diseases, along with increased standardization, can further strengthen health system integration and bolster Algeria's commitment to delivering **effective** care to its population.

Case study: Government Health Financing Scheme (Algeria)

The Government Health Financing system in Algeria is centrally administered by the Ministry of Health, which manages the national health budget.[12] Originating from the 1974 law enabling free healthcare and bolstered by the 1989 Constitution, the program guarantees that essential medical services—ranging from primary care to specialist treatments and hospital care—are either freely accessible or heavily subsidized.[9] The Algerian government dedicates approximately 5-6% of its GDP to healthcare, ensuring that citizens, regardless of income, have access to diagnostics, medications, and surgeries.

Public funds are distributed to healthcare facilities based on service provision and demand, with a focus on equity of access, especially in rural areas. Since 2000, Algeria's universal healthcare coverage has grown from 61% to 75% by 2019, surpassing global averages during this period. The system reimburses citizens for up to 80% of their prescription medication costs, while those with chronic conditions and hospital stays are fully covered.[14] Although not fully tied to outcomes, there are some performance-based allocations for specialized services, ensuring a relatively uniform delivery of care.

The scheme's main achievement is providing universal healthcare at minimal cost to patients, removing financial barriers and enabling broad access to care. The Ministry of Health can prioritize funding for key areas like maternal health and chronic disease management. Despite its achievements, the system faces difficulties like equipment shortages and the emigration of doctors to higher-paying countries, which affect the quality of healthcare.[12]

Argentina

Health system overview

The Argentinian health system operates through a decentralized mixed model and consists of three main sectors: the public sector, social security, and a private health system. Although health policy is carried out by the Ministry of Health, health service delivery is maintained on the municipal level leading to variability coverage and access across the county. [15–17] The public sector system offers universal coverage to citizens which is funded through taxation. Social security (Obras Sociales or OS) provides the most common form of non-public health insurance whose beneficiaries consist of formal sector workers who must enroll in a union-run health insurance scheme, each with varying degrees of coverage. Citizens can also choose to purchase private health insurance schemes, which are mandated to provide the same level of coverage as the compulsory minimum coverage of OS schemes. Recent financial reforms aim to enhance the sustainability of the health system by improving budget management and ensuring equitable resource distribution, leading to Argentina maintaining a high ratio of providers per capita.

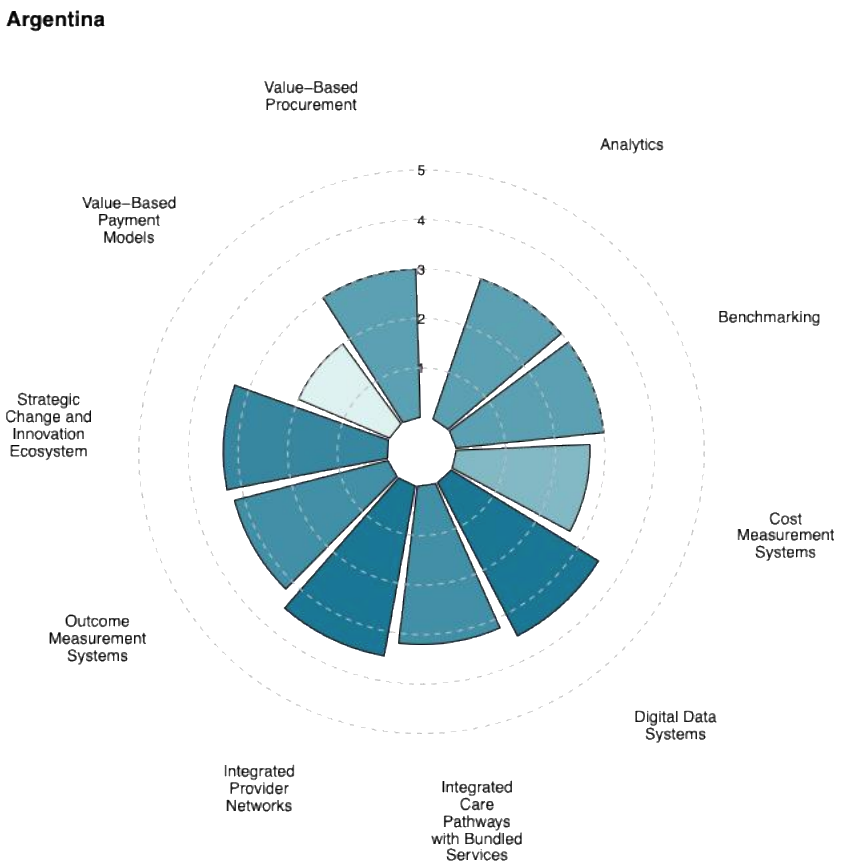

Figure 5: High-Value Health System (HVHS) assessment Argentina. Source: Authors.

Major findings

Overview of progress: Argentina has achieved moderate progress in areas of analytics (score 3/5), and moderate progress in digital data systems (score 3.5/5), outcome measurement systems (score 3.2/5), benchmarking (score 3/5), and integrated care pathways (score 3.2/5). In 2023, the country launched Sistema Unico de Registro de Historias Clínicas Electrónicas and Red Nacional de Salud Digital, advancing national electronic health record (EHR) implementation.[18] The EHR system manages medical history, social determinants, referrals, reporting, and prescriptions, supported by strong data governance policies on data privacy and management. Argentina's Ministry of Health-affiliated Statistics Unit further enhances analytic capacity and reporting. Since 2005, annual health reports have reported detailed health data and patient outcomes in areas like maternal, adolescent, and neonatal health.

Persistent challenges: While Argentina has demonstrated moderate progress in some areas, integrated provider networks (score 3.5/5), strategic change and innovation ecosystem (score 3/5), value-based procurement (score 3/5), cost measurement systems (score 2.7/5), and value-based payment models (score 2/5) remain a challenge. Although Argentina collects extensive health information data, collection of cost data remains limited. The Ministry of Health has released a framework for cost reporting in 2016, however limited evidence has been available to indicate its use throughout the country. As a result, limited cost information is available especially between the different levels of the health system. Value-based models (score 2/5) also remain a challenge in Argentina. The COVID-19 pandemic has accelerated the use of value-based payment models such as additional bonuses for performance based on quality measures, however no further updates or expansion of other value-based payment models have been identified. Argentina currently has a very fragmented set of insurers and providers, with no centralized analytics or benchmarking.

Opportunities: To advance high-value healthcare, Argentina should focus on the expansion of its data collection and analytics to include cost (score 2.7/5) and patient outcome measures (score 4/5). Detailed cost tracking across system levels, services, and equipment can guide future value-based procurement and policy development and support future policies aiming to lower care costs. This data would also bolster Argentina's private market drug procurement initiatives. Support from health system stakeholders and government leaders is crucial to secure funding for these value-based models, while involving private actors could enhance policy implementation, investment, and innovation within Argentina's healthcare ecosystem.

Case study: National digital health data network (Argentina)

Despite providing universal health coverage to its citizens, Argentina continues to face persistent delivery challenges. One of these challenges was the decentralized nature of health data – patients in Argentina often visit multiple health facilities when seeking testing, evaluation, and treatment and typically have to carry hard copies of records between those facilities. In 2021, Argentina's Ministry of Health partnered with an American company to develop the "Sistema Integrado de Informacion Sanitaria Argentina" (SISA), a national health data network to serve patients across 24 provinces.[19] Rebuilding legacy systems with a

scalable, agile technology infrastructure, SISA enables providers to achieve a more holistic view of a patient's health without placing undue burden on the patient themselves to provide that information. Additionally, the centralized nature of the network has enabled better coordination on nationwide initiatives, such as vaccination planning and epidemiological monitoring. More than 6 million patients are served by the platform with a goal of onboarding the entire nation's population in the coming years.[19]

Australia

Health system overview

Australia employs a mixed health system model, primarily structured around the tax-funded public health insurance scheme (Medicare) and is supplemented by a private health insurance sector. Around half of the Australian population owns private insurance to pay for private facility services, enjoy lower wait times, and access a wider selection of health services. This dual system provides Australian citizens with increased flexibility and choice, while enabling private facilities and providers to boost the system's efficiency and capacity. The Australian government has strongly focused on high-value care, emphasizing provider training and professional development, integrated care, and incentivizing high-value services, which is illustrated by its ranking as the third-best health system in the world from a list of comparable developed health systems.[20–23]

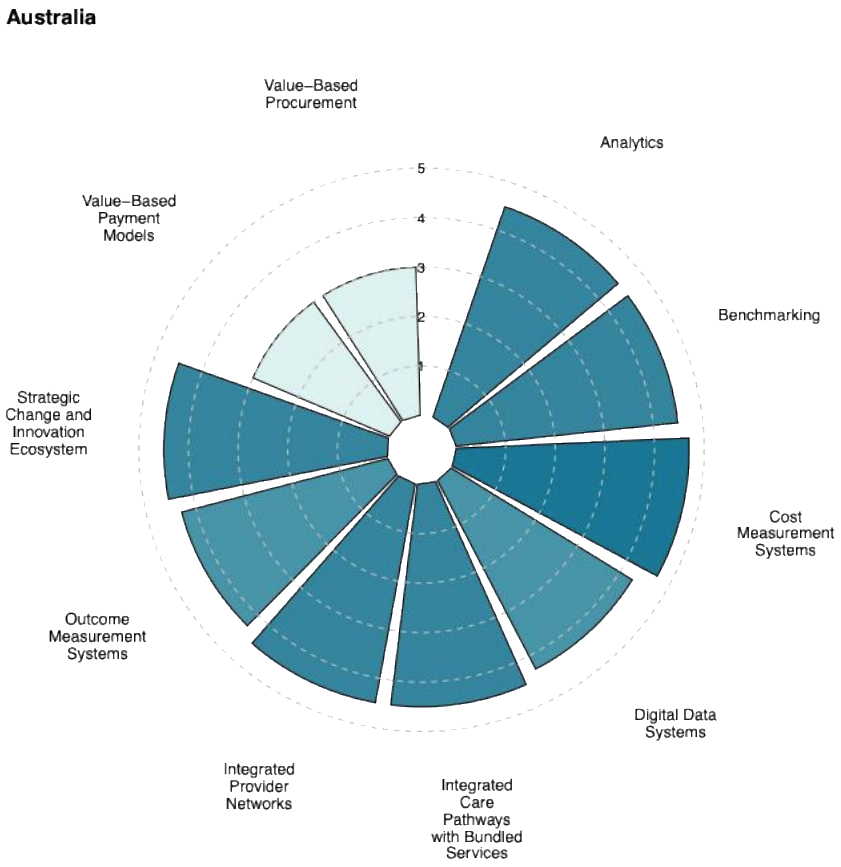

Figure 6: High-Value Health System (HVHS) assessment Australia. Source: Authors.

Major findings

Overview of progress: Australia has illustrated a strong commitment to high value health, achieving moderate progress in the areas of data analytics (score 4.5/5), benchmarking (score 4.5/5), integrated provider networks (score 4.5/5) and strategic change and innovation (score 4.5/5).

Australia's widely adopted EHR system, "My Health Record," combined with robust reporting from the Australian Institute of Health and Welfare and the Department of Health and Aged Care, support extensive health data and cost reporting. Health data is tracked across system levels, geographic regions, and quality domains like timeliness, care quality, and costs, allowing Australia to effectively compare its health system across regions and with other countries abroad. Despite Australia having a hybrid health system model, the health system remains highly integrated (score 4.5/5). Extensive referral guidelines and standards across multiple conditions, regions, and health system levels, in addition to the highly integrated EHR system, enable a smooth transition of care and a high level of integration of services.

Persistent challenges: Although Australia has performed highly in certain areas, value-based procurement (score 3/5), value-based payment (score 3/5), outcome measurement systems (score 4.3/5), integrated care pathways (score 4.5/5), and digital data systems (score 4.3/5) remain limited. Most notably Australia experiences challenges in areas of value-based procurement (score 3/5) and payment models (score 3/5). Although commitments to value-based payment and procurement have been documented, the federal government has not released an official strategy for either element. Select value-based payment models and procurement strategies have been implemented regionally, but without a formal framework, national implementation remains inconsistent and limited to specific areas.

Opportunities: Australia can enhance its **progression** to value-based care through investment and implementation of value-based procurement (score 3/5) and payment models (score 3/5). Leveraging public-private partnerships with formalized commitment

from the government can support a national procurement policy, building on regional efforts and encouraging broader implementation. Australia's strong history of reporting health and quality measures also presents an opportunity to adopt value-based payment models such as quality based bonuses and incentives in health facilities whilst complementing its fee-for-service system. Strategies like bonuses for meeting quality indicators and risk-reward alignment could strengthen current quality initiatives.

Case study: My Health Record (Australia)

My Health Record is Australia's nationwide digital health system, created through a collaboration between the public and private sectors to advance healthcare through digital innovation.[24] Initiated in 2012 by the Australian Digital Health Agency (ADHA), the platform empowers individuals to manage their health information online, giving authorized healthcare professionals access to crucial medical details, such as prescriptions and immunization histories.[25] The Australian government partnered with private organizations like Accenture and Telstra Health to create and secure the system, merging technology with key national health goals.[26]

Utilizing advanced technologies like cloud storage and robust cybersecurity measures, the platform is designed to be secure and user-friendly. This allows healthcare providers to share data in real time, streamlining care coordination and enabling faster, more informed decision-making.[25] My Health Record has been shown in studies to be particularly beneficial in managing medications and within emergency departments, where research indicates that it has improved decision-making in about one-third of cases, reducing medical errors and duplication of efforts.[27]

The system has played a critical role in enhancing the safety and efficiency of healthcare delivery across Australia by ensuring rapid access to patient records and reducing unnecessary testing and medication mistakes. Additionally, it has become an important tool for public health initiatives, including monitoring vaccination rates.[27] This joint effort illustrates the potential of public-private partnerships to drive large-scale healthcare innovations.

With over 23 million Australians now using My Health Record, the service continues to develop, using new technologies like artificial intelligence to further improve healthcare outcomes and operational efficiency.[24]

Brazil

Health system overview

The Brazilian health system is structured around the Unified Health System (SUS), which provides universal coverage to all citizens and residents. Funded by taxes at the federal, state, and municipal levels, SUS aims to ensure access to a wide range of healthcare services. SUS operates through a decentralized model, with local municipalities being responsible for operating, integrating, and managing health services. Primary care providers and community health agents play a vital role in the health system as they are able to operate in low-resource and low-density areas of the country. The system also coexists with a private healthcare sector that offers additional services. In comparison to other countries in the region, Brazil has higher than average wait times yet has higher health access levels than some of the countries in the region.[28–31]

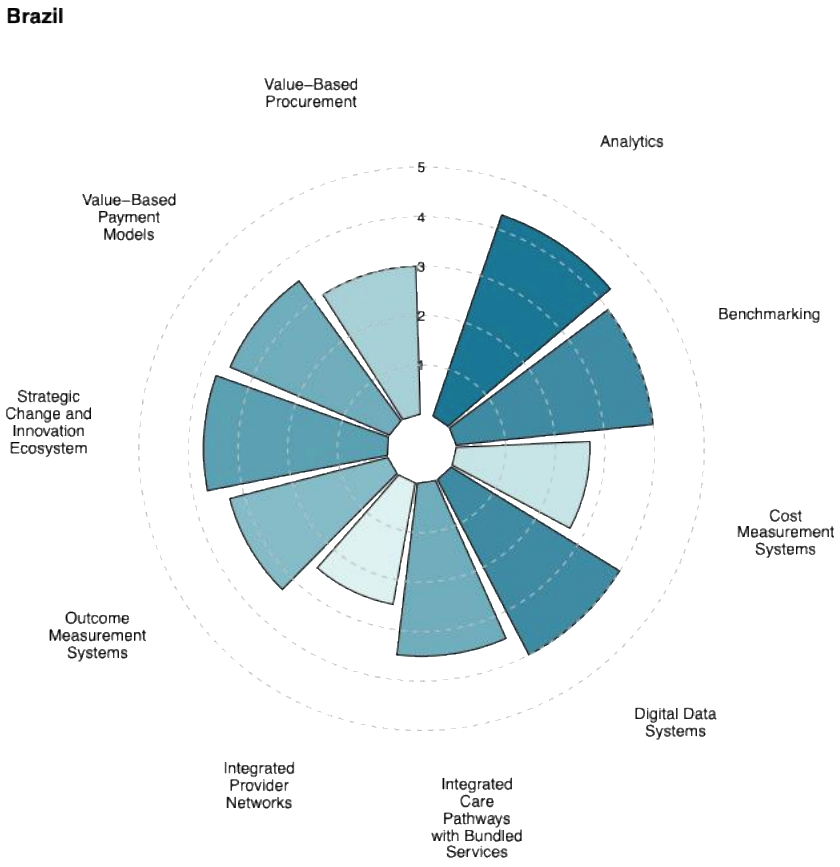

Figure 7: High-Value Health System (HVHS) assessment Brazil. Source: Authors.

Major findings

Overview of progress: Brazil has demonstrated moderate progress towards HVHS, performing highly in areas of analytics (score 4.3/5), digital data systems (score 4/5), benchmarking (score 4/5), strategic change and innovation (score 3.3/5), integrated care pathways (score 3.5/5), and value-based payment models (score 3.5/5). Brazil's consistent investment into primary care and high-value health has accelerated this progression, resulting in the country achieving moderate-major progress in the areas of analytics (score 4.3/5) and benchmarking (score 4/5). Brazil's robust National Health Data Network (RNDS) and the Connect SUS program facilitate health data exchange and collection. As a result, Brazil hosts a secure and integrated registry which is home to health outcomes and information for select diseases and is actively used in health-related decision making and epidemiological surveillance. Recently, innovations such as the introduction of a Data Lake – a repository of health data in the RNDS also support the country's analytic capabilities. Because of availability of some disease-specific data Brazil has been able to benchmark this data across select regions and health systems and more broadly, internationally.

Persistent challenges: Despite continued investment towards primary care and high value health services, several areas including outcome measurement systems (score 3.3/5), value-based procurement (score 3/5), cost measurement systems (score 2.7/5) and integrated provider networks (score 2.5/5). Integration of provider networks (score 2.5/5) of the Brazilian health system remains a persistent challenge. Brazilians often experience long wait times, particularly for specialist services and transfers between health system levels, resulting in insufficient levels of follow up care and gaps in the care continuum. The COVID-19 pandemic has worsened this issue, increasing the backlog of elective services like non-essential surgeries. Despite the introduction of municipal coordination centers, fragmented management across municipalities hinders effective integration and results in duplication of services. This fragmentation also extends to data collection, resulting in unequal health and cost reporting across regions and facilities.

Opportunities: In order for Brazil to progress towards HVHS, additional efforts should be put towards increasing the implementation of its digital health via digital data systems

(score 4/5) and integrated care pathways (score 3.5/5). Greater permeability of digital health products can improve data collection and thus analytic and reporting capabilities. A well-integrated digital health system can also improve overall health system integration and increase service delivery via increased ease of communication between providers within the health system and ease of health data transfer across facilities. Additional measures to improve health system integration can also reduce current regional inequalities and disparities observed within the health system, especially between rural and urban areas.

Case study: National Health Information and Informatics Policy (PNISS) (Brazil)

Brazil has made great progress in the development of digital data systems and analytics within the health sector in the recent years. Public policies such as the National Health Information and Informatics Policy (PNISS) and Informatiza APS implemented during the COVID pandemic as well as a National Digital Health Strategy 2020-2028 which has been developed by the Ministry of Health has enabled greater adoption of digital technology in the country.[32] By 2023, 87% of facilities across the country have adopted digital health systems and 32% of facilities have a fully electronic patient data storage system. Large inpatient facilities and primary health units have been at the forefront of adoption of this technology and host a wide range of clinical data ranging from demographic characteristics to clinical images, and immunizations. More than half of facilities in Brazil have electronic systems which allow patients to book appointments, request prescriptions and imaging tests, and requests for lab tests. DATASUS – the governmental department responsible for supporting and integrating health data processes, also supports efforts to connect facilities amongst all 27 states through the implementation of virtual cloud containers which are provided to each state. These efforts, support from both private and public actors, and increased digitalization has allowed Brazil to integrate health and demographic data into several analytic reports including on health expenditures (enabled by the National Health Accounts system), and health data (National Health Data Network).[33]

Canada

Health system overview

Canada provides universal health coverage for medically necessary services through a publicly funded healthcare system. This is governed by the Canadian Health Act, which allows the 13 provinces and territories to develop their own insurance plans, provided they adhere to the five pillars: public administration, portability, comprehensiveness, accessibility, and universality. This ensures that all Canadians have access to the vast majority of services delivered by physicians and hospitals. Notably, dental and vision services remain privatized, funded by out-of-pocket payments and private health insurance. However, over the past decade, the Canadian healthcare system has faced several challenges. These include, but are not limited to, increased wait times for both elective and emergency care, lack of access to a primary care physician, and increased out-of-pocket spending on healthcare-related costs. In response, provincial healthcare systems have begun implementing initiatives oriented toward providing higher-value health services for their citizens.[34,35]

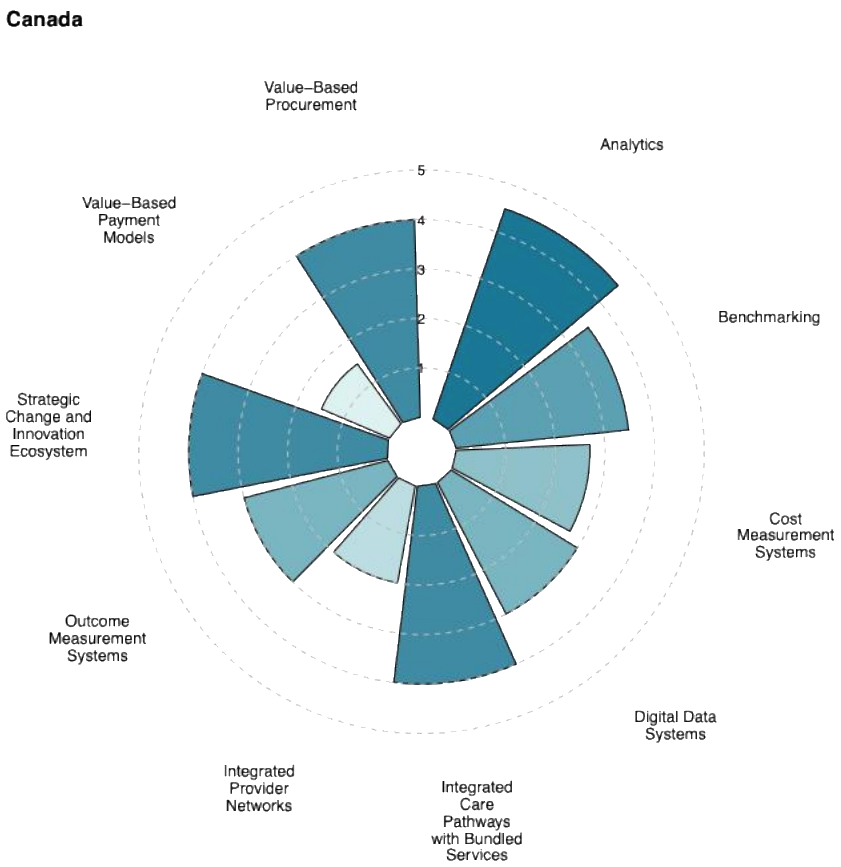

Figure 8: High-Value Health System (HVHS) assessment Canada. Source: Authors.

Major findings

Overview of progress: Canada has made moderate progress towards HVHS in areas of analytics (score 4.5/5), integrated care with bundled services (score 4/5), strategic change and innovation ecosystem (score 4/5), benchmarking (score 3.5/5), digital data systems (score 3/5), outcome measurement systems (score 3/5), and value-based procurement (score 4/5), Canada has made strategic efforts in implementing components related to high-value health, the most notable being within the areas of data analytics (score 4.5/5), benchmarking (score 3.5/5), and integrated care pathways with bundled services (score 4/5). In 1994, Canada developed an independent, not-for-profit organization named the Canadian Institute for Health Information (CIHI) that is responsible for managing and reporting on databases that collect information about health system performance and overall health status of Canadians. This has allowed for the regular and systematic

reporting of healthcare metrics as well as the ability to perform comparative benchmarking across facilities and provinces. CIHI also works with multiple multi-lateral organizations such as OECD on their health system benchmarking reports.

Persistent Challenges: Despite notable progress, Canada experiences multiple challenges especially in areas of value-based payment (score 1.5/5), integrated provider networks (score 2/5), and cost measurement systems (score 2.7/5). Despite innovations geared toward integrated care materializing across the nation, Canada's healthcare system remains fragmented. This is demonstrated through the lack of interoperability between Electronic Medical Record Systems (EMRs) within the nation. Although the adoption of EMRs has increased within the nation, they remain siloed and do not offer a seamless point of interaction for patients and providers. In addition, while CIHI exists as a national organization to collect and report on health system data, several provinces and territories are not mandated to submit all relevant data. Finally, there is a lack of unified cost and outcome measurement frameworks across institutions from departmental, institutional, regional, and national levels, which can lead to discrepancies in the data quality and prevents harmonized measurements.

Opportunities: To move toward high-value health, Canada should focus on enhancing the interoperability and standardization of digital data systems, starting with Electronic Medical Records. Healthcare systems, providers, and patients should be able to access their entire health records seamlessly and across provinces. Furthermore, Canada should begin to expand integrated health services across different conditions and ensure that harmonized cost measurement systems are in place to assess the true cost and benefits of these alternative payment plans. Finally, while Canada leads in digital innovation, there needs to be a greater emphasis placed on ensuring that Canadian solutions can be sustained and scaled across the health systems and that they move beyond the provinces from which they originated.

Case study: Patient Reported Measures (Canada)

Over time, Canada has actively taken steps to integrate PROMs and PREMs data collection across facilities, hospitals, and clinics. As patient experiences and outcomes have gained prominence, several efforts, both nationwide and province-specific, have been carried out to integrate PROMs and PREMs into the health system across a wide spectrum of diseases.[36] For example, in 2017 the Canadian Institute for Health Information (CIHI) – an independent, pan-Canadian organization for health systems databases and measurement, rolled out the first national PROMs data collection standard for knee and hip arthroplasty surgeries. These guidelines included suggested survey time points, minimum PROM instruments, and the English and French versions of the Oxford Hip Score (OHS) and EQ-5D-5L (a generic and highly validated PROM used to support cost-effectiveness studies). Notably, EQ-5D has been widely used in a variety of contexts across health systems, allowing cross-comparisons across specialties and specific facilities whilst maximizing participation.

Most notably, Alberta has taken the lead in integrating PROMs and PREMs into their health system. Alberta Health, Alberta Health Services (AHS), and the Health Quality Council of Alberta (HQCA) have jointly agreed to use and implement EQ-5D.[37,38] Mentioned in official reports as early as 2014, EQ-5D has been frequently collected and has been used to create standardized population norms for the province. Alberta's commitment to the usage of EQ-5D has led to the instrument to be incorporated into a new province-wide Connect Care electronic health information system and a designated research and support unit which helps to implement the tool in local health facilities and conduct research using the instrument. In many ways due to these efforts, EQ5D has also been integrated throughout the health system and has been used for the evaluation of a wide range of services including community care, rehabilitation, orthopedic, cancer, and transplant care. Not only leading the way in PROM collection, but Alberta has also been at the forefront of collecting patient experience data using PREMs. Since 2011, Alberta Health Services (AHS) collects and reports inpatient experiences and ratings on a quarterly basis and routinely collects PREMs using randomized sampling. Amongst the 9 different PREM instruments that are used to collect data, around 25 000 adult and 2500 pediatric patient experiences are captured annually. Alberta has been a great example of integrating both specialized and specific patient experience and outcome tools within the health system and across numerous conditions. This continued commitment to the use of PROMs and PREMs has allowed wide integration of PROM and PREM data across the province and has allowed patient voices to shape current and future health policies in the province.[36]

China

Health system overview

Supplemented by private insurance, China has achieved near-total universal coverage via a mix of three public insurance schemes: the Urban Employee Basic Medical Insurance (UEBMI), Urban Resident Basic Medical Insurance (URBMI), and New Rural Cooperative Medical Scheme (NRCMS). Financed by a combination of government subsidies, employer, and employee contributions, these schemes provide the main source of coverage for Chinese citizens, covering services ranging from traditional medicine to prescription medications. Working under a decentralized model, provinces are mainly responsible for implementing national policies, funding and operating health facilities, and overseeing public health initiatives. Rapid uptake of digital health and major reforms since 2011 have enabled China to achieve a dramatic increase in health coverage for its citizens.[39–41]

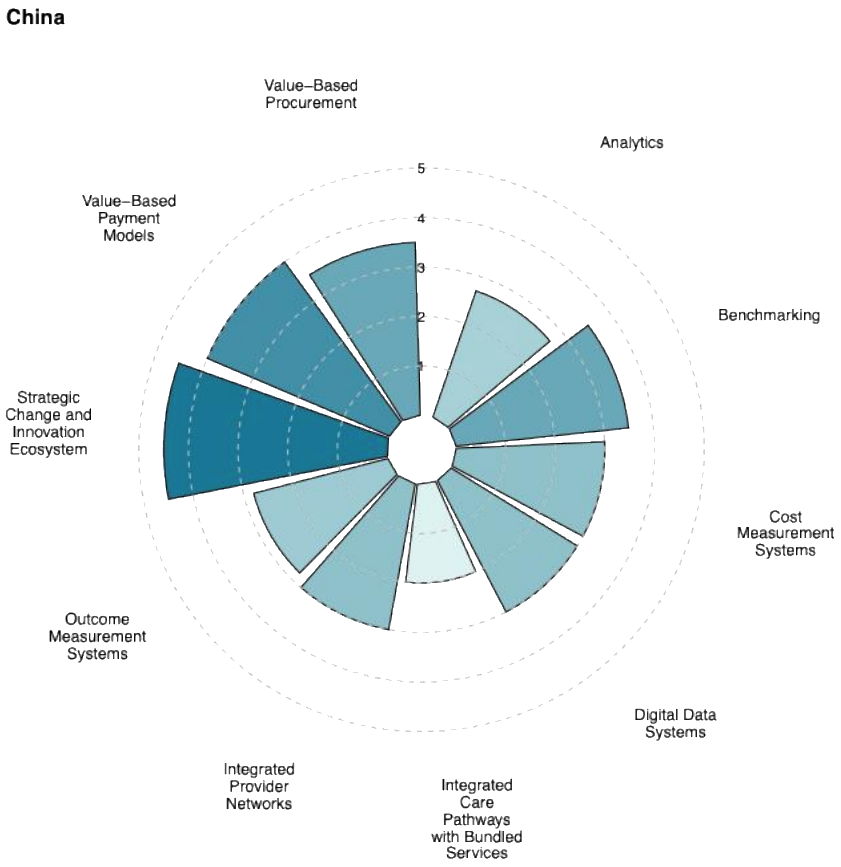

Figure 9: High-Value Health System (HVHS) assessment China. Source: Authors.

Major findings

Overview of progress: China has been continuing to move towards high value health, demonstrating moderate progress in strategic change and innovation (score 4.5/5), value-based payment models (score 4/5), value-based procurement (score 3.5/5), and benchmarking (score 3.5/5). Major-moderate progress has been observed especially in the areas of strategic change and innovation (score 4.5/5) and value-based payment models (score 4/5). China has made strong commitments to explore various value-based payment models building of previously rolled out piloted program – the "Diagnosis Intervention Packet" which has been explored as an alternative to fee for service model. Since 2020 the national government initiated a selection of 71 cities to pilot the program, with implementation remaining at regional level. Due to China's investment into the health and education sectors, the country became the second-largest producer of health sciences research. The establishment of the National Health Commission, under the Healthy China 2030 Initiative, further aims to support the innovation ecosystem via funding both public and private partners in enhancing the country's health system.

Persistent challenges: Despite progress, China experiences challenges in areas of integrated provider networks (score 3/5), integrated care pathways (score 2/5), outcome measurement systems (score 2.8/5), cost measurement systems (score 3/5), and digital data systems (score 3/5). Current challenges within the Chinese health system persist due to low levels of integration of its health services (score 2/5) and digital data systems (score 3/5). Whilst some referral guidelines exist, there are only a few specific referral criteria which are underutilized making it difficult for providers to effectively refer patients to the appropriate levels and for patients to receive multidisciplinary care. Similarly, because of multiple EHR systems being used across the country, standardization and interoperability between data platforms and facilities remain low, resulting in low digital data system advancement. This translates to limited capabilities for data sharing or transfer between facilities, especially in smaller cities and health centers where EHR use has been low.

Opportunities: One of the most effective ways for the Chinese health system to move towards the provision of high value health is to further support its value-based

procurement initiatives (score 3.5/5) as well as continued investment in digital health. China has piloted value-based procurement programs since 2019 and has demonstrated clear commitment via expansion of the program to other product categories and regions. China's investment and recent commitment towards digital health under Healthy China 2030 also has the potential to improve data systems' integration and implementation, especially in more rural regions and provinces. This additional investment can help improve the health system's integration and, as a result, help China to deliver more care to its citizens, especially in rural areas.

Case study: Diagnosis-Intervention Packet (DIP): A Value-Based Payment Model (China)

The Diagnosis-Intervention Packet (DIP) reform in China, initiated as a pilot in 2018 and expanded nationwide in 2020, represents an innovative approach to value-based payment aimed at curbing rising medical expenditures. Unlike traditional fee-for-service models, DIP consolidates payments based on predefined case groups, integrating a global budget framework to control costs while ensuring medical quality. Under DIP, medical services are reimbursed based on case types, with each case group assigned a specific point value reflecting its average cost. This point system is adjusted annually based on the total regional budget and the overall medical expenditure within a region, creating an incentive structure for providers to maintain efficiency without compromising patient care.[42,43]

DIP has demonstrated success in reducing costs and improving efficiency, particularly in urban areas like Guangzhou. Studies show that after its implementation, the average daily drug costs for elderly hypertensive patients in Guangzhou decreased significantly, contributing to an overall reduction in medical expenditure by nearly 50% over a three-year period. Furthermore, the reform led to changes in medication patterns, with a notable decline in the use of high-cost anti-tumor and anti-infective drugs, demonstrating the model's effectiveness in promoting cost-effective treatment pathways.[44,45]

Building on its successes, the DIP reform now seeks to expand its reach to ensure equitable impact across different insurance groups. While DIP has effectively reduced hospital stays and improved readmission rates, there are opportunities to enhance its implementation so that both Urban Employee Basic Medical Insurance (UEBMI) and Urban and Rural Residents Basic Medical Insurance (URRBMI) beneficiaries experience consistent benefits.[46]

Egypt

Health system overview

In the wake of political instability, Egypt's health system has made consistent progress. With a mixed model involving both public and private stakeholders, it strives for universal coverage. The government primarily funds the public system, which offers most services; citizens can also obtain private insurance from a rapidly expanding private sector. Many Egyptians turn to private healthcare for specialized treatments, particularly for non-urgent issues or when public sector wait times are lengthy. Despite recent reforms aimed at improving access, quality, and chronic disease management, regional discrepancies in care persist.[47,48]

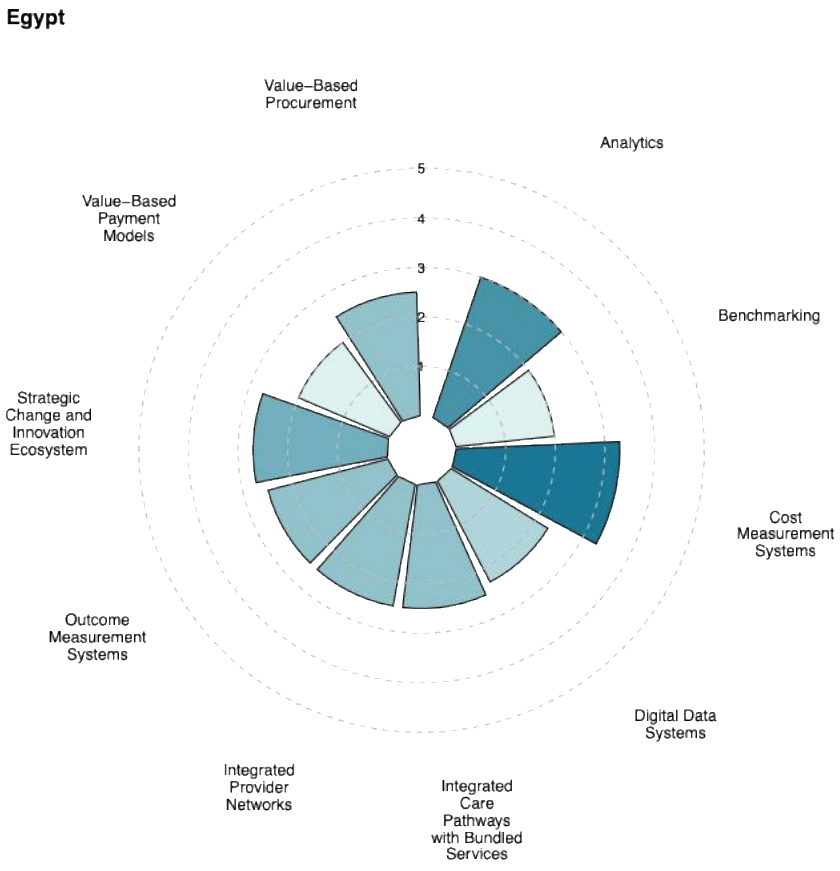

Figure 10: High-Value Health System (HVHS) assessment Egypt. Source: Authors.

Major findings

Overview of progress: Egypt has demonstrated progression towards HVHS especially in areas of cost measurement systems (score 3.3/5), analytics (score 3/5), strategic change and innovation (score 2.5/5). Egypt has made several strides towards strengthening their analytic and health information systems (score 3/5), currently transitioning towards an all-electronic system and introducing more robust legislation on digital data protection and privacy in 2020. Databases such as the National Disease Surveillance System is operational across all Egyptian governates and reports on 41 infectious diseases illustrate Egypt's current move towards embracing digital technology and analytics. Using health information systems, all public facilities report cost data using standardized reporting frameworks. Whilst not being integrated across all facilities, consistent reporting and use of standardized measures creates a baseline for Egypt to continue its development in the future.

Persistent challenges: Whilst progress has been made in digital data systems (score 2.3/5), outcome measurement systems (score 2.5/5), benchmarking (score 2/5), integrated care pathways (score 2.5/5), value-based payment models (score 2/5), value-based procurement (score 2.5/5), and integrated provider networks (score 2.5/5). Despite some data being collected in Egypt's health facilities, the country scores low on its benchmarking capabilities (score 2/5) and its value-based payment model integration (score 2/5). Large variations in available data and health outcomes makes it difficult to benchmark the performance of Egypt's health system, especially across geographical regions and health system levels. Although Egypt does participate in international health comparisons within the MENA region, its participation is also limited to a few outcomes and health conditions. Challenges also persist in the pursuit of value-based payment models (score 2/5). Some value-based models such as bundling of services in the public system have been piloted, however because most of the services in the health system are paid via out-of-pocket payments, implementation remains highly limited.

Opportunities: Future opportunities for Egypt to pursue high-value health center around strengthening its strategic change and innovation ecosystem (score 2.5/5). Strategies such

as embracing public private partnerships at the governmental level and building on the country's current economic reform agenda which puts heavy emphasis on public-private partnerships can further promote innovation and the integration of the private sector with Egypt's health system. Additionally, leveraging the private sectors financing and capital can enhance Egypt's current digitalization and quality improvement efforts across both public and private facilities.

Case study: Unified Procurement Authority to Drive Value-Based Procurement (Egypt)

Egypt has been engaged in healthcare reform in pursuit of achieving Universal Health Coverage by 2030. A key component of its reform strategy includes value-based procurement, led by the Egyptian Authority for Unified Procurement, Medical Supply, and Medical Technology (UPA), established in 2019. The UPA's work includes multiple activities, such as procurement policy development and maintenance of the country's strategic medical stockpile in case of emergency circumstances. The UPA also functions as a single negotiator on behalf of public and private providers in Egypt to secure the best pricing on pharmaceutical products, healthcare supplies, and healthcare equipment. Since 2009, Egypt leveraged an external reference pricing system with mixed results in terms of affordability – the UPA's value-driven procurement approach seeks to drive down costs for the health system overall.[49,50]

Ethiopia

Health system overview

The Ethiopian health system integrates community-based and public health services. Given its largely rural population, community health posts and primary care clinics are central to this structure, providing both health services and education. In contrast to many health systems, Ethiopia's is funded through a blend of out-of-pocket payments, government funding, and external donations. The Ethiopian government is currently prioritizing the provision of Universal Health Coverage to improve access to care, particularly for rural and low-income communities.[51–53]

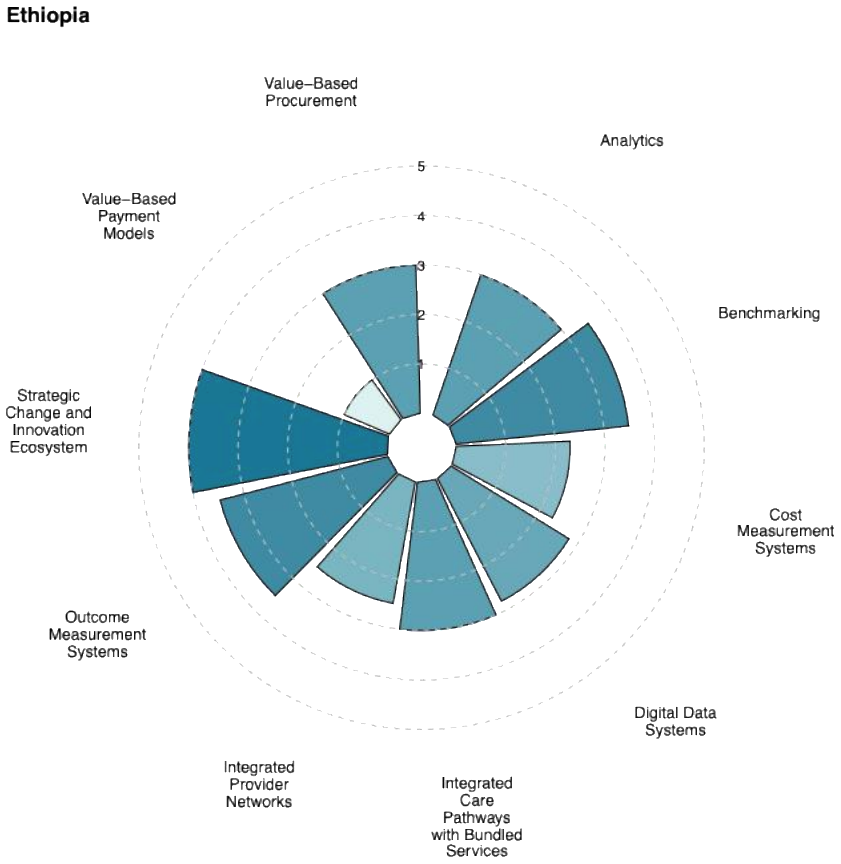

Figure 11: High-Value Health System (HVHS) assessment Ethiopia. Source: Authors.

Major findings

Overview of progress: Ethiopia has made moderate progress in creating a strategic change and innovation ecosystem (score 3.3/5), outcome measurement systems (score 3.5/5), benchmarking (score 3.5/5), value-based procurement (score 3/5), and analytics (score 3/5). Ethiopia has been embracing high value health through its commitment to strategic innovation and public private partnerships (score 3.3/5). Large foreign donors have a strong presence in Ethiopia. Organizations such as USAID support initiatives such as Private Health Sector Program and the Digital Health Activity initiative which help invest and collaborate with the private sector to improve health outcomes in key health areas and promote digital health. Innovation ecosystem is further supported through research and development activities where Ethiopia ranks 8th highest producer of health science publications in the African region.

Persistent challenges: While considerable progress has been made, digital data systems (score 2.8/5), cost measurement systems (score 2.3/5), value-based payment models (score 1/5), and integrated provider networks (score 2.5/5) remain a challenge. One of the largest challenges for the Ethiopian health system has been its low use of value-based payment models (score 1/5). Currently, limited information is available on value-based payment models in the country including evidence of use as well as formalized commitment of the federal government towards using value-based payment models to improve health quality and outcomes.

Opportunities: One of the main avenues for Ethiopia to shift towards high value health is by investing resources towards its outcome measurement systems (score 3.5/5). Currently national frameworks for monitoring performance and health outcomes exist in Ethiopia within select diseases and for hospital performance. A few specialties such as oncology also have embraced the use of PROMs in the country allowing for moderate benchmarking and reporting capabilities. By expanding their current measurement frameworks and infrastructure Ethiopia can make great gains in outcome reporting, supporting evidence-based practice and health system evaluation in the process.

Case study: Digital Health Activity (DHA) (Ethiopia)

The Digital Health Activity (DHA) in Ethiopia represents a strategic initiative aimed at modernizing healthcare delivery through the integration of digital health solutions.[54] Supported by USAID and the Ministry of Health, DHA focuses on enhancing health information systems to improve access and efficiency, particularly in maternal and child health and infectious disease management. The initiative emphasizes interoperability and the implementation of electronic medical records (EMRs) and telemedicine, significantly benefiting rural communities with limited healthcare access. Despite challenges such as digital literacy and infrastructural limitations, the DHA serves as a scalable model for digital health in low-resource settings, demonstrating Ethiopia's commitment to enhancing healthcare equity and delivery across the nation. Continued investments in training and infrastructure will be crucial for sustaining progress and expanding the reach of digital health benefits to a larger population.

France

Health system overview

France operates a decentralized mixed model centered on universal health coverage. Its statutory health insurance system serves nearly all residents and is overseen by various funds that include employer and employee contributions alongside taxes from different income sources. The nation has a blend of public and private facilities, with many private establishments providing outpatient services. Patients are free to select their providers but are encouraged to choose a "preferred doctor" for enhanced coordination of care. Currently, the French health system faces challenges in addressing the health needs of its aging population, rising healthcare costs, and reducing disparities across regions.[55–58]

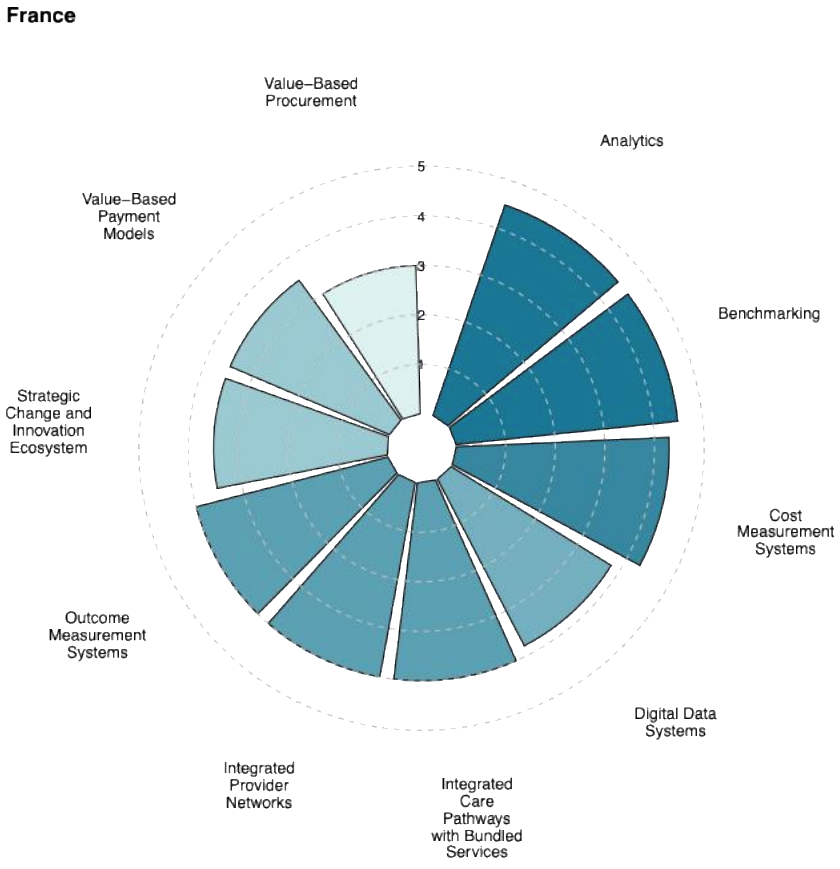

Figure 12: High-Value Health System (HVHS) assessment France. Source: Authors.

Major findings

Overview of progress: France has achieved moderate progress in analytics (score 4.5/5), benchmarking (score 4.5/5), cost measurement system (score 4.3/5), outcome measurement system (score 4/5), integrated care (score 4/5), and integrated provider networks (score 4/5). Building on our findings from the 2023 report, France has made great progress on moving towards high value health especially in its analytic (score 4.5/5) and benchmarking (score 4.5/5) capabilities. France is home to numerous robust data management and governance policies with the Directorate for Research, Studies, Evaluation, and Statistics (DREES) plays a significant role in increasing data availability, health data oversight, and analytics. Such strong practices translate into France's high benchmarking capabilities, with data being readily available across health facilities, and regions. France is also a frequent participant in several European Union (EU) and OECD reports which benchmark countries in terms of their health outcomes and health system performance.

Persistent challenges: Whilst France has made moderate progress, there are major opportunities to prioritize value-based procurement (score 3/5), strategic change and innovation (score 3.7/5), value-based payment models (score 3.5/5), and digital data systems (score 3.8/5). The French health system experiences challenges in ensuring full integration of its data systems (score 3.8/5) and value-based procurement (score 3/5) across regions. While the national EHR platform (Dossier Médical Partagé) exists, not all facilities participate in the system limiting operational integration of health services and the platform's data transfer and sharing capabilities. Similarly, while value-based procurement practices have slowly been taken up in France, its implementation varies across regions and there is no singular framework used for procurement. France's strong tradition of traditional procurement approaches by its health providers also make the implementation difficult.

Opportunities: Current opportunities for France in progressing towards HVHS lie in further integrating its health system, particularly in integrated provider networks (score 4/5) and integrated care pathways (score 4/5). Whilst France offers its patients broad

choices of providers, this capability combined with a lack of primary care physician referral to seek specialist care makes the health system in France fragmented, especially in areas of elderly care and mental health which require multidisciplinary care. Several policies have been implemented in France to promote integration of health services such as re-organization of payment schemes to providers, which can serve as windows of opportunity for France to shift towards high value health.

Case study: e-Satis: Standardized, Patient-Centric Outcome Measurement (France)

The e-Satis system, developed by the French National Authority for Health (HAS), is an outcome measurement tool launched in 2016. Its purpose is to standardize the collection of Patient-Reported Outcome Measures (PROMs) and Patient-Reported Experience Measures (PREMs) specifically within the medicine-surgery-obstetrics sector of hospitals. By using uniform questionnaires, e-Satis enables hospitals to consistently gather data on patient satisfaction and care quality, leading to actionable insights into healthcare performance.[59]

Due to its initial success, e-Satis has expanded to include outpatient surgery, follow-up care, rehabilitation services, home hospital services, and mental health care. This evolution has created a unified platform for tracking healthcare outcomes, allowing hospitals to benchmark their services and enhance care delivery based on patient-reported data.

The system assigns each hospital a satisfaction score (out of a range between 1 and 100), which is publicly accessible. This transparency helps patients make informed decisions about their care. Additionally, patient comments, known as "verbatims," are collected and analyzed for qualitative insights.

e-Satis data is also essential for healthcare facility certification and is integrated into financial incentive programs aimed at improving quality. This comprehensive approach has become a key component in monitoring healthcare performance and quality improvement efforts across France, establishing a national standard for outcome measurement systems.

Germany

Health system overview

Germany's health system ensures universal coverage through a statutory health insurance (SHI) model, mainly funded by employers and employees, with a limited government role. The majority of the population participates in SHI, which includes extensive services such as inpatient and outpatient care, mental health support, medical rehabilitation, dental, and prescription services. High-income individuals have the option to choose private health insurance, allowing nearly all residents to access essential health services. The system's efficiency is bolstered by cost-control measures like structured price negotiations, regulated drug prices, and standardized medical fees, while patients enjoy the freedom to choose their providers. Despite performing comparably to most EU nations, the health system is currently under strain, facing a projected shortage of over 1.8 million medical professionals in the coming years.[60,61]

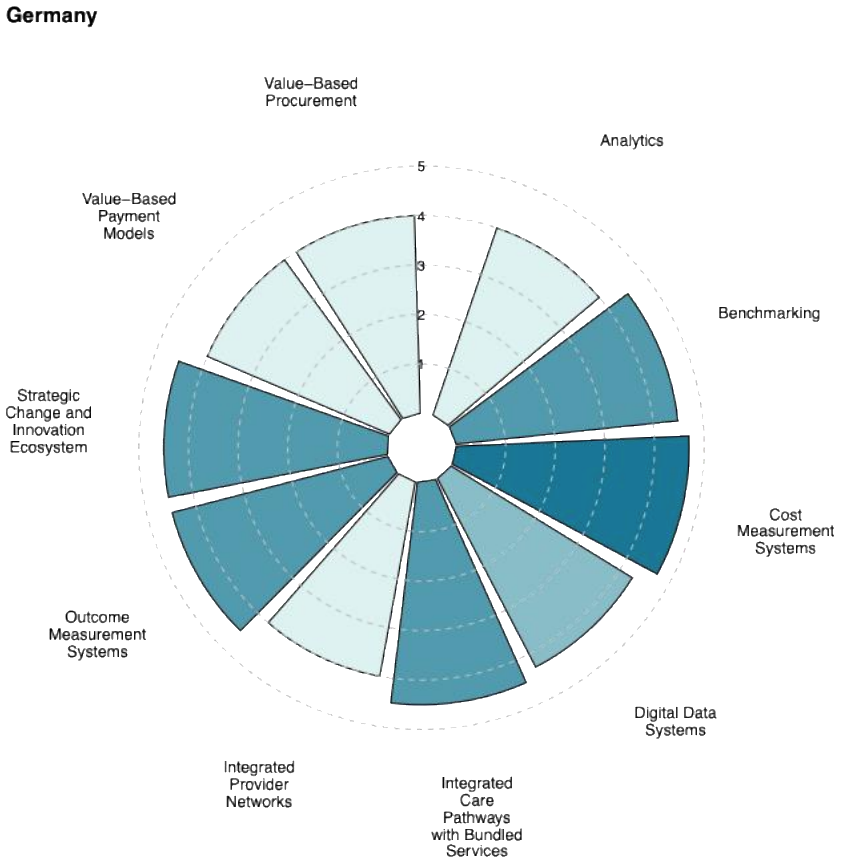

Figure 13: High-Value Health System (HVHS) assessment Germany. Source: Authors.

Major findings

Overview of progress: Germany has made moderate to major progress in analytics (score 4/5), cost measurement systems (score 4.5/5), integrated care pathways (score 4.5/5), and outcome measurement systems (score 4.5/5). Germany has made numerous impressive advancements towards high value health, especially in areas of data analytics (score of 4/5), benchmarking (score 4.5/5), and strategic change and innovation (score 4.5/5). Over the past decade, the country has heavily focused on digitization and electronic health systems, rolling out electronic medical chip cards in 2015 to all SHI-insured patients for accessing demographic, insurance, and clinical data. These initiatives are supported by the robust 'Telematics Infrastructure' for secure information exchange and stringent data stewardship guidelines, enabling the integration of clinical data into disease registries like the Centre for Cancer Registry Data (ZfKD) for public reporting. As a result, Germany has a robust, standardized, and comprehensive data system, allowing for performance comparisons across regions and across countries in Europe and the OECD.

Germany has long been a supporter of innovation within the healthcare sector, supporting multiple large private-public partnerships to improve healthcare delivery, infrastructure, and innovation. The Federal Ministry of Health (Bundesministerium für Gesundheit, BMG) plays a central role in coordinating investments in digital health and innovation, especially in areas of health system recovery and R&D, continuing the country's long history of scientific innovation as one of the top 3 producers of health sciences research in the world.

Persistent Challenges: Germany has made moderate progress, with regard to prioritizing and scaling value-based payment models (score 4/5), value-based procurement (score 4/5), integrated provider networks (score 4/5), and digital data systems (score 4.3/5). Although Germany has invested heavily in digital health innovation systems, platform coverage is uneven throughout the country and there is a lot of variation between different EHR platforms, resulting in lower standardization and interoperability. This is furthered by a lack of standardized reporting guidelines of health data in the EHR and provider notes which makes data collection efforts more challenging and lowers interoperability. Similar issues of varied implementation have also been observed with value-based procurement

measures like the Diagnosis-Related Groups (DRG) system which standardizes hospital payments and provides a structured framework for tracking costs and outcomes.

Opportunities: To move towards high-value care, Germany could focus on enhancing integration, standardization, and interoperability within health information systems. Recent legislation, including the Digital Healthcare Act and Digital Act, supports these efforts, as do initiatives promoting the recording, sharing, and validation of clinical data by health facilities. Strengthening the use of Patient-Reported Outcome Measures (PROMs) offers another avenue for improvement. By continuing to prioritize digital health and innovation and taking advantage of its long history of public-private partnerships, Germany has the potential to lead in developing a high-value health system.

Case Study: Health Technology Assessment (HTA) value-based procurement (Germany)

Health Technology Assessment (HTA) in Germany evaluates new medical technologies and treatments based on their clinical and economic effectiveness. Conducted primarily by the Institute for Quality and Efficiency in Health Care (IQWiG), HTA assesses benefits, risks, and costs to ensure that new interventions provide real value to patients and the health system. Approximately half of new therapies evaluated receive a positive assessment, indicating their added value over existing treatments.

The HTA process uses value-based procurement, comparing new interventions to existing standard care to determine the added value: clinical outcomes and cost-effectiveness. HTA findings play a crucial role in negotiations between healthcare providers and insurers, influencing pricing and reimbursement decisions. By focusing on value, HTA helps allocate healthcare resources efficiently, ultimately enhancing patient care while managing costs, with estimates suggesting that effective HTA can lead to savings of up to 20% in overall healthcare spending of Germany.[62,63]

India

Health system overview

India has a decentralized two-tier health system, allowing citizens to choose between free inpatient and outpatient services at government facilities or paying out-of-pocket for private care. Due to staffing and supply shortages in government facilities, the Indian government has introduced tax-funded health schemes to assist low-income individuals and families in accessing secondary and tertiary care at private establishments. While universal healthcare (Ayushman Bharat Pradhan Mantri Jan Arogya Yojana) is required in all Indian states, accessing healthcare, especially high-quality care, continues to pose challenges.[64]

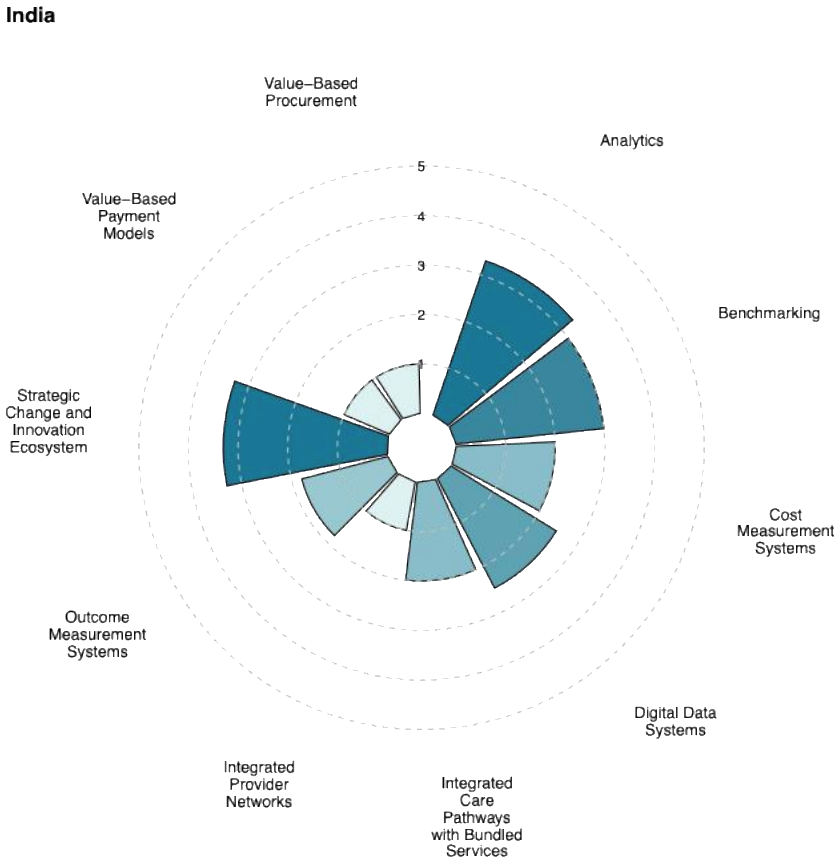

Figure 14: High-Value Health System (HVHS) assessment India. Source: Authors.

Major findings

Overview of progress: India has made moderate progress in analytics (score 3.3/5), strategic change and innovation (score 3.3/5), benchmarking (score 3/5), and digital data systems (score 2.5/5). The primary value-based initiative that India has been developing is the Ayushman Bharat Digital Mission, which aims to be the world's largest integrated digital health infrastructure (score 2.5/5). It will include components such as a healthcare professionals registry, a mobile app functioning as an electronic health record, and a health facility registry. In addition, the launch of the Pradhan Mantri Jan Arogya Yojana (PM-JAY) health insurance scheme aims to provide comprehensive health insurance to low-income families for services under registered facilities. When fully implemented, both initiatives will establish a foundational base for value-based healthcare, enabling the collection and reporting of health outcomes, costs, and health system performance data. To ensure success, India has developed the National Health Authority to design the strategy and build the technological infrastructure for a digital health ecosystem. This includes coordinating this national effort with state-led health services.

Persistent Challenges: Though the assessment, we identified major opportunities to prioritize cost measurement systems (score 2/5), integrated care pathways (score 2/5), value-based payment models (score 1/5), value-based procurement (score 1/5), and integrated provider networks (score 1/5). India currently lacks unified measurement frameworks for outcomes and costs, which impedes its ability to conduct performance benchmarking or understand the current health status of populations. With limited regulatory agencies and guidelines, healthcare quality varies widely across states. Additionally, there is a chronic shortage of healthcare practitioners and services within the public sector, posing a threat to the health needs of a growing population experiencing a rise in chronic diseases.

Opportunities: To aid in transitioning to higher value, India could utilise its growing startup and innovation ecosystem to identify and scale solutions that promote higher-value healthcare. Additionally, the Ayushman Bharat Digital Mission and PM-JAY present an immense opportunity to develop an independent health authority focused on uniform

collection of patient health data and associated costs to facilitate benchmarking. Once these systems are in place, they will enable the development and scaling of value-based initiatives such as bundled payment plans and integrated care pathways.

Case study: Narayana Health (India)

Narayana Health, a multispecialty hospital system founded in 2001, sought to transform the delivery of cardiac care in India. At the time of Narayana Health's founding, over 2.4 million Indians annually were in need of heart surgeries, but only 60,000 received them as a result of high healthcare costs and a shortage of providers. Narayana Health's approach leveraged economies of scale, real-time data analytics, assembly-line service delivery, and strategic deployment of virtual care to significantly reduce the costs of cardiac surgeries. Narayana Health reports the average cost of an open-heart surgery in its centers to be roughly $2,000 – the same surgery costs roughly $100,000 in the United States. Over the past two decades, Narayana has partnered with state governments across India, including launching the Yeshasvini micro-insurance scheme for farmers in collaboration with the Government of Karnataka and developing a large super specialty hospital in Guwahati in collaboration with the Government of Assam.[65–68]

Indonesia

Health system overview

Indonesia's health system has evolved significantly, focusing on accessibility and affordability under the Jaminan Kesehatan Nasional (JKN) scheme, a national health insurance program launched in 2014 and funded by premiums and government subsidies. JKN is compulsory for all Indonesians and covers essential services across a range of health system levels. Whilst public healthcare is dominant, private facilities exist commonly supplementing services in urban areas. Indonesia's vast archipelago poses a challenge to implement health facilities in all regions, and high levels of out-of-pocket payment costs still make some treatment services less accessible, limiting health system performance.[69,70]

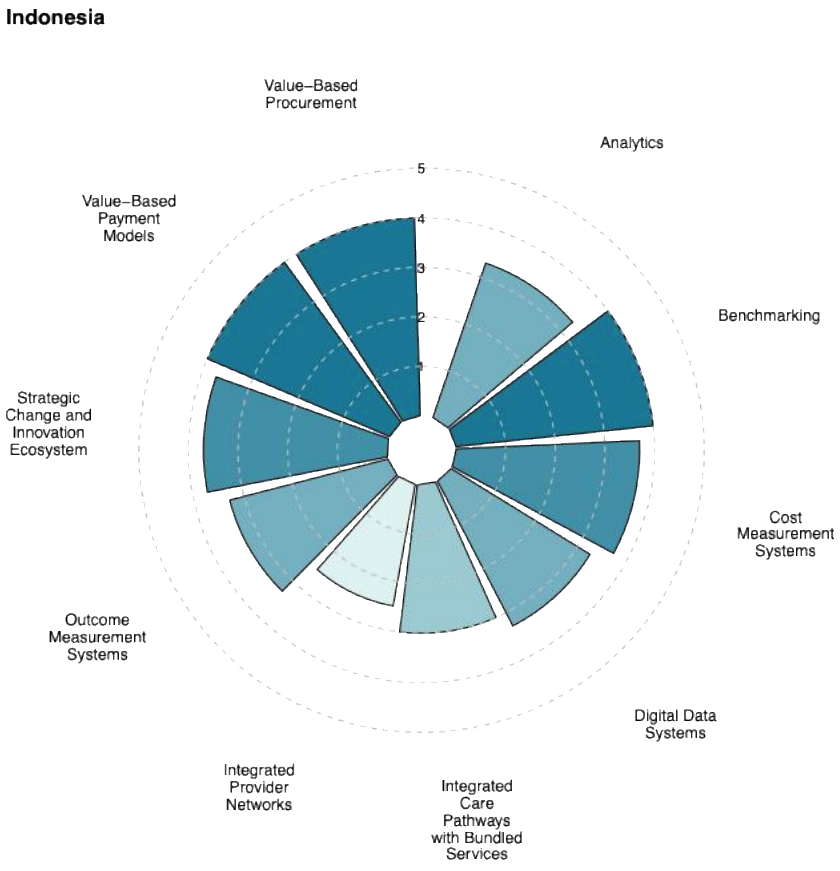

Figure 15: High-Value Health System (HVHS) assessment Indonesia. Source: Authors.

Major findings

Overview of progress: Indonesia has made moderate progress in value-based procurement (score 4/5), value-based payment (score 4/5), benchmarking (score 4/5), strategic change and innovation (score 3.3/5), and cost measurement systems (score 3.7/5). Indonesia's progress is especially evident via the country's strong commitment to value-based procurement (score 4/5) and value-based payment (score 4/5) practices, showing major progress on these indicators. Being one of the first single payer systems in the world to combine capitation-based payments with performance-based renomination, Indonesia has illustrated strong commitment towards value-based payment efforts. Additional policies like Indonesian Care Based Groups tariff rates further incentivize facilities towards cost saving measures. Being a member of the Global Procurement Agency, Indonesia is strongly committed to value-based procurement measures, working with their own National Procurement Agency to expand on their current frameworks for Health Technology Assessment and pharmaceutical products.

Persistent challenges: The Indonesian healthcare system presents opportunities to prioritize digital data systems (score 3.3/5), analytics (score 3.3/5), outcome measurement systems (score 3.3/5), integrated care pathways (score 3/5), and integrated provider networks (score 2.5/5). Value-based the integration of Indonesia's health system (score 2.5/5), especially remains a challenge. Current and previous initiatives launched by the government, such as the electronic and personal health records, have been partially integrated in the country, limiting operational integration and ability of providers to exchange health information to small geographic regions of networks of facilities. Whilst digital infrastructure exists across the country, many isolated EHR systems are still prevalent. Similarly, whilst integrated care pathways exist across common conditions the Indonesia's many islands and remote locations make integration of pathways and providers challenging.

Opportunities: In order to advance towards high value-based care Indonesia could continue to embrace its current innovative ecosystem (score 3.3/5) and its public private partnerships. Working with private partners on digital technologies and making them more

accessible can greatly aid implementation efforts of current health information systems and help to surpass current challenges in integration and adoption of digital technology such as Indonesia's geography.

Case study: SatuSehat: An Accessible Health Data Ecosystem (Indonesia)

In collaboration with the United States Agency for International Development (USAID), the Indonesian Ministry of Health launched the SatuSehat health data platform in 2022. Leveraging one national platform, SatuSehat enables users to maintain comprehensive health records in one location and avoid re-filling forms when transferring health facilities. In 2023, the platform was integrated across all major health facilities in Indonesia and a companion mobile app was created for patients to access their own medical records. As of 2024, the Indonesian Ministry of Health is expanding the availability of data types on the platform to include more image-based records such as ultrasounds and MRIs and partnering with private sector companies to integrate generative AI into the existing platform.[71–74]

Italy

Health System Overview

Italy provides decentralized universal health coverage to its citizens via the Servizio Sanitario Nazionale (SSN), which is mostly funded through national and regional taxes. Whilst most of the services are public, the private sector plays a unique and important role in service delivery, coverage, and innovation. For example, many private facilities offer additional or premium services, or partner with the SSN to deliver covered services in their facilities. Italians also have the option to purchase private health insurance, however its penetration is relatively low compared to other European countries. Italy has achieved one of the highest life expectancies globally, in part due to the system's effective service delivery and focus on prevention. Despite positive outcomes, long term financial sustainability and large regional disparities between the north and south have remained a concern.[75,76]

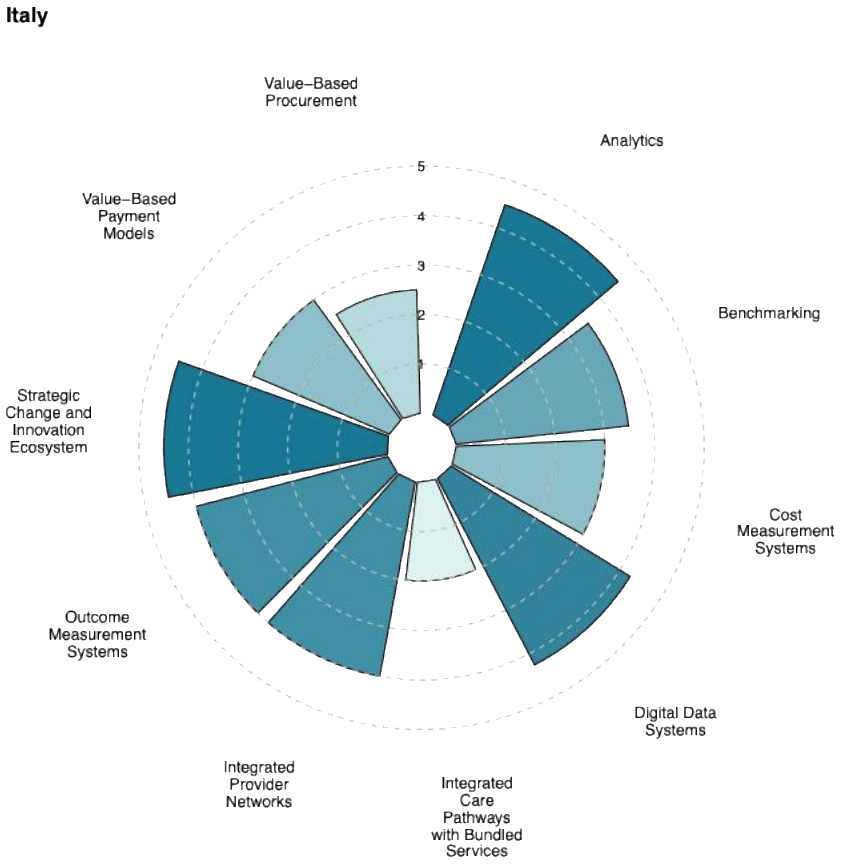

Figure 16: High-Value Health System (HVHS) assessment Italy. Source: Authors.

Major Findings

Overview of progress: Italy has achieved moderate progression towards HVHS, particularly in the areas of analytics (score 4.5/5), strategic change and innovation ecosystem (score 4.5/5), digital data systems (score 4.3/5), outcome measurement systems (score 4/5), and integrated provider networks (score 4/5). Italy has achieved especially high performance by fostering its innovation ecosystem (score 4.5/5). Being considered as the second-largest public-private partnership market in Europe, Italy has an extended history of leveraging public-private partnerships for implementing health infrastructure, facilities, and innovation within its health system. Some of Italy's most advanced, and operationally efficient facilities such as the New Mestre Hospital (Ospedale dell'Angelo) in Venice are a result of effective public-private partnerships. In addition, Italy's rich history of innovation and governmental interest in the promotion of innovation and digital health through Agenzia Nazionale per la Sanità Digitale (National Digital Health Agency) has made Italy a leader in fostering its innovation ecosystem.

Persisting challenges: Several challenges persist within the Italian health system, most notably in the areas of benchmarking (score 3.5/5), cost measurement systems (score 3/5), value-based payment (score 3/5), value-based procurement (score 2.5/5), and integrated care with bundled services (score 2/5).

Opportunities: An area of opportunity for Italy to further progress towards HVHS is in the areas of benchmarking (score 3.5/5) via improvement of Italy's outcome measurement systems (score 4/5) and digital data systems (score 4.3/5). Whilst Italy frequently participates in international benchmarking, its regional benchmarking capabilities remain limited, in part due to the large disparities in the availability of data between the wealthier Northern Italy and the poorer Southern region. These disparities can be limited through improved interoperability and standardization of Italy's digital information and data systems by enforcing standardization and adherence policies and encourage their utilization in poorer and more rural regions.

National Recovery and Resilience Plan: Community-based Integrated Care (Italy)

In 2022, Italy introduced the "community-based integrated care" (CBIC) model, backed by €7 billion from the National Recovery and Resilience Plan, aiming to establish a comprehensive network of healthcare services across the country. This reform is designed to reduce regional disparities and ensure accessible care by integrating primary care, domiciliary services, and social care. A primary focus of the CBIC model is to improve the management of chronic diseases and enhance continuity of care, a crucial need highlighted during the COVID-19 pandemic. The reform's innovative approach, leveraging both hospital-based and community-based care, signifies Italy's shift toward a more proactive healthcare model.[77,78]

At the core of the CBIC model are newly established community care centers and community hospitals, which are designed to provide coordinated health and social services. These facilities focus on seamless transitions between hospital and home care, improving outcomes by offering integrated services close to patients' homes. The inclusion of telemedicine and digital tools in care delivery supports proactive monitoring of chronic conditions, reducing the need for hospitalization. The model also aims to alleviate pressure on hospitals by enabling community hospitals to focus on less acute cases.

The success of the CBIC model hinges on regional implementation, with significant variation in progress across Italy. Regions like Emilia-Romagna, which had already invested in community care prior to the reform, are close to meeting the new standards. However, regions like Campania face more significant challenges due to infrastructure gaps and resource limitations. Despite these disparities, the autonomy granted to regional health authorities fosters innovation, allowing regions to tailor services to local needs while operating within a national framework. Early evaluations suggest that the model is making strides in promoting health equity and delivering more patient-centered care.

Japan

Health system overview

The Japanese health system consists of the National Health Insurance and employer-based insurance paid through employee and employer contributions, government subsidies, and out-of-pocket payments. Japan has the most privately capital-dependent health system compared to other developed countries. Private facilities dominate service delivery, with no requirements for patients to obtain a referral from a general practitioner to seek specialist services. Japan has a long history of cooperative involvement. Often operating clinics, hospitals, and health facilities across Japan (and especially in rural areas), cooperatives play an important role in the implementation of larger health system policies, reaching low-income, older adult, and marginalized populations. More recently, Japan has experienced difficulties in meeting the demands of a growing older population, facing shortages of providers and specialty services such as long-term and palliative care.[79–81]

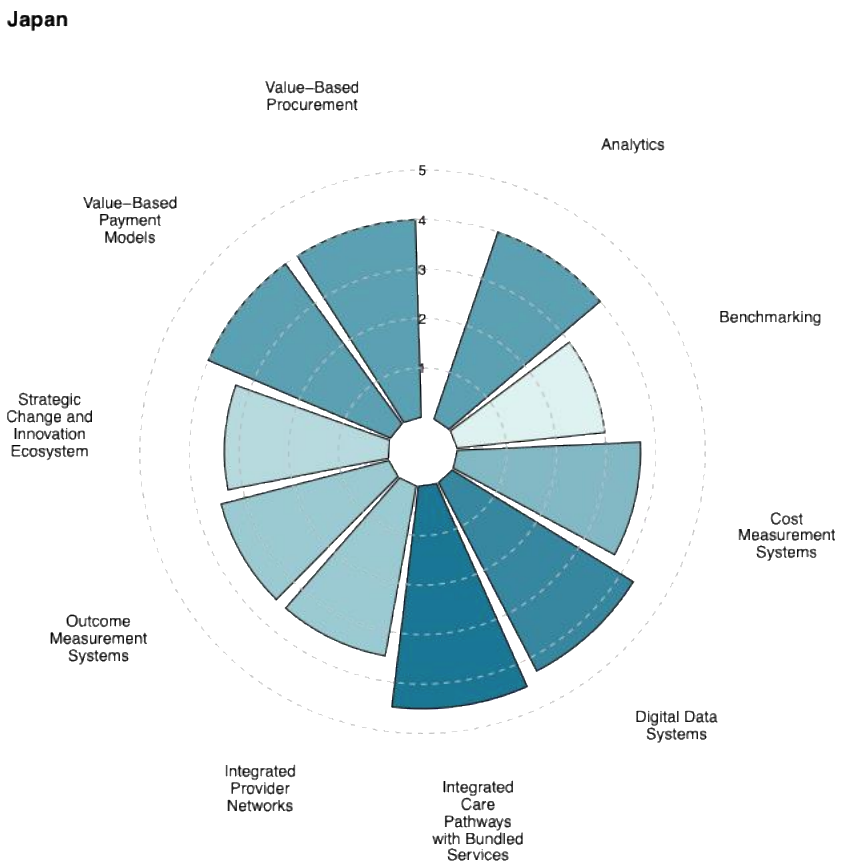

Figure 17: High-Value Health System (HVHS) assessment Japan. Source: Authors.

Major findings

Overview of progress: Japan has made moderate to major progress in digital data systems (score 4.3/5), integrated care pathways (score 4.5/5), analytics (score 4/5), value-based payment models (score 4/5), and value-based procurement (score 4/5). Japan has a strong history of robust health system services which is reflected in its high score for integrated care (score 4.5/5). While patients are not required to register with a practice, additional measures are put in place such as extra charges for self-referral which encourage patients to choose their preferred providers. Japan also has strongly integrated care systems for noncommunicable diseases and chronic conditions such as cancer, palliative care, and cardiac care. Financial incentives such as additional bonuses being awarded for facilities using post-discharge protocols and have contracts with physicians specifically for follow up care. Structural factors such as mandates for cities and large hospitals to establish

bodies responsible for coordination of care and community comprehensive support centers all contribute towards greater coordination and integration of services across the health system and regions.

Persistent challenges: Based on our assessment, Japan could prioritize cost measurement systems (score 3.7/5), outcome measurement systems (score 3.5/5), benchmarking (score 3/5), integrated provided networks (score 3.5/5), and strategic innovation ecosystem (score 3.5/5). Currently benchmarking remains a larger challenge. Japan has been frequently participating in international comparisons across a range of health and health system metrics, often compared with OECD members and other developed economies. Japan's comprehensive data collection efforts through the National Health Insurance Database, medical records, and facility reported data, however regional disparities in healthcare quality complicate internal benchmarking within Japan. Despite an existing data collection framework infrequent update of electronic health records and information systems as well as low level of standardization make it difficult to perform benchmarking across the country, resulting in low benchmarking capabilities within the country.

Opportunities: Further opportunities for Japan to advance towards HVHS center around greater integration of its current digital data systems (score 4.3/5). Despite wide adoption of the country's EHR system, its integration in smaller facilities and rural areas remains lags behind. This is especially significant for Japan where more and more elderly populations remain in rural areas. Embracing digital technologies and introduction of telemedicine services can support Japan's current efforts to meet the needs of its elderly population and deal with provider shortages.

Case study: Medical Digital Transformation Promotion Plan (Japan)

The Government of Japan (GOJ) is actively advancing the adoption and interoperability of Electronic Medical Records (EMRs) to accelerate healthcare digitization. This is part of Japan's ambitious 2035 Japan Vision for healthcare.[82] Japan's Ministry of Health, Labor, and Welfare (MHLW) is reducing regulatory barriers and providing financial incentives to facilitate the nationwide sharing of medical information. In 2022, the GOJ introduced the "Medical Digital Transformation (DX) Promotion Plan," which aims to standardize and expedite the digitization of healthcare. Key objectives of the plan include promoting the

use of cloud-based EMRs, leveraging AI for patient care, and improving data portability and security across health systems.

Mexico

Health system overview

Mexico's health system is a mixed model comprising both public and private sectors. The public system is primarily composed of three major institutions: IMSS (Mexican Institute of Social Security), ISSSTE (Institute for Social Security and Services for State Workers), and Seguro Popular (which covers the uninsured population). IMSS is the largest, providing comprehensive services for workers in the formal sector. ISSSTE caters to federal government employees, while Seguro Popular aims to offer care for those outside the formal employment sector, including the informal workforce. Underfunding of public health services and the large division between public and private sectors result in inequities in the system. Despite this, Mexico's life expectancy is higher compared to other countries in the region, reflecting its continued efforts to improve coverage through Seguro Popular.[83,84]

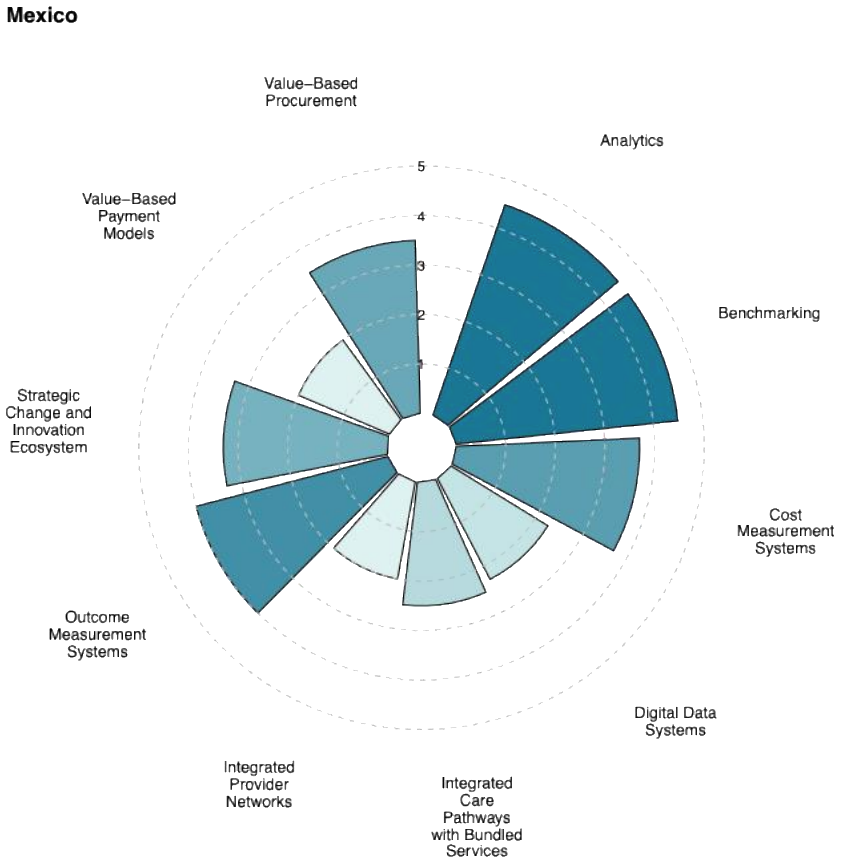

Figure 18: High-Value Health System (HVHS) assessment Mexico. Source: Authors.

Major findings

Overview of progress: Mexico has made major progress in analytics (score 4.5/5), benchmarking (score 4.5/5), outcome measurement system (score 4/5) and moderate progress when it comes to implementing and scaling cost measurement systems (score 3.7/5) and value-based procurement (score 3.5/5). Progress is especially illustrated in the areas of analytics (score 4.5/5) and benchmarking (score 4.5/5). Mexico employs multiple surveys and databases in its reporting, collaborating across multiple governmental institutions. The Ministry of Health and the National Institute of Public Health play a key role in reporting and analyzing health data. For example, the general directory of epidemiology oversees data reporting of multiple diseases at national and regional levels producing frequent reports across Mexico. Mexico also a collaborator with numerous international organizations to establish benchmarks for healthcare performance where its health system is often compared with other OECD countries.

Persisting challenges: Whilst Mexico has made some to moderate progress in these areas, there are major opportunities to prioritize digital data systems (score 2.3/5), integrated care pathways (score 2.5/5), value-based payment models (score 2/5), and integrated provider networks (score 2/5). Current challenges in Mexico persist due to high level of health system fragmentation, resulting in limited integrated provider networks (score 2/5). Current efforts such as the roll of out an EHR platform in Mexico aim to improve structural integration of the health system, however, beyond the select hospitals in Mexico City, implementation remains low. Low levels of EHR implementation and interoperability thus limit provider communication and data sharing, impacting the care pathway and service integration. In addition to fragmentation between facilities, the three main public institutions that serve patients in Mexico are also separated and segmented, creating duplication of services and limit the structural integration of the system.

Opportunities: Current opportunities for Mexico to shift further towards high value health is to build on the country's current efforts in value-based procurement practices (score

3.5/5). Current examples of value-based procurement on an institutional level exist for select products in Mexico, however a lack of a national procurement strategy remains as a current gap. This presents an opportunity for the Mexican Ministry of Health to unite and standardize current procurement operations across the country. This approach is especially valuable due to Mexico current issues with healthcare costs and funding.

Case study: National Health Information System and Public Health Reporting (Mexico)

Mexico has a long history of publishing epidemiological data on the state of the country's most common diseases. Since 1984, the National Epidemiological Surveillance System (SINAVE) has published annual yearbooks and epidemiological reports on over 142 diseases. SINAVE and other data bases such as the National Health and Nutrition Survey have been integrated into a singular health information system – the National Health Information System (SINAIS), which collects, monitors, and publishes health data across numerous domains including coverage, health services, performance evaluation, health outcomes, and available physical, human, and knowledge capital. All public and private providers across the health system are integrated under a single database with a Unique Health Establishment Code (CLUES) which specifies each provider's level of care and material resources that are available. CLUES are also complimented by the System for Health Care Equipment, Human Resources, and Infrastructure (SINERHIAS) which contains information on facilities. The Mexican Ministry of Health which manages the Information System updated the official health information standards in 2012, creating a separate information system (called the National Basic Health Information System or SINBA) which integrates SINAIS and the governmental epidemiological surveillance information system into one, creating a comprehensive database which has been used in the assessment of health system performance, evaluation of facilities, and analytics. This effort, combined with several administrative and private stakeholders responsible for collection of geographic and health data allows for the creation of a standardized, integrated, and coordinated database which has been used for regular reporting on Mexico's health system and patient outcomes.[84]

Republic of Korea

Health system overview

South Korea is home to a single-payer National Health Insurance Service (NHIS), which is funded through employer and employee contributions and government subsidies. The National Health Insurance Service works in tandem with the country's medical aid program, which helps to provide health services to low-income populations. While most facilities are privately owned, they are subject to strong governmental regulations to control costs and ensure standardized care. Primary care services act as an initial point of contact for patients; however, patients also have direct access to specialists. The South Korean health system has made significant progress in implementing digital technologies and integrating care pathways, which result in high health outcomes and a high ranking for the country's health system across the world. Despite these achievements, high costs remain a concern.[85–88]

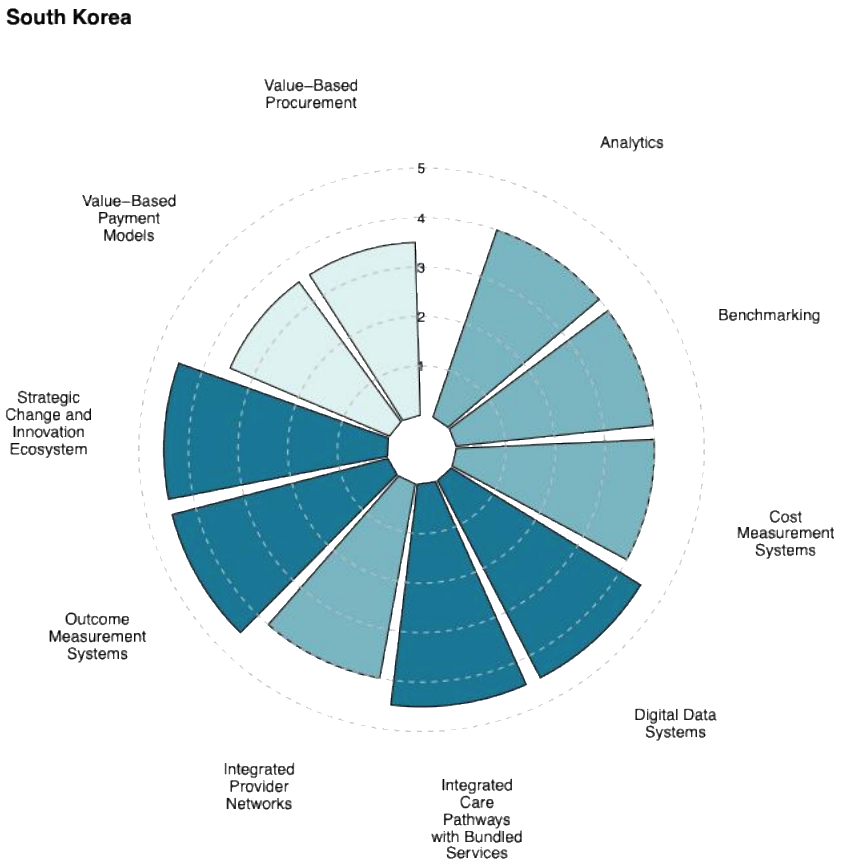

Figure 19: High-Value Health System (HVHS) assessment South Korea. Source: Authors.

Major findings

Overview of progress: South Korea has made moderate progress in analytics (score 4/5), benchmarking (score 4/5), integrated care pathways (score 4.5/5), and strategic change and innovation (score 4.5/5). South Korea has robust analytics (score 4/5) and data measurement system (score 4.5/5) infrastructure. Home to robust and strong guidelines on data stewardship and privacy, South Korea also has high levels of infrastructure used in analyzing and reporting of health data. As NHIS is the main regulatory and financing body for health services, a unified and comprehensive system for health cost measurement and reporting is present across multiple services and regions of the health system. The NHIS leads these efforts via an established framework for cost measurement and regular audits of health facilities and bodies.

Persistent challenges: There are opportunities to further prioritize value-based procurement (score 3.5/5) and payment (score 3.5/5) practices, as cost containment has been an increasing concern in South Korea. Currently South Korea employs a fee-for-service model of payment, but a few value-based payment programs such as the Support Fund Program for Care Quality Assessment and the Healthcare Benefit Appropriateness Assessment Program have been piloted to promote value care. Both programs put focus on risk alignment based on care quality assessment tests for 55 different diseases and health services, however implementation remains varied.

Opportunities: One opportunity for South Korea to further its transition to high-value care is to turn towards greater implementation of PROMs. Whilst South Korea has robust and extensive outcome measurement capabilities, PROMs are mainly utilized in specialized disciplines and specific departments rather than across all levels of the health systems and regions. Embracing PROMs and other patient experience measures can further improve quality care of services in Korea and inform policy makers of any structural changes that can improve the health system.

Case study: Health Data Standardization Taskforce (South Korea)

The Health Data Standardization Taskforce in South Korea is central to the country's digital healthcare transformation, focusing on standardizing and integrating health data across systems. Established in December 2022 under the Ministry of Health and Welfare (MOHW), the taskforce aims to streamline data sharing between healthcare providers to enhance patient care and public health outcomes[1]. By collaborating with both public and private stakeholders, the taskforce is creating national standards that integrate electronic health records and digital platforms.[89]

The taskforce's primary goal is to implement standardized formats that allow real-time sharing of patient data between hospitals, clinics, and pharmacies. Key initiatives include the development of the Korea Core Data for Interoperability (KR CDI) and the HL7 FHIR KR Core, which improve data exchange and healthcare outcomes[1]. These efforts have proven vital in managing chronic conditions and emergencies, ensuring timely access to accurate data. The taskforce has also played a crucial role in addressing public health crises like COVID-19 by enabling rapid data exchange.

One of the taskforce's significant achievements is the Health Information Exchange (HIE) system, which has reduced duplicate tests and improved patient safety by providing healthcare providers with updated medical information[1]. It has also promoted better coordination among providers, especially for patients with complex needs. By unifying health data standards, South Korea is positioning itself as a leader in digital health, paving the way for innovations like artificial intelligence to further improve healthcare delivery.

The taskforce exemplifies South Korea's commitment to a modern, data-driven health system, laying the foundation for future advancements and more efficient, integrated care.

Netherlands

Health system overview

The Dutch health system operates under a regulated market framework with a social insurance system where private insurers and providers deliver most health services under strict government oversight. All Dutch residents are required to purchase basic insurance that covers essential healthcare, which, combined with general taxes, serves as the primary form of financing for the health system. Primary care providers are the main gatekeepers in the system, requiring patients to obtain a referral before pursuing specialist and hospital care of their choice. The Dutch health system often ranks highly among other EU countries, especially in areas of accessibility and outcomes, with the country achieving one of the lowest levels of preventable mortality, in many ways due to the system's emphasis on primary care.[90–93]

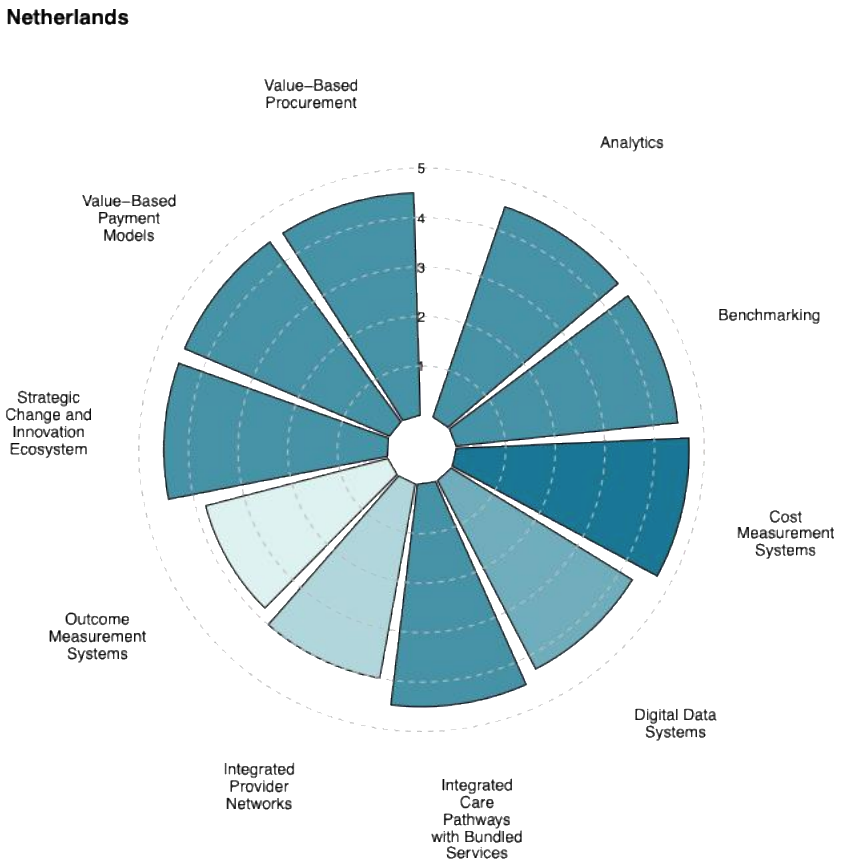

Figure 20: High-Value Health System (HVHS) assessment Netherlands. Source: Authors.

Major findings

Overview of progress: Overall, the Dutch health system performs strongly in relation to high-value care and integrating high-value components. The Netherlands has made moderate progress in analytics (score 4.5/5), benchmarking (score 4.5/5), integrated care pathways (score 4.5/5), value-based procurement (score 4.5/5), and strategic change and innovation (score 4.5/5). This is especially seen with the Dutch approach to value-based procurement (score 4.5/5). Combined with the Netherland's obligation to follow EU standards for health procurement regulations, the Netherlands has also set policies and frameworks for value-based procurement practices, demonstrating the strong commitment of the Dutch Health Care Authority (NZa) to value-based care. The Netherlands uses centralized procurement frameworks with contracts frequently incorporating value-based elements, assessing costs and patient outcomes related to any medical supplies. Additionally, green procurement policies emphasize environmental standards for products, encouraging suppliers to reduce waste and energy consumption in their offerings, which taken together aim to support high value and quality health delivery in a cost-effective manner.

Persistent challenges: Whilst Netherlands has made major progress, there are opportunities to further prioritize digital data systems (score 4.3/5), cost measurement systems (score 4.5/5), outcome measurement systems (score 3.8/5), value-based payment models (score 4.5/5), and integrated provider networks (score 4/5). As the Dutch health system focuses on the integration of digital technologies across the health system, standardization of outcome measures remains limited (score 3.8/5). Although the National Institute for Public Health and the Environment (RIVM) releases the Dutch Health Care Performance Report (DHCPR) on a regular basis, standardization and integration of existing outcome measurement frameworks remains limited. Many institutions still use their own methods and indicators for outcome measures, making cross comparisons across facilities challenging.

Opportunities: One of the primary opportunities for the Netherlands to further progress towards value-based care is to further focus on its implementation of health information

systems and electronic health records. Currently the Netherlands has invested in a national health information exchange system - LSP (Landelijk Schakelpunt). However, it is currently used as an opt-in system, limiting interoperability of the system and resulting in large lags in population coverage. By investing in implementation of a health information system across regions and levels of the health system, the Netherlands can further support information exchange and facilitate the integration of health services across its health system.

ParkinsonNet: Collaborative Care for Parkinson's Disease (The Netherlands)

ParkinsonNet is a Dutch national initiative aimed at improving care for people with Parkinson's disease by creating regional networks of specialized healthcare professionals, including neurologists, physiotherapists, speech therapists, and nurses. Launched in 2004, ParkinsonNet promotes interdisciplinary collaboration and patient-centered care, ensuring that patients have access to specialists who are trained specifically in Parkinson's management. This network-based approach allows for more tailored and coordinated care, reducing the fragmentation of services often experienced by patients with complex neurodegenerative conditions.[94,95]

A key feature of ParkinsonNet is its focus on training healthcare providers and encouraging continuous education on Parkinson's care. The initiative also integrates e-health tools for remote monitoring, enabling patients to track symptoms and progress while staying in close contact with their care teams. This technology-driven care model, combined with the regional networks, facilitates real-time adjustments to treatment and ensures that patients receive the right care at the right time. The system also promotes knowledge sharing among professionals, fostering innovation and improving care standards.

ParkinsonNet has been remarkably successful, with studies showing significant improvements in patient outcomes, including better mobility, reduced hospitalizations, and enhanced quality of life. Additionally, the initiative has led to a decrease in healthcare costs due to fewer complications and a more efficient allocation of resources. Today, ParkinsonNet is recognized as a global best practice for chronic disease management, with countries like Germany and the U.S. adopting similar models to improve Parkinson's care.

Nigeria

Health system overview

Nigeria employs a mixed model in its health system, consisting of public and private sectors. The public system remains decentralized, with each local level of government responsible for service delivery. Faith-based organizations comprise a large proportion of the private sector and play a significant role in delivering health services to rural and underserved areas. The private system remains out of reach for most Nigerians due to high out-of-pocket costs. Currently, the health system struggles to maintain its human and physical resources, limiting access to care, especially in rural areas.[96–98]

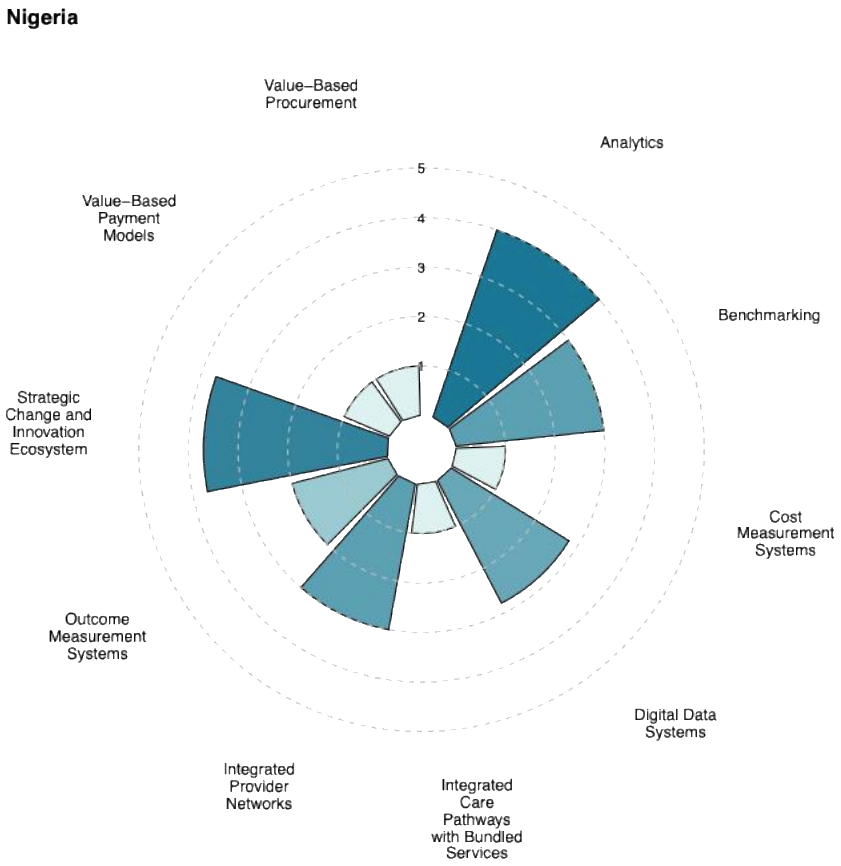

Figure 21: High-Value Health System (HVHS) assessment Nigeria. Source: Authors.

Major findings

Overview of progress: Nigeria has made moderate progress in analytics (score 4/5), strategic change and innovation (score 3/5), integrated provider networks (score 3/5), benchmarking (score 3/5), and digital data systems (score 2.8/5). Nigeria performs highly in its analytic capabilities (score 4/5). Legislation such as the National Health Act and the Nigerian Data Protection Regulation provide a strong baseline for data protection and stewardship policies, though their enforcement remains limited. An active department within the Ministry of Health with a focus on analytics and reporting of health data exists, indicated by the wide range of conditions Nigeria reports on. Notably this data is not readily available, with a time delay occurring between the monthly surveys and reporting.

Persistent challenges: Whilst Nigeria has made notable progress, there are major opportunities to prioritize cost measurement systems (score 1/5), integrated care pathways (score 1/5), value-based payment (score 1/5), and value-based procurement (score 1/5). As Nigeria's health system is slowly shifting towards value-based care, several challenges persist, especially in the areas of value-based payment and procurement measures (both with a score 1/5) and integrated care pathways (score 1/5). Whilst some referral guidelines exist, it is indicated that they are not largely used, making integration of services and pathways limited within the country. Some value-based procurement initiatives have been identified, however limited to no formal commitments have been made to value-based payment or broader value-based healthcare element which stresses alignment to outcomes as well as cost minimization.

Opportunities: An opportunity for Nigeria to advance towards value-based health lies in its current innovation ecosystem (3/5). The government of Nigeria has put continued support towards the formation of a digital health committee which combined with the long history of many public private partnerships in the health sector can serve as basis to support the implementation of health infrastructure and improving access to health for its population. The resulting partnership can further support current efforts to integrate and implement digital data systems, especially in areas which are rural and low income.

Case study: Digital Health Initiative (Nigeria)

Nigeria's Ministry of Health launched the Digital Health Initiative (NDHI) in 2024, creating a committee charged with creating a unified national electronic medical record system, building connectivity throughout the country to enable the private and secure flow of healthcare data, and engaging with the private sector.[99,100]

In recent years, Nigeria's healthcare startup sector has flourished, with over 130 new startups emerging in the healthcare technology space. The NDHI seeks to be a central body to form partnerships and support the growth of the private sector, which is considered to be a source of future economic growth. Other key priorities of the NDHI include the development of governance policies for healthcare information systems and the deployment of existing frameworks, such as the National Health Information Framework and the National Digital Health Strategy.

The Russian Federation

Health system overview

The Russian Federation uses a mostly centralized universal public health system, which coexists with a popular and robust private health sector. Every Russian citizen receives coverage via the Obligatory Medical Insurance (OMI), which is funded by payroll taxes and the federal budget. While Russia's health system is centralized in its structure, financing is more decentralized, resulting in variations in the health system budget based on the economic conditions of each region. Currently, the Russian health system faces several challenges, including a workforce shortage and management of chronic and non-communicable diseases, especially across regional disparities.[101–103]

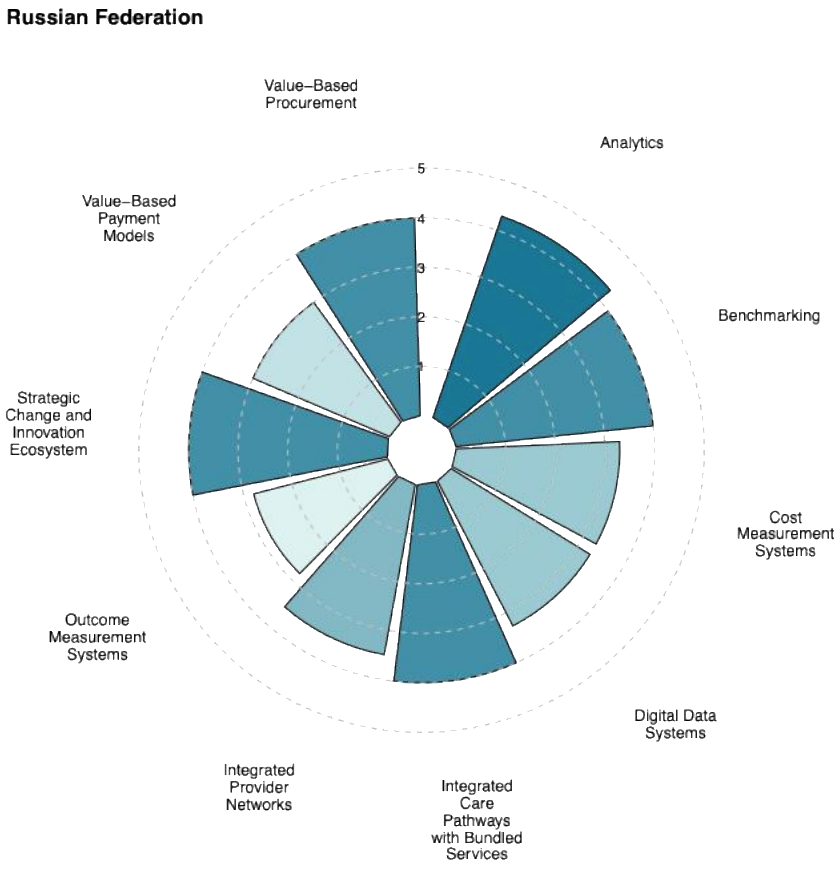

Figure 22: High-Value Health System (HVHS) assessment The Russian Federation. Source: Authors.

Major findings

Overview of progress: Russia has made notable progress in analytics (score 4.3/5), benchmarking (score 4/5), integrated care pathways (score 4/5), and strategic change and innovation (score 4/5). In part due to the centralized management of the Russian health system, Russian Federation performed highly its analytic capabilities (score 4.3/5). Russia has a several strongly enforced guidelines on data stewardship. The Ministry of Health and the Federal State Statistics Service (Rosstat) manage and perform regular data collection, publishing health statistics, health system performance indicators, and health utilization measures. While regular health outcomes and health system performance metrics are readily available online, variation in transparency and consistency across regions limit Russia's strong analytical potential.

Persistent challenges: Whilst Russia has made notable progress, there are major opportunities to prioritize digital data systems (score 3.3/5), cost measurement systems (score 3.3/5), outcome measurement systems (score 2.8/5), value-based payment models (score 3/5), and integrated provider networks (score 3.5/5). Regional disparities in data collection methods and standardization remain a challenge in reporting outcome measurements in Russia (score 2.8/5). Guidelines for collection of health outcomes exist but are limited in its enforcement, resulting in lack of standardization of data which combined with large variations in health infrastructure pose a challenge in collecting outcome measures across the country in a regulated manner. Furthermore, PROMs have not been widely used across the Russian health system, being only used in select hospitals and for select conditions. Whilst discussions of PROM use the amongst Russian medical community have been picking up, their implementation is limited to select specialties and large facilities.

Opportunities: In order for the Russian health system to move towards value-based care and to minimize regional disparities, Russia can utilize its long history of scientific innovation and its more recent growth in public private partnerships. Russia has slowly been developing several large public-private partnerships in its healthcare sector. For example, under the Moscow Healthcare Development Program the Moscow government

signs long term contracts with private companies to help refurbish its health clinics. While currently investment in digital health and innovative solutions has been decreasing in Russia, increased funding and partnering with private companies within the health sector, especially in less developed regions can provide an avenue to support Russia's health infrastructure development whilst promoting local economic growth and as a result, municipal budget for healthcare.

Case study: Project Personal Assistant (Персональный помощник) for oncological patients (Russia)

Over the last several years, Moscow's mayoral administration has put increased attention towards high-value health care and digitization. As part of this initiative, the "Personal Assistant" project was launched in 2020 to enhance the centralization and integration of care pathways and digital services in Moscow's oncological health system. Under this project, every patient with a suspected or confirmed diagnosis of a malignant mass is assigned a personal assistant whom they can contact after their first visit with an oncology specialist. Each personal assistant provides support through the entire care continuum —from diagnosis to treatment, hospitalization, and follow-up with local clinics—for up to two years. The project recruits specially trained administrative personnel whose main responsibilities are to support the patient with administrative tasks, including referral management, appointment booking, and reminders, and serve as a link and a coordinating body between the different health facilities throughout the treatment pathway. As part of recruitment efforts, personal assistants undergo additional education where they receive training on oncological principles, mental health support, and medical documentation which allows them to coordinate and help decide next steps in the treatment pathway for their assigned patients.[104,105]

In addition to supporting with referrals and navigation across care pathways, personal assistants answer common questions, provide mental health support, conduct surveys on healthcare quality, and input patient information into registries and databases such as the Moscow Cancer Registry. To do so, personal assistants use Moscow's Unified Medical Information and Analytical System (EMIAS) (Единная Медицинская Информационно-аналитическая Система (ЕМИАС)) which has appointment and booking, prescription, and electronic health record capabilities.

The project was first piloted in the Southern region of Moscow, and since 2021 has been operating across the whole Moscow region, integrating care between 6 regional multidisciplinary oncological centers, local clinics, and individual patients. As of 2022, 80 personal assistants have provided support to at least 120 thousand patients across the Moscow region.

Saudi Arabia

Health system overview

Saudi Arabia has a centralized health system with both public services and a rapidly growing private sector. Public services are primarily government-funded and offer universal coverage to Saudi citizens, free of charge at government funded health facilities. The private health sector has seen recent growth in Saudi Arabia, primarily offering elective treatments and has been especially popular with the country's expat population, who rely on the private system for care. The government of Saudi Arabia has been focusing on preventive care and health education to reduce its growing burden of noncommunicable diseases.[106–109]

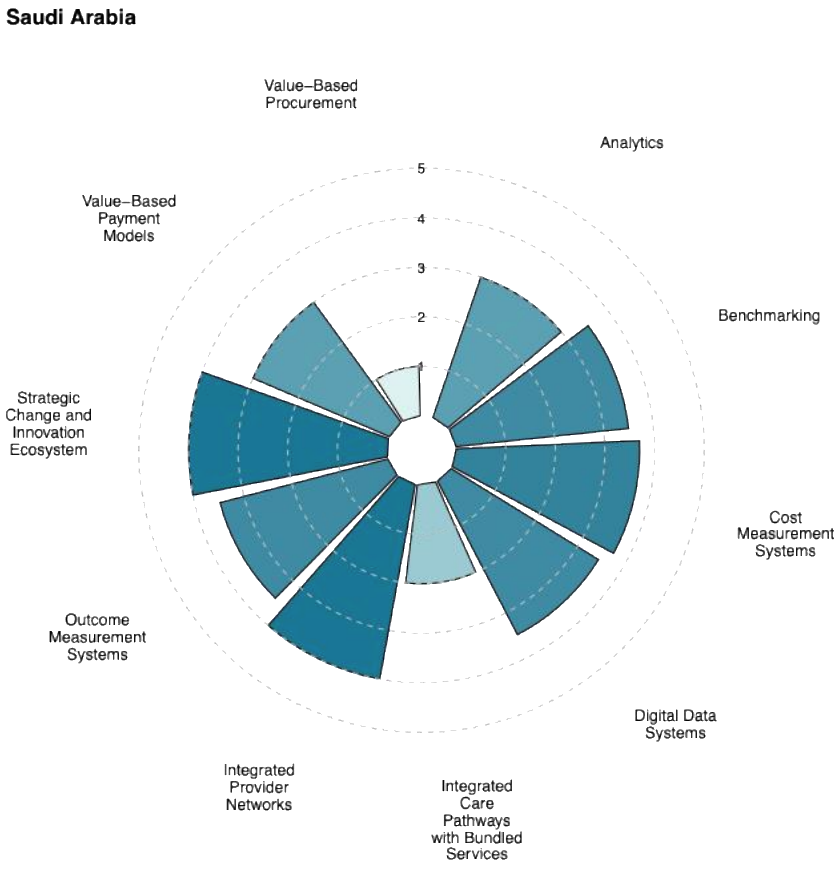

Figure 23: High-Value Health System (HVHS) assessment Saudi Arabia. Source: Authors.

Major findings

Overview of progress: Saudi Arabia has made moderate progress in analytics (score 3/5) and value-based payment models (score 3/5), and major progress in strategic change and innovation (score 4/5), integrated provider networks (score 4/5), and cost measurement systems (score 3.7/5). Saudi Arabia has robust data protection regulations which are strongly enforced. Based on the General Data Protection Regulation, though an EU law, has robust standards. Saudi Arabia also has strong reporting structures for data analytics and data breaches. Working with the Institute for Health Metrics and Evaluation in the United States, Saudi Arabia has achieved high reporting standards on multiple disease profiles. Continued investment into the health sector and the Vision 2030 initiative, facilitated by the formation of public-private partnerships and encourage increased investment in digital health solutions, further strengthen healthcare delivery in the country, particularly to address the high burden of non-communicable diseases.

Persistent challenges: Whilst Saudi Arabia has made notable progress, there are major opportunities to prioritize outcome measurement systems (score 3.5/5), benchmarking (score 3.5/5), integrated care pathways with bundled services (score 2/5), and value-based procurement (score 1/5). Although has embraced value-based health principles, in practice VBHC is not implemented at the national level. Value-based procurement measures such as centralized procurement and alignment of purchases with long term outcomes have not been identified in current reports. However, with the centralized vision of the Saudi government on achieving value-based care, it is anticipated that the health system will turn towards value procurement measures. Value-based payment models and analytics are still at an early stage in Saudi Arabia.

Opportunities: Current opportunities for Saudi Arabia center around strengthening its implementation of outcome (score 3.5/5) and cost measurement systems (**score** 3.7/5). The Center for National Health Insurance has been recently established which serves as a managing body for reporting and analyzing health costs. In addition, whilst cost measurement frameworks have been developed as part of Vision 2030, its implementation remains varied across facilities. Similarly, while some outcomes data has been reported,

but not at high granularity. Additional investment and implementation of data collection for health outcomes and costs can help aid policy development and for Saudi Arabia to effectively evaluate the performance of its health system.

Seha Virtual Hospital (Saudi Arabia)

Seha Virtual Hospital (SVH) is the first "virtual" hospital in the Middle East – it connects 170 hospitals around the country, offering access to teleconsultations and other virtual care spanning 29 basic health services and 73 sub-specialty services. Patients presenting at any SVH-connected hospital can get access to its central specialized services. Local hospitals can perform tests and imaging, which is then transmitted via Internet to SVH providers, who can provide specialized advice and care. SVH also leverages artificial intelligence solutions and Internet of Things (IoT) devices to provide remote care even to homebound patients. The Saudi Ministry of Health reports an annual capacity of 500,000 patients can be served by SVH. As a key tenet of the Saudi Vision 2030's healthcare transformation program, SVH aims to increase access to the highest quality care to patients across Saudi Arabia.[110–112]

South Africa

Health system overview

South Africa's health system features a dual structure, comprising both public and private sectors. The public sector, mainly financed by taxation, serves the majority of the population, whereas the private sector caters to a smaller, more affluent group who can pay for private insurance or out-of-pocket expenses. This division creates major inequities, leading to disparities in access to care and health outcomes. Presently, there are initiatives aimed at reforming the healthcare system to implement universal coverage via a National Health Insurance Program.[113,114]

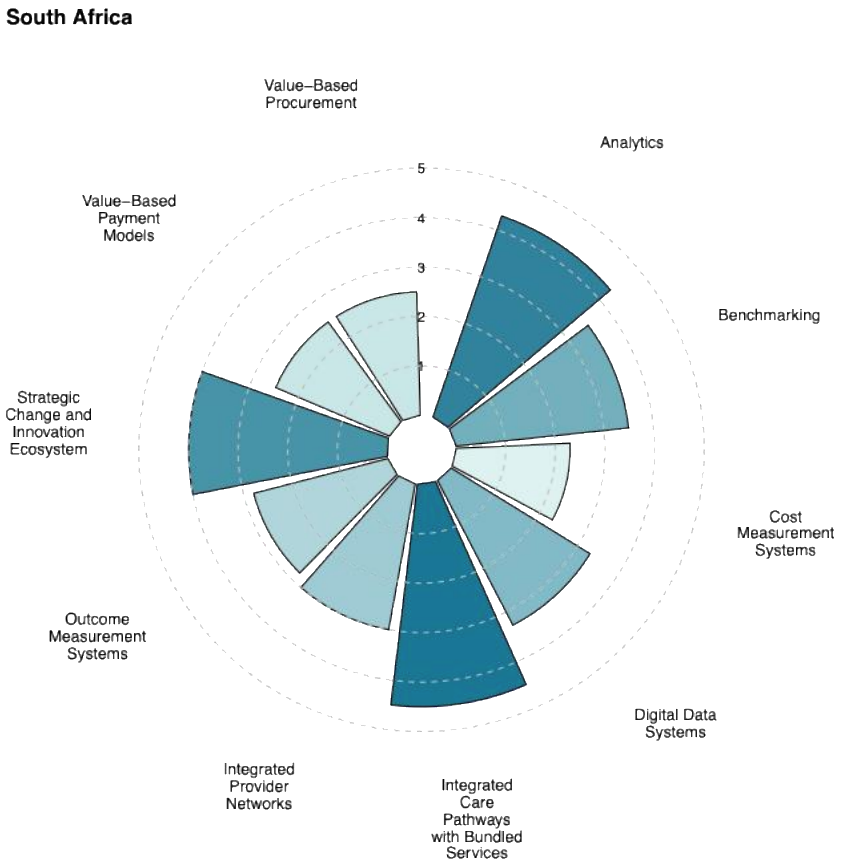

Figure 24: High-Value Health System (HVHS) assessment South Africa. Source: Authors.

Major findings

Overview of progress: South Africa has made notable progress in analytics (score 4.3/5), strategic change and innovation ecosystem (score 4/5), integrated care pathways (score 4.5/5), benchmarking (score 3.5/5), and digital data systems (score 3.3/5). South Africa has embraced numerous public private partnerships, creating a robust innovation ecosystem (score 4/5). Multiple partnerships exist where the South African Medical Research Council partners with multiple agencies across government sectors, private sectors, research institutions, and universities. International organizations such as GSK and the NIH are active partners in the country with multiple ongoing projects. These partnerships have also reflected in South Africa's growing production of health sciences research, ranking 31st in the list of health services research leaders worldwide.

Persistent challenges: Whilst South Africa has made notable progress, there are major opportunities to prioritize cost measurement systems (score 2.3/5), outcome measurement systems (score 2.8/5), value-based payment models (score 2.5/5), value-based procurement (score 2.5/5), and integrated provider networks (score 3/5). South Africa has experienced some challenges in adopting value-based procurement measures (score 2.5/5) and outcomes (score 2.8/5) and cost measurement systems (score 2.3/5). The South African government has expressed commitment towards value-based procurement, however no official strategy has yet been developed. Notably, value-based procurement models have been implemented regionally. South Africa also has existing frameworks for cost and outcome measurement, but its implementation has been limited to a few indicators and facilities, and for a specific set of health conditions.

Opportunities: One of the largest opportunities for South Africa to advance towards value-based health is to strengthen its current implementation of health information systems and electronic health records across the country via embracing digital data systems (score 3.3/5). A single interoperable EHR and information system can strengthen operational integration between facilities especially between the public and private branches. Additionally, greater availability of data across a wide range of facilities via an

electronic health system can further strengthen South Africa's analytic and benchmarking capabilities and encourage data sharing amongst providers.

Case study: Strategic Health Innovation Partnership (SHIP) (South Africa)

South Africa has established the Strategic Health Innovation Partnership (SHIP), an initiative led by the South African Medical Research Council (SAMRC) that focuses on fostering innovations in diagnostics, treatments, and health technologies tailored to address the country's unique health challenges, including HIV/AIDS, tuberculosis, and maternal and child health.[115] By funding and facilitating these innovations, SHIP aims to position South Africa as a leader in translational health research. This proactive approach not only addresses pressing health issues but also promotes collaboration among researchers, health professionals, and industry stakeholders, ultimately benefiting the local population and enhancing healthcare delivery across the nation.

Spain

Health system overview

Spain operates a universal health system (Sistema Nacional de Salud) that is primarily financed by government taxation. The system is highly decentralized, with each autonomous region managing healthcare delivery. The Spanish health system centers on preventative services and is organized into three tiers of services – from general practitioners to specialized centers. The private system also exists in Spain and complements the existing public services. While the Spanish health system performs at the same level and even above most other EU countries in metrics like quality of care and life expectancy, the system struggles with long wait times for specialist services.[116,117]

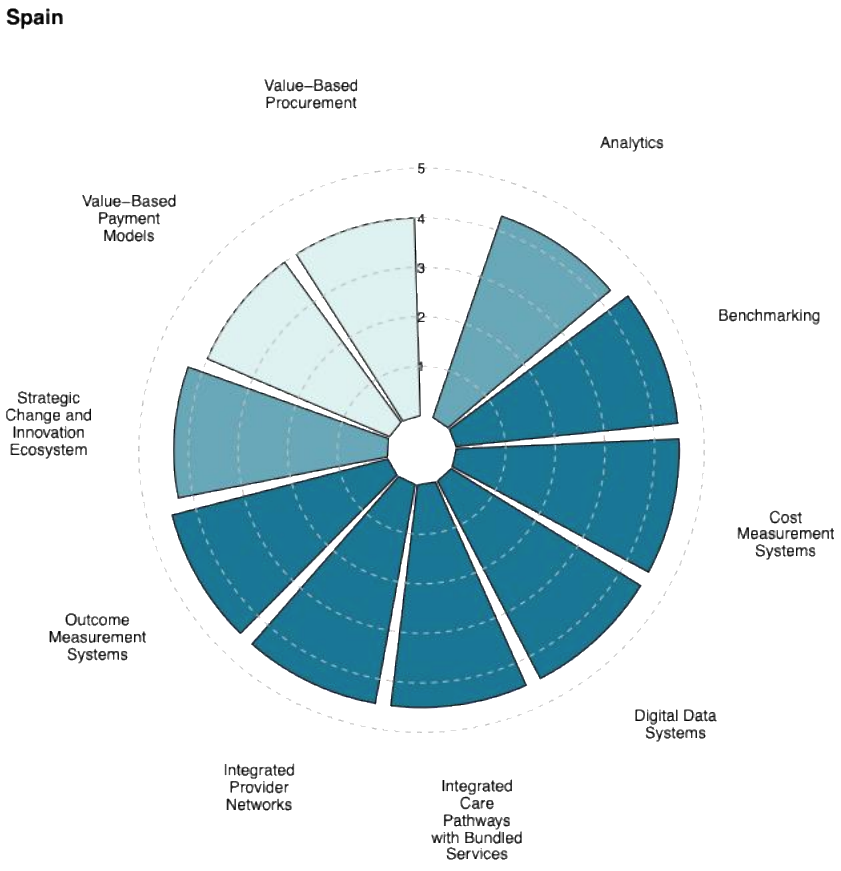

Figure 25: High-Value Health System (HVHS) assessment Spain. Source: Authors.

Major findings

Overview of progress: Spain has made great progress in benchmarking (score 4.5/5), cost measurement systems (score 4.5/5), digital data systems (score 4.5/5), outcome measurement systems (score 4.5/5), integrated care pathways (score 4.5/5) and integrated provider networks (score 4.5/5). The Spanish health system has been strongly committed to value-based care, especially in the areas of benchmarking (score 4.5/5) and cost measurement (score 4.5/5). A large amount of health data including disease metrics, determinants of health, and indicators of wellbeing are available for benchmarking across all of Spain in a specialized tool created by the Ministry of Health. In addition, Spain has been an active participant in international benchmarking activities with other EU and OECD countries. In 2017, Spain conducted a separate international benchmarking report, outlining Spain's performance compared to other 28 EU states. Based on the International Classification for Health Accounts, Spain follows a thorough framework when measuring costs including specific information such as framework adoption and cost data across facilities and region, with some data being readily available as early as 2003.

Persistent challenges: Whilst Spain has made notable progress, there are major opportunities to prioritize value-based payment (score 4/5), value-based procurement (score 4/5), strategic change and innovation (score 4/5), and analytics (score 4.3/5). Spain has faced some challenges in implementing value-based payment and procurement models (scores of 4/5 each). Some initiatives to promote value-based payment exist, however their implementation remains limited across the country and there is a lack of national commitment to value-based payment. Spain also does not have an official policy for value-based procurement, with practices mostly being implemented for the purchase of pharmaceutical goods. Some regions like Catalonia have been early adopters of value-based procurement models in the country, Implementation of value-based payment remains regional, with no direct national commitment or incentivization.

Opportunities: Although Spain has a strong record in advancing towards value-based care, several opportunities can further its advancement. Because Spain has a decentralized health system levels of integration and interoperability can remain low especially between

regions. For example, Spain's analytical capabilities have been limited due to lower levels of interoperability and a lack of data governance and protection measures beyond currently enforced EU measures. 13 out of 17 autonomous communities are connected to the national health information system in Spain, leading to lower levels of interoperability for the digital system. However, this has been given increasing attention with Spain's Digital Health strategy for 2021-2026 putting interoperability of its analytic and digital health systems at the forefront.

INCLASNS Health Indicators Visualization Tool (Spain)

Spain's Ministry of Health annually gathers over 240 key indicators from its health system to evaluate and benchmark data at a national level. Data is collected from a variety of sources and integrated into one platform. The Ministry of Health partnered with a private company to develop an interactive visualization tool to enable comparisons across regions and time periods. The interface allows for external users to perform individual comparisons and serves as an internal tool for the Ministry to identify opportunities for improvement. Key indicators included in the tool span overall health (e.g., cancer mortality), social determinants of health (e.g., average income per person), and the health system (e.g., health expenditure in primary care). The application is able to develop numerous charts and generate reports for users.[118,119]

Türkiye

Health system overview

Turkey's health system is centralized under the Ministry of Health, combining public, social security, and private sectors to promote universal coverage and quality care. The social insurance program is funded by employers, employees, and governmental contributions and is designed for formally employed workers and their dependents, while the public system remains available to all citizens. Major reforms, including the 2003 Health Transformation Program, have improved access, primary care, and patient satisfaction. Nearly all citizens are covered through Universal Health Insurance (UHI), funded by taxes and premiums, though regional access disparities persist. The Ministry of Health and the Social Security Institution (SGK) work to streamline operations and control costs, with recent efforts focusing on value-based healthcare initiatives for enhanced quality and efficiency. Currently, several challenges still persist, primarily due to the high burden of noncommunicable diseases, health workforce shortages, and regional disparities.[120–122]

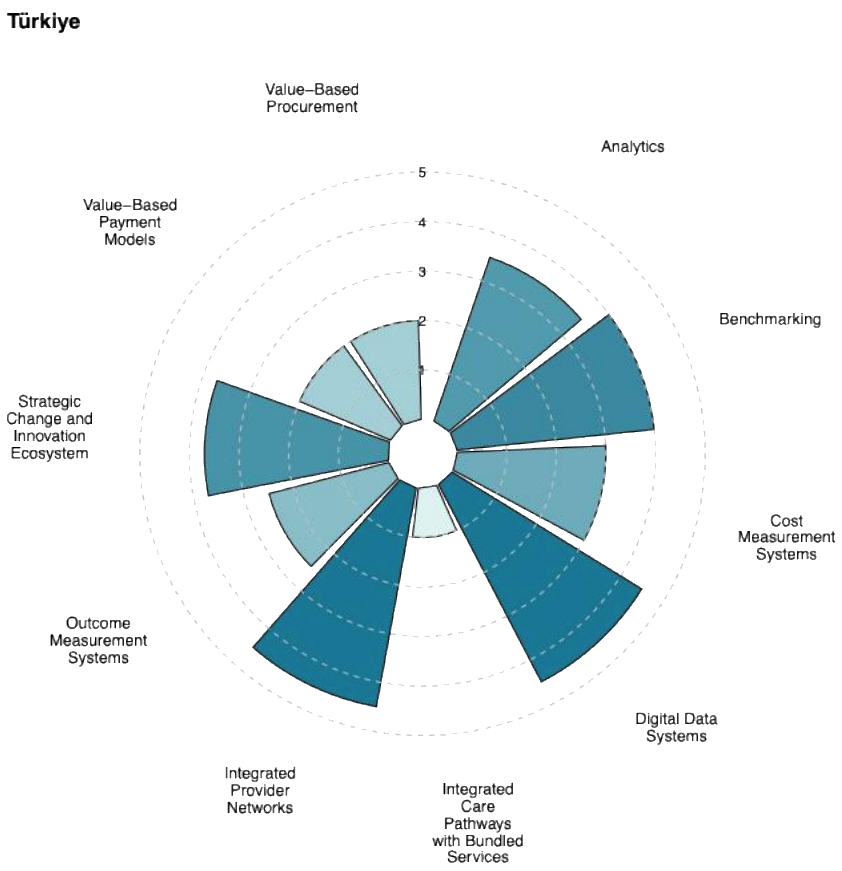

Figure 26: High-Value Health System (HVHS) assessment Türkiye. Source: Authors.

Major Findings

Overview of progress: Türkiye has made notable progress in digital data systems (score 4.5/5), integrated provider networks (score 4.5/5), benchmarking (score 4/5), strategic change and innovation ecosystem (score 3.5/5), and analytics (score 3.5/5). Türkiye's digital data systems (score 4.5/5) are a cornerstone of its health system transformation, with platforms like E-Nabız facilitating comprehensive data sharing and patient engagement. The robust digital infrastructure enhances data availability and supports evidence-based decision-making, which is essential for quality care. Under the 2003 Health Transformation Program, Türkiye's provider networks have been increasingly integrated. Robust digital health infrastructure like E-Nabiz, as well as mandated practice standards administered by the Ministry of Health has accelerated the integration of Türkiye's provider networks, linking providers and facilities structurally and operationally.

By enabling smooth referrals and collaboration among providers, these networks reduce fragmentation and enhance patient outcomes. Türkiye has a fully digitized data system for recording episodes of care that is captured within system (Medulla) at the unified Social Insurance Organization and used to pay hospitals and primary care providers, and to benchmark the providers.

Persistent challenges: While there has been advancement in value-based care progression, there are significant opportunities to focus on integrated care pathways with bundled services (score 1/5), value-based payment models (score 2/5), value-based procurement (score 2/5), outcome measurement systems (score 2.5/5), and cost measurement systems (score 3/5). While the health system's reforms and digital tools like E-Nabız, support operational integration of services, standardized referral pathways are limited, leading to inconsistencies in how patients move through the system, leading to challenges with organizing integrated care pathways (score 1/5). Many patients bypass primary care and go directly to specialists, causing bottlenecks and increased demand on secondary and tertiary facilities. This lack of structured referrals results in inefficiencies and limit the effectiveness of multidisciplinary care which is vital as Tukey suffers from a high burden of noncommunicable diseases.

Opportunities: Türkiye has significant opportunities to advance its health system by enhancing cost (score 3/5) and outcome (score 2.5/5) measurement systems. Leveraging digital data systems, such as E-Nabız, to systematically capture cost data at various care levels would provide valuable insights into healthcare expenditures, and to inform future value-based procurement practices. Similarly, Türkiye could improve patient outcome measurement by incorporating patient-reported outcome measures (PROMs) into its digital health records, creating a more comprehensive view of healthcare effectiveness. With targeted improvements, Türkiye's existing digital platforms have the potential to generate actionable data that can drive cost-effectiveness and improve patient outcomes across the health system.

Case study: e-Nabiz: Personal Health Record (Türkiye)

In 2015, Türkiye Türkiye launched e-Nabiz, an integrated personal health record application. The application was created with the intention of being a "personal" health record as opposed to only containing information from hospitals and similar healthcare facilities. For example, wearable device data can be integrated into the system alongside laboratory results and medical histories, offering users a comprehensive view of their overall health records. Additionally, the platform delivers health promotion content, assists with appointment scheduling, and serves as a central repository of data for healthcare professionals. As of 2023, 82% of Türkiye's population was using e-Nabiz, leveraging data flows from 28,608 healthcare facilities and 39 public institutions.[123,124]

United Kingdom

Health system overview

The United Kingdom's (UK) National Health Service (NHS) is a single-payer health system that provides universal health coverage funded primarily through general taxation. This financing model ensures that nearly all UK residents have access to essential healthcare services, including primary care, specialist services, and inpatient treatment at no direct cost. Immigrants and non-citizens can also access primary services (emergency services, psychiatric care, and primary care) at no or low cost. The NHS operates as a devolved system with distinct services for England, Scotland, Wales, and Northern Ireland, with general practitioners acting as gatekeepers for the pursuit of more specialist services. While a private sector exists, primarily offering elective services funded by private insurance or out-of-pocket payments, its scope remains limited, as most of the population continues to rely on the NHS. However, the NHS is currently facing workforce shortages, increasing wait times, and funding constraints. Recent pressures on the system, driven by increasing demand and an aging population, highlight a pressing need for enhanced efficiency and innovation to sustain its accessibility and quality standards.[125,126]

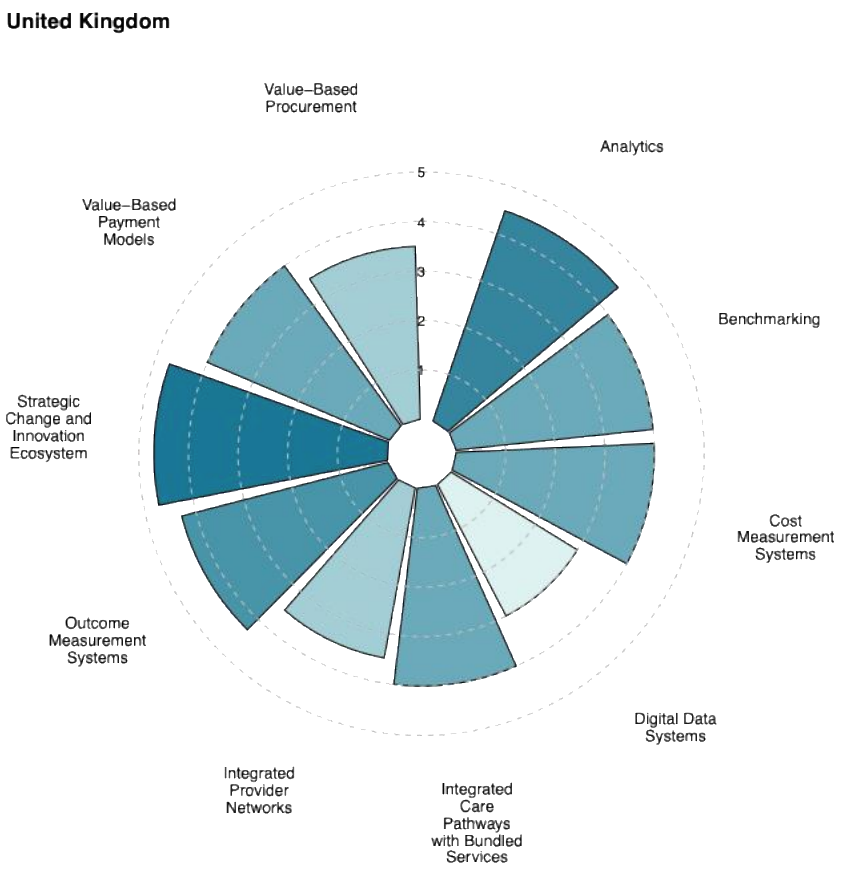

Figure 27: High-Value Health System (HVHS) assessment United Kingdom. Source: Authors.

Major findings

Overview of progress: United Kingdom has made notable progress in analytics (score 4.5/5), strategic change and innovation ecosystem (score 4.5/5), outcome measurement systems (score 4.3/5), cost measurement systems (score 4/5), and benchmarking (score 4/5). The UK demonstrates a strong commitment to value-based care, excelling in the areas of analytics (score 4.5/5) and fostering an innovation ecosystem (score 4.5/5). The NHS has made substantial progress in its data governance and reporting capabilities, with each area scoring high (score 4.5/5) in relation to 'Analytics'. GDPR-compliant data policies have been implemented, enforced and regularly audited to prioritize security and privacy in health data handling. National programs, such as the National Clinical Audit Program (NCAPOP), have established systematic and transparent health metric reporting, allowing for public accountability and fostering consistent improvements in care quality. This

translates into high performance for benchmarking (score 4/5), as such initiatives enable consistent comparison of health outcomes across regions and facilities. Such a widespread and structured approach makes it possible to evaluate and address quality discrepancies efficiently. The UK has a long history of innovation, being home to several leading health research institutes, universities and governmental organizations which support and coordinate major digital health projects. Additionally, public private partnerships such as the NHS Supply Chain illustrate the UK's commitment to fostering high value principles within its health system.

Persistent challenges: Despite advancements, there are major opportunities to prioritize integrated care pathways (score 4/5), value-based payment models (score 4/5), value-based procurement (score 3.5/5), digital data systems (score 3/5), and integrated provider networks (score 3.5/5). Widespread implementation of digital data systems (score 3/5) still poses a challenge within the UK's health system. The NHS faces issues with fragmented EHR platforms that vary across the country's regions and levels of care, hindering data flow. Without a standardized, interoperable system, healthcare providers struggle to share patient information across settings, affecting continuity of care and limiting coordinated healthcare delivery. Additionally, while value-based procurement initiatives are underway, there are obstacles in aligning risk-reward structures uniformly across the varied NHS regions and services. This variation complicates efforts to implement consistent cost-management practices and incentivize efficient care delivery. Overcoming these challenges is essential to achieving a more streamlined and connected healthcare ecosystem.

Opportunities: Looking ahead, the NHS could make significant strides by prioritizing interoperability in digital health platforms and expanding outcome-based payment models. A notable ongoing development in this area is the NHS's new contract with Palantir, awarded in 2023, to develop the Federated Data Platform (FDP). The FDP aims to unify health data across systems and regions, to address longstanding interoperability issues, making it easier to share and access information across facilities. However, concerns have been raised regarding data privacy and Palantir's role in handling sensitive

health information. Therefore, stakeholders have emphasized the need for strong data governance and transparency to uphold the NHS's usually high standards. Additionally, continuing to develop value-based payment models offers another pathway to driving quality improvements, and supports more effective resource allocation in a high-demand public health system.

Case study: National Clinical Audit Program (NCAPOP) (United Kingdom)

The National Clinical Audit Program (NCAPOP), created by NHS England with the Healthcare Quality Improvement Partnership (HQIP), acts as a standardized system for collecting, reporting and analyzing healthcare performance data throughout the United Kingdom.[127] Encompassing over 30 national audits, the goal of this program is to evaluate performance metrics and stimulate continuous improvement in patient care and patient outcomes. The results are published to promote transparency and enable comparisons across NHS regions and facilities.

Patient and Public Involvement (PPI) is a major component to the NCAPOP, with patient panels helping to design audits as a mechanism for reflecting patient priorities.[128] Reporting is aimed at being accessible and easy to understand, encouraging patients to engage actively and make informed healthcare decisions. This approach emphasizes NCAPOP's commitment to transparency and public involvement.

One of NCAPOP's major successes is the National Diabetes Audit (NDA), which monitors diabetes care across the NHS.[129] Patient and carer representatives are part of the NDA's steering group, helping NHS services benchmark their diabetes care and identify areas for improvement. It also supports research by evaluating how well diabetes care follows national guidelines, ensuring patients in remission from Type 2 diabetes receive appropriate annual checks, including HbA1c tests and foot exams.[130]

However, NCAPOP faces challenges, especially in smaller or less-resourced NHS facilities that potentially struggle with data collection and reporting demands. Programs like the NDA can encounter difficulties in rural areas with limited healthcare infrastructure. Additionally, the NCAPOP primarily serves NHS England, while regions like Scotland manage their own audits through bodies like Healthcare Improvement Scotland, leading to varying participation across the United Kingdom.

United States of America

Health System Overview

The United States operates under a mixed-model health system in which services are financed through publicly funded government insurance coverage (Medicare and Medicaid) as well as privately financed market insurance coverage. Out-of-pocket spending is used by individuals who don't have access to either. Healthcare services are largely provided by private sector facilities operating as either non-profit or for-profit entities. The federal government plays a role in surveying population health by setting policies, laws, and regulations and financing health services. It is also responsible for collecting and reporting health data through various institutions such as the Department of Health and Human Services. The United States leads globally in healthcare innovation regarding advanced technology and medications but falls short in ensuring that all citizens have access to basic health services. Additionally, the United States faces a critical problem with highly disparate health outcomes and quality despite increased healthcare expenditures.[131,132]

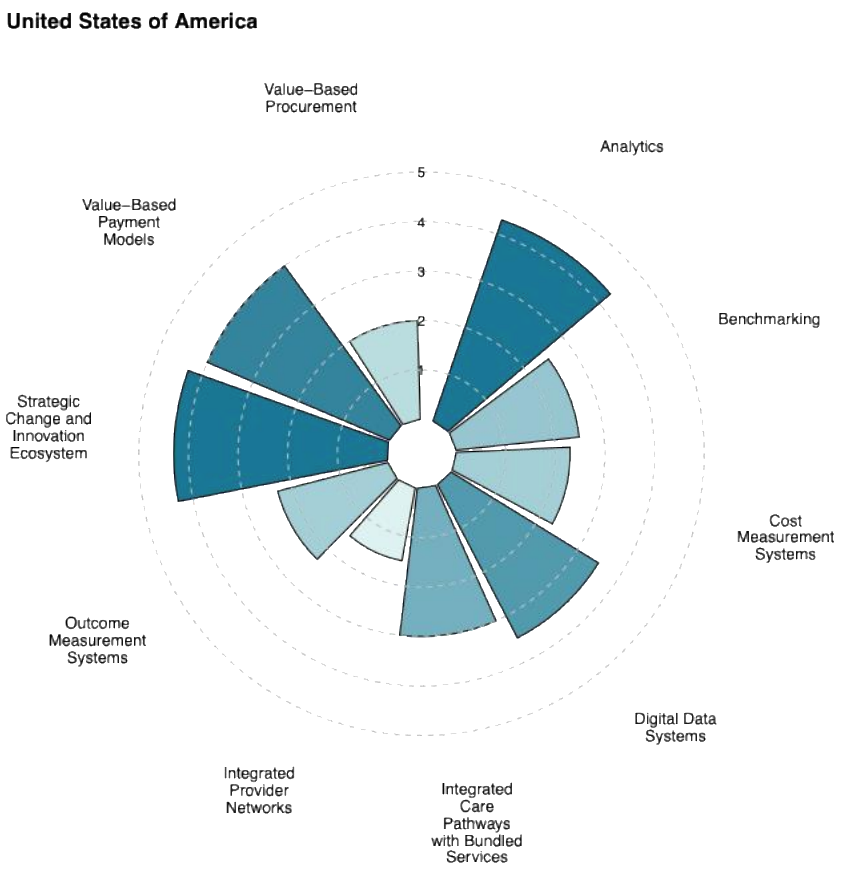

Figure 28: High-Value Health System (HVHS) assessment United States. Source: Authors.

Major findings

Overview of progress: United States of America has made notable progress in analytics (score 4.3/5), strategic change and innovation (score 4.3/5), digital data systems (score 3.5/5), value-based payment models (score 4/5), and integrated care pathways (score 3/5). The United States is the birthplace of the value-based healthcare movement[133] which following its introduction have led to experimentation and introduction of value-based payment models (score 4/5) while heavily investing in the creation and implementation of digital data systems (score 3.5/5) and analytics (score 4.3/5) through their strategic innovation and change ecosystem (score 4.3/5). There has been a proliferation of value-based initiatives within the United States looking to redesign health service delivery around patient value.

The Centers for Medicare and Medicaid Services (CMS) provides services to around 100 million Americans with the primary goal of strengthening the nation's healthcare system. The center aims to provide access to high-quality services while collecting health system performance data and developing tools to help decision-makers analyze system performance. CMS has developed five flagship value-based programs linking provider performance on quality measures to payment schemes. These programs extend beyond physicians to include nursing and home health services.

Persistent Challenges: The rising costs of healthcare pose a great threat to the sustainability and viability of healthcare services within the United States. The country has a fragmented financing system in which 9-10% of the population lacks access to adequate health insurance. While value-based payment programs are increasing, they remain at the departmental and institutional level without uniform scaling across all system levels. Furthermore, despite performance measurement across states, there is no unified system for measuring and reporting healthcare outcomes and costs, limiting performance benchmarking efforts both nationally and internationally.

Opportunities: Whilst United States of America has made notable progress, there are major opportunities to prioritize cost measurement systems (score 2.3/5), outcome measurement systems (score 2.3/5), benchmarking (score 2.5/5), value-based procurement (score 2/5), and integrated provider networks (score 1.5/5). To move toward high-value health, the United States should prioritize identifying successful value-based healthcare programs and initiatives and focus on scaling them nationally. There should be increased focus on accurate and comprehensive cost and outcome measurement and collection, with clear emphasis on benchmarking and performance measurement. As leaders in digital innovation, there remain several opportunities for health systems and government agencies to form public-private partnerships geared toward providing accessible and comprehensive health solutions to citizens.

Case study: Medicare Shared Savings Program: Value-Based Care (United States)

The Medicare Shared Savings Program (MSSP) is a vital part of the U.S. health system, designed to encourage the establishment of Accountable Care Organizations (ACOs) that provide coordinated care for Medicare beneficiaries. Launched under the Affordable Care Act in 2010, the MSSP incentivizes healthcare providers to deliver high-quality and cost-effective care by allowing ACOs to share in the savings generated for the Medicare program. This initiative emphasizes patient outcomes over the volume of services, moving away from traditional fee-for-service models toward more efficient and collaborative healthcare delivery.[134,135]

Since 2021, ACOs participating in the MSSP have been required to report quality performance data to the Centers for Medicare & Medicaid Services (CMS) through the Alternative Payment Model (APM) Performance Pathway (APP). ACOs are evaluated based on various quality measures, including patient experience, care coordination, and preventive health services, which ensures that high-quality care remains a primary goal. Financial incentives linked to performance outcomes drive ACOs to improve patient care while effectively managing costs.

Since its inception, the MSSP has achieved notable success, reporting $1.66 billion in savings for 2021, representing the fifth consecutive year of financial benefits to Medicare (AAMC, 2023). Both hospital- and physician-led ACOs have contributed to these savings, with physician-led organizations showing higher average savings. As the MSSP evolves, its emphasis on enhancing beneficiary engagement and upholding stringent quality standards positions it as a model for value-based healthcare in the U.S. and offers a framework for potential adoption in other health systems worldwide.

Section 4: Accelerating the transition to the HVHS model

Countries can move towards a high-value health system (HVHS) through adopting different initiatives and strategies to provide services and technologies. Governments can accelerate this transition in an organized and structured way so that their countries can achieve a HVHS in the shortest possible time to benefit citizens, patients, health providers, and payers. In this section, we present three different strategies that countries have adopted to move towards a HVHS and propose five enablers that governments could prioritize to accelerate their transition.

Strategies to transition to the HVHS model

Each country conceives, designs, and sequences the development of each of the 10 components differently based on its motivations to transition to a HVHS, health system dynamics, and the balance of various political, economic, and social forces. However, there are three strategies that all countries can follow when transitioning to the HVHS model and could be used to inform and develop a national HVHS strategy to accelerate country transition:

(1) **Extension Strategy:** implies extending the *scope* of the HVHS components—going from one to multiple components—followed by expanding the geographic *scale*—going from a small initiative to a health system-wide intervention.
(2) **Expansion Strategy:** indicates expanding the *scale* followed by the extension of *scope* (note that the difference between the extension and the expansion strategies is the order).
(3) **Transformation Strategy:** a hybrid approach that simultaneously combines extension with expansion with the introduction of system level transformations.

While most countries appear to follow the expansion or extension strategies, the biggest potential could be achieved if countries embarked on a transformational approach. **Figure 29** depicts the pathways of the different strategies.

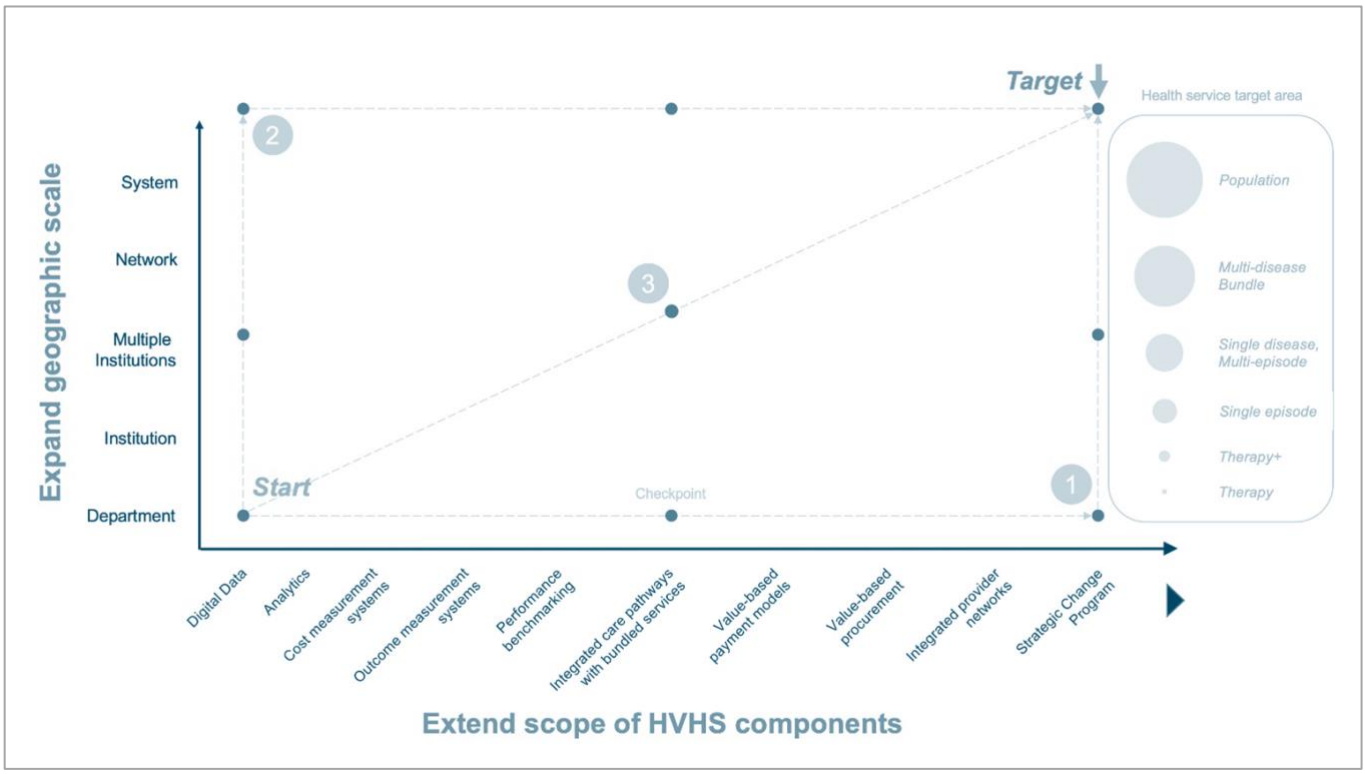

Figure 29: Harvard HVHS Transition Matrix. Source: Authors.

Extension Strategy: extend scope followed by expansion of scale

The extension strategy begins by introducing a proof-of-concept demonstration of one or more of the 10 HVHS model components that is applied to one of the five health service target areas (**Figure 29** Pathway 1). The primary aim of this demonstration is to design and execute a Minimum Viable Innovation (MVI), i.e., a working prototype that can yield the desired outcomes, evaluate the system's receptiveness to the innovation, and guide the strategic change required needed for scale-up.

The most basic demonstration could involve advancing one of the 10 HVHS components (e.g., performance benchmarking) at a low level in the system (e.g., Department of Surgery) focused on a relatively low complexity target health service (e.g., episode of care such as a readily measurable surgical procedure that is high-volume and time-limited). The MVI is then extended in scope by introducing additional HVHS components and or health service areas while enhancing the strategic change process, introducing pertinent policies and

capabilities, and creating an innovation ecosystem that enables readiness for replication and expansion of the MVI to other departments, institutions, and eventually, the system level.

Expansion Strategy: expand scale followed by extension of scope

The expansion strategy involves introducing a proof-of-concept demonstration of the HVHS model, which may comprise one or more of the 10 HVHS components applied to any of the health service target areas (**Figure 29**, Pathway 2) at either the departmental or institutional level. However, the chosen pathway emphasizes geographic scaling before including additional HVHS components or other health service target areas, which contrasts it from the expansion strategy. Once a demonstration has led to the design and implementation of an MVI, it should be expanded from a single unit, department, or institution to multiple institutions, networks, and the system level.

Transformation Strategy: simultaneous expansion of scope and scale

The transformation strategy is a hybrid approach that prioritizes building an enabling ecosystem for HVHS while simultaneously introducing multiple innovations at different scales and expanding their scope and scale (**Figure 29**, Pathway 3). As the system gains experience, builds capabilities, and implements a dedicated strategic change management program with policies that encourage the strengthening and addition of the 10 components of a high-value health system, critical lessons are learned that support the ongoing initiative for system transformation.

This hybrid approach allows for innovative, high-value solutions to be implemented at various levels of scale in the system while also driving substantial transformations at the system level through policies that encourage innovation generation, design, adoption, and diffusion in an ecosystem that supports both "emergent" and "driven" innovations.

Five enablers to accelerate the HVHS Transition

There are five critical enablers that G20+ countries or any other interested nation could prioritize to accelerate their transition to the Harvard HVHS model (**Figure 30**).

Figure 30: The Five Critical Enablers to Accelerate the Transition to the Harvard HVHS Model.

Source: Authors.

Development of National HVHS Strategy

The development of a National HVHS Strategy (NHS) confers three major advantages: 1) a process to engage critical healthcare stakeholders and develop a value-oriented agenda; 2) identification of the major HVHS priorities to pursue; 3) political commitment to support the HVHS transition. An HVHS strategy within the National Health Strategic Plan aligns the HVHS transition program with the national vision for the country's continued health system development and other national developmental objectives of the state. The NHS also enables a country to estimate the fiscal space and other potential funding range needed to implement the NHS, together with modelling to determine efficiency gains over

the long-term and spillover effects on other sectors, to justify and manage the investment in health system value transformation.

Leadership demonstrated among all critical stakeholders

Without leadership at the highest level, a country will struggle to develop and implement a focused HVHS transition strategy. Leadership is essential and must be distributed across and within five crucial stakeholder groups: government, providers, private payers, healthcare firms and the medical establishment (**Table 5**). Most of all, countries will need to create the conditions in which the five major stakeholders can collaborate around the National HVHS strategy, instead of the current zero-sum approach that characterizes stakeholder engagement in most countries.

Table 5: Distributed Leadership among and within Five Critical Stakeholders in Health Systems. Source: Authors.

Stakeholder	Major contribution to the HVHS components and other crucial roles
Government	• Strategic change and innovation ecosystem • Benchmarking • Expand fiscal space to fund HVHS transition • Coordinate and organize of plurality of actors involved in HVHS transition • Develop relevant policies needed for the HVHS transition
Providers	• Outcome measurement systems • Cost measurement systems • Integrated care pathways with bundled services • Integrated provider networks
Payers	• Value based payment models
Healthcare and IT Firms	• Digital data systems • Analytics • Value-based procurement
Medical Establishment	• This includes professional clinical association and medical education and training institutions: • Advocacy and promotion of awareness relating to HVHS • Align clinical practice with HVHS principles • Education and training tailored towards implementing HVHS • Research and involvement in innovation creation • Guidance on the creation of registries

Financing

While the transition to the HVHS model will produce 'value for money and value for many' over the long term, financing will be required to fund demonstration projects, development of minimal viable innovations, and the capital costs needed to introduce data systems capable of measuring, pooling, and analyzing outcomes and cost data. Investment in clinical workflow and functional reorganization of care around the patient and across provider groups may also be needed. New entities may need to be instituted to oversee the HVHS strategy, manage registries, regulate providers and payers and manage the introduction of new technologies, among others.

Healthcare firms and startups may also need to develop new business models to produce the goods and services required by the HVHS. In addition to leveraging existing resources in both the public and private sectors more creatively and intentionally to support the NHS, fiscal space could be expanded, and innovative financing mechanisms developed to unlock funding for HVHS transition initiatives, activities and interventions.

Global Benchmarking and Cross-Learning

Platforms that consolidate country-level data into an integrated dataset that enables cross-country comparison, analysis, and research will be invaluable to promoting learning across and within countries about what works and what does not at the system level. Such a dataset could be a public good and managed by an academic institution or multilateral entity that uses country-level data to present global progress in HVHS transition, conduct advanced analyses (advances data science techniques and machine learning at scale), and make data available for research entities to inform policy and practice. Eventually, such a platform could be updated in real-time, observed using existing virtual reality tools, and simulated policy scenarios to inform design and monitoring of implementation. An annual publication that uses such data to highlight progress made and key insights could be presented at an annual HVHS summit or the G20 Leadership Summit each year.

Innovation

Innovations in new products, delivery of health services, policies, programs, and institutional arrangements will be critical to drive the transition toward the HVHS model. In addition, health system reforms will be needed to enable rapid and expanded uptake of innovations and innovations in delivery at scale to achieve population-level impact. A more enabling ecosystem for innovation in health systems will be essential to involve more stakeholders in the innovation process, unlock startup capital, provide the necessary technical and strategic guidance, and ensure access within health systems to rapidly iterate potentially transformative HVHS innovations.

References

1. G20 Health Ministers Declaration. https://g20.utoronto.ca/2020/2020-g20-health-1119.html.
2. 2021 Declaration of the G20 Health Ministers. https://g20.utoronto.ca/2021/210906-health.html.
3. Reddy, C. L., Garcia Ruiz, J. & Atun, R. *Transitioning to High-Value Health Systems in G20+ Countries*. https://www.hsph.harvard.edu/health-systems-innovation-lab/hvhs/ (2023).
4. Atun, R. & Moore, G. *Building a High-Value Health System*. (Oxford University Press, 2021). doi:10.1093/oso/9780197528549.001.0001.
5. Health Systems Innovation Lab, Harvard University & Atun, R. Strategic Public-Private Partnerships to Transform Cardiovascular Health. *HPHR J.* **HSIL**, (2022).
6. Atun, R., Reddy, C. L. & Garcia Ruiz, J. Transitioning to High-Value Health Systems in G20+ Countries. *Health Systems Innovation Lab* https://www.hsph.harvard.edu/health-systems-innovation-lab/hvhs/ (2023).
7. Civaner, M. M. Health-care reform in Turkey: far from perfect. *The Lancet* **383**, 26 (2014).
8. Atun, R., de Jongh, T., Secci, F., Ohiri, K. & Adeyi, O. Integration of targeted health interventions into health systems: a conceptual framework for analysis. *Health Policy Plan.* **25**, 104–111 (2010).
9. Atun, R. *et al.* Universal health coverage in Turkey: enhancement of equity. *The Lancet* **382**, 65–99 (2013).
10. Africa Health Business. Algeria's Health Sector. (2021).
11. Brahamia, B. The Health Care System in Algeria. *SFB Glob. Entwicklungsdynamiken Von Sozialpolitik SFB 1342* (2022) doi:https://doi.org/10.26092/elib/2028.
12. Aomar, A. 1200 médecins vont quitter l'Algérie pour rejoindre la France. https://observalgerie.com/2022/02/05/societe/1200-medecins-france/ (2022).
13. Algeria - Strengthening health system governance: Towards more effective regulatory environment for improved efficiency and quality of care. *World Bank* https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/165961468211458971/Algeria-Strengthening-health-system-governance-Towards-more-effective-regulatory-environment-for-improved-efficiency-and-quality-of-care.
14. Hamaizia, A. & Belkacem, M. A. Reforming Algeria's social protection system | Policy Commons.
15. Belló, M. & Becerril-Montekio, V. M. The health system of Argentina. *Salud Publica Mex.* **53 Suppl 2**, s96–s108 (2011).

16. Gupta, H. Public Health in Argentina. *The Borgen Project* https://borgenproject.org/public-health-in-argentina/ (2024).
17. Oficina de Presupuesto del Congreso. CHARACTERISTICS OF THE ARGENTINE HEALTH CARE SYSTEM. https://www.opc.gob.ar/en/health/characteristics-of-the-argentine-health-care-system/ (2021).
18. Torres, C. A. Estudio e implementación de la Historia Clínica Electrónica a nivel Nacional en Argentina. (2020).
19. Argentine Ministry of Health builds national digital data network. https://www.redhat.com/en/resources/argentina-ministerio-de-salud-case-study.
20. Europe, W. H. O. R. O. for, Policies, E. O. on H. S. and, Healy, J., Sharman, E. & Lokuge, B. Australia: health system review. (2006).
21. Care, A. G. D. of H. and A. The Australian health system. https://www.health.gov.au/about-us/the-australian-health-system (2018).
22. Commonwealth. Australia. https://www.commonwealthfund.org/international-health-policy-center/countries/australia (2020).
23. Health system overview. *Australian Institute of Health and Welfare* https://www.aihw.gov.au/reports/australias-health/health-system-overview (2024).
24. Care, A. G. D. of H. and A. Better health outcomes through My Health Record. https://www.health.gov.au/ministers/the-hon-greg-hunt-mp/media/better-health-outcomes-through-my-health-record (2019).
25. Hoffman, D. M. My Health Record (and E-scripts): essential new resource for physicians-a personal perspective. *Intern. Med. J.* **53**, 439–442 (2023).
26. Australia, H. About my health record – purpose, benefits and security. https://www.healthdirect.gov.au/my-health-record (2024).
27. My Health Record in Emergency Departments Project | Australian Commission on Safety and Quality in Health Care. https://www.safetyandquality.gov.au/our-work/e-health-safety/my-health-record-emergency-departments-project.
28. Tikkanen, R., Osborn, R., Mossialos, E., Djordjevic, A. & Wharton, G. A. Brazil - International Health System Profile. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/brazil (2020).
29. Ortega, F. & Pele, A. Brazil's unified health system: 35 years and future challenges. *Lancet Reg. Health – Am.* **28**, (2023).
30. Roman, A. A Closer Look Into Brazil's Healthcare System: What Can We Learn? *Cureus* **15**, e38390 (2023).
31. Massuda, A., Hone, T., Leles, F. A. G., Castro, M. C. de & Atun, R. The Brazilian health system at crossroads: progress, crisis and resilience. *BMJ Glob. Health* **3**, e000829 (2018).

32. Ministry of Health, Brazil, E. S. *Brazilian National Digital Health Strategy 2020-2028*. 128 : http://bvsms.saude.gov.br/bvs/publicacoes/strategy_health_digital_brazilian.pdf (2020).
33. OECD. *Health Data Infrastructure and Information System in Brazil*. https://www.oecd-ilibrary.org/social-issues-migration-health/oecd-reviews-of-health-systems-brazil-2021_b601203f-en (2022) doi:10.1787/b601203f-en.
34. Tikkanen, R., Osborn, R., Mossialos, E., Djordjevic, A. & Wharton, G. A. Canada - Internaitonal Health System Profile. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/canada (2020).
35. Health Canada. Canada's Health Care System. https://www.canada.ca/en/health-canada/services/health-care-system/reports-publications/health-care-system/canada.html (2011).
36. Santana, M. J., Manalili, K., Ahmed, S., Fairie, P. & Kemp, K. A. The Role of Patient-Reported Outcomes in Person-Centred Care in Canada.
37. ACHORD - Alberta PROMs and EQ-5D Research and Support Unit (APERSU). https://sites.google.com/ualberta.ca/achord/projects/alberta-proms-and-eq-5d-research-and-support-unit-apersu.
38. Cuthbert, C. A. *et al*. Patient-reported outcomes in Alberta: rationale, scope, and design of a database initiative. *Curr. Oncol.* **26**, e503 (2019).
39. Tikkanen, R., Osborn, R., Mossialos, E., Djordjevic, A. & Wharton, G. A. China. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/china (2020).
40. Wang, Y., Castelli, A., Cao, Q. & Liu, D. Assessing the design of China's complex health system – Concerns on equity and efficiency. *Health Policy OPEN* **1**, 100021 (2020).
41. Yi, B. An overview of the Chinese healthcare system. *Hepatobiliary Surg. Nutr.* **10**, 93 (2021).
42. Hong, D. *et al*. The Influence of Diagnosis Intervention Packet Policy Intervention on Medication Structure and Drug Cost of Elderly Hypertensive Inpatients in China: A Multicenter Interrupted Time-Series Analysis. *Risk Manag. Healthc. Policy* **16**, 1781 (2023).
43. Lin, K., Li, Y., Yao, Y., Xiong, Y. & Xiang, L. The impact of an innovative payment method on medical expenditure, efficiency, and quality for inpatients with different types of medical insurance: evidence from a pilot city, China. *Int. J. Equity Health* **23**, 115 (2024).
44. Hong, D. *et al*. The Influence of Diagnosis Intervention Packet Policy Intervention on Medication Structure and Drug Cost of Elderly Hypertensive Inpatients in China: A Multicenter

Interrupted Time-Series Analysis. *Risk Manag. Healthc. Policy* **16**, 1781–1790 (2023).

45. Zhu, Z., Wang, Q., Sun, Q., Lexchin, J. & Yang, L. Improving access to medicines and beyond: the national volume-based procurement policy in China. *BMJ Glob. Health* **8**, e011535 (2023).

46. Lin, K., Li, Y., Yao, Y., Xiong, Y. & Xiang, L. The impact of an innovative payment method on medical expenditure, efficiency, and quality for inpatients with different types of medical insurance: evidence from a pilot city, China. *Int. J. Equity Health* **23**, 115 (2024).

47. Fasseeh, A. *et al.* Healthcare financing in Egypt: a systematic literature review. *J. Egypt. Public Health Assoc.* **97**, 1 (2022).

48. Egypt's Health Care System - The Center for Global Health and Development (CGHD). https://www.cghd.org/index.php/global-health-partnerships-and-solutions/profiles/43-egypts-health-care-system.

49. Pinilla-Dominguez, P. *et al.* Institutionalizing health technology assessment in Egypt: Situational analysis and roadmap. *Front. Pharmacol.* **13**, 1014658 (2022).

50. Gamal, M. *et al.* National Recommendations for Pharmacoeconomic Evaluations Reporting for Reimbursement and Procurement of New Pharmaceutical Applications in Egypt. *Glob. J. Qual. Saf. Healthc.* **7**, 216–223 (2024).

51. Annis, E. & Ratcliffe, H. Strengthening Primary Health Care Systems to Increase Effective Coverage and Improve Outcomes in Ethiopia. *PHCPI* https://www.improvingphc.org/ethiopia-1.

52. Internaitonal Trade Administration USA. Ethiopia - Healthcare. *International Trade Administration* https://www.trade.gov/country-commercial-guides/ethiopia-healthcare (2024).

53. USAID; Health System 20/20. Health Facility Governance in the Ethiopian Health System. https://www.hfgproject.org/wp-content/uploads/2015/02/Health-Facility-Governance-in-the-Ethiopian-Health-System.pdf.

54. USAID. Digital Health Activity. *USAID Digital Health Activity | DHA* https://dha.jsi.com/ (2024).

55. Imai, Y., Jacobzone, S. & Lenain, P. *The Changing Health System in France*. https://www.oecd-ilibrary.org/economics/the-changing-health-system-in-france_353501840323 (2000) doi:10.1787/353501840323.

56. Rodwin, V. The French Healthcare System. *World Hosp. Health Serv.* **54**, 49–55 (2018).

57. Tikkanen, R., Osborn, R., Mossialos, E., Djordjevic, A. & Wharton, G. A. France - International Health Care System Profiles. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/france (2020).

58. Secretariat of, the European Observatory on Health Systems and Policies & World Health

Organization Regional Office for. France health system information. *Secretariat of, the European Observatory on Health Systems and Policies* https://eurohealthobservatory.who.int/countries/france.

59. Crubezy, M., Haesebaert, J., Geig, A. & Michel, P. Valoriser e-Satis : nouvelle méthode d'analyse de l'Expérience Patient. *Rev. DÉpidémiologie Santé Publique* **71**, 101839 (2023).

60. Tikkanen, R., Osborn, R., Mossialos, E., Djordjevic, A. & Wharton, G. A. Germany - International Health Care System Profiles. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/germany.

61. DIP - Gutachten 2024 des Sachverständigenrates zur Begutachtung der Entwicklung im Gesundheitswesen und in der Pflege Fachkräfte im Gesundheitswesen - Nachhaltiger Einsatz einer knappen Ressource. https://dip.bundestag.de/drucksache/gutachten-2024-des-sachverst%C3%A4ndigenrates-zur-begutachtung-der-entwicklung-im-gesundheitswesen/274907.

62. Authors *et al. Overview of Health Technology Assessment Processes for Time-Limited Recommendations: CADTH Health Technology Review*. (Canadian Agency for Drugs and Technologies in Health, Ottawa (ON), 2023).

63. Federal Ministry of Health, G. *DIGITAL TOGETHER Germany's Digitalisation Strategy for Health and Care*. 44 https://www.bundesgesundheitsministerium.de/fileadmin/Dateien/3_Downloads/D/Digitalisierungsstrategie/Germany_s_Digitalisation_Strategy_for_Health_and_Care.pdf (2023).

64. Tikkanen, R., Osborn, Robin, Mossialos, E., Djordjevic, A. & Wharton, G. A. India - International Health Care System Profiles. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/india (2020).

65. Standard, B. Narayana Hrudayalaya to set up Rs 150 cr hospital in Assam. https://www.business-standard.com/article/companies/narayana-hrudayalaya-to-set-up-rs-150-cr-hospital-in-assam-112061200049_1.html (2012).

66. Tarun, K. & Rangan, V. K. Narayana Hrudayalaya Heart Hospital: Cardiac Care for the Poor (A) - Case - Faculty & Research - Harvard Business School. *Harvard Business School Case* https://www.hbs.edu/faculty/Pages/item.aspx?num=32452 (2005).

67. Narayana Hrudayalaya: A Model for Accessible, Affordable Health Care? *Knowledge at Wharton* https://knowledge.wharton.upenn.edu/article/narayana-hrudayalaya-a-model-for-accessible-affordable-health-care/.

68. Expanding access to low-cost, high-quality tertiary care: spreading the Narayana Health model beyond India.

69. Mahendradhata, Y. *et al. The Republic of Indonesia Health System Review*. https://iris.who.int/bitstream/handle/10665/254716/9789290225164-eng.pdf (2017).
70. Nundy, M. & Bhatt, P. Health System in the Republic of Indonesia - Reforms, Transformations, and Challenges. (2022).
71. Ang, A. SatuSehat mobile EMR access enabled and more briefs | Healthcare IT News. *Healthcare IT News* https://www.healthcareitnews.com/news/asia/satusehat-mobile-emr-access-enabled-and-more-briefs (2024).
72. Ang, A. Google Cloud looks to incorporate genAI in Indonesia's SatuSehat. *Healthcare IT News* https://www.healthcareitnews.com/news/asia/google-cloud-looks-incorporate-genai-indonesias-satusehat (2024).
73. Office of Assistant to Deputy Cabinet Secretary for State Documents &Office of Assistant to Deputy Cabinet Secretary for State Documents &. Health Ministry Launches 'SatuSehat' Platform. *Sekretariat Kabinet Republik Indonesia* https://setkab.go.id/en/health-ministry-launches-satusehat-platform/ (2022).
74. USAID. Indonesia | Country Health Information Systems and Data Use Project (CHISU). https://chisuprogram.org/where-we-work/indonesia.
75. Tikkanen, R., Osborn, Robin, Mossialos, E., Djordjevic, A. & Wharton, G. A. Italy - International Health Care System Profiles. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/italy (2020).
76. World Health Organization & Secretariat of, the European Observatory on Health Systems and Policies. Italy health system information. *Secretariat of, the European Observatory on Health Systems and Policies* https://eurohealthobservatory.who.int/countries/italy.
77. Cinelli, G. & Fattore, G. The 2022 community-based integrated care reform in Italy: From *desiderata* to implementation. *Health Policy* **139**, 104943 (2024).
78. OECD. Towards person-centered integrated care in Italy. *OECD* https://www.oecd.org/en/about/programmes/dg-reform/towards-person-centered-integrated-care-in-italy.html.
79. Kaneko, M. & Matsushima, M. Current trends in Japanese health care: establishing a system for board-certificated GPs. *Br. J. Gen. Pract.* **67**, 29 (2017).
80. Katori, T. Japan's healthcare delivery system: From its historical evolution to the challenges of a super-aged society. *Glob. Health Med.* **6**, 6 (2024).
81. Tikkanen, R., Osborn, Robin, Mossialos, E., Djordjevic, A. & Wharton, G. A. Japan - International Health Care System Profiles. *The*

Commonwealth Fund https://www.commonwealthfund.org/international-health-policy-center/countries/japan (2020).

82. Health Care 2035 Advisory Panel. *The Japan Vision: Health Care 2035 Executive Summary*. https://www.mhlw.go.jp/seisakunitsuite/bunya/hokabunya/shakaihoshou/hokeniryou2035/assets/file/healthcare2035_proposal_150703_summary_en.pdf (2015).

83. Internaitonal Trade Administration USA. Mexico - Healthcare Products & Services. *International Trade Administration* https://www.trade.gov/country-commercial-guides/mexico-healthcare-products-services (2023).

84. World Health Organization. Mexico: Health System Review 2020. *Secretariat of, the European Observatory on Health Systems and Policies* https://eurohealthobservatory.who.int/publications/i/mexico-health-system-review-2020 (2020).

85. Health Insurance Review and Assessment Service (HIRA). Healthcare System in Korea. *HIRA* https://www.hira.or.kr/dummy.do?pgmid=HIRAJ010000006000.

86. Regional Office for the WesternPacific, W. H. O. Republic of Korea health system review. *Health Syst. Transit.* **5**, (2015).

87. Song, Y. J. The South Korean Health Care System. *JMA J.* **52**, 206–209 (2009).

88. Yoon, J. H., Kwon, I. H. & Park, H. W. The South Korean health-care system in crisis. *The Lancet* **403**, 2589 (2024).

89. Kwon, A. *et al.* Current Health Data Standardization Project and Future Directions to Ensure Interoperability in Korea. *Healthc. Inform. Res.* **30**, 93–102 (2024).

90. Tikkanen, R., Osborn, Robin, Mossialos, E., Djordjevic, A. & Wharton, G. A. Netherlands - International Health Care System Profiles. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/netherlands (2020).

91. Maarse, H., Jansen, M., Jambroes, M. & Ruwaard, D. The Netherlands. in *Organization and financing of public health services in Europe: Country reports [Internet]* (European Observatory on Health Systems and Policies, 2018).

92. OECD. *The Structure and Governance of the Dutch Health Information System in Comparison with OECD Countries*. https://www.oecd-ilibrary.org/social-issues-migration-health/towards-an-integrated-health-information-system-in-the-netherlands_7f2fe4f0-en (2022) doi:10.1787/7f2fe4f0-en.

93. Ministerie van Volksgezondheid, W. en S. The Dutch health care system. https://english.zorginstituutnederland.nl/about-us/healthcare-in-the-netherlands (2018).

94. van de Warrenburg, B. P., Tiemessen, M., Munneke, M. & Bloem, B. R. The Architecture of Contemporary Care Networks for Rare Movement Disorders: Leveraging the ParkinsonNet Experience. *Front. Neurol.* **12**, (2021).
95. Een landelijk netwerk van meer dan 3.900 zorgverleners gespecialiseerd in parkinson. *ParkinsonNet* https://www.parkinsonnet.nl/.
96. World Health Organization. Country Cooperation Strategy at a glance - Nigeria. OECD Publishing https://doi.org/10.1787/20758480-table1 (2014).
97. Christian, B. N., Christian, N. G., Keshinro, M. I. & Olutade-Babatunde, O. How to build bridges for Universal Health Coverage in Nigeria by linking formal and informal health providers. *BMJ Glob. Health* **8**, e014165 (2023).
98. Severe Malaria Observatory. Nigeria health system. *Severe Malaria Observatory* https://www.severemalaria.org/countries/nigeria/nigeria-health-system.
99. Abujah, R. FMOH Launches Digital Health Committee. *Science Nigeria* https://sciencenigeria.com/fmoh-launches-digital-health-committee/ (2024).
100. Deelstra, J. A more sustainable approach for Nigeria's digital health ecosystem. *PATH* https://www.path.org/our-impact/articles/-a-more-sustainable-path-for-nigerias-digital-health-ecosystem/ (2024).
101. Shishkin, S., Sheiman, I., Vlassov, V., Potapchik, E. & Sazhina, S. Structural changes in the Russian health care system: do they match European trends? *Health Econ. Rev.* **12**, 29 (2022).
102. The European Observatory on Health Systems and Policies, W. H. O. Russian Federation health system information. *The European Observatory on Health Systems and Policies* https://eurohealthobservatory.who.int/countries/russian-federation.
103. Vacrioux, A. Russia's Health Care System, Demographics Present Unique Advantages, Disadvantages in Fighting COVID-19 | Davis Center. *Harvard University Davis Center for Russian and Eurasian Studies* https://daviscenter.fas.harvard.edu/insights/russias-health-care-system-demographics-present-unique-advantages-disadvantages-fighting (2020).
104. Чеканникова, О. А. Журнал «Московская медицина» - Проект «Персональный помощник». *НИИ организации здравоохранения и медицинского менеджмента Департамента здравоохранения города Москвы.* https://niioz.ru/moskovskaya-meditsina/zhurnal-moskovskaya-meditsina/glavnoe/proekt-personalnyy-pomoshchnik/ (2023).

105. Проект “Персональный помощник” для онкобольных показал хорошие результаты, и мы продолжим его | Онкологический центр № 1 ГКБ имени С.С. Юдина. https://gkob1.ru/news/proekt-personalnyj-pomoshhnik-dlja-onkobolnyh-pokazal-horoshie-rezultaty-i-my-prodolzhim-ego/.
106. Al-Nozha, O. M. Key aspects of the Saudi healthcare system reform and the potential impact on the main stakeholders: A qualitative study. *J. Taibah Univ. Med. Sci.* **19**, 598–610 (2024).
107. Gurajala, S. Healthcare System in the Kingdom of Saudi Arabia: An Expat Doctor’s Perspective. *Cureus* **15**, (2023).
108. Internaitonal Trade Administration USA. Saudi Arabia - Healthcare. https://www.trade.gov/country-commercial-guides/saudi-arabia-healthcare (2024).
109. Kingdom of Saudi Arabia. Health Care in the Kingdom of Saudi Arabia. *Kingdom of Saudi Arabia* https://www.my.gov.sa/wps/portal/snp/aboutksa/HealthCareInKSA/?lang=en.
110. Kingdom of Saudi Arabia Ministry of Health. MOH Initiatives & Projects - Seha Virtual Hospital. https://www.moh.gov.sa/en/Ministry/Projects/Pages/Seha-Virtual-Hospital.aspx.
111. World Economic Forum. Middle East’s First-Ever Virtual Hospital Opens In Saudi Arabia. *World Economic Forum* https://www.weforum.org/videos/this-is-the-biggest-virtual-hospital-in-the-world/.
112. Monié, K. Behind the world’s largest virtual hospital. *WIRED Middle East* https://wired.me/technology/whats-behind-the-worlds-largest-virtual-hospital/ (2023).
113. Mathews, C. *et al*. South Africa’s healthcare system: eight steps that would get it on the right track. *The Conversation* http://theconversation.com/south-africas-healthcare-system-eight-steps-that-would-get-it-on-the-right-track-233893 (2024).
114. Zwarenstein, M. The structure of South Africa’s health service. *Afr. Health* 3–4 (1994).
115. Department of Health Republic of South Africa. Strategic Health Innovation Partnerships | SAMRC. https://www.samrc.ac.za/innovation/strategic-health-innovation-partnerships.
116. Dedeu, T., Bolibar, B., Gené, J., Pareja, C. & Violan, C. Spain. in *Building primary care in a changing Europe: Case studies [Internet]* (European Observatory on Health Systems and Policies, 2015).
117. The European Observatory on Health Systems and Policies, W. H. Spain: health system review 2024. *The European Observatory on Health Systems and Policies* https://eurohealthobservatory.who.int/publications/i/spain-health-system-review-2024.

118. INCLASNS | Predictia. https://predictia.es/en/projects/inclasns.
119. Ministerio de Sanidad Espana. Marco conceptual de los Indicadores Clave del SNS. https://inclasns.sanidad.gob.es/doc.
120. UNITAR. New Collaboration With Turkish Ministry Of Health And Universities For Value-Based Healthcare Project. *Value-Based Healthcare Hub* https://www.valuebasedhealthcare-un.org/news/new-collaboration-with-turkish-ministry-of-health-and-universities-in-value-based-healthcare.
121. Turkey: Service Availability & Readiness. *PHCPI* https://www.improvingphc.org/turkey-service-availability-readiness.
122. Health Türkiye. Türkiye Health System. *Health Türkiye* https://www.healthturkiye.com/tukiye-health-system.
123. Birinci, Ş. A Digital Opportunity for Patients to Manage Their Health: Turkey National Personal Health Record System (The e-Nabız). *Balk. Med. J.* **40**, 215 (2023).
124. Türkiye Health. *e-Nabız – electronic and personal health record system. *Eipa* https://www.eipa.eu/epsa/e-nabiz-electronic-and-personal-health-record-system/.
125. The European Observatory on Health Systems and Policies, W. H. United Kingdom: health system summary. *The European Observatory on Health Systems and Policies* https://eurohealthobservatory.who.int/publications/i/united-kingdom-health-system-summary.
126. Tikkanen, R., Osborn, Robin, Mossialos, E., Djordjevic, A. & Wharton, G. A. England - International Health Care System Profiles. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/england (2020).
127. The Healthcare Quality Improvement Partnership (HQIP). Information for Providers - NCAPOP. *HQIP* https://www.hqip.org.uk/involving-patients/information-for-providers-ncapop/.
128. England, N. H. S. The National Clinical Audit and Patient Outcomes Programme (NCAPOP). https://www.england.nhs.uk/clinaudit/.
129. England, N. H. S. National Diabetes Audit Programme. *NHS England Digital* https://digital.nhs.uk/data-and-information/clinical-audits-and-registries/national-diabetes-audit.
130. Holman, N. *et al.* Care processes in people in remission from type 2 diabetes: A cohort study using the National Diabetes Audit. *Diabet. Med.* **40**, e15016 (2022).
131. ISPOR. US Healthcare System Overview. https://www.ispor.org/heor-resources/more-heor-resources/us-healthcare-system-overview/us-healthcare-system-overview-background-page-1.

132. Tikkanen, Roosa, Osborn, Robin, Mossialos, E., Djordjevic, A. & Wharton, G. A. United States - International Health Care System Profiles. *The Commonwealth Fund* https://www.commonwealthfund.org/international-health-policy-center/countries/united-states (2020).

133. Teisberg, E., Wallace, S. & O'Hara, S. Defining and Implementing Value-Based Health Care: A Strategic Framework. *Acad. Med.* **95**, 682 (2020).

134. Shared Savings Program | CMS. https://www.cms.gov/medicare/payment/fee-for-service-providers/shared-savings-program-ssp-acos.

135. Dreyer. What's the Value in Value-Based Care? *Research and Action Institute* https://www.aamcresearchinstitute.org/our-work/issue-brief/whats-value-value-based-care doi:10.15766/rai_c7chwtb5.