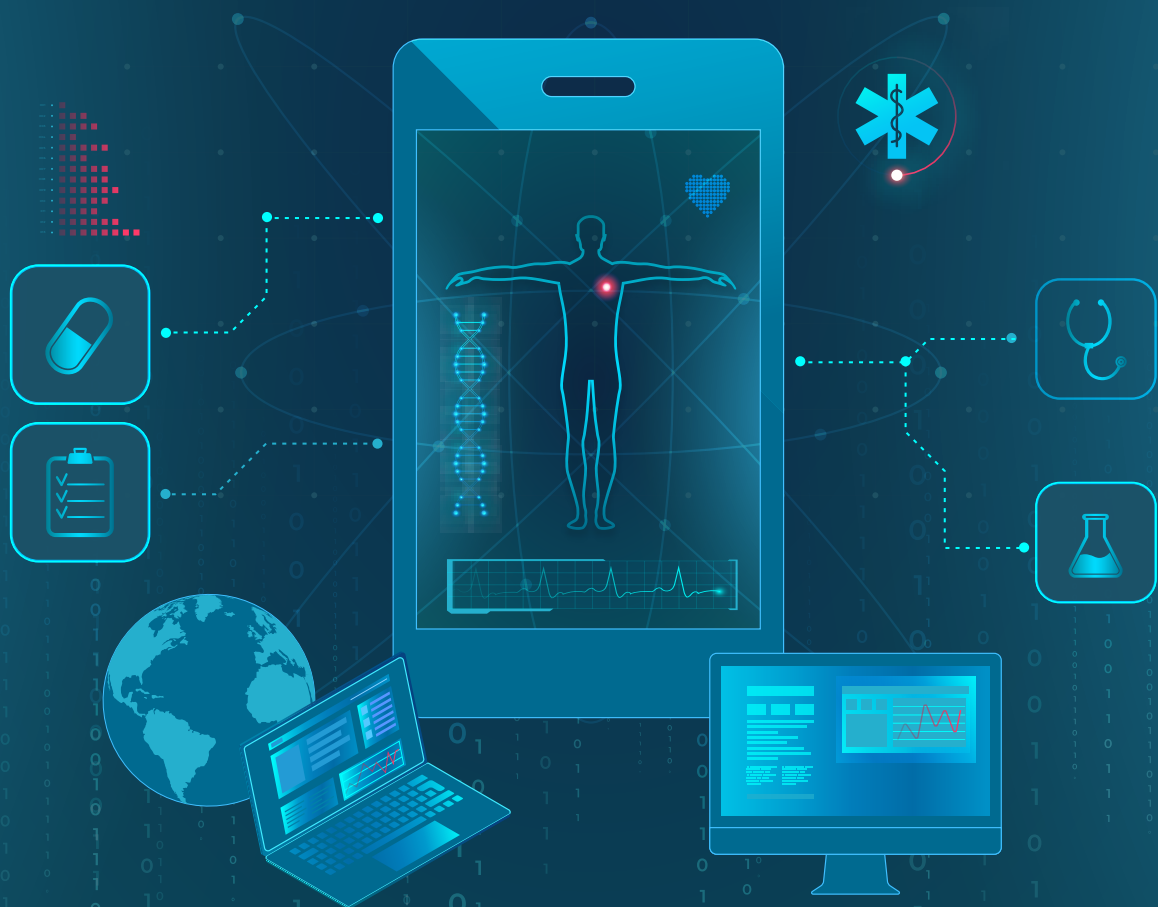


# Advancing the responsible use of digital technologies in global health

A report of the WHO Science Council







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ISBN 978-92-4-011410-4 (electronic version)

ISBN 978-92-4-011411-1 (print version)

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**Conflict of interest:** Each Science Council member completed a WHO declaration of interest form on his/her appointment by the WHO Director-General and as a Council member has been subjected to evaluation for conflicts of interest by the WHO Secretariat.

# Acknowledgements

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This report and enclosed recommendations have been developed by the World Health Organization (WHO) Science Council.

The WHO Science Council was guided throughout the development of this report by a broad range of stakeholders via a series of meetings, briefings, consultations and in-depth review of this document. The WHO Science Council wishes to thank the many individuals and organizations who provided input. Participants at the expert consultations are listed in Annex 1.

The WHO Science Council Secretariat, under the direction of Dr Anna Laura Ross (Head of the Science Council Secretariat, Head of Emerging Technologies, Research Prioritization and Support), coordinated the report development under the overall leadership of the WHO Chief Scientist, Dr Jeremy Farrar.

As the WHO department responsible for this technical normative area, the Department of Digital Health and Innovation under the leadership of Dr Alain Labrique (Director) and Dr Garrett Mehl (Unit Head, Digital Health Systems) provided ongoing guidance throughout the development process on conceptualization, consultations, relevant resources, and report review and writing.

The process was facilitated with the support of Dr Patricia Mechael as a senior technical consultant and writer. Dr Thidar Pyone (WHO) collated comments from the public consultation phase and assisted in drafting the report.

# Acronyms and abbreviations

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<b>AI</b>	artificial intelligence
<b>ATM</b>	automated teller machine
<b>CDC</b>	(Africa) Centres for Disease Control and Prevention
<b>CRVS</b>	civil registration and vital statistics
<b>DPI</b>	digital public infrastructure
<b>EHR</b>	electronic health record
<b>FHIR</b>	Fast Healthcare Interoperability Resources
<b>G20</b>	Group of 20 (intergovernmental forum)
<b>GDHM</b>	Global Digital Health Monitor
<b>GIDH</b>	Global Initiative on Digital Health
<b>HIE</b>	health information exchange
<b>ICT</b>	information and communication technology
<b>ICVP</b>	International Certificate of Vaccination or Prophylaxis
<b>IT</b>	information technology
<b>ITU</b>	International Telecommunication Union
<b>LMICs</b>	low- and middle-income countries
<b>ML</b>	machine learning
<b>NGO</b>	nongovernmental organization
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>PHR</b>	personal health record
<b>UHC</b>	universal health coverage
<b>UN</b>	United Nations
<b>UNICEF</b>	United Nations Children's Fund
<b>WHA</b>	World Health Assembly
<b>WHO</b>	World Health Organization

# Glossary of digital health terms

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## **AI in health care.**

The use of artificial intelligence technologies including machine learning and natural language processing enhances health care services by providing diagnostic tools, predictive analytics and personalized treatment plans, and by automating administrative tasks.

## **Digital assistants.**

Digital assistants can perform tasks and services, often using voice recognition, to help health workers and individuals interact more successfully with digital health services: they may be actual persons or software programs.

## **Digital health.**

The systematic adoption of information and communications technologies, computer science and datasets, to support informed decision-making by individuals, workforces and health systems, in order to strengthen resilience to disease and improve health and wellness for all.

## **Digital public infrastructure (DPI).**

Digital services which act as shared, scalable basic resources. They are based on open standards and usually developed by governments or designated authorities (e.g. digital identity, data exchange systems and digital payment systems).

## **Digital therapeutics.**

Evidence-based, clinically validated therapeutic interventions delivered via software applications to prevent, manage or treat medical conditions, and which often complement or replace traditional therapies. Digital therapeutics make use of advanced technologies, such as mobile apps, wearable devices or virtual reality, to deliver personalized treatments that improve patient outcomes.

## **Electronic health record (EHR).**

A digital version of a patient's paper chart, containing their complete medical and treatment history.

## **Health information exchange (HIE).**

The electronic sharing and protecting of health-related information based on nationally recognized standards to improve the speed, quality and safety of health care by enabling access to the EHR between patient and multiple providers with relevant safeguards for consent and privacy.

## **Interoperability.**

The ability of different health care information systems, devices and applications to access, exchange and cooperatively use data for seamless sharing of patient information across different health care settings.

## **mHealth (mobile health).**

The practice of medicine and public health assisted by mobile devices such as smartphones, tablets and wearable devices.

## **Person-centred.**

In the context of health services, "person-centered" means prioritizing the comprehensive needs of individuals (i.e. persons, clients, patients, users) integral to all health systems. It involves actively engaging and empowering individuals to take a more active role in their own health and health care decisions. It shifts health services away from a focus on specific diseases or interventions towards addressing the holistic needs of individuals across the continuum of care and the life course.<sup>1</sup>

## **Telemedicine.**

The use of telecommunications technology to deliver health care services remotely. This includes consultations, diagnosis and treatment via video calls, phone calls or chat platforms.

## **Wearable technology.**

Devices worn on the body that collect and monitor health data, such as fitness trackers, smartwatches and biosensors to support real-time health monitoring and chronic disease management, and to promote healthy behaviour patterns.

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<sup>1</sup> Integrated people-centred care. Geneva: World Health Organization; 2024 ([https://www.who.int/health-topics/integrated-people-centered-care#tab=tab\\_1](https://www.who.int/health-topics/integrated-people-centered-care#tab=tab_1), accessed 11 July 2025).

# Executive summary

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The Science Council of the World Health Organization (WHO) recognizes the potential of digital technologies to enhance global health outcomes, a potential that is starting to be realized in many national health systems around the world. However, the health sector's adoption – and the corresponding impact – of digital technologies still **lags behind progress being made in other sectors** such as commerce, travel and finance. This gap can be attributed to factors such as disconnected investments, projects focused on individual health components rather than entire health systems and insufficient development of core backbone infrastructure elements, namely quality assurance, digital identification and payments, standards and governance.

Without concerted action, the lack of access to high-quality digital health services risks increasing **health inequity** within and between countries, exacerbating a divide between those who are connected to the digital ecosystem and those who are not. The Science Council proposes that these obstacles be overcome by taking action in **four key areas: connect, educate, invest and evaluate**.

**Connect.** The Science Council advocates a **unifying approach** to digital health, with an enforced set of standards and definitions able to integrate independently developed systems dedicated to person-centred health prevention and care, continuity of care and communication of public health information. This will require expanded stakeholder engagement, standardized approaches and interoperable digital systems. Leveraging digital tools, including artificial intelligence (**AI**), is recommended in order to strengthen population health, disease prevention and diagnosis, and readiness for public health threats. Enabling **person-centred health via personal health records** is a critical priority, allowing individuals to access, manage and share their health information for better-quality, personalized care.

**Educate.** The Science Council proposes measures to ensure a **digitally empowered public and a skilled health workforce** capable of effectively and safely using digital health services. This requires the co-development of programmes with and for patients and communities, integrating digital methods into health care delivery and addressing needs for IT skills and digital literacy gaps. Recommended actions include developing competency frameworks, updating curricula and potentially creating roles like those of **"digital assistants"** to help existing health personnel and the public adapt to increasing dependence on digital technologies, while addressing the risk of digital exclusion.

**Invest.** The Science Council bids stakeholders such as governments, development partners and the private sector to make **sustained and better coordinated investments** in digital infrastructure. These steps should be regarded as a **strategic investment** rather than an outlay: they are essential to achieve Universal Health Coverage (UHC) by 2030, and will reduce costs, improve outcomes and enhance resilience. Digital payments in health systems stand out as an example of how digital technology can reduce risk and fraud. Fostering the well-regulated engagement of the private sector is crucial, and governments should create stable, predictable ecosystems by establishing clear blueprints, standards and regulatory guardrails. Most countries report insufficient funding for digital health programmes, as well as infrastructure. The significant shortfall in economic evaluations to guide investment decisions also needs to be addressed.

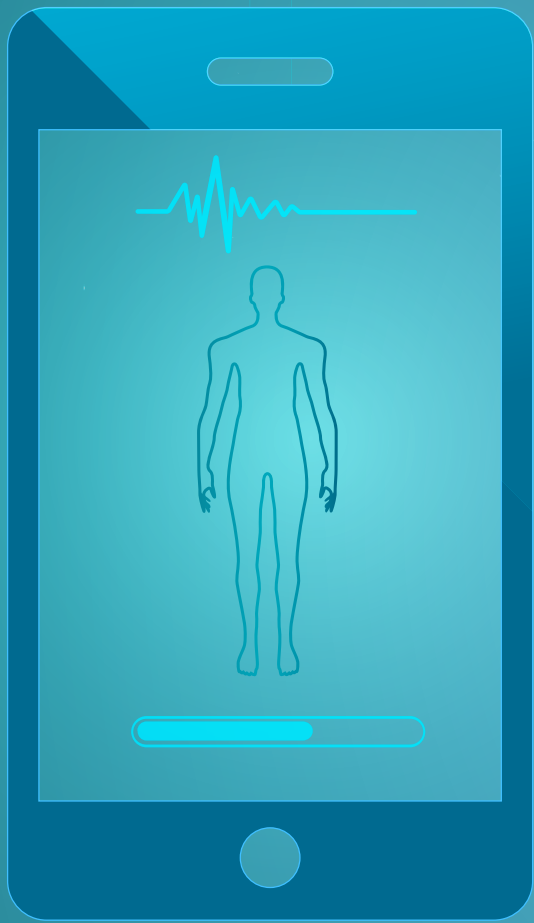
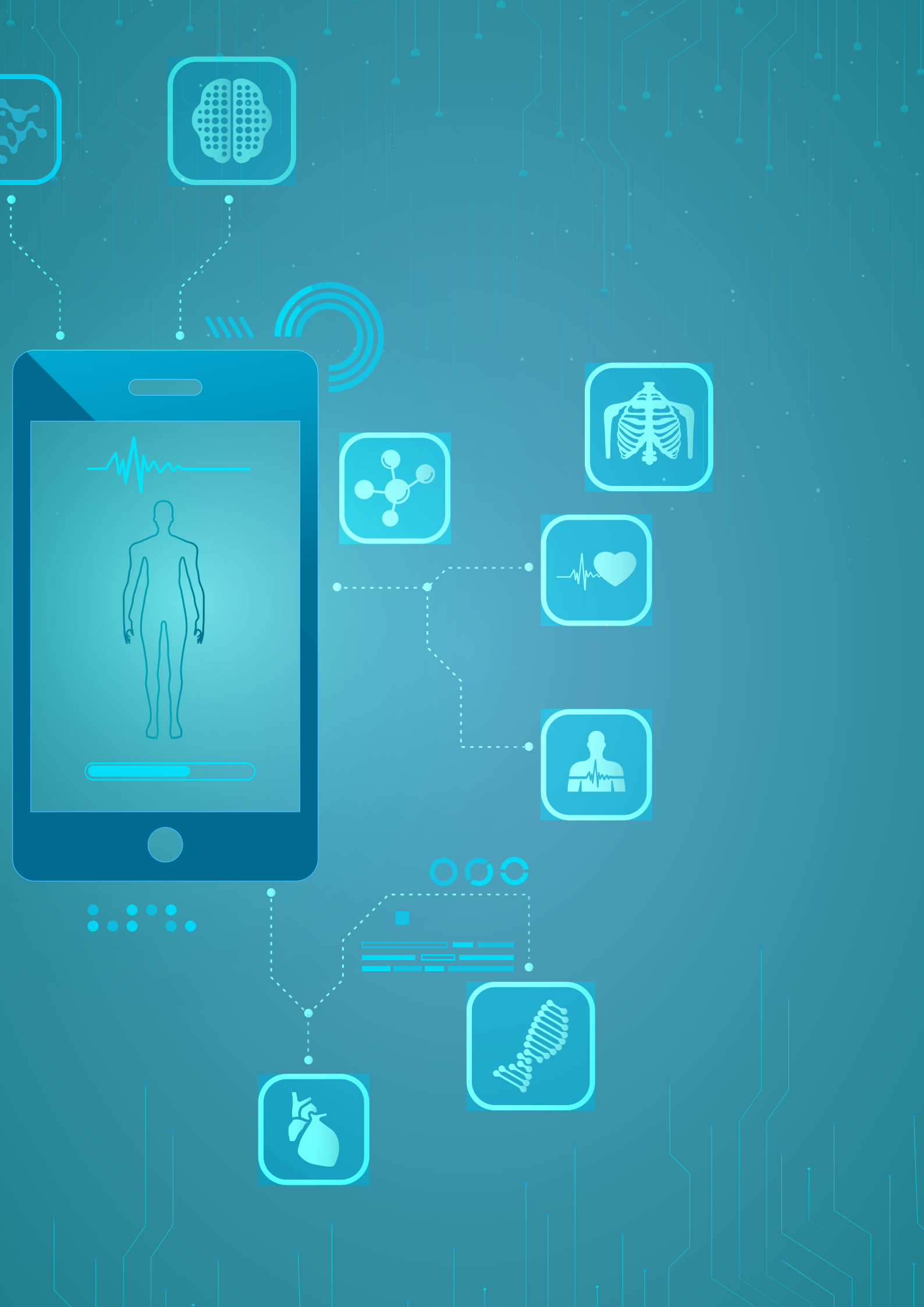
**Evaluate.** The Council strongly encourages the use of a **continuous learning approach** by incorporating systematic and ongoing evaluation of implementation, impact, economic viability, equity, and other facets into digital health efforts. This would allow for refinement and optimization of interventions to meet evolving needs and support evidence generation. Learning from how digital methods have been implemented in other sectors like finance and commerce, where user-centered design and scalability have enhanced engagement, ought to be encouraged. Strengthening economic evaluations of digital health and AI investments on health outcomes, as well as system performance, is recommended.

As an overarching principle, digital efforts should be designed to be **accessible to all, particularly vulnerable populations**. They should address the recognized social and digital determinants of health – while mitigating potential harms such as misinformation – and ensure equity. With demographic shifts and workforce shortages, digitalization is no longer optional: it is the necessary path for health care sustainability. It requires **finance ministries** and other sectors to play a **leading role in supporting the digital transformation of health**.

The Science Council calls upon WHO, Member States, international agencies, the private sector, NGOs and academic institutions to support these four action areas to drive progress towards a more effective, efficient, equitable and accessible global health system. The report emphasizes the need for a revised WHO strategy, the current one being scheduled to expire in 2025. It is essential that the new strategy incorporates emerging technologies and effectively addresses ongoing challenges in global health. As was decided by the WHA78, the Global Strategy on Digital Health (2020–2025) has been extended to 2027, with activities to begin during this term to renew the Strategy for another five years. The recommendations of the Science Council will be included as key inputs for the new strategy, serving as a basis for accountability by the WHO Secretariat, Member States and partners over the next five years.

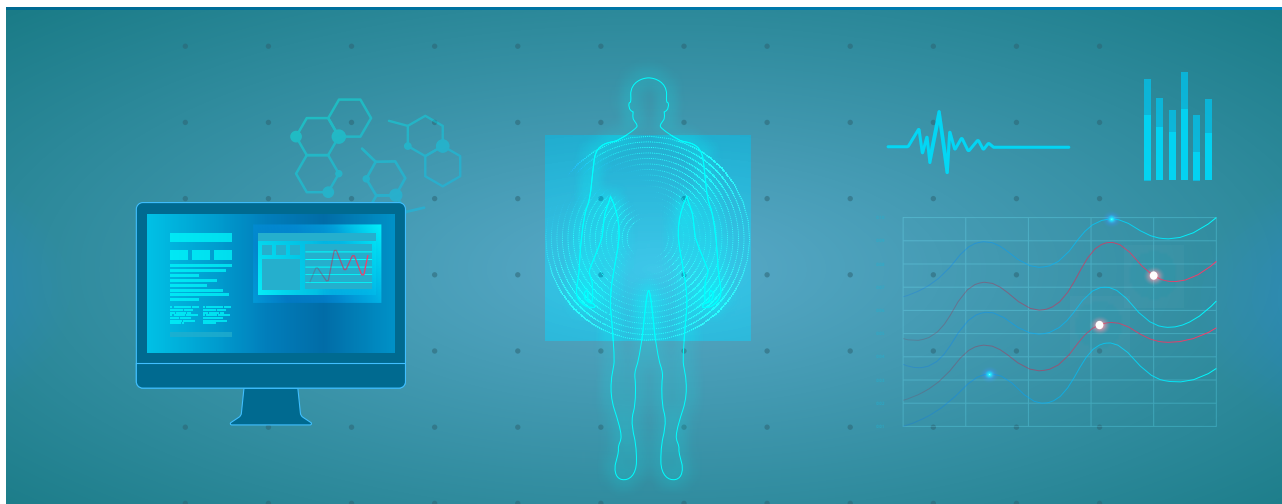
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<sup>2</sup> The World Health Assembly endorses the extension of the Global Strategy on Digital Health to 2027 and approves the next phase for 2028–2033 [update]. Geneva: World Health Organization; 2025 (<https://www.who.int/news/item/23-05-2025-world-health-assembly-endorses-extension-of-the-global-digital-health-strategy-to-2027>, accessed 11 July 2025).



# 1. Opening statement

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During their deliberations, Science Council members frequently noted examples of the effective application of digital technologies during the **COVID-19 pandemic** to enhance understanding of its epidemiology, and a greater use of these technologies in medical care, public health, research and communication. However, the Council also commented on the **relatively slow pace** at which digital technologies have been incorporated into routine, non-pandemic health activities compared to how these technologies have been adopted in other sectors including commerce, travel and finance. These sectors have benefited from proactive government action and private sector investment, including steps to set up regulatory frameworks, incentives for innovation and interoperability, and data protection measures. Deliberate government action has been a key enabler of success in these sectors, highlighting a similar need in the health sector. These observations prompted the Council to identify obstacles to wider use of digital health and to develop recommendations.

In its advisory capacity to the WHO Director-General, the Science Council reviewed the current status of digital technologies in health. This report describes benefits observed, identifies obstacles and recommends actions to overcome them. Its goal is to foster progress towards a **more effective, efficient, equitable and accessible health sector**. The Science Council's evaluation involved engagement with the WHO Science Division, audiences with temporary advisors from multiple regions including low- and middle-income countries (LMICs) and consultations with experts and health economists (Annex 1). The report aims to build on WHO's historical work in digital health (Box 1) in line with the principles upheld by the Global Initiative on Digital Health and reiterated by the UN Global Digital Compact to promote coordinated, country-led, equitable and transparent investments.

## Box 1. Digital health at WHO

WHO has been engaged in efforts to expand and improve the use of digital health for two decades. Key documents include the following resolutions, guidelines and resources, available at: <https://www.who.int/health-topics/digital-health>.

- World Health Assembly 58 Resolution 28 on eHealth (2005) which established the Global Observatory for eHealth
- WHO/ITU eHealth Strategy Toolkit (2012)
- World Health Assembly 66 Resolution 24 on Standards and Interoperability in eHealth (2008)
- World Health Assembly 71 Resolution 7 on Digital Health (2018) which calls on WHO Member States to develop a WHO Global Strategy on Digital Health
- WHO Guideline: Recommendations on Digital Health Interventions for Health System Strengthening (2019)
- WHO Global Strategy on Digital Health 2020–2025 (2020)
- Establishment of Department for Digital Health and Innovation (2021)
- WHO launch of the Global Digital Health Certification Network (2023)
- WHO Global Initiative on Digital Health (2023)
- Tripartite Global Initiative on AI for Health (2024)
- Digital transformation handbook for primary health care: optimizing person-centred point of service systems (2024)

## Introduction and background

Multiple factors have contributed to widespread improvements in health and life expectancy, at the same time as advances have been made in digital technologies (mobile phones, wearables, AI). These advances have fed into digital health, a term that encompasses developments in support of various health system functions, including telemedicine, logistics, personal health records, clinical decision support and public health surveillance. The *WHO guideline: recommendations on digital interventions for health system strengthening* (2019) lists 10 evidence-based recommendations that highlight the documented contributions of digital technology to improving service delivery, efficiency, patient empowerment, workforce support, communication, data collection and equity. These perspectives exist within a growing landscape of digital health frameworks and tools to assist policymakers and implementers in navigating complex choices regarding technologies, standards and governance (1).

Digital technology is increasingly the method of choice to enhance service delivery and access, and to strengthen disease prevention and facilitate early diagnosis. It is also progressively being applied on the demand side to disseminate health information and promote health literacy, and its utility in supporting self-care initiatives as well as treatment adherence and remote monitoring is fully recognized (2). Some specific examples include:

- mobile messaging for maternal and child health;
- telemedicine to boost antenatal care visits, radiology services and immunization rates (3, 4, 5);
- digital tools to support screening and treatment adherence for communicable and noncommunicable diseases (6); and
- improved access mental health services and improve their outcomes (7, 8).

The COVID-19 pandemic led some countries to invest significantly in digital transformation to facilitate public health responses such as contact tracing and surveillance, and expanded telemedicine. The pandemic also encouraged cross-border data-sharing (e.g. in genomic data and vaccine certificates), leading to WHO's Global Digital Health Certification Network, an open-source platform which is now operational in over 80 countries. Within health systems, digitalization has enhanced vital registration, electronic medical records, patient scheduling and communication. AI is increasingly being adopted for system planning, service optimization, monitoring and financing, and in clinical areas such as diagnostics. While AI/ML approaches are accelerating, challenges remain regarding validation, research gaps, clinician acceptance, and trust and data biases originating primarily from non-diverse populations mostly in the global north. Natural language chatbots are emerging as "digital front doors" for health systems: they facilitate engagement, answer frequently asked questions and reduce the barriers to individuals playing a more active role in their health. However, caution is needed to mitigate the biases and risks of data misuse. Digital technology has the potential to interconnect fragmented services and thus enhance continuity of care, while enabling continuous improvement through increased transparency and accountability in service delivery.

## State of digital health across countries

Countries are at different stages in the process of rolling out digital health and maximizing its potential in the face of typical challenges such as policy inertia, lack of sustained funding, literacy and infrastructure. The Global Digital Health Monitor (GDHM) tracks digital health maturity in participating countries, and every year publishes its *State of Digital Health Report*. The 2023 report indicates that prioritizing digital health in national strategies is a strength, although funding is insufficient in most countries. In 2024, only 17% of countries had established structured funding models for digital health, while most continued to depend on fragmented, ad hoc, short-term financial arrangements. Although the private sector is involved in digital health initiatives in most countries, systematic private sector investment is reported in only 17%. Supportive environments for private sector engagement are limited, particularly in LMICs. Workforce training is the lowest-performing area, with over half of the countries not integrating digital health in the training of health care professionals. Many countries also lack defined public sector career paths in digital health. Greater investment is needed in LMICs to overcome poor connectivity, highlighting the critical role of **digital public infrastructure (DPI)**. DPI refers to digital services which act as shared, scalable basic resources: they are based on open standards and usually developed by governments or designated authorities (e.g. digital identity, data exchange systems, canonical registries and digital payment systems). DPI can enable inclusive, interoperable systems for equitable health care. While other sectors like finance and travel have adopted DPI to a significant level, the health sector has not experienced a similar transformation on a national scale (see Table 1).

**Table 1. Characteristics of changes conferred by the use of digital technologies in other sectors**

<b>Industry/sector</b>	<b>Effects</b>
Finance	<p>Digital technologies in finance have streamlined operations and improved customer experiences through a focus on standards and unified payment systems that enable:</p> <ul style="list-style-type: none"><li>• digital banking (mobile money, digital wallets, ATMs, cross-border payments, etc.)</li><li>• automated financial planning and advisory services.</li></ul>
Retail and travel	<p>Digital technologies in retail businesses and travel have enabled people to buy and sell goods and services through multiple mechanisms:</p> <ul style="list-style-type: none"><li>• e-commerce</li><li>• omni-channel points of sale</li><li>• personalized marketing</li><li>• digital travel (booking, ticketing, boarding pass, check-in).</li></ul>
Education	<p>In education practices, digital technologies have increased access and reach, enabled personalized learning experiences, including:</p> <ul style="list-style-type: none"><li>• e-learning</li><li>• learning management systems</li><li>• augmented and virtual reality.</li></ul>

## 2. Digital transformation of health systems: goals and obstacles

---



Implementing digital technology can significantly advance the goal of UHC by 2030 by offering improved accessibility, affordability and quality of services. Despite this high ambition, numerous obstacles hinder progress, especially in LMICs, due to inadequate national plans, policies, funding and infrastructure. Support for digital health must grow – and be viewed as an **investment and not just a cost**. Limited evidence and incomplete economic evaluations make building a strong case for investment challenging. Estimating investment levels requires an analysis of both health and non-health infrastructure costs. In the long term, however, digital health investment can reduce costs, improve outcomes and enhance resilience. Specific examples of cost-effectiveness for single interventions exist, such as telehealth savings in the USA (See Table 2 for a summary of key obstacles and corresponding goals).

A fundamental obstacle is the lack of adequate concern about **equity, privacy and security**, topics which must be addressed to build and sustain trust in digital technologies: data breaches, privacy risks and lack of transparency are recurring issues. Mitigation efforts require robust encryption, transparent consent processes, regular audits, and clear governance and regulations. Lessons can be learned from the financial sector's robust regulations and investments in cybersecurity – which contribute substantially to building and preserving trust.

**Table 2. Obstacles and goals identified during digital health consultations**

Goal	Obstacles	Key recommendations	Assigned actions for major stakeholders
<b>Connect</b>	<ul style="list-style-type: none"> <li>• Lack of interconnected health care infrastructure.</li> <li>• Low coordination among stakeholders.</li> <li>• Inadequate use of interoperability standards and reliable connectivity, particularly in underserved regions and crisis settings.</li> <li>• Limited user-friendly tools adapted to diverse populations, and language and cultural barriers.</li> </ul>	1. Involve a broad range of users and experts in shaping and overseeing digital health policies and services.	<ul style="list-style-type: none"> <li>• <b>WHO</b> to expand its Global Initiative on Digital Health into a representative multi-stakeholder platform.</li> <li>• <b>Ministries of health</b> and ICT to establish platforms that include other ministries, the private sector, NGOs, academia and patient groups, and to set up and invest in digital transformation agencies.</li> </ul>
		2. Build digital tools that work seamlessly with essential health infrastructure to improve service delivery and patient care.	<ul style="list-style-type: none"> <li>• <b>WHO/ITU</b> to develop guidance on architecture and standards for interoperable digital ecosystems.</li> <li>• <b>Ministries of health/ICT/finance</b> to collaborate on national DPI priorities and frameworks.</li> <li>• <b>Private sector</b> to co-create interoperable solutions adhering to standards.</li> </ul>
		3. Enhance population health, prevention, diagnosis and public health resilience through evidence-based digital technologies and AI.	<ul style="list-style-type: none"> <li>• <b>WHO</b> to leverage platforms such as the GIDH and the WHO Hub for Pandemic and Epidemic Intelligence to engage with Member States.</li> <li>• <b>Ministries of health</b> to expand the use of digital technology for health promotion, screening, and disease surveillance.</li> <li>• Other entities (<b>hospitals, insurers, NGOs</b>) to share relevant data with the public sector.</li> </ul>
		4. Enable more personalized and accessible health care by developing personal health records that can be securely verified and used anywhere.	<ul style="list-style-type: none"> <li>• <b>WHO</b> to design a user-friendly standard personal health record (PHR), based on existing records such as vaccine certificates.</li> <li>• <b>WHO</b> to support DPI for verification of PHRs across Member States.</li> <li>• <b>Ministries of health</b> should adopt international guidelines for PHR standards and ensure support for data sharing/receiving.</li> </ul>

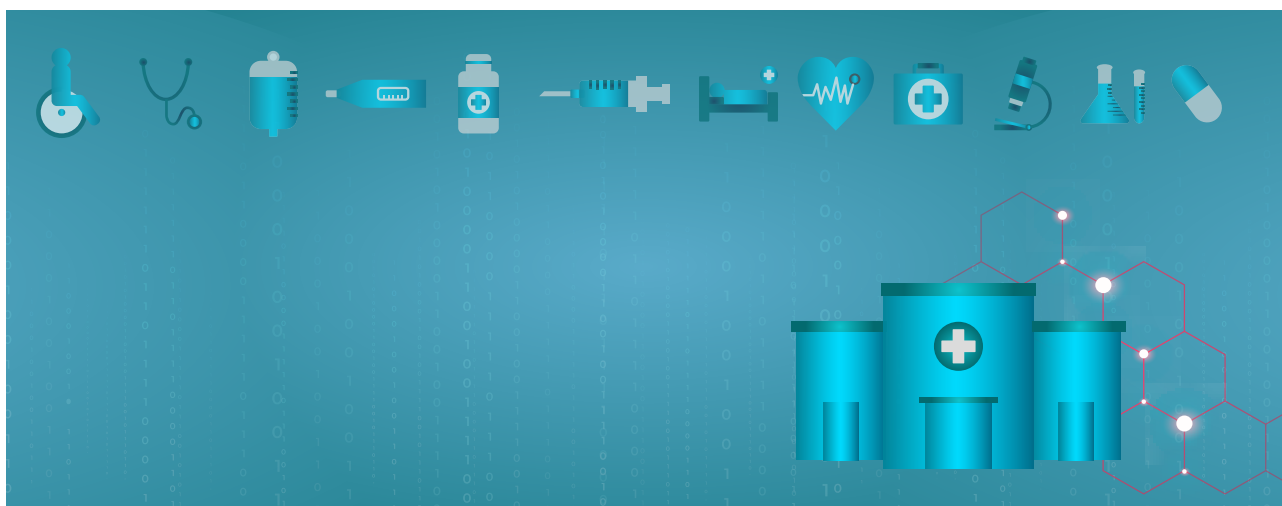
Goal	Obstacles	Key recommendations	Assigned actions for major stakeholders
<b>Educate</b>	<ul style="list-style-type: none"> <li>• Unprepared health workforce, resistance to digital adoption among health professionals.</li> <li>• Lack of structured digital literacy programmes and inadequate digital training.</li> <li>• Low digital literacy among public and policymakers.</li> </ul>	<ol style="list-style-type: none"> <li>5. Integrate pre- and in-service training to build a digitally skilled health workforce able to use digital methods in the delivery of health services and patient engagement.</li> <li>6. Create professional tracks that recognize unique skills and contributions of digital health professionals</li> </ol>	<ul style="list-style-type: none"> <li>• <b>WHO</b> to build on efforts to develop a competency framework, engaging with Member States and academic institutions.</li> <li>• <b>Global/regional/national accrediting bodies and academic institutions</b> to review curricula to include digital health and technology skills.</li> <li>• <b>Ministries of health/education and professional associations</b> to recognize certificates and offer incentives.</li> <li>• <b>WHO</b> to support the development of career paths for digital health professionals.</li> <li>• <b>Ministries of health and professional associations</b> to maximize digital technology use to bridge workforce shortages.</li> <li>• <b>Ministries of health</b> to establish programmes using “digital assistants” to help health care professionals adapt as systems become more dependent on digital technology.</li> </ul>

Goal	Obstacles	Key recommendations	Assigned actions for major stakeholders
<b>Invest</b>	<ul style="list-style-type: none"> <li>Underinvestment in digital health systems, fragmented funding, and limited collaboration across public and private sectors.</li> <li>Insufficient, uncoordinated investment in digital health infrastructure.</li> </ul>	<p>7. Establish a collaborative platform for macro- and microeconomic evaluations to inform investment planning.</p>	<ul style="list-style-type: none"> <li><b>WHO</b> to establish an economic evaluation panel to coordinate studies and provide guidance on costs and priorities.</li> <li><b>Member States</b> to prioritize an investment plan for digital health, covering funding sources, incentives, timelines and long-term maintenance.</li> <li><b>Ministries of health</b> to include dedicated budget line items for digital health and coordinate with non-health sectors.</li> </ul>
	<ul style="list-style-type: none"> <li>Disparities in access to digital health tools due to socioeconomic, geographical and digital divides, with limited data on cost-effectiveness.</li> </ul>	<p>8. Foster greater private sector engagement through regulatory clarity and investment incentives.</p>	<ul style="list-style-type: none"> <li><b>WHO</b> to increase support for the WHO supported test environments for digital health and AI applications against standards, convene stakeholders to develop skills using open code, standards and DPI.</li> <li><b>Ministries of health/ICT and private sector</b> to co-develop a framework and policies for a supportive regulatory environment, including data governance protocols and incentives. Private sector to invest in and set up core DPIs to enhance opportunities for all citizens.</li> </ul>

Goal	Obstacles	Key recommendations	Assigned actions for major stakeholders
<b>Evaluate</b>	<ul style="list-style-type: none"> <li>Lack of available data on effectiveness and return on investment of digital health initiatives, hindering scalability.</li> <li>Limited monitoring, learning, and evidence-sharing mechanisms for digital tools.</li> </ul>	<p>9. From inception embed implementation research, equity assessment and feedback mechanisms within all digital health interventions to strengthen the return-on-investment case for building digital health infrastructure.</p>	<ul style="list-style-type: none"> <li><b>WHO</b> to engage research funders to establish a global mechanism for evidence generation, incorporating real-time research.</li> <li><b>Ministries of health, academic institutions and private sector</b> to facilitate collaboration to include underrepresented LMICs in global datasets and research.</li> <li><b>Development partners</b> to strengthen tracking and traceability of investments in digital systems and infrastructure, facilitating cost-benefit evaluations.</li> </ul>

### 3. Connect, educate, invest and evaluate: specific recommendations

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Health systems are at different stages of digital maturity. It is probable that digital technologies will be the principal means of accessing and delivering health services in the future. Historically, health systems have been slow to adopt digital technologies perhaps in consideration of the broad interactions among components of the health enterprise. Instead, the application of those technologies has been designed with a focus on narrow goals, such as administrative processes and data collection for reporting and record-keeping, rather than connecting people or supporting health workers. The nine recommendations below aim to accelerate progress by emphasizing the interconnectedness of people and tasks within health systems.

#### Connect: recommendations

These recommendations focus on expanded partnerships, a uniform approach to digital transformation via DPI and standards, and a greater focus on population health. Coordinated investment is needed to support systems, end-users and promote public health/personalized care.

#### **Recommendation 1. Ensure multi-stakeholder engagement in the design and governance of digital health policies and services.**

Essential for diverse perspectives, collaboration and sustainable inclusive systems. Neutral platforms that bridge countries play a crucial role in facilitating collaborative processes and enabling the global exchange of knowledge and resources to address health challenges more effectively. Governments should set vision and guidance, often in national strategies. **WHO** should expand its Global Initiative on Digital Health into a representative multi-stakeholder

platform. **Ministries of health** should establish knowledge-sharing and collaborating governing bodies, engaging other ministries, the private sector, NGOs, academia and patient groups.

**Recommendation 2. Adopt a system-based approach to digital health, connecting systems to core infrastructure to improve service delivery and patient care.**

DPI and unifying architecture/interoperability frameworks are common in countries with higher digital health maturity. These digital commons bring efficiencies, scalability, sustainability and data consistency, and provide a foundation for universal verifiable personal health records. **WHO/ITU** should develop guidance on architecture and standards. **Ministries of health, information and communication technology (ICT) and finance** should collaborate on national DPI priorities and frameworks. The **private sector** should co-create interoperable solutions adhering to standards, e.g. Fast Healthcare Interoperability Resources (FHIR), an important standard that is being adopted widely to enable interoperability of locally developed and mainstream commercial systems.

**Recommendation 3. Enhance population health, prevention, diagnosis and public health resilience through evidence-based digital technologies and AI.**

Health systems need to leverage digital technology to capture and analyse population health data. The responsible adoption of AI can support prevention, early detection and responses to public health emergencies by means of big data analytics. **WHO** should leverage platforms such as the Global Initiative on Digital Health, Global Initiative on AI for Health and the WHO Hub for Pandemic and Epidemic Intelligence to engage with Member States to strengthen national capacities to capture and analyse data, including civil registration and vital statistics (CRVS), disease data and mis/disinformation. **Ministries of health** should expand the use of digital technology for health promotion, screening and disease surveillance. Other entities (hospitals, insurers, NGOs) should be encouraged to share relevant data in a privacy-preserving manner with the public sector, focusing on person-centred care experiences across service delivery providers.

**Recommendation 4. Enable person-centred health by developing personal health records that can be authenticated and used anywhere.**

Allowing individuals to capture, manage and store their health information is a critical priority not yet achieved by many countries. Digital systems which can capture, send, receive and update standardized data as patients interact with providers will promote individual access to and control of medical records, within-country care and cross-border data sharing. An international patient summary would favour cross-border services. **WHO** should design standards and guidance on implementation for user-friendly standardized personal health records (such as the digital ICVP), building on experiences with test and vaccine certificates. **WHO** should support DPI to verify personal health records (PHR) across Member States to facilitate “One Person, One Record”, within and across countries. **Ministries of health** should adopt international guidelines for PHR standards and support data sharing/receiving. Cybersecurity investments are needed to strengthen trust in PHR.

## Educate: recommendations

The current and future health workforce urgently needs to use digital technology effectively. Digital technology can help address global workforce shortages, optimize staff time, improve access to specialists and facilitate consultations. Health administrators, officials and policy-makers also need to build capacity to govern digital health, use data and manage systems.

**Recommendation 5. Integrate pre- and in-service training to build a digitally skilled health workforce.**

The capacity to use digital methods in the delivery of health services with direct patient involvement throughout the health system requires more extensive training of health care workers. Most health professionals have not been trained in digital health applications in their pre-service education. Training is needed to adapt to a technology-driven environment, enabling better care, streamlined operations and enhanced decision-making. In-service training should be provided to equip staff to integrate digital innovations. **WHO** should step up efforts to develop a competency framework, engaging

with Member States and academic institutions. Global, regional and national accrediting bodies and academic institutions should review curricula to integrate digital technology skills within pre-service and in-service training. **Ministries of health and education and professional associations** should recognize certificates and offer incentives.

**Recommendation 6. Create professional tracks that recognize the unique skills and contributions of digital health professionals.**

Technical deficiencies exist in both the workforce and the public. Workers need digital tools to optimize efficiency, collaboration, and productivity, and to engage with IT professionals and persons in specialized roles. Initiatives should also address patient needs. **WHO** should support the development of career paths for digital health professionals (informatics and bioinformatics specialists, software engineers, data scientists, etc.). **Ministries of health and professional associations** should maximize digital technology uptake to bridge workforce shortages (scheduling, task prioritization, performance monitoring, remote consultations). **Ministries of health** should establish “digital assistants” to help health care professionals adapt as systems become more dependent on digital technology. Digital assistants (or digital health navigators) can help bridge divisions and training gaps in digital health, assisting providers and clients with tasks such as scheduling, messaging, accessing records and navigating systems. They can also help individuals find their way around digital platforms, thereby reducing errors due to unfamiliarity. With rapid advances in AI, many digital assistants may soon function as virtual agents via natural language and voice interfaces. To expand the use and impact of digital assistants, ministries of health should launch national programmes to recruit, train and deploy digital assistants, integrate digital health literacy into education, and establish clear career paths to ensure sustainability. Health system administrators should embed digital assistants in care settings to support digital onboarding and communication. Tools should be user-friendly, accessible and tailored to both patients and providers.

## Invest: recommendations

Increased financing for digital health infrastructure is required for universal health coverage (UHC) by 2030, a development which is viewed as a strategic investment. Measuring return on investment is challenging due to the limited number of studies, which often focus on single interventions with ad hoc financing. Vertical digital health programme costs are often higher in countries unable to leverage domestic DPI and private sector capacity. Coordinated investments and commitments are needed from various stakeholders to build, manage and maintain a well-governed, person-centred digital health ecosystem, while attracting private sector entrepreneurship.

**Recommendation 7. Establish a collaborative platform for macro- and micro-economic evaluations to inform investment planning.**

A dedicated effort is needed to fill the gap in economic evaluation knowledge. Data is needed on both upfront investments as well as ongoing operational costs. **WHO** should establish an economic evaluation panel to coordinate studies and provide guidance on costs and priorities. **WHO Member States** should prioritize an investment plan for digital health which covers funding sources, incentives, timelines and long-term maintenance. This could be achieved by leveraging ongoing implementation research led by academic institutions, international development banks and the OECD’s Development Assistance Committee (DAC) which tracks investments in digital health and DPI. **Ministries of health** should include dedicated budget line items for digital health infrastructure, programmes and training, and coordinate with non-health sectors for investments in a shared DPI. This is in line with the India and Brazil G20 Health Working Group’s Call to Action, emphasizing the need for better tracking and reporting of digital health investments, particularly financial assistance for digital public infrastructure at both country and global levels.

**Recommendation 8. Foster greater private sector engagement through regulatory clarity and investment incentives.**

Digital transformation in other sectors has been driven by public and private engagement. Digitally mature countries like India and Indonesia showed government leadership by establishing a vision, clear and predictable standards, and regulatory guardrails. A stable, transparent, predictable and secure ecosystem is crucial in any efforts to encourage private investment, innovation and collaboration. By contrast, lack of predictability in data governance, privacy, security, standards and liability all render private sector engagement uncertain. **WHO** should step up its support for conformance testing standards and platforms for digital health and AI systems which can vet applications for architecture and content. WHO should convene stakeholders to develop skills based on open code, standards and DPI. **Ministries of health, ICT and the private sector** should collaborate to co-develop a framework and policies that enable a supportive regulatory environment, including data governance protocols and incentives. **The private sector** should invest in and develop a core DPI to enhance digital continuity of care and person-centred digital health for all citizens.

**Evaluate: recommendations**

The global health ecosystem should adopt a learning approach by incorporating continuous mechanisms for implementation research, impact analysis and equity assessments from the outset. This allows for refinement and optimization. Strong collaborations can increase the representation of LMICs in global research. Learning from other sectors (finance, commerce) regarding user-centred design, accessibility and scalability is to be encouraged.

**Recommendation 9. From the inception period, expand the use of digital technologies in health systems and embed implementation research, equity assessment and feedback mechanisms within all digital health interventions to strengthen the return-on-investment case for building digital health infrastructure.**

Incorporate continuous mechanisms for implementation research, impact analysis and equity assessments from the initial stages. Topics for evaluation should include the uptake of digital methods, administrative workload, operational processes and the lived experiences of health care providers. Once established, DPI ought to enable data-driven quality improvement, although evaluation needs to consider the level of trust needed for people to engage with digital health. **WHO** should engage research funders to establish a global mechanism for evidence generation, incorporating real-time research; and **ministries of health, academic institutions and the private sector** should facilitate collaboration to include underrepresented LMICs in global datasets and research. **Development partners** could strengthen tracking and traceability of investments in digital systems and infrastructure, facilitating cost-benefit analyses. Economic arguments, particularly regarding the return on investment, ought to be advanced by stakeholders in order to prioritize the case for building digital infrastructure: this will make the economic and health benefits of digital transformation more evident to policy-makers and funders.

## 4. Conclusion

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The Science Council strongly endorses the concept of utilizing digital health's transformative potential to improve outcomes, strengthen health systems and reduce inequities, especially in low- and middle-income countries. Realizing this vision requires the development of secure, inclusive and interoperable digital ecosystems. The Council's four guiding themes – **connect, educate, invest, evaluate** – offer a coherent approach for action. Connecting fragmented systems through shared standards and data exchange is fundamental for scale and impact. Building a digitally capable health workforce through targeted training is equally critical. Strategic investment in DPI, particularly in under-resourced settings, is essential to achieving universal health coverage by 2030. Embedding continuous learning and evaluation mechanisms will enable adaptive, evidence-informed interventions that can close persistent digital and health equity gaps.

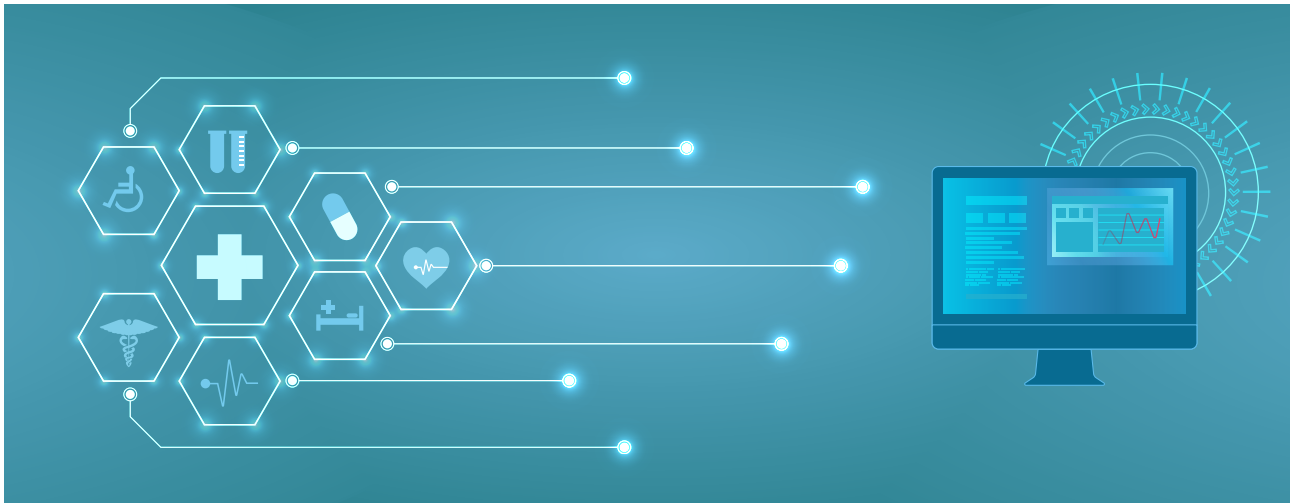
The rapid expansion of digital technologies presents a vital opportunity to make health systems more responsive, resilient, efficient and equitable. Realizing this potential demands coordinated action across sectors and sustained political commitment. As WHO's current digital health strategy approaches its conclusion, a renewed and ambitious framework is urgently needed – one that addresses real-world implementation barriers and harnesses emerging innovations,

including AI, responsibly and equitably. The recommendations of the Science Council will be incorporated into key inputs for the new Global Strategy on Digital Health, forming the basis for accountability of these recommendations by the WHO Secretariat, Member States and partners over the next five years. With demographic shifts, resource constraints and critical health workforce shortages, digital solutions are not a luxury – they are a necessity for maintaining service delivery and avoiding growing disparities. The economic rationale is also compelling, but will require greater engagement from ministries of finance and cross-government leadership to align digital investments with health system resilience.

In this context, the Science Council's report offers more than recommendations – it provides a systematic navigational tool for a complex, fast-moving domain. It condenses technical evidence into actionable guidance for policymakers, development partners and the WHO alike, supporting timely, coordinated action in an era of mounting pressures on global health systems. Accelerating this digital transformation is not only possible: it is imperative.

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# Annex 1. Methodology, consultations and participants

## Methodology and participants

To begin the process, the WHO convened a high-level discussion on 24 April 2024 with the following senior leaders in digital transformation, who shared their expertise about how digital innovations can further empower and transform health systems globally.

**H.E. Mr Jean-Philbert Nsengimana** - Chief Digital Advisor, Africa CDC, fostering digital health initiatives and innovation across the African continent.

**Professor Fazilah Shaik Allaudin** - State Health Director, Penang State Health Department, Malaysia, advancing digital health integration into public health systems.

**Mr Anir Chowdhury** - Policy Advisor, A2i, Government of Bangladesh, driving digital public services and health innovation through ICT strategies.

**Dr Susan Thomas** - Director, Google Health, spearheading global health AI and technology solutions to improve health care outcomes.

This discussion set the stage for three consultations with digital health thought leaders and experts, as well as contributions from various individuals with broader digital transformation expertise in digital finance and digital public infrastructure (agendas and participants below).

The following group of regionally representative temporary advisors informed the overall process.

Temporary advisor	Affiliation	WHO region
Dr Smisha Agarwal (F)	Johns Hopkins Bloomberg School of Public Health, USA	Region of the Americas
Dr Dari Alhuwail (M)	Kuwait University, Kuwait	Eastern Mediterranean Region
Dr Antoine Geissbuhler (M)	University of Geneva, Switzerland	European Region
Dr Boonchai Kijsanayotin (M)	Mahidol University, Thailand	South-East Asia Region
Mr Steven Wanyee (M)	Health Informatics in Africa (HELINA), Ghana	African Region
Dr Robyn Whittaker (F)	Waitemata District Health Board, New Zealand	Western Pacific Region

As part of the effort to estimate the level of investment needed for digital health, the WHO Science Council consulted the following economists.

<b>Economist</b>	<b>Affiliation</b>	<b>Expertise</b>
Philippa Biggs	International Telecommunication Union (ITU)	Senior economist specializing in digital health and broadband for sustainable development. Promotes access to ICTs for health.
Peter Drury	Independent Consultant	Consultant experienced in global health, digital health financing and health systems strengthening. Works with major international organizations.
Amnesty LeFevre	University of Cape Town (UCT), South Africa	Professor with expertise in health economics, focusing on digital health solutions in low-resource settings, including maternal and child health evaluations.
Eric Sutherland	Organisation for Economic Co-operation and Development (OECD)	Analyst focusing on health data, digital technologies and their economic impacts. Evaluates benefits of digital health tools.

## Workshop 1 (26 April 2024): digital health systems transformation

This workshop was designed to envision the health system of the future, learning from global trends and more advanced digital health systems.

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**Session 1** **Digital transformation and linkages to health** with presentations to explore digital transformation in general, in health and in financial systems, and relevant learning and linkages to health systems.

**Yongyuth Yuthavong** - WHO Science Council Member (moderator)

- **Marelize Gorgens** (co-moderator) - Senior Health Specialist, World Bank, advancing digital public infrastructure and financial system linkages to support health outcomes.
- **Hani Eskandar** - Digital Services Coordinator, ITU, fostering digital transformation and infrastructure for health systems worldwide.
- **Vajira Dissanayake** - Professor of Biomedical Informatics, University of Colombo, Sri Lanka, exploring digital health advancements across Commonwealth countries.
- **Mauricio Mattoli** - Faculty at Centro de Informática Biomédica, Universidad del Desarrollo, Chile, focusing on computer science applications to health systems.
- **Pramod Varma** - Chief Architect, EKSTEP Foundation, leveraging India's unified payments interface (UPI) to drive financial inclusion and its implications for digital health.

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**Session 2** **Digital health systems of the future** with presentations to explore responsible global health transition to a digital future, digital leadership and investment to accelerate transformation.

**Yongyuth Yuthavong** - WHO Science Council Member (moderator)

- **Smisha Agarwal** (co-moderator) - Director, Center for Global Digital Health Innovation, Johns Hopkins Bloomberg School of Public Health, USA, presenting early findings from Exemplars in Digital Health Research.
  - **Pirkko Kouri** - Expert on digital transformation in Finland, sharing experiences on integrating digital tools into national health care systems.
  - **Kiran Vaska** - Head, National Digital Health Authority, India, leading the design and implementation of India's comprehensive digital health infrastructure.
  - **João André Santos de Oliveira** (on behalf of **Dr Ana Estela Haddad**) - Secretary of Information and Digital Health, Ministry of Health, Brazil) on driving the modernization of Brazil's health systems through digital innovation.
  - **Setiaji Setiaji** - Chief Digital Transformation Officer, Ministry of Health, Indonesia, pioneering the adoption of digital health technologies to improve health care access and delivery.
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## Workshop 2 (3 May 2024): health providers

This workshop was designed to envision the health workforce of the future and shed light on the constraints and challenges faced by health providers in low- and middle-income countries.

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**Session 1** **Global health workforce now and in the future** with presentations to explore how digital health technologies can address current challenges, enhance workforce capacity and prepare health systems for the demands of a rapidly evolving global health landscape.

**Salim Abdool Karim** - Science Council Member (moderator)

- **Reena Sooch** (co-moderator) - Partner and Head of Digital and AI Strategy, Day One Strategy, India, offering strategic insights into the evolution of health workforces amid digital health transformations.
- **Maria Aguilar** - Representative, Elsevier Health, supporting research on health professional experiences and attitudes toward digital health and AI.
- **Giorgio Cometto** - Unit Head, Health Workforce Department, WHO, guiding digital health competency framework development for health workforce.
- **Innocent Chimboma** - Digital Health Lead, Ministry of Health, Zambia, advancing Zambia's health workforce through innovative digital health solutions.
- **Njide Ndili** - Country Director, PharmAccess Nigeria, driving initiatives that integrate digital health to optimize quality of care delivered by the Nigerian health workforce.

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**Session 2** **Building a digitally transformed health workforce** with presentations to explore the development of professional cadres in the health sector and lessons from the professionalization of digital finance.

**Firdausi Qadri** - Science Council Member (moderator)

- **Kate Tulenko** (co-moderator) - CEO, Corvus Health, and Health Workforce Expert, focusing on strengthening global health workforces through innovative digital health solutions.
  - **Sarah Corley** - CEO, Alliance of Digital Finance and Fintech Associations, emphasizing the intersection of digital finance and health workforce development.
  - **Wisdom Atiwoto** - Digital Health Lead, Ministry of Health, Ghana, implementing digital strategies to enhance Ghana's health care workforce.
  - **Neha Verma** - Co-Founder and CEO, Intelehealth, India, pioneering telemedicine solutions to expand health care access and empower health professionals.
  - **Osama Elhassan** - Co-Founder, Zimam, United Arab Emirates, driving the adoption of digital health systems to support workforce capacity and innovation in the Middle East.
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## Workshop 3 (9 May 2024): persons

This workshop was designed to explore how digital technologies are reshaping the health and well-being of individuals, including how patients engage with the health system and with digital self-care, particularly in low- and middle-income countries.

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**Session 1** **Digital determinants of health: how technology is reshaping health and well-being** with presentations to explore the impact of digital technologies on the social, economic and environmental factors that influence health outcomes and overall well-being.

**Yongyuth Yuthavong** - Science Council Member (moderator)

- **Louise Holly** (co-moderator) - Director, Digital Transformation for Health Lab, advancing research and initiatives to support the digital determinants of health and youth engagement in digital health.
  - **Jennifer Nelson** - Specialist, Digital Health Solutions for the Social Protection and Health Division, Inter-American Development Bank, promoting digital health initiatives to strengthen equity and inclusion in health systems across Latin America and the Caribbean.
  - **Dr Nojus Saad** - Leader, Youth for Women Foundation, Iran, advocating for digital health solutions to improve access to health for women and youth.
  - **Karin Källander** - Global Lead, UNICEF Digital Health & Information Systems, driving the development and deployment of digital tools to enhance health services for children and families.
  - **Gavin Krugel** - CEO, Digital Frontiers, spearheading efforts to build digital skills and capacity for the finance and other sectors.
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**Session 2** **Digital transformation of how people engage in their own health and well-being** with presentations to reflect on digital self-care, digital technology as a point of access for health information and services.

**Yongyuth Yuthavong** - Science Council Member (Moderator)

- **Pascale Allotey** - Director, Human Reproductive Programme, WHO, advancing global reproductive health through innovative digital solutions.
  - **Debbie Rogers** - CEO, Reach Digital Health, leveraging digital platforms to improve access to quality health care in underserved communities.
  - **Javier Elkin** - Digital Health Specialist, International Committee of Red Cross and Red Crescent, integrating digital health solutions in humanitarian settings.
  - **Heather Cole-Lewis** - Global Head of Health Equity at Google Health, leading initiatives to integrate health equity into digital health and AI solutions.
  - **Alvin Marcelo** - Founding Member, Asia eHealth Information Network, fostering regional collaboration to enhance digital health infrastructure and innovation.
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The following participants attended one or more of the three workshops.

## WHO Science Council – Workshop “responsible global health transitions to a digital future” Participants

Names	Affiliation
Adamson, Elizabeth	Novartis Foundation, Switzerland
Aguilar Calero, Maria	Elsevier, United Kingdom
Ahmed, Zakiuddin	Digital Health Pakistan, Pakistan
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Balachandran, Lakshmi	Clinton Health Access Initiative, Switzerland
Beynon, Fenalla	Swiss Tropical & Public Health Institute, Switzerland
Bunker, Edward B.	Johns Hopkins University School of Medicine, United States of America
Chiboma, Innocent	Ministry of Health, Zambia
Corley, Sarah	Alliance of Digital Finance and Fintech Associations, United Kingdom
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Elkin, Javier	ICRC, Switzerland
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Pratap Gupta, Rajendra	Academy of Digital Health Sciences, India
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Tulenko, Kate	Corvus Health, United States of America

Names	Affiliation
Udayasankaran, Jai Ganesh	Asia eHealth Information Network (AeHIN), Hong Kong
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Vaska, Kiran	National Health Authority, India
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Waugaman, Adele	US Agency for International Development (USAID), United States of America
Weerabaddana, Chaminda	Ministry of Health, Sri Lanka
Wutiwiwatchai, Chai	National Electronics and Computer Technology Center (NECTEC), Thailand

# Annex 2. Guiding principles

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In the process of developing this report, the members of the Science Council have observed various divisions and gaps in health and digital technology and the need to articulate guiding principles that apply to the recommendations made. We have provided below some leading examples of such principles.

## Principles of the WHO Global Initiative on Digital Health (GIDH)

<https://www.who.int/initiatives/gidh>

The WHO Global Initiative on Digital Health is governed by the following principles:

- ensuring inclusivity and diversity of membership and structure, ensuring adequate representation from different stakeholder groups, geographical regions and income settings;
- upholding transparency of all processes, including the operational strategy and GIDH activities;
- conducting activities in line with WHO's norms and standards; and
- coordinating interested parties to advance WHO priorities on standards-based digital health transformation as articulated in the Global Strategy on Digital Health 2020–2025 and the Digital Implementation Investment Guide (DIIG), among other normative and technical products.

## Principles for Digital Development (updated and relaunched in 2024)

[www.digitalprinciples.org](http://www.digitalprinciples.org)

Originally developed in 2014 with UN support, these nine “living guidelines” have been endorsed by more than 300 organizations, including donors, international organizations and civil society organizations:

- Understand the existing ecosystem;
- Share, reuse, and improve;
- Design with people;
- Design for inclusion;
- Build for sustainability;
- Establish people-first data practices;
- Create open and transparent practices;
- Anticipate and mitigate digital harms;
- Use evidence to improve outcomes.

# Annex 3. Country case studies from consultations

Examples of the use of digital health technologies in individual countries as reported in workshops and consultations are listed below as part of the report's development process.

Country	Case study example	Digital health priorities	Goal
<b>Australia</b>	National digital transformation of health <a href="https://www.digitalhealth.gov.au/national-digital-health-strategy">https://www.digitalhealth.gov.au/national-digital-health-strategy</a>	Integration of digital technologies such as EHRs, telehealth and data analytics improves patient outcomes, accessibility and efficiency.	Improve health care accessibility, efficiency and patient outcomes through advanced digital transformation.
<b>Bangladesh</b>	Support for digital public infrastructure, political and operational support, inclusivity and digital divide, data sharing and privacy <a href="https://dghs.portal.gov.bd/sites/default/files/files/dghs.portal.gov.bd/page/4124d18a_ab99_40e2_8fef_ff4052948739/2024-04-23-07-09-48541d4dd55108137e50961ebcba0477.pdf">https://dghs.portal.gov.bd/sites/default/files/files/dghs.portal.gov.bd/page/4124d18a_ab99_40e2_8fef_ff4052948739/2024-04-23-07-09-48541d4dd55108137e50961ebcba0477.pdf</a>	Gender-sensitive infrastructure and policies, emphasizing inclusivity and operational guidance for underserved populations.	Ensure inclusivity and gender equity, and secure digital infrastructure for equitable health care access.
<b>Brazil</b>	National digital health ecosystem with local adaptation <a href="https://bvsmms.saude.gov.br/bvs/publicacoes/strategy_health_digital_brazilian.pdf">https://bvsmms.saude.gov.br/bvs/publicacoes/strategy_health_digital_brazilian.pdf</a>	Tailored digital health strategies to local and regional contexts improve accessibility and effectiveness.	Create an integrated digital health ecosystem for comprehensive and accessible care.

Country	Case study example	Digital health priorities	Goal
<b>Chile</b>	Structured implementation, early adoption of standards, continuous learning and adaptation  <a href="https://cdn.who.int/media/docs/default-source/digital-health-documents/global-observatory-on-digital-health/mapa-de-ruta-completo.pdf?sfvrsn=ef4de26_1">https://cdn.who.int/media/docs/default-source/digital-health-documents/global-observatory-on-digital-health/mapa-de-ruta-completo.pdf?sfvrsn=ef4de26_1</a>	Interoperability standards, continuous learning and flexible strategies ensure successful implementation and adaptation.	Standardize and adapt digital health tools to ensure interoperability and continuous improvement.
<b>Finland</b>	National data warehouse and archiving system built on trust  <a href="https://www.kanta.fi/en">https://www.kanta.fi/en</a>	Building trust through citizen involvement, transparency and secure data management fosters successful digital health ecosystems.	Build a trusted, secure digital health ecosystem to support integrated health care delivery.
<b>Ghana</b>	National health insurance as a driver of digital transformation	Biometric registration and mobile platforms improve enrolment, reduce fraud and enhance health care delivery.	Enhance health care access and efficiency through innovations in national health insurance.
<b>India</b>	Federated architecture, incentivizing adoption  <a href="https://extranet.who.int/countryplanningcycles/sites/default/files/public_file_rep/IND_India_National-Digital-Health-Blueprint.Pdf">https://extranet.who.int/countryplanningcycles/sites/default/files/public_file_rep/IND_India_National-Digital-Health-Blueprint.Pdf</a>	Federated architecture and incentivization promote adoption while maintaining data sovereignty and interoperability.	Enable seamless health care data exchange and adoption of digital health systems.
<b>India</b>	Financial inclusion – minimalist digital public infrastructure, public-private partnerships, modular and interoperable infrastructure	Minimalist modular infrastructure and public-private partnerships drive large-scale adoption and financial inclusion.	Achieve large-scale financial inclusion and health care transformation through digital public infrastructure.
<b>Indonesia</b>	COVID-19 digital transformation and regulatory support	Supportive regulations and private sector engagement accelerate digital transformation during health crises.	Rapidly integrate digital health solutions during public health crises for better care delivery.

Country	Case study example	Digital health priorities	Goal
<b>Malaysia</b>	Political will, Inter-agency collaboration, and Industry and Academia Participation  <a href="https://monitor.digitalhealthmonitor.org/country_profile/MYS">https://monitor.digitalhealthmonitor.org/country_profile/MYS</a>	Collaboration across agencies and sectors fosters sustainable and innovative digital health solutions.	Foster collaboration for innovative, sustainable digital health initiatives.
<b>Nigeria</b>	Public-private partnerships to improve quality of care  <a href="https://www.pharmaccess.org/update/pharmaccess-carepay-showcase-the-role-of-digital-technology-in-enabling-uhc/">https://www.pharmaccess.org/update/pharmaccess-carepay-showcase-the-role-of-digital-technology-in-enabling-uhc/</a>	Mobile technology partnerships improve care quality through real-time data and actionable insights.	Improve health care quality and accountability through public-private digital partnerships.
<b>Saudi Arabia</b>	Connecting individuals through a national health system  <a href="https://www.who.int/news/item/21-10-2024-who-global-network-expands-digital-health-certification-for-hajj-pilgrims">https://www.who.int/news/item/21-10-2024-who-global-network-expands-digital-health-certification-for-hajj-pilgrims</a>	Digital technologies enable remote consultations, specialized care, and improved accessibility in remote areas.	Expand access to specialized health care and improve efficiency through virtual health solutions.
<b>Sri Lanka</b>	Digital health leadership development and holistic care  <a href="https://ohie.org/wp-content/uploads/2024/04/DigitalHealthBlueprint_SRILANKA-2.pdf">https://ohie.org/wp-content/uploads/2024/04/DigitalHealthBlueprint_SRILANKA-2.pdf</a>	Investing in digital health leadership and holistic care approaches strengthens sustainability and overall health care goals.	Develop sustainable digital health leadership and promote holistic care delivery.
<b>United Kingdom</b>	Digital transformation of national health service with linkages to social care  <a href="https://www.gov.uk/government/publications/a-plan-for-digital-health-and-social-care/a-plan-for-digital-health-and-social-care">https://www.gov.uk/government/publications/a-plan-for-digital-health-and-social-care/a-plan-for-digital-health-and-social-care</a>	Expanding EHRs, telehealth and AI innovations improve patient-centered care and health care connectivity.	Modernize health care delivery, improve connectivity and enhance patient-centered care.

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