

Leveraging digital transformation for better health in Europe: Regional digital health action plan for the WHO European Region 2023–2030

Progress report

At the 72nd session of the WHO Regional Committee for Europe (RC72) in September 2022, the Regional Committee adopted the Regional Digital Health Action Plan for the WHO European Region 2023–2030 in resolution EUR/RC72/R2.

In collaboration with Member States and other key stakeholders, the WHO Regional Office for Europe has begun implementing the Action Plan. The first two years focused on developing research, strengthening capacity-building and supporting Member States in the area of digital transformation of the health sector.

Progress has been made in all of the 18 key regional focus areas identified across the four strategic priorities. Over the upcoming third year of implementation, the WHO Regional Office for Europe will continue this progress, helping to deliver the Empowerment through Digital Health flagship initiative of the European Programme of Work, 2020–2025, and strengthening its relevance to all 53 Member States in the WHO European Region.

Following the resolution EUR/RC72/R2, Leveraging digital transformation for better health in Europe: Regional digital health action plan for the WHO European Region 2023–2030, and the commitment to report to the Regional Committee every two years on progress made in implementing the Action Plan, and to review and update the list of illustrative actions as necessary, a new list of illustrative actions has been appended to this progress report.

This progress report is submitted to the Regional Committee for consideration at its 74th session in October 2024.

Contents

Introduction.....	3
Overview of implementation by strategic priority	3
Strategic Priority 1 – setting norms, developing evidence-based technical guidance and formulating direction to support decision-making in digital health	3
Strategic Priority 2 – enhancing country capacities to better govern digital transformation in the health sector and advance digital health literacy	5
Strategic Priority 3 – building networks and promoting dialogue and knowledge exchange to facilitate interaction between partners, stakeholders and the wider public to steer the agenda for innovation in digital health	5
Strategic Priority 4 – conducting horizon-scanning and landscape analysis to identify solutions that are patient-centred and can be scaled up at country or regional level to help shape public health and health systems in the digital era	6
Future direction.....	6
Annex. Illustrative actions and expected impact at the country level	7

INTRODUCTION

1. This report provides an overview of the progress made in the implementation of the Regional Digital Health Action Plan for the WHO European Region 2023–2030 since the 72nd session of the WHO Regional Committee for Europe (RC72) in 2022, from September 2022 to May 2024.
2. The Action Plan was developed under the guidance of a working group of digital health experts from the WHO European Region (38 Member States) and in close collaboration with several international partners: Asian Development Bank (ADB), United States Centers for Disease Control and Prevention (CDC), European Centre for Disease Prevention and Control (ECDC), European Commission (EC), International Telecommunication Union (ITU), Organisation for Economic Co-operation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD), United Nations Development Programme (UNDP), United Nations Children’s Fund (UNICEF), United States Agency for International Development (USAID), and the World Bank.
3. The purpose of the Action Plan is to outline the strategic actions needed to promote digital health systems to improve health at scale in the Region. The Action Plan is intended to support countries in leveraging and scaling up digital transformation for better health and in aligning digital technology investments with health system needs, while fully respecting the values of equity, solidarity and human rights. The Action Plan complements and operationalizes the WHO Global strategy on digital health 2020–2025.

OVERVIEW OF IMPLEMENTATION BY STRATEGIC PRIORITY

Strategic Priority 1 – setting norms, developing evidence-based technical guidance and formulating direction to support decision-making in digital health

4. More research is needed on digital health. The WHO Regional Office for Europe (WHO/Europe) has collaborated with other agencies, Member States, international organizations, academic institutions, civil society and the digital technology industry to build on past lessons and develop research in this area through 14 technical publications (see Table 1).

Table 1. Technical guidance developed to help Member States in the WHO European Region face digital health challenges

Topic	Findings
Artificial intelligence (AI)	<ul style="list-style-type: none"> AI is used in several ways in health care, from molecular and genetics testing to medical imaging, diagnostic codes analysis, and in infectious disease outbreak predictions as part of health emergencies protection programmes. However, its application remains limited and is used most often only in laboratories and testing.¹ AI is seen as a novel tool in the planning of mental health services, as well as in identifying and monitoring mental health problems in individuals and populations. At the same time, significant flaws have been found, including how AI applications process statistics, infrequent data validation and little evaluation of the risk of bias.²
Equity	<ul style="list-style-type: none"> Digital health technologies are not equally accessible to all communities and areas in the Region, raising concerns over the equitable use of digital tools for health. The research showed that people with poor health are among those who are struggling the most to access these tools.³ Digital health technologies can improve women's health and promote equity. The benefits are primarily associated with improving access to health care services, enhancing maternal health, providing essential health information, and empowering women to increase their autonomy.⁴
Health workforce	<ul style="list-style-type: none"> Digital health tools positively impact health workers' performance,⁵ and digital health literacy is key to overcoming barriers for health workers to utilize digital health technologies.⁶
Monitoring digital health	<ul style="list-style-type: none"> After a review in eight countries across three WHO regions, it was found that digital health programmes and interventions are often not monitored or evaluated.⁷
Misinformation/infodemics	<ul style="list-style-type: none"> Incorrect interpretations of health information, which increase during outbreaks and disasters, often negatively impact people's mental health and increase vaccine hesitancy, and can delay the provision of health care.⁸
Telemedicine	<ul style="list-style-type: none"> Data from over 20 000 studies in 53 countries showed telemedicine has clear benefits in the screening, diagnosis, management and treatment of chronic diseases.⁹

¹ Martinez-Millana A, Saez-Saez A, Tornero-Costa R, Azzopardi-Muscat N, Traver V, Novillo-Ortiz D. [Artificial intelligence and its impact on the domains of universal health coverage, health emergencies and health promotion: An overview of systematic reviews](#). Int J Med Inform. 2022;166:104855 (accessed 12 April 2024).

² Tornero-Costa R, Martinez-Millana A, Azzopardi-Muscat N, Lazeri L, Traver V, Novillo-Ortiz D. [Methodological and Quality Flaws in the Use of Artificial Intelligence in Mental Health Research: Systematic Review](#). JMIR Ment Health. 2023;10:e42045 (accessed 12 April 2024).

³ [Equity within digital health technology within the WHO European Region: a scoping review](#). Copenhagen: WHO Regional Office for Europe; 2022 (accessed 12 April 2024). Licence: CC BY-NC-SA 3.0 IGO.

⁴ [The role of digital health technologies in women's health, empowerment, and gender equality: project report](#). Copenhagen: WHO Regional Office for Europe; 2024 (accessed 12 April 2024). Licence: CC BY-NC-SA 3.0 IGO.

⁵ Borges do Nascimento IJ, Abdulazeem HM, Vasanthan LT, Martinez EZ, Zucoloto ML, Østengaard L et al. [The global effect of digital health technologies on health workers' competencies and health workplace: an umbrella review of systematic reviews and lexical-based and sentence-based meta-analysis](#). Lancet Digit Health. 2023;5(8):e534-e544 (accessed 12 April 2024).

⁶ Borges do Nascimento IJ, Abdulazeem H, Vasanthan LT, Martinez EZ, Zucoloto ML, Østengaard L et al. [Barriers and facilitators to utilizing digital health technologies by healthcare professionals](#). NPJ Digit Med. 2023;6(1):161 (accessed 12 April 2024).

⁷ [Monitoring the implementation of digital health: an overview of selected national and international methodologies](#). Copenhagen: WHO Regional Office for Europe; 2022 (accessed 12 April 2024). Licence: CC BY-NC-SA 3.0 IGO.

⁸ Borges do Nascimento IJ, Pizarro AB, Almeida JM, Azzopardi-Muscat N, Gonçalves MA, Björklund M et al. [Infodemics and health misinformation: a systematic review of reviews](#). Bull World Health Organ. 2022;100(9):544-561 (accessed 12 April 2024).

⁹ Saigí-Rubió F, Borges do Nascimento IJ, Robles N, Ivanovska K, Katz C, Azzopardi-Muscat N et al. [The Current Status of Telemedicine Technology Use Across the World Health Organization European Region: An Overview of Systematic Reviews](#). J Med Internet Res. 2022;24(10):e40877 (accessed 12 April 2024).

Strategic Priority 2 – enhancing country capacities to better govern digital transformation in the health sector and advance digital health literacy

5. Digital health solutions are an essential component and enabler of sustainable health systems and universal health coverage. To realize their potential, digital health initiatives must be responsive to health needs and be part of the wider health ecosystem. They should be guided by a robust national digital health strategy or equivalent regional strategies. Since 2020, 10 Member States have started to develop or revise their national digital health strategy.¹⁰ To date, 83% (44 out of 53) of Member States in the Region have a digital health strategy.
6. Since 2022, WHO/Europe has been supporting authorities in strengthening health information systems to enhance health system response and establishing telemedicine services in rural areas to mitigate disruption of services and deliver high-quality primary health care. In particular, 15 Member States have prioritized the strengthening of data and health information systems, including their digitalization, and telemedicine.¹¹ In addition, WHO/Europe has established the WHO European Geospatial Coordination Hub to strengthen geospatial capacities and facilitate the implementation of geospatial activities across the Region.
7. Support on developing awareness and practical guidance in cybersecurity risk management and privacy-enhancing technologies has been provided to Member States.¹² In addition, a cybersecurity audit methodology for digital health information systems has been developed (currently in the pilot phase).
8. In regard to fostering innovation in predictive analytics for better health through big data and artificial intelligence (AI), 19 Member States have worked with WHO/Europe to engage in training and develop their capacity in relation to ethics and governance of AI and big data in health care,¹³ with the aim of giving participants a better understanding of what is needed to implement AI and big data solutions in health care.
9. To strengthen digital literacy skills, with special attention to the health workforce, WHO/Europe and the Eastern Europe and Central Asia Regional Office of the CDC have launched a fellowship programme in countries of eastern Europe and central Asia, to improve the use of data science in public health.

Strategic Priority 3 – building networks and promoting dialogue and knowledge exchange to facilitate interaction between partners, stakeholders and the wider public to steer the agenda for innovation in digital health

10. To facilitate advocacy and promote interregional, international and multisectoral collaboration, a digital health partners forum for the European Region was established in September 2023. The forum meets once per quarter.¹⁴
11. To promote and facilitate the dissemination and exchange of good practices and lessons learned in digital health among Member States, several knowledge-exchange activities have been implemented, including the webinar series Decoding Data and Digital Health and the second WHO Symposium on the Future of Health Systems in a Digital Era in the European Region. The Symposium, which was co-hosted by the Portuguese Ministry of Health and the National Health Service on 5–6 September 2023 in Porto, Portugal, attracted more than 1000 participants, including 571 in-person attendees.

¹⁰ Czechia, Germany, Iceland, Latvia, Lithuania, Malta, Romania, Serbia, Tajikistan and Uzbekistan.

¹¹ Armenia, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, Republic of Moldova, Romania, Serbia, Tajikistan, Türkiye, Turkmenistan, Ukraine and Uzbekistan.

¹² Armenia, Georgia and Romania.

¹³ Albania, Austria, Belgium, Bosnia and Herzegovina, Denmark, Georgia, Greece, Israel, Kazakhstan, Kyrgyzstan, Montenegro, North Macedonia, Portugal, Serbia, Slovenia, Spain, Tajikistan, Turkmenistan and Uzbekistan.

¹⁴ The current partners of this forum are: ADB, the Eastern Europe and Central Asia Regional Office of the CDC, the ECDC, the EC, the International Organization for Migration (IOM), the OECD, UNDP, UNICEF, USAID and the World Bank.

12. To facilitate a platform for dialogue with non-State actors to better align technology ideation with health system bottlenecks, WHO has established the Strategic Partners' Initiative for Data and Digital Health. This initiative involves selected international experts and government officials who will work together to identify actions to improve the uptake of safe and equitable digital health. In addition, a memorandum of understanding was signed between WHO/Europe and the Healthcare Information and Management Systems Society (HIMSS) to advance digital health in the European Region.

13. In terms of partnership, another donor agreement was signed with the EC, which aims to support Member States in the Region to strengthen health information systems and boost the use and sharing of health data, including by promoting, where possible, the principles and solutions included in the proposed legislation for a European Health Data Space.

Strategic Priority 4 – conducting horizon-scanning and landscape analysis to identify solutions that are patient-centred and can be scaled up at country or regional level to help shape public health and health systems in the digital era

14. A landmark report, *Digital health in the European Region: the ongoing journey to commitment and transformation*,¹⁵ was launched in September 2023 to present developments and trends in digital health in the Region. The report showed that while in many countries the COVID-19 pandemic accelerated the creation and use of digital health tools and policies in response to lockdowns and social distancing, including telemedicine and user-friendly health apps, there is still much work to be done. In addition, the WHO report, *Exploring the digital health landscape in the WHO European Region: digital health country profiles*,¹⁶ looked at individual countries to see how WHO European Member States are reshaping their health care systems through the integration of digital health policies and tools.

15. To ensure a people-centred approach is considered when developing digital solutions and to strengthen gender equality and health equity, research and advocacy efforts have been conducted, showing that digital health is not accessible by everyone equally,¹⁷ but that digital tools can help improve women's health and promote gender equality.¹⁸

16. Lastly, to facilitate implementation, evaluation and scaling up of digital technologies in the health sector, WHO conducted a landscape analysis determining that digital health programmes and interventions are often not monitored or evaluated, despite their clear potential.¹⁹

FUTURE DIRECTION

17. Following the resolution EUR/RC72/R2, Leveraging digital transformation for better health in Europe: Regional digital health action plan for the WHO European Region 2023–2030, and the commitment to report to the Regional Committee every two years on progress made in implementing the Action Plan, and to review and update the list of illustrative actions as necessary, a new list of illustrative actions is appended to this progress report.

¹⁵ [Digital Health in the European Region: the ongoing journey to commitment and transformation](#). Copenhagen: WHO Regional Office for Europe; 2023 (accessed 12 April 2024). Licence: CC BY-NC-SA 3.0 IGO.

¹⁶ [Exploring the digital health landscape in the WHO European Region: digital health country profiles](#). Copenhagen: WHO Regional Office for Europe; 2024 (accessed 25 June 2024). Licence: CC BY-NC-SA 3.0 IGO.

¹⁷ [Equity within digital health technology within the WHO European Region: a scoping review](#).

¹⁸ [The role of digital health technologies in women's health, empowerment, and gender equality: project report](#).

¹⁹ [Monitoring the implementation of digital health: an overview of selected national and international methodologies](#).

Annex. Illustrative actions and expected impact at the country level

Strategic Priority 1 – setting norms, developing evidence-based technical guidance and formulating direction to support decision-making in digital health

1. Key regional focus areas:

- Promote commitment to and awareness of digital health by sharing evidence and good practice.
- Conduct research and collect available evidence and good practices on the development, implementation and use of digital solutions in the health sector.
- Guide the development and adoption of digital technologies that facilitate the application of digital health to health priorities across the entire WHO European Region.

Illustrative actions and expected impact at the country level for the period 2022–2023: Strategic Priority 1

2. Illustrative actions by the WHO Secretariat, Member States and partners:

- Develop a digital health strategic resource kit to articulate the elements required to deliver successful digital transformation of health systems.
- Establish a digital health research agenda that prioritizes health system needs and health priorities.
- Develop and/or update core technical guidance and evidence-informed technical documents in priority digital health areas in the context of moving towards universal health coverage, protecting against health emergencies and promoting health and well-being.
- Develop capacity-building plans to promote and support the digital transition in different health areas and contexts.

Additional illustrative actions and expected impact at the country level for the period 2024–2025: Strategic Priority 1

3. Illustrative actions by the WHO Secretariat, Member States and partners:

- In conjunction with relevant partners, produce core guidance for priority areas of digital health, as identified by Member States: digitalization of health information systems, artificial intelligence, telemedicine and cybersecurity.
- Develop a policy brief series on health data, evidence and digital health.
- Conduct research on key topics of regional importance for the development of digital health, including the impact of digital health on climate sustainability, the role of digital health in combating antimicrobial resistance, health and gender-related issues in digital environments, and digital health to support healthy ageing.
- Building on existing efforts for interoperability, work with WHO headquarters and relevant standards development organizations to develop guidance on and harmonize the adoption of health data standards in WHO European Member States.

4. Expected impact at the country level:

- Evidence-building plan and research agenda on the contribution, opportunities and challenges of digital health in the context of the national health system's needs and health priorities is available to support decision-making.
- Guidance on priority digital health areas is developed and provided to Member States, and capacity is increased in these areas.

Strategic Priority 2 – enhancing country capacities to better govern digital transformation in the health sector and advance digital health literacy

5. Key regional focus areas:

- Support the enhancement or development of national digital health strategies and related governance frameworks to help achieve national health goals, improve health system performance and guide future digital health investments and transformation.
- Support countries' capacities to better govern digital transformation in the health sector.
- Increase countries' digital health capacities and foundations and their ability to identify and align solutions and prioritize procurement and investments with identified health needs.
- Strengthen health information systems and health data governance and use.
- Develop awareness and practical guidance in cybersecurity risk management and privacy-enhancing technologies.
- Foster innovation on predictive analytics for better health, through big data and artificial intelligence, with special attention to (i) how people approach health throughout life (birth, adolescence, adulthood, elder years), (ii) infodemic management, (iii) enhancement of financial protection, and (iv) detection of epidemics.
- Strengthen digital literacy skills and capacity-building in the general population, with special attention to the health workforce, for the use of digital health services and disease prevention and management.

Illustrative actions and expected impact at the country level for the period 2022–2023: Strategic Priority 2

6. Illustrative actions by the WHO Secretariat, Member States and partners:

- Develop guidance to support the development of digital health foundations, procurement and enhancement of governance structures and mechanisms on digital health.
- Promote and contribute to the assessment of infrastructural needs and the review of national laws and policies to drive successful digital transformation.
- Assess health information systems and their governance to strengthen countries' capacities to collect, analyse, integrate and use health information and data.
- Develop a European health data governance framework through a European health data governance charter.
- Address the infodemic in the Region and globally.
- Strengthen countries' capacities to leverage the full potential of big data and artificial intelligence, taking into account data privacy, security and ethical use.
- Identify the core competencies for digital health literacy in the health workforce, and develop a framework to assess digital health literacy skills in the population.

Additional illustrative actions and expected impact at the country level for the period 2024–2025: Strategic Priority 2

7. Illustrative actions by the WHO Secretariat, Member States and partners:
 - Develop guidance on financing value-based care models to support investment in digital health solutions and payment strategies that improve access to universal health coverage.
 - Assess geospatial capacities and facilitate the implementation of geospatial activities in support of public health across the Region.
 - Conduct sentiment analysis using digital data sources to complement traditional data collection methods for policy-making.
 - Strengthen health information systems and boost the use and reuse of health data, including by promoting, where possible, the principles and solutions included in the proposed legislation for a European Health Data Space.
 - Guide countries towards the development of evidence-based methodologies to support the implementation of inclusive, high-quality, safe digital health solutions and measurement frameworks.

8. Expected impact at the country level:
 - Support and expert advice are provided to strengthen national digital health procurement and governance (including financial, infrastructural, human, organizational and cultural resources).
 - Technical assistance in adopting digital health solutions is tailored and provided at the national level based on country and health needs.
 - National health information systems and data governance frameworks are assessed to enhance the use of health data for health-related public interest.
 - Efforts are strengthened to develop a comprehensive roadmap for full implementation of health data standards for data interoperability within countries to facilitate integrated health information systems.
 - Capacity is developed, according to country-specific contexts, for planning and implementing infodemic management.
 - Capacity-building to leverage the potential of big data and artificial intelligence is provided through the Winter School of Impact Training for Big Data in Healthcare.
 - A core competency framework of digital skills for the health workforce is developed and available for adoption at the national level.
 - A standardized approach is proposed for measuring digital health literacy skills in the population at the national and regional levels.

Strategic Priority 3 – building networks and promoting dialogue and knowledge exchange to facilitate interaction between partners, stakeholders and the wider public to steer the agenda for innovation in digital health

9. Key regional focus areas:
 - Facilitate advocacy and promote interregional, international and multisectoral collaboration.
 - Promote and facilitate the dissemination and exchange of good practices and lessons learned in digital health among Member States.
 - Establish a platform for dialogue with non-State actors to better align technology ideation with health system bottlenecks.

***Illustrative actions and expected impact at the country level for the period 2022–2023:
Strategic Priority 3***

10. Illustrative actions by the WHO Secretariat, Member States and partners:
- Analyse the landscape of digital health networks and cross-sectoral partnerships in the Region.
 - Promote alignment with the European Union (such as through the eHealth Network), the Organisation for Economic Co-operation and Development, and other international organizations to leverage the full potential and expertise of regional and international partners.
 - Establish a digital health network in the Region, and contribute to other regional and global digital health networks.
 - Develop a methodology for knowledge-sharing in digital health, and build a repository for good practices, lessons learned and country vignettes.
 - Establish a digital health partnership council as a policy dialogue platform.

***Additional illustrative actions and expected impact at the country level for the period
2024–2025: Strategic Priority 3***

11. Illustrative actions by the WHO Secretariat, Member States and partners:
- Establish a technical advisory group on the implementation and use of artificial intelligence in health for the Region.
 - Continue ongoing work with, and encourage participation in, the Strategic Partners' Initiative for Data and Digital Health, the WHO Health Information Network (WHO/HIN) and the Regional Digital Health Partners Forum.
 - Increase the number of WHO collaborating centres for digital health to continue the development of the European data and digital health research agenda.
 - Deliver the third WHO Symposium on the Future of Health Systems in a Digital Era in the European Region to continue discussions on how countries and industry can work together to provide user-centric health care beyond 2030, enabled by digital health.
12. Expected impact at the country level:
- National digital health networks and cross-sectoral partnerships are promoted, and their visibility is increased at the regional level.
 - International coordination and cooperation is enhanced for the benefit of Member States.
 - Knowledge exchange in digital health at the regional and global levels is facilitated by sharing national good practices and learning from others.
 - An independent forum for Member States is established to increase understanding of the available technologies and implementation approaches.

Strategic Priority 4 – conducting horizon-scanning and landscape analysis to identify solutions that are patient-centred and can be scaled up at country or regional level to help shape public health and health systems in the digital era

13. Key regional focus areas:
- Monitor developments and trends in emergent digital solutions with the potential to enhance health systems and improve the population's health.
 - Ensure that a people-centred approach is considered so as to build trust and facilitate adoption.

- Strengthen gender equality and health equity approaches as part of countries' own aims to promote inclusive digital societies.
- Enhance the development of digital approaches to the management of health at the population level, with the aim of moving health and well-being from reactive care models to active community-based and disease prevention models.
- Facilitate implementation, evaluation and scale up of digital technologies in the health sector in Member States.

***Illustrative actions and expected impact at the country level for the period 2022–2023:
Strategic Priority 4***

14. Illustrative actions by the WHO Secretariat, Member States and partners:

- Develop a measurement framework to monitor digital health in the Region.
- Update or develop country profiles or case studies on digital health.
- Identify and examine the main impacts that gender and equity present in the adoption and scaling of digital health solutions in the Region.
- Identify opportunities for (i) engaging professional and patient associations in digital health development, (ii) promoting the engagement of end users and beneficiary populations using digital health services, and (iii) improving disease prevention and management.
- Develop a catalogue of business cases of national investment in digital infrastructure and technologies to support advancing universal health coverage, protecting the public in times of emergencies and enhancing health and well-being.

***Additional illustrative actions and expected impact at the country level for the period
2024–2025: Strategic Priority 4***

15. Illustrative actions by the WHO Secretariat, Member States and partners:

- Conduct a study on the status of artificial intelligence in health care in the Region (Governing AI effectively: leadership and oversight; supporting the development and uptake of AI innovation for better health).
- Raise awareness of the importance of equity in digital environments in the context of universal health coverage through the development of a proposed European framework for the measurement of digital health equity.
- Develop policy guidance to support Member States in addressing the digital determinants of health, particularly for subpopulations experiencing vulnerability, including actions to mitigate their impact on the trust in and use of digital health solutions by populations.

16. Expected impact at the country level:

- A standardized approach to monitoring digital health at the national and regional levels is proposed, including for the monitoring of end user experience and preferences.
- Digital health country profiles and/or case studies are developed and available to facilitate regional comparability.
- Approaches are identified to empower end users and various beneficiary populations using digital health services.
- Technical support is provided to develop business cases for national investment in digital infrastructure and technologies to leverage health at scale.