8

Guiding Principles for Digital Transformation of the Health Sector

A Call to
Action in the Americas

8

Guiding Principles for Digital Transformation of the Health Sector

A Call to Action in the Americas

Washington, D.C., 2021

Pan American Health Organization
World Health Organization
REGIONAL OFFICE FOR THE Americas

PAHO

Eight Guiding Principles of Digital Transformation of the Health Sector.
A Call to Pan American Action

Guiding Principles for Digital Transformation of the Health Sector

"We need to take a fresh look at public health, one that is much more holistic and inclusive, and that considers new critical factors for the success of interventions, such as connectivity, bandwidth, interoperability, and artificial intelligence, among others. This renewed approach must also consider inequities in the digital era to ensure that the digital divide does not widen the gaps in health inequities".

Dr. Carissa F. Etienne, Director
Pan American Health Organization

A call to action in the Americas to advance together in the digital transformation of the health sector

Considering that digital transformation is an irreversible reality, and convinced that the benefits of information technologies must no longer be the domain of the few and must become everyone's right, the Pan American Health Organization urges the Member States and all institutions and workers in the health sector to work on the following strategic lines of action:

- **Work** together so that digital transformation drives us to achieve the 2030 agenda

- **Coordinate** actions related to technical considerations and legal frameworks that leave no one behind

- **Motivate** international collaboration to guarantee access to the necessary knowledge and information, at the right time and in the necessary format

- **Incorporate** digital literacy as a public policy starting in early education

- **Strengthen** foundational aspects and governance mechanisms to make investments and actions cost-effective, informed, and sustainable

- **Ensure** that all actions related to digital transformation of the health sector consider the ethical principles and foundations of inclusiveness and human rights

The list of references consulted for the development of this document are listed at the following electronic address: http://www.paho.org/ish/8p

8 Guiding Principles for Digital Transformation of the Health Sector

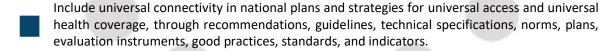| 1 | Universal connectivity | **Ensure** universal connectivity in the health sector by 2030 |
2	Digital public goods	**Co-create** digital public health goods for a more equitable world
3	Inclusive digital health	**Accelerate** towards inclusive digital health with an emphasis on the most vulnerable
4	Interoperability	**Implement** interoperable, open, and sustainable digital health and information systems
5	Human rights	**Mainstream** human rights in all areas of digital transformation in health
6	Artificial intelligence	**Participate** in global cooperation on artificial intelligence and any emerging technology
7	Information security	**Establish** mechanisms for trust and information security in the digital environment of public health
8	Public health architecture	**Design** public healthcare architecture in the era of digital interdependence

Universal connectivity

1

Ensure universal connectivity in the health sector by 2030

Initiatives to position the health sector in the era of digital interdependence must be channeled into solid and sustainable policies that achieve full understanding and consideration of its characteristics and that address the needs and challenges of individuals and communities, as well as service providers. The benefits of considering connectivity and bandwidth as a new social determinant of health must also be considered.

Call to action

- Include universal connectivity in national plans and strategies for universal access and universal health coverage, through recommendations, guidelines, technical specifications, norms, plans, evaluation instruments, good practices, standards, and indicators.

- Create records and carry out accreditations, classifications, controls, and monitoring of practices, developments, processes, and evaluation of results, with special emphasis on legal protection for the people and entities involved (operators, technicians and professionals, service providers, intermediaries, marketers, etc.), and for their products, activities, services, and systems in connection with digital health.

- Establish partnerships and sustainable mechanisms for the exchange of data, information, knowledge, investment, and public-private financing, including government funds and multilateral banks in conjunction with the private sector.

- Define and support public-private, sustainable, and practical financing models for the development of broadband networks and infrastructure to support digital transformation of the health sector.

- Position the health sector, with its specific needs, in discussions aimed at extending telecommunications networks in remote areas.

- Promote full integration of connectivity networks with other sectors (social sector, local governance, etc.) to ensure a comprehensive approach to the health sector from a multidisciplinary point of view, avoiding silos and compartmentalization.

- Foster training so that personnel understand the implications of connectivity in health and its different aspects: technological, health, social, legal, etc.

*"It is imperative to achieve **universal connectivity** in the health sector by 2030, addressing the needs and challenges of people, communities, and service providers, and the benefits that will accrue to governments by positioning connectivity and bandwidth as a high priority for public health interventions"*

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

Digital public goods

2

Co-create digital public health goods for a more equitable world

To strengthen the health and well-being of the world's population, digital public goods must include open source software, standards, algorithms, data, applications, and content designed with the appropriate architecture and licensing. These attributes should allow them to be scaled to diverse populations and contexts, and to be implemented with the appropriate local adaptations. Responsibility and sustainability should always prevail, with a user-centered design, especially in vulnerable populations with special needs in terms of technology and digital literacy.

Call to action

- Establish a vision, strategic objectives, and a framework for action to promote appropriate and sustainable incorporation of digital public health goods into health strategies at different political-administrative levels in each country.

- Promote legal and ethical frameworks for open coding, open data, open models of artificial intelligence, standards, and open content. Especially, update and strengthen intellectual property frameworks for the use of and access to digital public goods, in order to facilitate their acquisition and application in low-income regions.

- Design and adopt new cooperation mechanisms between the private sector, public sector, civil society, and academia.

- Assess the inequities and unintended consequences that digital public goods may generate in unfavorable social contexts.

- Align different technological solutions with specific health needs. They must be technologically appropriate to the social, cultural, environmental, and economic conditions where they will be applied.

- Include competencies in the field of digital public goods in education and training programs related to public health, emphasizing the importance of monitoring access, use, and constant adaptation.

- Consider the common values of humanity, such as inclusiveness, respect, the centrality of the human being, human rights, international law, transparency, and sustainability.

"There is a need to co-create digital public health goods for a more equitable world with appropriate architecture and licensing to scale them regionally and globally in different populations and contexts, with the capacity for local adaptation."

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

Inclusive digital health

3

Accelerate towards inclusive digital health with an emphasis on the most vulnerable

Leaving no one behind in the digital age requires not only reaching populations in situations of greatest social, economic, geographic, or cultural vulnerability, but also people and population groups that are not digitally literate. ICTs have the potential to reduce health inequalities by allowing people to access information and digital tools for prevention and care at the right time and in the right format. Digital inclusion implies appropriate access, digital skills, and usability and navigability in the development of technological solutions. All this should encourage inclusion, while respecting the autonomy of individuals and groups who decide not to use digital services.

Call to action

- Include gender criteria, the intercultural perspective, and the principles of equity and solidarity in actions related to the digital health inclusivity agenda.

- Use reference data as a starting point to formulate and evaluate interventions, determining which people and groups have some degree of vulnerability and their relationship with the virtual world.

- Take multisectoral action to formulate and implement digital inclusion policies and strategies, such as awareness campaigns and training programs (authorities, providers, and the general population).

- Empower individuals and their communities (children, youth, seniors, women, people with disabilities, and indigenous peoples) through initiatives that promote digital health.

- Analyze beliefs, concerns, and motivations regarding health decision-making that may affect the achievement of digital health for all, taking into account the most vulnerable people.

- Promote the inclusion of people-centered digital health, ensuring that the population knows their rights and responsibilities regarding the security, privacy, and reliability of health data.

- Enable a virtual resilience system so that health systems continue to offer coverage if physical care is impossible, with special attention to the most vulnerable populations.

"Inclusive digital health should be a ³must, ´ and it is necessary to accelerate progress toward inclusive digital health, with emphasis on the most vulnerable populations; reaching not only populations in conditions of greater social, economic, geographical, or cultural vulnerability but also people and population groups that are not digitally literate"

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

Interoperability

4

Implement interoperable, open, and sustainable digital health and information systems

Information systems for health—with timely and open access to properly disaggregated data, integration of national and local systems, digital health, and ICT—facilitate effective identification, notification, and analysis of cases and contacts, early case search and detection, and definition and monitoring of the at-risk population in a manner that is safe, interoperable, and as personalized as possible.

Call to action

- Include the following four dimensions in national plans and public policies on information systems and digital health: 1) management and governance of information systems; 2) data management and information technology; 3) information and knowledge management and innovation; and 4) integration and digital convergence, meaning the ability to access the same content from different devices.

- Ensure the implementation of information systems and digital health strategies under governance that ensures the convergence of investments and actions, as well as the interconnection and interoperability of databases and applications to facilitate timely access to reliable data and knowledge in the right place and the right format.

- Consolidate infrastructure for the exchange of open data and critical information focused on ethical and cybersecurity criteria in information flows.

- Adopt a digital literacy program based on detected needs and considering different contexts, in order to reduce inequalities.

- Provide the conditions and necessary support to strengthen existing initiatives and build a "multi-stakeholder network that promotes comprehensive and inclusive approaches to building digital capacity for sustainable development".

- Define governance schemes for the data generated by interoperable health systems in order to promote secondary use of information, generating data for tactical and operational decision-making.

- Develop secure mechanisms that allow the exchange of clinical documentation (syntactic interoperability) based on existing standards.

" There is a need to stop seeing ³interoperability´ as an isolated IT-related term. It is a key concept for having timely open access to properly disaggregated data and the integration of national and local systems."

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

Human rights

5

Mainstream human rights in all areas of digital transformation in health

Ensuring the protection of human rights in digital health requires a thorough review of legal instruments related to the health sector. The individual and social dimensions of human dignity constitute one of the fundamental values of the digital transformation process, along with the environment in which people live. To be fair and equitable, a regulatory framework must be free of any geographic, educational, cultural, political, religious, or gender bias.

Call to action

■ Guarantee fundamental rights and urge the development of national and regional regulatory frameworks that consider and regulate potential conflicts of rights. International organizations and national and subnational governments must address—together with civil society—the improvement of intervention capacities and health strategies by validating processes related to digital health.

■ Emphasize the legal principles that support public protection and security, based on human rights, equity, equal access to health, and transparency.

■ Formulate appropriate regulatory instruments that weigh the public interest against individual and mass health data. It is necessary to seek a balance between protecting public health as a social good and protecting sensitive personal data, as occurs with the technology used for notification systems in epidemiological surveillance.

■ Use scientific data to ensure that the benefits of digital health outweigh the risks to individual rights and freedoms, especially during public health emergencies.

■ Promote the development or modernization of sustainable legislative ecosystems in digital health, in particular concerning laws on access to public information, ensuring the privacy of sensitive personal data with the express consent of the individual.

■ Ensure the right of verification, algorithm validation, and evaluation of digital technology in terms of security, efficacy, and sustainability.

"Mainstreaming human rights across all areas of digital transformation in health is one of the most important critical factors for success. Guaranteeing the protection of human rights in digital health requires immediate in-depth action to review legal and regulatory instruments directly or indirectly related to the health sector "

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

Artificial intelligence

6

Participate in global cooperation on artificial intelligence and any emerging technology

Global cooperation on artificial intelligence (AI) implies understanding the individual and social dimensions of the globalized and interconnected reality of the human condition. As well as working in multisectoral and interdisciplinary networks, such cooperation is vital when designing and adopting artificial intelligence solutions that promote equity, gender, and cultural diversity with safe, reliable, and open algorithms.

Call to action

- Prevent algorithmic biases and guarantee social inclusion in the design of artificial intelligence systems and in their potential application at all economic, social, and geopolitical levels in the countries of the Region.

- Promote multinational investment funds so that the most vulnerable countries are not deprived of the benefits of emerging technologies and artificial intelligence in the field of public health.

- Ensure the dual role of the State as guarantor of human rights and promoter of the enjoyment of those rights when deploying artificial intelligence in the field of health.

- Establish formal coordination mechanisms that promote and ensure cooperative and constructive understanding at the regional and global levels, involving the public and private sectors, governance mechanisms, academia, industry, and citizens.

- Build an open and cooperative AI innovation system, promoting the development of open access codes for algorithms and applications.

- Accelerate the development of ethical and legal frameworks, training, and the search for high-level talent in artificial intelligence. Build AI as an academic discipline by forming multidisciplinary teams (e.g., healthcare professionals, data scientists, and legal professionals) that promote issues such as transparency, explicability, and algorithmic auditing.

"Participation in global cooperation on artificial intelligence and any emerging technology should be part of public health policies. The principle of global cooperative support in artificial intelligence and any emerging technology means including the individual and social dimensions in a globalized interconnected reality that is now part of the human condition."

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

Information security

Establish mechanisms for trust and information security in the digital environment of public health

Adopt regulatory instruments for the treatment and protection of sensitive health data, as well as international security guidelines and standards for patient-centered information systems. Implementation of these systems must respect health-related rights in order to generate a "culture of safe and reliable data management", understood as the balance between the need to access data and the need for privacy.

Call to action

- Have normative instruments that regulate the management of and access to health data based on privacy, confidentiality, and information security.

- Establish public policies that include a health data protection and security plan, defining access profiles based on the actions each user must perform.

- Actively train all actors involved in the flow of health information on computer security guidelines and associated risks.

- Develop monitoring mechanisms to detect security incidents in health information systems.

- Have mechanisms for informed consent regarding access, registration, and safeguarding of sensitive information.

- Enable centralized security certification services for sensitive health data, using blockchain certification technologies, etc.

- Adopt communication plans to make the population aware of their rights and responsibilities regarding their personal data.

- Update current data protection regulations, many of which were created before the digital age, in order to include new topics such as cybersecurity.

"It is imperative to protect sensitive health information, and therefore it is necessary to collaborate and co-create mechanisms for ensuring the confidentiality and security of personal information in the digital public health setting, while simultaneously promoting access and transparency in information and knowledge"

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

8 Guiding Principles for Digital Transformation of the Health Sector

Public health architecture

8

Designing public health architecture in the age of digital interdependence

Public health architecture in the era of digital interdependence must be framed within each government's digital agenda. It must be transversal in order to include the different aspects of governance and optimize strategic planning and resource management. It should be based on the use of standards and procedures that favor multiple areas, not only the health field. This is the case of connectivity and bandwidth, which have an impact on health, education, and all other sectors.

Call to action

- Update digital agendas as a public policy with the necessary regulatory framework for digital applications in health.

- Capitalize on international efforts to develop projects to deploy health information technology.

- Consider establishing technologies to allow data exchange; for example, an interoperability bus with services for consulting standardized databases of national benefit and use.

- Define processes to evaluate emerging technologies related to big data, machine learning, artificial intelligence, and "omics" sciences, among others.

- Create change management teams that accompany digital transformation, specifically in the health environment, attending to the needs of different actors (patients, health professionals, administrative staff, leaders, coordinators, etc.).

- Incorporate new underlying frames of reference to predict the adoption and use of technologies in the health sector, both from the perspective of providers and users.

- Develop mechanisms to search, promote, and exchange information on good practices; and create effective mechanisms for the exchange of knowledge to avoid 'adamism' in different sectors and locations.

"Public health architecture in the age of digital interdependence should be designed within the framework of a digital governance agenda. This architecture should be cross-cutting, permitting proper coordination of the different areas of governance and achieving optimization of strategic planning and management of the resources allocated to it"

PAHO / WHO Statement during the High-Level Conference on Information Systems for Health, February 2021.

Digitization of health services implies important cultural changes for both health personnel and the general population.

This guide presents eight principles to guide the countries of the Region of the Americas in the process of digital health transformation.

The goal is to support them in making informed decisions, formulating short- and long-term goals, and developing solid and sustainable public policies, leaving no one behind.

8

Guiding Principles for Digital Transformation of the Health Sector

Department of Evidence and Intelligence for Action in Health