

Detect, Prevent, Respond, Recover *Digitally*

Speaking the Same Language for Digital Solutions in Public Health Emergencies



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Why are digital solutions important during a pandemic?

When health systems use digital solutions in a pandemic, they can access information more easily and exchange it more quickly and

accurately. They are also better able to monitor public health and communicate effectively with the population.

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What are the different types of digital interventions?

Digital solutions are grouped into six categories, based on critical actions taken to prepare for and respond to the pandemic, as well as to access accurate and timely information for decision-making. These categories are¹:

- **CRISIS COMMUNICATION AND ENGAGING THE PUBLIC.**

This category encompasses systems designed for interacting with the public, gathering information, and providing people with reliable information. It includes traditional media like radio and television, and actions taken via multiple interactive channels like social media, SMS, WhatsApp (instant messaging), and others. Interactive channels can lead to enhanced impacts because [behavioral science](#) techniques can be used to combine and analyze data to create better communication strategies for different audiences.

- **EPIDEMIOLOGICAL INTELLIGENCE.**

These digital tools are for evaluating, identifying, monitoring, and surveillance of cases and events at the population level. This category includes tool for:

- **EVALUATING AND FINDING CASES.**

Applications for self-diagnosis or

information on the disease are in this group. While not as accurate as traditional tests, they can help identify the most clear-cut cases and keep health systems from becoming overwhelmed. Examples include applications like chatbots, online forms, and dedicated hotlines. Many countries have call centers for managing this process that could centralize these efforts with multi-channel solutions for managing the flow of patients. Being able to identify potential cases at national and international ports of entry is also crucial.

- **EVENT-BASED SURVEILLANCE.**

These are systems for finding cases and tracing contacts, like the WHO's Go.Data. They optimize the process and cut delays caused by paper-based procedures. Importantly, the purpose of these types of applications is to support, not replace, traditional case surveillance and contact tracing methods. Also, when the pandemic reaches the community transmission phase, it is important for countries to implement [severe acute respiratory infection surveillance systems](#). Part of this process

¹ See Appendix 1 for more details on the complete landscape by phase of the pandemic

that is currently under research is using cell phones to make contact notifications (**digital proximity tracking technologies**), but it is important to take the [WHO's guidance](#) into account.

- **CASE MONITORING.** This subcategory consists of tools for tracking and monitoring the appearance of symptoms in people suspected to have COVID-19 and who are in quarantine. Notable solutions include those based on cell tower triangulation, GPS, and phone calls. This type of monitoring requires a strategy for first registering potential cases and then referring them to monitoring services.

- **POPULATION-LEVEL MONITORING.** These applications use aggregate and anonymized data, like Google's mobility maps and cell phone movement patterns, to monitor a population's mobility and determine whether geographical areas are respecting the different quarantine recommendations.

- **CLINICAL MANAGEMENT FOR COVID-19 CASES AND REMOTE SERVICES.** This category contains tools like [teleconsultations](#), electronic health records, electronic prescriptions, and patient portals, among others. The tools are developed to facilitate interactions between health personnel and patients in order to assess suspected cases and guide the patients' diagnosis and treatment, minimizing the risk of spreading the disease. Also, the response can be strengthened by involving both specialists and primary healthcare services in providing care. This not only helps with monitoring COVID-19 patients who do not need to be hospitalized, it also ensures continued care for pregnant women, children, and chronic patients, shielding them from infection and optimizing use of the health system's physical space and human resources.

- **MANAGEMENT OF THE PUBLIC-PRIVATE HEALTH SYSTEM'S RESPONSE.** To manage the health system's response, it is critical to have centralized,

population-level information that covers public and private services. There are three priority subcategories within this category:

1. **LABORATORY TESTS.** Performing tests is necessary, but information and results from laboratories should be managed through an information system. Traditionally, a Laboratory Information System (LIS) would serve this function, but in our region there is no guarantee that these types of systems exist or are integrated. However, there are rapid solutions that can be rolled out for gathering and centralizing data in areas without an LIS.

2. **LOGISTICS MANAGEMENT.** Logistics systems are often overlooked due to the apparent simplicity of accessing this type of information. However, the region's logistics systems are still weak. In the transition to normality, it is key to implement basic solutions of this kind to know the availability of beds, lab tests, masks, and human resources, among other aspects, so they can be allocated properly.

3. **HUMAN RESOURCE MANAGEMENT:** Human resources should be managed differently during crises than under normal circumstances. In health emergency situations like the Covid-19 pandemic, where social distancing remains the best form of prevention, the decision to return to the office should not be taken lightly. Also, work policies should be flexible and set up to address any unforeseen circumstances. Additionally, it is important to monitor health employees who have contracted the disease, given the virus' high risk of transmission. Digital tool can contribute to this goal by allowing employees to work remotely. For management, it will be key to make sure people engage while working remotely and plan out how business will continue during the crisis.

- **HEALTH DATA MANAGEMENT AND ANALYSIS.** Tools in this category help organize data from various sources in order to make decisions. They include dashboards, systems for geo-referencing information,

and predictive models. They can be used, for example, to identify potential new outbreaks and feed this information into public alert systems or logistics management systems. It is crucial to remember to use interoperability and data standards, to disaggregate data to the level needed in order to analyze it, and to use data ethically.

The digital transformation will help develop systems for recovery and more. All sectors should be open to adapting to this impending change, but special attention should be paid to the details and problems that using digital technology could pose, such as ethical issues and protecting personal data.

• **SYSTEMS FOR RECOVERY AND RETURNING TO THE NEW NORMAL:**

We will enter the age of “new normal” after COVID-19. The pace of the fourth industrial revolution, driven by digital transformation, will pick up during this time. For example, AI (artificial intelligence) and mobile technology/digital tools help enable social distancing and point towards ways to be better positioned to face the new normal.

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The different types of digital interventions

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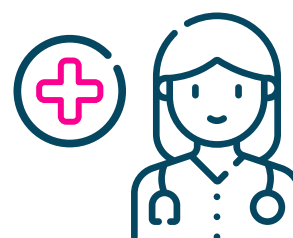


Crisis communication and engaging the public



Epidemiological intelligence

- Evaluating and finding cases
- Event-based surveillance
- Case monitoring
- Population-level monitoring



Clinical management for COVID-19 cases and remote services.

- Teleassistance



Management of the public-private health system's response

- Laboratory tests
- Logistics management
- Human resource management



Health data management and analysis



Systems for recovery and returning to the new normal

What do we need in order to implement digital solutions?

Much of the literature stresses the need for more complete information systems to ensure information is managed properly in emergencies. We know that digital interventions by themselves are insufficient. This pandemic has given an unprecedented boost to the use of digital tools, but there are many countries where this technology is just starting to catch on. This includes not only the technical ability for medical staff to work with patients remotely, but also the necessary regulations that would enable tools and care models that clarify the flow and responsibility of the different participants. It is important not to overlook the foundational elements, like governance, policies, and ITC infrastructure. Often non-digital approaches like contact tracing interviews are more important or already need to be in place for digital approaches to be of any use. That said, when digital interventions are one component of a coherent public health response, they can be very powerful and a great help to making good decisions in real time. Likewise, it is important for public health experts to describe their requirements for digital solutions, as in [this example](#) from the CDC for digital notification systems.

When implementing emerging digital solutions, we need to actively monitor the unwanted consequences that come with abrupt shifts and technological overhauls. Matters like private and security during public health emergencies, public

perception, and ethical issues will be important concerns when using digital interventions. For this reason, the frameworks guiding the decisions of political leaders and citizens during crises should be ready before future outbreaks. Some countries are conducting surveys to gauge their population's opinion, like [this example](#) from the United States.

During the pandemic, much has been made of the brand-new technologies being implemented in Asia, and more recently in the United States and Europe. However, this type of technology works in more developed countries because it rests on a foundation of services and information systems that address health services' basic problems. Additionally, disparities in access to these technologies could lead to poor responses due to lack of data from, or channels of communication with, the most vulnerable groups. In a process of returning to normality, the starting point for considering new technology should be making sure basic systems are in place and having specific plans for serving groups without access.

Additional resources

- [Detect, Prevent, Respond, Recover Digitally: Evidence from Applying Digital Interventions to Past and Present for Future Public Health Emergencies](#)
- [WHO Classification of Digital Health Interventions](#)
- [The WHO's eight pillars for COVID-19 strategic preparedness and response](#)
- [COVID-19 Factsheet: COVID-19 and the Role of Information Systems and Technologies at the First Level of Care](#)
- [COVID-19 Factsheet: The Importance of Strengthening Information Systems](#)
- [COVID-19 Factsheet: Understanding the Infodemic and Misinformation in the Fight Against COVID-19](#)
- [From Lockdown to Reopening: Strategic considerations for resuming activities in Latin America and the Caribbean during the COVID-19 pandemic](#)

Annex 1

Landscape of Digital Interventions for COVID-19 based on WHO's Table 1. Critical preparedness, readiness, and response actions for each transmission scenario for COVID-19

	No Cases	Sporadic Cases	Clusters of Cases	Community Transmission
Transmission scenario	No reported cases	One or more cases, imported or locally acquired	Most cases of local transmission linked to chains of transmission	Outbreaks with the inability to relate confirmed cases through chains of transmission for a large number of cases, or by increasing positive tests through sentinel samples (routine systematic testing of respiratory samples from established laboratories)
Aim	Stop transmission and prevent spread	Stop transmission and prevent spread	Stop transmission and prevent spread	Slow transmission, reduce case numbers, end community outbreaks

Digital Interventions for the WHO Priority areas of work for COVID-19

Emergency response mechanisms	<ul style="list-style-type: none"> Incident management system including the use of ICT Tools for: Management, Operations, Planning, Logistics, Finance and administration during the Public Health Emergency
Risk communication and public engagement	<ul style="list-style-type: none"> Websites and SMS alerts for the public to update on the local situation in local languages Massive communication of official information through multiple channels (WhatsApp, SMS, telephone, websites) Systems to detect false information / rumors
Case finding, contact tracing and management	<ul style="list-style-type: none"> Preparing for tool acquisition and deployment Study potential of Contact tracing software (WHO's Go.Data platform, DHIS2, CommCare) for notification Systems for self-reporting / self-triage Identification of "hot spots" Targeted messages to individuals about risk/special precautions / testing Use of mobility data to identify potential high-risk areas Mandatory Reporting systems to WHO SARI Surveillance System (once Community Transmission is reached) Study potential of use of cellphones for automatic contact Notification**
Public Health Surveillance	<ul style="list-style-type: none"> BI tools (Dashboard, Geospatial Analysis tools, Big Data Analysis/Non-traditional data sources) Use of anonymized data from non-traditional data sources to understand population movements (cellphone data, traffic data, data from Google maps, Facebook, etc)
Laboratory testing	<ul style="list-style-type: none"> Lab information Management System (LMIS)

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Annex 1 Continuation

Digital Interventions for the WHO Priority areas of work for COVID-19

	No Cases	Sporadic Cases	Clusters of Cases	Community Transmission
PREVENT	Public Health Surveillance			
	<ul style="list-style-type: none"> Digital tools to support behavior change for communication / change management strategy Use of A/B testing for messages in different population segments 			
RESPOND	Infection prevention and control			
	<ul style="list-style-type: none"> Systems to manage logistics (stock, distribution) of Human Resources, equipment and supplies for COVID-19 Systems to communicate with health care workers (correct use of PPE) 			
	Case management strategy			
RECOVER	<ul style="list-style-type: none"> Tele consult between health providers (connect specialists with front line providers) Ongoing training of HR and discussion of cases (ECHO) Clinical Decision Support Systems for COVID-19 Management for providers (knowledge support systems, reminders, support to diagnose images) Systems to monitor quality and effectiveness of care of COVID-19 patients (review of symptoms, comparison of treatment outcomes) 			
	Case management recommendations by case severity and risk factors (which includes isolation)			
	<ul style="list-style-type: none"> Follow up on suspected and confirmed cases through telemedicine and use of remote monitoring devices (temperature, pulse, oxygen with wearables) Provide routine health services to priority groups, such as pregnant women, patients with chronic illness, primary care through telemedicine and use of remote monitoring devices (temperature, pulse, oxygen with wearables), ideally with support from EHR systems 			
Societal response				
<ul style="list-style-type: none"> Digital tools to support behavior change for communication / change management strategy Crowd-sourcing to understand public concerns, perceptions and needs and promote transparency through social media, Promise Tracker Systems for volunteers to support the health response (retired health professionals, medical students, etc.) 				
Interventions for "the day after" (certifications to return to work, etc.)				
<ul style="list-style-type: none"> Systems to manage certifications of vaccines to return to work, travel (health workers/essential services and general public) (note that WHO does not support immunity passports at this time) Port of entry systems for international/domestic travel 				

Cross Cutting Issues for Digital Interventions

Governance	<ul style="list-style-type: none"> Interdisciplinary team to lead COVID-19 Response and clear strategy of how to incorporate digital interventions to add value Coordination of the Ecosystem (relationship with public and private sector; plan on how to review and select solutions and vendors)
Policy Issues	<ul style="list-style-type: none"> Health data governance frameworks to safeguard privacy, including having systems for secure data exchange, automatic data extraction from clinical records, secure data access mechanisms for research, data storage and destruction Data standards and interoperability standards Requirements for mandatory reporting Data sharing agreements and open data for anonymized data
Infrastructure	<ul style="list-style-type: none"> Infrastructure and architecture for Data storage from various sources mentioned above Connectivity: Access to Wifi and Mobile Data Hardware (cellphones, tablets, computers, etc) Plans for business continuity / System down time during the crisis
People & Culture	<ul style="list-style-type: none"> Change Management for providers and patients New Workflows & processes

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REMEMBER, to be effective...

- Tools need to be deployed in various settings (urban/rural)
- Should be inclusive in their design
- Should follow the Digital Development Principles:
- Consider using existing Global Goods where possible

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Digital Solutions to Improve Health in Latin America and the Caribbean

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Digital Tools #02: July 2020

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