CDC Global Digital Health Strategy

Executive Summary

May 2022

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INTRODUCTION

Strengthening public health systems worldwide is critical for a prosperous and healthy global community. Access to timely, accurate, and relevant data, coupled with a well-trained global workforce capable of interpreting and acting on data, is critical for effective disease surveillance and response.

In the context of global health, availability of timely, country-level data stemming from healthcare delivery systems and other key sources (e.g., environment, animal, and cross-border program data) will have multiple benefits at the country, regional, and global levels. The integration of higher-quality data into systems and workflows, as well as its effective use, will strengthen the ability of the global health community to detect and respond rapidly to disease outbreaks, strengthen global health security, and prevent the spread of disease, both globally and to the United States.

The Centers for Disease Control (CDC) Global Digital Health Strategy aims to improve the availability and use of data in health systems and accelerate digital enablement of the global health workforce through a paradigm shift in how digital health is implemented at country, regional, and global levels.

THE NEED FOR DIGITAL ENABLEMENT

Data underpins all core CDC activities – detecting, responding to, and preventing disease outbreaks involves the analysis of data coming from a variety of sources, and CDC is highly conversant in many of these sources and their formats. In addition, data from new and emerging technologies such as social media and other "consumer-based" sources, though not directly discussed here, will be of high value to the CDC data stream in the future.

This strategy discusses, in detail, opportunities to harness both existing and untapped data sources for transformation of public health at the global, regional, and country levels. Digital health has shown its potential for transforming the collection, sharing, and use of data for key healthcare and public health capabilities. However, to date, the development of digital health applications and supporting information and communication technology (ICT) infrastructure has been pursued in siloes, resulting in a fragmented digital health landscape, particularly at the country level, where program-specific investments have resulted in program-specific information systems. Barriers to data integration result in inefficient health and public health systems, which are unable to access critical data from the wide variety of sources needed to detect and respond to outbreaks and control epidemics.

CDC recognizes that a paradigm shift is needed to bring about digital transformation in the field of global health. This shift should systematize the scaling of digital health applications at the country,

regional, and global levels, and integrate a broad range of relevant data sources to modernize data use at all levels of public health and health service delivery. This, in turn, would support timely information sharing and decision making at the country level, and ultimately across borders through regional and global data sharing.

This digital transformation requires the use of country- or subregion-level shared digital platforms supported by robust governance structures and resources and a capable workforce. This approach enables digital functions and solutions to be interoperable with each other as well as with regional and global analytical centers. This strategy has been framed around four distinct layers that collectively make up a digitally enabled global health system.

Global and Regional Monitoring and Response:
Protect global health security by enabling timely access, protection, and use of high-quality, shared country data with global health community and practitioners in sectors such as environment and animal health.

Country Health Programs:
Implement data-driven public health and healthcare workflows, decision making, supervision, and programs that improve delivery of services, health outcomes, science, and research.

Country Digital Enablement:
Improve ability to collect, secure, and analyze quality data in service of strengthening health programs to improve effectiveness, including cost and access to services, via digital enablement.

Common Infrastructure:
Provide secure information communication technology (ICT) infrastructure, accessible as appropriate to all users, sectors, and service providers.

The use of shared digital platforms allows key, in-country stakeholders to implement a data governance structure that enables all users to leverage the data for public health, science and research, detection and response, and service quality improvements. Data may range from granular patient-level information to highly summarized district or national indicators, and include data from other sectors such as environment, animal health, and border health programs to create a more holistic data set and analysis. In the future, data from social media and other "consumer-based" sources could be of high value.

At the country level, access to data and proper use and analysis of it will ultimately enable governments to improve public health, health outcomes, and science and research, while strengthening the quality of health programs and access to services. At the global and regional levels, the broader global health community, including collaborating partners, will both contribute to

and benefit from this shared digital platform. This will improve their ability to coordinate and increase the impact of their investments, bringing the collective vision of digital enablement closer to achievement.

CDC itself is typically an essential and unparalleled stakeholder in terms of subject matter and operational expertise in managing outbreaks and epidemics. This strategic approach is reflected in the CDC's Data Modernization Initiative (DMI), which is focused on unlocking the full potential of data for disease detection and elimination. CDC collaborates with state health departments to advance the digital enablement of the health sector in the U.S., with a specific focus on public health. While the focus of the DMI is on the domestic United States, its principles and the challenges the initiative aims to address are universal and equally applicable to a global health context. In addition, CDC's domestic subject-matter experts can indirectly benefit the global health community through sharing evidence. Additional collaboration between the CDC and a country-level public health workforce is possible through a robust data governance framework.

PROPOSED COLLECTIVE STRATEGY

Achieving the vision of digital enablement at the country level and across all public health sectors including environment, animal health, and border health, requires a holistic view of the health system and other relevant data sources as well as a coordinated approach across the global health community, supported by shared goals and objectives. As such, this strategy advocates for a proposed coordinated, global approach for the global digital health community. It is a call to rally around a set of unifying goals and objectives – where the achievement of each goal depends on collective commitment and action. It also offers the first steps of a strategic road map for digital transformation that engages domestic, country, regional, and global partners.

Table A describes the global goals as well as a set of associated unifying objectives that are required to realize each goal. These proposed goals and objectives have particular focus on persistent challenges to success in the digital health and digital development arenas, for instance, the need for global agreements on standards and protocols for protecting and sharing data for the benefit of further use, including research purposes. The pursuit of these shared objectives will move the digital health field towards the realization and use of shared digital platforms across low- and middle-income countries and around the world. The strategies published by other prominent global health partners, including other agencies and organizations based within the United States, are already well aligned with these unifying objectives.

Table A: Global Unifying Goals and Objectives

GLOBAL GOALS	GLOBAL UNIFYING OBJECTIVES		
	DIGITALLY ENABLED SERVICES AND COMPONENTS	OPERATIONS & SKILLED WORKFORCE	GOVERNANCE & LEADERSHIP
GLOBAL AND REGIONAL MONITORING AND RESPONSE: Protect global health security by enabling timely access, protection, and use of high quality, shared country data with global health community and practitioners in sectors such as environment and animal health.	Shared data and analyses from country-driven systems are being used at the global and regional level in support of global health goals.	Decision-making is data-driven and based upon the best available science and technology.	Countries have established data governance policies and mechanisms to make relevant data available to all partners.
COUNTRY HEALTH PROGRAMS: Implement data driven public health and healthcare workflows, decision making, supervision, and programs that improve delivery of services, health outcomes, science, and research.	Common digital components are being deployed in support of service delivery and public health programs.	The workforce is trained and able to keep up with current demand to use digital tools and data to improve service delivery and other health activities.	Country governments are supporting technology and policy regarding use of digital technology.
COUNTRY DIGITAL ENABLEMENT: Improve ability to collect, secure, and analyze quality data in service of strengthening health programs to improve effectiveness, including cost and access to services, via digital enablement.	Countries are developing or using existing digital global goods in support of service delivery and public health programs.	Countries are capacitated and able to implement, use, and maintain digital components.	Country strategy and implementation plans have support across partners and sectors, and country government digital core services are cross-sector.
COMMON INFRASTRUCTURE: Provide secure ICT infrastructure, accessible as appropriate to all users and service providers.	Hardware infrastructure is robust, secure, and accessible.	A critical mass of the workforce across sectors has access to cellular or internet network connectivity and functional devices.	Scope of hardware platforms and connectivity is cross-sector.

CDC ROLE

Based on CDC's public health technical expertise, it is well positioned to contribute to the realization of these unifying global-health goals through an agency-wide approach and can provide leadership in its areas of particular strength, including defining, accessing, and using health and other relevant data for global health protection. For instance, CDC can provide technical assistance and expertise across disease domains and public-health programs (e.g., lab, analytics, informatics, surveillance, animal health) to ensure that digital policies, standards, guidelines, IT infrastructure and software applications, data requirements, data analytics, and workforce capacity meet the needs of country public-health core capabilities. CDC provides expertise to identify the data necessary to ensure robust surveillance for diseases of concern in the country and supports multisectoral coordination to foster information sharing and integration of data, including between the human, animal, and environmental health sectors. The organization also works with global partners to identify and implement cost effective digital health solutions. This strategy provides further detail on the various CDC-specific strategic approaches and activities.

NEXT STEPS

To make this strategy a reality, CDC will work through partnerships with country, regional, and global partners to implement and demonstrate the value of the overall approach articulated in this strategy and to influence others to achieve digital enablement. It will also build internal and external capacity around digital enablement, especially in countries that have little existing capacity.

This strategy advocates for a paradigm shift that encompasses both digital and non-digital foundations across the global health community. It is through this shift that the field of public health can modernize data use to support timely information sharing and decision making and meet health goals.

CDC, as a leading public health organization, can play an essential role in the digital transformation of the health sector in countries where it works. The agency can advocate for, help establish, integrate, and adopt cross-sectoral and shared data platforms, where appropriate, through innovation in data systems, data governance, and workforce development.

For more detail, please see the full strategy as well as associated appendices.