

# USAID'S INFECTIOUS DISEASE DETECTION AND SURVEILLANCE (IDDS) Health Informatics Technical Approach

# **Overview**

A well-structured and interoperable Health Information System (HIS) provides decision makers and health authorities with highquality and timely data, while reducing the reporting burden at lower levels of the health system. Such information sytems are necessary for early detection and surveillance for priority pathogens and antimicrobial resistance (AMR). Interoperability layers are best implemented by first developing resilient governance structures, crafting robust data-sharing protocols and agreements, building capacity at both ends of the data value chain, and standardizing datasets being collected and analyzed. The Infectious Disease Detection and Surveillance (IDDS) project will start by supporting the development and implementation of the necessary health information policies and then will assist with developing the capacity and skills to achieve interoperability between laboratory information systems, from both human and animal health, and surveillance systems. Reaching a mature level of both semantic (issues related to data standarization) and technical interoperability, will greatly improve all types of surveillance (see Surveillance Technical Approach).

# **Technical Approach**

As part of the larger strategic goal of strengthening diagnostic networks and surveillance systems, the IDDS technical approach to support HIS has been developed in alignment with the Principles for Digital Development. The Principles are a set of guidelines that are designed to help integrate best practices into technology-enabled programs. They were developed by the United States Agency for International Development (USAID) and other donors and implementing partners.

IDDS will use existing assessment tools (such as the MEASURE Evaluation HIS Interoperability Maturity Toolkit) to determine the maturity level of the existing connectivity between HIS components. Working collaboratively with the users, IDDS will define pathways to more mature states in the different domains and subdomains that addresses crucial data needs to achieve disease surveillance and detection goals.

The IDDS approach to sustainable and scalable systems is to support and use Open Standards and Open Source Software. For example, in current IDDS partner countries, the leading health management information system is the open source software District Health Information Systems 2 (DHIS 2); recognizing the value of this open source solution we plan to continue to leverage this system in our technical approaches. IDDS will also address privacy and security concerns by supporting local stakeholders in the implementation of responsible data collection practices and safeguards to avoid leaks of personal identifiers.



All technical solutions implemented by IDDS will be evidence-based and focused on delivering data products that are ready-to-use by decision makers. To promote sustainability, IDDS will train local partners in the skills needed to continuously improve and update data products.



#### Design with the User

User-centered design starts with getting to know the people you are designing for through conversation, observation and co-creation.



#### **Reuse and Improve**

Reusing and improving is about taking the work of the global development community further than any organization or program can do alone.



#### Build for Sustainability

Building sustainable programs, platforms and digital tools is essential to maintain user and stakeholder support, as well as to maximize long-term impact.



#### Design for Scale

Achieving scale requires adoption beyond an initiative's pilot population and often necessitates securing funding or partners that take the initiative to new communities or regions.



#### Be Collaborative

Being collaborative means sharing information, insights, strategies and resources across projects, organizations and sectors, leading to increased efficiency and impact.



# Use Open Standards, Open Data, Open Source, and Open Innovation

An open approach to digital development can help to increase collaboration in the digital development community and avoid duplicating work that has already been done.



#### Be Data Driven

When an initiative is data driven, quality information is available to the right people when they need it, enabling them to use the data to take action.



#### Understand the Existing Ecosystem

Well-designed initiatives and digital tools consider the particular structures and needs that exist in each country, region and community.



#### Address Privacy & Security

Addressing privacy and security in digital development involves careful consideration of which data are collected and how data are acquired, used, stored and shared.

## **Digital Health Assessments**

Two important Principles for Digital Development are "Understand the Ecosystem" and "Reuse and Improve." The core tenets of these principles are to understand the "people, networks, cultures, politics, infrastructure and markets" that comprise the HIS ecosystem within a given country and, where possible, to adapt and enhance existing tools and resources. It is critical that the focal country HIS ecosystem assessment is done before engaging in HIS strengthening activities.

The HIS Interoperability Maturity Toolkit was developed by USAID's MEASURE Evaluation Project, in collaboration with the Digital Health and Interoperability Technical Working Group of the Health Data Collaborative, to help countries to assess the readiness of their HIS and make progress towards a fully interoperable national HIS. The toolkit contains three essential components: a maturity model, an assessment tool, and a user guide. It was designed to capture the factors critical to successful implementation of interoperable information systems. As such, the HIS Interoperability Maturity Toolkit identifies the main components of HIS interoperability and lays out an organization's growth pathway through these components. To meet the needs of IDDS, the toolkit will be tailored to specifically look at the HIS components of the IDDS Data Value Chain to assess the status of interoperability between these components and priority areas for strengthening. Further, we will seek to assess: whether the current HIS ecosystem for disease detection and surveillance meets the needs of data consumers; whether there is a national authority in place to oversee HIS activities; what stakeholders should be included in implementation and planning processes; whether policies and procedures for exchanging data are adequate; and whether human and financial resources are sufficient.



## Policy and Governance

An interoperable HIS requires a supportive policy environment, standard operating procedures, champions to support implementation and allocation of resources, and leadership to oversee long-term maintenance of technical components and curation of metadata and standardized indicators. It will be important to understand how HIS tools for disease detection and surveillance fit into a country's broader HIS strategic plan, and what existing policies may be applicable to the introduction or adaptation of new and existing tools.

Successful HIS governance requires leadership, stakeholder engagement, clear policies, and planning for institutionalization and allocation of adequate and sustainable financial resources. Countries with HIS activities supported by IDDS will benefit from establishing a steering committee in instances where none exists to oversee activities and ensure that key stakeholders are engaged in the decision-making process. The steering committee will ideally include:

- Ministry officers who have authority or contacts needed to push forward HIS activities, make decisions, and secure the funding and resources needed.
- Individuals who can advise on data requirements, data sources, and current tools being used for data collection and analysis.
- Individuals who have supported HIS implementation in-country.

The steering committee will: establish a common vision for strengthening disease detection and surveillance HIS infrastructure; act as a coordinating body that reduces duplication and increases efficiency; provide recommendations to establish or strengthen HIS policies; foster adoption of standards that promote integration and interoperability; and establish policies and procedures to support scaling, maintenance, and sustainability of HIS tools needed for disease detection and surveillance activities.

In countries where large-scale HIS implementations may occur, it will also be necessary to collaborate with the existing technical working group (TWG) that reports to the steering committee, or to support the creation of one. The TWG will coordinate with IDDS to develop detailed work plans for implementation and will coordinate with local technical staff. A TWG should include implementing partners, government staff from the ministry of health (MoH) and ministry of information, communications and technology, local research institutions, technology firms, consultants, and relevant stakeholders and data consumers.

Appropriate policy and governance oversight will ensure that IDDS HIS activities align with the principles of digital development by planning for scale and sustainability, ensuring policies are in place that address privacy and security, and addressing collaboration through stakeholder engagement.



### Interoperability

In order to enhance the availability of data for decision-making, countries need high-quality health information from laboratories, pharmacies, electronic medical records, terminology services, and other HIS components. IDDS will work with governments and stakeholders in support of the adoption of data content and exchange standards and emerging best practices to achieve interoperable HIS that support disease detection and surveillance. Questions for consideration include capacity and interoperability maturity of HIS components that make up the IDDS Data Value Chain. The Digital Health Assessment will provide insight and guidance in answering these questions and align with the Principle for Digital Development of "Understand the Ecosystem." IDDS will work with governments and stakeholders to identify and implement data management, data exchange, and data security and privacy standards needed to implement and standardize digital health systems across the key components of the data value chain.



IDDS will work with countries to scale and sustain existing tools, such as Open Electronic Laboratory Information System (OpenELIS), Basic Laboratory Information System (BLIS), LabBooks and DHIS2. Additionally, IDDS will identify innovations, such as a methodology to share data from WHONET (a tool to support AMR data collection and analysis) to DHIS2, that address critical data gaps needed to achieve detection and surveillance goals and help countries to prioritize HIS strengthening activities.

Through these efforts, IDDS will help ensure that countries are on the path towards fully realized and interoperable disease detection and surveillance information systems.

# IDDS Data Value Chain

For the support and capacity development to be properly targeted, IDDS has identified the four main areas of its Data Value Chain. The first two (Generation and Collection) usually happening at laboratories and lower levels of the health systems and the latter two (Analytics and Exchange) typically are executed at a sub-national or national level.



## **Capacity Development**

IDDS will work with the steering committee to determine capacity needs for any existing and planned HIS projects. Questions to be answered include:

- What staff will be needed to implement and maintain HIS projects?
- What capacity exists within MoH and/or other local implementing partners?
- What types of training will be required?
- What external resources will be needed to bridge capacity gaps?
- What opportunities are available for supervised practice and technical assistance?

IDDS, in conjunction with the steering committee, will review and develop job descriptions, standard operating procedures, manuals, training materials, and job aids.

In addition to technical human resources, such as software developers and systems engineers, IDDS will support capacity development in data analytics. The end goal of HIS strengthening activities is to make data available for decision making and program planning. As more data is available, increased capacity for evaluating data quality, statistical numeracy, data analytics, and data visualization will be needed. These skills will be essential in realizing effective national monitoring systems for disease surveillance and detection. Moving beyond data for reporting purposes, IDDS will work with countries and implementing partners to connect data to goals, strategies, and outcomes. Also, to understand how data can be used in quality improvement projects and how to effectively use HIS tools to get the information they need.

Where possible, IDDS will develop or reuse content well suited for a blended training approach and self-paced eLearning, providing a more sustainable and scalable path to capacity development. Another reason to use a dynamic learning structure is the ability to adjust the content in response to new information and changes in context, integrating an adaptive management approach into the operational cycle.

