USAID'S INFECTIOUS DISEASE DETECTION AND SURVEILLANCE (IDDS)

Surveillance Technical Approach

Overview

To prevent the spread and minimize the consequences of infectious diseases and Antimicrobial Resistance (AMR), national governments must establish robust surveillance for both priority infectious diseases and AMR that is integrated from local to national levels and across the human, animal, and environmental health sectors. Effective surveillance systems must have a supportive policy environment, well-integrated health information systems (HIS) across sectors and governance levels, a knowledgeable public health workforce, and the ability to collect and analyze data to produce actionable outputs to protect public health. An improved surveillance system empowers public and animal health organizations to prevent or respond appropriately to events of significance for public health and health security.

Technical Approach

The Infectious Disease Detection and Surveillance (IDDS) technical approach for strengthening surveillance systems will build on existing efforts in countries and use internationally recognized best practices. Activities will be tailored to the country context by collaborating with and incorporating strong input from national and international stakeholders, including Global Health Security partners. Using a One Health approach, IDDS will focus on two surveillance areas: priority diseases including Tuberculosis (TB) and AMR. Within each of these areas, IDDS will provide support to strengthen policy and governance, increase surveillance coverage geographically and number of pathogens included for indicator-based surveillance (IBS) and event-based surveillance (EBS) systems. IDDS will also improve data quality, integrate Health Information Systems (See Health Informatics Technical Approach), and build capacity for data analysis and interpretation in the public and animal health workforces. Where feasible, IDDS will strive to identify additional methods for capturing events of public health concern through new technology adaptation or surveillance using non-traditional sources. Throughout the activities, the importance of linking diagnostic networks to surveillance systems will be emphasized. Although outbreak response, emerging infectious disease research, and support to emergency operations centers remains a critical aspect of public health systems, these activity areas are outside the scope of IDDS.

Scoping trips have revealed that nearly all countries have made progress in improving surveillance systems, as assessed through the World Health Organization (WHO) Joint External Evaluation (JEE) tool, and most are utilizing the District Health Information Systems 2 (DHIS 2) for at least a portion of their indicator- or EBS systems. Gaps remain in policy and governance, data analysis and interpretation, human

resources, risk communications, and health informatics across priority disease and AMR surveillance systems. Linkages (both physical and digital) between surveillance and laboratory information systems and across human and animal health sectors are limited or weak due to siloed health system structures and funding mechanisms that are disease-focused rather than system-focused.

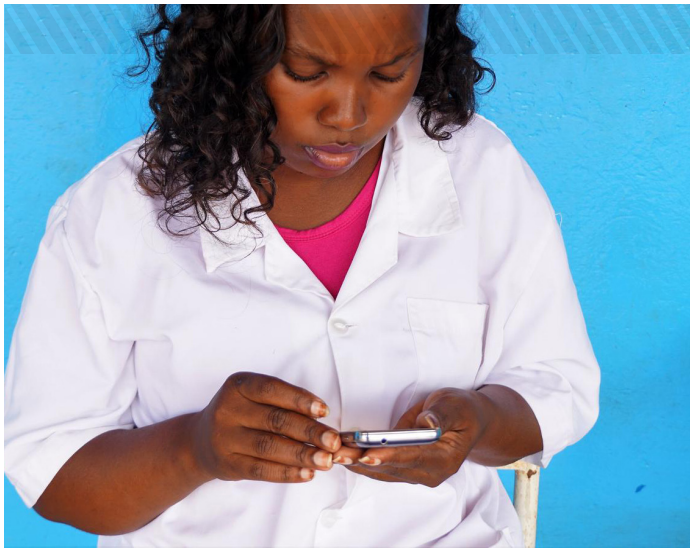
Across the IDDS countries, there is a need to take stock of assessments or projects that have been implemented through the Global Health Security Agenda (GHSA) and other health system strengthening programs to support surveillance. We will assess where these activities or findings can be reinforced or expanded to lead to a more streamlined approach to surveillance interventions. In Year 1, IDDS activities are focused on assessing what has been implemented for AMR and priority disease surveillance, supporting development of sustainable human resources for surveillance data collection, analysis, and interpretation; and piloting or expanding surveillance activities in line with national strategic plans, National Action Plan for Health Security, and the GHSA Roadmaps.

Priority Diseases:

Strengthening country surveillance systems for priority diseases including TB will focus on strengthening IBS and EBS, improving and expanding community-based surveillance (CBS), and increasing capacity for real-time analysis and notifications of disease events. Where relevant to priority diseases, syndromic surveillance systems will be implemented.

Indicator-based surveillance: IDDS will support improvements to indicator-based surveillance systems. IDDS will first review findings and outcomes from current and previous projects or surveillance assessments on priority diseases including: the JEE; the Food and Agriculture Organization Surveillance Evaluation Tool (FAO-SET); FAO Assessment Tool for Laboratories and AMR Surveillance Systems (FAO-ATLASS); World Organization for Animal Health (OIE) Performance of Veterinary Services (PVS); GHSA roadmaps; and CDC's One Health Zoonotic Disease Prioritization tool. IDDS will support interventions in surveillance based on identified gaps in national action plans, and GHSA stakeholder inputs. Interventions will include technical assistance, procurement of needed hardware, capacity development, and workforce development.

IDDS will support technical improvements to the DHIS 2 system (see Health Informatics Technical Approach) with a strong emphasis on linking diagnostic laboratory data with surveillance systems; supporting interoperability between human and animal health sectors; and improving data analysis, reporting, and bi-directional communication



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between sub-national and national levels, considering the impact of decentralization of public and animal health surveillance systems where relevant. IDDS will support national governments to identify and implement active surveillance in sentinel sites for priority diseases where needed.

In order to adequately capture zoonotic disease prevalence, respond to potential zoonotic disease outbreaks, and implement public and animal health actions to prevent disease spread, it is critical to support linkages between clinics, public health and veterinary diagnostic laboratories, public health organizations, and animal health organizations across the surveillance system. IDDS will support integration of data collection and analysis across human and animal health systems for priority diseases by increasing data exchange and analysis (See Health Informatics Technical Approach), supporting national multisectoral working groups, and providing technical assistance for analyzing multisectoral surveillance data.

Event-Based Surveillance (EBS): IDDS will support EBS strengthening activities that are identified as a priority or gap by countries during the lifespan of this project. This may include collaboration and coordination with partners who are supporting EBS work or adapting existing EBS tools and systems as appropriate for surveillance. IDDS will support EBS by working with national government partners to review national policies guiding EBS implementation, and support the development of training, tools and policies where needed. IDDS will assist national partners to identify potential sources of EBS reports, set up structures to receive, review, and verify EBS data, and build capacity to interpret this data for public health action. An additional focus will be strengthening

EBS at the community level and improving interpretation of surveillance data for public health action at sub-national levels, including community levels. These activities are described in detail under the CBS section below.

Community-Based Surveillance (CBS): There has been much work conducted to build CBS systems in IDDS countries, often through local non-governmental organizations on targeted projects that, in some cases, are very fragmented. CBS implementation must be better coordinated by national governments to ensure appropriate use of the data obtained and to ensure sustainability of these programs past the life of capacity building projects. IDDS will build on existing activities and support the streamlining of CBS methodology, implementation and analysis at a national and sub-national level, while using tools that can be applied across multiple countries where feasible. IDDS will consult with national stakeholders to review previous projects, lessons learned and gaps that need to be filled to improve CBS. IDDS will use various tools and resources that have already been prepared including: WHO's Integrated Disease Surveillance and Response in the African Region's Guide for Establishing Community Based Surveillance; WHO's Community-based Surveillance Training Manual; and the more recent International Federation of the Red Cross and Red Crescent Societies (IFRC) Community-Based Surveillance: Guiding Principles. IDDS will streamline implementation with national and sub-national counterparts, strengthen CBS for priority diseases and expand coverage in collaboration with ongoing CBS activities. In some countries, IDDS will work directly with national partners to pilot these improved and standardized tools at the local level, including analysis and interpretation of data collected.

To maximize the understanding of community health challenges, IDDS will prioritize the selection of pilot sites where similar surveillance activities are already ongoing in the animal health sector. Results from human-focused CBS activities can be integrated with findings from animal health community surveillance efforts and linked to point of care diagnostics where feasible, to facilitate rapid disease identification. IDDS will bring both community public and animal health workers together for capacity development and training programs on community-level multi-sectoral surveillance to encourage multidisciplinary learning opportunities.

Real-time notifications: IDDS will support improvements to real-time notification systems within DHIS 2 and the development of novel reporting methods, such as through social media. IDDS will explore, including reports from non-traditional sources (such as pharmacies), which capture information based on health-seeking behaviors at the community level. As a first step, IDDS will work with national government agencies and partners (especially those more involved in outbreak response activities) to review current policies in place for immediate notification systems. IDDS will work with national partners to address identified policy gaps by updating or expanding existing policy documents. Wherever possible, IDDS will work with existing systems and networks.

Real-time notification systems will be developed to identify and notify sub-national and national government officials of potential disease outbreaks through data collected from both IBS and EBS activities. IDDS will support improvements in, or clarification of, thresholds for notification and automate notifications to the correct authorities using electronic tools (see Health Informatics Technical Approach).
Updated notification systems will be piloted through IDDS work on indicator- and CBS systems and through IDDS supported diagnostic networks. Pilot activities will be developed and reviewed in collaboration with national government counterparts and other partners, focusing on public health outbreak and response activities to identify gaps and areas for improvement. Once improvements are made, updated notification systems can be expanded and adapted for new surveillance systems, diagnostic networks, and geographic areas.

Antimicrobial Resistance (AMR):

IDDS will support member countries to better identify, analyze and respond to AMR by connecting WHONET with DHIS 2, linking human and animal AMR surveillance data, and strengthening the capacity of AMR sentinel surveillance sites. WHONET is free software developed by the WHO Collaborating Centre for Surveillance of Antimicrobial Resistance that supports laboratory-based surveillance of AMR. Use of the WHONET software facilitates reporting of surveillance data through laboratory systems. These activities will be implemented in a stepwise approach that first assesses the status of country's AMR surveillance by reviewing existing assessments (JEE, IHR, FAO-SET, FAO-ATLASS) and national strategic plans. IDDS will support AMR activities prioritized in consultation with key national stakeholders, and tailor intervention activities to the needs of the national government while considering other organizations and investments occurring in the sector.

IDDS will support the development of national policies around AMR surveillance if they are not already in place and provide technical assistance to setting up sentinel surveillance systems for AMR for both human and animal populations. These will use WHO Global Antimicrobial Resistance Surveillance System (WHO GLASS) and nationally integrated animal and human AMR surveillance reporting as a longer-term goal. Sentinel sites will be trained and equipped to gather appropriate samples and data, and send samples to the appropriate diagnostic facility (see Diagnostic Network Technical Approach). Laboratories in the AMR surveillance system will generate Antimicrobial Susceptibility Test results utilizing appropriate national reporting systems (including WHONET where relevant). IDDS will support increasing linkages between WHONET and DHIS 2 to facilitate surveillance data analysis at all levels of the surveillance system. All AMR surveillance activities will be implemented in close collaboration with, and considering other work implemented by, national and international partners including upcoming Fleming Fund recipients and other GHSA partners such as FAO, CDC and USAID Medicines, Technologies and Pharmaceutical Services Project (MTaPS). For example, with MTaPs we anticipate collaboration specifically on the use of surveillance data to inform infection prevention and control, as well as antimicrobial stewardship activities implemented by MTaPs

AMR is highly impacted by antimicrobial use in the environment and across human and animal populations. Once national strategic plans and sentinel sites are set up for AMR surveillance on WHO GLASS pathogens and OIE AMR priority pathogens, IDDS will support countries to implement the WHO Tricycle project to increase understanding of AMR surveillance data using a One Health approach. IDDS will engage national governments, and national academic institutions, to support training and capacity building activities related to AMR surveillance for the next generation of epidemiologists.

Adaptability and Lessons Learned

The IDDS Surveillance Technical Approach is built to be highly collaborative and involve opportunities for iterative learning over the course of the project. IDDS will seek regular feedback from beneficiaries, host country governments, and national and international partner organizations to continuously improve and expand interventions. On an annual basis, activities will be reviewed both at national level and across the IDDS project sites. This approach enables propagation of lessons learned to all IDDS partner countries. Knowledge management activities will be facilitated at the IDDS headquarters level and best practices will be shared between IDDS countries to facilitate country-to-country learning opportunities. In a similar fashion, tools and training modules will be developed with cross-country implementation in mind to facilitate scaling up activities across IDDS countries. The cross-cutting themes, also seen in the Diagnostic Technical Approaches, will inform our activities with a keen focus on One Health and including additional sectors such as education, finance, and other sectors. As many priority diseases are zoonotic in nature and animal populations play a key role in the emergence and spread of AMR, it is critical that surveillance activities take a One Health approach.