



**USAID**  
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# Infectious Disease Detection and Surveillance (IDDS) Project



**ANNUAL REPORT**  
**FISCAL YEAR 2021**



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## A MESSAGE FROM IDDS LEADERSHIP

The COVID-19 pandemic has brought into sharp focus the fact that disease knows no borders and that health, education, economies, and social and political stability are interconnected. Early disease detection and rapid response are key to mitigating the next public health crisis, and as the United States Agency for International Development's (USAID) flagship diagnostic project, the Infectious Disease Detection and Surveillance (IDDS) project is one of the Agency's most critical investments to help protect the United States and the world from the growing threat of infectious diseases.

IDDS has not only safely and successfully continued its work to strengthen the ability of health systems across multiple African and Asian nations to quickly detect and accurately diagnose infectious and drug-resistant diseases during the pandemic, but we have also been on the front lines of USAID's COVID-19 and Ebola emergency response. Our ability to do this is a testament to our close collaborations with USAID, host country governments, and trusted local and international partners, the strength of our consortium, and our collective expertise and experience.

We invite you to read about IDDS's fiscal year 2021 accomplishments and our impact in the pages that follow, and we thank USAID and the American people for the opportunity to continue the project's life-saving work.

**LISA**  
Nichols

IDDS Project Director

**OCHIAWUNMA**  
Akwiwu-Ibe

IDDS Deputy Project Director

**DENISE**  
Johnson

IDDS Project Director  
(until October 2021)

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# INTRODUCTION

## THE GROWING THREAT OF INFECTIOUS DISEASES

The threat of infectious diseases has grown, and outbreaks have increased in frequency and severity since the start of the 21st century. This increase is due in large part to the ease of global travel and trade, population growth, climate change, and increased contact with animals—from which more than 70 percent of infectious disease threats now originate. There has also been a rise in antibiotic and other antimicrobial resistance (AMR), with approximately 700,000 people dying each year from drug-resistant diseases.

Strong diagnostic and surveillance systems are essential for providing patient care, detecting infectious diseases before they spread, and ensuring that health officials and other decision-makers have the information they need to take decisive action. However, many low- and middle-income countries (LMICs) currently lack the capacity to detect and respond to both known and new infectious diseases, including regions at high risk for diseases with pandemic potential and AMR. Laboratory systems and testing capacity in particular are a frequently overlooked and underfunded component of health systems in LMICs.

“When we strengthen health systems in far regions of the world, we reduce the risk of future pandemics that can threaten our people and our economy.

— PRESIDENT JOE BIDEN

## ABOUT IDDS

Through its Infectious Disease Detection and Surveillance (IDDS) project, the United States Agency for International Development (USAID) works hand-in-hand with partner countries and with in-country, regional, and global organizations to strengthen the ability of health systems to quickly detect, track, and respond to priority infectious diseases, such as tuberculosis (TB), Ebola Virus Disease (EVD), and Coronavirus Disease 2019 (COVID-19).

A primary focus for IDDS is building the capacity of laboratories in partner countries to conduct safe testing for diseases that have the potential to spread quickly, and to provide accurate, quick test results. In addition, IDDS works to identify and track the spread of drug-resistant pathogens

that cause infection, and to bolster the ability of animal health services to diagnose zoonotic diseases before they spread to humans (the “One Health” approach).

We also collaborate with partner countries to put disease surveillance systems in place to effectively record cases and quickly analyze and report data—and to promptly communicate those data to health care providers, public health officials, and other key decision-makers.

IDDS is led by ICF and a consortium of organizations with extensive expertise in infectious diseases, disease detection and surveillance, and health information systems—consisting of FHI 360, PATH, the Mérieux Foundation, the African Society for Laboratory Medicine, Abt Associates, Gryphon Scientific, Metabiota, and the Association of Public Health Laboratories.

IDDS prioritizes close collaboration and partnership with country governments, ministries of health, local counterparts, and community-based organizations, and we are committed to building local capacity to ensure partner country ownership and sustainability.

## WHERE WE WORK

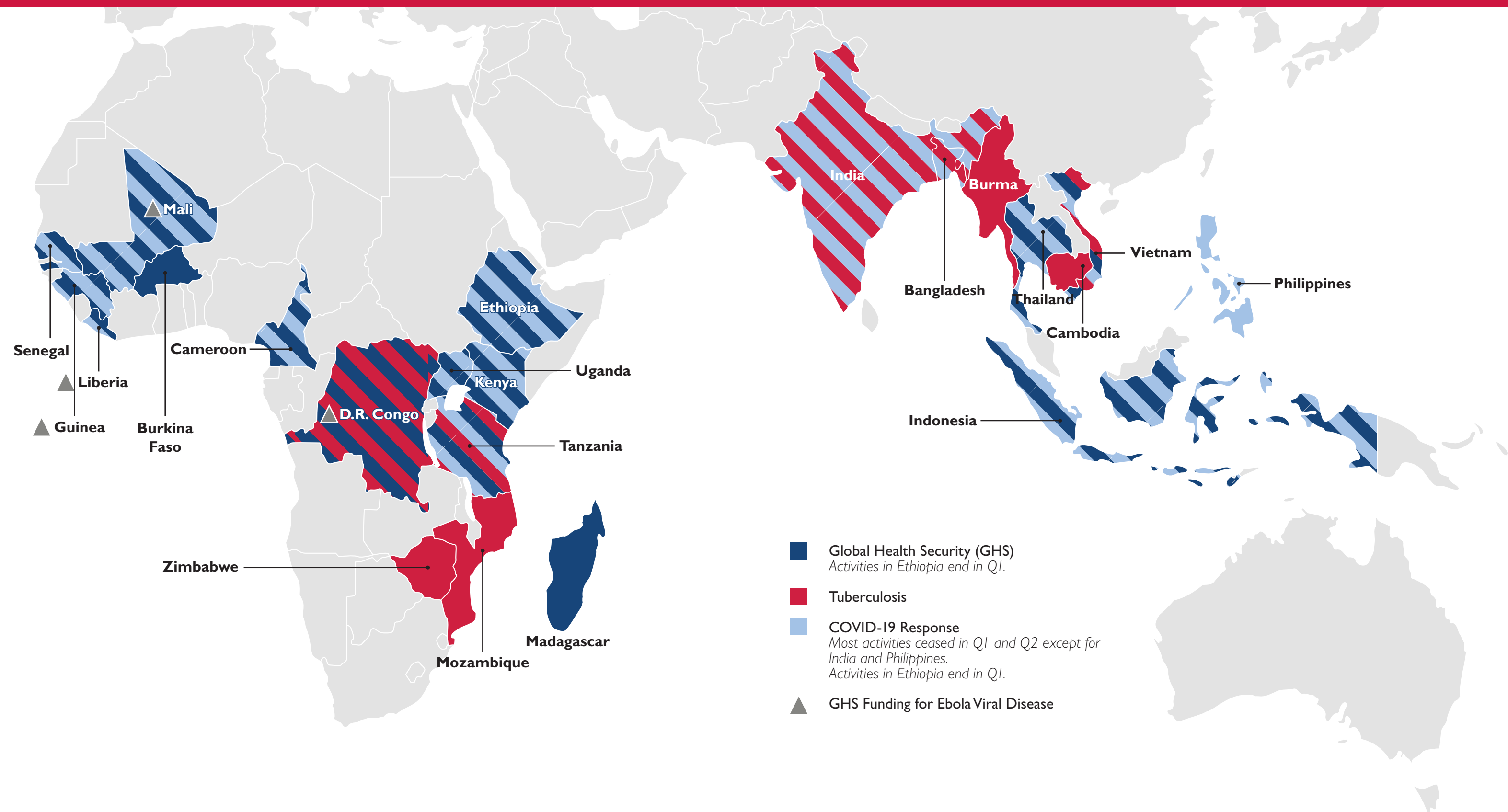
IDDS operates in 22 countries in Africa and Asia where there are significant gaps in the ability of health systems to detect, track, and rapidly respond to both known and new infectious diseases.

The project has expanded since it began as more countries seek IDDS's types of services to help them address their toughest challenges in detecting and diagnosing TB, Ebola, COVID-19, and other infectious diseases that pose a significant threat to global health security.

A hallmark of IDDS is that it's designed to cut across diseases and sectors, and to identify and address systems gaps other disease-specific programs aren't set up to address.



# INFECTIOUS DISEASE DETECTION AND SURVEILLANCE (IDDS) PROJECT

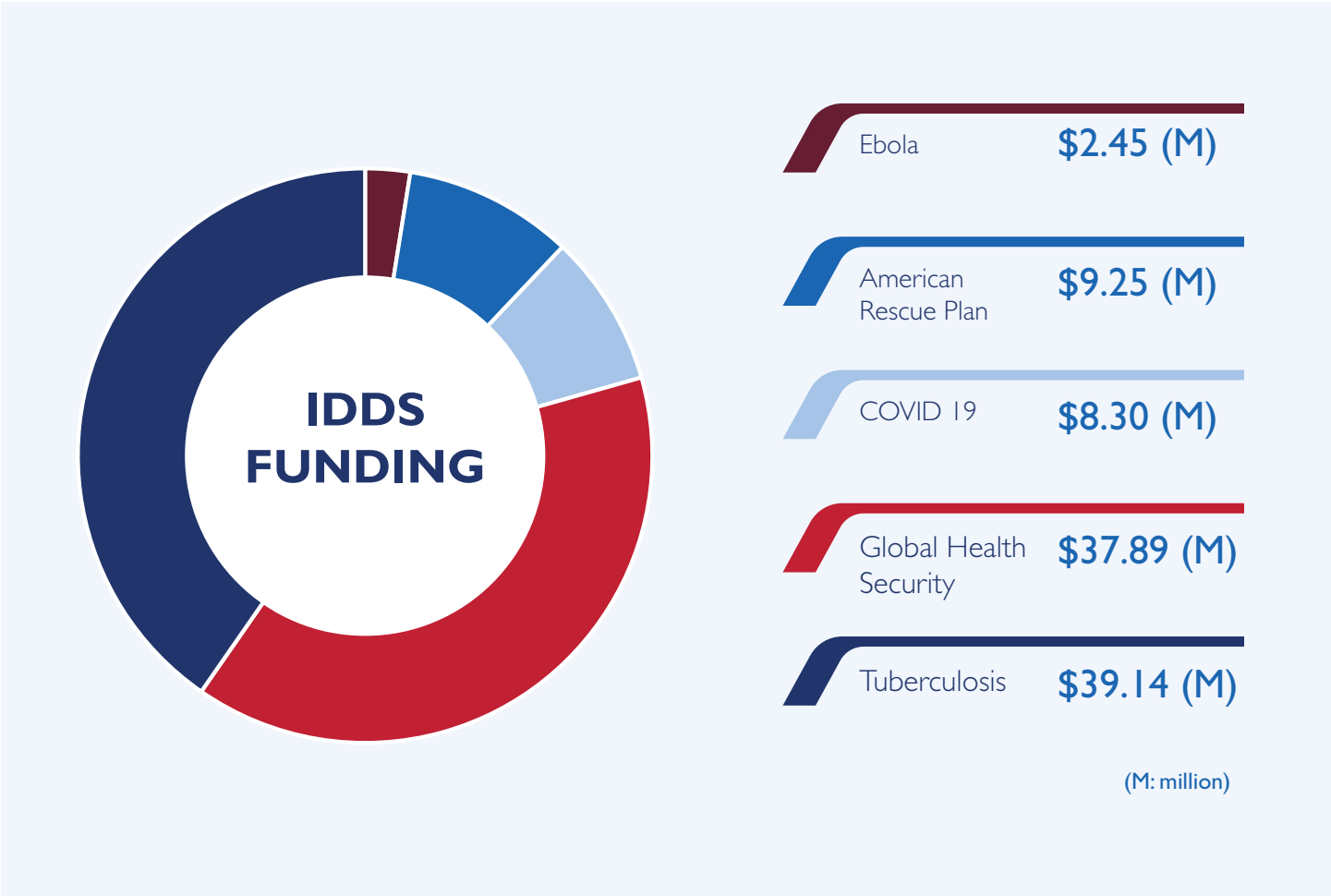


FUNDING

IDDS is a \$120 million cross-cutting project that can take in funds from multiple sources and pivot quickly as country needs change.

In fiscal year (FY) 2021, IDDS received different types of USAID funding: Global Health Security (GHS), which included funds for the Ebola response; TB, which included

USAID Washington core funds, field support funds from eight USAID missions, and President’s Emergency Plan for AIDS Relief funds for TB activities; USAID COVID-19 funds; and American Rescue Plan Act funds. American Rescue Plan Act funds have been received for seven countries, all of which will continue activities into FY 2022.



## IDDS BY THE NUMBERS (FY 2021)

100

Laboratories with improved diagnostic capacity

32

Laboratories supported to detect drug resistance

7

Countries with more integrated animal and human disease surveillance

39

Districts across 4 countries able to conduct community-based surveillance

74

Regional and district teams better equipped to manage detection and surveillance

2,000

Persons trained to improve disease surveillance

2,389

Persons trained to improve laboratory capacity

212

Supervisory visits

224

Standard operating procedures for laboratories

31

National strategies, plans, and guidelines

473

People trained on COVID-19 specimen collection, transport, and use of RDTs

35,433

COVID-19 specimens transported for testing

## DELIVERING RESULTS

IDDS safely and successfully continued its work in FY 2021 to strengthen the ability of health systems to quickly detect, track, and respond to infectious and drug-resistant diseases—even in the face of the continued COVID-19 pandemic, political and civil unrest, natural disasters, power outages, Internet connectivity issues, staff and commodity shortages, and other challenges in our partner countries. And we delivered results.

### NURTURING THE NEXT GENERATION

Through USAID investments, IDDS is building a skilled and collaborative infectious diseases diagnostics workforce through training, mentoring, and supportive supervision to improve the quality of infectious diseases testing, including TB. We tailored training to local contexts and ensured that best practices and technologies in testing and surveillance were adopted this year.

#### *Global Health Security*

We trained 55 people in **Guinea** and 99 people in the **Democratic Republic of the Congo (DRC)** on rapid diagnostic tests (RDTs) to facilitate rapid detection of Ebola. In **Uganda**, we developed a quality management system (QMS) mentorship toolkit for animal health laboratories and trained the first pool of 12 trainers based on the International Organization for Standardization (ISO) 17025:2017. The pioneer trainers will conduct ISO 17025 trainings for an additional 15 animal health care providers from animal health laboratories and improve detection of priority zoonotic diseases at subnational animal disease diagnostic and epidemiology centers.

#### *Tuberculosis*

Availability of a laboratory workforce skilled in TB diagnostics is a major constraint to many countries seeking TB control. This year, our training supported 21 laboratory technicians and analysts to operate and maintain critical TB testing equipment, such as polymerase chain reaction (PCR) machines in **Bangladesh**, which is the first time this type of training has occurred and will increase the efficiency and lifespan of the equipment, which is essential for the country. To mentor staff and improve the quality of their work, we embedded three IDDS diagnostic specialists at the National Tuberculosis Reference Laboratory (NTRL) and two Regional Tuberculosis Reference Laboratories (RTRLs) in **Bangladesh**. We also

### **DIAGNOSE: Strengthening Laboratory Systems to Deliver Efficient and Quality Testing**

A laboratory system is only as strong as the ability of its health workforce to accurately test and diagnose infectious diseases such as Ebola or TB. USAID investments to improve diagnoses in country programs are helping create stronger and more resilient laboratory networks, with IDDS at the forefront of these efforts. IDDS builds capacity in laboratories by training and mentoring laboratory managers, technicians, and analysts across countries, ensures that laboratories have functional equipment and necessary supplies, and provides targeted infrastructure improvements. IDDS helps introduce the latest diagnostic technology and establishes systems for ensuring quality and safety. Our efforts are collaborative and tailored to local contexts. Wherever possible, we work with government counterparts to jointly build skills and mentor, understanding that this is also a means of building in-country capacity to manage TB and other infectious disease programs.

embedded staff into the national laboratory in **Burma** to directly train and transfer knowledge. We provided supportive supervision to four TB tiered laboratories to resolve technical issues, cleared a testing backlog of 500 specimens, and supported the Rajan Babu Institute of Pulmonary Medicine in India to reduce turnaround time for line probe assay (LPA) results from more than 1 month to less than 15 days. IDDS also trained laboratory technicians and health care workers to use innovative approaches to detect and diagnose TB, such as in **Vietnam**, where we trained 462 people on identifying TB in children using stool samples and molecular diagnostic machines and analyzed “trace” results of 400 patient samples to identify missed cases.



## STRENGTHENING QUALITY MANAGEMENT SYSTEMS FOR GHS IN COUNTRIES

Quality laboratory services require improved QMS to reduce diagnostic errors across the three testing phases (pre-analytical, analytical, and post-analytical), decrease turnaround time, and allow traceability of all laboratory procedures. QMS helps to ensure the safety of patients and staff alike. IDDS is supporting laboratories to strive for the highest possible quality service: a rapid, reliable and reproducible test report. The first level of QMS in laboratories is internal and external quality control and educational activities, which forms the core for all accreditation in laboratories.

IDDS helped 22 laboratories enroll in QMS this year, bringing to 33 the total number of laboratories we support to implement QMS activities. We also trained 173 laboratory staff on QMS approaches. IDDS is supporting QMS at both central and district levels in Kenya, Liberia, Mali, Senegal, Uganda, and Zimbabwe. Liberia, Mali, and Senegal have chosen to concentrate on higher-level laboratories and then expand to lower-level facilities, cascading through the laboratory hierarchy one level at a time. In Uganda, we developed a QMS mentorship toolkit for animal health laboratories and trained the first pool of 12 trainers based on the ISO 17025:2017 who will then train additional animal health care providers and improve detection of priority

zoonotic diseases at subnational levels. IDDS is supporting all these countries to approach quality management in a tailored and contextualized manner, efforts which are leading to fruition as diagnostic networks visibly strengthen. These efforts to support laboratories toward accreditation also have added benefits, such as the following:

- Standardizing all processes
- Clarifying the responsibilities of each team member
- Putting in place personal and institutional policies
- Enabling demonstrability of results
- Allowing for the systematic evaluation of suppliers
- Building prestige of laboratories
- Improving communication with partners



BUILDING HIGH-QUALITY LABORATORY TESTING CAPACITY

USAID investments through IDDS create well-supplied laboratories with state-of-the-art testing equipment and implementation of quality management approaches for priority infectious diseases and TB testing. This year we improved infrastructure and provided point-of-care molecular diagnostic machines, tools, and essential supplies to prepare regional and national laboratories to detect new and existing priority diseases, including TB.

Global Health Security

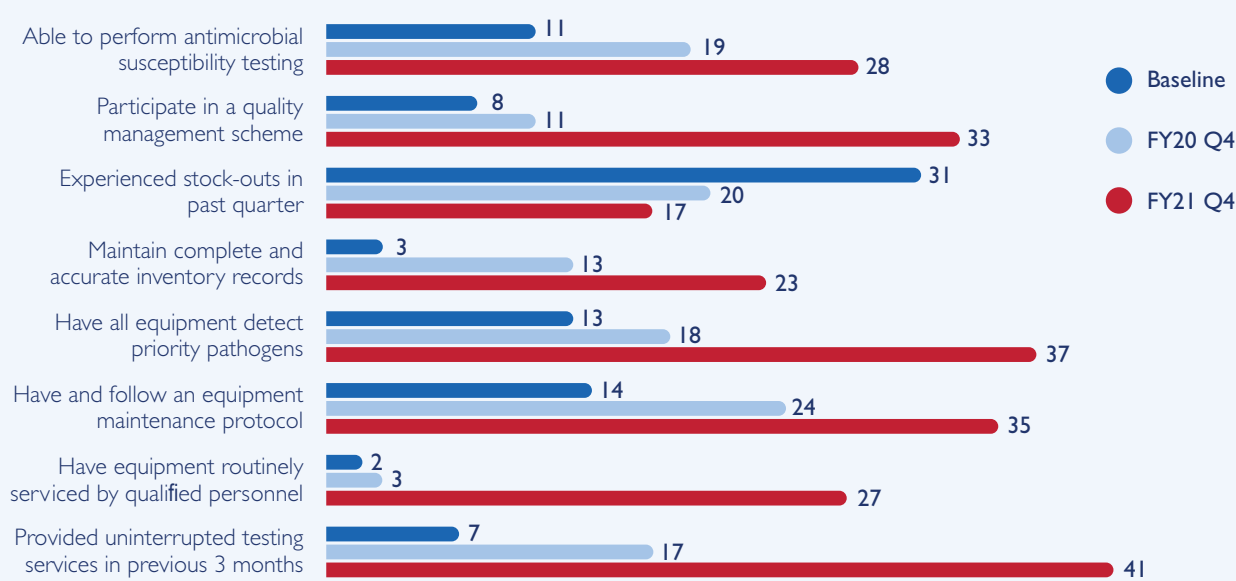
IDDS supported 19 laboratories to acquire equipment needed to perform testing of all national priority pathogens and enabled 41 sites to provide uninterrupted bacteriology testing services through improved commodity management and equipment maintenance procedures. In **Liberia**, we handed over the newly equipped and upgraded G.W. Harley Hospital and Tellewoyan Hospital laboratories to the government to enable provision of high-quality microbiology testing services for the country, which is a current best practice for detecting emerging and other priority infectious diseases. IDDS made significant contributions in starting

bacteriology services at 17 laboratories to detect drug-resistant diseases to strengthen national AMR surveillance systems. IDDS established this capacity in six countries (**Guinea, Kenya, Liberia, Madagascar, Senegal, and Tanzania**) by equipping laboratories with basic bacteriology and biosafety equipment, supplies, and reagents, providing on-site mentorship, and establishing external quality assurance (EQA) programs to monitor the accuracy of testing results. IDDS also developed 224 unique laboratory standard operating procedures (SOPs) across all GHS country programs this year.

Tuberculosis

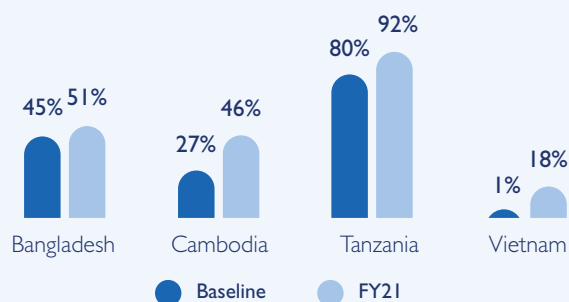
In **Bangladesh**, IDDS upgraded a 250-bed TB hospital and regional reference laboratories with critical TB testing equipment. In **DRC**, we supported the upgrade and efficient functioning of the NTRL in Kinshasa, to ensure regular specimen testing, minimize risk of infection to staff, and reduce specimen contamination. We also supported maintenance and improvement of the P3 unit, in which phenotypic drug susceptibility testing (DST) for first- and second-line anti-TB drugs occurs, and of the P2 unit, which is used for LPA, and we also provided in-service training for staff in these units. We strengthened the quality of TB services in seven provincial laboratories

IMPROVED GHS LABORATORY CAPACITY NUMBER OF IDDS-SUPPORTED LABORATORIES MEETING SPECIFIC PERFORMANCE CRITERIA



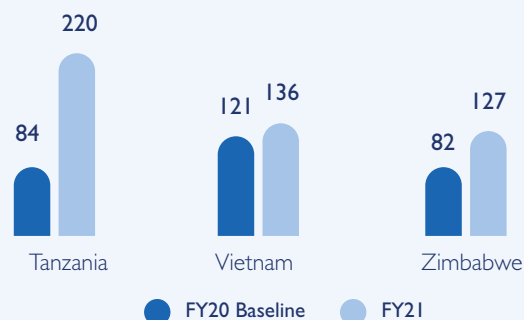
## IMPROVED TB DIAGNOSTICS

Percent of presumptive TB cases tested with a WHO-recommended rapid diagnostic test at IDDS-supported sites



## QUALITY ASSURANCE

TB WRD diagnostic sites enrolled in a quality assurance program



in **Vietnam** by developing a capacity strengthening and continuous improvement plan and by adapting and translating Lab Safety Level 2 procedures for national use and training on safe working practices for TB at subnational laboratories. In **Zimbabwe**, we developed a quality improvement framework for the Bulawayo NTRL, and contributed to increasing the number of TB rapid diagnostic laboratories that participate in a quality assurance program from 82 to 127.

## THINKING LONG TERM

Sustaining investments is an important consideration of IDDS work in countries. Continuous generation of technically proficient laboratory technicians, analysts, and laboratory managers is crucial to overcoming human resource challenges faced by infectious disease diagnostic and surveillance systems in countries. Part of this is ensuring that adequate in-country human resource capacity exists to manage and implement resilient diagnostic and surveillance programs.

### Global Health Security

This year in **Kenya**, IDDS collated AMR surveillance training materials and established a self-paced online training on the Ministry of Health's (MOH) eLearning Academy. In **Liberia**, IDDS developed a curriculum for the Bachelor of Medical Laboratory Science degree for the

University of Liberia's College of Health Sciences, which will be used by all training facilities in the country. IDDS also trained a technician in **Liberia** to be a bacteriology trainer and provided financial support for ongoing bacteriology mentorship in IDDS-supported counties as a means of building sustainable bacteriology capacity in the country. These activities exemplify how IDDS incorporates approaches to educate and train the next generation of laboratory technicians, analysts, and managers who are essential to a strengthened diagnostic network.

### Tuberculosis

This year in **Zimbabwe**, IDDS trained a pool of 27 TB diagnostic network supervisors on the latest edition of the **Zimbabwe** TB Diagnostic Network Supportive and Supervision Checklist to institutionalize monitoring of laboratory performance. In **Tanzania**, we trained six in-country consultants to conduct Diagnostic Network Assessments to obtain a clear picture of existing TB testing equipment and processes and to build overall capacity in understanding key aspects of the national TB diagnostic program. We also strengthened management capacity and leadership of the NTP by supporting revisions to TB diagnostic algorithms as per the latest international guidelines and best practices in **Zimbabwe**, **Bangladesh**, and **Vietnam**.

## GLOBAL HEALTH SECURITY

### IR 1.1: GAPS IN DIAGNOSTIC NETWORKS IDENTIFIED AND ESSENTIAL COMPONENTS SUPPORTED

	TOTAL	Testing Procedures	Equipment Maintenance	Commodity Management	QMS	Specimen Referral	Biosafety	Other Diagnostic Network Topics
People Trained	1,494	442	0	73	146	631	61	141
SOPs, Plans, and Guidelines Developed, Revised, or Disseminated	249	157	39	3	35	12	2	1
TWG Group Meetings Held	68	23	2	3	6	28	1	5
Supervisory Visits Conducted		14	0	1	14	0	0	6
Pilots Conducted	0	0	0	0	0	0	0	0
Assessment Reports Completed	6	2	0	0	0	2	1	1
Persons Mentored	127	56	32	0	39	0	0	0
Countries*								
Bangladesh		●						
Burkina Faso						●		
Cameroon		●	●					●
DRC		●	●					●
Guinea		●	●	●	●		●	
Indonesia								
Kenya		●		●	●	●		
Liberia		●	●	●	●			
Madagascar		●	●	●				●
Mali		●	●		●	●	●	
Philippines						●		
Senegal		●						
Tanzania		●		●			●	●
Thailand						●		
Uganda		●			●	●		●
Vietnam						●		

\*Countries listed are those that contributed to specific outputs in FY 2021. Countries may be contributing to a technical area, but if no outputs were reported, they are not included in the list.

Some outputs may cover more than one technical area, for example, a training on testing procedures could also include content on biosafety. To avoid double counting we only list it under the main technical area the output addressed.

## TUBERCULOSIS

### IR 1.1: GAPS IN DIAGNOSTIC NETWORKS IDENTIFIED AND ESSENTIAL COMPONENTS SUPPORTED

	TOTAL	Equipment Maintenance	Testing Skills and Procedures	New Diagnostic Tools	QMS	Diagnostic Connectivity Solutions	Laboratory Diagnostic Data Analysis	TB DNA	Other Diagnostic Network Topics
People Trained	903	21	156	660	27	23		16	
SOPs, Plans, and Guidelines Developed, Revised, or Disseminated	14	0	4	3	3	1	0	0	3
TWG Group Meetings Held	21	1	0	8	0	0	0	1	11
Supervisory Visits	137	0	20	1	75	41	0	0	0
Pilots Conducted	4	0	0	4	0	0	0	0	0
Assessment Reports Completed	9	0	1	2	0	0	2	1	3
People Mentored	273	0	0	273	0	0	0	0	0
<b>Countries*</b>									
Bangladesh		●	●	●					●
Burma			●						●
Cambodia				●		●			
Core TB				●			●	●	●
DRC									
India			●	●					●
Tanzania					●				●
Vietnam				●				●	●
Zimbabwe			●		●	●			●

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Some outputs may cover more than one technical area, for example, a training on testing procedures could also include content on biosafety. To avoid double counting we only list it under the main technical area the output addressed.

### DETECT: Building Early Warning Systems with Community Health Workers to Identify Potential Outbreaks

An early warning system for outbreaks can be transformative for a country—instead of saving lives as part of an emergency response, countries can spot threats in real time and mount a response that anticipates and plans for needed resources to curb the spread of disease. IDDS is on the front lines of strengthening warning systems at regional and community levels. IDDS programs train and mentor frontline workers on community- and event-based surveillance, integrate data collected in communities with data collected by health facilities, bolster mobile early warning systems, and harmonize approaches across animal and human health surveillance. Our work is already showing fruition. In FY 2021, IDDS efforts to enhance early warning systems have helped detect and control new outbreaks, such as yellow fever and measles in **Mali** and Lassa Fever and Marburg in **Guinea**.

## LINKING COMMUNITIES TO HEALTH SYSTEMS

IDDS is building regional workforce and technical capacity in countries to act as a conduit between early warning and routine surveillance systems. This year, IDDS carried out numerous trainings and supervision visits to improve peripheral surveillance systems in countries.

### *Global Health Security*

IDDS strengthened community-based surveillance (CBS) by training 306 community and facility health workers on priority diseases, such as Ebola in **Guinea, Mali, and Senegal**. In **Vietnam**, IDDS trained 1,227 human and animal health staff and community group representatives on One Health-focused event-based surveillance (EBS), which put into practice national guidelines for the first time. IDDS also focused on improving the quality of reporting, such as in **Burkina Faso**, where IDDS conducted 14 joint supportive supervision visits on EBS to improve One Health surveillance. With IDDS support, 29 districts across IDDS countries were reporting CBS data in line with national guidelines, up from 8 the previous year.

## STANDARDIZING POLICIES AND PRACTICES

In many countries, early warning systems are fragmented or do not combine human and animal health surveillance. IDDS improved the integration of these early warning systems by supporting scale-up plans across important GHS areas.

### *Global Health Security*

IDDS supported scale-up plans for One Health surveillance in **Burkina Faso** and supported scale-up plans for CBS across **Mali**. In **Senegal**, IDDS updated national-level Ebola surveillance tools based on learning from the

recent outbreak. IDDS also enhanced mobile surveillance systems to standardize CBS reporting in **Mali**, where IDDS trained frontline workers to use the Frontline SMS platform and equipped the region with essential telecommunication equipment.

## HIGH-QUALITY DATA FOR HIGH-QUALITY RESULTS

The IDDS focus on improving information systems is already yielding results. This year, IDDS supported the generation of over 200 surveillance reports by strengthening data collection, management, and analysis, and helped connect lower levels of the health information system to national information networks. We also supported 62 data review meetings to improve the quality and use of surveillance data.

### *Global Health Security*

IDDS helped facilities report better-quality AMR surveillance data through joint data quality reviews with government counterparts in **Kenya** and **Tanzania**. In **Cameroon**, IDDS trained 24 persons and provided mentoring on AMR data management and entry into WHONET, a software that helps analyze drug resistance data. In **Burkina Faso**, our support led to an increase in complete surveillance reports created on time by ministries from 30 to 100 percent, and in **Vietnam**, IDDS support to an animal health surveillance pilot study led to first-time reporting on animal health surveillance, with facilities reaching 80 percent completion rates. We also mentored staff at facilities in **Senegal** where we had trained 246 nurses and midwives to report high-quality disease surveillance data into the District Health Information Software, version 2 (DHIS2), a national

## **TRACK: Improving Information Systems to Monitor the Spread of Disease and AMR and to Support TB Control**

A real-time monitoring and information system that models, analyzes, and shares data to inform critical decisions is crucial for national infectious disease programs. Access to data allows countries to monitor disease trends, anticipate where resources are needed, and mobilize a rapid response when necessary to prevent the spread of disease. USAID investments are helping IDDS build skills to collect, manage, and use testing and surveillance data, train on integrated disease surveillance response, improve TB information management systems, improve TB diagnostic connectivity and real-time decision-making, and facilitate data sharing across government sectors and stakeholders. A key component of our efforts is connecting infectious disease and AMR information systems and GeneXpert machines to broader information networks in countries to allow them to monitor the spread of disease and act to prevent or contain the spread.





Stool GeneXpert testing at Nghe An Lung Hospital, Vietnam. Photo by IDDS

platform that collates health data from all levels of the health system, and we enabled four laboratories to report AMR surveillance for the first time in two years. Our work at the community level in **Guinea** led to community surveillance data being reported as part of routine analysis at the national level. IDDS also built world-class surveillance in **Cameroon** and **Tanzania**, where we helped laboratories submit AMR data for reporting into the World Health Organization (WHO) Global Antimicrobial Resistance Surveillance System (GLASS).

## CONNECTING THE (DATA) DOTS

IDDS improved integration of human and animal health information systems to support the exchange of data across sectors and enable comprehensive monitoring of negative health events.

### Global Health Security

IDDS contributed significantly to interoperability efforts in **Indonesia**, where we developed national 4-Way Linking Guidelines, National Zoonoses/Emerging Infectious Diseases (EIDs) Cross-Sectoral Integrated Surveillance Guidelines, and a National *Sistem Informasi Zoonoses dan Emerging Infectious Diseases* (SIZE) Roadmap that will enable human health and animal health laboratories and epidemiology centers to jointly plan, share data, assess risks, and communicate to strengthen the national surveillance system. In **Senegal**, IDDS incorporated 12 private sector facilities into the national surveillance system as part of integrated disease surveillance and response (IDSR) activities to capture the 40 percent of epidemic disease cases that are typically found at these facilities. In **Kenya** and **Mali**, we developed guidelines for national stakeholders on how to share information

and integrate surveillance data. IDDS supported the **Cameroon** National Public Health Laboratory (LNSP) to establish an AMR data warehouse to coordinate One Health AMR surveillance data collection, analysis, interpretation, and reporting to the WHO's GLASS.

## TRANSFORMING THE FIGHT AGAINST TB

Information is power, and IDDS is equipping countries with the tools to counter TB. IDDS connected molecular TB testing tools, such as GeneXpert (GX), to larger networks that allow countries to monitor laboratory performance and test results remotely and share real-time information with clinicians.

### Tuberculosis

In **Tanzania**, IDDS built capacity for monitoring and managing GX machines remotely by equipping the National Data Centre with a GxAlert server and initiating processes to equip GX machines with GxAlert routers. These actions facilitated GX inventory, management, and use and allowed GX machines to be connected 89 percent of the time in December 2020, compared to 49 percent the previous year. In **Zimbabwe**, IDDS enrolled 11 GX machines onto the GxAlert platform, which enabled real-time information sharing with clinicians. As a result, TB test results were transmitted 69,306 times between July 2020 and June 2021 using the GxAlert platform, compared to 55,614 times the previous year. IDDS also supported **Vietnam** to develop digital specimen referral network models to track TB and other priority disease samples as they move between testing facilities, check for delays, and provide real-time reports to allow for decision-making on improving the referral network.

## GLOBAL HEALTH SECURITY

### IR 2.1: GAPS IN CORE FUNCTIONS OF SURVEILLANCE SYSTEMS IDENTIFIED AND ESSENTIAL ACTIVITIES SUPPORTED

	TOTAL	Surveillance Implementation	Electronic Reporting	Data Analysis and Use	Data Quality	Interoperability	Other Surveillance Topics
People Trained	2,000	1,446	509	45	0	0	0
SOPs, Plans, and Guidelines Developed, Revised, or Disseminated	29	5	10	5	3	0	1
TWG Group Meetings Held	59	8	9	4	6	6	24
Supervisory Visits Conducted	30	17	7	0	5	0	1
Pilots Conducted		1	2	0	1	0	0
Assessment Reports Completed	3	1	0	0	1	1	0
Persons Mentored		0	52	10	10	0	0
Countries*							
Burkina Faso		●	●				●
Cameroon		●	●	●	●		
DRC							
Guinea		●					
Indonesia			●	●		●	●
Kenya				●	●		
Liberia							
Madagascar							
Mali		●	●		●		
Senegal		●	●		●		●
Tanzania		●	●	●	●		●
Thailand							
Uganda		●			●	●	
Vietnam		●	●	●	●		

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### RESPOND: Filling Critical Gaps in Emergency Response to Contain Outbreaks

USAID investments through IDDS strengthen laboratory systems to enable countries to respond to major public health emergencies, such as COVID-19 and Ebola. IDDS pivoted to fill gaps in health systems in countries where we operate. Working closely with government counterparts, we provide strategic advice and technical assistance on how to implement emergency response programs, with an eye to strengthening future diagnostic networks for TB. We give essential training on how to collect and test specimens from infected patients at the peripheral level and package specimens for transport to central laboratories for further testing. We also equip at-risk areas with equipment and supplies to take on and overcome the acute challenges of responding to an outbreak.

## BUILDING AN EMERGENCY WORKFORCE

People form the foundation of an emergency response. IDDS experts trained and mentored health care workers on how to detect and collect specimens, conduct testing, and use molecular tools to diagnose COVID-19 and Ebola.

### *Global Health Security*

IDDS trained 178 workers in one province in the **Philippines** on how to transport and test COVID-19 specimens and helped mentor 35 staff in **Tanzania** to improve the quality of COVID-19 testing. We adapted training materials and SOPs for molecular tests for COVID-19 in India and provided training on how to pack and transport COVID-19 specimens in **Thailand**. We also harnessed mobile technology in the fight against COVID-19. In **Senegal**, we adapted the mInfoSanté mobile application and trained community health workers on how to use it to report COVID-19 cases. To support the Ebola response, IDDS trained 88 health care workers in 3 high-risk regions in **Mali** on how to detect Ebola, trace potential patients, and report data, and we trained 78 laboratory staff on collecting, packing, and transporting Ebola specimens. We also provided training and mentoring in **DRC** and **Guinea** on reading and understanding RDTs, which are important point-of-care diagnostic assays for COVID-19 and Ebola that are effective in low-resource settings.

## EQUIPPING LABORATORIES TO RESPOND

Many countries do not have diagnostic facilities with adequate supplies and equipment to respond quickly and efficiently to acute needs. IDDS plugged this gap using its vast network of connections and understanding of health system needs.

### *Global Health Security*

In India, as a trusted partner to USAID through the American Rescue Plan, we equipped laboratories with 62,110 GX cartridges and 106,100 Truenat tests to support testing for COVID-19, which we distributed directly to 29 out of 37 states and union territories. We also provided laboratories with essential supplies to improve testing and personal and sample safety practices in six GHS-supported countries—**Indonesia**, **Mali**, the **Philippines**, **Senegal**, **Tanzania**, and **Thailand**. To support Ebola response efforts through testing potential Ebola samples using GX, we equipped laboratories in **Guinea** with 1,000 cartridges and laboratories in **DRC** with 500 cartridges. We provided 450 rapid testing kits in **DRC** and distributed 1,200 rapid testing kits in **Guinea** to support a 90-day enhanced surveillance period. We also quickly pivoted to support the outbreak response to Lassa Fever and Marburg by enabling access to essential testing reagents in **Guinea**.



Microbiology at Murang'a County Referral Hospital, Kenya. Photo by IDDS

### *Tuberculosis*

IDDS efforts in equipping laboratories with 62,110 GX cartridges and 106,100 Truenat tests not only bolstered laboratory capacity in India to counter COVID-19 diagnostic deficiencies, but also introduced the viability of using these investments to strengthen TB testing programs over the long term. To support access to TB diagnostics and increase TB case notification, in **Cambodia**, IDDS operationalized 9 GX sites for TB and rifampicin-resistance testing by providing GX accessories such as printers and voltage stabilizers, and in **Tanzania**, IDDS built continuous TB testing capacity by equipping the country with 180 GX modules to replace nonfunctioning ones and instituting a service-level agreement to ensure sustainable maintenance of machines. Finally, we also equipped TB laboratories with supplies to improve testing and personal and sample safety practices in three countries—**Bangladesh**, **Tanzania**, and **Vietnam**.

## FACILITATING SPECIMEN TRANSPORT

Getting samples from hard-to-reach areas to laboratories where testing equipment is located is a massive logistical challenge that many countries cannot undertake, especially in times of crisis. IDDS successfully took on this challenge in numerous countries this year in the midst of the COVID-19 pandemic.



## Global Health Security

In FY 2021, IDDS tackled sample transportation to speed up testing and improve disease monitoring and decision-making for the emergency response to COVID-19 and Ebola. In the **Philippines**, IDDS transported potential COVID-19 specimens in three provinces by road and partnered with Shell Philippines to airlift additional specimens for molecular testing. This resulted in 5,724 potential COVID-19 specimens from 22 locations sent for testing within 24 hours in the last quarter of this year. IDDS also transported 7,994 potential COVID-19 specimens in **Mali** and 4,185 specimens in 7 of 11 districts in the South Sulawesi province of **Indonesia**. To support the Ebola response, IDDS distributed testing supplies in **DRC** and transported and distributed 1,200 rapid testing kits across 18 health areas in **Guinea**. Throughout these efforts, IDDS experts provided technical inputs into planning and logistics management for the complex response needed within a short timeframe.

## CONNECT: Fostering Multisectoral Partnerships to Leverage Resources and Learning

A complex set of actors and resources must come together to make a health system, and a diagnostic network, effective. IDDS builds resilient capacity in countries to localize the response to TB and other infectious diseases. We bring together the various multisectoral actors by fostering enduring partnerships to enable sustainable disease detection. IDDS breaks down barriers between diagnostics and surveillance and bridges human health, animal health, and environmental sectors by networking actors through regional learning and technical assistance.



Handing over viral transport media at Senegal's Ministry of Health.  
Photo by IDDS

## LEVERAGING PARTNERSHIPS

Strengthening laboratory systems is a cross-cutting and complex endeavor, dependent on partnerships beyond laboratories and among clinicians and health care managers across the health system, policymakers, researchers, private sector laboratories, and clinical research organizations. IDDS connected these varied actors by working with regional networks, national coordination committees, task forces, and disease-specific secretariats that are mandated to improve testing and surveillance. These strategic exchanges brought forth new ideas, resources, and learning, which IDDS leveraged to maximize impact in the countries where it operates.

## Global Health Security

In **Thailand**, IDDS provided technical and coordination expertise to the Regional Public Health Laboratory (RPHL) Network to develop a bench of diagnostic and surveillance experts in member countries, who can share learning and assistance on new infectious disease outbreaks. IDDS has also contributed its technical and coordination expertise as part of the One Health Technical Secretariat in Burkina Faso and as part of the One Health Laboratory Network sub-working group in **Indonesia**. In **Senegal**, we worked with the private sector to expand the laboratory network. Our efforts led to an additional 12 private laboratories reporting disease surveillance data into DHIS2, an important achievement

## GLOBAL NETWORK OF PARTNERS

IDDS has more than 196 partners as it implements diagnostic and surveillance strengthening programs globally—165 in-country stakeholders and 31 global partners.

because almost 40 percent of infectious disease cases are diagnosed at private facilities. Our experts have also facilitated the development of 34 policies and strategy documents by bringing together diverse stakeholders from across animal and human health sectors, including agriculture, animal and livestock industries, fisheries, water, environment, wildlife, and health agencies.

### **Tuberculosis**

In **Zimbabwe**, IDDS established a TB diagnostic network technical working group (TWG), and in **Tanzania**, we continued support for the TB Laboratory TWG. In **Vietnam**, we established a whole genome sequencing working group to build national capacity for more accurate patient-specific TB treatment and control. In India, we are working with the private sector as part of the National Tuberculosis Elimination Program to expand the TB laboratory network and create a One-Stop diagnostic model for TB testing. IDDS experts also convened TB sector stakeholders and led the development of numerous policies and strategy documents in countries that it operated.

## **REINFORCING LEADERSHIP**

IDDS works with governments to strengthen capabilities to manage and lead laboratories to carry out world-class testing of infectious diseases and TB testing. IDDS built country capacity to govern infectious disease and TB control programs by supporting the creation of coordination systems and the development of 44 national strategic plans, guidelines, and policies related to diagnostic and surveillance systems. IDDS also provided thought leadership and technical assistance to numerous infectious disease and TB diagnostic task forces, coordinating bodies, and working groups to instill best practices in leadership for key disease program areas.

### **Global Health Security**

In **Indonesia**, IDDS collaborated with the government to develop a policy brief on working across sectors to counter zoonotic and new infectious diseases, which will also serve as the national strategic plan. In **Vietnam**, we supported the Vietnam Department of Animal Health to develop a new National Guideline on Animal Specimen Collection, Packaging, and Transportation. This new guideline replaced the previous guideline from 2011, which was considered out of date and limited in coverage. Work in **Mali** included supporting the government to develop a national plan to expand CBS across the country and coordinate all CBS activities among partners. IDDS also helped finalize the National Surveillance Strategic Plan in **Madagascar**, which is an important tool to monitor and evaluate, mobilize resources, and establish leadership to counter and report on priority diseases.

### **Tuberculosis**

In **Bangladesh**, we helped develop the National TB Strategic Plan, which outlines priorities for TB diagnosis over the next five years and is a critical policy document for the country to achieve long-term goals to eliminate TB. As part of this, we helped develop terms of reference for the NTRL and RTRLs that outline roles and responsibilities and will allow these essential diagnostic facilities to take a leadership role in guiding and managing the national TB diagnostic network. In **Tanzania**, IDDS developed the country's first TB laboratory operation plan to guide all TB activities in the country, and in **Burma**, we incorporated an updated algorithm for drug-resistant TB diagnosis into the National Drug-Resistant TB Guidelines. We also developed a GeneXpert Multiplexing Guide that provides clear instructions on specimen prioritization, staffing, quality assurance, and budgeting across the TB program in **Zimbabwe**.

## **GOVERN: Enhancing Country Capacity to Lead, Manage, and Own Infectious Disease Programs**

An effective infectious disease and TB program is founded on a laboratory system with strong leadership and coordination and the ability to identify issues, make decisions, and find resources to implement programs. IDDS is helping countries detect known or new infectious diseases by putting in place comprehensive governing policies and guidelines to guide public health officials, laboratory managers, and health care workers to safely detect and diagnose priority infectious diseases and TB. Through its efforts, IDDS supports public health implementers at all levels of the health system to access the tools and know-how to implement high-quality diagnostic activities, and importantly, to harmonize laboratory practices so that collected data can inform decision-making during critical moments.



## LINKING ANIMAL AND HUMAN HEALTH LABORATORIES

USAID investments through IDDS also support the creation of national strategies that foster links between animal and human health laboratories. This year, IDDS helped ensure that countries stay one step ahead of new zoonotic diseases, as part of the “One Health” approach.

### *Global Health Security*

Our work in Burkina Faso supported the development of the One Health Strategic Plan: 2021-2025. In **Cameroon**, we put in the place the first ever national strategy to guide AMR surveillance, the Integrated Antimicrobial Resistance Surveillance Guide, and in **Uganda**, we helped develop the National Strategy for Coordinated Surveillance of Priority Zoonotic Diseases 2021-2025.

## WORKING AT SUBNATIONAL LEVELS

IDDS enhances leadership on the front lines, at subnational clinical laboratories in which new or known infectious diseases and TB cases are first detected. By working directly with district and regional officials and laboratory managers to strengthen the management of diagnostic quality, IDDS ensures that subnational laboratory capacity exists to operationalize national policies and conduct high-quality diagnostics. Our work this year contributed to standardizing high-quality testing practices so that governments can be assured that the data they receive from lower levels of the health system can be trusted and used to make important decisions about disease control and response.

### *Global Health Security*

IDDS supported subnational laboratories to enhance QMS for improved infectious disease diagnostics in **Liberia, Kenya, Mali, Senegal, and Uganda** this year. For example, in **Liberia**, we improved the quality of laboratory services through mentoring as part of the Strengthening Laboratory Management Toward Accreditation (SLMTA) program at nine supported facilities. In **Kenya**, we conducted an AMR surveillance data quality assessment for the first time and developed data quality improvement plans to improve data collected by surveillance sites. IDDS also enhanced diagnostic system decentralization in **Uganda** by helping draft tiered testing standards and algorithms for zoonotic diseases to efficiently manage and use existing laboratories and optimize diagnostic testing for zoonotic diseases. We also developed a QMS mentorship toolkit to support quality management at subnational animal health laboratories.

### *Tuberculosis*

In **Zimbabwe**, IDDS improved the quality of TB testing services by revising a supervision checklist and national drug-resistant-TB treatment protocols to standardize the quality and services of TB testing facilities and decision-making related to TB diagnosis, care, and treatment. In **India** and **Tanzania**, IDDS enhanced management and coordination of laboratories by assessing gaps and providing mentorship to improve laboratory services. In **Tanzania**, we also expanded EQA accreditation to include culture and LPA at zonal laboratories.

## MAPPING TO MOBILIZE CRUCIAL RESOURCES

To govern the laboratory system well, governments need a clear picture of existing equipment, tools, supplies, and skills, so they can identify gaps that must be filled. With this knowledge, countries will be empowered to mobilize resources from the public sector and other sources even after IDDS is no longer operating. Through its activities, IDDS collated information on the types and amounts of resources that laboratories have available to them across country TB and other infectious disease control programs.

### *Global Health Security*

In **Guinea**, IDDS mapped 176 laboratories, and in **Mali**, we mapped 282 One Health laboratories. In the Eastern region of **DRC**, we developed the first ever laboratory network map and assessed specimen management, which is helping us create a costed plan for a functional public health laboratory network. Our experts also developed costed recommendations to improve One Health sample referral and transport systems in **Burkina Faso** and **Guinea** and discussed plans for sustainable maintenance of these systems in **Indonesia** and **Vietnam**.

### *Tuberculosis*

We assessed TB diagnostic capacity by implementing TB Diagnostic Network Assessments in **Burma, Tanzania, and Vietnam**, and these assessments will help their respective national TB programs prioritize investments and activities, meet strategic plan goals, and improve the quality and coverage of the existing TB diagnostic network. We also completed a testing equipment inventory in **Bangladesh**.

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## LOOKING TO THE FUTURE

Building the capacity of LMICs to quickly detect, track, and respond to infectious disease threats will take time, especially given the toll that the COVID-19 pandemic has taken on already fragile health systems. However, the pandemic has drawn unprecedented attention to the fact that strengthening health systems and global health security is an investment in our collective future—and in turn brought a renewed sense of urgency and dedication to the task.

IDDS will capitalize on this energy in the coming year, with a continued focus on strengthening laboratory systems and diagnostic capacity closer to the beneficiaries in our partner countries. More specifically, we will scale up our efforts to build local expertise, institutionalize processes and procedures to ensure quality and adherence to international standards, improve access to testing by bringing it closer to the community, and enhance community-based and lab-based surveillance to identify new or reemerging threats more rapidly.

We are confident that together with our host countries and trusted partners we can achieve these near-term goals, and we invite you to join us in raising awareness of the importance of strong diagnostic and surveillance systems for a healthier, safer, and more secure world.

## FEATURE STORIES

### INNOVATIONS TO EXPAND ACCESS TO TB DIAGNOSIS

The COVID-19 pandemic has had a devastating impact on efforts to end tuberculosis (TB). An estimated 1.2 million fewer people are expected to be diagnosed and treated for TB in 2021 (Stop TB Partnership), mainly due to COVID-19-related measures. If we are to reach the United Nation's goal of ending the TB epidemic by 2030, easy access to rapid and accurate TB testing and treatment is vital.

IDDS aims to scale up access to accurate, timely, safe, reliable, and integrated TB diagnostic tests for all presumptive TB cases, as close to the patient as possible. IDDS is working with national TB control programs in **Bangladesh, Burma, Cambodia, Democratic Republic of the Congo, India, Mozambique, Tanzania, Vietnam, and Zimbabwe** to achieve this.

#### ONE-STOP TB CENTER

In **Bangladesh**, in September 2021, U.S. Ambassador Earl R Miller joined the Health Minister Zahid Maleque and USAID Deputy Mission Director Randy Ali to officially open the country's first One-Stop Tuberculosis Service Center in the capital, Dhaka. The One-Stop Center, in the Shyamoli Hospital, will provide all diagnostic and treatment services for TB patients under a single roof. The Center, set up with IDDS support, and its upgraded laboratory will lessen the routine testing burden on the National TB Reference Laboratory, reducing delays in referrals and enabling patients to begin treatment immediately following their diagnosis, improving their chances of beating the disease. The Center is the first of four planned in **Bangladesh** and will also reduce travel time for patients—a common barrier to service access.

"We are pleased to open the doors to this impressive one-stop TB center and help protect the lives of many who are fighting this disease," said Ambassador Miller.

#### STATE-OF-THE-ART FACILITIES

IDDS also supported upgrading **Bangladesh's** Shyamoli Regional TB Reference Laboratory (RTRL) and the Rajshahi RTRL. Both laboratories now offer the full suite



U.S. Ambassador Earl R Miller and Health Minister Zahid Maleque opening the One-Stop Tuberculosis Service Center in Dhaka, Bangladesh. Photo by IDDS

of World Health Organization-recommended TB tests and have started performing drug susceptibility testing and second-line testing of TB drugs using liquid culture (the TB bacteria are grown in a liquid nutrient), which are critical for the diagnosis and management of TB patients. Liquid culture can reduce the time to diagnosis by more than half over older processes.

The establishment of Shyamoli and Rajshahi RTRLs is a milestone for **Bangladesh** in expanding quality diagnostic access for detection and management of drug-sensitive and drug-resistant TB, including the harder-to-diagnose cases of pulmonary TB in children and extra-pulmonary TB in all persons.

#### PORTABLE DIAGNOSIS

**Bangladesh**, together with **Cambodia, DRC, Kenya, Nigeria, the Philippines, Uganda, Vietnam, and Zimbabwe**, is among the countries where IDDS is introducing Truenat. The Truenat TB test is a new molecular test that works using the polymerase chain reaction method. It can diagnose TB in one hour and test for resistance to rifampicin (a common and powerful drug used to treat TB). The tests are carried out by a small, portable device that can run for a full day on its battery.



The upgraded laboratory at Shyamoli Hospital, Dhaka, Bangladesh. Photo by IDDS

Truenat can bring TB testing to remote health facilities. Fifteen sites in the Rajshahi and Sylhet divisions of **Bangladesh** were selected for the pilot and include community-level health facilities, where people go for treatment for a cough or fever.

“The technology offers great potential for expanding access to rapid and accurate TB tests even to the most remote areas, as close as possible to patients that might have TB,” said Janet Robinson, Senior Diagnostics Advisor with IDDS. “The pilot aims to test how Truenat performs in these local areas of **Bangladesh** where conditions can often be hot and humid, and testing its Internet connectivity for results reporting.”

Truenat can also test for other infectious diseases such as COVID-19.

## EASIER TESTING FOR CHILDREN

A major barrier to improving TB testing in young children is that most tests use sputum (phlegm) samples. Collecting the sputum can be very uncomfortable for children under five because it can be difficult for them to cough up.

IDDS conducted a pilot on pediatric stool testing in **Vietnam**’s Nghe An province from June to November 2020. This child-friendly, non-invasive diagnostic method involves the simple collection of stool rather than sputum and is expected to result in more pediatric TB detection.

The pilot proved successful, opening the way for expansion of this method across **Vietnam**. Seven laboratories in **Vietnam** are now providing stool-based testing through IDDS support and more are planned to join. IDDS has also trained 462 staff in the new method. “Previously, it is very difficult to collect sputum or gastric aspirate in small children, and it could only be performed at the hospital. However, now it is easy to collect stool samples from children of any age at home—and the children do not need to go to the hospital,” said Dr. Nguyen Thi Tham, a laboratory technician from Nghe An Hospital.

The new method will help detect TB more rapidly in children, leading to a higher proportion of children being treated and preventing death or serious health consequences from undiagnosed TB in **Vietnam**.

Previously, it is very difficult to collect sputum or gastric aspirate in small children, and it could only be performed at the hospital. However, now it is easy to collect stool samples from children of any age at home—and the children do not need to go to the hospital.

– DR. NGUYEN THI THAM  
Nghe An Hospital



## ON THE FRONT LINES OF THE FIGHT AGAINST EBOLA

Hemorrhagic fevers, like Ebola and Marburg, are among Africa's most deadly diseases. And with the continent already struggling with the COVID-19 pandemic, both Ebola and Marburg broke out in Africa during 2021.

The Democratic Republic of the Congo (**DRC**) has suffered more outbreaks of Ebola than any other country, and the disease was detected again on February 7, 2021, when the **DRC** declared an outbreak after laboratory confirmation of a single case in Butembo, North Kivu Province. Ebola also broke out in Guinea's Nzérékoré Region during the same month, and the country recorded its first case of Marburg in August.

### TRAINING HEALTH WORKERS

In the **DRC**, IDDS initial support to the Ministry of Health (MOH) focused on training. "Part of the training was on post-mortem surveillance for Ebola," explained Andy Numbi, IDDS Team Lead in the **DRC**. "This is a key part of containing the outbreak and testing for the presence of the virus." Ebola is transmitted by contact with bodily fluids, including sweat, from an infected person but also from similar contact with the recently deceased. "Health workers need to be trained and equipped to safely test for the presence of the virus in suspected cases, including post-mortem situations," said Numbi.

IDDS led the training of 99 laboratory technicians, hygienists, nurses, and community health workers on Ebola rapid diagnostic tests (RDTs) for post-mortem surveillance. RDTs are used on the recently deceased to screen for the presence of the Ebola virus. The tests are low-tech and highly portable, making them easy to take to the field. Results from RDT tests are then confirmed with a second test in a laboratory. In total, three different sessions were offered for teams from three health zones (Biena, Katwa, and Butembo) in the outbreak area, and an International Organization for Migration team was also trained. The International Organization for Migration team was dispatched to support cross-border disease surveillance.

### CRITICAL TESTING SUPPLIES

Transport of critical supplies to the outbreak region was another component of IDDS support in the **DRC**. IDDS provided logistics for the transport of 450 RDT kits from the provincial capital Goma to Butembo. IDDS also provided transportation for the distribution of 8,900



RDT training in the DRC. Photo by IDDS

further supplies, including GeneXpert cartridges (for Ebola testing), swabs, viral transport media (a chemical solution used to preserve virus specimens), specimen collection tubes, and personal protective equipment.

Thanks to the swift response of the **DRC's** MOH and the National Institute of Biomedical Research, with the support of international health agencies and IDDS, the outbreak was declared over on May 3 after 42 days of no new cases, and the MOH started a 90-day heightened surveillance period. Of the 12 suspected and confirmed cases, there were 6 deaths and 6 recoveries. As part of the heightened surveillance, IDDS organized supportive supervision visits in Goma and Butembo, to follow up on the trainings, evaluate whether the RDTs were being used correctly, and monitor laboratory data. "It is important not to let your guard down against Ebola," said Numbi. "Even when an outbreak has ended, we need diligent surveillance and to prepare for the potential of another outbreak. Ebola is still out there, and it is likely it will return."

To prepare the **DRC** for future responses, IDDS organized the supply of 1,000 GeneXpert Ebola cartridges. These were handed over on August 13 by Deputy Head of Mission of the U.S. Embassy, Marion Ekpuk, to the Minister of Public Health, Dr. Jean-Jacques Mbungani, and the Director General of the *Institut National pour la Recherche Biomedicale* (National Biomedical Research Institute), Professor Jean-Jacques Muyembe. Thanking USAID, Dr. Mbungani said, "The government is striving, apart from the implementation of universal health coverage, to also effectively fight against major endemics and epidemics."



## CRUCIAL EQUIPMENT

Ebola broke out in **Guinea** in February 2021, with a cluster of cases in Guinea's Nzérékoré Region. Guinea's MOH, with technical and logistical support from IDDS, moved quickly to contain the outbreak. IDDS obtained and delivered crucial equipment, including 500 GeneXpert cartridges for testing for Ebola virus (with another 500 in the pipeline), computer tablets, and 50 cooler boxes for the transport of specimens for testing.

IDDS and Guinea's MOH launched six days of training on RDTs for the Ebola virus. The training equipped 55 health workers in the Nzérékoré Region to screen for the Ebola virus through the safe use of ORAQUICK EBOLA rapid tests. Prior to the training, 1,200 test kits from the U.S. Government were handed over to Guinea's MOH.

"IDDS is strongly supporting **Guinea** to detect any new cases of Ebola and contain the outbreak. The RDTs are an important tool for doing just this. The trainees are now equipped to carry out their work safely and effectively," said Ebi Bile, IDDS Guinea Team Lead.

Part of the training for hygienists and other skilled health workers covered how to carry out safe and dignified funerals for those who have died from Ebola without endangering family and other mourners. To boost case detection and reporting into the central health authority, IDDS also trained 46 health care workers from urban and rural health care clinics.



RDTs like this are used for post-mortem surveillance.  
Photo by IDDS

## PREPARING FOR FUTURE OUTBREAKS

In August 2021, the first ever case of Marburg Virus Disease was detected in **Guinea**. IDDS responded by supplying **Guinea's** MOH with laboratory supplies and reagents necessary for testing for Marburg. The outbreak was declared over in September 2021, with only one case confirmed.

IDDS also worked with the health authorities in countries neighboring **Guinea**, including **Liberia**, **Mali**, and **Senegal**, to prepare for any outbreak that crosses borders.

IDDS is strongly supporting **Guinea** to detect any new cases of Ebola and contain the outbreak. The RDTs are an important tool for doing just this. The trainees are now equipped to carry out their work safely and effectively.

— EBI BILE  
IDDS Guinea Team Lead

## SPEEDING UP COVID-19 TESTING

Testing is critical to tracking and controlling the spread of COVID-19. And ensuring that specimens are safely and quickly transported to central laboratories for testing is key to accurate and timely diagnosis. However, this can be a major logistical challenge, with many countries lacking the drivers, vehicles, and other resources needed for transport from hard-to-reach areas and across long distances. Many countries also lack the training and supplies to conduct laboratory testing.

IDDS has worked diligently across Africa and Asia to address these gaps and has been a key player in USAID's COVID-19 response. As a result, specimen transport times have dropped dramatically in IDDS-supported areas of partner countries, and laboratories are now better equipped with the expertise and supplies they need to ensure timely testing.

### BUILDING RAPID SPECIMEN TRANSFER

In Mindanao in the **Philippines**, which suffers from security challenges and poor infrastructure, IDDS support led to a dramatic decrease in COVID-19 specimen transport time, which dropped from up to three days to under three hours. IDDS did this by developing a transport relay system at a regional border, using unmarked vehicles to avoid unwanted attention.

This success led to the expansion of IDDS support to Bulacan, Rizal, and Palawan provinces, where 5,724 potential COVID-19 specimens from 22 unique sites were taken for testing within 24 hours between July and September 2021.

IDDS has organized specimen collection and transport and supported broader COVID-19 response efforts with trainings and supplies in **Bangladesh, Cameroon, India, Indonesia, Madagascar, Mali, the Philippines, Senegal, Tanzania, Thailand, Uganda** (community-based surveillance), and **Vietnam**.

### EXPANDING TESTING

**India** was hit exceptionally hard by the COVID-19 pandemic early in 2021, recording more than 400,000 new cases in a 24-hour period on April 30. Using American Rescue Plan funding, IDDS expanded testing across India for COVID-19 with the purchase of GeneXpert Xpress SARS-CoV-2 cartridges and Truenat tests (supplies for GeneXpert and Truenat machines for the rapid diagnosis of COVID-19). These machines enable reliable and fast testing at local facilities, close to patients' homes. In partnership with the Ministry of Health & Family Welfare, 67,000 GeneXpert cartridges were delivered to 41 laboratories across 17 Indian states, and 106,000 Truenat tests were delivered to 266 laboratories in 14 states.

To make best use of these supplies, IDDS has worked with the manufacturers (Cepheid for GeneXpert and Molbio for Truenat) to adapt training materials for **India** and organize training webinars on COVID-19 diagnostics.

In **Madagascar**, IDDS expanded COVID-19 testing in the island's Mahajanga Region by handing over polymerase chain reaction (PCR) testing equipment to the PZaGa Mahajanga Hospital laboratory in the north of **Madagascar**. This donation brought much-needed rapid testing for COVID-19 and other infectious diseases to this region of the island.

PCR testing is a fast and inexpensive way to test for infectious diseases, and an important way to identify diseases that threaten public health. "The PCR equipment will greatly expand infectious disease testing in the Mahajanga area. Clearly this is much needed as we seek to control the COVID-19 pandemic," said Perlinot Herindrainy, Country Team Lead for IDDS in **Madagascar**.

The PCR equipment will greatly expand infectious disease testing in the Mahajanga area. Clearly this is much needed as we seek to control the COVID-19 pandemic.

— PERLINOT HERINDRAINY  
Country Team Lead for IDDS in Madagascar

Michaela Sayo has vital responsibilities at the Bulacan Molecular Diagnostics Laboratory in the Philippines. She verifies all the results of tests for COVID-19, and as biosafety officer, she also ensures that all specimens follow proper storage, handling, and disposal procedures.

“Working in a COVID laboratory may be both difficult and challenging. But the necessity of helping sick people suffering with COVID-19 encourages me to work in the molecular laboratory,” explains Michaela. “This is my profession and I love it. It is not the compensation that matters but the fulfillment of service that will be provided to everyone.”

Working in a COVID laboratory may be both difficult and challenging. But the necessity of helping sick people suffering with COVID-19 encourages me to work in the molecular laboratory.

– MICHAELLA SAYO

Biosafety Officer



Preparing reagents (substances used in disease testing) at the Bulacan Molecular Diagnostics Laboratory. Photo by Bulacan Molecular Diagnostics Laboratory

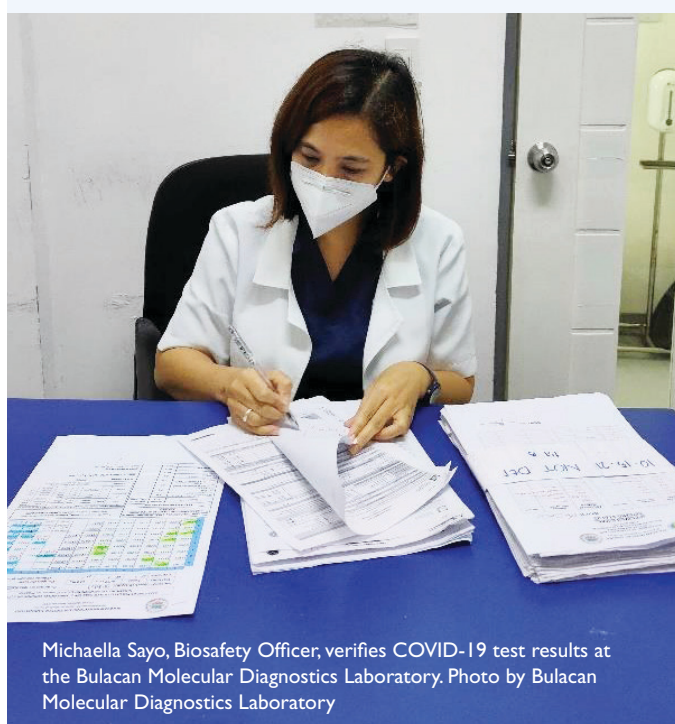
## SHARING EXPERTISE

The IDDS team in **Thailand** supported an important side meeting in October 2020, *Laboratory Diagnostic Responses for COVID-19*, during ministerial meetings for the 6th Annual Global Health Security Agenda Ministerial Meeting. Held virtually, the side meeting provided a forum for public health laboratorians to hear from prominent speakers and representatives of the Association of Southeast Asian Nations' Regional Public Health Laboratory Network, the European Union, and the Caribbean laboratory networks. Attended by 311 people from 14 countries, representatives from Association of Southeast Asian Nations and key development partners shared their experiences through e-posters and video clips.

IDDS received an award for “the excellent support to the Ministry of Health’s COVID-19 testing program” by USAID in **Indonesia**. It was announced by the Mission Director, Ryan Washburn, at a virtual town hall in March 2021. The award is a recognition of the hard work and excellent performance of the IDDS team, despite the limitations set by the pandemic.

IDDS contributed to **Indonesia’s** COVID-19 response by supporting specimen collection and transport, training and technical assistance, procurement, and the development of a COVID-19 national laboratory strategy. This included the delivery of 46,250 viral transport media to the Indonesian health services.

IDDS has supported the Bulacan Molecular Diagnostics Laboratory with the transport of 2,353 specimens from Bulacan to Manila for whole genome sequencing (a process used to test and track for COVID-19 variants) at the Philippines Genome Center. IDDS has also supported the laboratory with laboratory supplies, including real-time PCR test kits for COVID-19.



Michaela Sayo, Biosafety Officer, verifies COVID-19 test results at the Bulacan Molecular Diagnostics Laboratory. Photo by Bulacan Molecular Diagnostics Laboratory



## PREVENTING THE SPREAD OF YELLOW FEVER IN MALI

When community health worker Djenebou Kola Cisse saw the yellow tint in the young mother's eyes, she suspected the woman had yellow fever.

Yellow fever is a preventable disease, with a single dose of vaccine providing strong protection. But there is no medicine to treat or cure the disease, and 30 to 60 percent of those who develop severe yellow fever die. The disease can spread quickly in unvaccinated populations when infected mosquitoes transmit the virus from person to person.

Djenebou explained the risks of the disease to the woman and her family members and convinced her husband to take his wife to the Zégoua Community Health Center, where a blood sample was collected. The sample was sent to the National Institute of Public Health in Bamako, the capital of **Mali**, for testing, and the diagnosis was then confirmed by the Pasteur Institute of Dakar in **Senegal**.

Djenebou is one of 72 community health workers who were trained to recognize yellow fever and signs of other deadly infectious diseases as part of an IDDS-supported community-based surveillance (CBS) pilot project in Mali's Kadiolo health district near the Côte d'Ivoire border. As part of this project, IDDS also worked with **Mali's** General Directorate of Health and Public Hygiene to produce and distribute across the country, a standard "how to" guide and reporting tools for CBS.



The IDDS-supported response team and health center staff with family members of the woman with yellow fever. Photo by IDDS

Djenebou was told of the young woman with yellow fever symptoms when training other community members to recognize dangerous diseases. The woman was one of three laboratory-confirmed cases of the disease, and she was the only survivor.

Djenebou's decision to visit the young mother and refer her to the community health center meant that the woman received timely supportive care and did not develop severe yellow fever. Her diagnosis also prompted the Kadiolo health district to conduct community outreach about the disease and the importance of vaccination. Supported by IDDS and the district's World Health Organization advisor, this effort reached 920 people and likely saved many lives.

IDDS has also supported CBS operations in **Burkina Faso, Guinea, Senegal, Uganda, and Vietnam**. The project is currently helping countries include COVID-19 in their CBS systems to increase tracking of the disease and help boost diagnosis and treatment.



Health worker in Nassoulou teaching community members about yellow fever and the importance of getting vaccinated. Photo by IDDS

## COUNTERING THE THREAT OF DRUG RESISTANCE

Drug-resistant “superbugs” threaten to undermine the huge progress that antibiotics and other antimicrobial medicines have made in modern medicine. At least 700,000 people die every year due to drug-resistant disease, and the World Health Organization has declared antimicrobial resistance (AMR) one of the top 10 global health threats facing humanity.

Testing for drug resistance is relatively simple: If a sample of the pathogen (bacteria, virus, or other microorganism that can cause disease) grows in the presence of the drug you are testing it against, you have AMR. Yet many laboratories across the world lack the training, equipment, and supplies to do this testing.

### TRAINING

In **Kenya**, IDDS has been instrumental in creating and rolling out the National AMR Surveillance Training Course on the Ministry of Health’s e-Learning Academy. The 12-module online curriculum was officially launched during World Antimicrobial Awareness Week in November 2020. It is available nationwide to laboratory personnel, doctors, veterinarians, pharmacists, and nurses, and so far, 40 learners have enrolled.

In **Cameroon**, AMR surveillance training is using a mentorship approach: long-term training and guidance for individual staff members at national and regional laboratories. This will strengthen the capacity of human and animal laboratories to conduct core tests for the detection of dangerous AMR pathogens, including the capacity to generate more accurate and higher quality results and report into GLASS: the World Health Organization’s Global Antimicrobial Resistance and Use Surveillance System.

### MANAGING SUPPLIES

In **Tanzania**, running out of the laboratory supplies necessary for AMR testing has been a bottleneck. The microbiology supplies needed for AMR testing can be difficult to quantify and forecast because they can come in powder form and not whole units. To address this, IDDS, together with the Ministry of Health, provided training to laboratory scientists on the electronic Logistic Management Information System (eLMIS) to report stocks to the national level and request new supplies.

Benjamin Mkapa Hospital in the capital, Dodoma, has used the eLMIS monthly reports to identify dwindling

commodities and purchase them using hospital funds. This has helped the hospital provide laboratory services continuously and generated enough data for AMR tracking. For example, in September 2020, the hospital procured 10,000 petri dishes (twice the amount previously provided through IDDS support to the site), which should cover 2 years of use.

Benjamin Kipilipili, Laboratory Scientist and Storekeeper at the hospital, said, “At first we thought the monthly tracer commodities reports and eLMIS report will be a laborious and unproductive exercise, but it has been an eye opener and alarming exercise. It reminds us to place orders when commodities are about to get finished and also redistribute overstocked commodities that are close to expiring.”

### RESTARTING TESTING

In **Senegal’s** Guediawaye and Linguere Hospital Laboratories, AMR testing restarted in March 2021 after a two-year gap. Testing had ceased due to insufficient staffing, training, equipment, and supplies.



Benjamin Kipilipili, Laboratory Scientist and Storekeeper at the Benjamin Mkapa Hospital, checking the availability of supplies. Photo by IDDS

IDDS supported the restart at the two laboratories through the development of national standard operating procedures and laboratory tools for AMR testing. IDDS also provided equipment, supplies, and hands-on training for key staff. Guediawaye and Linguere are regional laboratories, so the restarting of testing is a major boost to AMR detection across **Senegal**, providing more local capacity to detect priority infectious diseases.

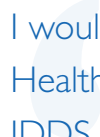
Dr. Adama Tall, Head of Guediawaye Hospital Laboratory, said, "IDDS contributed significantly to the improvement of diagnostic capabilities in Guediawaye health district with the procurement of equipment, reagents, and consumables that allow them to perform microbiological tests. With this new capacity, our patients no longer need to go to the University Hospital facilities to access this service."

IDDS and **Senegal's** National Public Health Laboratory held an AMR training in the country's Thies Region in April 2021, and as a result, seven additional laboratories are now fully capable of performing AMR detection and surveillance.

**Senegal's** Director of Laboratories, Professor Amadou Mactar Dieye, recognized the importance of the training: "I would like to thank IDDS, all the facilitators, and the Director of the National Public Health Laboratory for having hosted the training, as well as all the participants for attending. IDDS, you have done a very good job and the Senegalese people will be grateful to you."

IDDS support for external quality assessment also enabled the start of AMR testing at three regional hospital laboratories in **Guinea**: Kindia, Faranah, and Mamou. External quality assessment is a method for comparing a laboratory's testing to a peer group of laboratories or reference laboratory. It works to ensure the overall quality (i.e., correctness) of laboratory test procedures.

According to Professor Toure Abdoulaye, Director of Guinea's National Health Laboratory, "This new capability will help streamline the quality of bacteriology and AMR results in the country. That will give more confidence to the medical practitioners with the laboratory results and the treatments they prescribe to the patients."



I would like to thank IDDS, all the facilitators, and the Director of the National Public Health Laboratory for having hosted the training, as well as all the participants for attending. IDDS, you have done a very good job and the Senegalese people will be grateful to you.

— PROFESSOR AMADOU MOCTAR DIEYE  
Senegal's Director of Laboratories



## ONE HEALTH: BRIDGING THE GAP BETWEEN ANIMAL AND HUMAN HEALTH

The phrase “One Health” dates from 2006, but Dr. Philip Wakimwere, the District Veterinary Officer for Mbale and IDDS collaborator in **Uganda**, remembers the approach as not so new.

“When I was growing up in the early 80s, our neighbor’s cow was found dead. The Animal Health Worker was called, and he did a post-mortem. He instructed that, in the presence of a parish chief, the whole carcass should be burned and whoever participated in the disposal was to bathe well with soap before leaving the scene,” said Dr. Wakimwere. “The purpose was to prevent the consumption of meat from an animal which had died of an unknown disease, with the fear of it spreading among people and other cows.”

One Health is an integrated approach that recognizes the interconnection between people, animals (wild and livestock), and our shared environment. This approach has gained traction in recent years as awareness of the dangers of zoonotic diseases—those that jump from animals to people such as Ebola and COVID-19—has grown. However, collaboration between the animal and human health sectors and formal systems to detect, track, and respond to zoonotic disease outbreaks before they spread to humans is still lacking in many countries.

IDDS is doing its part to bridge the gap between animal and human health systems in 10 countries in Africa and Asia, with a focus on training and helping veterinary laboratories follow international standards for diagnostic testing quality, safety, and efficiency.

### TRAINING AND STANDARDS

In **Uganda**, IDDS has been at the forefront in training animal health professionals in One Health and in preparing the nation’s veterinary laboratory to obtain International Organization for Standardization (ISO) accreditation for diagnostic testing. IDDS has also fostered collaboration between the animal and human health sectors. Staff from the national and regional veterinary laboratories were supported to attend trainings at the National Microbiology Reference Laboratory in the Ministry of Health to detect dangerous infectious diseases and antimicrobial resistance.

Michael Nandala, a Laboratory Quality Assurance Specialist working with **Uganda’s** Ministry of Health as the National Laboratory Accreditation Coordinator, recognizes IDDS support toward ISO accreditation.



This cow was found to be infected with trypanosomosis by the Mbale District Veterinary Laboratory in Uganda, a disease spread by the tsetse fly. The human form of trypanosomosis, often called sleeping sickness, is fatal without treatment. Photo by Mbale Regional Veterinary Laboratory.

“IDDS has helped to strengthen diagnostic quality management systems through implementation of ISO 17025 in the national, regional and district veterinary laboratories in the country,” said Nandala. “IDDS has also helped to build the capacity of the national and regional veterinary laboratories to detect priority infectious diseases and antimicrobial resistance.”

## SPECIMEN COLLECTION AND TRANSPORT


Animal specimen collection and transportation is key to rapid case detection and accurate diagnosis of animal diseases before they are transmitted to humans.

In **Vietnam**, IDDS assisted the Department of Animal Health to hold a series of technical meetings and to create the National Guideline on Animal Specimen Collection, Packaging, and Transportation. As of September 2021, the final version of this guideline had been shared with all 63 of Vietnam’s provincial sub-departments of animal health for feedback, with the launch of the guideline planned for early 2022.

Dr.Tien Ngoc Tien, Director of the Regional Animal Health Office No.7, said, “The guideline provides a comprehensive summary of technical requirements and essential guidance on how to properly collect, package, and transport animal health specimens. This guideline will be a great resource for animal health staff in the field.”

## COMBINING EXPERTISE

Reflecting on the importance of One Health in a year that has seen millions of lives lost to a zoonotic disease, Dr.Wakimwere said, “We combine the expertise of different categories: health, veterinary, wildlife, water and environment, security to harmonize all efforts and mechanisms that may combat an emergency before it reaches a certain threshold level that may lead to a pandemic. When these experts work together, the avenues of these emergencies may be blocked so that we minimize outbreaks from spilling over to the human side.”



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– DR. PHILIP WAKIMWERE

District Veterinary Officer for Mbale and IDDS collaborator in Uganda



# BANGLADESH

## TUBERCULOSIS

### ANNUAL HIGHLIGHTS

In Bangladesh, IDDS seeks to improve the diagnostic TB network by improving access to and use of GX technology; building the capacity of select RTRLs to provide culture/ DST and rapid molecular diagnosis of TB, including multi-drug resistant (MDR)-TB; supporting preventative maintenance of TB equipment; reinforcing biosafety equipment; and strengthening specimen referral systems.

#### Diagnostics

- Led the creation of Bangladesh's first one-stop TB service center with state-of-the-art testing and laboratory equipment at the Shyamoli 250-bed TB hospital by installing negative pressure and biosafety and biosecurity systems and other essential TB diagnostic equipment, and training laboratory staff in conjunction with the National Tuberculosis Program (NTP).
- Upgraded and refurbished the Rajshahi RTRL through installation of a negative pressure system, and materials to initiate provision of LPA and liquid culture services, enabling access to genotypic and phenotypic tests that are critical for diagnosing and treating TB and drug-resistant-TB.
- Strengthened leadership and management capacity to guide and manage the national TB diagnostic network of the NTRL and the RTRL by developing terms of reference outlining roles and responsibilities.
- Contributed to increases in bacteriological diagnosis coverage from 86 percent to 93 percent at IDDS-supported sites, and from 73 percent to 82 percent nationally between December 2019 and September 2021. The proportion of presumptive TB patients with WHO-approved RDTs increased from 45 percent to 53 percent over the same period at IDDS-supported sites.
- Supported development of the National TB Strategic Plan, which outlines implementation priorities for the TB diagnostic network over the next five years; a critical policy document for the NTP in achieving its short- and long-term goals to eliminate TB.

### BY THE NUMBERS

4



Reference  
laboratories  
supported

31



Persons trained\*

3



Assessments  
completed

\*10 trained on liquid culture using MGIT 960 system; 21 trained on equipment maintenance

### PARTNERS AND COLLABORATORS

- National Tuberculosis Control Program
- Ministry of Health and Family Welfare
- BRAC
- Damien Foundation
- HEED Bangladesh
- International Centre for Diarrhoeal Disease Research, Bangladesh

### GLOBAL PARTNERS

- Stop TB Partnership
- The Global Fund to Fight AIDS, Tuberculosis and Malaria
- USAID-funded New Tools Project
- Cepheid









## COVID-19 Diagnostics (GHS Funded)

- Strengthened COVID-19 diagnostic capacity by supporting the International Centre for Diarrhoeal Disease Research, Bangladesh to provide a PCR training of trainers and three onsite PCR trainings at laboratories. All 15 trainees passed training with a score of 80 percent or higher.
- Enhanced functioning of the NTP by equipping the NTP central store with three autoclaves for decontamination of GX cartridges and other consumables used for COVID-19 testing that the NTP will install at selected sites.



An IDDS-hired medical technologist ready for specimen collection in Bangladesh. Photo by IDDS

NATIONAL					
297,198	1,281	76%	N/A	N/A	0
					
TB Cases Notified	Drug Resistant TB Cases Notified	Bacteriological Diagnosis Coverage	Rapid Diagnostic Testing Coverage	Specimens tested within the nationally-specified target timeframe	WHO recommended rapid diagnostic (WRD) testing sites that are included in QA program
4,926	192	88%	51%	69%	0
IDDS SITE					



The upgraded laboratory at Shyamoli Hospital. Photo by IDDS

# BURKINA FASO

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS built the core functions of disease surveillance through support to DHIS2 (health management information system) management, CBS, and One Health information reporting, which integrated data from human health, veterinary, and forestry service delivery sites. IDDS also strengthened the integrated specimen referral system and improved early detection of pathogens of public health concern.

#### Diagnostics

- Paved the way for the establishment of a One Health integrated specimen referral and transport system, making it operation ready by revising and finalizing the National *Système Intègre de Transport des Échantillons Biologiques* Guidelines, and developing training modules, SOPs, and costed recommendations.
- Supported the development of the One Health Strategic Plan (2021–2025) for Burkina Faso through funding and technical assistance.

#### Surveillance

- Bolstered integrated EBS by finalizing the One Health EBS extension plan and training materials and disseminating them to key One Health stakeholders.
- Strengthened capacity to conduct integrated surveillance and increased EBS reporting rates from 30–40 percent to 90–100 percent through joint quarterly field supervision visits with One Health surveillance focal points at the Ministries of Health, Animal Resources and Fishery, and Environment.
- Supported the One Health Secretariat to prepare for the high visibility national One Health council meeting, chaired by the prime minister.
- Supported the development of a country-specific online One Health documentation library with orientation materials available to any organization and partner electronically to facilitate institutionalization of integrated surveillance of priority pathogens.
- Supported organization of the AMR Conference 2020 in which AMR research, including work done by IDDS, was disseminated.

### BY THE NUMBERS

154



Persons trained  
on electronic  
reporting

10



SOPs and guidelines  
developed\*

3



Joint supervision  
visits conducted  
for surveillance

3



TWG meetings  
held

\*7 SOPs/guidelines for specimen referrals; 3 for surveillance

### PARTNERS AND COLLABORATORS

- Ministry of Health
- Ministry of Animal Resources and Fisheries
- Ministry of Agriculture
- Ministry of Environment, Green Economy, and Climate Change
- One Health Technical Secretariat
- Davycas International
- Information Technology

## COVID-19 Surveillance

- Supported the establishment of a platform to monitor COVID-19 vaccinations, allowing the MOH to register and track people who are vaccinated. Trained 115 persons on the use of the platform at vaccination sites in the Central Region.

## Challenges/Lessons Learned

- Low motivation of community workers negatively impacted engagement in surveillance and data transmission activities. Financial compensation for meals and transportation during field visits and supportive supervision may help overcome this.



The IDDS booth at an AMR conference in Burkina Faso. Photo by IDDS

## IDDS GHS

Sites submitting surveillance data electronically to a national system



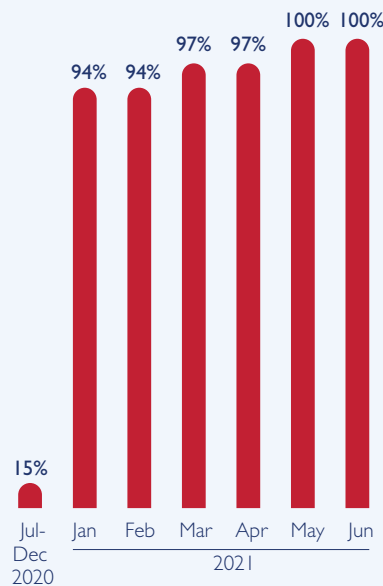
● Baseline

● FY20 Q4

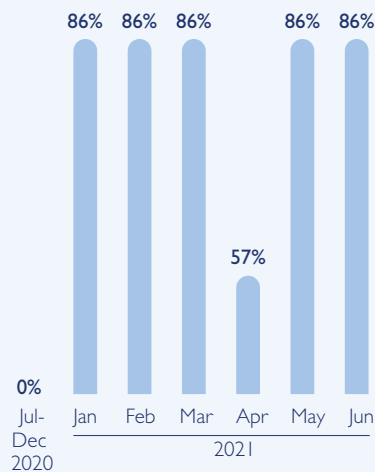
● FY21 Q4

## PERCENT OF EXPECTED MONTHLY EVENT-BASED SURVEILLANCE REPORTS THAT WERE SUBMITTED BY SECTOR

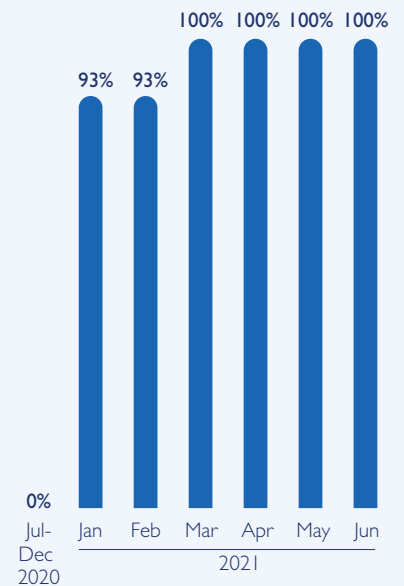
### Human Health



### Animal Resources



### Environment







# BURMA

## TUBERCULOSIS

### ANNUAL HIGHLIGHTS

IDDS work in Burma is strengthening the TB diagnostic network framework and systems, increasing access to quality TB diagnostic services, and strengthening TB and MDR-TB case detection at TB diagnostic facilities. This year, IDDS faced significant bottlenecks due to the political upheaval in the country, which impeded the implementation of continued and new activities. Nevertheless, IDDS pivoted its approaches to continue making progress on interventions.

#### Diagnostics

- Assessed and documented existing coverage, capacity, and accessibility of the national TB diagnostic network through an IDDS-led assessment.
- Strengthened TB governance by finalizing the diagnostic section of the National Drug-Resistant TB Guidelines, which includes an updated algorithm for drug-resistant TB diagnosis.
- Built TB diagnostic stakeholder capacity by working with the Tuberculosis Laboratory Technical Support Group to share operational diagnostic network updates.
- Supported innovative diagnostic techniques by developing an operational research protocol for use of the more sensitive stool GX Ultra testing for TB diagnosis in children and by developing a training curriculum using chest X-rays to diagnose TB.
- Increased potential for greater bacteriological detection of TB and rifampicin resistant-TB in resource-limited settings by piloting a new diagnostic algorithm using chest X-ray and GX as an initial diagnostic test among presumptive TB patients in five townships in Yangon.
- Partnered with WHO to build TB diagnostic capacity through advanced training on GX to 28 laboratory technicians from 9 international nongovernmental organizations in Yangon.
- Bridged gaps in TB diagnosis during COVID 19, political and civil unrest to increase case detection in the private sector through training on acid-fast bacillus staining reagent preparation to 10 laboratory technicians from six international nongovernmental organization laboratories in Yangon.

### BY THE NUMBERS

38



People trained  
in testing  
procedures

10



Supportive  
supervision visits  
conducted

### PARTNERS AND COLLABORATORS

- Ministry of Health and Sports
- National Tuberculosis Program
- National Tuberculosis Reference Laboratory
- Tuberculosis Laboratory Technical Working Group
- Multidrug-Resistant TB Expert Committee

### GLOBAL PARTNERS

- World Health Organization
- USAID-funded Global Health Supply Chain Program
- Cepheid



GeneXpert machine ready for operation in Burma.  
Photo by IDDS

Challenges/Lessons Learned

- The ongoing COVID-19 pandemic and the coup d'etat that started on February 1 substantially disrupted health services. The NTP management functions at all levels of the TB care cascade, including case finding, diagnosis, and treatment, were stopped as of February 1. Although NTP services restarted in June, normal operations have not resumed. These crises greatly impacted IDDS activities. IDDS revised the work plan to accommodate uncertainties in the political environment and progression of the pandemic. The work plan was approved in July 2021. The COVID-19 pandemic and the political and civil unrest necessitated a shift to alternative diagnostic options. Through working with partners, this led to increased collaboration with the private sector, which may yield benefits through increased linkages between private and public sectors and strengthen overall case detection when the country is no longer in crisis.



Note: Limited data were available from Burma due to the political situation.



# CAMBODIA

## TUBERCULOSIS

### ANNUAL HIGHLIGHTS

IDDS is strengthening the TB diagnostic network by establishing a GX connectivity solution to better monitor test results and key performance indicators, pilot implementation of Truenat diagnostic testing, improve the chest X-ray reading and interpretation platform, and improve bi-directional screening for TB-diabetes mellitus.

#### Diagnostics

- Operationalized nine GX sites for TB and rifampicin resistance testing by procuring GX accessories, including printers, uninterruptible power supply, and voltage stabilizers, through the Centre for Tuberculosis and Leprosy Control. This will improve accessibility of TB diagnostics and increase TB case notification. Across IDDS-supported districts, the proportion of presumptive TB patients tested with a WHO-recommended RDT increased from 27 percent in the January–March 2021 reporting period to 43 percent in June–September 2021 period.
- Customized DataToCare software, a solution to establish TB diagnostic connectivity for GX, and developed a pilot installation plan for the central server and laboratories in 10 districts. This is an important step to improve the quality of the TB diagnostic network, enable real-time reporting, and inform the national policy for diagnostic connectivity and future expansion.
- Developed a pilot protocol and site selection report for 15 sites for operational research on the feasibility and acceptability of Truenat for TB diagnosis at the peripheral level in the country. Increased access to such molecular diagnostics will help generate evidence for future rollout of the technology.

### BY THE NUMBERS

19



Laboratories supported

1



SOPs or guidelines developed on diagnostic connectivity

1



Pilot underway

### PARTNERS AND COLLABORATORS

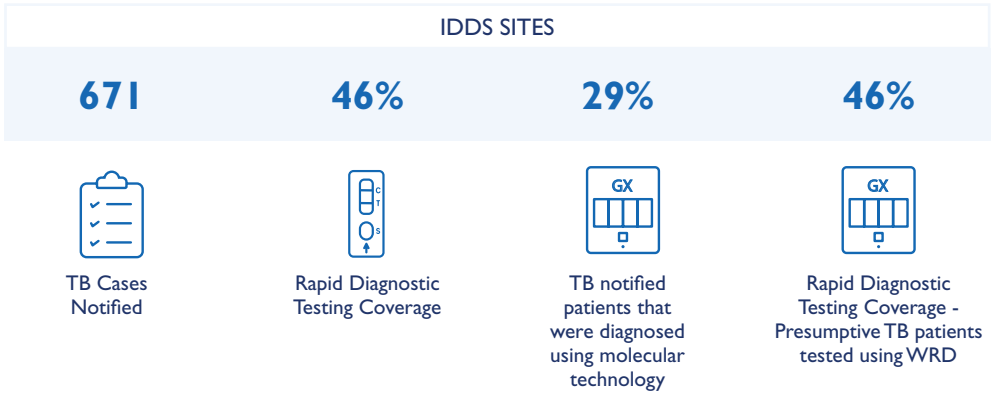
- Ministry of Health
- Centre for Tuberculosis and Leprosy Control
- National Tuberculosis Reference Laboratory
- Savics

### GLOBAL PARTNERS

- USAID-funded New Tools Project
- USAID-funded Community Mobilization Initiatives to End Tuberculosis Project
- The Global Fund to Fight AIDS, Tuberculosis and Malaria



Procured GX accessories in Cambodia. Photo by IDDS







# CAMEROON

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS worked to strengthen the capacity of human and animal laboratories to conduct core tests to detect priority AMR pathogens, including the capacity to generate more accurate and higher-quality results and contribute to overall One Health AMR surveillance.

#### Diagnostics

- Improved detection and reporting on priority AMR pathogens by developing and standardizing 83 SOPs to harmonize practices and maintain equipment across laboratories.
- Strengthened laboratory staff capacities at sentinel surveillance sites through a training of trainers for future cascade training and supervision on AMR detection using IDDS-developed supervisory tools and national SOPs.
- Supported quality assurance and control activities for AMR and priority pathogen detection by equipping six human and two animal health surveillance sites with laboratory reagents, consumables, small equipment, and reference stains for priority pathogens.
- Analyzed laboratory mapping data, modeled scenarios to optimize the diagnostic network, and informed government decision-making on laboratory strengthening and quality services through data quality reviews of collected laboratory mapping data and training of government staff on the use of decision-making tools (Planwise, QGIS, and Rstudio).

#### Surveillance

- Strengthened governance capacity to detect and respond to AMR cases by finalizing the national strategy to guide AMR surveillance, titled the *Integrated Antimicrobial Resistance Surveillance Guide*.
- Operationalized the national strategy to fight AMR by piloting AMR surveillance at six human and two animal sentinel sites through providing training and mentorship on AMR data management, providing training on WHONET data entry, and equipping sites with computers for data collection. Developed SOPs for WHONET data entry, data transmission, data analysis, and data conversion.

### BY THE NUMBERS

10



Laboratories supported for AMR detection and surveillance

34



Persons trained in AMR diagnostics

24



Persons trained in electronic reporting and data use

88



SOPs or guidelines developed\*

20



Persons mentored

1



Data review meeting held for surveillance

2



Pilots conducted on AMR data collection

8



Supportive supervision visits conducted

\*83 SOPs developed for AMR diagnostics and equipment maintenance; 5 SOPs and guidelines developed for surveillance

### PARTNERS AND COLLABORATORS

- Directorate of Pharmacy, Medicines, and Laboratories
- Department for the Control of Disease, Epidemics, and Pandemics
- Directorate of Veterinary Services
- National Public Health Laboratory
- National Veterinary Laboratory

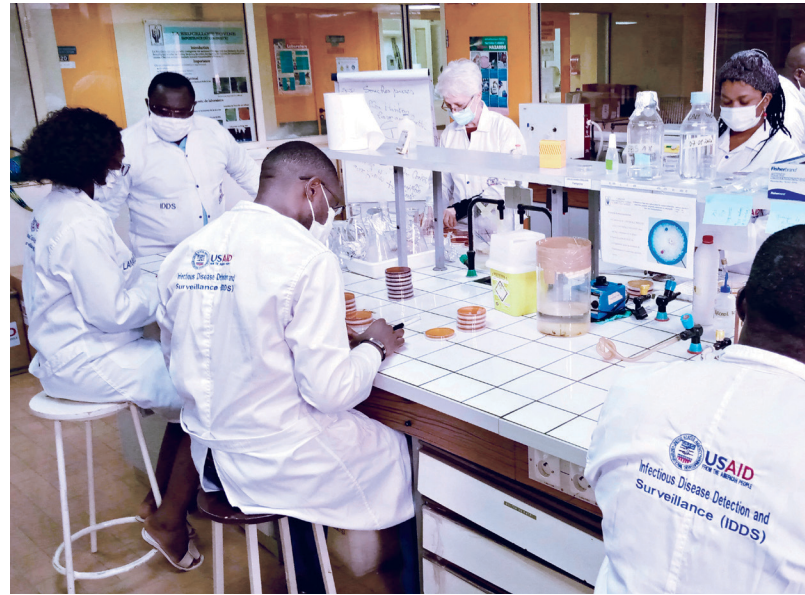
### GLOBAL PARTNERS

- African Society for Laboratory Medicine  
Resolve Project

- Strengthened governance for One Health AMR surveillance by supporting the National Public Health Laboratory (LNSP) to establish and equip an AMR data warehouse to coordinate One Health AMR surveillance data collection, analysis, interpretation, and reporting to WHO GLASS.
- Operationalized the National AMR Surveillance Guidelines through technical support to the LNSP to organize the first AMR data quality review workshop for sentinel surveillance sites.

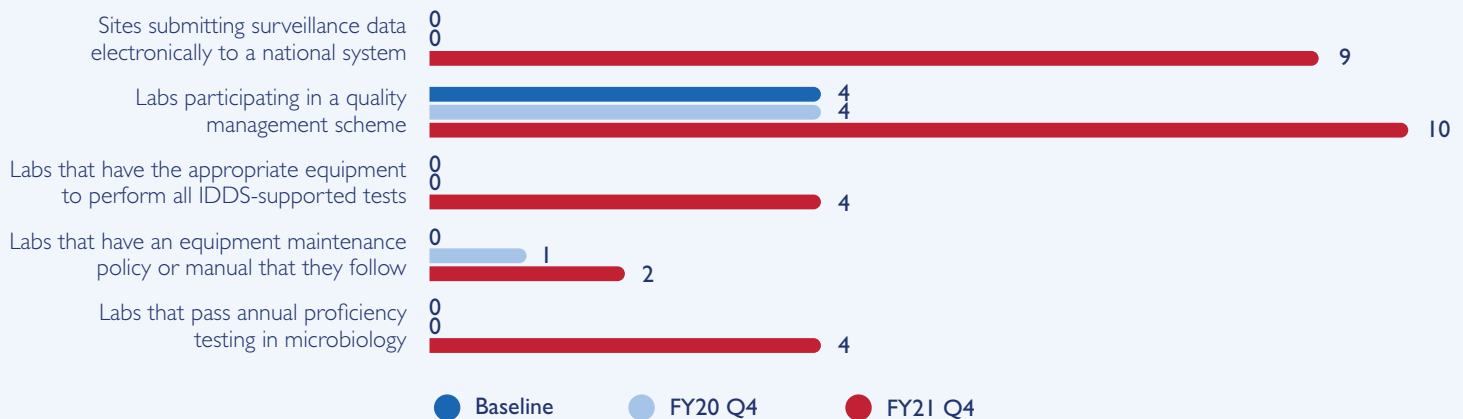
### Challenges/Lessons Learned

- Co-funding activities with partner projects in country saved resources and led to mutual gain and greater impact.

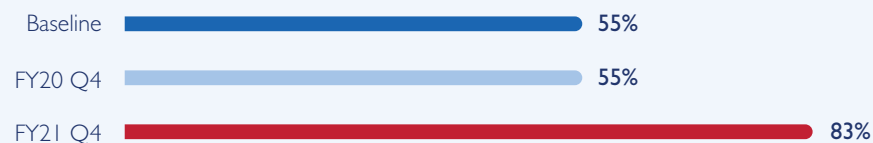


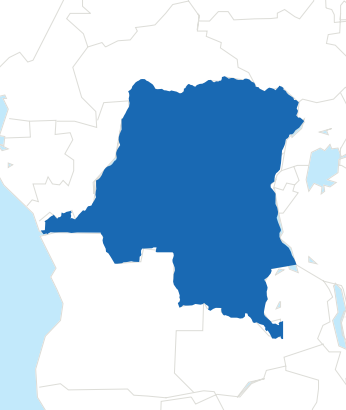
AMR training in Cameroon. Photo by IDDS

### IDDS GHS



### SPECIMENS RECEIVED AND TESTED WITHIN SPECIFIED TIMEFRAME





# DEMOCRATIC REPUBLIC OF THE CONGO (DRC)

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

In the DRC, IDDS supports the operationalization of DRC's MOH Laboratory Policy and Strategic Plan and establishment of a regional public health network in Eastern DRC through laboratory capacity mapping, strengthening specimen referral, and enhancing functional laboratory equipment. In addition, IDDS works to boost the capacity of the MOH to respond appropriately to outbreaks of priority pathogens including zoonotic diseases.

#### Diagnostics

- Enhanced the management and coordination of the diagnostic network through the creation of a database with information on laboratory capacity and services for 300 laboratories in 3 provinces of Eastern DRC, which will assist the Division of Laboratory Services, provincial health divisions, and other partners to plan and make strategic decisions on priority diseases detection in Eastern DRC.
- Trained 33 data collectors in using laboratory mapping tools and data, including the Open Data Kit software for laboratory mapping, to enable the identification of gaps and recommendations to strengthen the diagnostic network.
- Enhanced governance capacity for the diagnostic network by finalizing the National Laboratory Strategic Plan 2021, which will help coordinate and guide partner efforts to strengthen the laboratory network.
- Supported the assessment of the sample referral and transport system to identify gaps and challenges and formulate recommendations for strengthening the sample referral and transport system with a view to integrating the *Institut National pour la Recherche Biomedicale's* (INRB, or National Biomedical Research Institute) satellite laboratory in Goma, as the focal point of the Eastern region public health laboratory network.
- Strengthened the quality of diagnostic services by developing the first set of manuals, job aids, and SOPs in the country to cover biosecurity, clinical biology specimen storage and transport, and biological specimen collection.

### BY THE NUMBERS

132



Persons trained\*

1



SOPs or guidelines  
developed on  
equipment maintenance

4



Supportive  
supervision visits  
conducted for EVD

2



TWG meetings

1



Assessment  
completed

\*99 trained in use of EVD rapid diagnostic tests, and 33 on laboratory mapping methods

### PARTNERS AND COLLABORATORS

- Ministry of Health
- National Institute of Biomedical Research
- National Tuberculosis Program
- Directorate of Laboratory Services
- Directorate of Epidemiologic Surveillance
- Provincial Health Divisions
- HIV/AIDS Provincial Coordination
- Tuberculosis Provincial Coordination
- Malaria Provincial Coordination
- Provincial Veterinary Laboratory
- Ami Labo
- FHI 360 Crisis Response Team

### GLOBAL PARTNERS

- International Organization for Migration
- Centers for Disease Control and Prevention

## Ebola Diagnostics

- Strengthened the EVD diagnostic network through support to the INRB to distribute EVD diagnostic commodities.
- Improved EVD diagnostics using GX by equipping an INRB laboratory in Goma with 500 GX EVD cartridges, which were handed over during a highly publicized ceremony attended by the U.S. vice ambassador, the DRC minister, and the DRC vice minister of health.
- Strengthened EVD laboratory diagnostic capacity through support to the INRB and the provincial health divisions to plan for rollout of RDTs in DRC, transport 450 RDT kits, and subsequently provide joint training and supportive supervision on RDT reading and interpretation.

## Challenges/Lessons Learned

- The Nyiragongo volcanic eruption and relocation of Goma-based staff to Kinshasa meant closure of the Goma office on May 28. The office reopened on June 14 while staff continued their work remotely. Further, the ongoing security situation and state of emergency in North Kivu and Ituri since April limited access to non-secure sites and required regular monitoring of the situation.
- It is important to get shipping documentation from vendors as soon as possible to prepare for customs clearance before commodities even arrive in country.



RDT training in the DRC. Photo by IDDS



GX EVD cartridges handed over to DRC's Minister of Public Health. Photo by IDDS



# GUINEA

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS in Guinea focuses on bolstering laboratory diagnostic capacity for detection of priority pathogens through operationalizing laboratory diagnostic and surveillance strategies and plans at decentralized levels and building overall bacteriology and AMR capacity.

#### Diagnostics

- Supported the establishment of bacteriology and AMR testing capacity at three regional laboratories, enabling the conduct of bacteriology culture and antimicrobial susceptibility testing (AST) for 14 priority pathogens and enrollment in the national AMR surveillance system.
- Enabled continuous quality improvement at regional laboratories by implementing a mentorship program and training and mentoring 11 laboratory technicians from the 3 regional laboratories and 5 prefectorial hospitals.
- Provided costed recommendations for the national supply chain system for priority zoonotic diseases to inform sustainable financing considerations for the diagnostic network.
- Established an EQA program for priority pathogens in the diagnostic network by enabling the National Institute of Public Health to prepare bacteriology testing panels and distributing them to the regional laboratories. This will allow the monitoring of testing skills in these laboratories.

#### Ebola Diagnostics

- Improved quality and management of the EVD specimen transport tracking system by developing SOPs with the laboratory TWG to monitor and track specimen characteristics and by developing terms of reference, a rollout plan, and training materials for implementation of the specimen transport tracking system.
- Strengthened diagnostic workforce capacity through 5 trainings on biosafety and biosecurity in Kindia and Nzérékoré, 3 trainings on contact tracing and case definition in Nzérékoré, and 3 trainings on RDT use for cadaveric surveillance for 55 participants in Nzérékoré. IDDS also supported the development of RDT training materials, SOPs, and the rollout of post-training mentorship.

### BY THE NUMBERS

3



Laboratories supported

148



Persons trained\*

51



SOPs and guidelines developed\*\*

1



Assessment completed

11



Persons mentored on bacteriology testing and quality management systems

9



TWG meetings held

\*95 trained in Ebola testing and biosafety; and 53 in contact tracing for EVD

\*\*22 SOPs on testing procedures, 18 on equipment maintenance, 5 on use of Ebola RDTs, 4 for quality management systems, and 2 on commodity management

### PARTNERS AND COLLABORATORS

- Ministry of Health
- National Health Security Agency
- National Institute of Public Health
- National Directorate of Laboratories
- National Agency for Health Security
- Regional Health Directorate
- Laboratory Technical Working Group
- RDT Technical Working Group
- Red Cross Volunteers
- Army Reference Laboratory
- Animal Health Reference Laboratory

### GLOBAL PARTNERS

- Centers for Disease Control and Prevention

- Enhanced Nzérékoré's Regional Health Directorate laboratory diagnostic capacity by transporting 1,200 RDT kits and distributing them to 18 health areas and the regional laboratory to cover testing needs for a 90-day enhanced surveillance period for EVD.
- Improved quality of molecular diagnostics for EVD through the development of a draft quality assurance plan for GX Ebola assay.
- Strengthened the laboratory management information system for EVD by integrating key laboratory variables and indicators for EVD data into the existing laboratory management information system, installing the system, and training staff on its use at three supported facilities.
- Improved EVD diagnostics using GX by procuring 500 GX EVD cartridges, which were handed over to the National Health Security Agency on September 30.
- Pivoted to support the Lassa Fever and Marburg outbreaks by procuring essential testing reagents.
- Strengthened management capacity of the EVD diagnostic network by mapping laboratories in two regions: Nzérékoré and Kankan.

### Surveillance

- Supported the establishment of a national AMR surveillance system by finalizing the national AMR guidelines and AMR surveillance capacity implementation plan.



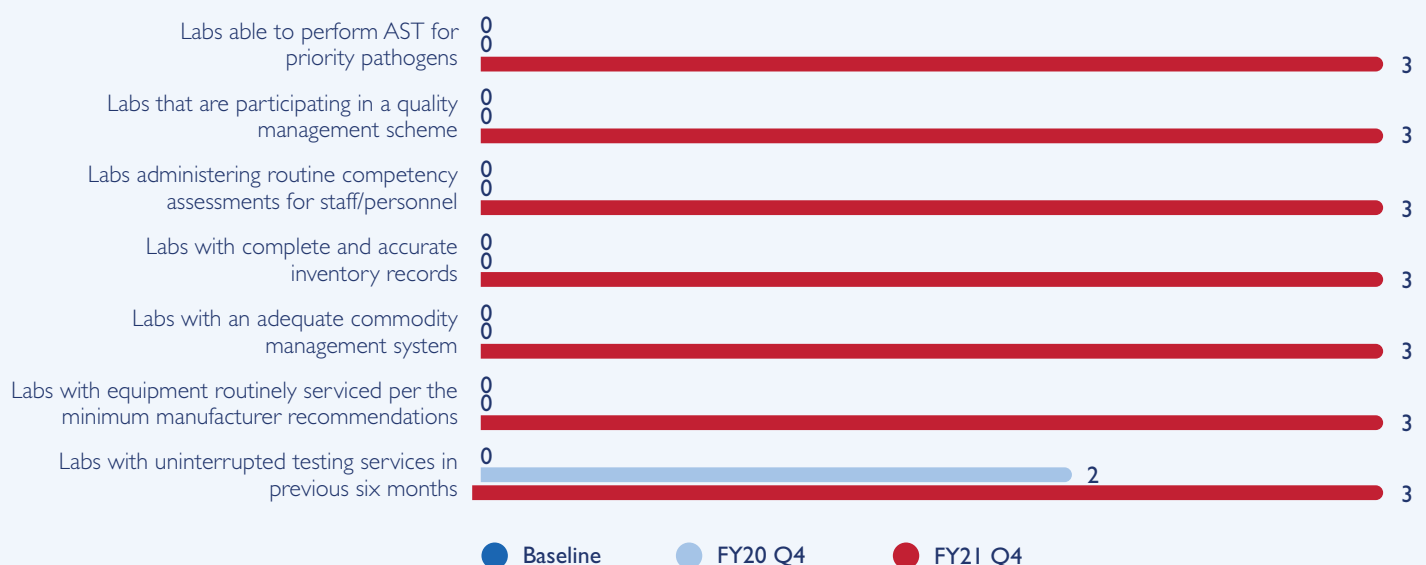
EVD testing training in Guinea. Photo by IDDS

- Enabled the integration of CBS into health facility data for routine analysis and digital reporting at the national level by training 84 community agents on the use of IDDS-developed CBS toolkits and guidelines.

### Challenges/Lessons Learned

- Poor road conditions due to the rainy season prevented IDDS from traveling and collecting data from the Nzérékoré regional laboratory as planned. IDDS worked with stakeholders to adapt timelines and will collect these data when conditions allow.

### IDDS GHS





# INDIA

## TUBERCULOSIS

### ANNUAL HIGHLIGHTS

IDDS works closely with the India Central TB Division to help improve quality and efficiencies of the TB diagnostic care cascade as part of the National TB Elimination Program.

#### Diagnostics

- Strengthened health workforce coordination and management at public sector laboratories through a situational analysis at six National Reference Laboratories (NRLs) and Intermediate Reference Laboratories (IRLs).
- Resolved technical issues through supportive supervision at 4 TB tiered laboratories and cleared a backlog of 500 specimens at the IRL in Patna. The Rajan Babu Institute of Pulmonary Medicine and Tuberculosis became functional after the visit; at the IRL in Patna, the backlog of samples reduced from more than 400 to less than 100, and turnaround time for LPA decreased from more than 1 month to less than 15 days.
- Built the management capacity of NRLs and IRLs by consulting with two NRLs to develop a capacity strengthening document and revising the monitoring and evaluation framework.
- Deliberated on a One-Stop diagnostic model for private sector laboratory engagement in the National Tuberculosis Elimination Program through one-on-one meetings with the private sector and other key stakeholders. The Central Tuberculosis Division acknowledged progress and communicated with states to facilitate implementation.
- Received acclaim in the India Tuberculosis Report 2021 developed by the Ministry of Health and Family Welfare.

### BY THE NUMBERS

8



Liquid culture and  
DST

11



Supportive supervision  
visits to reference labs

3



Assessment  
completed

### PARTNERS AND COLLABORATORS

- Ministry of Health and Family Welfare
- Central Tuberculosis Division
- National Institute of Tuberculosis and Respiratory Diseases Delhi
- Regional Medical Research Centre Bhubaneswar
- Bhopal Memorial Hospital and Research Centre
- All India Institute of Medical Sciences
- Rajan Babu Institute of Pulmonary Medicine and Tuberculosis
- National Centre for Disease Control
- National Tuberculosis Institute Bangalore
- National Institute for Research in Tuberculosis Chennai
- iQVIA
- The Union
- Yaathum Biotech
- Indian Council of Medical Research

## COVID-19 Diagnostics (American Rescue Plan Funded)

- Improved laboratory diagnostic capacity for COVID-19 by working with the Ministry of Health and Family Welfare to equip 38 laboratories with 62,110 GX Xpress SARS-CoV-2 cartridges and 265 laboratories with 106,100 Truenat tests, which were distributed directly to 29 out of 37 states and union territories in India.
- Strengthened COVID-19 diagnostic capacity by coordinating with Cepheid for GX and with Molbio for Truenat, to adapt training materials and SOPs for India and plan for training webinars that will be facilitated by local diagnostic experts.

## GLOBAL PARTNERS

- USAID-funded iDefeat-TB Project
- World Health Organization
- Cepheid
- Molbio



IDDS team visit to biotech facility in Chennai. Photo by IDDS



IDDS team handing over the GX Xpress SARS-CoV-2 cartridges to the staff at New Delhi TB Centre. Photo by IDDS





# INDONESIA

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS's focus is to support the Government of Indonesia's cross sectoral One Health approach for the detection and surveillance of Zoonoses/Emerging Infectious Diseases (EIDs) and AMR. IDDS has supported the establishment of the Zoonoses/EIDs and AMR Cross-Sectoral Technical Coordination for Detection and Surveillance Working Group which comprises three sub-working groups: One Health Laboratory Network, Cross-Sectoral Surveillance Integration, and Information System for Zoonoses/EIDs (SIZE) Operationalization.

#### Diagnostics

- Strengthened detection of priority pathogens by working with the One Health Laboratory Network Sub-Working Group to identify and determine the steps required to upgrade the map of the serogroup/*Leptospira* serovars and harmonize the microscopic agglutination test serovar panel to be used by laboratories. A harmonized *Leptospira* serovars panel will improve the accuracy of leptospirosis detection and surveillance in Indonesia.

#### COVID-19 Diagnostics

- Strengthened specimen collection and transportation in the South Sulawesi province by supporting Yayasan KNCV Indonesia to transport specimens from district-level hospitals and health centers to the provincial reference laboratory in 7 of 11 districts.
- Improved availability and coverage of trainings on COVID-19 diagnostics by promoting videos on specimen collection, packaging, and transport through the IDDS YouTube channel for provincial health offices and by collaborating with the MOH to develop training videos on how to enter COVID-19 test results into the data management system maintained by provincial offices.
- Built COVID-19 diagnostic capacity by equipping animal health laboratories with viral transport media (VTM) and N95 masks and equipping human health laboratories with personal protective equipment, VTM, and EQA panels to support COVID-19 PCR testing.

### BY THE NUMBERS

35



TWG meetings  
for surveillance  
held

17



Institutions  
participated in the  
working groups

5



Policy briefs  
developed

4,185



COVID-19  
specimens  
transported

177



Sites received  
COVID-19 EQA  
panels with WHO  
and IDDS support

1



Assessment  
completed

### PARTNERS AND COLLABORATORS

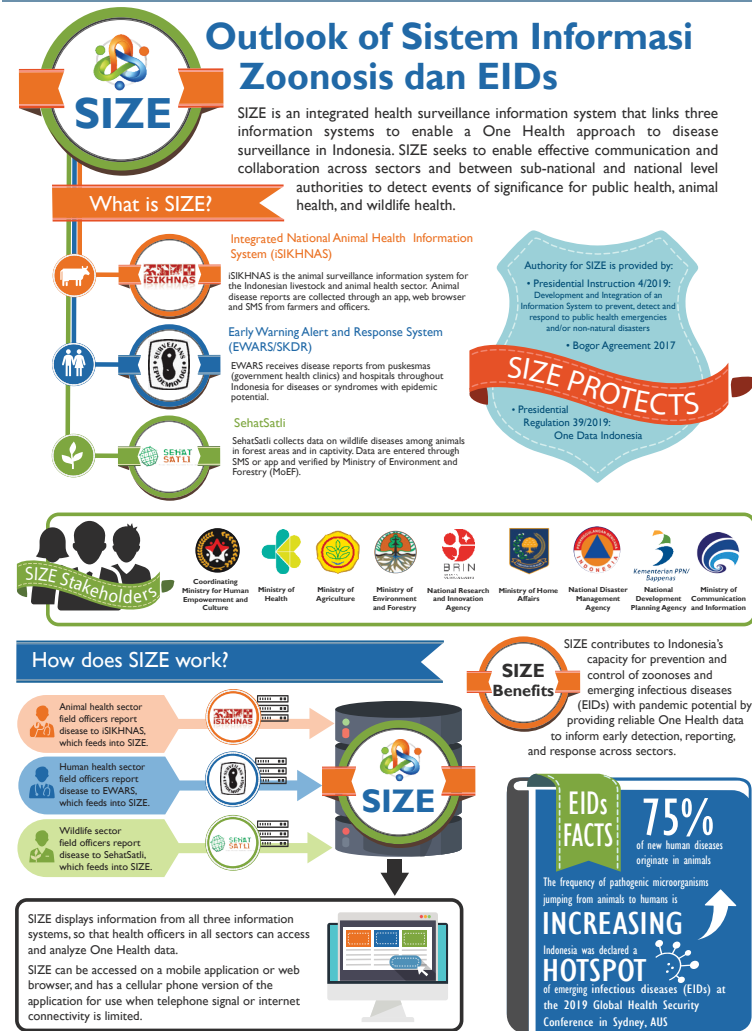
- Ministry of Health
- Ministry of Agriculture
- Ministry of Environment and Forestry
- Coordinating Ministry for Human Development and Cultural Affairs
- Agency for the Assessment and Application of Technology
- Sub-working groups for One Health, Integrated Surveillance, 4-Way Linking, and SIZE
- Yayasan KNCV Indonesia



Boxes of VTM delivered to Indonesia's MOH. Photo by IDDS

## Surveillance

- Developed several national guidelines in support of cross-sectoral integrated surveillance, planning, and coordination to counter emerging endemic zoonotic and EIDs. These included 4-Way Linking Guidelines for coordination between the public health, animal health, and wildlife health sectors; National Zoonoses/ EIDs Cross-Sectoral Integrated Surveillance Guidelines to implement cross-sectoral integrated surveillance activities for potential zoonosis or EID outbreaks; and the National SIZE Roadmap and Gap Analysis to support ministries in operationalizing and further developing this cross-sectoral integrated information system that provides interoperability between Early Warning Alert and Response System in the human health sector (SKDR), the Integrated National Animal Health Information System (iSIKHNAS) in the animal health sector, and the Wildlife Health Reporting System (SEHAT SATLI) in the wildlife health sector.
- Supported the national integrated surveillance system by developing and disseminating the Cross-Sectoral Zoonosis/EIDs Detection and Surveillance Policy Brief, which is the national strategic plan.



SIZE (Information System for Zoonoses and Emerging Infectious Diseases) integrates disease surveillance across the human, animal, and wildlife health sectors. Photo by IDDS

# KENYA

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

In Kenya, IDDS strengthens national and decentralized capacity at five regional sentinel sites for AMR diagnostics and surveillance. By building laboratory capacity to conduct bacteriology tests and generate AMR data and providing training, logistical and technical support IDDS is enabling the government of Kenya to operationalize its national health security and AMR plans.

#### Diagnostics

- Guided one of the first Kenyan public county laboratories, Murang'a County Referral Hospital Laboratory, to incorporate bacteriology tests as part of the scope of tests accredited by the Kenya Accreditation Service to ISO 15189:2012 standards. This achievement will ensure that the county commits resources to maintain high-quality testing standards, improve patient management outcomes, and provide quality surveillance data to guide regional and national policy-related decision-making.
- Advanced quality assurance for AMR surveillance by assisting the National Antimicrobial Stewardship Interagency Committee to develop a bacteriology isolate referral guide for retesting bacterial isolate samples at the National Microbiology Reference Laboratory. The guide was disseminated through the National Public Health Laboratory (NPHL) Extension for Community Healthcare Outcomes platform and a webinar for all surveillance sites in the country.
- Guaranteed continuous bacteriological service provision to support AMR data generation by equipping counties with essential microbiology reagents and supplies.

#### Surveillance

- Increased the capacity of seven AMR surveillance sites to be able to report into WHO GLASS for the first time by providing technical and logistical assistance for data cleaning and preparation.
- Built national surveillance capacity by supporting five sites that successfully conducted bacteriology testing through the year to submit data to the NPHL Central Data Warehouse (CDW). Four of the five sites have successfully reported to the CDW throughout FY 2021.<sup>1</sup>

### BY THE NUMBERS

405



Persons trained\*

2



SOPs or guidelines developed for AMR surveillance

5



Supervisory visits conducted

5



Laboratories supported for AMR testing and surveillance

2



Data review meetings held

1



Pilot conducted of the AMR data quality assessment tool

15



Persons mentored on testing and QMS

\*55 on commodity management; 178 on testing procedures; 38 on specimen referral and transport; 119 on QMS; 15 on data analysis and use



Training on API bacterial identification panels for Murang'a and Nyeri Laboratory technologists. Photo by IDDS

- Built national health workforce capacity for AMR prevention and control by increasing access to AMR surveillance training materials through collaboration with multiple stakeholders to host a self-paced online training on the MOH eLearning academy.
- Conducted AMR surveillance data quality assessment for the first time and prepared site-specific data quality improvement plans that guided surveillance sites toward collecting and transmitting higher quality data to the national level.
- Provided technical assistance to the National Antimicrobial Stewardship Interagency Committee to develop AMR surveillance dashboards for supported sites to strengthen clinical management of patients and contribute to increased site use and higher quality testing and data.
- Strengthened the surveillance of priority AMR pathogens by training 15 microbiologists at the National Microbiology Reference Laboratory and Aga Khan University Hospital and 10 surveillance site personnel on AMR surveillance data analysis for organism identification and AST.

### Challenges/Lessons Learned

- Too few informatics staff at the NPHL hindered resolution of issues related to the laboratory information system and Internet connectivity, which in turn delayed submission of data from surveillance sites to the CDW. Bungoma County Referral Hospital Laboratory was unable to submit data as a result, despite generating the highest number of tests and isolates. IDDS provided a modem and Internet data bundles to the site in Malindi to temporarily facilitate

## PARTNERS AND COLLABORATORS

- Ministry of Health
- Ministry of Agriculture, Livestock, Fisheries, and Cooperatives
- National Antimicrobial Stewardship Interagency Committee
- National Public Health Laboratory
- National Microbiology Reference Laboratory
- Aga Khan University Hospital
- Nursing Council Kenya
- Kenya Veterinary Board
- Association of Kenya Medical Laboratory Scientific Officers
- Clinical Officer's Council of Kenya
- Infection Prevention Network
- Daktari Online
- Kenya Medical Supplies Agency
- African Medical and Research Foundation
- Center for Health Solutions
- Biomerieux
- iLab Africa
- Beckton and Dickerson

## GLOBAL PARTNERS

- USAID-funded Health IT Project
- USAID-funded MTaPS Project
- USAID-funded TB Arc II Project
- Fleming Fund
- Centers for Disease Control and Prevention
- Pfizer
- Foundation for Innovative New Diagnostics

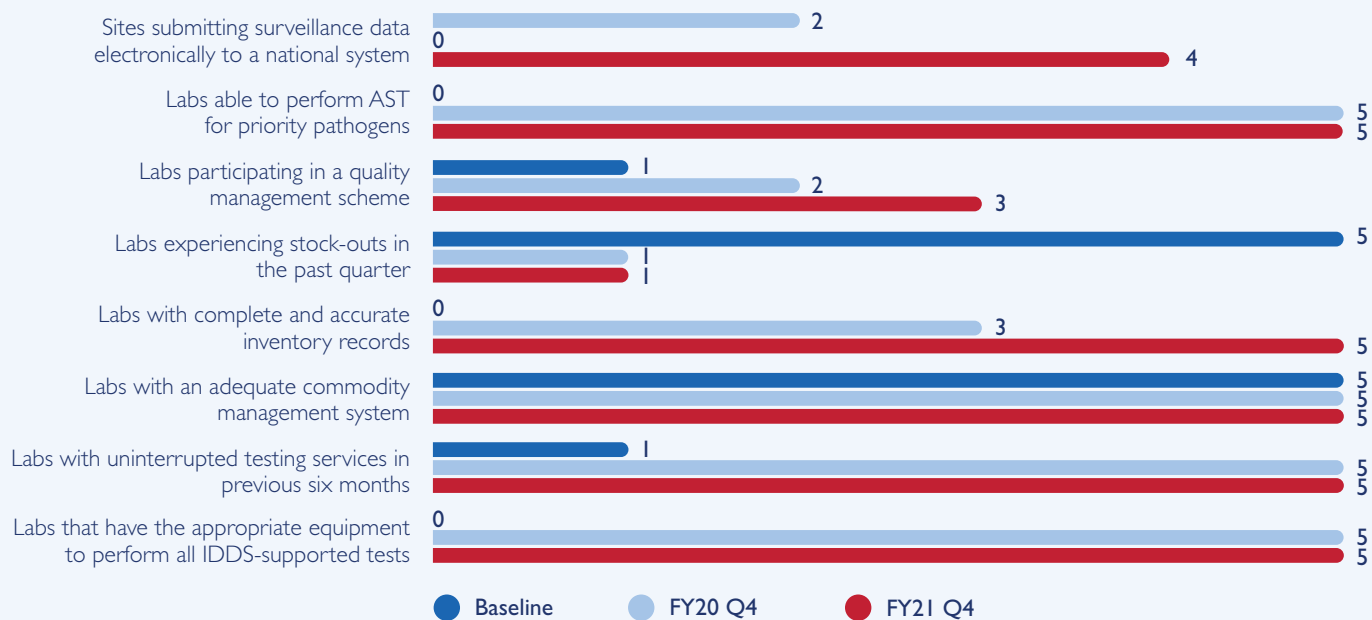
electronic data submission while a long-term solution is developed. IDDS also facilitated NPHL informatics staff to visit sites in Bungoma, Kitale, and Nyeri to address connectivity issues.

- Integrating a QMS into routine laboratory capacity building to detect AMR is a sustainable use of resources. Maintaining accreditation standards requires continuous capacity building and reassessment of the laboratory.
- Access to the CDW enabled real-time monitoring of submitted data from surveillance sites and data quality assessments, which enabled the early identification of challenges and solutions in data transmission and quality that were shared with the sites and the NPHL.

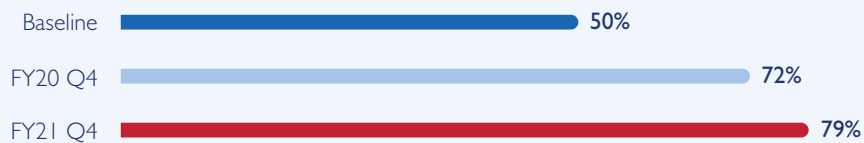
<sup>1</sup> Available at <https://elearning.health.go.ke/course/index.php?categoryid=68>



### IDDS GHS



### SPECIMENS TESTED WITHIN SPECIFIED TARGET TIMEFRAME



# LIBERIA

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS is working closely with the National Diagnostic Division of the Ministry of Health and the National Public Health Reference Laboratory to bolster diagnostic network capacities at the national and decentralized levels in three focal counties (Bong, Nimba, and Lofa). In addition, IDDS is operationalizing an ISO 15189-based National Quality Management System (QMS) program to improve diagnostic facility (laboratory and point-of-care) quality systems in the nine laboratories enrolled in the SLMTA-led QMS program in the Bong, Lofa, and Nimba counties.

#### Diagnostics

- Increased the number of laboratories in the country that are able to provide bacteriology testing by equipping the G.W. Harley Hospital and Tellewoyan Hospital laboratories with needed equipment, reagents, and consumables, and training staff on diagnosing EIDs and AMR.
- Improved quality laboratory services through mentoring on implementation of the SLMTA program in nine facilities.
- Strengthened the role of the National Diagnostic Division at the national and subnational levels through supportive supervision visits, which has elevated the role of laboratories nationally and built confidence in the country's diagnostic network.
- Built capacity for a sustainable and high-quality health workforce by developing a curriculum for the Bachelor of Medical Laboratory Science degree for the University of Liberia College of Health Sciences, which will also be used by all training institutions in Liberia.
- Built capacity for bacteriology and AST in three county laboratories as part of providing quality-assured bacteriology services that can detect pathogens of public health importance.
- Contributed to building a bench of technicians with bacteriology skills and knowledge to act as bacteriology champions and sustainably build bacteriology capacity in the country through funding mentoring visits in supported counties.

### BY THE NUMBERS

3



Laboratories supported to perform bacteriology and AMR testing

9



Laboratories supported for QMS

9



Persons trained in bacteriology testing

33



SOPs or guidelines developed\*

11



Supervisory visits conducted for QMS and testing

29



Persons mentored for QMS and testing

8



TWG groups held on bacteriology testing & commodity management

\*30 SOPs/guidelines for QMS, and 3 SOPs guidelines for Ebola detection

### PARTNERS AND COLLABORATORS

- Ministry of Health National Diagnostic Division
- National Public Health Institute
- National Public Health Reference Laboratory
- Hospital Laboratories (Tellewoyan, Foya Boma, Curran, Kolahun, G.W. Harley, Ganta Methodist, Phebe, Bong Mines, and C.B. Dunbar)
- University of Liberia College of Health Sciences

Ebola Diagnostics

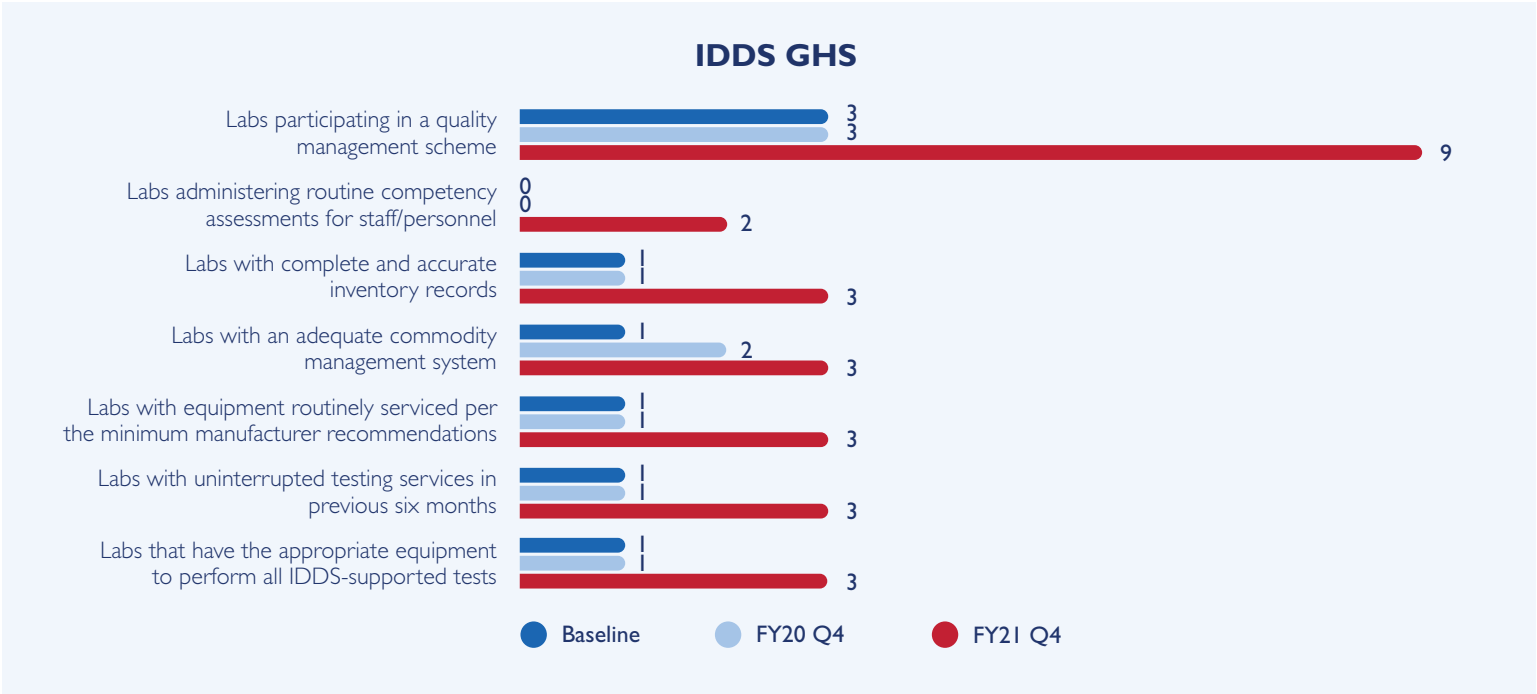
- Developed training materials and a laboratory testing capacity assessment checklist for the National Public Health Reference Laboratory for improved management of the EVD diagnostic network.
- Supported an assessment of the EVD laboratory testing capacity using the checklist developed above.
- Strengthened the quality of EVD diagnostics by developing and distributing EVD specimen management guidelines to supported counties.
- Improved EVD diagnostics by assessing power requirements of the Tellewoyan Memorial Hospital and procuring the equipment needed to upgrade the solar power system.



Participants in the IDDS bacteriology training held in March 2021 in Liberia’s Bong county. Photo by IDDS

Liberia couldn’t have gotten a better partner with so much passion for laboratory system strengthening than IDDS. Your impact is positive and felt at both county and national level.

– DR. JONATHAN KPAKA  
National Diagnostic Division Deputy Director for Technical Services, at the end of the biannual review meeting on September 29, 2021





# MADAGASCAR

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS partners with the Directorate of Health and Epidemiological Surveillance to strengthen surveillance systems and reporting for priority diseases. Additionally, IDDS aims to improve the performance and quality of service of laboratories at each level of the diagnostic network, thereby improving detection of priority diseases. To support capacity-building efforts, IDDS developed the National Strategic Plan for the Development of Laboratories, which provides a framework for priority activities to be implemented from 2021 to 2025.

#### Diagnostics

- Established the first peripheral specimen testing center in Mahajanga by installing a PCR platform in the PZaGa University Hospital Center to meet short-term diagnostic needs for accurate, timely, and reliable testing during the COVID-19 pandemic. Decentralized testing is a strategic, long-term goal for the government if the COVID-19 pandemic continues or new epidemics emerge.
- Strengthened and increased the number of laboratories in the *Reseau des Laboratoires à Madagascar* laboratory network that can conduct bacteriology testing by equipping laboratories with equipment, reagents, and consumables and providing training for all 13 laboratories.

#### Surveillance

- Supported the finalization of the National Surveillance Strategic Plan, which provides standardized guidance for reporting priority diseases, assessing surveillance data quality, and establishing the roles and responsibilities of various actors. The plan is an important tool for monitoring and evaluation of the strategic actions decided, mobilization of resources, and establishment of effective leadership for the surveillance system.
- Consistently supported the Directorate of Health and Epidemiological Surveillance to host monthly stakeholder meetings to review indicator-based surveillance data and continue publication of Madagascar's national monthly surveillance bulletin.

### BY THE NUMBERS

12



Laboratories supported for bacteriology testing

61



Persons trained for bacteriology and COVID-19 testing

1



SOP or guideline developed

9



TWG meetings held

### PARTNERS AND COLLABORATORS

- Ministry of Public Health
- Directorate of Health and Epidemiological Surveillance
- *Reseau des Laboratoires à Madagascar*
- PZaGa University Hospital Center
- Fondation Merieux

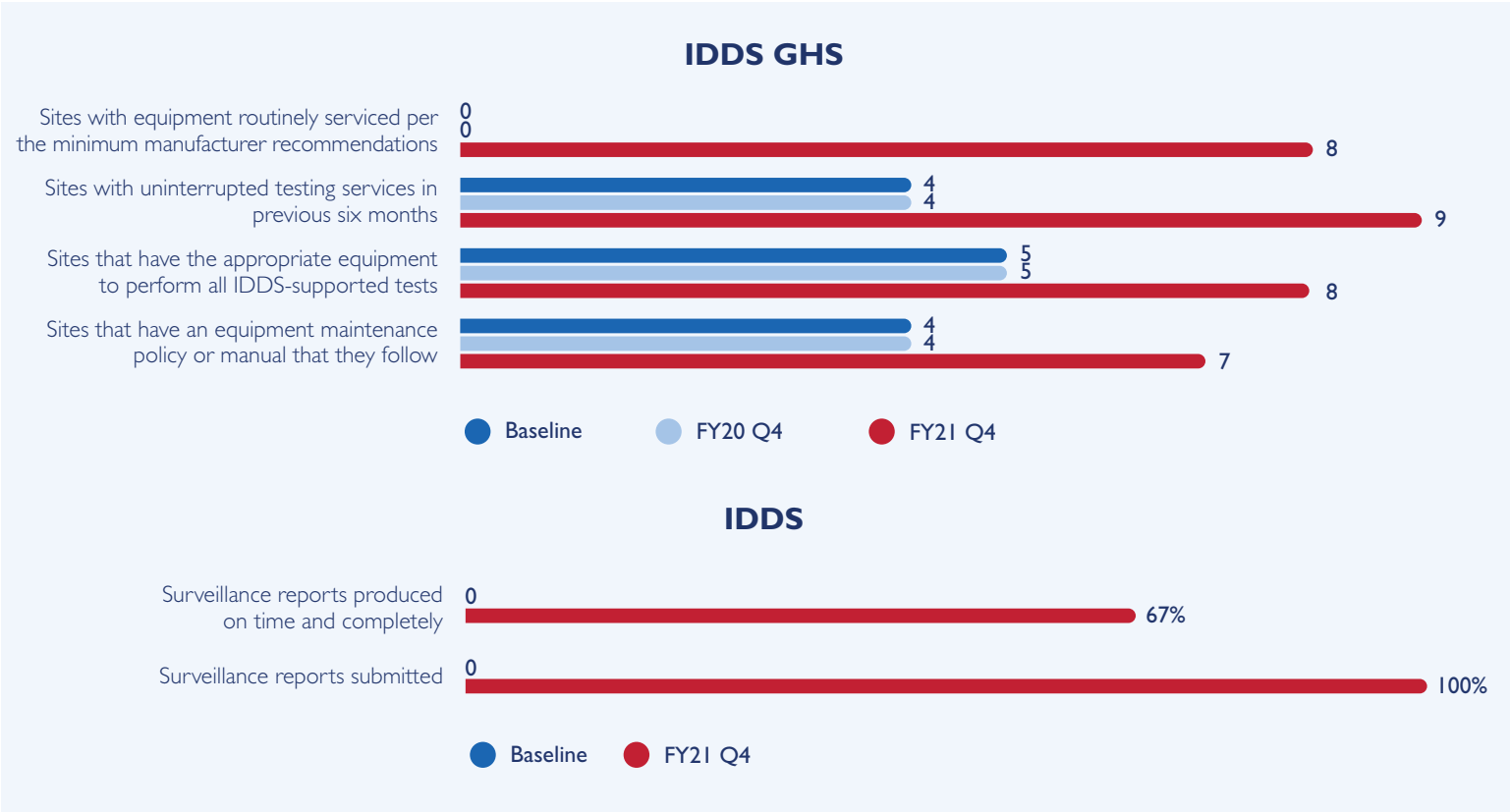


Challenges/Lessons Learned

- The government began development of a strategy for a new diagnostic network called *Laboratoire d'Analyses Médicales de Madagascar*, which is different from *Reseau des Laboratoires à Madagascar*, a diagnostic network that Fondation Merieux has supported the Directorate of Pharmacies, Laboratories and Traditional Medicine to develop over the past few years. IDDS met with relevant stakeholders to learn more about the strategy and determine possible areas of integration and alignment.



Handing over PCR testing equipment to the PZaGa Mahajanga Hospital laboratory in the north of Madagascar. Photo by IDDS





# MALI

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS collaborates with Mali's Ministry of Health through the General Directorate of Health and Public Hygiene (DGSH) and National Institute of Public Health (INSP) to strengthen the laboratory systems ranging from relaunching the ISO accreditation at the INSP through developing reference documents that boost the quality and reliability of tests results, supporting the revision and validation of the National Institute for Public Health policy, and the manual for emergency response procedures on laboratory biosafety and biosecurity. IDDS also supports the implementation of CBS using a One Health approach by strengthening IDSR capacity in underperforming health districts.

#### Diagnostics

- Strengthened laboratory capacity and the specimen referral system by mapping 282 diagnostic One Health platform laboratories and providing decision-makers with a benchmark for targeted improvements.
- Enabled two laboratories to identify and address gaps in biosafety and biosecurity as part of setting up a national external and internal assessment program for biological risk.
- Ensured the functioning of preventative and curative laboratory equipment at three regional hospitals in Ségou, Sikasso, and Mopti.

#### COVID-19 Diagnostics

- Strengthened COVID-19 specimen collection and transportation in Kayes, Koulikoro, and Bamako.
- Built laboratory capacity for COVID-19 diagnostics through four trainings on RDT for local health workers identified by the MOH in eight border regions.
- Built laboratory diagnostic capacity by equipping them with VTM, triple packaging, cooler boxes, and thermometers.

### BY THE NUMBERS

4



Laboratories supported

284



Persons trained\*

8



SOPs or guidelines developed\*\*

4



Supportive supervision visits conducted

17



Persons mentored on equipment maintenance

5



TWG meetings held on QMS, biosafety, and equipment maintenance

17



Data review meetings held

7,994



COVID-19 specimens transported

1



Pilot conducted

2



Assessments completed

\*40 trained in COVID-19 RDTs; 78 persons in EVD specimen collection and packaging; 166 persons trained in EVD surveillance

\*\*5 SOPs for EVD specimen collection and testing; 2 on biosafety; 1 on CBS

## PARTNERS AND COLLABORATORS

- Ministry of Health
- General Directorate of Health and Public Hygiene
- National Institute for Public Health
- Directorate of Pharmacy and Medicines

## GLOBAL PARTNERS

- UK Foreign, Commonwealth and Development Office-funded Tackling Deadly Disease in Africa Program

## Ebola Diagnostics

- Strengthened laboratory workforce diagnostic capacity by working with the National Public Health Institute to develop and conduct trainings for 78 referral laboratory staff on EVD specimen collection, packaging, and safe transport and use of data from RDTs.

## Surveillance

- Piloted CBS procedures in two districts based on guidance developed by IDDS and expanded CBS to Kadiolo and continued support for Kati, which allowed the country to detect four measles outbreaks and one yellow fever outbreak.
- Supported the government and One Health stakeholders to develop a costed six year national plan to expand CBS across the country and serve as a reference for the government and implementing partners for all CBS activities in Mali.
- Improved surveillance system interoperability and information sharing through the development of an improvement plan that will serve as a guideline for the government and partners to better integrate epidemiological surveillance information.
- Produced 11 monthly and 1 annual epidemiological surveillance bulletin using data from DHIS2 and shared reports widely to provide essential information to national, regional, and local surveillance levels on ongoing outbreaks of infectious disease.

## Ebola Surveillance

- Built EVD surveillance and contact tracing capacity working with the General Directorate of Health and Public Hygiene to train 88 health care workers in 3 high-risk regions and staff at ports of entry on EVD detection, contact tracing, case management, reporting, protocols, and SOPs.
- Strengthened CBS through 2 trainings and supportive supervision for 78 community health workers on 24 priority diseases, including EVD, and mobile reporting using the Frontline SMS platform and equipping the regional health director with tele-communication equipment to conduct CBS.

## Challenges/Lessons Learned

- Lack of sustainable compensation for community health workers involved in implementing CBS hinders effective CBS. IDDS advocated to the government to formalize payments to the community health workers using a budget dedicated to decentralized territorial authorities.
- Co-funding activities with other projects in country may save costs and time during implementation. For example, the CBS expansion plan was co-funded with the Tackling Deadly Disease in Africa Program.
- Implementing CBS helps to detect unvaccinated children, improve health service use through home visits by community health workers, and improve the responsiveness of district health workers in detecting and reporting an epidemic outbreak.
- Obtaining the necessary tax waiver documentation to permit release of procured items from customs became an issue. IDDS conducted regular follow-up with the relevant government counterparts and USAID Mission representatives to obtain an approval letter. In the future, IDDS will begin the process earlier to complete customs paperwork and obtain tax documentation to release procured items so that activity implementation is not delayed.

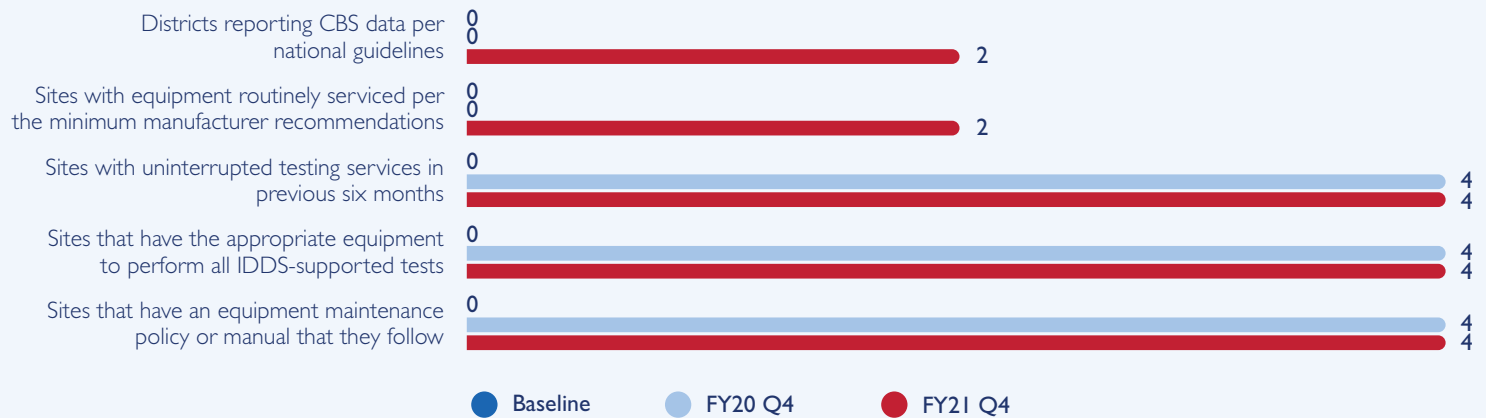


RDT training in Mali: Photo by IDDS

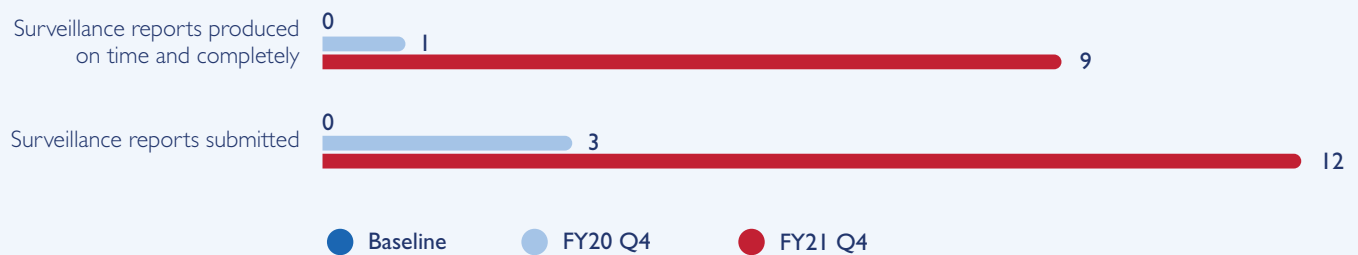


Specimen transfer vehicles for COVID-19 response in Bamako. Photo by IDDS

## IDDS GHS



## IDDS







# PHILIPPINES

## COVID-19

### ANNUAL HIGHLIGHTS

IDDS has been successfully implementing activities to support the response to COVID-19 in the Philippines since March 2020. IDDS works with key stakeholders to identify gaps in timely, safe, specimen collection and transport to ensure that COVID-19 specimens are properly collected, referred, and shipped to the designated COVID-19 laboratory in the country or in the region as needed. The initial activities focused on the Mindanao region. This support transitioned to the provinces of Bulacan, Rizal, and Palawan in April 2021.

### COVID-19 Diagnostics

- Strengthened COVID-19 specimen collection and transportation in Bulacan, Rizal, and Palawan provinces, through transportation of specimens by road and an agreement with Shell Philippines to airlift specimens from Bulacan and Palawan provinces to Manila for PCR testing and whole genome sequencing at the Philippines Genome Center. This resulted in the following: 95 percent of specimens transported in October and 98 percent of specimens transported in November were transported within 24 hours; 5,724 potential COVID-19 specimens from 22 unique sites were taken for testing within 24 hours between July and September.
- Bolstered management and coordination of the specimen referral system for the COVID-19 response by collaborating with provincial local government units to finalize lists on specimen pick-up locations and frequency.
- Built diagnostic capacity for COVID-19 through planning with local government units and conducting five trainings for health care workers on specimen collection, packaging, and transportation in the three provinces. In Rizal, 178 health care workers were trained.
- Strengthened laboratory diagnostic capacity for COVID-19 by equipping facilities in all 3 provinces with specimen transport boxes and providing PCR extraction kits for 6,000 tests to the Bulacan Molecular Diagnostic Laboratory and the Philippine Genome Center in Manila.

### BY THE NUMBERS

**8,902**



Specimens transported

**2,353**



Specimens transported for genome sequencing

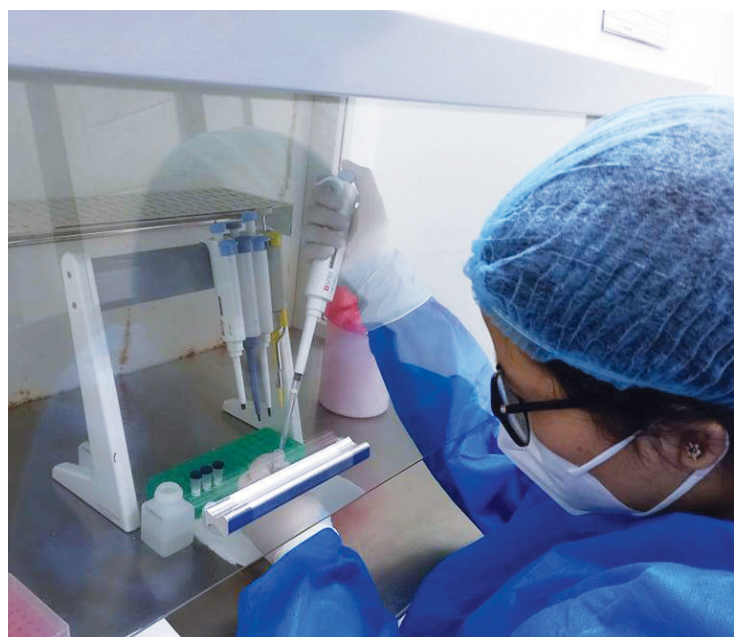
**383**



Persons trained in specimen collection and transportation

### PARTNERS AND COLLABORATORS

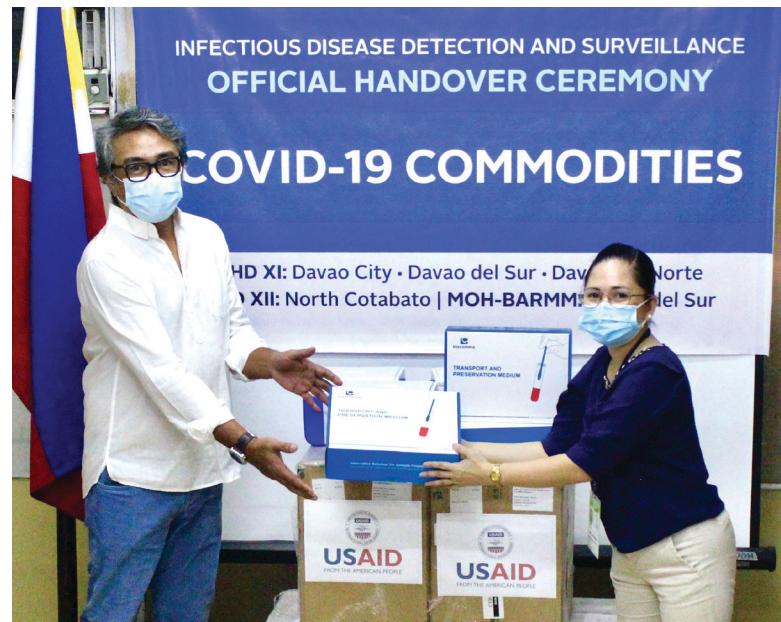
- Ministry of Health
- Local government units in the provinces
- Philippine Genome Center
- Bulacan Molecular Diagnostic Laboratory
- Shell Philippines



Preparing reagents at Bulacan Molecular Diagnostic Laboratory.  
Photo by Bulacan Molecular Diagnostic Laboratory

### Challenges/Lessons Learned

- The Philippine Genome Center announced in early September that it was no longer accepting specimens for reverse transcription-PCR testing to focus on variant detection and double its capacity for whole genome sequencing. Prior to this, IDDS had been transporting specimens from Rizal province to the Philippine Genome Center for reverse transcription-PCR testing. Through collaboration with stakeholders, IDDS is now referring specimens from Rizal province to the Lung Center of the Philippines.



VTM and other supplies for COVID-19 response in Mindanao. Photo by IDDS



# SENEGAL

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS builds the capacity of diagnostic facilities to perform laboratory testing and reporting of timely, complete, and high-quality results into the DHIS2 that are robust and comparable across sites. AST is not performed in most laboratories in Senegal, and IDDS supports seven priority laboratories that serve as AMR sentinel surveillance in microbiology testing and AST in order to improve routine AMR surveillance countrywide, particularly outside the major cities. IDDS also supports improvements in the quality of CBS data reported and institutionalization of CBS activities.

#### Diagnostics

- Developed and validated the first national AST SOPs and training materials, which will help ensure standardized quality testing at all AMR sentinel sites. Standard testing approaches also allow better comparability of AMR data across sites.
- Increased capacity at 7 diagnostic facilities to conduct bacteriology testing and AST for AMR surveillance by providing equipment and reagents, training 12 laboratory technicians, and conducting supervisory visits to reinforce skills.

#### COVID-19 Diagnostics

- Strengthened COVID-19 laboratory diagnostic capacity by equipping supported laboratories with 1,200 PCR reagents and commodities, such as triple packaging, thermometers, cooler boxes, a microcentrifuge, and a biosafety cabinet.

### BY THE NUMBERS

7



Laboratories supported

345



Persons trained\*

66



SOPs or guidelines developed\*\*

24



Supervisory visits conducted

6



Data review meetings held

\*333 trained on electronic data reporting, 12 trained on AST

\*\*61 SOPs or guidelines on testing, 5 related to surveillance

### PARTNERS AND COLLABORATORS

- Ministry of Health
- Directorate of Laboratories
- Directorate of Private Facilities
- Directorate of Prevention
- Division of Health Information System
- National Public Health Laboratory
- Emergency Operations Center
- Roi Baudouin Hospital
- Regional Hospital of Louga
- Ouakam Health Center
- Ziguinchor Regional Hospital
- Dalal Jaam Hospital
- Epidemiological Surveillance Technical Working Group

## Surveillance

- Strengthened reporting of priority diseases by training 246 nurses and midwives in 12 districts in the Saint Louis and Tambacounda regions to report high-quality, complete, and timely IDSR data into DHIS2. Pre- and post-test results for health care workers trained on data quality components showed an increase in scores from 55 percent to 86 percent in Tambacounda region and from 60 percent to 82 percent in Saint Louis region.
- Incorporated 12 private sector facilities into the national IDSR system. With 40 percent of priority and epidemic disease cases being diagnosed at private facilities, this integration is crucial to support data-informed policymaking.
- Provided technical support to the Directorate of Laboratories to develop tools and guidelines for AMR data collection and reporting into DHIS2. Four IDDS-supported laboratories are now reporting into this national health information system to provide the MOH with quality AMR data in a timely manner.

- Reinforced One Health CBS in 6 districts and expanded CBS into 3 new districts of Tambacounda region (Dianke Makhani, Goudiry, and Maka Colibantang) by training 56 nurses, livestock staff, community volunteers, and 13 district management team members.

## Ebola Surveillance

- Strengthened the national early warning surveillance system through support to the MOH to incorporate hemorrhagic fevers, including EVD, into the mobile early warning surveillance system in the country.

## Challenges

- Obtaining customs clearance for procured supplies was frequently delayed. IDDS worked with the relevant government agency to address this directly and will prevent future delays by building in extra time during implementation to complete import-related customs and tax paperwork.



AMR training workshop at the National Public Health Laboratory in Thies, Senegal. Photo by IDDS

I would like, in turn, thank IDDS, all the facilitators, Dr. Rokhaya for having also hosted the training at the LNSP and all the participants... You have done a very good job and the Senegalese people will be grateful to you.

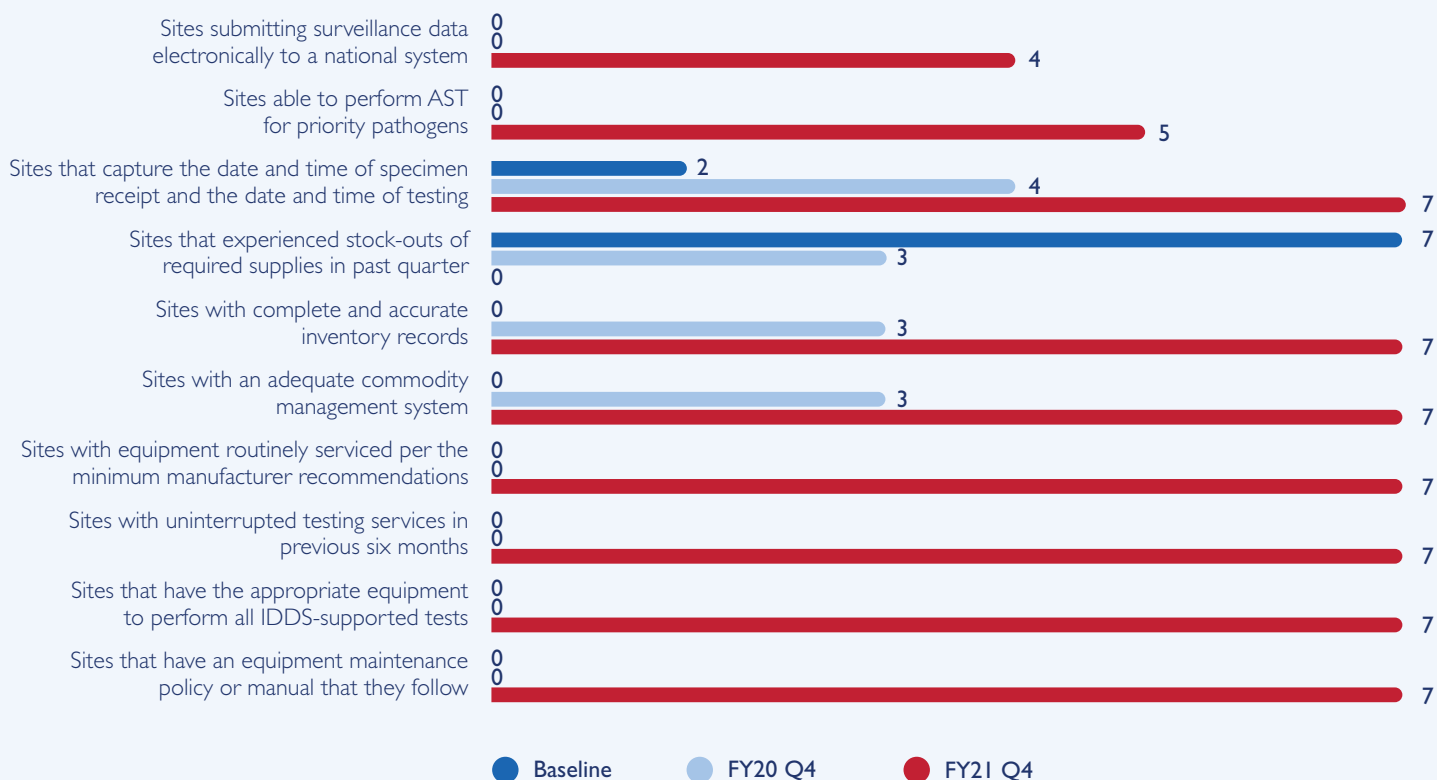
— PROFESSOR AMADOU MOCTAR DIEYE  
Ministry of Health and Social Action, General  
Directorate of Public Health

With the training of the midwives, there is no longer any risk of transmitting late reports to the Ministry of Health. If the head nurse is out of the office, the midwife now has the skills to collect the data and send the report to the Ministry of health in a timely manner.

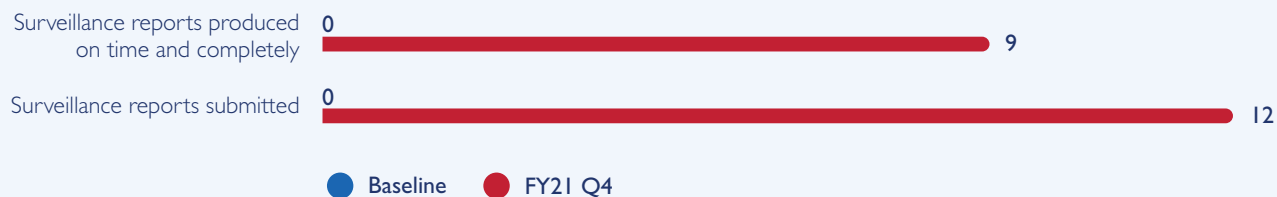
— DR. EL HADJI CHEIKH ABDOULAYE DIOP  
Koumpentoum Health District Chief Medical Officer



## IDDS GHS



## IDDS



# TANZANIA

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

IDDS works to strengthen laboratory and surveillance capacities by supporting the National AMR Surveillance Framework. This includes enhancing the national supply chain system to cover microbiology commodities and enabling the detection of AMR priority pathogens in four IDDS-supported sites: Temeke Regional Referral Hospital in Dar es Salaam, Morogoro Regional Referral Hospital in Morogoro region, Benjamin Mkapa Hospital in Dodoma region, and Maweni Regional Referral Hospital in Kigoma region.

#### Diagnostics

- Strengthened national reporting of AMR data into WHO GLASS by operationalizing IDDS-supported sites to perform AST and report high-quality AMR data to the national level.
- Bolstered priority pathogen diagnostic testing by improving bacterial isolation rates and visible hemolysis through equipping the NPHL and supported laboratories with sheep blood for nutrient media.
- Built regional capacity and performance for diagnostic testing by implementing onsite mentorship programs and supportive supervision to alleviate challenges related to inadequate staffing and turnover.
- Strengthened laboratory commodity management and procurement forecasting for AST through implementation of a complete and robust inventory management system at four laboratories.

#### Surveillance

- Built management and coordination capacity for AMR surveillance through development and integration of an AMR supportive supervision checklist into the electronic platform *Afya SS* of the Ministry of Health, Community Development, Gender, Elderly, and Children, to standardize supportive supervision and provide mentorship to all sites, improving the quality of AMR testing.

### BY THE NUMBERS

4



Laboratories supported

74



Persons trained\*

20



Persons mentored on testing and data analysis and use

3



SOPs or guidelines developed

3



Supportive supervision visits conducted

4



TWG groups held on testing and AMR surveillance

\*35 trained in supportive supervision for COVID-19 specimen referral, 21 trained in biosafety, 18 trained on commodity management and reporting AMR data

### PARTNERS AND COLLABORATORS

- Ministry of Health, Community Development, Gender, Elderly, and Children
- National Public Health Laboratory
- Medical Stores Department
- National Antimicrobial Surveillance and Research Technical Working Group
- Pharmaceutical Service Unit
- Tanzania Posts Corporation

### GLOBAL PARTNERS

- USAID-funded MTaPS Project
- American Society for Microbiology

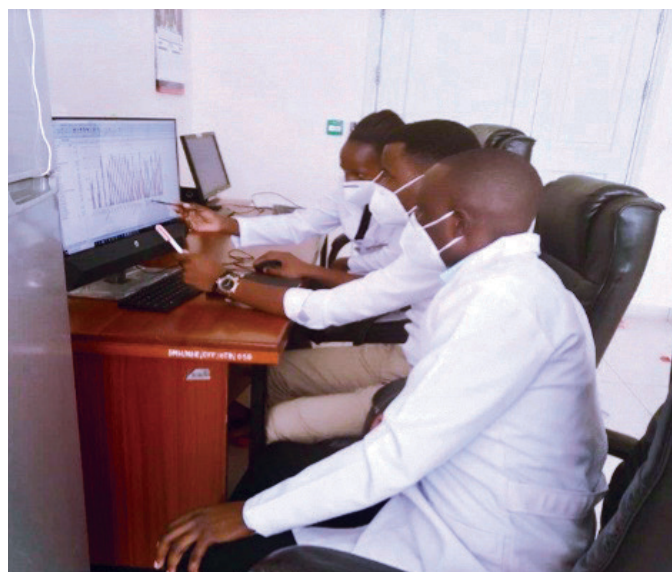
- Strengthened AMR surveillance in the country by increasing linkages and collaboration among AMR surveillance stakeholders through AMR data quality review meetings and sensitization on the National AMR Surveillance Framework.
- Improved clinician prescribing practices by strengthening the capacity of four AMR sentinel sites to collect, analyze, and interpret AMR surveillance data through initiation of quarterly data reviews at each sentinel site.

### COVID-19 Diagnostics

- Strengthened COVID-19 health care worker capacity through support for the Ministry of Health, Community Development, Gender, Elderly, and Children for supportive supervision visits on COVID-19 collection, handling, and shipment for 35 staff in Kigoma, Kagera, Tanga, and Kilimanjaro regions.
- Enhanced laboratory diagnostic capacity by equipping the NPHL with 10,000 microcentrifuge tubes and pipette tips, VTM, swabs, triple packaging and its outer carriage, biosafety materials, desktop computers, and printers to improve COVID-19 diagnosis.

### Challenges/Lessons Learned

- Inadequate staffing due to high turnover at regional facilities affected the quality of collected AMR data. IDDS implemented quarterly supportive supervision and an onsite mentorship program. Use of integrated digital tools as part of supportive supervision also enhanced a coordinated approach in AMR supportive supervision, saved time for facility staff, and improved the quality of reports from supportive supervision visits.

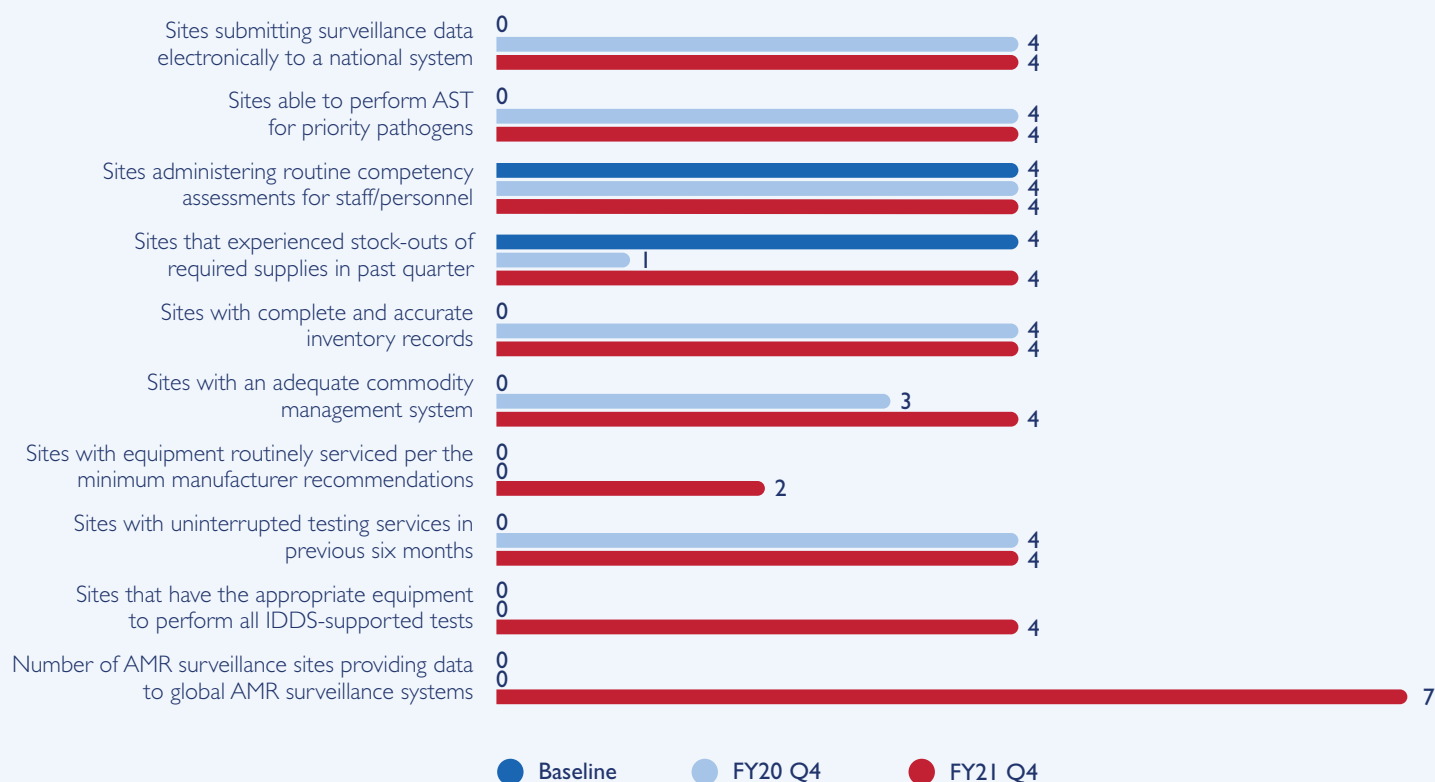


Laboratory staff at Benjamin Mkapa Hospital in Dodoma, Tanzania participating in AMR data management training. Photo by IDDS

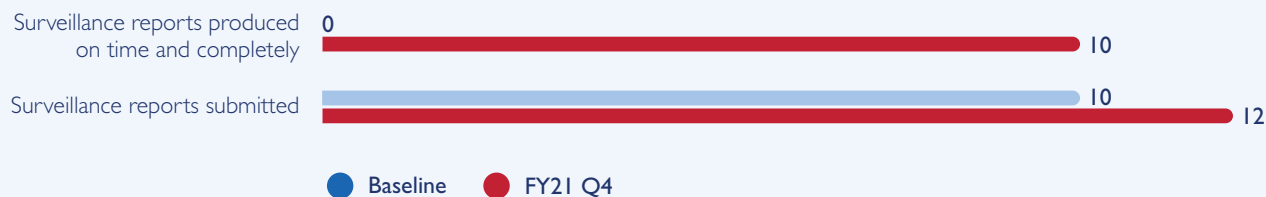


Oral swab training in Tanzania. Photo by IDDS

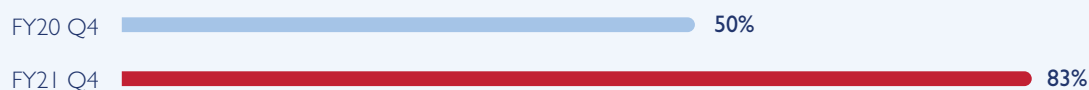
### IDDS GHS



### IDDS



### SPECIMENS TESTED WITHIN SPECIFIED TIMEFRAME





# TUBERCULOSIS

## ANNUAL HIGHLIGHTS

IDDS works to strengthen laboratory and surveillance. In FY 2021, IDDS focused on strengthening the national TB diagnostic network by providing technical and logistical support to the National TB and Leprosy Program for decentralization and implementation of annual activities, improving quality of TB testing, ensuring functionality of GXAlert, and conducting a diagnostic network assessment.

### Diagnostics

- Developed the country's first TB laboratory operation plan to guide implementation of TB activities, enhance decentralization by the National TB and Leprosy Program, and expand accreditation to include culture and LPA at zonal laboratories.
- Identified capacity gaps of the TB diagnostic network through a TB DNA that led to recommendations that will be operationalized to improve overall functioning of the network and meet goals and targets of the National TB Strategic Plan 2021–2025.
- Ensured expanded TB testing capacity by equipping the country with 180 GX modules to replace nonfunctioning ones and instituting a service-level agreement to ensure sustainable maintenance of the machines. The proportion of functional GX modules nationally increased from 79 percent to 95 percent between December 2019 and September 2021. The proportion of presumptive TB cases tested with a WHO-recommended rapid diagnostic tool increased from 55 to 59 percent nationally over the same period, and bacteriological diagnosis coverage increased from 51 to 70 percent.
- Supported efforts to connect GX machines across the country to a central GxAlert software solution by equipping the National Data Centre with a GxAlert server and initiating the process to equip GX machines with GxAlert routers. These actions improved the connectivity of GxAlert from 49 percent in December 2019 to 81 percent in September 2021. This connectivity enables improved monitoring of GX machine performance and GX inventory.
- Increased the number of TB GX sites participating in a quality assurance program from 84 to 220 between December 2019 and September 2021 through the procurement of EQA panels and implementation of the EQA program.

## BY THE NUMBERS

4



Supportive  
supervision visits  
conducted on QMS

2



TWG meetings held

## PARTNERS AND COLLABORATORS








- Ministry of Health, Community Development, Gender, Elderly and Children
- National Tuberculosis and Leprosy Program
- Central Tuberculosis Reference Laboratory

## GLOBAL PARTNERS

- System One
- USAID-funded Sustaining Technical and Analytical Resources Project



Conducting a TB DNA in Tanzania. Photo by IDDS

NATIONAL						
<b>59,778</b>	<b>453</b>	<b>66%</b>	<b>63%</b>	<b>N/A</b>	<b>80%</b>	<b>81%</b>
 TB Cases Notified	 Drug Resistant TB Cases Notified	 Bacteriological Diagnosis Coverage	 Rapid Diagnostic Testing Coverage	 Specimens tested within the nationally-specified target timeframe	 WRD testing sites that are included in QA program	 GenXpert sites that transmit data electronically to the national TB surveillance system
<b>2,655</b>	<b>177</b>	<b>93%</b>	<b>92%</b>	<b>85%</b>	<b>100%</b>	<b>100%</b>
IDDS SITE						



# THAILAND

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

In Thailand, IDDS has been working towards strengthening the leadership and collaborations within the Regional Public Health Laboratory (RPHL) Network. The RPHL Network took a leadership role in the region as a hub for public health coordination, collaboration, and information sharing.

#### Diagnostics

- Strengthened regional linkages and collaboration through support for the RPHL Network to lead the development of an inventory of regional diagnostic and laboratory experts who can provide technical assistance on emerging threats for member countries.
- Developed a transition plan to sustainably transfer management and coordination of the RPHL Network to ownership by member countries.

#### COVID-19 Diagnostics

- Strengthened health care worker diagnostic capacity through training for 18 cascade trainers on COVID-19 specimen packaging and transport for reference laboratories in Thailand and Malaysia.
- Strengthened coordination and implementation activities of the RPHL Network by support for a side meeting at the 6th Global Health Security Agenda Ministerial Meeting for 180 participants.
- Built COVID-19 diagnostic capacity by coordinating with the Department of Medical Sciences to equip laboratories with essential reagents and commodities, including PCR extraction and detection kits, to respond to the outbreak along Thailand-Burma border

### BY THE NUMBERS

**168**



Persons trained\*

**707**



Participants attended an RPHL event

**6**



Videoconference sessions held

**6**



Training sessions held

**10**



New connections made

**564**



Document downloads from the RPHL website

**15**



Documents uploaded to RPHL website

\* 150 trained through RPHL Network, 18 trained in COVID-19 specimen handling

### PARTNERS AND COLLABORATORS

- Regional Public Health Laboratory Network
- Reference Laboratories in Thailand and Malaysia
- Department of Medical Sciences
- Centers for Disease Control Thailand



Dr. Opart Karnkawinpong, Director General of Thailand's Department of Disease Control, opening an online RPHL Network training. Photo by IDDS

## GLOBAL PARTNERS

- Regional Development Mission for Asia
- World Health Organization
- Association of Southeast Asian Nations
- Food and Agriculture Association
- World Organization for Animal Health
- Defense Threat Reduction Agency
- The Chair of GHS Action Package 3 (Biosafety & Biosecurity)
- Caribbean Public Health Agency
- Sandia National Laboratories



กรมวิทยาศาสตร์การแพทย์  
Department of Medical Sciences



# NETWORKING OF THE NETWORKS

RPHL NETWORK ANNUAL  
PARTNERSHIP FORUM

**7-8 DECEMBER 2021**

Hybrid Meeting  
Bangkok, Thailand



IDDS actively publicizes RPHL Network meetings to boost attendance. Photo by IDDS.





# UGANDA

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

In Uganda, IDDS works to improve the integration of diagnostic network components across human and animal health for priority zoonotic diseases by improving coordination, defining roles and responsibilities of each sector in testing and reporting, and strengthening diagnostic and surveillance capacity in the animal sector.

#### Diagnostics

- Developed tiered testing standards and algorithms for seven priority zoonotic diseases. The standards outline appropriate tests for animal and human sectors at each health system level and provide a framework for better integration of diagnostic network components across sectors.
- Developed a QMS toolkit for animal health laboratories and trained a pool of 12 national ISO 17025:2017 trainers. The trainers and IDDS then trained 15 staff from 7 animal laboratories and provided onsite mentorship on QMS at 4 of the laboratories.
- Conducted a gap analysis assessment of the national specimen referral system network to identify opportunities to integrate animal and human health specimen referral.

#### Surveillance

- Developed a data entry and analysis tool for improvements in the data entry process for animal health surveillance sites, and finalized the guidelines and tools developed previously with the Ministry of Agriculture, Animal Industry and Fisheries to support the electronic reporting of data and routine data quality assessments.
- Strengthened coordination and collaboration among stakeholders for joint data sharing and outbreak response through the development of a National Strategy for Coordinated Surveillance of Priority Zoonotic Diseases in Uganda 2021–2025, which provides a plan to streamline and coordinate surveillance of priority zoonotic disease across the human health, animal health, and environment sectors.

### BY THE NUMBERS

10



Laboratories supported

27



Persons trained on QMS

4



SOPs or guidelines developed

4



Data review meetings held

10



Supportive supervision visits conducted\*

35



Persons on QMS

10



TWG meetings held

\*10 for COVID-19 surveillance and 4 on QMS



Even regular work can bring you close to wild animals in Uganda. Photo by IDDS

## Challenges/Lessons Learned

- Several zoonotic disease outbreaks, including anthrax, Crimean Congo hemorrhagic fever, and Rift Valley fever, were competing priorities for government officials. IDDS engaged with officials to implement activities in a timely manner and offered technical inputs for the response to disease outbreaks, such as through the National Task Force and after review meetings, which built a strong working relationship with all stakeholders.

I thank IDDS for the technical and financial support. These guidelines and tools fill a critical gap identified in the performance of veterinary services assessment.

– DR. JOSEPH SSERUGGA

A Senior Veterinary Officer at MAAIF, during a validation meeting on data quality assessments for animal surveillance data.

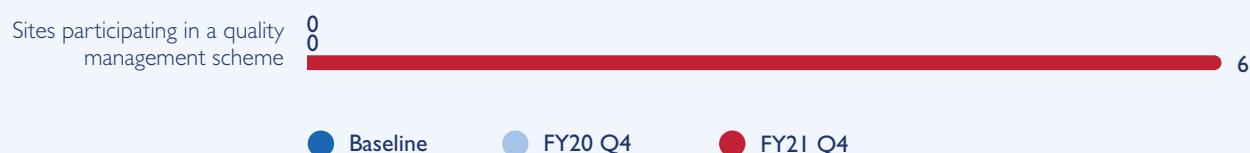
## PARTNERS AND COLLABORATORS

- Ministry of Health
- Ministry of Agriculture, Animal Industries, and Fisheries
- Ministry of Water and Environment
- National Animal Disease Diagnostics and Epidemiology Center
- Regional Animal Disease Diagnostics and Epidemiology Centers
- National Livestock Resources Research Institute
- Makerere University College of Veterinary Medicine, Animal Resources and Bio Security
- Uganda Wildlife Authority

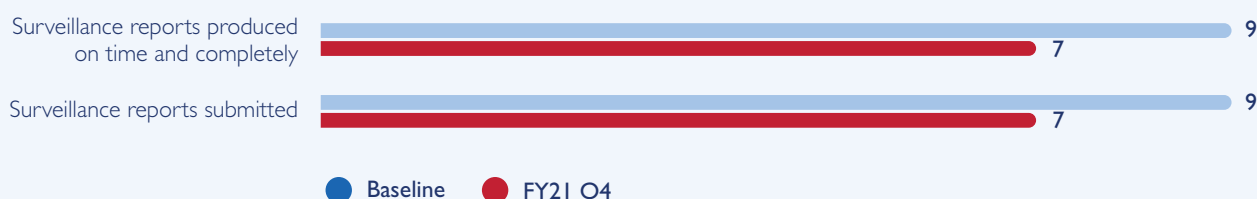
## GLOBAL PARTNERS

- Food and Agriculture Organization

### IDDS GHS



### IDDS





# VIETNAM

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

In Vietnam, IDDS works to strengthen specimen referral systems (SRS) in human and animal health by reinforcing JEE benchmark level-2 and level-3 actions and piloting an integrated SRS across both human and animal health. In addition, IDDS is using a One Health approach to improve early detection of public health threats through event-based surveillance at the community level.

#### Diagnostics

- Developed and piloted the first integrated human and animal specimen referral system in three provinces—Binh Dinh, Dong Thap, and Thai Nguyen—following an assessment of the existing network and design of the integrated specimen referral system, working with human and animal health agencies at national and subnational levels.
- Developed the National Guideline on Animal Specimen Collection, Packaging, and Transportation 2021, to improve the quality of diagnostic specimens, ensure timeliness, biosafety, and biosecurity, and enhance the overall performance of the diagnostic system.
- Strengthened workforce capacity on animal and human health specimen packaging, storage, and transportation by training 178 laboratory staff.

#### COVID-19 Diagnostics

- Built management capacity for the use of molecular tools to diagnose COVID-19 by developing an operational plan for the NTP and job aids for GX COVID-19 test kits.
- Strengthened the quality of COVID-19 testing through an EQA program, which established a COVID-19 retesting program and strategy.
- Improved laboratory diagnostic capacity for COVID-19 by equipping the NTP and other laboratories with specimen swabs and VTM, including for GX Xpress.

### BY THE NUMBERS

1,371



Persons trained\*

8



SOPs or guidelines developed\*\*

52



Persons mentored on electronic reporting

34



TWG meetings held

2



Data review meetings held

1



Assessment completed

\*1,227 trained in EBS, 114 in specimen referrals

\*\*7 SOPs on electronic reporting, 1 on specimen referrals

### PARTNERS AND COLLABORATORS

- Ministry of Health
- Pasteur Institute of Nha Trang
- Ministry of Agriculture and Rural Development
- Department of Animal Health
- Pasteur Institute of Ho Chi Minh City
- National Institute of Hygiene and Epidemiology
- Provincial Centers for Disease Control
- General Department of Preventive Medicine
- Department of Medical Services
- Department of Health Insurance
- Vietnam Post
- National Center for Veterinary Diagnosis

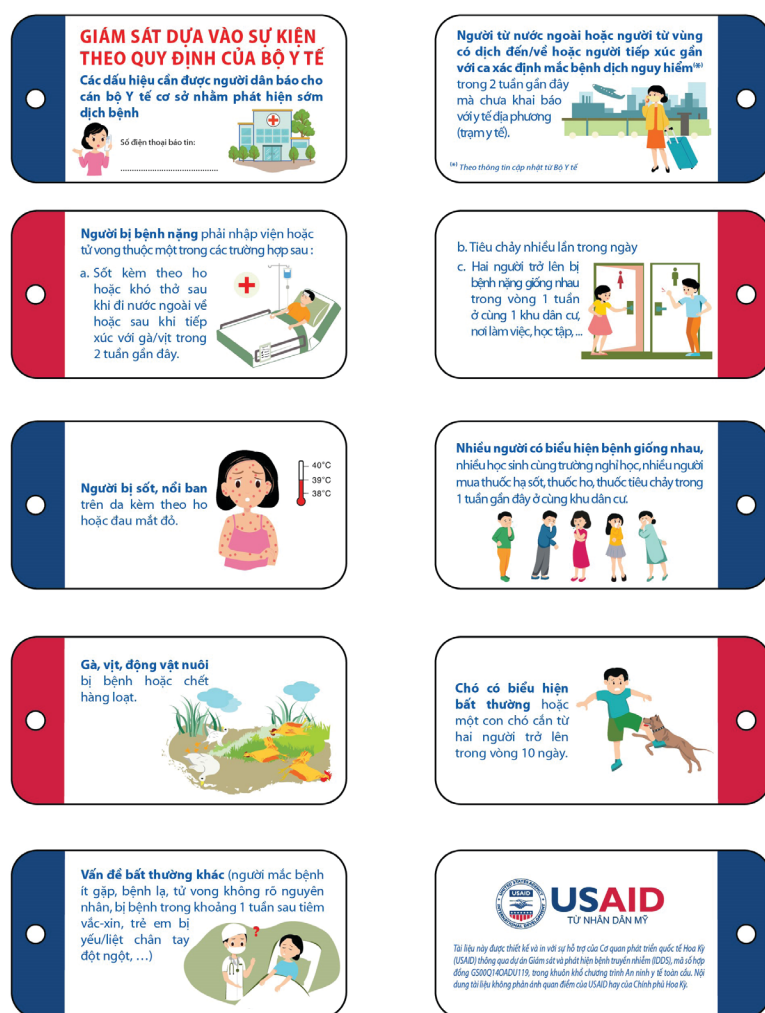
## Surveillance

- Built capacity on surveillance of animal disease outbreaks through conducting a situational analysis of the Vietnam Animal Health Information System at the subnational level and developing and implementing a pilot to improve overall reporting. As of September 2021, timely and complete reporting in the 5 pilot provinces was 80 percent, up from 0 percent in 2020.
- Supported implementation of One Health-focused EBS for the first time in 2 provinces by training 1,227 human and animal health staff and other community group representatives in the detection and reporting of adverse events and by designing and distributing EBS communication materials in communities. These

activities helped initiate operationalization of the National Guidelines for EBS Implementation 2018, and incorporated animal health signals for the first time. By September 2021, 19 districts were reporting CBS data in line with national guidelines, up from 0 at the start of the year.

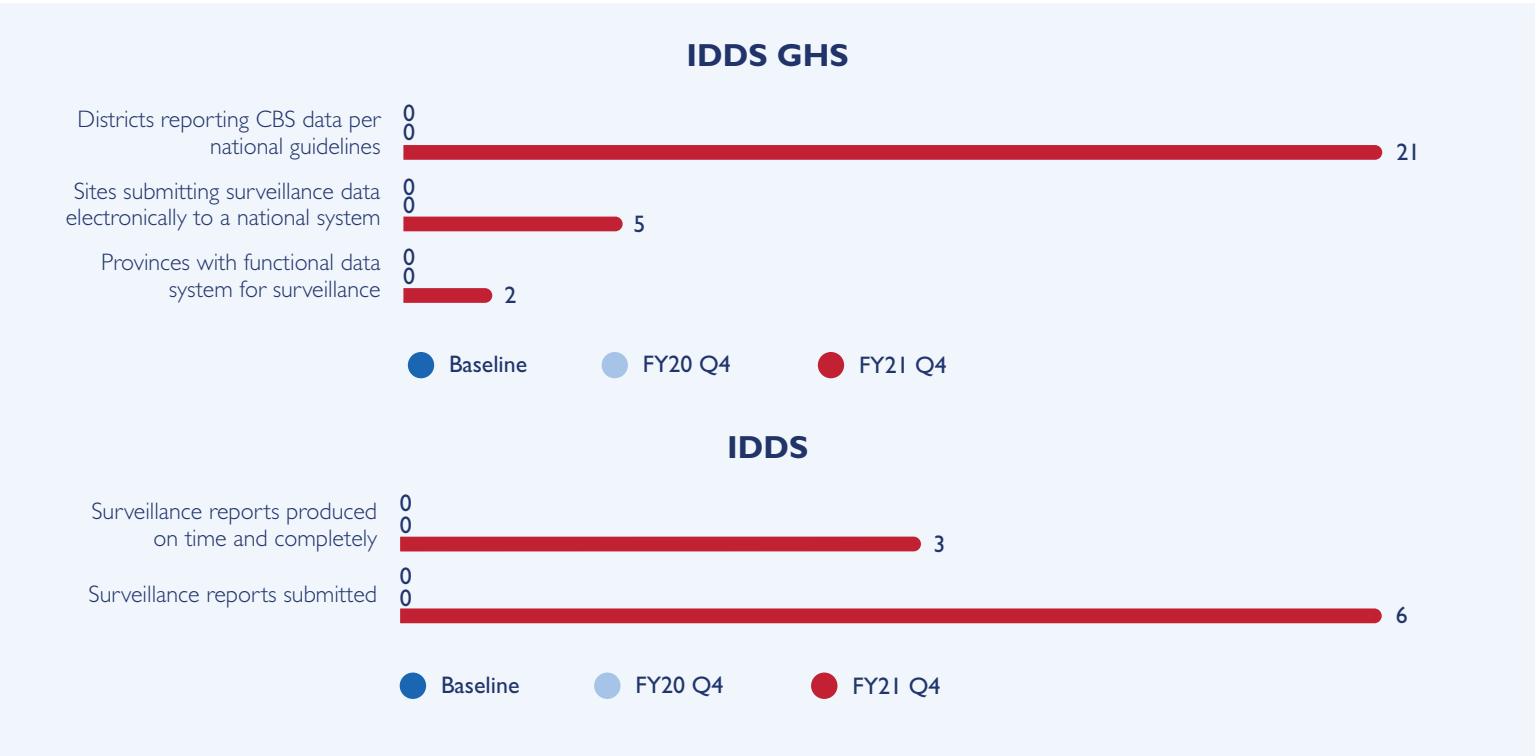
## Challenges/Lessons Learned

- An outbreak related to community transmission led to a change in testing commodity needs, which delayed the original procurement plan for COVID-19 commodities. IDDS coordinated with key stakeholders to revise the procurement plan and secure deliveries of commodities to hospitals where the needs were greatest.



EBS keychain cards for village health volunteers. Photo by IDDS





# TUBERCULOSIS

## ANNUAL HIGHLIGHTS

In Vietnam, IDDS works to improve the accuracy, timeliness, and availability of diagnostic testing at the national, provincial, and peripheral levels. IDDS supports Vietnam to reach its goal of replacing microscopy as the primary diagnostic tool by increasing the use of GX and molecular testing and introducing new diagnostics tools and services, including piloting innovative approaches for pediatric TB diagnostics.

### Diagnostics

- Assessed and identified gaps in the TB diagnostic network through the TB DNA to support the NTP to prioritize investments and activities that sustainably improve the quality and coverage of the TB diagnostic network.
- Strengthened the quality of TB diagnostic services at seven provincial laboratories by developing a comprehensive capacity strengthening and continuous improvement plan, following an assessment to understand staff capacities, equipment, and SOPs.
- Strengthened capacity to diagnose pediatric TB by introducing stool based GX to seven sites. IDDS supported planning, implemented a pilot in Nghe An province, and using results from the pilot, supported the NTP and NRL to scale up stool-based testing in three provinces. We trained 462 persons on implementation of stool-based testing.
- Improved quality TB diagnostic services by building TB laboratory safety capacity by adapting and translating safety procedures for Lab Safety Level 2 for national use and conducting training at subnational laboratories on SOPs and safe working practices for TB laboratories.
- Contributed to improving TB diagnostic coverage by providing analysis and strategic guidance to the NTP to plan and prioritize the placement of 38 Truenat machines.
- Enhanced the national TB and priority pathogen specimen referral network by developing digitized specimen referral network models to monitor specimen referrals, identify delays, and report status in real time, enabling decision-makers to troubleshoot and optimize the specimen referral network.
- Built national capacity for accurate patient-specific TB treatment and control by supporting the NTP to establish a TWG for whole genome sequencing using next generation sequencing technology and strengthening linkages among stakeholders.

## BY THE NUMBERS



Provinces supported



Persons trained\*



Persons mentored



SOPs or guidelines developed



TWG meetings held



Supportive supervision visits on QMS conducted



Pilots on new diagnostic tools conducted

\*462 on new diagnostic tools (stool-based GX testing), 79 on biosafety

## PARTNERS AND COLLABORATORS

- Ministry of Health
- Pasteur Institute of Nha Trang
- National Tuberculosis Program
- National Reference Laboratory
- Pham Hgoc Hospital
- Da Nang Lung and TB Hospital
- Centers for Disease Control Vietnam
- Vietnam Administration of Medical Services

## GLOBAL PARTNERS

- World Health Organization
- KNCV Foundation
- Foundation for Innovative New Diagnostics

- Improved workforce capacity to understand and accurately treat TB diagnosis through implementation of an operational research protocol to analyze “trace” results for 400 patient results collected by 15 GX laboratories.

Challenges/Lessons Learned







- Action planning after assessments conducted by key stakeholders increases relevancy, effectiveness, readiness, and ownership of the implementation plan. Piloting a new activity prior to scale-up is vital and enhances implementation as feedback can be incorporated. This is key for national scale-up.

Good Practices in TB Laboratory’ training is a very useful training with many practical techniques and experiences. We can apply what we have learned in this training into our routine work in the lab. Thank you, NRL, and IDDS for organizing this interactive training with a lot of effort and knowledge.

– PARTICIPANT  
Good practices in TB Laboratory’ Training

Thank you, IDDS for supporting NRL/ NTP in establishing and organizing the training for TB laboratorians. This is the first time we convey the practical training materials in a very interactive method virtually. We have learned a lot from the process of preparing the training materials and organizing the training in the past 2 days. We hope that we can do many other trainings like this one in the future to help laboratorians around the country in updating their knowledge and practical experiences.

– DR. HA  
Vice Head of Microbiology Department, National Lung Hospital

NATIONAL					
73,041	1,830	60%	16%	N/A	94%
					
TB Cases Notified	Drug Resistant TB Cases Notified	Bacteriological Diagnosis Coverage	Rapid Diagnostic Testing Coverage	Specimens tested within the nationally-specified target timeframe	WRD testing sites that are included in QA program
14,576	279	70%	16%	100%	100%
IDDS SITE					



# ZIMBABWE

## TUBERCULOSIS

### ANNUAL HIGHLIGHTS

In recent years, there has been a decrease in TB case notification, which was exacerbated by the advent of COVID-19. IDDS supports the NTP to strengthen the TB diagnostic network at the central and provincial levels to increase detection and expand patient services for TB and MDR-TB cases.

#### Diagnostics

- Built national governance capacity for novel TB diagnostic tools by developing a GX Multiplexing Guide that outlines the testing of different specimens (TB, EID-VL, and SARS-COV-2 samples) on the GX platform and provides clear instructions on specimen prioritization, staffing, quality assurance, and budgeting across programs.
- Improved the quality of TB diagnostic services by revising the TB Diagnostic Network Supportive Supervision Checklist, which provides stakeholders with insights on how to target technical assistance, and by developing the TB Diagnostic Network Supportive Supervision Guide, which ensures a standardized approach to supervision. Trained 27 individuals to use these supervision tools.
- Strengthened the provision of quality TB diagnostic services through support for the Bulawayo NTRL to develop a quality improvement framework.
- Revised the national TB/MDR-TB algorithm to incorporate all testing platforms in line with the latest international guidelines and provided sensitization training to 21 persons on the algorithm.
- Built national capacity for management and coordination of the TB diagnostic network by establishing the TB Diagnostic Network TWG.
- Strengthened the health information system for TB by enrolling 11 GX machines onto the GxAlert platform to enable real-time information sharing with clinicians. The number of MTB/Rif Ultra results transmitted through the GxAlert platform has increased from 55,614 between July 2019 and June 2020 (prior to the IDDS project in Zimbabwe) to 69,306 between July 2020 and June 2021.

### BY THE NUMBERS

71



Persons trained\*

6



SOPs or guidelines developed

112



Supportive supervision visits conducted\*\*

1



TWG meeting held

\*21 trained on TB algorithm, 27 on laboratory supervision guide and checklist, 23 on GxAlert

\*\*71 visits for QMS and 41 for GxAlert connectivity

### PARTNERS AND COLLABORATORS

- Ministry of Health and Child Care
- National Tuberculosis Control Program
- Directorate of Laboratory Services
- National Tuberculosis Reference Laboratory

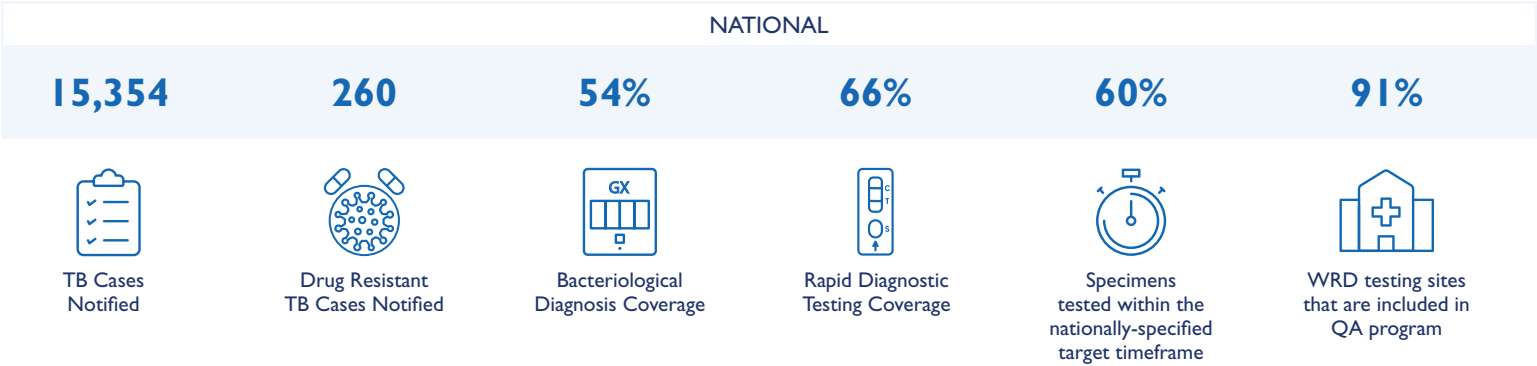
### GLOBAL PARTNERS

- System One



Mentorship session at the National TB Reference Laboratory in Bulawayo, Zimbabwe. Photo by IDDS





# CORE TB

## TUBERCULOSIS

### ANNUAL HIGHLIGHTS

IDDS supports Core TB activities in eight countries (Bangladesh, Burma, Cambodia, DRC, India, Tanzania, Vietnam, and Zimbabwe) and anticipates activities to continue in those countries, with new activities planned in Malawi, Mozambique, Pakistan, Uganda, and Ukraine.<sup>2</sup>

#### Diagnostics

- Strengthened NTP governance for the TB diagnostic network in Bangladesh through a spatial analysis of the rapid molecular diagnostic network. Results confirmed that the 425 GX facilities selected would indeed improve TB diagnostic coverage when prioritized areas received Truenat machines, obtained through the Stop TB Partnership's USAID-funded Introducing New Tools project.
- Assessed and analyzed findings on the TB diagnostic network in Vietnam through the TB DNA to support the NTP to prioritize investments and activities that sustainably improve quality and coverage of the TB diagnostic network and identify candidate facilities for Truenat replacements based on accessibility and expected demand.
- Restored rapid molecular testing capacity of the diagnostic system in Tanzania through the purchase of 180 GX machines, which equated to 10 percent of the total capacity in the country.
- Restored functionality of DRC's TB diagnostic network by refurbishing the NTRL in Kinshasa, which is responsible for testing and confirming all presumptive drug-resistant samples.
- Hosted virtual satellite session, "TB Diagnostic Network Assessment: innovative and comprehensive TB diagnostic network assessment model," at 51st World Lung Health Conference with speakers from USAID and the Uganda Supra-National TB Reference Laboratory.
- Strengthened global governance for TB programs by translating the TB-NET tool and manual into French for use in French-speaking countries and Truenat training materials into French and Vietnamese.

### BY THE NUMBERS

214



Persons trained\*

1



SOPs or guidelines developed

10



Supportive supervision visits

1



TWG meeting held

6



Assessments completed

\*198 on Truenat; 16 on TB DNA

### PARTNERS AND COLLABORATORS

- National Tuberculosis Programs in Bangladesh, Burma, Cambodia, DRC, India, Kenya, Nigeria, the Philippines, Tanzania, Uganda, Vietnam, Zambia, and Zimbabwe

### GLOBAL PARTNERS

- Stop TB Partnership
- USAID-funded iNTP Project
- System One
- Centers for Disease Control and Prevention

<sup>2</sup>This FY 2022 Annual Work Plan covers the eight countries in which operation unit work plans have been approved as of the start of FY 2022. IDDS anticipates approval and start-up in Malawi, Mozambique, Pakistan, Uganda, and Ukraine, with an expansion planned in Cambodia in FY 2022.

### Challenges/Lessons Learned

- In Tanzania, 10 percent of the GX testing capacity was unavailable due to broken equipment. IDDS, with USAID support, purchased and installed replacement parts.



TB DNA in Tanzania. Photo by IDDS

# INTEGRATED DISEASE SURVEILLANCE AND RESPONSE

## GLOBAL HEALTH SECURITY

### ANNUAL HIGHLIGHTS

Through the IDSR funding stream, IDDS supported Ministries of Health in two countries (Cameroon and Senegal) to roll out trainings to key national and subnational surveillance staff on the updated third edition of the IDSR Guidelines.

#### Surveillance

- Built national surveillance capacity to rapidly respond to infectious disease outbreaks in Cameroon by cascade training of 34 surveillance staff from the national and regional levels on the third edition of the IDSR guidelines. Cameroon can now support training at the subnational level to ensure that all surveillance reporting is aligned to national guidelines and up to international standards.

#### Challenges/Lessons Learned

- The IDDS HQ team developed standard follow-up questions to assess the utility of the IDSR guidelines training that could be rolled out in either paper or electronic form. Electronic reporting of findings made the process easier and faster for training participants to provide their feedback and standardize feedback across countries for improved comparability.

### BY THE NUMBERS

34



Persons trained  
in IDSR in  
Cameroon

7



Technical meetings  
attended\*

\*3 in Cameroon, 4 in Senegal

### PARTNERS AND COLLABORATORS

- Ministry of Health in Cameroon and Senegal
- Regional health information office in Cameroon

### GLOBAL PARTNERS

- World Health Organization
- Centers for Disease Control and Prevention



AMR training in Cameroon. Photo by IDDS



## LIST OF ABBREVIATIONS

<b>AMR</b>	Antimicrobial Resistance	<b>ISO</b>	International Organization for Standardization
<b>AST</b>	Antimicrobial Susceptibility Testing	<b>LMICs</b>	Low- and Middle-income Countries
<b>CBS</b>	Community-based Surveillance	<b>LNSP</b>	National Public Health Laboratory
<b>CDW</b>	Central Data Warehouse	<b>LPA</b>	Line Probe Assay
<b>COVID-19</b>	Coronavirus Disease 2019	<b>MDR</b>	Multi-drug Resistant
<b>DHIS2</b>	District Health Information Software, Version 2	<b>MOH</b>	Ministry of Health
<b>DNA</b>	Diagnostic Network Assessment	<b>NPHL</b>	National Public Health Laboratory
<b>DRC</b>	Democratic Republic of the Congo	<b>NRL</b>	National Reference Laboratory
<b>DST</b>	Drug Susceptibility Testing	<b>NTP</b>	National Tuberculosis Program
<b>EBS</b>	Event-based Surveillance	<b>NTRL</b>	National Tuberculosis Reference Laboratory
<b>EID</b>	Emerging Infectious Disease	<b>PCR</b>	Polymerase Chain Reaction
<b>eLMIS</b>	Electronic Laboratory Management Information System	<b>QMS</b>	Quality Management System
<b>EQA</b>	External Quality Assurance	<b>RDT</b>	Rapid Diagnostic Test
<b>EVD</b>	Ebola Virus Disease	<b>RPHL</b>	Regional Public Health Laboratory
<b>GHS</b>	Global Health Security	<b>RTRL</b>	Regional Tuberculosis Reference Laboratory
<b>GLASS</b>	Global Antimicrobial Resistance Surveillance System	<b>SIZE</b>	<i>Sistem Informasi Zoonoses dan Emerging Infectious Diseases</i>
<b>GX</b>	GeneXpert	<b>SLMTA</b>	Strengthening Laboratory Management Toward Accreditation
<b>FY</b>	Fiscal Year	<b>SOP</b>	Standard Operating Procedure
<b>IDSR</b>	Integrated Disease Surveillance and Response	<b>TB</b>	Tuberculosis
<b>INRB</b>	<i>Institut National pour la Recherche Biomedicale</i> (National Biomedical Research Institute)	<b>TWG</b>	Technical Working Group
<b>IRL</b>	Intermediate Reference Laboratory	<b>VTM</b>	Viral Transport Media
		<b>WHO</b>	World Health Organization



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