



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



**ANNUAL REPORT  
FISCAL YEAR 2021**

**TUBERCULOSIS SUPPLEMENT**

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## ABOUT IDDS

The Infectious Disease Detection and Surveillance (IDDS) project is USAID's flagship initiative to strengthen the ability of health systems in sub-Saharan Africa and Asia to quickly detect and stop the spread of infectious diseases and drug-resistant pathogens. A primary focus of the project is to develop the capacity of laboratories in our more than 20 partner countries to provide safe, timely, and accurate diagnostic testing. We also collaborate with partner countries to set up disease surveillance systems that can effectively record cases and quickly analyze and report data—so health officials and other key decision makers have the information they need to take action and help make the world safer for us all.

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## WHY TB

IDDS prioritizes diagnostic testing for diseases and drug-resistant pathogens that have the potential to spread quickly, devastate public health, disrupt economies, and threaten social and political stability. Tuberculosis (TB) is a major focus for IDDS as it remains one of the world's leading infectious disease killers. Globally TB continues to kill more people each year than HIV and malaria combined, and it is among the top 10 causes of death in Africa and Asia. Drug-resistant forms of TB, which include multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB), are a major public health challenge because they are more deadly, and more difficult and expensive, to diagnose and treat.

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# DELIVERING RESULTS FOR TUBERCULOSIS CONTROL

IDDS safely and successfully continued its work in FY 2021 to strengthen the ability of health systems to quickly detect and track Tuberculosis (TB)—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

Availability of a laboratory workforce skilled in TB diagnostics is a major constraint to many countries seeking TB control. Through USAID investments, IDDS is enhancing existing TB laboratory workforce through training, mentoring, and supportive supervision to improve the quality of TB testing. We tailor training to local contexts and ensure that best practices and technologies in TB diagnostics are adopted. 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 allow for the increase in efficiency and lifespan of equipment, which is essential for the country. To mentor staff and improve quality of their work, we embedded three IDDS diagnostic specialists at the National and two Regional Tuberculosis Reference Laboratories in **Bangladesh**. We also 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 over one month to under 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.

## 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 TB diagnostic 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. 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**.

## 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.

## 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			●		●	●			●

\*1 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.

### TRACK: Improving Information Systems in Support of TB Control

A real-time monitoring and information system that models, analyzes, and shares data to inform critical decisions is crucial for national TB programs. Access to data allows countries to prepare a measured, non-resource intensive response to varying rates of TB across regions. USAID investments are helping IDDS improve TB information management systems, improve connectivity, and real-time decision-making, and facilitate data sharing across government sectors and stakeholders. A key component of our efforts is connecting GeneXpert machines to broader information networks in countries to allow them to monitor the spread of TB and act to prevent or contain the spread.



## 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, to larger networks that allow countries to manage testing machines remotely and share real-time information with clinicians. In **Tanzania**, IDDS built capacity for monitoring and managing GeneXpert machines remotely by equipping the National Data Centre with a GxAlert server and initiating processes to equip GeneXpert machines with GxAlert routers. These actions facilitated GeneXpert inventory, management, and use and allowed GeneXpert machines to be connected 89 percent of the time in December 2020, compared to 49 percent the previous year. In **Zimbabwe**, IDDS enrolled 11 GeneXpert 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.

## EQUIPPING LABORATORIES TO RESPOND

IDDS is strengthening laboratory networks to improve availability and access to diagnostic tools and supplies to enable quick and efficient response to acute needs. As a trusted partner for USAID for the American Rescue Plan Act, IDDS efforts in equipping laboratories with 62,110 GeneXpert 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 GeneXpert sites for TB and Rifampicin-resistance testing by procuring GeneXpert accessories such as printers and voltage stabilizers, and in **Tanzania**, built continuous TB testing capacity by equipping the country with 180 GeneXpert 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**.

## RESPOND: Equipping Laboratories to Bolster TB Control Programs

USAID investments through IDDS strengthen diagnostic networks to enable response to major public health emergencies. Working closely with government counterparts, IDDS experts provided strategic advice and technical assistance on how to implement emergency response programs with an eye to strengthening future diagnostic networks for TB. We harnessed existing investments in TB testing such as in point-of-care diagnostic equipment and supplies to overcome the acute challenges of responding to the COVID-19 pandemic. IDDS efforts have also more broadly targeted TB control and response diagnostic networks. We equipped laboratories with needed diagnostic equipment, ensured that equipment in laboratories are functional and necessary supplies are available and provided targeted infrastructure improvements. We also helped to introduce the latest TB diagnostic technology and established systems for ensuring quality and safety.

## BUILDING HIGH QUALITY LABORATORY TESTING CAPACITY

USAID investments through IDDS are improving the capacity and quality of TB diagnostic services with state-of-the-art testing equipment and implementation of quality management approaches for TB testing. We improved infrastructure and provided point-of-care molecular diagnostic machines, tools, and essential supplies to prepare regional and national laboratories to detect TB. For example, 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

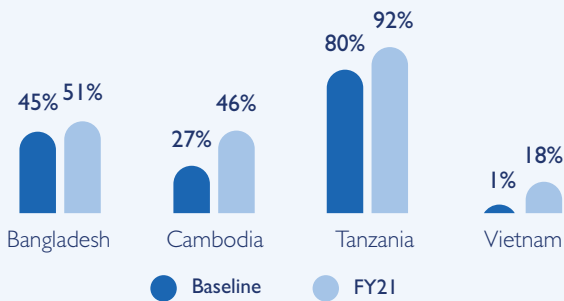
provided in-service training for staff in these units. We strengthened the quality of TB services in seven provincial laboratories in **Vietnam** by developing a capacity strengthening and continuous improvement plan and by adapting and translating Lab Safety Level 2 procedures for national use and training 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.

**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 TB diagnostic network, effective. IDDS builds resilient capacity in countries to localize the response to TB. We bring together the various multisectoral actors by fostering enduring partnerships to enable sustainable TB detection. IDDS breaks down barriers by networking actors through regional learning and technical assistance.

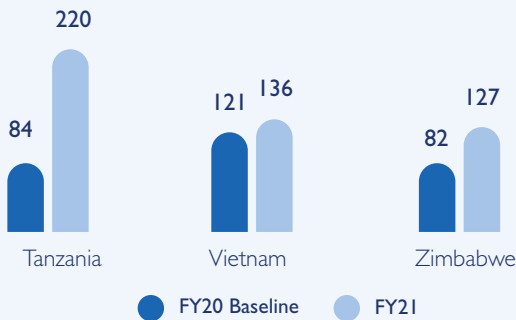
**IMPROVED TB DIAGNOSTICS**

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



**LEVERAGING PARTNERSHIPS**

Strengthening laboratory systems for TB control is a cross-cutting and complex endeavor, dependent on partnerships beyond laboratories and among clinicians, health care managers across the health system, policymakers, researchers, private sector laboratories, and clinical research organizations. IDDS connects these varied actors by working with regional networks, national coordination committees, and task forces, that are mandated to improve TB testing and surveillance. These strategic exchanges bring forth new ideas, resources, and learning, which IDDS leverages to maximize impact in the countries where it operates. In **Zimbabwe**, IDDS facilitated the establishment of a TB diagnostic network technical working group, in **Tanzania**, we continued support for the TB Laboratory Technical Working Group, and in **Vietnam**, we enabled the setting up of 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 facilitated the convening of TB sector stakeholders and mobilized for the development of numerous policies and strategy documents in countries that it operated.

## GOVERN: Enhancing Country Capacity to Lead, Manage, and Own TB Control Programs

An effective TB control 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 to counter the TB epidemic 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 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, harmonize laboratory practices so that collected data can inform decision-making during critical moments.

## REINFORCING LEADERSHIP

IDDS works with governments to strengthen abilities to manage and lead laboratories to carry out world-class TB testing. IDDS is building country capacity to govern TB control programs by supporting the creation of national strategic plans and coordination systems across the diagnostic and surveillance system. 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**. In addition to these contributions to national policies, IDDS provided thought leadership and technical assistance to numerous TB diagnostic task forces, coordinating bodies, and working groups to instill best practices in leadership for TB.

## WORKING AT SUB-NATIONAL LEVELS

IDDS enhances leadership on the frontlines, where TB case detection first takes place. By working directly with district and regional officials and laboratory managers to strengthen management and coordination, IDDS ensures that capacity exists to operationalize national policies at the local level and that testing for suspected TB cases is done in a timely and high-quality manner. 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. Our work standardizes 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 TB control and response.

## 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 laboratories have available to them across country TB programs. We assessed TB diagnostic capacity by implementing TB Diagnostic Network Assessments in **Burma**, **Tanzania**, and **Vietnam**, the results of which will help respective national TB programs to 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**.