Annex B. Success Stories, FY 2023 QI

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Successful Training of Trainers on Laboratory Skills Conducted by IDDS in The Democratic Republic of The Congo



The Democratic Republic of the Congo (DRC) is a challenging environment for infectious disease detection and surveillance. Years of civil unrest and a lack of funding have undermined a fragile health system in a country that is vulnerable to outbreaks of dangerous zoonotic diseases (those that can jump from animals to humans) like Ebola.

<u>USAID's Infectious Disease Detection and Surveillance (IDDS) project</u>, which started work in the DRC in 2020, ran a laboratory mapping exercise to identify the biggest issues facing public health laboratories in the eastern part of the country. The most important shortcomings included defective facilities and limited space, lack of laboratory equipment maintenance, inadequate specimen management, and a lack of tools or guidelines on biosafety and biosecurity for laboratories. These findings have been included in the DRC Ministry of Public Health's national strategic plan for the development of health laboratory services.

Six months after the laboratory mapping exercise, a training program by IDDS has made strong progress in addressing a number of these challenges. After a recent training of laboratory technicians, test scores on laboratory skills, including biosafety and biosecurity, rose by 29 percentage points.

IDDS is collaborating with the Directorate of Health Laboratories (part of the Ministry of Public



Three training of trainers workshops were held. Photo by IDDS

Health) to build the skills of laboratory staff and develop policy and training materials and tools. Three training of trainers (TOT) workshops were held in the IDDSsupported provinces in eastern DRC (North Kivu, South Kivu, and Maniema), covering biosafety/biosecurity and specimen collection, preservation, and transportation. TOTs are sessions in which those who are trained are equipped to pass on their skills to others.

The TOT workshops were arranged in different places and trained a total of 44 participants (7 female). The average score of the pretests was 51.2 percent. This low score confirmed the laboratory mapping findings. The training facilitators then adapted the training methodology focused on identifying the participants' profiles, adapting the modules to the audience through question-and-answer sessions, dividing the audience into small working groups, as well as arranging multiple practical exercises, individual and group presentations, and group discussions.

Each training group improved its presentation skills and its overall knowledge, and the average post-test score increased to 80.2 percent. This increase of 29 percentage points demonstrated the effectiveness of the methodology and strategies used during the training.



The TOT led to the establishment of a pool of provincial trainers who will in turn train other colleagues in their workplace. The knowledge and skills that were reinforced during the sessions spanned the topics of specimen management, specimen referral systems, and biosafety/biosecurity. Another anticipated benefit of the training sessions is a significant positive impact on the protection of laboratory staff and their work environment during future infectious disease outbreaks.

These key factors significantly contributed to the successful conduct of the TOTs:

- Appropriate identification of training needs
- Correct selection of participants
- Involvement of qualified and experienced facilitators
- Appropriate development and adaptation of training materials and tools
- Use of effective methodology and training strategies

IDDS Convenes Experts to Draft India's National Action Plan on Antimicrobial Resistance for Professional Associations and Civil Society Organizations

Antimicrobial resistance (AMR) occurs when bacteria, viruses, and other microbes mutate and no longer respond to medicines, making infections more difficult to treat and increasing the risk of disease transmission, illness, and death. A <u>recent analysis in The Lancet</u> estimated global deaths from antibiotic-resistant bacterial infections at 1.3 million in 2019.

India's National Action Plan on AMR (2017–2021) (NAP-AMR) has ended, and it is important to understand the plan's achievements, gaps, challenges, and lessons learned to continue progress against AMR. To do this, the National Center for Disease Control (the lead agency for AMR under the Ministry of Health and Family Welfare), other government agencies, and the World Health Organization, together with <u>USAID's Infectious Disease Detection and Surveillance</u> (IDDS) project, are holding a series of cross-sector meetings to understand the status of the implementation of the NAP-AMR.

The third consultation of experts from professional associations and civil society organizations was organized in New Delhi, on December 15–16, 2022. The goal of the meeting was to obtain information on the correct use of antimicrobial medications across the country and to understand the possible role of professional associations and civil society organizations in influencing their use. Around 60 experts from the country attended the meeting, representing organizations across both the human and animal health sectors.

Intensive group work by experts involved the identification of gaps and challenges of the NAP-AMR, collating strategic inputs for the development of NAP-AMR 2.0 (2023–2027), designing a draft operational plan, and developing a monitoring and evaluation framework for the strategic priorities. These steps will be instrumental in developing a comprehensive and feasible NAP-AMR 2.0 and contribute toward addressing the challenge of AMR in India and beyond.

Dr. Sujeet Kumar Singh, former director and principal advisor with the National Center for Disease Control, stated that the professional associations have a unique public-private partnership model that can bring the best from all parts of the country in mitigating AMR. Expertise available within the professional associations can be harnessed for strengthening the rational use of antibiotics. Further, AMR containment, as a multisectoral task, requires engagement of all stakeholders and hence, Dr. Singh commended the organization of this consultation in which various experts contributed their vision for developing a practical and efficient NAP-AMR 2.0.

Among the dignitaries who attended the expert consultation were Dr. Singh, Ms. Sangita Patel, and Dr. Umesh Alavadi from USAID India; Ms. Payden, deputy World Health Organization representative India; and Dr. Daniel Vanderende from the U.S. Centers for Disease Control and Prevention.



Dignitaries and experts attending the National Consultation for Developing the NAP AMR 2.0 for Professional Associations and Civil Society Organizations in New Delhi, December 15-16, 2022. Photo by IDDS



Dr. Sanjeev Saini, IDDS team lead in India, delivering the vote of thanks in the meeting. Photo by IDDS

Indonesia Prepares to Face Future Epidemics by Institutionalizing a "One Health" Approach

Indonesia is one of Asia's hotspots for emerging infectious diseases (EIDs) that can jump from animals to humans. Epidemics of zoonotic diseases have become more frequent and spread more quickly than ever, with devastating health, social, and economic consequences. In recognition of this growing problem, in 2019, Indonesia issued a presidential instruction, which set in motion a government-wide initiative to better prepare for and respond to potential pandemics.

<u>USAID's Infectious Disease Detection and Surveillance (IDDS) project</u> is helping the country build a strong integrated surveillance system, complete with laboratory capacity, information systems, and well-trained staff to prevent, detect, and quickly respond to outbreaks using the <u>One Health</u> approach. One Health is a collaborative, multisectoral approach that recognizes the health impacts of the connections between humans, animals, and their shared environment.

In 2020, IDDS supported the Government of Indonesia to establish the One Health Coordination Working Group, which supports the government in handling EIDs through crosssectoral collaboration and coordination nationally and locally. The working group consists of three sub-working groups: the One Health Laboratory Network, Integrated Surveillance, and the Zoonosis and EID Information System (SIZE). In 2021, the One Health Coordination Working Group was formally legalized under the Deputy Decree of the Coordinating Minister.

Animal Health, Human Health, and the Environment

IDDS also supported the government in developing the Crosssectoral Integrated Surveillance Guideline, the Revitalization Four-Way Linking (4WL) Guideline, and the National SIZE Roadmap (which became annexes of the Regulation of the Coordinating Minister). In 2022, the pilot implementation of the joint risk assessment (JRA), using the 4WL framework and the Cross-sectoral Integrated Surveillance Guideline, was carried out at the district level, with a focus on controlling the high number of cases of leptospirosis, a disease that is worsened during the rainy season when water becomes contaminated with *Leptospira* bacteria. Agricultural workers are at higher risk of contracting the disease, and its prevalence



Specimen collection for cross-sectoral integrated surveillance. Photo by IDDS

among humans, livestock, and ruminants may be severely underestimated in Indonesia.

The pilot included all stakeholders, including human health, animal health, and wildlife/environment health professionals from central and local government, as well as international partners: the World Health Organization, the Food and Agriculture Organization of the United Nations, and the Australia Indonesia Health Security Partnership. The JRA-4WL

revealed a high risk of leptospirosis in Demak district and found sporadic increases in both human and livestock disease cases. The preliminary findings have been presented to the head of local government, along with the following recommendations:

- Strengthen existing programs by adding educational content on leptospirosis prevention
- Improve infrastructure, such as laboratory equipment and reporting tools
- Conduct risk communication, such as socialization, involving local champions and local people

IDDS expects to expand the implementation of the JRA-4WL and Cross-sectoral Integrated Surveillance to other priority zoonosis and other regions in Indonesia in 2023.

Preventing and Detecting Outbreaks



To increase laboratory capacity to detect new EIDs with epidemic potential, IDDS developed the PREDICT laboratory protocol curriculum, in collaboration with the Eijkman Institute for Molecular Biology. The certified training on PREDICT has been successfully carried out at four public health laboratories (BTKLPP Manado, Ambon, Makassar, and Batam). After participating in this training, 20 public health laboratory officers were certified by the Human Resources Training Center, Ministry of Health. Laboratory test results from the pilot were reported in SIZE to be circulated and responded to by provincial and central levels, showing the improvement of Indonesia's capacity to prevent and respond to future outbreaks.

Information technology is another key area for preventing and detecting outbreaks of infectious diseases. IDDS supports the government to develop, operationalize, and optimize the SIZE information system, which integrates human and animal disease data from across Indonesia. In 2019, SIZE was piloted to detect rabies in four provinces (North Sulawesi, West Kalimantan, Riau, and Central Java), supported by the Food and Agriculture Organization of the United

Nations. To accelerate the implementation of SIZE, IDDS supported the government to conduct training sessions, including One Health training in Karawang, West Java, which will be followed by the upcoming SIZE on-site technical training on priority zoonoses. It will be targeted to four additional provinces (North Sumatera, West Sumatera, Banten, and West Nusa Tenggara) that expect to implement



SIZE in the future. Meanwhile, the improvement of SIZE to be interoperable and integrated with human, animal, and wildlife information systems as well as to cover more priority zoonoses is ongoing to ensure that SIZE will be regularly updated and functional in Indonesia.

For more effective responses in Indonesia, we must first understand the epidemiology of zoonotic diseases and track their incidence and prevalence across sectors. Through international collaboration and investments, the Government of Indonesia has made substantial progress toward achieving an integrated disease information system, articulated its vision and roadmap toward integrated surveillance, and taken important steps toward training the health workforce and building capacity for preparedness and response, including within the agricultural sector. With zoonotic diseases an ever-present threat, the vision established at the G20 summit held in Indonesia in November 2022—to redouble efforts to strengthen national health systems and global health governance across sectors—is more important than ever.

<u>USAID's Infectious Disease Detection and Surveillance (IDDS) project</u> operates in more than 20 countries in Africa and Asia where there are significant gaps in health systems' ability to detect, track, and rapidly respond to infectious diseases and drug-resistant infections that pose a major threat to public health and global health security.

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IDDS-supported Laboratories in Tanzania: From Improving Antimicrobial Resistance Data Quantity and Quality to Presentation of Abstracts at a Scientific Symposium

Antimicrobial resistance (AMR) occurs when microbes evolve to resist the effects of antimicrobial medicines. In 2019, global deaths directly attributable to bacterial AMR were estimated at 1.27 million (<u>The Lancet</u>), and if little action is taken, this number could rise to 10 million by 2050.

AMR can arise anywhere, and weak health care systems in lower-income countries, particularly those with inadequate human resources for health at regional levels, have limited the detection and surveillance of AMR and the availability of data for decision-making at national levels. Up-to-date information on which bacteria are resistant to which drug is vital for treatment decisions.

Meeting the growing challenge of AMR is an important part of the work of <u>USAID's Infectious</u> <u>Disease Detection and Surveillance (IDDS) project</u>. In Tanzania, IDDS has been supporting the operationalization of the national AMR surveillance framework, which has identified 25 surveillance sites (typically hospital laboratories) to systematically collect, collate, and generate information that will mitigate the AMR and antimicrobial misuse in the country, in alignment with the National AMR Action Plan based on national needs and priorities. IDDS supports 4 of the 25 sites: Morogoro regional referral hospital in Morogoro region, Maweni regional referral hospital in Kigoma region, Temeke regional referral hospital in Dar es Salaam region, and Benjamin Mkapa Hospital in Dodoma region.

Limited training, staff turnover, and inadequate supplies and equipment not only limit the quality and volume of AMR data produced, but also reduce the confidence of laboratory staff to share AMR data generated at clinical and scientific meetings (compared with staff from academic and research institutions). IDDS supports building AMR detection and surveillance at the four sites with on-site mentorships, supportive supervision, and data quality reviews. This work is focused on support for AMR data generation, analysis, reporting, and presentation for all staff at the IDDS-supported sites.

In November 2022, three staff from the IDDS-supported sites in Kigoma, Morogoro, and Dodoma presented scientific abstracts at the National AMR Symposium, held in Dar es Salaam on November 22-23, 2022. The demonstrated progress in enhancing AMR data quality instilled confidence in these local staff to present data at a scientific symposium. More than 300 participants from regional hospitals and academic and research institutions at the national level attended the symposium. "It is a big milestone for subnational (regional referral hospitals) to be able to collect, analysis and present these data at this level," said Hassan Mrwanda, Maweni Regional Laboratory Manager.



Ms. Fides Njau, a laboratory technician from Morogoro regional referral hospital, one of the IDDS-supported sites, presenting AMR data at the National AMR Symposium in Dar es Salaam, Tanzania, November 22-23, 2022. Photo by IDDS

IDDS Maintains Momentum for Improving Tuberculosis Diagnosis in Uganda through Refresher Training and Onsite Supervision

Diagnosing tuberculosis (TB) accurately and quickly remains a challenge in many countries, including Uganda. <u>USAID's Infectious Disease Detection and Surveillance (IDDS) project</u> works to improve the diagnostic capacity of the laboratory network, expanding patient access to TB tests. In Uganda, IDDS installed 37 Truelab instruments—portable, battery-operated devices that can run Truenat tests for rapid TB diagnosis—across 37 high-volume clinics. The project then followed up these installations with training and refresher training for laboratory staff on how to use the machines.

"I was wondering why I was getting a lot of errors when running my samples, but today I had a hands-on practical session and I have been given a chance to practice and run samples in a standardized way," said Benard Waako, a laboratory assistant at Namwendwa Health Center level 4 in Kamuli district in eastern Uganda. "This will go an extra mile in minimizing reagents and reducing the costs of re-run of samples." Waako was part of Truenat TB refresher training that was conducted by a team of trained Truenat super-users and Molbio technicians, with support from IDDS.

In Uganda, IDDS pioneered the use of point-of-care Truenat technology, as recommended by the World Health Organization for accurate molecular testing for TB and drug-resistant TB detection. IDDS supported the initial installation, training, and roll out of Truenat in 38 health facility sites. As follow-up, IDDS organized TB refresher training and on-site support supervision visits at the clinics and laboratories to solve facility-specific challenges that impede the success of this technology.

Benjamin Niringiiyimana, training coordinator at the National TB Reference Laboratory, said, "The IDDS project approach in providing a refresher training followed by the support supervision exercise, are timely and crucial since they provide a platform to further develop and standardize the laboratory practical operation and manipulative skills of all the health facility staff, who are conducting the daily analysis using this technology. I believe this will improve the number of tests done, reduce further the error rates, and improve the performance of the teams in the external quality assessment."



Practical demonstrations during the Truenat TB refresher training, November 2022. Photos by IDDS

IDDS Pioneers Extension of Vietnam Animal Health Information System to the District Level to Improve Animal Disease Reporting

In 2018, the Vietnamese government launched the Vietnam Animal Health Information System (VAHIS), a web-based system for reporting and managing animal disease data and sharing relevant information. This system was designed for government animal health staff at national, regional, and provincial levels to report and manage animal disease data. Each of the 63 provinces in Vietnam has a VAHIS account for these purposes. However, reporting of animal outbreak data through VAHIS often does not meet timeliness and completeness requirements.

Truong Hoang Yen, the focal person for VAHIS reporting at Binh Dinh Provincial Sub-Department of Animal Health, is eager to report animal disease data through VAHIS but does not receive data frequently from the district-level animal health staff below her in the reporting process. Due to limited human and financial resources, there are only four staff from the Epidemiology Division of the agency overseeing animal disease prevention and control in the whole province. These staff are responsible for capturing and reporting animal disease outbreaks that may occur at some 1,600 livestock farms and 233,000 animal-raising households in the province. Receiving the input of animal health data from lower levels is essential. However, district-level staff often provide incomplete or inaccurate data or provide the data late, often through email or paper-based reporting, because VAHIS was originally designed for provincial and higher-level staff, not district-level staff. These are the main reasons leading to animal health events reported into VAHIS not meeting the requirements of government regulations. The difficulties faced by Yen are all too common for animal health staff in other provinces nationwide.

Responding to a support request from the Vietnam Department of Animal Health, from September to December 2022, <u>USAID's Infectious Disease Detection and Surveillance (IDDS)</u> <u>project</u> worked with relevant national, regional, and provincial staff to conduct an assessment to define needs and organize the first two training courses for district staff who were assigned to report animal disease data through VAHIS, in Binh Dinh and Khanh Hoa provinces. IDDS also worked with software development experts who previously developed VAHIS software to create VAHIS demo software and a new reporting layer in VAHIS for the district level. IDDS also provided technical support and coaching to ensure that district staff can report animal disease data into VAHIS correctly.

IDDS has also been supporting the development of a VAHIS mobile app to allow district staff to report data into VAHIS when they go to the field to conduct outbreak investigations. By providing direct access to VAHIS, district staff understand what information to collect and how to complete all necessary data fields. Having accurate, complete, and timely data will help their provinces and neighboring provinces better prevent and control animal diseases, including zoonoses (those that can jump from animals to humans), thus protecting the health of people and animals.

District staff in IDDS-supported provinces can now practice entering data into the VAHIS demo software to master their reporting skills. "IDDS is a pioneer in extending VAHIS reporting to the district level," said Dang Van Hung, the chief epidemiologist at Regional Animal Health Office No. IV. "By facilitating direct reporting of animal disease data into VAHIS from the district level, the quality of animal disease data will be improved significantly, and the animal health events will be reported sooner because district staff are often the first-line responders to animal outbreaks."

IDDS will continue to support Binh Dinh and four other provinces (Thai Nguyen, Khanh Hoa, Can Tho, and Dong Thap) to extend VAHIS use to the district level. In the coming months, the Department of Animal Health will review the results from the VAHIS extension pilot in the IDDS-supported provinces before officially mandating district staff to report animal disease data through VAHIS nationwide.



Practical training on VAHIS use for district-level animal health staff in Khanh Hoa province in September 2022. Photo by IDDS

Applying the Power of Artificial Intelligence to Vietnam's Tuberculosis Detection Strategy

Vietnam is one of the 30 countries with the world's highest number of tuberculosis (TB) patients and highest burden of multidrug-resistant TB. The COVID-19 pandemic brought a large decrease in the number of people newly diagnosed with TB globally, and Vietnam is one of the countries that saw a large reduction in new TB case notifications between 2020 and 2021. Vital resources of equipment and personnel that would otherwise have been used to detect TB were diverted to pandemic response. To make progress toward reducing the burden of TB, the Vietnam National Tuberculosis Control Program (NTP) recently adopted the Double X strategy, which promotes using both a chest X-ray (CXR) and GeneXpert testing to detect and electronically report suspected TB cases for diagnosis.

CXR is a critical screening tool in the Double X strategy. Improving the quality of X-ray images and interpretation can ease the burden on laboratories by reducing the number of patients referred for TB diagnosis. However, radiologists at provincial TB hospitals and district health centers have limited capacity to read CXR images and report results without delay. In response to this challenge, <u>USAID's Infectious Disease Detection and Surveillance (IDDS) project</u> introduced an artificial intelligence (AI)-enabled CXR diagnostic software application: Qure.AI-qXR. Qure.AI-qXR provides X-ray film reading results with superior accuracy compared to human-read results. IDDS conducted a pilot of Qure.AI-qXR software at provincial hospitals and district health centers with high patient loads, to improve the capacity of radiologists at provincial and district TB facilities to capture and read CXR images. The pilot results are helping Vietnam's NTP to assess whether the scale-up of AI-assisted CXR technology is feasible.

To initiate the pilot, IDDS selected two district-level health centers and one provincial hospital in Khanh Hoa province, which is one of the highest TB burden provinces in Vietnam's southern central region. IDDS also developed the workflow of AI-assisted CXR reading, which aligns with Double X, to ensure the smooth integration of the technology at the pilot sites (see below). In addition, IDDS conducted training on using Qure.AI-qXR software and reading CXR films assisted with AI and supported the NTP to analyze the pilot results.

From the beginning of the pilot in January to its conclusion in July 2022, 8,318 CXR images were read with the AI software. A total of 5,425 films came back with not presumptive pulmonary TB, 2,856 films with presumptive pulmonary TB, and 38 with invalid results. In comparison, the results read by the imaging department (i.e., humans) recorded 5,789 films as not presumptive pulmonary TB and 2,533 as presumptive pulmonary TB. The pilot sites recorded a total of 571 TB diagnosed cases, including 493 pulmonary TB cases, 16 cases with no bacteriological evidence of Mycobacterium tuberculosis (the bacteria that causes TB), and 78 cases of extrapulmonary TB. To assess the quality of AI-assisted CXR reading for TB diagnosis, IDDS also supported an external quality assessment. The assessment results strongly suggest the accuracy of AI-enabled X-ray reading, with the accurate reading rate at 97.7 percent at the three pilot sites.

Results	AI	Imaging Department
Not presumptive pulmonary TB	5,425	5,789
Presumptive pulmonary TB	2,856	2,533
Invalid	38	0

Through the pilot in Khan Hoa province, AI proved its potential to support radiologists to read CXR images accurately and detect presumptive TB cases. The technology will play a key role in supporting Vietnam's Double X strategy, helping the country detect more TB cases and ultimately save lives of these patients.

Strengthening Zimbabwe's National Tuberculosis Reference Laboratories to Attain International Accreditation

The chief laboratory scientist of the Bulawayo National Tuberculosis (TB) Reference Laboratory, Vincent Kampira, could not hide his joy when the laboratory was recommended for international accreditation after an intensive assessment by the Southern African Development Community Accreditation Services (SADCAS). "The establishment of a quality management system at the Bulawayo National TB Reference Laboratory was not an easy task, but the mentorship and technical assistance provided by the <u>USAID's Infectious Disease</u> <u>Detection and Surveillance (IDDS) project</u> was instrumental in attaining this goal," said Kampira.

Accreditation is the independent assessment of a medical laboratory that includes an examination of personnel qualifications and competence; equipment, reagents, and supplies; quality assurance; and analytical, pre-analytical, and post-analytical factors. It is important because it:

- Promotes trust in laboratories and confidence among authorities, health care providers, and patients who are served by the laboratory
- Improves facilitation of accurate and rapid diagnostics, efficiency of treatment, and reduction of errors in the laboratory process
- Reduces errors
- Promotes efficiency and effectiveness of laboratory processes
- Reduces turnaround time
- Supports continuous quality improvement
- Improves staff morale

SADCAS is a multi-country accreditation body covering southern Africa. It ensures that conformity assessment service providers (calibration/testing/medical laboratories, certification, and inspection bodies) operating in SADC member states that do not have national accreditation bodies are subject to high-quality oversight. In the first quarter of fiscal year 2023, the SADCAS laboratory team addressed the non-conformances at the Bulawayo laboratory, and these were cleared by the accreditation agency. Kampira highlighted that the laboratory had been working toward accreditation for the past 10 years but could not reach the intended target until now.

The TB diagnostic network assessment, conducted by the Zimbabwe Ministry of Health and Child Care through IDDS support in 2020, had noted that the two national TB reference laboratories (Bulawayo and Harare) in the country were facing difficulties in fulfilling their role of supporting the provincial, district, and private TB laboratories. Without the full support of the reference laboratories, TB case detection at local laboratories was facing serious challenges in Zimbabwe.

These challenges included the fact that the reference laboratories were not accredited, did not meet biosafety level 3 (BSL-3) requirements (BSL-3 laboratories are used to study infectious agents or toxins that may be transmitted through the air and cause potentially lethal infections, such as TB), faced shortages of some consumables and funding for equipment maintenance, and encountered staff shortages. IDDS started to address the problems by embedding a technical expert at the Bulawayo laboratory in September 2020 to mentor laboratory staff members on both TB testing techniques and quality management systems implementation for improved service delivery, as well as working toward accreditation.

IDDS chose on-site mentorship as a strategy because mentorship provides an opportunity for extended contact time between an expert and the beneficiary laboratory personnel, allowing time for the demonstration of key techniques that will result in knowledge transfer and culture change. Due to IDDS mentorship, the laboratory strengthened the test result review processes and monitored result turnaround times. The long-term impact is the implementation of quality systems for improved service provision: accurate and rapid TB detection.

In addition to the mentorship, IDDS engaged an international consultant who conducted a five-day training on the requirements of biosafety/biosecurity standard ISO 15190 in April 2022 for 22 participants from the Bulawayo laboratory. This training was a requirement of ISO 15189:2012.

IDDS also supported the installation of a BSL-3 modular laboratory as a stopgap measure in preparation for the laboratory's renovation. The laboratory now meets BSL-3 requirements and complies with World Health Organization requirements for handling infectious pathogens, because of the use of the modular laboratory. The BSL-3 laboratory is designed and precision-built to operate under negative pressure, which ensures that all exhausted air passes through a dedicated filter system, preventing pathogens from escaping into the environment. This will result in the protection of both the laboratorians working in the laboratory and protection of the environment as a long-term impact.



IDDS TB Diagnostic Specialist, Barbara Murwira (left), mentoring a Bulawayo NTRL staff on TB culture techniques. Photo by IDDS



Bulawayo NTRL staff members in the modular laboratory undergoing the biosafety training that was supported by the IDDS project. Photo by IDDS

Finding the Missing Childhood Tuberculosis Cases in Zimbabwe Using Stool Specimens

Younger children are particularly vulnerable to life-threatening forms of tuberculosis (TB). To counter this threat, Zimbabwe's National TB Strategic Plan (2020–2025) estimates that 10 percent of all TB cases diagnosed should be children under the age of 15 years.

However, Zimbabwe has recorded a sustained decline in the proportion of children diagnosed with TB, from a peak of 8 percent in 2014 to 6 percent in 2021. The diagnosis of TB in children can be especially difficult. Younger children struggle to produce sputum specimens for testing, and there is low awareness of childhood TB in many communities.

With these challenges, Zimbabwe's National Tuberculosis and Leprosy Control Program welcomed the January 2020 World Health Organization recommendation of GeneXpert testing of stool specimens as a primary diagnostic test for pulmonary TB (TB that affects the lungs) in children. The stool samples are easy to collect, and GeneXpert machines are already a part of the country's TB diagnostic network. Zimbabwe adopted the recommendation in its national TB guidelines with the expectation that it will improve bacteriological confirmation of TB in children.

But due to limited funding, Zimbabwe's Ministry of Health and Child Care (MoHCC) could not roll out the necessary training for the Simple One-Step (SOS) stool testing method to all the health facilities in the country. <u>USAID's Infectious Disease Detection and Surveillance</u> (IDDS) project stepped in to support the training of 26 laboratory technicians and clinicians on the SOS method at a regional training held October 29–November 6, 2022, in Bulawayo, Zimbabwe. Trainers from IDDS, the KNCV Tuberculosis Foundation, and the Uganda Supranational Reference Laboratory facilitated the training, which delivered basic skills on the SOS stool processing method to laboratory staff working at provincial health facilities in Zimbabwe. There was also master training on the SOS method for six staff from the Uganda Supranational Reference Laboratory and other consultants to allow them to run SOS trainings in other countries. The master training was led by KNCV and IDDS HQ staff.

"The use of stool as a specimen for childhood TB diagnosis on the GeneXpert platform is a positive development in Zimbabwe's case finding efforts," said Dr. Raiva Simbi, director of laboratory services at the MoHCC, when opening the training. "The MoHCC appreciates IDDS's support in this initiative, and this is the first of many trainings in strengthening childhood TB diagnosis in Zimbabwe."

The training consisted of both practical and theoretical sessions, which focused on the epidemiology of childhood TB, the principle of the SOS method, and discussions on other countries' experiences.

In 2023, IDDS will support the expansion of the training to all of Zimbabwe's provinces, provide financial and technical support in conducting biannual data review meetings to assess impact, and conduct supportive supervision (mentoring) visits to all the trained facilities.

IDDS began its SOS method training in Harare province through the IDDS Harare provincial mentor, who is conducting on-site training to health care workers in the province's 25 public and private TB laboratories. The participants from the Uganda Supranational Reference Laboratory are expected to expand the SOS method training to other USAID-

supported countries to strengthen childhood TB diagnosis. Ultimately, the SOS method is expected to result in an increase in the number of children screened and tested for TB in Zimbabwe, leading to improved treatment outcomes for patients.



A KNCV facilitator observes a participant conducting the SOS test during the training in Bulawayo, Zimbabwe. Photo by IDDS