

Infectious Disease Detection and Surveillance (IDDS)

Quarterly Report FY22 Q1: Annex B. Success Stories

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Filling the Extra-pulmonary Tuberculosis Diagnosis Gap in Bangladesh

Tuberculosis (TB) is commonly known as a disease of the lungs, but this is not always the case. Extra-pulmonary TB (EP-TB) refers to TB involving organs other than the lungs, such as lymph nodes. Although considerable success has been achieved in pulmonary TB control, there is a gap in the diagnosis and treatment of EP-TB in many countries, including Bangladesh.

To start to address this gap, USAID's Infectious Disease Detection and Surveillance (IDDS) project and Bangladesh's National Tuberculosis Control Program (NTP) organized a two-day technical training on EP-TB and stool sample processing. The training took place November 7 to 8, 2021, at the Shyamoli TB Hospital Reference Laboratory in Dhaka.

The training was designed to develop the capacity of laboratory staff to process and test all types of EP-TB specimens and stools for detection of EP-TB and childhood TB. Stool sample testing enables easier TB testing for children who often struggle to produce sputum samples for testing. IDDS has piloted stool sample testing in Bangladesh and Vietnam.



IDDS and the NTP developed a standard operating procedure for processing and testing EP-TB and stool specimens. This standard operating procedure was used to design the training. Seven microbiologists and eight medical technologists from the National TB Reference

Laboratory and the Shyamoli TB Hospital Reference Laboratory completed the training.

Dr. Khurshid Alam, Line Director of NTP, opened the training on November 7, 2021. The first day of the training included lectures on the different types of EP-TB specimens, including lymph nodes, cerebrospinal fluid, urine, pleural fluid, and acetic fluid specimens, followed by a hands-on session in the laboratory on processing and testing specimens using GeneXpert and liquid culture.

On the second day, the training provided an overview of specimen collection, processing, and testing, and was followed by a hands-on session on testing the specimens using GeneXpert. During the concluding session, Dr. Iffat Ara Iffat, a microbiologist from the National TB

Reference Laboratory, spoke on behalf of the participants and said, “This training will help all participants to process the EP-TB and stool specimen properly and increase detection of more EP-TB and pediatric TB cases.” Dr. Ifa appreciated IDDS support for this training and requested further support to offer the training to additional staff.

Organizing Bangladesh's First Training for Line Probe Assay Testing

Line probe assay (LPA) testing is an important, rapid tool for detecting drug-resistant tuberculosis (TB), but training is essential to ensure correct use. For more than a year, the COVID-19 pandemic delayed efforts of the Bangladesh National Tuberculosis Control Program (NTP) to train staff on LPA. Laboratory staff were unable to travel out of the country, and overseas experts were unable to enter Bangladesh.

The NTP then approached USAID's Infectious Disease Detection and Surveillance (IDDS) project for help in determining how best to proceed in the face of these constraints. IDDS took on the challenge, and with support from LPA manufacturer Hain Lifescience, developed a hybrid training that included virtual sessions led by overseas experts, as well as hands-on sessions led by in-country technicians.

The LPA training was held on October 4 to 6, 2021, at the Regional TB Reference Laboratory (RTRL) in Dhaka's Shyamoli Hospital, and was opened by NTP Line Director, Dr. Khurshid Alam.

Thirteen microbiologists from the National TB Reference Laboratory and laboratory personnel from all five RTRLs attended the training. An expert from Hain Lifescience remotely facilitated the training for the entire three-day period and covered the LPA technology, workflow, result interpretation, troubleshooting, and prevention of contamination.



Practical training on extra-pulmonary tuberculosis specimen processing and testing. Photo by IDDS

Hands-on sessions, the most important part of the training, were conducted at the RTRL Shyamoli laboratory. Experts from the National TB Reference Laboratory and IDDS oversaw the sessions on sample preparation, DNA extraction and amplification, and hybridization and result interpretations. Multiple question-and-answer sessions were built in to discuss and reinforce participant learning about good laboratory practices and the challenges that typically arise when performing the tests. The training ended with a lively participatory session discussing interpretation of the LPA results and how to ensure accurate test results.

USAID mission staff and other representatives from the NTP attended the closing session and expressed appreciation for IDDS's support in designing and organizing a highly effective LPA training, the first ever held in Bangladesh.

Ensuring Continuing Quality of Tuberculosis Diagnosis in Burma

Burma is one of the 30 countries with the highest burden of tuberculosis (TB) in the world, a near crisis situation with high levels of drug-resistant TB. Recently, the country's ability to fight TB has been hampered by COVID-19-related social distancing requirements and travel restrictions, as well as political instability. To support Burma in its efforts to ensure continued access to quality TB diagnostic services during this challenging time, USAID's Infectious Disease Detection and Surveillance (IDDS) project has engaged new partners and developed a new set of e-learning tools.

GeneXpert (GX)¹ is an important, rapid, and reliable testing method for TB. In Burma, most GX tests are carried out by the public sector, but most laboratory technicians working in GX diagnostic centers have not received adequate training. In addition, with the public sector badly hit by political crisis, most existing GX diagnostic services have been interrupted. To ensure accessibility to quality testing, GX diagnostic capacity needs to be expanded to Burma's private sector.

In June 2021, IDDS and the World Health Organization (WHO) conducted advanced training for GX users from the private sector, using locally adapted training materials recommended by GX manufacturer Cepheid. In conjunction with this training, a TB diagnostic specialist from IDDS, with the support of a bioengineer from WHO, recorded four video clips on essential components of GX testing: (1) test procedure, (2) stuck cartridge procedure, (3) GX machine calibration and (4) GX machine maintenance. Each scene in the videos was carefully designed to reflect the local situation, so that viewers can relate to their actual working environments. After undergoing technical reviews, the video clips on GX testing were published in late 2021.

IDDS distributed the four GX testing videos to implementing partners that are introducing GX testing services in the community. IDDS will upload those videos onto an e-learning platform, which is currently being developed in close collaboration with in-country technical partners, including WHO.

These four GX testing videos are the first simple and comprehensive technical resources to support the sustainable virtual learning environment in Burma. IDDS is also working on other TB laboratory diagnosis-related videos, to help ensure continuity of quality diagnosis during the crisis. Implementing partners can refer to these IDDS technical resources to strengthen existing diagnostic capacity or build up testing capacity during expansion of diagnostic services.

¹ The GeneXpert test is a molecular test for TB. GeneXpert diagnoses TB by detecting the presence of TB bacteria (*Mycobacterium tuberculosis*), as well as testing for resistance to the drug rifampicin.



IDDS's laboratory specialist demonstrating GX testing procedure in the GX testing video. Photo by IDDS



Bioengineer from WHO demonstrating GX machine calibration in the GX testing video. Photo by IDDS



Training materials in the GX testing video, which are locally adapted materials as recommended by the GX machine manufacturer. Photo by IDDS

IDDS Fosters Coordination across Tuberculosis Laboratories in Bhopal, India

India suffers from the largest number of tuberculosis (TB) cases in the world, with more than 2.1 million new cases in 2019 (World Health Organization). Reducing this burden requires not only wide access to TB diagnosis but also strong coordination between levels of TB laboratories (national, regional, local), and these efforts offer the opportunity for learning and exchanging best practices among experts in the field.

To foster this important coordination and cooperation, USAID's Infectious Disease Detection and Surveillance (IDDS) project, along with the National Reference Laboratory at the Bhopal Memorial Hospital & Research Centre, supported the organization of the first intermediate reference laboratory (IRL) review meeting in Bhopal. This meeting brought together the National Reference Laboratory at the Bhopal Memorial Hospital & Research Centre with its linked IRLs and TB culture and drug susceptibility testing laboratories.

Held on November 25, 2021, in person and virtually, the hybrid meeting included 61 experts and technicians, including state TB officers, state TB training directors, microbiologists, and USAID India staff.

Participants discussed and reviewed infrastructure, human resources, onsite monitoring and supervision visits, equipment maintenance, and training. Consensus was achieved on potential solutions to the key challenges and on actions required to improve the indicators for universal drug susceptibility testing. TB notification rates were also discussed.

Participants agreed that the IRL review meetings should be continued because they provide a platform to collaborate and learn from each other's experiences. IDDS's TB work was acknowledged, and the group discussed how IDDS can continue to support the strengthening of TB laboratories. IDDS agreed to help organize a future district review meeting in Ranchi, for the state of Jharkhand in eastern India.



Inauguration of the meeting with the lighting of a lamp. Photo by



Dignitaries at the dais addressing the participants. Photo by IDDS

Bacteriology Testing Services Launched in Liberia's Lofa County

USAID's Infectious Disease Detection and Surveillance (IDDS) project is strengthening laboratory capacity to detect pathogens (the microorganisms that can cause disease) that are a risk to public health in Liberia. A milestone in this mission is the launching of bacteriology testing services at Tellewoyan laboratory in Liberia's Lofa County in late 2021 with IDDS support. Bacteriology testing is vital for the detection of dangerous bacterial pathogens and antimicrobial resistance (AMR) that can cause drug-resistant infections.

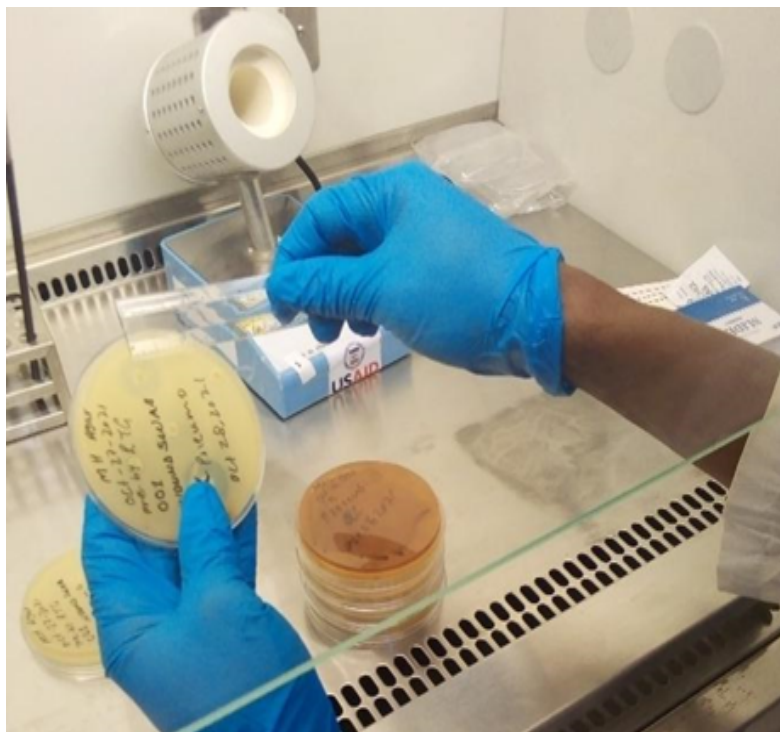
Provision of bacteriology services in the county will improve patient management of treatable bacterial infections, detection of AMR, and implementation of effective antimicrobial stewardship interventions. The launch of these bacteriology services was made possible through an IDDS-supported three-week mentorship session provided by the National Diagnostic Division's bacteriology trainer from September 25 to October 12, 2021. The bacteriology trainer is graduate of a microbiology training that IDDS provided in Liberia in March 2021.

The one-on-one mentorship included biosafety (use of personal protective equipment and general cleaning of laboratory), management of bacteriology resources, preparation of media, specimen processing including quality control, and bacteriology waste management.

A meeting was held with the hospital management and clinicians, making them aware of the availability of bacteriology services. Also, together with the Liberia Ministry of Health AMR unit and the World Health Organization, virtual and in-person trainings were conducted with hospital personnel (physicians, clinicians, laboratory technicians, and infection prevention personnel) on interpreting antimicrobial sensitivity results, promoting antimicrobial stewardship, raising awareness of hospital hygiene, and preventing transmission of multidrug-resistant bacteria.

Roland T. Gobeh, County Diagnostic Officer in Lofa County, said, "I am so happy for IDDS's system strengthening approach, which is focused on strengthening the local teams and there is no way to say it better. They have brought us bacteriology services, which was just a dream to us. Now we can improve our own expertise in bacteriology at the same time helping our own people."

Since the launch of bacteriology testing services, the laboratory results have improved patient care and enabled antimicrobial stewardship and the control of hospital-acquired infections. Results from October 2021 to December 2021 show that the laboratory processed a total of 22 specimens: 8 blood cultures, 2 urine cultures, 2 stool cultures, and 10 wound swabs. Of the 10 positive cultures, 3 had *Staphylococcus aureus* with 1 resistant to all antibiotics, and 1 had *Shigella* species. These data provide a baseline for AMR surveillance that is being expanded countrywide.



Antimicrobial susceptibility testing at the Tellewoyan laboratory. Photo by IDDS

IDDS Supports the Rollout of the Third Edition of the Integrated Disease Surveillance and Response Guidelines in Senegal

USAID's Infectious Disease Detection and Surveillance (IDDS) project has played an important role in the rollout of the third edition of the World Health Organization (WHO) Integrated Disease Surveillance and Response (IDSR) technical guidelines in Senegal. This involved training all the head nurses from three health districts of the Tambacounda Medical region in the new IDSR methods.

IDSR is a strategy adopted by countries in WHO's African Region for building comprehensive public health surveillance and response systems for priority diseases, at all levels of health systems, and ultimately improving global health security and emergency response. The third edition of the IDSR guidelines was published in 2019, and it includes antimicrobial resistance, event-based surveillance, community-based surveillance, and human, animal, and laboratory surveillance. With the third edition of the IDSR, there is potential for disease surveillance in Senegal to be greatly improved, but successful implementation requires a well-trained and dedicated workforce.

Dr. Bayal Cisse, Tambacounda Regional Medical Officer, said, "IDDS is the lead partner of the medical region on epidemiological surveillance. The project is already supporting the seven health districts of the region in improving the quality of data reports on priority diseases. Now it has provided support to implement the latest version of the IDSR through the training of nurses. This kind of training will help us to continuously strengthen the surveillance system."

IDDS organized the training of nurses in the region over a two-week period in November 2021, and the sessions were facilitated by the Senegal Ministry of Health's Directorate of Prevention. The focus districts were Koumpentoum, Maka Colibantang, and Tambacounda. Fifty-nine head nurses were trained, and by the end of the training, their scores on the post-test had increased five-fold, compared with their pre-test scores.

Now that these district head nurses have been trained, they will in turn train the staff members of their health posts, including midwives, ending the use of the outdated second edition IDSR guidelines. The new guidelines also strengthen the head nurses' ability to analyze and interpret disease surveillance data. The nurses enter data into District Health Information Software version 2 (DHIS2), which is part of the overall IDSR system. Through planned, regular supportive supervision of data quality in DHIS2 with the health districts, and regular data review meetings, IDDS will be able to measure changes in data quality to determine how much the IDSR training and coaching has improved the nurses' data entry and analysis skills.

IDDS had previously supported adapting the third edition IDSR guidelines to the Senegalese context. From October to December 2020, IDDS engaged with key stakeholders, including the Ministry of Health's Directorate of Prevention, WHO, and the U.S. Centers for Disease Control and Prevention, to validate the updated Senegalese version of the national guidelines.

IDDS then contributed to the development of the training of trainers and participant training materials during the first quarter of 2021.

The first edition of the technical guidelines for the IDSR was issued by WHO in 2002 and the second edition was released in 2010. The second edition included community-based surveillance and other health systems strengthening strategies. After the Ebola outbreaks in West Africa in 2014 and the realization that WHO's 2005 International Health Regulations had not been fully adopted by all member states, it was clear that addressing health emergencies was still a major challenge, leading to the third edition of the IDSR guidelines in 2019.

Two USAID-Funded Sister Projects Collaborate to Tackle Antimicrobial Resistance in Tanzania

Antimicrobial resistance (AMR) is a major global health security threat, which endangers modern human and veterinary medicine. A recent study in the *Lancet* put human deaths from drug-resistant infections in 2019 at more than 1.2 million, more than HIV or malaria. In addition to increased mortality, AMR is also leading to prolonged and more expensive treatment as well as diminishing therapeutic choices among patients and health care providers. Other impacts of AMR include long hospital stays, admission to intensive care units, and the spread of resistant microorganisms to other patients. It also contributes to an increase in the cost of health care because of the need for more expensive second- or third-line antimicrobial agents.

There is limited data on AMR in Tanzania, but resistance to commonly used antimicrobial medicines, such as ampicillin, tetracycline, chloroquine, and trimethoprim-sulfamethoxazole, is significant (Tanzania National Action Plan on AMR, 2017).

Since 2019, two USAID projects, the Infectious Disease Detection and Surveillance (IDDS) project and the Medicines, Technologies, and Pharmaceutical Services (MTaPS) project, have conducted complementary work in Kigoma Regional Hospital in Tanzania. IDDS builds the capacity of diagnostic networks and surveillance systems to detect and report AMR, and MTaPS works to optimize the use of antimicrobial medicines and reduce the incidence of infection through effective sanitation, hygiene, and infection prevention measures.

Together, IDDS and MTaPS have produced AMR surveillance data, established the AMR Surveillance, Therapeutic, and Infection Protection Control committees, and implemented infection prevention and control guidelines in this hospital over the past two years. Through these collaborative interventions, the investments made by USAID are paying off. This includes a reduction in the surgical site infection rate, from 5 percent in third quarter of 2021 to 1 percent in fourth quarter of 2021.

On November 8, 2021, IDDS and MTaPS, together with the Ministry of Health and the USAID Mission in Tanzania, conducted a joint site visit to Kigoma Regional Hospital. The visit was aimed at further improving AMR data sharing and use across the different activities to enhance ongoing AMR work, including surveillance, infection prevention and control, and antimicrobial stewardship.

“I was pleased to learn about the AMR surveillance and how Maweni (Kigoma Regional Hospital) utilizes WHONET to track and analyze AMR, and they are on track to develop an antimicrobial formulary using this data that will be reviewed and revised at least bi-annually,” said Carrie Reed, USAID Senior Infectious Disease Advisor and U.S. Mission Representative.

She recommended sharing high-level findings with other IDDS and MTaPS-supported facilities, and following up with site visits to additional IDDS and MTaPS-supported facilities to understand how implementation is similar or varies from site to site.



Carrie Reed (right), USAID Senior Infectious Disease Advisor and U.S. Mission Representative, and Hassan Mrwanda (left), Laboratory Technologist at Kigoma Regional Hospital, discussing the AMR data analysis, storage, reporting, and archiving using WHONET installed on computers procured by IDDS. Photo by IDDS



Carrie Reed (right), USAID Senior Infectious Disease Advisor and U.S. Mission Representative, and Ernest Ryoba (left), Infection Prevention and Control Nurse at Kigoma Regional Hospital, discussing the implementation of infection prevention and control guidelines and the subsequent reduction of surgical site infection rates during a joint site visit by USAID, IDDS, and MTaPS project staff in November 2021. Photo by IDDS

IDDS Helps Improve Reporting into Vietnam's Animal Health Information System

It has been four years since Vietnam's Ministry of Agriculture and Rural Development launched the Vietnam Animal Health Information System (VAHIS), an online disease reporting system designed to enable real-time reporting of animal and zoonotic diseases (those that can jump between animals and humans). It is an important tool to contain potential outbreaks of dangerous zoonotic diseases such as avian flu. However, VAHIS was rarely used and very few reports were being entered into the system.

Now, with support from USAID's Infectious Disease Detection and Surveillance (IDDS) project to Vietnam's Department of Animal Health (DAH), under the Ministry of Agriculture and Rural Development, and regional and provincial animal health agencies, reporting rates into VAHIS have increased dramatically. In June 2020, the five IDDS-supported Vietnamese provinces started reporting, and by December 2021, all of Vietnam's 63 provinces were successfully reporting disease outbreak data through VAHIS.

Improvements to VAHIS have been lauded by users and leaders of the animal health agencies in Vietnam. "The improvements of VAHIS have made the data entry and management process much smoother and easier, especially for provincial staff. This helped to further increase reporting rates, and timeliness and completeness of reported outbreak data, which are important for animal disease prevention and control in the regions" said Dang Van Hung, Head of the Disease and Outbreak Management Department at Regional Animal Health Office No. 4.

Previously, reporting was hampered by many issues in VAHIS. For example, data entry items, such as number of dead animals, number of animals destroyed, and total at-risk population, were not clearly defined and could be interpreted differently by different reporting staff. Also, some data requested from VAHIS were not available at the beginning of an outbreak or were unnecessarily repeated in daily update reports. Some users also claimed that they had issues exporting data they had previously entered into the system.

IDDS staff worked with each of the five project-supported provinces and the corresponding regional animal health offices (RAHOs) to learn more and compose a detailed list of issues encountered by provincial and regional staff, with a clear description of each issue. The IDDS team worked with DAH technical staff and the responsible software engineer (supported by the Vietnam Food and Agriculture Organization) to redesign the software, improving functionality as well as the interface. After the listed issues were addressed, IDDS worked with users in the five provinces and RAHOs to evaluate the new reporting system and identify any remaining issues related to the use of the system. IDDS also organized a meeting with DAH, RAHO, and provincial technical staff as well as the responsible software engineer to discuss and find solutions to the remaining issues.

For example, the improved system now allows users to choose between two modes of outbreak data entry: standard outbreak data entry (accommodating entry of more data items when available) or quick outbreak data entry (with fewer data items requested, more convenient for daily updates). Another example is the improved dashboard that has more advanced options for displaying maps, charts, and summary data tables. The new system also

allows users to search for data with multiple selection criteria, and to copy and save maps and charts.

After key VAHIS users at the provincial, regional, and national levels were satisfied with the improvements, IDDS organized a pilot virtual training course to all users in the five supported provinces in November 2021. IDDS also collected additional feedback from users in each province through monthly technical meetings on VAHIS use and reporting. The feedback and comments from users in the five pilot provinces have helped DAH to further refine the system design and training materials, which were later used by RAHOs to train VAHIS users in all the other provinces in the country on new features of the improved system.

Improving systems like VAHIS is part of IDDS's [One Health Approach](#). One Health is a multi-sector approach that recognizes the interconnection between people, animals, and our shared environment. One Health employs a holistic perspective to better understand and solve public health threats on a local, regional, national, and global scale. By encouraging collaboration between sectors otherwise siloed, this approach can more effectively achieve comprehensive and integrated public health outcomes.

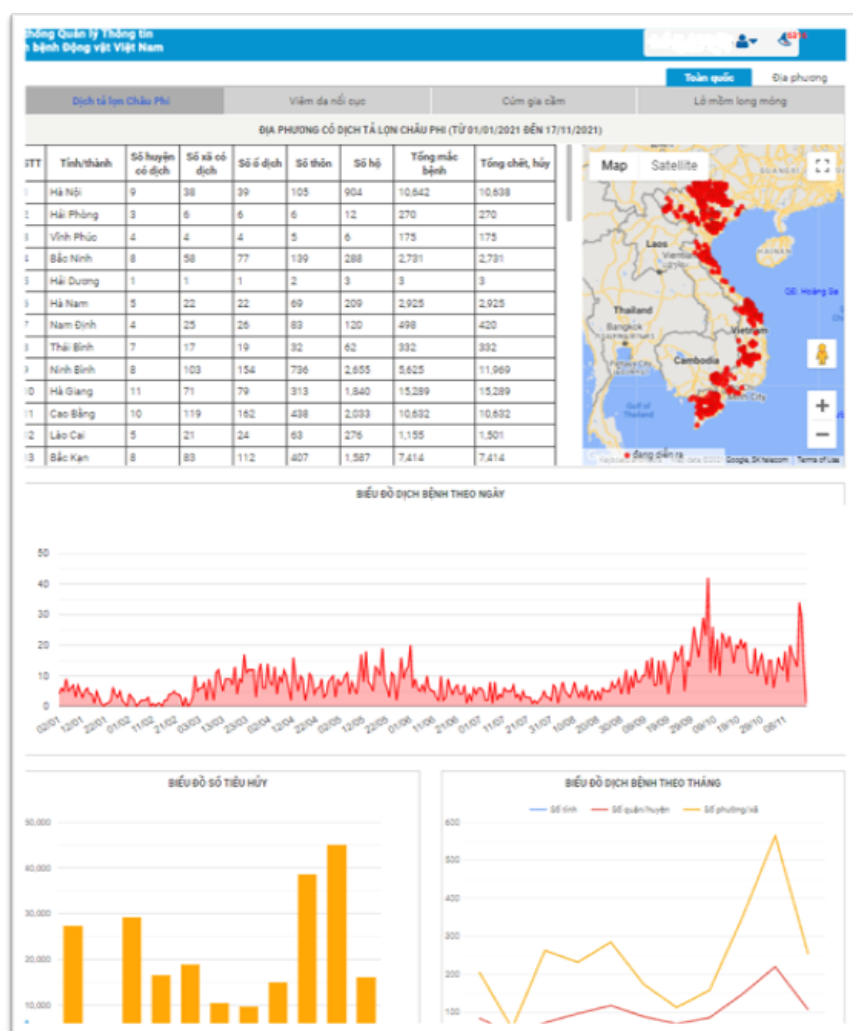







Figure 1: The new dashboard design of the improved VAHIS


VAHIS
Hệ thống thông tin
dịch bệnh động vật Việt Nam



DỊCH BỆNH ĐỘNG VẬT
 ổ dịch đột xuất
 Báo cáo
 Tra cứu dữ liệu
GIÁM SÁT DỊCH BỆNH
VĂN BẢN - QUY ĐỊNH
HỖ TRỢ
Hôm nay, 30/12/2021

Thông tin chung

Thêm báo cáo

Loại bệnh(*)

Trạng thái
☒ Đang diễn ra ☐ Đã kết thúc

Tỉnh thành(*)

Hà Nội

Quận/Huyện(*)

Phường/xã

Ngày phát hiện(*)

30/12/2021

Ngày ghi nhận ổ dịch

30/12/2021

Số thôn

0

Số hộ

0


Nguồn gốc


Không biết

Ghi chú

Nội dung ghi chú

THÊM BÁO CÁO

 Văn bản Cục Thú Y: Về việc rà soát, báo cáo kết quả công tác phòng, chống bệnh Đại trên động vật năm 2020 và xây dựng kế hoạch giai đoạn tiếp theo(1388/TY-DT)

 Hỏi đáp

Hệ thống VAHIS - Cục Thú Y

Figure 2: The quick outbreak data entry interface of the improved VAHIS, typically used for daily updates on outbreaks of animal diseases

IDDS Supports Installation of a Modular Laboratory to Ensure Continuity of Tuberculosis Diagnostic Testing in Zimbabwe

A primary focus for USAID's Infectious Disease Detection and Surveillance (IDDS) project is to support partner countries and their ministries of health to strengthen laboratory systems. This includes ensuring they have the laboratory facilities, functional equipment, supplies, and training they need to provide safe, accurate, and timely diagnostic testing services.

In Zimbabwe, IDDS worked with engineers from the Ministry of Health and Child Care and the Ministry of Local Government and Public Works to install a modular extension laboratory at the Bulawayo National Tuberculosis (TB) Reference Laboratory. This important step will ensure continuous testing services in Bulawayo, the country's second largest city, while the main laboratory receives a much-needed renovation.

The modular laboratory will be connected to and operate as part of the main laboratory when the renovation process is complete at the end of 2023. The main laboratory is being renovated to bring it up to biosafety level 3 standards, because biosafety level 3 conditions are recommended when conducting culture and drug susceptibility testing. Growing culture is the gold standard for TB diagnosis because it requires as little as 10 bacilli per milliliter of sputum, compared to more than 5,000 bacilli required for smear microscopy (viewing under a microscope).

Culture testing is ideal for detecting paucibacillary TB (TB disease caused by a smaller number of bacteria). Paucibacillary TB is more common in children and HIV-positive patients. Culture is also pivotal in confirming TB treatment failure, when the TB diagnosis is in doubt, and treatment monitoring and outcome evaluation for patients on second-line anti-TB drugs. The culture isolates grown are used to determine whether a TB strain is resistant to an anti-TB drug by evaluating TB bacterial growth in the presence of the drug.

The modular laboratory was installed over a three-day period in October 2021. "I would like to thank the IDDS project for supporting the installation of the modular laboratory which will ensure provision of quality TB testing in a safe, internationally acceptable work environment," said Zimbabwe National TB Laboratories Coordinator Tanaka Sakubani.

In 2022, IDDS will continue supporting the operationalization of the modular laboratory by financing the relocation of Mycobacteria Growth Indicator Tube machines from the main laboratory, training staff on safe work practices before they start working in the new facility and ensuring preventive maintenance of line probe assay testing equipment.

The construction engineers worked in collaboration with Laboratory Infrastructure Solutions, the laboratory manufacturer. The laboratory was procured through USAID Challenge TB funding.



Engineers installing the modular laboratory. Photo by IDDS



Placement of equipment in modular laboratory. Photo by IDDS



Installed modular laboratory. Photo by IDDS



Site preparation during installation . Photo by IDDS