Infectious Disease Detection and Surveillance (IDDS)

Quarterly Report FY22 Q2: Annex B. Success Stories

Contents

Bringing Bangladesh's National TB Laboratory Strategic Plan to Life

Bangladesh suffers from one of the highest burdens of tuberculosis (TB) in the world. The World Health Organization estimates that 44,000 people died of TB in Bangladesh in 2020. But TB is curable with proper diagnosis and treatment, and to make progress to end TB, Bangladesh's National TB Control Program (NTP) created its TB Laboratory Strategic Plan (LSP) (2021–2025) with the support of USAID's Infectious Disease Detection and Surveillance (IDDS) project in 2021.

The LSP covers four key areas[1] in TB diagnostics, including ensuring universal access to fast and accurate testing and phasing out older methods. However, no plan will be effective without a budget.

To bring the plan to life, IDDS completed the costing and budgeting of the LSP in early 2022. The costing and budgeting were worked out through a two-day workshop organized and facilitated by IDDS over March 5 and 6, 2022. In addition to NTP Line Director Dr. Khurshid Alam, program coordination, finance, and procurement staff from the NTP, as well as representatives from leading non-government TB implementing partners, joined the workshop. The participants worked in four groups for each of the four LSP objectives. The groups identified activities and sub-activities and estimated associated costs for the activities (as per the standard government guidance and guidance from the Global Fund to Fight AIDS, Tuberculosis and Malaria). Each group presented its work in a plenary session for feedback that was later addressed by the IDDS technical team.

Dr. Alam, NTP Line Director, praised IDDS for supporting this activity: "It was a rewarding experience for me to participate in this interactive workshop. The costing of the TB-LSP will greatly benefit NTP to plan funding for implementation of the strategy."

The development of the costing and budgeting of the plan was carried out in a participatory way involving all stakeholders to ensure transparency and country ownership. IDDS used the WHO-recommended budgeting and work plan tool. This budgeting exercise provides a solid foundation for the NTP to plan for resource mobilization, including discussions with the government and international donors, and prepare applications to the Global Fund, which is a major funder for implementation of the LSP. The budgeting template will automatically produce summary budget tables required for Global Fund proposals. It also provides a framework for monitoring and evaluation of implementation.

[1] The four key areas are (1) ensure universal access to rapid molecular diagnostics and gradual phase-out of smear microscopy; (2) improve the diagnosis of extra-pulmonary TB, pediatric TB, and TB in people living with HIV/AIDS; (3) use quality-assured microscopy to perform treatment follow-up; and (4) establish laboratory quality management systems in the TB laboratory network.

Participants engaged in group work at the workshop. Photo by IDDS

Established in May 2018, USAID's Infectious Disease Detection and Surveillance (IDDS) project is a five-year, $120 million initiative that operates in more than 20 countries in sub-Saharan 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.

Expanding AMR Surveillance in Cameroon

In April 2021, Cameroon marked a major milestone in the battle against antimicrobial resistance (AMR), drug-resistant microbes that can cause life-threatening infections. The country started collecting data on AMR and entering them into WHONET, World Health Organization software for the management and analysis of AMR data.

This a major step forward in tackling AMR and was achieved with the support of USAID's Infectious Disease Detection and Surveillance (IDDS) project. However, much more needs to be done, including expanding the limited number of personnel trained to enter data into WHONET. With few people trained to use WHONET, data collection was centralized and entered by just one trained staff member. In addition, IDDS observed during quality assessments that double-checking data after entry was rare.

To address these issues, IDDS organized training to promote the use of WHONET among bacteriology laboratory staff in Cameroon and ensure that they can collect quality data.

The training took place in March 2022 at seven IDDS-supported pilot sites for AMR surveillance: the General Hospital, the University Teaching Hospital, the Military Hospital, the National Veterinary Laboratory, the National Insurance Fund Hospital in Cameroon's capital Yaoundé, the Laquintinie Hospital in Douala, and the Limbe Hospital in Limbe.

At these locations, a total of 57 laboratory technicians were successfully trained. "WHONET allows trained users to better manage AMR data and helps them monitor the evolution of known resistance patterns and the appearance of atypical patterns," said Helene Tiomo, Deputy Head of the Bacteriology Laboratory at National Veterinary Laboratory in Yaoundé.

IDDS is ensuring the sustainability and reliability of AMR surveillance and WHONET by promoting the collection of high-quality data that the country needs to capture Cameroon's AMR situation nationwide. By the end of 2022, Cameroon's AMR data will also start to be entered into the World Health Organization's Global Antimicrobial Resistance and Use Surveillance System and made available to medical experts worldwide.

Limbe regional hospital trainees during practical exercises. Photo by IDDS

National Insurance Fund Hospital participants during practical exercises. Photo by IDDS

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IDDS Supports the Development of a National Action Plan on Antimicrobial Resistance, 2022–2026, for India's Livestock Sector

A recent analysis in *The Lancet* put global deaths from antibiotic-resistant bacterial infections at 1.2 million in 2019. That is more deaths caused by antimicrobial resistance (AMR) than by HIV/AIDS or malaria. The world is waking up to the huge danger of AMR and is starting to take action.

In India, coordinating AMR detection and surveillance is the responsibility of the National Centre for Disease Control (NCDC). Currently, only a few partner agencies are working in coordination with the NCDC on AMR detection and surveillance in India, such as the World Health Organization, and the U.S. Centers for Disease Control and Prevention. Infectious Disease Detection and Surveillance (IDDS) is the first United States Agency for International Development (USAID) project to collaborate with NCDC on AMR. There is a clear need to expand AMR coordination in India, including bringing in the animal health sector. Dangerous infections can jump between humans and animals, and coordination is in line with the One Health approach, which aims to obtain optimal health outcomes by recognizing the interconnection between people, animals, and their shared environment.

IDDS project is supporting the NCDC in its AMR coordination and was the key contributor by providing technical inputs for the livestock sector at the National Stakeholders' Workshop on AMR 2022–2026, over March 23 and 24, 2022. The goal of the workshop is the creation of a national action plan on AMR for the livestock sector.

The workshop was led by the NCDC and brought together the Ministry of Fisheries, Animal Husbandry and Dairying, the Food and Agriculture Organization of the United Nations, and other key stakeholders, with support from USAID.

IDDS participated in the workshop and contributed to the group discussions to understand the status of the implementation of AMR animal health activities and lessons learned from the previous national action plan, and to propose a roadmap for implementation of the new plan and its monitoring.

IDDS will now provide technical and managerial support to the NCDC in organizing meetings of other health sector stakeholders (e.g., human health, food and drugs, environment, research, and professional and civil society organizations) to analyze the status of implementation and brainstorm on strategic priorities and activities to be included in a new national action plan on AMR.

IDDS India team participation in National Stakeholders Workshop of Livestock sector for development of NAP-AMR 2022-2026, March 23-24, New Delhi. Photo by IDDS

IDDS representative participating in Group work during the workshop. Photo by IDDS

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USAID's Infectious Disease Detection and Surveillance Project Exhibits at India's Step Up to End TB Summit on World Tuberculosis Day 2022

India has committed to end tuberculosis (TB) by 2025, five years ahead of the United Nations Sustainable Development Goal global target of 2030. India's National TB Elimination Program has made tremendous progress over the past few years, but the COVID-19 pandemic threatened this by limiting access to case detection and treatment. The National TB Elimination Program realizes the importance of refocusing attention on TB to meet its target.

Step Up to End TB was geared to place national attention back on the fight to end TB. Marking World TB Day, India's Ministry of Health and Family Welfare organized the Step Up to End TB event over March 24 and 25, 2022, at Vigyan Bhavan in New Delhi.

USAID's Infectious Disease Detection and Surveillance (IDDS) project has been supporting India to reach its TB targets since October 2020. Specifically, IDDS strengthens two pillars of the TB National Strategic Plan, Detect and Build, by improving case detection and building institutional strengthening in the fight against TB. The event gave IDDS the opportunity to showcase this work, including areas such as public sector strengthening, private sector outreach, and research. The IDDS stand at the high-profile event demonstrated project work and achievements through leaflets, posters, and a presentation on a wide-screen display.

Around 1,200 delegates attended this event from government agencies and non-governmental and civil society organizations. Prominent visitors to the IDDS stand included Dr. Mansukh Mandaviya, Minister of Health and Family Welfare, and Dr. Bharati Pravin Pawar, Minister of State. They were shown IDDS's work to strengthen the TB diagnostic network in India. Dr Mansukh Mandaviya acknowledged the contributions and support of USAID's projects in India.

Dr. Mansukh Mandaviya, Minister of Health and Family Welfare, and Dr. Bharati Pravin Pawar, Minister of State, during their visit to the IDDS stand, Vigyan Bhavan, New Delhi on March 24, 2022. Photo by IDDS

Dr. Sangita Patel, Director Health at USAID, India, and Dr. Umesh Alavadi, Project Management Specialist, USAID India, during their visit to the IDDS stand, Vigyan Bhavan, New Delhi on March 24, 2022. Photo by IDDS

Another official visitor Dr. Alok Mathur, Additional Deputy Director General TB, appreciated the efforts made by IDDS in public sector institutional strengthening. Many partner agencies also visited the IDDS stand, such as national, state, and district TB officials, and World Health Organization staff.

IDDS representatives, along with Dr. Alok Mathur, Additional Deputy Director General TB, Dr. Raghuram Rao, Joint Director-TB, Dr. Nishant Kumar, Joint Director-Public Health, Central TB Division, Ministry of Health and Family Welfare, during their visit to the IDDS stand, Vigyan Bhavan, New Delhi on March 24, 2022. Photo by IDDS

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Promoting Bacteriology in Liberia

Bacteriology is crucial for detection and surveillance of antimicrobial resistance (AMR): drug-resistant infections that are a major challenge for modern medicine. USAID's Infectious Disease Detection and Surveillance (IDDS) project has supported three hospital laboratories in Liberia so that they are now equipped to take on bacteriology for the first time. But a second important part of countering the danger of AMR is promoting bacteriology to clinicians so they make use of these testing services.

To do this, IDDS joined Liberia's National Diagnostic Division, the National Reference Laboratory, and the AMR Unit of the Ministry of Health, between January 22 and March 6, 2022, for a series of promotional visits to the three hospital laboratories: Phebe (Bong county), Tellewoyan (Lofa county), and G.W. Harley (Nimba county).

In addition to increasing awareness within the hospital community of the availability of bacteriology testing services, the visits assessed the readiness and capacity of these laboratories to handle infectious disease specimens and AMR. Testing of these specimens determines whether a patient is infected with a drug-resistant pathogen. Data on specimens processed and turnaround times were reviewed as a way of ensuring timeliness and accuracy. The visiting team met with the hospital management of each hospital, promoting the availability of bacteriology testing services and encouraging clinicians to utilize the services.

"We want to encourage the hospital teams to create awareness during grand rounds[2] so that people will know that the service is available to make objective diagnosis," said Diana Smith, National Coordinator of the AMR Unit at Liberia's Ministry of Health. "It helps you to know that this is the right antibiotic to use for a particular clinical condition and that resistance has been built against a particular antibiotic and cannot be used to treat the patient. So, awareness is key."

Interviews were held with laboratory and other facility staff, while laboratory records, standard operating procedures, and guidelines were reviewed. Meetings were also held with facility staff to provide understanding and awareness of AMR surveillance and stewardship programs for the clinical management of patients.

The training and mentorship records of the laboratories showed adequate training on specimen collection and bacteriology specimen culture. Inventory records showed that reagents for conducting culture and antimicrobial susceptibility testing were available.

The joint assessment concluded that IDDS has built bacteriology testing capacity in the three county laboratories and engagement with the clinicians should continue to increase the specimen flow to the laboratories.

[2] Grand rounds are a method of medical education in which the medical problems and treatment of a particular patient are presented to an audience of clinicians and medical students.

Diana Smith and Watta Antony verifying bacteriology testing records with the laboratory supervisor. Photo by IDDS

Inspecting sub-cultured organisms, prepared media, and availability of microbiology laboratory supplies. Photos by IDDS

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Microbiology Skills Training for County Laboratory Technologists at Nairobi's Aga Khan University Hospital

Microbiology skills are essential to both detect dangerous pathogens (the microorganisms that can cause disease) and to test for antimicrobial resistance (AMR), dangerous drug-resistant microbes that are impervious to certain antibiotics.

In Kenya, USAID's Infectious Disease Detection and Surveillance (IDDS) project has been mentoring and training laboratory technologists in five county referral hospital laboratories (Bungoma, Kilifi, Murang'a, Nyeri, and Trans-Nzoia) since July 2019 to strengthen their microbiology skills and their capacity to detect and report AMR. To boost their microbiology work, IDDS identified the placement of the laboratory technologists from the five laboratories in a respected, busy microbiology laboratory as a strong strategy to complement the on-site mentorship and other training.

In early 2022, IDDS initiated discussions with the Aga Khan University Hospital (AKUH) in Nairobi and the five-IDDS-supported counties on placement of their laboratory technologists in the AKUH clinical microbiology laboratory for on-bench skills development. AKUH was selected because it is a major hospital with high-quality standards in bacteriology and it processes various clinical specimens for organism identification and antibiotic susceptibility testing (AST). AST allows practitioners to identify whether pathogens are sensitive or resistant to available antibiotics.

Five microbiology laboratory technologists, one at a time, were placed in the AKUH microbiology laboratory department for two weeks, between January 31 and April 1, 2022. The main objective was to develop the laboratory technologists' bench technical skills on specimen processing and quality assurance and to strengthen capacity to detect pathogens and conduct surveillance on AMR in bacterial pathogens. Their competency was evaluated through simulation with unknown specimens.

IDDS developed the minimum requirements for the laboratory technologists to be selected for placement and covered the laboratory technologists' travel expenses. IDDS and AKUH also developed a clinical microbiology on-bench competency task list to guide the laboratory technologists' rotation through various laboratory sections, specimen management, minimum number of specimens to be processed, culture reading and interpretation, AST, culture media preparation, biosafety, and quality assurance practices. The five county hospitals committed to provide adequate facilities, equipment, reagents, and consumables (chemicals and other materials used in testing) to enable the technologists to be able to apply their learning.

The two-week placement offered the technologists an opportunity to acquire new skills in handling various clinical specimens, linking clinical information with culture reading, and interpretating reports. Each technologist developed an action plan for areas of improvement upon return to their respective laboratories. These areas included culture processing of clinical specimens, plate streaking to obtain discrete colonies, differentiating between normal flora and pathogens, preparing culture media, labeling quality control, and reagent consumption.

Erick Wanjala, a microbiology technologist from Bungoma County Referral Hospital, appreciated the clinical exposure from the two-week placement in the AKUH microbiology laboratory. "I got the opportunity to be exposed to a laboratory accredited by the College of American Pathologists where there are meticulous quality processes involved in specimen processing," said Wanjala. "Additionally, I processed many clinical specimens and developed confidence in culture reading and interpretation of pathogen from normal floras and learning urine culture processing by correlating dipstick findings and bacterial growth on plate. I have introduced the use of dipstick in all urine for culture processing and this has eased our interpretation of urine cultures."

The training has enhanced the laboratory technologists' skills in strengthening quality management systems in bacteriology culture processing. This will improve timely, verifiable, and quality culture results to inform clinical decisions. Patients will get faster, better care because their doctors will know which drugs will work best for them. This will also contribute to the generation of quality AMR data that are sent to the national database for analysis, dissemination, and use, and finally sharing with the World Health Organization's Global Antimicrobial Surveillance System, to inform global policy decisions. IDDS will continue to mentor and monitor the laboratory technologists at their workstations after the placements to ensure continued development of the skills they acquired.

Eric Wanjala from Bungoma County Referral Hospital processing culture during the clinical placement at AKUH. Photo by IDDS

Eric Wanjala of Bungoma County Referral Hospital setting AST in VITEK during clinical placement at AKUH. Photo by IDDS

Benson Malau of Malindi Sub-County Hospital being taken through culture reading and interpretation during clinical placement at AKUH. Photo by IDDS

Benson Malau of Malindi Sub-County Hospital being taken through AST processing in an automated VITEK 2 Compact equipment during clinical placement at AKUH. Photo by IDDS

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Expanding AMR Detection and Surveillance in Senegal

Antimicrobial resistance (AMR) occurs when a pathogen (a microorganism that can cause disease) develops resistance to medication, making it harder to treat even common infections. In many countries, doctors will use standard treatment methods without testing for AMR in patients when they do not have access to antimicrobial susceptibility testing. Antimicrobial susceptibility testing allows practitioners to identify whether pathogens are sensitive or resistant to available antibiotics and ensures that patients have access to the best treatments for their illness.

USAID's Infectious Disease Detection and Surveillance (IDDS) project has played an important role in AMR detection and surveillance in Senegal. The project supports seven laboratories in the country to implement AMR detection and surveillance. These laboratories provide services to half of all the regions in the country.

Professor Amadou Moctar Dieye, Director of Laboratories at Senegal's Ministry of Health, said, "IDDS is continuously increasing the capacity of the country to tackle the threat of AMR with its support to diagnostic facilities."

From March 14 to 18, 2022, IDDS supported Senegal's Directorate of Laboratories to conduct an assessment of the capacity and needs of two further laboratories, Polyclinique Medina in the Dakar region and Mbour in the Thies region, to begin bacteriology testing, including AMR. The assessment was conducted using the tool developed by IDDS and validated by Senegal's Ministry of Health, and in compliance with international standards. Based on the findings, IDDS will assist the laboratories obtain the necessary equipment, reagents, and consumables (chemicals and other materials for testing) to start AMR detection and surveillance. When they are properly equipped, IDDS will start bacteriology training for the two laboratories.

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IDDS Supports Installation of and Training on Truenat Machines for Tuberculosis Diagnosis in the Democratic Republic of the Congo

The Democratic Republic of the Congo (DRC) suffers from one of the world's highest burdens of tuberculosis (TB) and multidrug-resistant TB. Although more than 200,000 TB cases are diagnosed every year, it is estimated that about 50 percent of cases are missed. The DRC's National TB Program is seeking to bridge this diagnostic gap by increasing the coverage of molecular testing, a rapid and accurate method of testing for infectious diseases including TB.

The DRC had adopted molecular testing as an initial TB diagnostic tool several years ago, but with just 120 GeneXpert machines[3] for more than 500 health zones and 2,000 centers for diagnosis and treatment (CDTs), lack of access to testing for patients has been a serious problem.

In March 2022, the DRC received 38 Truenat machines, funded by USAID's New Tools Project and the United Nations' Stop TB Partnership.

USAID's Infectious Disease Detection and Surveillance (IDDS) project is providing technical support to the NTP for the installation of the Truenat machines and staff training in four pilot provinces. These provinces are Kinshasa, Haut Katanga (Lubumbashi), Kasai Oriental (Mbuji-Mayi), and Lualaba. Truenat is a portable molecular testing system that can operate in a wide range of temperatures and has battery power. Together with the manufacturer Molbio, the installation of the Truenat machines and staff training took place from March 20 to April 10, 2022.

In Kinshasa, the training brought together the managers of the National TB Reference Laboratory (six staff), the managers of the Provincial Laboratory of Kinshasa (four staff), and eight providers at the selected CDTs. For the other provinces (Haut Katanga, Kasai Oriental, and Lualaba), the managers of the provincial TB laboratories and the technicians at the CDTs were trained.

A week after the installation and activation of the Truenat machines at the sites in Kinshasa, the IDDS team carried out a post-training visit. One of the first users of the Truenat machine in the DRC was Second Lieutenant Nkunga Fabrice, a laboratory technician at the Kokolo CDT (Kokolo Military Health Zone in Kinshasa). "This new machine, Truenat, is easy to use, and will facilitate our work in the diagnosis of TB here at CDT Kokolo, because for several years we had only our Olympus CX21 microscope," said Fabrice. "When we had to resort to (sending out) for the molecular test (GeneXpert), we had difficulties in transporting samples far away and the results were not returned to us on time, sometimes we did not receive the results because sometimes the samples were not analyzed, the machine out of service or failure of the modules, out of stock of cartridge, etc."

[3] GeneXpert is a molecular testing diagnostic system.

Fabrice, who had not received any molecular test training before, said that he needs support to set up a framework for experience sharing with all users of the Truenat machine in Kinshasa, to plan the training of a second technician, and to support the education of the community and clinicians for testing of presumptive TB cases. During the visit, Fabrice was operating the Truenat machine without any difficulty and had already performed 20 tests, including six detected TB cases.

Practical session during the Truenat training at the Provincial Laboratory of Mbuji-Mayi (Kasaï Oriental). Photo by IDDS

Second Lieutenant Fabrice Nkunga, working on a Truenat machine at CDT Kokolo. Photo by IDDS

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U.S. Assistant Secretary of State Monica P. Medina Visits IDDS-supported Rodolphe Mérieux Laboratory in the Democratic Republic of the Congo

The eastern provinces of the Democratic Republic of the Congo (DRC) are a very challenging environment for dealing with the threat of infectious diseases. USAID's Infectious Disease Detection and Surveillance (IDDS) project provided strong support to the DRC's response to the Ebola outbreaks in the east of the country in 2021.

The National Institute for Biomedical Research's (INRB) Rodolphe Mérieux regional laboratory for the eastern provinces in Goma leads the DRC's infectious disease detection in the east and is a crucial partner for IDDS. IDDS's support for the laboratory has included providing GeneXpert testing cartridges during the Ebola outbreaks.

On February 24, INRB hosted a visit by U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, Monica P. Medina, to the Rodolphe Mérieux laboratory, together with IDDS. Assistant Secretary Medina was in Goma to view the support of the U.S. Government for infectious disease response in the DRC.

This visit was prepared and coordinated by IDDS and INRB management, who provided a tour of the laboratory facilities. This visit helped the U.S. delegation see firsthand the support of the U.S. government to the DRC Ministry of Health through USAID.

IDDS began supporting the INRB-Goma laboratory in September 2020, including training staff on sample management and testing, equipment maintenance, and development of the laboratory operational plan to ensure the INRB-Goma laboratory's position as a biosafety level 3[4] laboratory. IDDS provided support during the Ebola outbreaks, including the provision of GeneXpert cartridges, field transportation of commodities, and safe transportation of used cartridges and other biohazardous materials for safe disposal.

Assistant Secretary Medina expressed her appreciation of the work done by the INRB-Goma laboratory team with the support of USAID and specifically IDDS. Soon after the visit, the U.S. Ambassador to the DRC, Mike Hammer, tweeted, "Assistant Secretary Medina met the impressive team of INRB-Goma and discovered a lab founded by the USG where a wide range of laboratory services is available. Their work serves as a powerful first line of defense to combat infectious diseases and protect global health."

The INRB is the national public health laboratory and medical research center of the DRC. It was founded in 1984 and is directed by Professor Jean-Jacques Muyembe-Tamfum, who is well known for his early work on Ebola. The INRB is involved in cutting-edge research and collaborates with many institutions and universities, including the Johns Hopkins University and the University of California. Its activities cover clinical research, surveillance, emergency response, training, and laboratory strengthening. The INRB has been designated a World Health Organization collaborating center since 2018.

[4] Biosafety level 3 is appropriate for work involving microbes that can cause serious and potentially lethal disease through inhalation.

The INRB-Goma laboratory was created in 2019 as part of decentralization efforts to better respond to Ebola outbreaks in eastern DRC and to become a regional laboratory for other dangerous diseases. This laboratory is the only operational biosafety level 3 facility in the eastern DRC region. It serves as a hub for transporting laboratory samples between Goma and INRB-Kinshasa and can serve as a laboratory sample depot for samples collected in the region. Its operations primarily involve research for the INRB, but currently it also provides public health testing for the community.

Assistant Secretary Medina (right) and Dr. Daniel Mukadi, director of INRB-Goma, tour the INRB-Goma laboratory. Photo by IDDS

Dr. Daniel Mukadi, director of INRB-Goma (left) and the IDDS DRC team accompanying Assistant Secretary Medina (right) during the tour of the INRB-Goma laboratory. Photo by IDDS

The INRB and IDDS teams with Assistant Secretary Medina (center). Photo by IDDS

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IDDS Improves Biosafety and Biosecurity in Uganda

While COVID-19 has taken the headlines, many countries have registered outbreaks from other dangerous pathogens (the microorganisms that can cause disease) in recent years. Over the past few years, Uganda has faced outbreaks of Ebola, Marburg virus disease, avian influenza, Crimean-Congo hemorrhagic fever, anthrax, rabies, yellow fever, measles, and Rift Valley fever. The risks of dealing with these pathogens have brought biosafety and biosecurity into the spotlight.

The danger of catastrophic biological events continues to be magnified by global travel, urbanization, terrorist interest in weapons of mass destruction, and rapid advances in technology, which may result in the creation and manipulation of pathogens with pandemic potential. In addition, recent cases of laboratory-acquired infections underscore the need to institute and improve bio-risk management systems in laboratories.

From March 21 to 25, 2022, USAID's Infectious Disease Detection and Surveillance (IDDS) project conducted biosafety and biosecurity training of laboratory directors and safety managers from four IDDS-supported Regional Animal Disease Diagnostics and Epidemiology Centers, the National Livestock Resources Research Institute, and the Uganda Wildlife Authority. The training is part of the quality management system mandatory training series that helps satisfy the requirements of International Organization for Standardization (ISO) standard 35001:2019, which defines the requirements for a bio-risk management program, and ISO standard 15190:2020, which defines the requirements for safety in medical laboratories.

The training aimed to improve the bio-risk management aspects of the laboratories, especially in biosafety and biosecurity, because all these laboratories deal with hazardous pathogens. Dr. Susan Nabadda, the commissioner of laboratory services/executive director, National Health Laboratory and Diagnostic Services of the Ministry of Health, officially closed the workshop, saying, "I would like to thank the IDDS project for the continuous support given to veterinary laboratory services and for enrolling the regional veterinary laboratories of Gulu, Mbale, Mbarara, and Moroto in a quality management system program, that I hope will ultimately lead to accreditation of these animal health laboratories."

The five-day training workshop took place in Jinja district and was attended by 13 participants from the laboratories in Gulu (2), Moroto (2), Mbale (2), Mbarara (2), the National Animal Disease Diagnostics and Epidemiology Center (2), the Uganda Wildlife Authority Murchison Veterinary Lab (1), and the National Livestock Resources Research Institute (2). This training was carried out by IDDS and four International Federation of Bio Risk Management-certified trainers.

IDDS organized the training, together with the Bio Risk Management Department of the National Health Laboratory and Diagnostic Services of the Ministry of Health, the Ministry of Agriculture, Animal Industry and Fisheries/National Animal Disease Diagnostics and Epidemiology Center, the National Livestock Resources Research Institute, and the Uganda Wildlife Authority.

Laboratory managers after receiving their training certificates. Photo by IDDS

A facilitator from the Bio Risk Management Department of the National Health Laboratory and Diagnostic Services, Ministry of Health, facilitating a training session for the animal health laboratory staff. Photo by IDDS

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infectious diseases and drug-resistant infections that pose a major threat to public health and global health security.

IDDS Brings One Health Surveillance for Zoonotic Diseases to Uganda's Kazo and Mbale Districts

In recent years, Uganda has suffered from the outbreak of many dangerous zoonotic diseases, infections that can jump between animals and humans, including Ebola, Marburg virus disease, and avian influenza. The One Health approach is key to detecting and tracking such outbreaks. One Health recognizes the interconnection between people and animals and their shared environment and seeks to bring health sectors together.

One Health informs much of the work of USAID's Infectious Disease Detection and Surveillance (IDDS) project in Uganda. IDDS is supporting Uganda to implement its National One Health Strategic Plan (2018–2022). The plan calls for coordinated zoonotic disease surveillance across health sectors and for this to take place in Uganda's districts, where such outbreaks are likely to occur.

IDDS is putting decentralized, cross-sector surveillance into practice with training for health workers, in collaboration with Uganda's National One Health Platform. Staff from Kazo in the west of the country and from Mbale in the east received their training from January 17 to 28, 2022. A total of 40 district staff from the district health offices, the water and natural resources department, the district veterinary offices, and the Uganda Wildlife Authority received training on the implementation of coordinated surveillance using a One Health approach.

Aliziki Wasagali, an assistant warden at Mount Elgon Wildlife Conservation Area, said, "This training in One Health was long overdue. Zoonotic threats do not know the boundaries of our sectors. It is high time we collaborated more closely."

One Health Focal Person for Ministry of Water and Environment, Betty Mbolanyi, facilitating training of the Mbale District One Health team. Photo by IDDS

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IDDS Hosts the U.S. Ambassador and Shows U.S. Support for Global Health Security Capacity in Uganda's Mount Elgon Region

In February 2022, the Biden Administration underlined its commitment to global health security, saying that the United States will continue "intensive support (to) partner countries, to provide assistance to better prevent, detect, and respond to infectious disease threats." The reality of where this support happens is often in very humble, rural settings, far from where policy decisions are made.

Uganda's Mount Elgon region is considered a hot spot for emerging infectious diseases. Kween district experienced outbreaks of Marburg virus disease and anthrax in animals and humans in October 2017 and April 2021. Several other zoonotic diseases (those that jump from animals to humans), including brucellosis and rabies, have also occurred in the area in recent years.

USAID's Infectious Disease Detection and Surveillance (IDDS) project supports zoonotic disease detection and surveillance in the Mount Elgon region, including the Kween and Mbale districts. On March 1, 2022, Natalie E. Brown, the U.S. Ambassador to Uganda, visited the Mount Elgon region. The visit provided Ambassador Brown with a view of USAID's efforts to strengthen Uganda's capacity to detect, prevent, and respond to zoonotic disease outbreaks and implement robust animal disease surveillance in an emerging disease hot spot area. Ambassador Brown was hosted by IDDS, together with the Food and Agriculture Organization of United Nation and National One Health platform members.

Ambassador Brown witnessed how USAID enables the collection and transportation of specimens from animals on farms in remote villages in Uganda to laboratories in urban centers. She was taken on a guided tour of Mbale District Veterinary Laboratory, an IDDS-supported diagnostic site that was refurbished and equipped with assistance from IDDS, the Defense Threat Reduction Agency of the U.S. Department of Defense, and the Food and Agriculture Organization. Ms. Awor Albina, chief administrative officer of Kween district, thanked the ambassador for the development assistance provided through partners like IDDS and added, "Without the personal protective equipment you provide, we cannot safely take a specimen to detect and respond to the frequent zoonotic outbreaks."

"The United States is proud to work in partnership with the people of Uganda, the government, and U.S. colleagues to find ways to improve agricultural production, specifically when it comes to the animal side to ensure that the animals and the humans who take care of them remain healthy specially when it comes to zoonotic diseases," said Ambassador Brown. "One thing I have learned today is that you can pick a specimen from the cow's tail."

Ambassador Brown (in a white top in the center) observes how specimens collected from farms are packaged prior to transportation to the laboratories. Photo by IDDS

Ambassador Brown (orange mask) takes a guided tour of Mbale District Veterinary Laboratory, led by the IDDS diagnostic specialist, Thomas Ssemakadde (extreme right with a blue mask). Photo by IDDS

Ambassador Brown (far left) observes how a blood specimen is collected from a cow on a farm in Kween district. Photo by IDDS

Established in May 2018, USAID's Infectious Disease Detection and Surveillance (IDDS) project is a five-year, $120 million initiative that operates in more than 20 countries in sub-Saharan 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.

IDDS Support Leads to Vietnam's First Standard Operating Procedures for Specimen Packaging and Transport

Accurate and timely test results are vital for effective treatment and improved patient care. They also lead to enhanced disease surveillance and the ability to respond to and control infectious diseases. Coordination between referral and testing facilities plays a key role in ensuring that specimens are transported quickly and remain of high quality.

There has never been a fully functional specimen referral system in Vietnam. Specimen referral is fragmented, and each referring facility has a different mode of specimen transport without government guidelines or regulations (e.g., transport by medical staff or by courier company). This is partly due to a lack of official specimen transport standard operating procedures (SOPs) to guide laboratory staff.

In late 2021, with the support of USAID's Infectious Disease Detection and Surveillance (IDDS) project, the Vietnam Department of Animal Health issued the updated National Guidelines on Animal Specimen Collection, Packaging, Storage and Transportation. However, these guidelines did not include detailed instructions on specimen transport, especially regarding methods of transport. Developing and distributing specific SOPs for specimen referral covering transport details was still vital.

IDDS collaborated with experts from both the human and animal health sectors to create the SOPs for specimen transport and handling of incidents, as well as accompanying forms for referring and testing facilities to use as a reference. At the end of March 2022, the SOPs were officially issued in Thai Nguyen province for the first time. "We had already developed SOPs for most diagnostic tests conducted in Vietnam; however, there was no technical guidance on several aspects of specimen referral such as means of transportation and incident handling during transport," explained Dr. Hoang Thi Thu Ha, Head of the Bacteriology Department of the National Institute of Hygiene and Epidemiology.

IDDS also disseminated the SOPs in two additional pilot provinces, Dong Thap and Binh Dinh. In March and early April 2022, training courses on the SOPs were conducted in all three IDDS-supported provinces.

IDDS plans to launch the specimen referral system pilots in May 2022 to demonstrate the operation of the system, conduct an evaluation of performance, and identify areas that need improvements. Along with the creation of the SOPs, IDDS supported making two videos on packaging, storage, and incident handling during transportation. "The SOPs for specimen referral and the training materials (the two videos) are extremely useful to implement SRS activities," said Nguyen Thi Thuy Man, Head of the Pathology and Parasitology Division, National Center of Veterinary Diagnosis. "These SOPs will facilitate specimen referral activities and contribute to the improvements of the diagnostic networks in the three pilot provinces."

Discussion on the revision and planning for issuance of specimen referral SOPs at the Thai Nguyen Center for Disease Control on March 25, 2022. Photo taken by Doan Thi Tuyet Lam, Thai Nguyen Center for Disease Control. Photo by IDDS

A training course held at the Thai Nguyen Provincial Sub-Department of Animal Health on March 29, 2022, on specimen packaging, transportation, and handling of spilling/leakage incidents. Photo taken by Nguyen Hoai Thu, IDDS GHS Vietnam team. Photo by IDDS

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Transforming Vietnam's Animal Health Information System

The COVID-19 pandemic, like swine flu and SARS earlier this century, has reinforced the interconnection of the health of people, animals, and ecosystems. But it is one thing to see that human, animal, and environmental health systems need to work together. It is quite another for government officials to have a real-time, multi-sector disease reporting system.

In Vietnam, it has been four years since the launch of the Vietnam Animal Health Information System (VAHIS), an online disease reporting system designed to enable real-time reporting of animal diseases and zoonotic diseases (those that jump from animals to humans). It is an important tool to contain potential outbreaks of dangerous zoonotic diseases such as avian flu. However, for a long time, 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) 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," said Dang Van Hung, head of the Epidemiology Division at Regional Animal Health Office No. 4. "This helped to further increase reporting rates, timeliness, and completeness of reported outbreak data, which are important for animal disease prevention and control in the regions."

Improving Methods

Previously, reporting was hampered by many issues in VAHIS. For example, data entry items, such as the 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 had been entered into the system.

IDDS staff facilitated each of the five project-supported provinces and the corresponding regional animal health offices (RAHOs) to make a detailed list of issues encountered by provincial and regional staff. The IDDS team worked with DAH technical staff and the responsible software engineer (supported by the Food and Agriculture Organization of the United Nations in Vietnam) to redesign the VAHIS 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 system and identify any remaining issues.

The improved system 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). The improved dashboard 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.

"With this improved version, VAHIS has become an excellent tool, allowing electronic data reporting to replace paper-based and email-based reporting methods," said Hoang Manh Tien, Technical Officer, and the focal person for VAHIS at the DAH Division of Veterinary Epidemiology.

Implementing Changes

After key VAHIS users at the provincial, regional, and national levels were satisfied with the improvements, IDDS organized a pilot virtual training course for all users in the five supported provinces in November 2021. Since then, VAHIS has obtained accurate and complete animal disease data in a timely manner from the five provinces. In the last three months of 2021, the five provinces used VAHIS to report 92 animal disease outbreaks including zoonotic diseases.

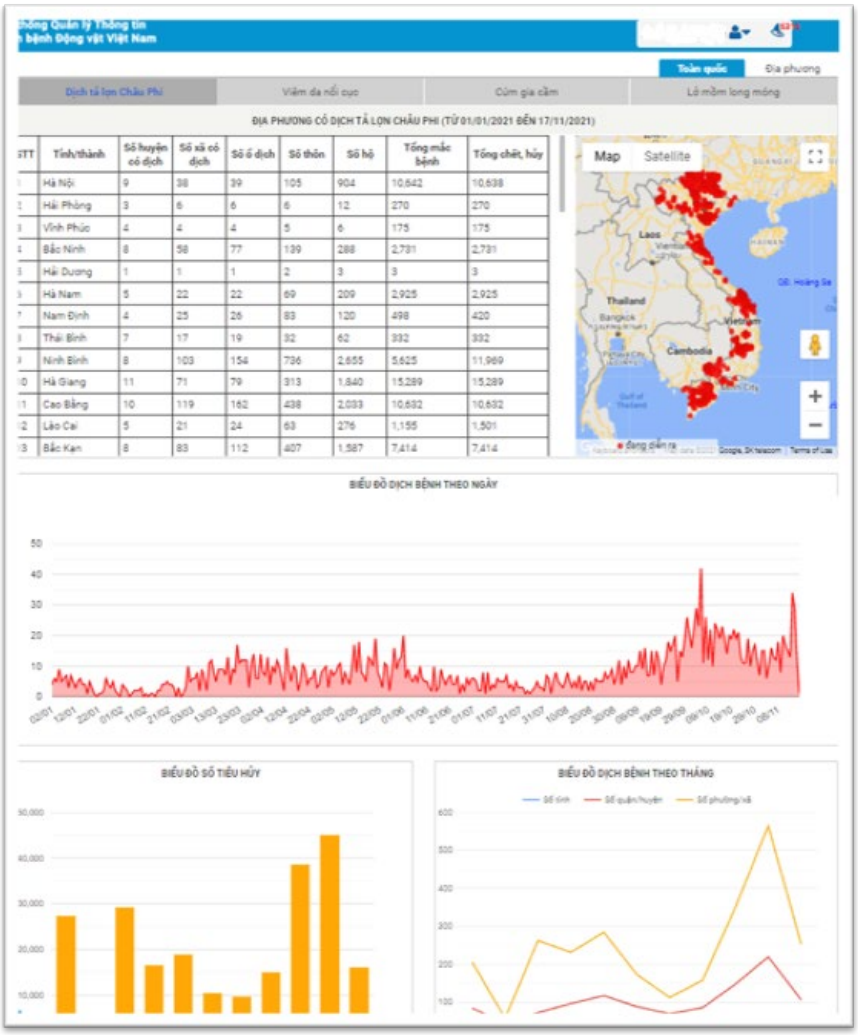
IDDS also collected additional feedback from users in each province through monthly technical meetings on VAHIS use and reporting. The feedback from users in the five pilot provinces helped DAH to further refine the system design and training materials, which were later used by RAHOs to train VAHIS users in all the other provinces in the country on new features of the improved system.

"So far, most provinces in the country have been reporting animal disease data through VAHIS," added Hoang Manh Tien. "These have helped leaders and technical personnel in the animal health system to have timely access to up-to-date information on disease outbreaks. The use of VAHIS has reduced time needed for compiling disease data, and this is an important step toward digitalization of governing in the animal health sector."

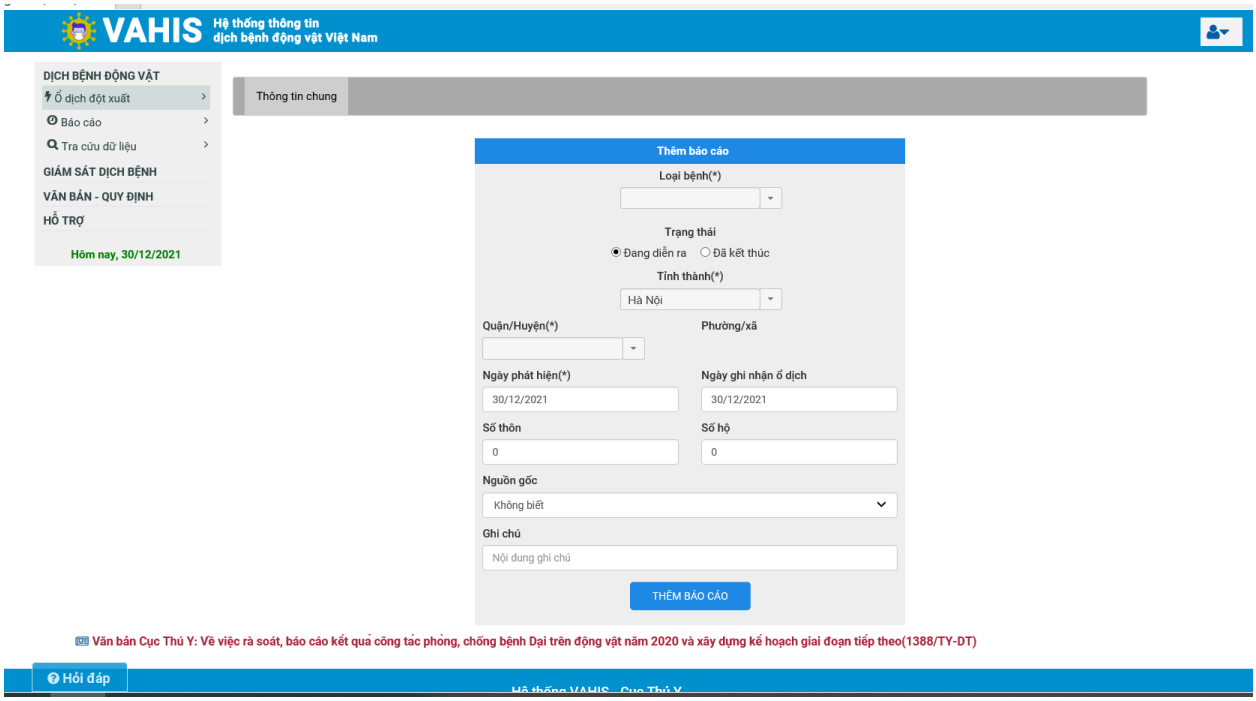
Averting Outbreaks

Improving systems like VAHIS is part of IDDS's One Health approach, which brings together experts from sectors such as global health, agriculture, and the environment to avert disease outbreaks.

"We can only prevent future pandemics with an integrated One Health approach to public health, animal health, and the environment we share," said WHO Director-General Tedros Adhanom Ghebreyesus. "Approximately 70 percent of all emerging and re-emerging pathogens are zoonotic, and we don't know when the next threat—the next disease X—will emerge."



The new dashboard design of the improved VAHIS



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

Lan Nguyen Thi Ngoc, Vice Director of the Binh Dinh Provincial Sub-Department of Animal Health, presenting the local needs and challenges in using VAHIS for animal disease data reporting at an IDDS workshop in 2021. Photo by IDDS

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