



# AFENET-LAB Newsletter

Networking you to the latest laboratory  
developments in public health

March 2009, Vol. 1, Issue 1



## Launch of AFENET-L

This month, the African Field Epidemiology Network (AFENET) with assistance from PEPFAR funding, is celebrating the launch of AFENET-L. This initiative was conceived during the 5th meeting of the Regional HIV/AIDS public health laboratory network, that was held in Senegal in September 2008. The meeting was a continuation of the WHO HIV Laboratory Network initiative which started in Harare in 2001.

The aim of AFENET-L was to develop or strengthen comprehensive national laboratory policies focusing on laboratory functions, organization, structures, networking, coordination, technologies, maintenance, biosafety, biosecurity and quality management.

AFENET-L will be implemented in the context of the WHO/AFRO Regional Public Health Laboratory Network, established in 2001. This will be through collaboration with WHO public health laboratory focal persons together with utilizing existing relationship with the Ministries of Health.

### What is AFENET-L?

AFENET-L is a network of public health laboratories in Africa that are committed to providing quality and reliable diagnosis of public health infections.

### AFENET-L's capacity

AFENET-L, as a network, is rich in laboratory expertise from a number of national reference laboratories in Africa; experienced laboratory-field epidemiologists from renowned Field Epidemiology and Laboratory Training Programmes (FELTPs);

### Vision

Our mission is to provide leadership in public health laboratory services in Africa to aid communicable diseases control and to inform public health policy.

### Mission

Our mission is to support public health laboratories in Africa provide quality and reliable diagnosis of public health infections through sharing of knowledge and expertise, sustaining quality laboratory management, and advocacy for laboratory leadership.

existing collaborations with regional and international laboratories and other research institutions.

Problems AFENET-L is addressing

- Lack of quality laboratory practice and reliability of laboratory results
- Lack of expertise and untimely response of laboratories to public health emergencies
- Poor communication and sharing of information and expertise among laboratories in Africa, especially at district level
- Lack of systematic analysis and utilization of laboratory data to guide policy

### Our strategies

The strategies AFENET-L will use to meet these challenges will include:

- Maintaining collaboration with other stakeholders in strengthening public health laboratory networks
- Supporting training of public health laboratories in quality assurance and laboratory management.

- Providing a portal for information sharing through the newsletters and website, especially at the district level
- Enhancing easy access to laboratory expertise available in the network
- Building a culture of laboratory data analysis, utilization and sharing

### What difference is AFENET-L trying to make?

- Improve quality in the public health laboratories in Africa
- Improve timely and adequate laboratory response to public health emergencies
- Improve utilization of laboratory data, information sharing and best practice

One of the products of AFENET-L is the AFENET-Lab Newsletter. This is a quarterly newsletter aimed at facilitating information sharing especially among district level laboratorians. ❖

## INSIDE THIS ISSUE:

Launch of AFENET-Lab	1
Message from the AFENET Executive Director	2
WHO Malaria Update	2
Tanzania Trains Laboratorians on HIV/AIDS Care	3
Cholera Characterization in Zimbabwe	3
Latest Developments in Laboratory Testing Technologies	4
Some Regional Public Health Networks	4
Uganda Pilots Task-based Laboratory Management Training	5



## African Field Epidemiology Network (AFENET)

Plot 23, Mackenzie Vale, Kololo  
P.O. Box 12874  
Kampala, Uganda  
Phone: +256 414 542352  
Fax: +256 414 542352  
[www.afenet.net](http://www.afenet.net)  
[www.afenet-lab.net](http://www.afenet-lab.net)

### EDITORIAL TEAM

#### EDITORS

Prof. Kariuki Njenga  
Virologist and Laboratory Director  
GDD/IEIP – Kenya, CDC  
Email: [KNjenga@ke.cdc.gov](mailto:KNjenga@ke.cdc.gov)

Dr. Fausta Masha  
Laboratory Resident Advisor TFLTP  
NIMR- NHLQATC  
Email: [fausta\\_masha@yahoo.com](mailto:fausta_masha@yahoo.com)

Dr. Faustine Ndugulile  
Laboratory Resident Advisor, SA FELTP  
NICD, South Africa  
Email: [faustinen@nicd.ac.za](mailto:faustinen@nicd.ac.za)

#### LAYOUT AND DESIGN

Dr. Pascale Krumm  
CDC, Atlanta  
Email: [pkrumm@cdc.gov](mailto:pkrumm@cdc.gov)

#### SEND COMMENTS AND LETTERS TO THE EDITORS TO

Mr. William Kabasa  
AFENET Lab Project Officer  
Email: [wkabasa@afenet.net](mailto:wkabasa@afenet.net)

Mr. Nqobile Ndlovu  
Lab Surveillance Officer  
Email: [nndlovu@healthnet.org.zw](mailto:nndlovu@healthnet.org.zw)

### Message from the AFENET Executive Director

I welcome you to our maiden issue of the *AFENET-Lab Newsletter*. The objective of this quarterly newsletter is to facilitate the information-sharing of best practices and latest laboratory developments in the public health.

AFENET established AFENET-Lab which is an initiative to strengthen laboratory networking in Africa and AFENET-Lab was started in December 2008. It has started its activities in Uganda and in the near future it will cover Kenya, Rwanda, and Tanzania and then it will be rolled out to the rest of Africa. AFENET-Lab is a network initiative dedicated to helping MOHs in Africa build stronger, effective and sustainable laboratory services. For the latest news, visit [www.AFENET-Lab.net](http://www.AFENET-Lab.net).

We welcome your stories, announcements and feedback. Please contact the editor-in-chief for details.

Thank you,

David O. Mukanga



### WHO Malaria RDTs Update

The World Health Organization (WHO) has released an update useful for guiding procurement decisions and for developing funding proposals and implementation plans for Rapid Diagnostic Tests (RDTs).

Evidence exists that current test accuracy in the field is variable, due to poor manufacture or exposure to high temperatures during transport and storage.

It is recommended to procure from manufacturers with evidence of quality of manufacturing, as evidenced by ISO13485:2003 compliance. Selection of RDTs should be guided by Plasmodium species to be detected, sensitivity and specificity, thermal stability, ease of use, costs, product support and appropriate packaging, among other things.

#### RDTs: Future Developments

WHO is collaborating in the development of stable, well-calibrated positive control wells, containing recombinant antigens and

designed to allow testing of malaria RDTs at clinic or village levels. These positive control wells will enable rapid direct evaluation of RDTs performance in remote locations without the need for cross-checking against expert microscopy.

In addition, a panel of wells of different antigens is also under development for standardized testing to be carried out at national level, which could have application for national regulatory testing and pre- or post-purchase lot-testing. ❖

### Monitoring RDT Performance in the Field

The following procedures are recommended

- Compare RDT results with expert light microscopy for blood films from the same patient
- Every month, 40 RDTs (20 positive and 20 negative) should be cross checked against corresponding 40 blood films by expert microscopy
- Expert microscopy may be available at the 'sentinel' sites used for monitoring therapeutic efficacy of antimalarial medicines or reference laboratory

## Tanzania Trains Laboratorians on HIV/AIDS Care

Together with its partners, the Tanzania Ministry of Health and Social Welfare has embarked on training laboratory personnel with the objectives of giving them skills to support and care for HIV/AIDS patients.

The training programme begun with the formation of the National Laboratory Training Team (NLTT) in 2006 which oversees all the training activities.

Training modules on CD4, Hematology, Clinical Chemistry and Laboratory Management were adopted and customized from the American Society for Clinical Pathology (ASCP) and HIV Rapid test module from CDC.

The trainings were conducted

using the Training of Trainers and Teach back approach which was then followed by rollout trainings. The trainings were conducted concurrently with the training need assessment and review of Curriculum for Training Laboratory Schools.

According to Dr. Fausta Moshia, the Tanzanian Lab Resident Advisor for FELTP, “there is a NLTT which meets quarterly. About 350 laboratory personnel from care and treatment sites have been trained on CD4, hematology, and clinical chemistry and 70 on laboratory management. About 900 health workers have also been trained on HIV Rapid Test.”

Currently, the development of a comprehensive Laboratory Training

Plan is still ongoing with the review of Laboratory Assistant training curriculum, while the Laboratory Diploma Training curriculum review has been completed and incorporated all the adopted training modules.

Dr. Fausta emphasized that the professional development of laboratory staff at schools and at working places in relation to HIV/AIDS/STI control is an important component in the fight against AIDS. Laboratory infrastructure and personnel should be developed alongside the health system to respond to the needs of the National Aids Care and Treatment Programme, she said. ❖

## Cholera Characterization in Zimbabwe

The Zimbabwe National Microbiology Reference Laboratory (NMRL) has by the end of February confirmed about 100 cholera isolates from different parts of the country, said Mr. James Mudzori, the coordinator of NMRL.

In the wake of the cholera outbreak that affected all the provinces in Zimbabwe, two different strains of *Vibrio cholerae* O1 have been isolated so far from human cases.

“The two serotypes we have been isolating from different epicenters are Ogawa and Inaba and these serotypes are not unique but common in Zimbabwe” confirmed Mr. Owen Chitsatso, the senior microbiologist at NMRL.

The two serotypes have been found in different places: Ogawa in Harare urban and Beitbridge city, Matabeleland South; and both Ogawa and Inaba in Chegutu and Makonde districts, Mashonaland West.

Districts and provinces have been sending their specimens and isolates to NMRL since the beginning of the outbreak. Some district laboratories are able to identify the *Vibrio* through culturing on TCBS and through sensitivity testing. However the existing network requires that such should be confirmed still at the NMRL.

Specimens were sent to NMRL, some at room temperature and others in cooler boxes depending on the distance. Swabs were transported using Cary Blair medium and in some cases in Stuarts Medium.



Stool specimens taken from Chitungwiza town during the cholera outbreak

“The laboratory techniques that we have used to confirm the cholera outbreak were culture on TCBS and subsequent serotyping using monovalent Ogawa, Inaba and O139,” said Mr. Chitsatso.

According to the laboratory surveillance officer, Mr. Nqobile Ndlovu, the *Vibrio* was 100% sensitive to Ciprofloxacin and about 65% sensitive to Doxycycline - the first line drug of choice. All isolates were resistant to Cotrimoxazole. ❖

**To find out more about the African Field Epidemiology Network-Lab (AFENET-Lab) and the latest information and best practices among the public health laboratories, visit: [www.AFENET-Lab.net](http://www.AFENET-Lab.net).**

## Latest Developments in Laboratory Testing Technologies

### New TB Drug Resistance Test

The challenges of detecting Multi-drug-resistant TB (MDR-TB) may be over said the officials from WHO as they unveiled a new test that can detect MDR-TB in two days instead of the standard two to three months.

“The new test is revolutionary,” said Dr. Mario Raviglione, WHO’s director of TB control, because “it changes completely the way we will be dealing with MDR-TB.”

Laboratory diagnosis of TB takes a longer time especially in developing countries owing to the lack of laboratory equipment and consumables. TB culture itself requires a longer time period of up to three months. The new test, called line probe assay, costs less than \$8 and detects mutations in bacterial DNA linked to drug resistance.

The principle of the test involves extraction of the DNA from a sputum specimen and then uses amplifying techniques to produce large numbers of copies of the DNA. This enables the detection of certain genetic mutations that are linked to resistance with the most important anti-TB drugs, isoniazid and rifampin.

The test has been used in South Africa, and there is a consensus for its widespread use in that country. Lesotho and Latvia are also using the test and Ethiopia may adopt it later this year. Thirteen additional countries are expected to begin using it by 2011 under support from Unitaaid.

### Researchers Report Quick, Inexpensive HIV Test

An HIV test which works by capturing immune cells on a microchip and then analyzing them has been developed by researchers in the HMS Division of AIDS, working with scientists at the University of Texas, Austin.

The test is said to be fast, inexpensive, and ultimately expected to fit in the palm of the hand. Whilst the invasiveness of some test is a challenge, this one requires no more than a drop or two of blood from a simple finger stick.

“The ultimate goal is that we could have a hand-held device that a relatively untrained person could use in the field, in a rural or resource-poor area and be able to get the critical tests that are needed to monitor HIV in minutes,” said Rodriguez, HMS instructor in medicine at Massachusetts General Hospital.

This development has been seen as a solution to the challenges of bulky and expensive flow cytometers. It is estimated that the device will cost between \$600 and \$800, a fraction of the \$70,000 to \$100,000 price tag on current HIV-testing equipment. The cost of a single test to monitor an individual patient’s CD4 count will be about a dollar and a half, compared to \$25 for existing methods.

“In parallel with making the drugs cheaper, we are making the tests cheaper,” said Rodriguez. “The combination is necessary to really treat people with HIV around the world.” ❖

---

## Some Regional Public Health Networks

A number of public health laboratory networks exists in Africa, as briefly described below.

### National Health Laboratory Service Network of South Africa

It integrates the following bodies:

- South Africa Institute for Medicine Research (SAIMR),
- National Institute for Virology (NIV), and
- National Centre for Occupational Health (NCOH).

It uses the common laboratory management systems and transport networks to facilitate transport of specimens, referral of tests to referral laboratories, and delivery of results.

### Africa Regional Polio Laboratory Network

This is one of the 15 regional reference laboratory networks of 145 virology laboratories that was established by WHO to support surveillance activities of polio eradication initiative (PEI). They analyses stool specimens from patients and environmental samples for the presence of polioviruses.

### Veterinary Diagnostic Laboratory Networks for Control of Epizootics (PACE)

PACE is a network for the sero monitoring of rinderpest and the evaluation of post vaccination campaigns in Africa.

### WHO/AFRO Public Health Laboratory Network

This includes national reference centers, sub-regional, and regional reference laboratories for specific diseases. It also has a WHO collaborating centers for plague.

These laboratories have adopted the WHO recommended standard materials, methods and operating procedures for cholera, bacillary dysentery, bacterial meningitis and plague.

The laboratories are equipped with essential reagents and antigens for rapid investigation and confirmation of outbreaks. A monthly bulletin on epidemiological and laboratory data is shared with countries and partners. ❖

## Uganda Pilots Task-based Laboratory Management Training

The Uganda Ministry of Health, together with the U.S. Centers for Disease Prevention and Control and Prevention (CDC), and the American Society for Clinical Pathology (ASCP), in March held their last pilot course on Laboratory Management at the Imperial Resort Beach hotel, in Entebbe. Commenting during the three-day training workshop held from the 24th to the 26th of March, Dr. Kayt Yao (Health Communications Specialist, CDC) said this course was aimed at improving laboratory performance.

Twenty three participants attended the workshop from health center IV and districts laboratories. “This is the last of the three workshops we have conducted in Uganda”, added Dr. Kayt, “this pilot course will assist us to cascade this training to seven countries.” She added that this was a task-based training which is different from a skills-based training.

The pilot training, which was characterized by simulations, demonstrations, and group discussions was well received by the laboratorians who realized the need to improve laboratory quality performance. “The approach used in this workshop has made us realize the importance of laboratory layout, specimen flow,

documentation, workstation inventory management, and inventory management,” commented Mr. Andrew a laboratory technologist from the Kampala district laboratory.

The facilitators included Dr. Kayt Yao, Barbara McKinney (ASCP) and Anna Murphy (ASCP). The course contents of the training covered workstation organization, laboratory documentation, work flow design, and laboratory layout. The expected outcomes of the pilot training was improved performance and quality results, improved turn around time, inventory management, and improved equipment maintenance.

A section on “Interacting with the Clinician” was conducted to explore communications challenges that face the laboratorians and clinicians. Group discussions focused on challenges that laboratories and clinicians faced and ways of improving them. The training emphasized on the improvement of the turn around time to improve patient care. “We are not an island. We are a team together with clinicians. Most of the harm that comes upon the patients is due to poor communication between the two,” said Dr. McKinney, “We are in the same team working for the same goal.” ❖



Workshop participants during a group exercise