



Division of Public Health Systems and Workforce Development

2010 Annual Report



Centers for Disease
Control and Prevention
Center for Global Health

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www.cdc.gov/globalhealth/fetp; www.cdc.gov/globalhealth/smdp; www.cdc.gov/idsr; and

<http://www.cdc.gov/globalhealth/programs/informatics.htm>

Center for Global Health: www.cdc.gov/globalhealth

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U.S. Department of Health and Human Services: www.hhs.gov

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CENTERS FOR DISEASE CONTROL AND PREVENTION
CENTER FOR GLOBAL HEALTH

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DIRECTOR'S LETTER

It is my pleasure to present the 6th annual report for the Division of Public Health Systems and Workforce Development (DPHSWD) at the Centers for Disease Control and Prevention (CDC). The 2010 Annual Report provides a detailed picture of the division's global health activities and its major accomplishments.

In recent years, CDC has gone through an agency-wide reorganization that led to the restructuring and renaming of our division from the Division of Global Public Health Capacity Development to the Division of Public Health Systems and Workforce Development (DPHSWD). In 2010, the division became a part of the newly established Center for Global Health (CGH). The division also expanded by adding the Global Public Health Informatics Program (GPHIP) and the Integrated Disease Surveillance and Response (IDSR) team. Those two programs complement the previously existing programs: the Field Epidemiology and Laboratory Training Program and Systems Development Branch (Africa), the Field Epidemiology and Laboratory Training Program and Systems Development Branch (Asia and the Americas), and the Sustainable Management Development Program.

The reorganization also brought to CGH the Division of Global Disease Detection & Emergency Response, the Division of Global HIV/AIDS, and the Division of Parasitic Diseases and Malaria. This organizational restructuring reflects CDC's increased emphasis on global public health. Being a part of this new Center presents numerous opportunities to strengthen existing relationships, develop new partnerships, streamline activities, be more innovative, and work with partners more efficiently to build and strengthen public health systems.

During the past year, the work of DPHSWD and its Field Epidemiology Training Programs (FETPs) continued to receive global recognition. Several new FETP programs have been established while others have expanded. We have also broadened the scope of our activities by working on specific tracks for non-communicable diseases, malaria, zoonoses, and immunization. Greater emphasis has also been given to improving the quality of the training and outcomes. We are developing and deploying new tools to help programs assess their quality. We are also partnering with TEPHINET and others to work on accreditation and preparing for a multi-site evaluation of the FETP. We believe that this approach will allow us to expand support for ministries of health and other partners, strengthen and improve critical public health systems, prevent and control infectious and chronic diseases, respond to international disasters, and provide a sustainable approach to building a global public health workforce that includes skilled field epidemiologists, laboratory scientists, and public health managers.

The division's Sustainable Management Development Program (SMDP) continues to focus on building a strong public health system and workforce equipped with competent managers and leaders. SMDP has focused its efforts on a Global Health Leadership Forum that targets public health leaders and an on-site Management for International Public Health course that targets mid-level managers. Both initiatives assist countries in building management and leadership capacity. The addition of the GPHIP and IDSR teams further expands the range of services and technical advice our division can offer partner countries.

DPHSWD is re-examining our strategies, goals, and objectives with the aim of providing a stronger and more strategic approach to building public health systems and workforce capacity through partnerships. We will also focus more on providing better headquarters support to our programs and Resident Advisors in the field through a results-oriented approach.

As we continue to define our goals and objectives and develop a strategic plan to move forward as a division within CGH, we will work closely with our internal and external partners to determine how best to utilize all of CDC's assets to support the needs of the countries we serve. We remain committed to working with our partners to strengthen public health systems and workforce capacity and to protecting and improving the health of the global community. We look forward to keeping you apprised of our progress on this new strategic positioning so that together we can maximize our ability to support country needs. For the latest updates on our activities, please visit our websites at www.cdc.gov/globalhealth/fetp; www.cdc.gov/globalhealth/smdp; www.cdc.gov/idsr; and <http://www.cdc.gov/globalhealth/programs/informatics.htm>.



Bassam Jarrar, MBA, MA
Acting Director
Division of Public Health Systems and Workforce Development
Center for Global Health
Centers for Disease Control and Prevention

DIVISION OVERVIEW

Based in Atlanta, Georgia (U.S.A.), the Division of Public Health Systems and Workforce Development is part of the Center for Global Health at the U.S. Centers for Disease Control and Prevention.

The division's strategy is to work with partners to strengthen the global public health workforce, support public health systems, and achieve program sustainability through key strategies that emphasize applying public health science and practice and demonstrating measurable public health impact. We aim to achieve these goals through:

- **Field Epidemiology.** We work with ministries of health (MOHs) and other ministries and public health institutions to strengthen their epidemiology workforce through the division's flagship residency-based programs in applied epidemiology, the Field Epidemiology Training Programs (FETPs) and the Field Epidemiology and Laboratory Training Programs (FELTPs). A combination of classroom-based instruction and mentored practical work allows residents to receive hands-on multi-disciplinary training in public health surveillance, outbreak investigation, laboratory management, program evaluation, and other aspects of epidemiologic research and methodology. Through the FE(L)TP, short courses, and other programs, we help to train hundreds of public health professional on the principles of epidemiology, surveillance and outbreak response, and public health practice to address specific country needs.
- **Public Health Surveillance and Response Systems.** We work with partner MOHs to strengthen their public health surveillance and response systems for priority disease conditions. FETP and FELTP residents learn about surveillance, disease or outbreak detection, confirmation, reporting, analysis and feedback of disease data, and implementation of effective public health responses in a participatory approach. As graduates, they apply these skills in their work for the MOH to operate and further strengthen the public health surveillance and response systems and to use the information for more effective disease detection, control, and prevention.
- **Integrated Disease Surveillance and Response (IDSR).** Instituted in 1998 by the World Health Organization African Regional Office (WHO AFRO) and later identified as a primary strategy for African countries to build the detection and response capabilities required under the International Health Regulations, IDSR aims to improve the availability and use of surveillance and laboratory data for control of priority infectious diseases that are the leading cause of death, disability, and illness in the African region. Through technical assistance and development of guidelines and tools, the CDC's IDSR Team works closely with African ministries of health to implement strategies and activities for improving surveillance and response to priority infectious diseases in Africa. IDSR is the surveillance strategy taught to FETP residents in Africa.

VISION

Our vision is that countries throughout the world have effective and equitable public health systems to protect communities and enable people to live healthy and productive lives.

MISSION

Working with Ministries of Health (MOHs) and public health partners, we are committed to strengthening public health systems and developing the workforce using solid science and innovative programs.

We aim to build sustainable capacity that meets our partners' national priorities. We believe that strong public health systems are needed to improve and protect the public's health and to respond effectively to the ever-changing and increasing global public health challenges. We are committed to effectively collaborate with our public health partners and to respect the diversity of global public health practices, resources, and experiences.

GOALS

Using systems development programs such as Field Epidemiology Training Programs (FETP), Field Epidemiology and Laboratory Training Programs (FELTP), Sustainable Management Development Program (SMDP), Global Public Health Informatics Program (GPHIP), Integrated Disease Surveillance and Response (IDSR), and other programs, we help MOHs around the world build strong, effective, sustainable programs and capacity to improve public health systems on a local, regional, and national level.

- **Public Health Leadership and Management.** Through strategic partnerships with public health training institutions, faculty development in our Management for International Public Health course, and technical program assistance, the Sustainable Management Development Program (SMDP) works with partner countries to develop leadership and management programs for public health professionals. Our approach combines experiential training and supervised applied management improvement projects to help public health professionals acquire the knowledge and skills needed to improve organizational performance, shape the public health agenda, and strengthen public health practice in their countries.
- **Public Health Informatics:** The Global Public Health Informatics Program (GPHIP) supports the division's mission to expand opportunities to work with the global health community to standardize, strengthen, integrate, exchange, share, and ensure interoperability of disparate datasets, tools, and services to maximize public health impact. GPHIP's vision is to transform public health practice through informatics. Its mission is to improve health outcomes, quality, and safety through interoperable, integrated, and standardized information systems that are able to capture, track, report, and exchange data and improve decisions.
- **Public Health Systems Strengthening in Fragile States:** Combining the division's programmatic and technical resources with those of other technical units around CDC, we provide support to many partner governments of countries emerging from war, civil war, natural disasters, and other causes of instability to assist them in building, rebuilding, or strengthening their critical public health systems and workforce. These activities contribute to larger, multilateral reconstruction and stabilization efforts.

Our teams of epidemiologists, public health advisors, management trainers, instructional designers, health educators, health communication specialists, and support staff provide scientific expertise, training consultations, and other programmatic support and advice to help MOHs enhance their health protection and health promotion programs.

Our Resident Advisors are assigned to MOHs and provide direct technical assistance in developing and sustaining the FE(L)TPs, and assist with training, mentoring, and system strengthening. Our team has developed curricula, tools, and training material in all areas of epidemiology, biostatistics, management, and public health communication skills, to mention a few examples. Our Atlanta-based team provides technical assistance and support both from Atlanta and on-site.

Our work is only possible through partnerships. Ministries of health are our main partners in building workforce and systems capacity. Collaboration and partnerships include other CDC units, especially the Global AIDS Program and the Global Disease Detection Program. Externally, we have built strong partnerships with many national and international organizations such as the World Health Organization, the U.S. Agency for International Development, the Department of State, the Department of Defense, the Bill and Melinda Gates Foundation, the Ellison Medical Foundation, the Carter Center, and the World Bank. We also have strong partnerships with the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) and regional FETP networks –the African Field Epidemiology Network (AFENET), the Eastern Mediterranean Public Health Network (EMPHNET), the South Asia Field Epidemiology and Technology Network (SAFETYNET) and REDSUR (the network of FETPs in Latin America).

DIVISION-**S**UPPORTED **FETP**S AND **FELTP**S

AFGHANISTAN FETP

Program description

In 2009, in response to a request for assistance from the Afghan Ministry of Public Health (Afghan MoPH), CDC began a collaborative effort to develop a Field Epidemiology Training Program (FETP) in the country. The Afghan MoPH highlighted the following areas that they hope the FETP will help health officials in Afghanistan to address:

- A severe shortage of personnel who have any background in epidemiology;
- A high burden of infectious diseases, many of zoonotic origin. Priority diseases include anthrax, Crimean-Congo hemorrhagic fever (CCHF), brucellosis, rabies, plague, and tuberculosis; and
- The country's high maternal mortality rate.

In its first year, the Afghan FETP enrolled two Afghans into the established program in Pakistan. Several in-country trainings for diverse audiences, including MoPH staff and a number of Afghanistan's Provincial Rapid Response Teams (which are tasked with responding to health events at the local level), were also conducted by CDC subject matter experts.

Given the difficulties of working in a conflict country such as Afghanistan and encountering funding constraints, the FETP has until now not been able to establish an in-country training program. Although the MoPH would like for training to be moved in-country, until the security situation stabilizes, alternative strategies to build Afghanistan's public health workforce capacity are being explored, including the development of a regional FETP based in Dushanbe, Tajikistan that would enroll approximately equal numbers of Tajiks and Afghans. Such a program is seen as an attractive solution to the myriad security and other problems that have, to date, inhibited the establishment of a high-quality FETP based in Kabul. The MOH in Tajikistan has also indicated a high level of support for this regional program.

Team members

Atlanta-based staff

- Henry Walke, Team Lead
- Dana Schneider, Health Scientist
- Nabil Ahmed, Public Health Advisor
- Lisa Bryde, Instructional Designer

Afghanistan-based Staff

- Bashir Noormal, Director, Program Director, Afghan Public Health Institute
- Mohammad Iqbal Aman, Program Manager
- Jawad Asghar, Resident Advisor, Pakistan FELTP

Partners

- United States Agency for International Development (USAID)
- Afghan Public Health Institute, Ministry of Public Health (APHI/MOPH)
- Pakistan FELTP

Cohort information

- Current number of trainees for cohort 1: 2

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 2
- Number of surveillance evaluations conducted: 2

Other projects or programs conducted in 2010

The two Afghan FETP residents, along with the FETP program manager and a senior epidemiologist from the Afghan Public Health Institute, worked on a mass gathering-related public health project that was developed during a mass gathering workshop held in Amman, Jordan in the Fall of 2010. The project was a cross-sectional survey designed to determine the occurrence of three communicable diseases syndromes of concern—diarrhea, acute respiratory infection, and jaundice—among Afghans both before and after participation in the 2010 Hajj. The Afghan team presented the results of their mass gathering project at a follow-up workshop in Marrakesh, Morocco in February 2011. They are currently writing up their work as a scientific manuscript under the guidance of two Council of State and Territorial Epidemiologists subject matter experts.

ANGOLA FELTP

Program description

The Angola Field Epidemiology and Laboratory Training Program (Angola FELTP) has not been initiated. However, work has begun with a pre-assessment and an assessment visit. Over the past year, many of the undetermined aspects of the Angola FELTP have been resolved. Agostinho Neto University (ANU), the only public institute of higher learning in Angola which trains specialists in various scientific subjects, will grant a Master's degree upon completion of the two- year FELTP training. The Ministry of Health's (MOH) Department of Hygiene and Epidemiology will be in charge of the FELTP and will provide overall guidance for its field activities. The program will be known in Portuguese as Mestrado de Epidemiologia de Campo e Laboratorio (MECL). The FELTP curriculum is being finalized for approval. Resident application requirements have been established and field site locations have been selected for the FELTP resident placement. The program's first cohort will consist of 10 professionals - four from ANU, one from the Army Health Services, and five from the MOH. Additionally, the program has already begun creating the foundation for establishing career paths for FELTP graduates.

Ministry of Health officials have acknowledged that throughout Angola there are several weaknesses in the healthcare system, especially the lack of human and institutional capacity for implementing surveillance, performing outbreak investigations, and managing those outcomes. Despite these challenging conditions, health officials believe that the FELTP will have a vital role in reducing the deficiency of skilled healthcare workers.

Team Members

Atlanta-based staff

- Peter Nsubuga, Branch Chief, FELTP Africa
- Yescenia Espinosa, Instructional Designer
- Ken Johnson, Public Health Advisor

Angola-based staff

- Júlio Leite, MOH Program Director
- Rosa Moreira, FELTP Resident Advisor
- Nicholas Gaffga, CDC- Angola, Director
- Catherine Avery, CDC- Angola, Deputy Director
- Margarida Rodrigues, CDC- Angola, Lab Head

Partners

- Angola Ministry of Health
- Agostinho Neto University
- Angola Army Health Services
- CDC- Angola (Global AIDS Program)
- USAID

Cohort Information

- Cohort 1 started in 2011.

CENTRAL AFRICA FELTP

Program description

The Central Africa Field Epidemiology and Laboratory Training Program (Central Africa FELTP) is a component of two larger projects funded through the Bill and Melinda Gates Foundation and the US Agency for International Development's Emerging Pandemic Threats (EPT) project. The Gates-funded SURVAC project is intended to address the issues of expanding immunization coverage, improved diseases surveillance and response, and public health laboratory and human capacity development. In the Central African region, inadequate surveillance, data for the implementation of public health programs, especially vaccine-preventable diseases and poor outbreak investigation, have been recognized as major barriers to sustaining recent gains in measles control. This region has been chosen because of its epidemiologic importance in terms of emerging infections, the migration of people to, from, and within as a result of civil conflicts, and its similarities of tropical environment, and disease problems across countries.

The USAID-funded EPT project focuses on improving the detection and response to epidemic-prone and emerging zoonotic infectious diseases that result from the interaction between human and domesticated or wild animal populations in the Congo River Basin. The objective of the Central Africa FELTP is to strengthen surveillance and response capacity and quality through training and infrastructure improvements; to implement a quality surveillance and response program for vaccine-preventable diseases/syndromes, including laboratory capacity, networks, and data management systems; and, to strengthen communication and develop capacity for advocacy to ensure that these efforts are assumed by the ministries of health in the targeted countries. Veterinary epidemiologists will be trained along with public health professionals in order to address the ever-growing threat that zoonotic and epizootic diseases pose to the region. The program aims to increase collaboration between epidemiologists and laboratorians, as well as between human and the animal health sectors. In addition to the core curriculum, resident will be given the option to concentrate in field epidemiology or public health laboratory based on their qualifications. The program began Oct, 18, 2010 with the officially opening ceremony on October 26, 2010.

Team Members

Atlanta-based staff

- Peter Nsubuga, Medical Epidemiologist
- Italia Rolle, Epidemiologist, Team Lead
- Andrew Weathers, Public Health Advisor
- John Ngulefac, Program Manager

Country-based staff

- Andze Gervais, Disease Control Program Director
- Ditu Kazambu, Epi Resident Advisor
- Dieula Delissaint, EPI Resident Advisor
- Unice Benazea, Administrative Assistant

Partners

- Bill and Melinda Gates Foundation
- WHO-Geneva
- WHO-Lyon
- WHO-AFRO
- CDC Foundation
- CDC-NCIRD
- USAID
- DAI/RESPOND

Cohort information

- Current number of trainees for cohort 1: 18

Training:

Training Type/ Title	Target Audience	Length	Number Trained	Key Outcomes or Comments
Epidemiology and Outbreak investigation short courses	Cameroon Ministry of Health staff	10 days	24	Participants that were trained during the Cameroon outbreak investigation course played an active role in responding to the 2010 Cameroon cholera outbreak. SURVAC provided some funding to assist with the outbreak response.
Epidemiology and Outbreak investigation short courses	Democratic Republic of Congo Ministry of Health staff	10 days	25	
	Central African Republic Ministry of Health staff	10 days	29 (includes 4 from Chad)	

Accomplishments:

- **Central Africa FELTP office established.** The FELTP office was established in Cameroon on the campus of the University of Yaoundé.
- **Logistics and support for start of the Central Africa FELTP.** AFENET provided logistical, administrative and technical support for the start of CAFELTP. These activities were accomplished working closely with staff from CDC
- **Students recruited and enrolled in program.** A total of 18 residents were recruited and enrolled in the program (five from Cameroon, five from the Central African Republic and eight from the Democratic Republic of Congo). Of the 18 residents, 12 will focus on the epidemiology track and six will focus on the laboratory track. Fifteen residents were funded by SURVAC and three students received funding from another source (EPT).

- **Launch of the program.** The program was launched October 18, 2010 at the University of Yaoundé. The official opening ceremony saw representatives from several organizations, including the Ministry of Health Cameroon, the Ministry of Education Cameroon, the Ministry of Health Central African Republic, the University of Yaoundé, AFENET, the US Embassy, the Centers for Disease Control and Prevention, and the Bill and Melinda Gates Foundation.
- **Teaching of first module.** The first module (six-week course 1) started October 18, 2010. This module comprises the core functions of surveillance, epidemiology, biostatistics, and laboratory.
- **Conduct training for Field Supervisors.** A training session was conducted for the Field Supervisors November 18th and 19th in Yaoundé. They were oriented to the FELTP program and their responsibilities as they advise the trainees completing field work.

Future

- Recruit the second cohort of the program in August 2011
- Organize short courses in September
- Hold a scientific seminar in the three countries
- Provide training to field supervisors in the three countries

CENTRAL AMERICA FETP

Program description

The Central America FETP started in 2000 as part of the post-Mitch/Georges Hurricanes reconstruction project for Central America. The Central America FETP was initially supported by funds through USAID, and most recently through the Global Disease Detection (GDD) program.

The Central America FETP is a regional program of seven national FETP initiatives representing Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Belize, and Panama. The most recent FETP initiatives were launched during 2010 in Panama and Belize. The Central America FETP is unique in that it was initiated with a regional vision. The principal goals of the Central America FETP are to build institutional capacity within each country for epidemiologic assessment, investigation, and surveillance, and to foster a scientific, data-driven approach for implementing effective public health programs and policies.

The Central America FETP has designed and implemented a three-tiered FETP that has been cited as a successful model for FETPs in the global network. The goal of this model is to build an effective career track and surveillance network for epidemiologists. The three tiers are:

1. **Basic Level Training:** Designed for health staff at the local level; consists of approximately 86 hours of classroom training, interspersed throughout a 3–5 month field assignment;
2. **Intermediate Level Training:** Designed for mid-level district epidemiologists; consists of 191 classroom hours interspersed throughout a 9-month field assignment; and
3. **Advanced Level Training:** Known as the advanced FETP; designed with a national focus for advanced epidemiologists; consists of 400 classroom hours interspersed throughout a 24-month field assignment.

This tiered approach lets trainees establish a foundation of epidemiology skills that can be built upon as they graduate through higher levels of the training model.

This model also creates a mentorship “cascade” with advanced level trainees serving as mentors to intermediate-level trainees who in turn mentor basic-level trainees.

The program measures long-term success by the attainment of self-sustaining national FETPs that produce high-quality graduates who become agents of change within their public health systems.

The Central America FETP has become an interdependent network of national FETP initiatives with countries at various stages of implementation of the multi-tiered training. Costa Rica has developed an institutionalized, sustainable national FETP; other countries are implementing basic and intermediate level tiers.

Academic accreditation is provided by the University del Valle de Guatemala (UVG) in Guatemala City, which is also the physical site of the CDC-Central America and Panama (CAP) office. The focus of the Central America FETP has been to develop an academic and political/leadership infrastructure and to strengthen national program curriculum materials with future web-based delivery options (with assistance from UNC-Chapel Hill). The steering body of the Central America FETP, known as the Regional Technical Committee, includes national epidemiology directors and the FETP coordinators.

Guatemala-based CDC Central America FETP field staff is integrated into the Global Disease Detection (GDD) center activities, staffing the emergency operations center on a rotating basis, and providing direct technical assistance to the Guatemalan MOH in various areas (e.g., injury surveillance, pandemic influenza response, all hazards-related activities).

Team members

Atlanta-based staff

- Victor M. Caceres, Team Lead
- Nathalie Roberts, Public Health Advisor
- Senia Espinosa, Instructional Designer
- Denise Traicoff, Instructional Designer

Guatemala-based staff

- Augusto Lopez, Regional Advisor
- Gloria Suarez, Regional Advisor
- Anaité Diaz, Academic Director
- Gabriela Illescas, Administrative Assistant
- Javier Arambutu, Academic Coordinator

Partners

- CDC partners: CDC-CAP, GDD, Avian Influenza Program, International Emerging Infections Program, Global AIDS Program, and other Atlanta-based Centers
- University del Valle de Guatemala (UVG)-Guatemala City
- Pan American Health Organization
- Regional Technical Committee
- University of North Carolina-Chapel Hill, NC
- Universidad Evangelica–San Salvador, Costa Rica
- Universidad Nacional Autonoma-San Juan, Costa Rica
- Universidad Catolica-Tegucigalpa, Honduras
- Council of Ministers of Health from Central America (COMISCA)
- REDSUR (network of South America FETPs)

Cohort information

- Current number of trainees for cohort #6 (advanced level): 18
- Total number of graduates as of 2010 (advanced level): 78

Strengthened public health workforce

Examples of major leadership positions that have been held by FETP graduates:

- Guatemala: National Director of Epidemiology (3), National Director of Surveillance
- Honduras: National Director of Epidemiology, Executive Secretary for Family Health and Maternal Mortality Reduction
- El Salvador: National Director of Epidemiology, National Director of Surveillance

- Costa Rica: National Director of Epidemiology (CCSS), National Director of Surveillance
- Dominican Republic: National Director of Epidemiology, National Director of TB Program, National Director for Chronic Disease Program

Almost all the national coordinators of programs in the region are FETP graduates.

Present positions of advanced- FETP graduates (cohorts 1-4) in Central America, n=78*

Country	Ministry of Health			Other Institutions**	International Health-related Organizations	Retired	Total
	Epidemiology Office	Other MOH Programs	Local and District				
Costa Rica***	6	4	17				27
El Salvador	6				2	1	9
Guatemala	2		4	4	2		12
Honduras	3	3	3				9
Nicaragua±		1	4	2	1	1	9
Dominican Rep.	3	4	4				11
Panama		1			1		2
Total	20	13	32	6	5	2	79
Percentage (%)	25%	16%	41%	8%	8%	3%	100%

* Data current as of March 2011.

** Other institutions include other governmental or non-governmental institutions (NGOs), such as universities.

*** Includes the 20 graduates from the 1st and 2nd cohorts of the national program.

± Information updated as of Dec 2007 (Nicaragua is not currently active in the Central America FETP).

Graduates by level and country (2001–2010)*

Country	Basic	Intermediate	Advanced	Comment
Belize	9	0	0	
Guatemala	1070	172	12	
Honduras	228	54	9	
El Salvador	201	169	9	
Costa Rica	630	104	27	
Nicaragua	0	80	9	Not currently participating
Dominican Republic	77	28	11	
Panama	26	0	1	
Total number	2241	607	78	

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 64 (conducted by basic, intermediate, and advanced FETP levels)
- Number of planned (protocol-based) studies conducted and completed: 7 (conducted by advanced level FETP trainees)
- Number of surveillance analyses conducted: 65 (conducted by basic level FETP trainees)

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Intermediate Level (Guatemala) Module 8: Communication in Public Health	14 MOH personnel 4 researchers from Center for Health Studies (UVG)	24 hours	18	Main goal of this module is for trainees to acquire skills in oral and written public health communication methods
Intermediate Level(Guatemala) Module 9: Cross-sectional study Field Exercise	14 MOH personnel 4 researchers from Center for Health Studies (UVG)	48 hours	18	Main goal was to introduce trainees to the different steps of conducting a planned investigation
Basic Level (Guatemala) Module 1 Introduction to Public Health and Epidemiology	4 courses held, one for veterinarians from the Ministry of Agriculture, and the other 3 for Jutiapa, Quetzaltenango and Suchitepéquez Health District Staff	24 hours	34	This was an introductory course that included a general overview of epidemiologic concepts and tools
Basic Level (Guatemala) Module 2 Biostatistics and Management	4 courses held: 1 for veterinarians from the Ministry of Agriculture, 3 for Jutiapa, Quetzaltenango, and Suchitepéquez Health District Staff	16 hrs (health district staff) 32 hrs (veterinarians)	34	The module conducted for veterinarians included a field investigation of an outbreak of equine neurological disease in eastern Guatemala
Basic Level (Guatemala) Module 3 Surveillance and Computer Technology	4 courses held: 1 for veterinarians from the Ministry of Agriculture, 3 for Jutiapa, Quetzaltenango, and Suchitepéquez Health District Staff	16 hrs (health district staff) 24 hrs (veterinarians)	34	The primary goal was to describe surveillance in public health practice
Basic Level (Guatemala) Communication	4 courses held: 1 for veterinarians from the Ministry of Agriculture, 3 for Jutiapa, Quetzaltenango, and Suchitepéquez Health District Staff	32 hrs (health district staff) 24 hrs (veterinarians)	34	At the end of this module the students presented 1 of the 2 deliverables: outbreak investigation and analysis of a surveillance system they conducted
Basic Level (Belize) Tutors Workshop	Tutors for Basic Level	24 hrs	8	Orientation given prior to launch of Basic Level FETP
Basic Level (Panama) Tutors Workshop	Tutors for Basic Level	32 hrs	13	Orientation given prior to launch of Basic Level FETP

Other accomplishments

- Basic level curriculum of the Central America FETP was piloted.
- The tutors' curriculum for the advanced-level FETP was completed and piloted. These materials focus on competencies for the trainee field products, and provide guidance and an evaluation strategy for tutors.
- CDC-Atlanta and CDC-CAP FETP staff provided technical assistance to FETPs in South America (e.g., Colombia, Argentina). Central America FETP is actively engaged in strengthening the network of FETPs in South America known as Red Sur.
- Central America FETP regional program trainees/graduates had 27 abstracts accepted for presentations (10 for oral, 17 for poster presentations) at the 2010, TEPHINET 6th Global Biannual Scientific Conference, Cape Town, South Africa, December 13–17.

Status of program independence and sustainability

- The Costa Rica FETP is the first national program to reach full sustainability. Nine trainees from the first cohort, using national resources, graduated in 2008. Eleven trainees from its second cohort graduated in 2010. Costa Rica also started a basic level training course in 2009, and initiated an intermediate level course in 2010. Honduras and El Salvador have active basic and intermediate FETP initiatives, but both faced funding challenges in 2010. The Dominican Republic is currently in the process of initiating a basic and intermediate level FETP initiative with the standardized regional curriculum.
- The regional advanced level Central America FETP is still primarily supported by CDC, although responsibility for day-to-day planning and implementation of training modules has largely been turned over to UVG staff.

Monitoring and evaluation activities

- Assessment using “scorecard” is planned for Costa Rica FETP during 2011.
- Training modules for tutors and trainees have standardized evaluation procedures.

Outcomes

In early November 2010, intense rains swept through the central Pacific region of Costa Rica. These storms produced severe flooding and landslides which caused many deaths and injuries as well as destruction of public infrastructure. Graduates of the basic, intermediate, and advanced FETP levels were integrated into emergency response teams. These teams established intensified surveillance for acute respiratory infections, diarrheal diseases, and leptospirosis. The FETP evaluated and monitored sanitation and hygienic conditions of shelters established for persons left homeless. Surveys were conducted to assess needs and daily reports that were vital to decision-making and prioritization were provided to the national emergency operations center.

As a result of cholera in Haiti in October 21, 2010, trainees and graduates of the Dominican Republic basic and advanced FETP levels were activated to assist the public health response to prevent and control cholera in the country. In addition, the MOH formally requested technical assistance from the CDC-CAP office in Guatemala. In partnership with CDC, the Dominican Republic FETP mitigated the impact of the outbreak on the island with several activities including setting up an active sentinel surveillance system, investigating and actively searching for suspected cholera cases, training hospital personnel in the diagnosis and treatment of cholera, conducting workshops for the media, and developing protocols for laboratory disinfection and biosafety.

Belize

- Held basic level tutors course in March, 2010.
- Initiated basic level FETP using the regional standardized curriculum in May, 2010.

Costa Rica

- Initiated intermediate level FETP using the regional standardized curriculum in May, 2010. This program is accredited by the Center for Strategic Development of Health Information and Social Security. This accreditation translates to “points” when applying for jobs, thereby enhancing career potential of graduates.
- Hosted a 3-day workshop on survey methods using GPS devices and information systems attended by trainees and graduates of the FETP, and coordinated by staff from CDC-CAP.
- Investigated an outbreak of Norovirus in the Huetar region. The FETP trainees identified 688 cases which were suspected to be caused by a contaminated municipal water system (common source).

Dominican Republic

- Collaborated with CDC and PAHO in the response to the earthquake in Haiti, intensifying disease and injury surveillance along border areas.
- Initiated the basic level FETP using the regional standardized curriculum in July, 2010.
- Mobilized FETP trainees and graduates during the cholera outbreak.

Guatemala

- Incorporated veterinarians from the Ministry of Agriculture into the basic level FETP.
- Graduated 31 trainees of the first cohort at the basic level using the regional standardized curriculum.
- Graduated 18 trainees of the eighth cohort of the intermediate FETP in April, 2010. Field work completed by this cohort included 18 surveillance analysis reports, 18 community health situation analyses, and 18 outbreak investigations of various diseases.
- Participated on rapid response teams and conducted needs surveys after Hurricane Agatha.

Honduras

- Graduated 28 trainees of the second cohort of the intermediate FETP in May, 2010. Field work completed by this cohort included 28 surveillance analysis reports, 23 community health situation analyses, and 28 outbreak investigations of various diseases (including brucellosis, leptospirosis, dengue, diarrheal, and respiratory illnesses).
- Presented an investigation by an advanced FETP graduate from the second regional FETP cohort at the Safety 2010 World Conference in London, England: “Domestic violence in women presenting to health services in 10 municipalities in Alta de La Paz, Honduras”.

Panama

- Initiated the basic level program using the regional standardized curriculum in May, 2010.
- Designated the advanced level trainee, along with other colleagues from the MOH, to investigate an equine encephalitis outbreak in May 2010. The investigation showed there were two viruses involved: Venezuelan equine encephalitis (VEE) and east equine encephalitis (EEE).

CENTRAL ASIA FETP

Program description

In 2003, the Central Asia regional FETP was established in cooperation among the MOHs from the Central Asian republics of Kazakhstan, Kyrgyz Republic, Tajikistan, and Uzbekistan (Turkmenistan joined in 2008), CDC, and USAID. The program is headquartered in Almaty, Kazakhstan.

Although USAID no longer supports the program, the Department of Defense/Defense Threat Reduction Agency (DOD/DTRA), through the Biological Threat Reduction Program, supports FETP activities in Kazakhstan, while funds from the Global Disease Detection (GDD) program are used to primarily support FETP activities in Uzbekistan, Kyrgyzstan, Turkmenistan, and Tajikistan. The Asian Development Bank (ADB) provided support in 2010 for residents from Kyrgyz Republic and Tajikistan who enrolled in the epidemiology and the newly established veterinary tracks.

Eight cohorts have been enrolled in the program from five countries of the Central Asia region; 49 residents have completed the 2-year training course while 25 are currently in training.

Since its inception, the program has conducted 122 outbreak investigations and 49 surveillance evaluations; and 32 research studies have been completed. The Central Asia region FETP is recognized by the MOHs as a venue for training the next generation of public health leaders in Central Asia.

Team members

Atlanta-based staff

- Russ Gerber, Medical Epidemiologist, Team Lead
- Nabil Ahmed, Public Health Advisor
- Hiari Imara, Public Health Advisor

Kazakhstan-based staff

- Simon Ajeilat, Resident Advisor
- Dilyara Nabirova, Program Manager

Partners

- DOD/DTRA
- Kazakhstan MOH and Republican Sanitary Epidemiological Services
- Kyrgyz Republic MOH and Republican Sanitary Epidemiological Services
- Tajikistan MOH and Republican Sanitary Epidemiological Services
- Turkmenistan MOH and Republican Sanitary Epidemiological Services
- Uzbekistan MOH and Republican Sanitary Epidemiological Services
- Asian Development Bank
- CDC Division of Global Disease Detection and Emergency Response (DGDDER)

Cohort information

- Current number of trainees for cohort 7: 12
- Current number of trainees for cohort 8: 13
- Total number of graduates as of 2010: 49

Strengthened public health workforce

In 2010, the program had 25 trainees. There are 49 graduates, 42 of whom work with MOHs. To date, 86% of the graduates are still working in their government health system; several of these have been appointed to high level positions in their respective MOHs where they can influence public health practices throughout their country.

Kazakhstan

- Graduates working at the national (Republican) level:
 - » Director of the national Department for Epidemiologic Monitoring and Risk Assessment
 - » Head of the national Department for Epidemiology and Control of Infectious Diseases
 - » Leading specialist in the Especially Dangerous Pathogens Department
 - » Leading specialist in the national TB Institute
 - » Coordinator of the regional training program on HIV surveillance
 - » Current trainee has been promoted to Deputy Director of the Almaty City AIDS Center
- Graduates working at the Provincial level:
 - » Heads of the regional and district surveillance departments

Tajikistan

- Graduates working at the national (Republican) level Deputy MOH:
 - » Deputy Director of the Tajik Republican Sanitary Epidemiologic Station
 - » Director of the national Department for Epidemiologic Surveillance
 - » Leading specialist in Especially Dangerous Pathogen Department
 - » Leading specialist in Vaccine Preventable Diseases Department
- Graduates working at the Provincial level:
 - » Head of a district Sanitary Epidemiologic Station

Uzbekistan

- Graduates working at the Provincial level:
 - » Head of an oblast Sanitary Epidemiologic Station
 - » Head of the Infection Control Department in the MOH
 - » One trainee is the head of the Museum for Pathogens in the Especially Dangerous Pathogen institute
- Graduates working at the national (Republican) level:
 - » Leading specialist for the national (Republican) surveillance department.

Turkmenistan

- Trainee working at the national (Republican) level:
 - » The current second-year trainee is the head of the national Department for Surveillance and Parasitic Diseases of the country at the MOH headquarters

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 19
- Number of planned (protocol-based) studies conducted and completed: 6
- Number of surveillance evaluations conducted: 12
- Number of surveillance analyses conducted: 4

Other projects or programs conducted in 2010

Tajikistan

Veterinary trainees from Kyrgyz Republic and Tajikistan were recruited for the first time into the Central Asia FETP in 2010.

Other Accomplishments:

- Participation of local MOHs in programs by
 - » providing laboratory support for testing biological specimens collected during field investigations;
 - » providing space for training in Kazakhstan; and,
 - » providing occasional full support to the trainees while conducting field investigations
- Participation in the polio activities in Central Asia
 - » After the detection of the wild polio outbreak in the Central Asia region in 2010, WHO invited the FETP program to participate in evaluation of polio control activities;
 - » During May–Sep 2010, FETP trainees and staff participated in monitoring and assessing coverage of the three rounds of the national immunization campaign and provided expertise and assistance; and,
 - » Afterwards, the report prepared by the investigators on those activities was well-received by WHO.

Status of program independence and sustainability

Several FETP graduates have been appointed to high level positions in the MOHs where they can influence public health practices throughout their country. When asked for examples of how the FETP has contributed to the improvement of public health in their countries, the directors of the Republican Sanitary Epidemiological Stations in Kazakhstan, Kyrgyz Republic, and Tajikistan submitted letters expressing their gratitude and deep appreciation for the significant contributions of the FETP. They specifically appreciated: the epidemiological skills of the trainees and graduates who are able to provide sound scientific evidence to guide public health decision-making; the active participation of trainees in the investigation of serious public health problems, some of which have the potential for regional and global consequences; FETP graduates' active participation in reforming public health policies and in training other public health officers within the MOH; and communication of scientifically-based data and information through reports, presentations, and publications, nationally and internationally. Successful graduation from the FETP is now a requirement of the Kazakh and Uzbek MOHs for job grade promotions for epidemiologists.

Monitoring and evaluation

- Daily communication with trainees during outbreak investigations;
- Regular evaluation of knowledge acquired after each training course;
- Biweekly reports from trainees on field assignments (data analysis, protocols of planned studies, and evaluation of surveillance systems);
- Weekly/biweekly feedback by e-mail or phone.

Outcomes

- Graduates at the national level are using skills learned during their training to collect and analyze surveillance data;
- FETP graduates developed epidemic thresholds for influenza;
- Investigation of acute health problems were carried out by local health officers using the methods of the FETP trainees;
- FETP graduates in Kazakhstan developed guidelines for investigating acute public health problems;
- FETP graduates and trainees from Kazakhstan and Tajikistan participated in the development of the national polio preparedness plan;
- FETP graduates from Kazakhstan participated in the development of national guidelines on vaccine preventable diseases;
- The outbreak investigations of foodborne illnesses among company workers in Western Kazakhstan highlighted the need for more intensive and regular inspection of food facilities in the area;
- Upon request by the public health officials in Kazakhstan, FETP trainees have been working on developing epidemic thresholds for certain disease that will be used for detection of disease outbreaks.

CHINA FETP

Program description

The China FETP was created in 2001 by the China CDC. Since that time, China FETP officers and staff have played major roles in China's surveillance, epidemiologic investigation, and response activities. Over the past nine years, the China FETP has conducted approximately 50 investigations annually on many public health problems, including SARS in 2003, the emergence of avian influenza worldwide in 2006, paraplegia from contaminated methotrexate in 2007, severe enterovirus 71 in 2008, melamine contamination of infant formula in 2008, the 2008 Sichuan earthquake, the 2008 central China cold weather disaster, severe pandemic H1N1 influenza in 2009, and other national public health emergencies. Additionally, in 2010 CDC and China CDC developed a plan to incorporate more specific training in non-communicable disease (NCDs) epidemiology into the China FETP to enable the China FETP to respond to the growing problem of NCDs.

In 2006, China FETP became a permanent part of the China CDC Office of Epidemiology. During their two years of training, China FETP officers are assigned to either the China CDC in Beijing or to field sites within China's 31 provinces and administrative regions. Since the beginning of the program, China FETP has expanded to 19 field training bases with several more being developed. In 2010, China FETP was able to increase its training class size to 32 students, and to strengthen collaboration with the provincial FETP. This represents significant progress toward a goal of increasing the epidemiologic workforce in China to a level of 1:200,000 people.

Team members

Atlanta-based staff

- Russell Gerber, Medical Epidemiologist, Team Lead
- Genessa Giorgi, Public Health Advisor

China-based staff

- Zeng Guang, Executive Director
- Robert Fontaine, Resident Advisor
- Bao-Ping Zhu, Medical Epidemiologist
- Zhang Rui, Office Management Specialist

Partners

- China CDC, including 19 provincial field bases (Shandong Province, Anhui Province, Jiangsu Province, Henan Province, Fujian Province, Jiangxi Province, Shanghai, Chongqing, Guangdong Province, Zhejiang Province, Sichuan Province, Guizhou Province, Hubei Province, Shenzhen City, Bao'an District, Chaoyang District, Ningbo city, Suzhou city, Xiamen city)
- WHO
- International Emerging Infections Program, CDC
- Influenza Division, CDC
- Office of Non-communicable Diseases, Injury and Environmental Health, CDC
- Division of Global Disease Detection and Emergency Response, Center for Global Health, CDC

Cohort information

- Current number of trainees for cohort 8: 17
- Current number of trainees for cohort 9: 14
- Current number of trainees for cohort 10: 32
- Total number of graduates as of 2010: 96

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 35
- Number of planned (protocol-based) studies conducted and completed: 43
- Number of surveillance evaluations conducted: 5
- Number of surveillance analyses conducted: 15
- Daily consultation on H1N1 to China CDC and to MOH (1/1 - 3/1/2010)
- Helped develop veterinary FETP for China through collaboration with the FAO and MOA and China CDC

Other projects or programs conducted in 2010:

- Consulted on three studies which will be conducted by China CDC
- Economic assessment study on influenza burden in China;
- Survey of factors of influenza vaccine usage; and
- Telephone survey on influenza vaccine coverage in China.

Training:

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Wimba online courses	Epidemiologists	0.5 days	20	Aircraft influenza/Fu Jian H1N1 outbreak investigation
Wimba online courses	Epidemiologists	0.5 days	38	Shigellosis/outbreak investigation
A Health Literacy Webinar for China's field epidemiologists in Beijing	Epidemiologists	0.5 days	38	Attendees included field epidemiologists from Mongolia
Annual mentors' workshop	Epidemiologists	2 days	75	Mentors and other key staff from provincial field bases learned new techniques for improving quantity and quality of field investigations done by China FETP officers under their supervision.
How to facilitate a case study	Epidemiologists	2 days	12	Mentors from China FETP, Chinese CDC departments, and Chinese Veterinary FETP
Course in tuberculosis epidemiology	Epidemiologists	4 days	150	China FETP conducted training on the response to TB outbreaks assisted by National Center for TB Prevention Control for Tuberculosis Program staff from multiple provinces in China.
Introduction Course in field epidemiology for Shanghai CDC	Epidemiologists	5 weeks	20	US CDC Advisors assisted Shanghai CDC in developing and carrying out a 5-week course to begin the new Shanghai FETP.

Status of program independence and sustainability

- The China FETP has developed agreements with two China CDC departments (Emergency Office and Chronic Disease) to develop epidemiologic capacity in their staff.
- The Chinese CDC has provided ample permanent space for offices and training facilities for the China FETP.

Improvement in surveillance programs

- Participated in creating the new definition for a hepatitis A outbreak to improve detecting hepatitis A outbreaks;
- Worked with China CDC's Office for Emergency Public Health Response to establish the Severe Acute Respiratory Infections (SARI) surveillance system, greatly improving the ability to detect unusual aberrations in severe influenza and other respiratory infectious diseases; and
- Led the efforts in revising the national dengue and malaria surveillance systems.

Improved management of acute health events/emergency investigations

- Assisted China CDC in establishing a standard operating procedure for investigating measles outbreaks, based on several measles outbreak investigations conducted by China FETP officers and published in the *China FETP Dispatch*.

Improvement or development of public health programs

- The China FETP investigation of a measles outbreak after the nationwide measles vaccination campaign found that the campaign did not reach the originally reported vaccination coverage level of 95% for the target age groups and in some cases was in fact closer to 55%. There were also lapses in routine measles vaccination. The findings were published in the *China FETP Dispatch*, which was distributed to the leaders at the MOH and China CDC. After reviewing this report, the MOH and the China CDC's EPI Center organized a symposium, inviting the China FETP officer and her supervisor to give a presentation on this outbreak. A case study was written for training staff. The national leaders also decided to conduct in-depth investigations of measles vaccination coverage in areas where post-campaign outbreaks have been reported.
- A China FETP survey on the use of salt-spoons distributed to residents of Beijing and designed to limit salt-consumption, found that the use of the spoons was less than optimal, and elucidated the reasons for not using the spoons. After the findings were published in the *China FETP Dispatch* and shared with the Beijing government, the Beijing government used the information to improve this program.

Creation or improvement in a public health policy or regulation

- China FETP investigated a hemorrhagic disease outbreak, and found it was due to exposure to a high-concentration superwarfarin used as rat poison. The findings were published in the *China FETP Dispatch*, and shared with the agricultural department, resulting in improved management of the poison.
- An investigation of a measles outbreak showed that the outbreak was due to delayed reporting by village doctors. After the findings were reported in the *China FETP Dispatch*, the province where the outbreak occurred took actions to ensure that village doctors report notifiable diseases timely.

- A China FETP staff member assisted the new Mongolian FETP. He spent two months mentoring them on field investigations including *Klebsiella* sepsis in a newborn nursery and anthrax. This resulted in the solution of a major health problem and high visibility of the new Mongolian FETP with the MOH.

Other accomplishments

- Preparation for the Guangzhou Asia Games
- *Streptococcus pneumoniae* Surveillance Project

Monitoring and evaluation activities:

- Weekly report required by trainees
- Weekly review meeting among staff
- Products review by each field base in mentor workshop
- Database update weekly

ETHIOPIA FELTP

Program description

The Ethiopia Field Epidemiology Laboratory Training Program (Ethiopia FELTP) is a competency-based training and service program in applied epidemiology and public health. It is co-sponsored by The Federal Ministry of Health, Addis Ababa University School of Public Health, Ethiopian Public Health Association, and U.S. Centers for Disease Control and Prevention. Program participants are called “residents” and will receive a master of public health degree in field epidemiology from the Addis Ababa University School of Public Health upon successful completion of program requirements.

The program is dedicated, through a combination of 25% classroom learning and 75% on-the-job training and service, to applied, field-oriented, public health practice. The goal of this program is to build public health capacity and improve the health of Ethiopia’s population by producing a highly trained cadre of public health epidemiologists who will work on priority issues in the country, strengthen the public health system, and enhance human resource infrastructure while providing essential public health expertise and service to their hosting health unit.

Team members

Atlanta- based staff

- Donna Jones, Team Lead
- Ken Johnson, Public Health Advisor
- Michele Evering-Watley, Instructional Designer

Ethiopia- based Staff

- Daddi Jima, Deputy Director, EHNRI and EFELTP Program Director
- Getnet Mitike, Dean Addis Ababa University School of Public Health, EFELTP Program Co-Director
- Richard Luce, Resident Advisor
- Zegeye Hailemariam, MOH Project Coordinator
- Adamu Addissie, Addis Ababa University School of Public Health, Academic Coordinator
- Alemayehu Bekele, Ethiopia Public Health Association, Project Coordinator

Partners

- Ministry of Health/Ethiopian Health and Nutrition Research Institute
- Ethiopia Public Health Association
- Addis Ababa University School of Public Health
- CDC Ethiopia

Cohort Information

- Current number of trainees for cohort 1: 13
- Current number of trainees for cohort 2: 22

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 10
- Number of planned (protocol-based) studies conducted and completed: 2
- Number of surveillance evaluations conducted: 7
- Number of surveillance analyses conducted: 3

Other projects or programs conducted in 2010

- Assisted WHO/MOH with International Health Regulation core capacity assessment of national and regional health bureaus situational analysis and needs assessment on the acute watery diarrhea outbreak preparedness and response, Afar region.
- Seasonal non-food health and nutrition emergency needs assessment, Afar and Amhara regions.
- Temporo-spatial effect of climate on malaria in Oromia Regional State.
- Tigray Liver Disease Surveillance and Surveillance System Strengthening and Training.
- Participated in investigation of elevated HIV seroprevalence among secondary school students, Amhara Region (CDC EPI-AID 2011-04).

Training

Training type/title	Target Audience	Length	Number trained	Key outcomes or comments
Short Course in Applied Epidemiology	National level Surveillance officers	5 days	15	Improved use of surveillance data
New reportable disease guidelines	Regional Public Health Emergency Management Staff- Benishangul-Gumuz	5 days	12	New disease reporting guidelines and forms introduced
Surveillance/reporting and outbreak investigation	Addis Ababa Sub-city health staff	5 days	12	Basic instruction on how to report and investigate outbreaks
Surveillance System Strengthening and monitoring	Regional, Zonal and district level health staff	3 days	80	Training done in 2 separate sessions. Surveillance specifically for Liver Disease in Tigray Region
New reportable disease guidelines	Regional Public Health Emergency Management Staff- Oromia	5 days	10	New disease surveillance system, reporting guidelines and forms introduced
New reportable disease guidelines	Regional Public Health Emergency Management Staff-SNNPR	5 days	8	New disease surveillance system, reporting guidelines and forms introduced
New reportable disease guidelines	Regional Public Health Emergency Management Staff-Tigray	5 days	5	New disease surveillance system, reporting guidelines and forms introduced
New reportable disease guidelines	Regional Public Health Emergency Management Staff-Amhara	5 days	6	New disease surveillance system, reporting guidelines and forms introduced

Status of program independence and sustainability

- The Ethiopia FELTP academic curriculum was revised to be consistent with new university regulations requiring all masters programs to have modular format.
- MOH and Academic Coordinators have remained with the program; very little staff turnover experienced.
- Ethiopia FELTP has coordinated with 4 Regional Health Bureaus to establish field bases that will host residents for their field attachments.
- Field supervisors from Regional Health Bureaus have been recruited, oriented, trained on program objectives, activities, resident requirements and field base administrative issues.
- Program operates on comparatively modest annual budget of approximately \$200,000.
- Federal and Regional Health Bureaus have provided in-kind contribution in terms of transport to investigations.

Outcomes

- Ethiopia FELTP residents provided critical support to strengthen surveillance for a long-standing chronic liver disease in rural northern Ethiopia
- Ethiopia FELTP Residents have provided the majority of training sessions for regional health bureaus related to the implementation of the revised national notifiable disease reporting system.
- Ethiopia FELTP Residents are the first trained field epidemiologists in the country. Residents investigated an outbreak of shigellosis at a university campus and were able to identify risk factors using analytical epidemiology. This kind of investigation is only now beginning to be recognized and appreciated for its contribution to public health science and establishment of an evidence-based public health culture.
- An Ethiopia FELTP led outbreak investigation of febrile illness was able to confirm relapsing fever as the etiology which ensured correct intervention activities were undertaken.
- Investigation of a large outbreak of diarrheal disease suggested that migrant laborers may transmit disease to new areas.

INDIAN EIS (NEW DELHI)

Program description

The Centers for Disease Control and Prevention (CDC) formed a new Global Disease Detection (GDD) platform in New Delhi, India in 2008. This new site will coordinate with the Indian Ministry of Health and join the six existing sites that are critical to reducing the timeline for identification and control of emerging infectious diseases. The GDD Centers serve as regional resources to assist the host country and neighboring countries detect and confirm pathogens closer to the source.

The Indian Epidemic Intelligence Service (EIS) is based within the Ministry of Health, in the National Centers for Disease Control (formerly the National Institute for Communicable Diseases). This program provides an appropriate amount of competency-based training for public health professionals serving at many different levels of government. This two-year training program provides mentored competency-based training. The Indian-EIS is based on the US EIS and accepts medical doctors typically in their late 20s and from all over India, and provides them with a training program that prepares the graduate of the Indian EIS with the knowledge and skills to respond to emerging and re-emerging public health threats.

Team members

Atlanta-based staff

- Jeremy Sobel, Medical Epidemiologist
- Nabil Ahmed, Public Health Advisor

Division role

CDC's Division of Public Health Systems and Workforce Development (DPHSWD) will develop the program into a mentored field-based experience model where the trainees are given opportunities to participate in “real-time” epidemiologic investigations. Ideally, these trainees should also be incorporated into the “pyramidal” model so that they may serve as mentors for trainees at the lower levels of the pyramid.

Partners

- Ministry of Health - India
- National Centers for Disease Control – New Delhi (NCDC)

Other Accomplishments

Signing of a Memorandum of Understanding that initiated formal discussion and timelines for the commencement of an US EIS-like model in India

- Advocacy for the Indian EIS by the Global Disease Detection center director to high level Ministry of Health officials
- Recruitment of a Resident Advisor who will serve as a mentor to EIS fellows and will provide technical assistance to the NCDC
- Development of a timeline and scope of work for the Indian Ministry of Health, which outlines the action steps towards the commencement of the first Indian EIS class

Future plans

- Conduct a stakeholders' workshop in coordination with the Ministry of Health to present the Indian EIS to stakeholders and achieve buy-in from high levels of the MOH and well as implementing partners.
- Develop the selection criteria through input from key stakeholders
- Identify members of a technical committee who will provide guidance and decision-making of the Indian EIS
- Placement of the Resident Advisor in New Delhi and commencement of the first cohort of the Indian EIS

IRAQ FETP

Program description

In fiscal year 2010, the CDC Center for Global Health, Division of Public Health Systems and Workforce Development (DPHSWD), the Iraqi Ministry of Health (Iraqi MOH), the Iraqi Ministry of Higher Education (Iraqi MOHE) and the WHO Iraq office established the framework and broad consensus to launch a Field Epidemiology Training Program in Iraq (Iraq-FETP). This two-year in-service training program is supported by CDC, the WHO Iraq office in Amman, the Iraqi MOH, and the Iraqi MOHE. Upon completion of the program requirements, graduates will receive a high diploma degree in Field Epidemiology from College of Medicine, Baghdad University. Training courses will be conducted in Baghdad with Baghdad University and CDC responsible for the bulk of didactic trainings. All fieldwork is carried out in Iraq, with mentoring and supervisory support from the Iraqi MOH and CDC. During fiscal year 2010, three didactic trainings were conducted for an initial seven officers. This program will build public health capacity in disease surveillance, outbreak response, and program evaluation through training courses in applied epidemiology. The High Diploma, a professional degree equivalent to a master's degree, was approved in May 2010, allowing for the release of these officers from their governorates to formally engage in the two-year residency, to begin in November 2010, at which time an additional four officers will join the Iraq-FETP 1st Cohort to make a total of eleven trainees.

Team members

Atlanta-based staff

- Richard Dicker, Epidemiologist
- Lisa Bryde, Instructional Designer
- Steven Becknell, Public Health Advisor

Iraq-based Staff

- Ihsan Jaafar , Program Director
- Ban Majeed, Program Advisor
- Faris Al-Lami, Resident Advisor

Partners

- Iraq Ministry of Health (MOH)
- Iraqi Ministry of Higher Education (MOHE)
- WHO
- Iraqi Scientist Engagement Program (U.S. State Department)

Cohort information

- Current number of trainees for cohort 1: 7
- Current number of trainees for cohort 2: 11

Position of residents in health system as of December 2010

One of the FETP graduates is working in the Iraqi MOH at the national level and two are working at the municipal/district level.

Investigations and surveillance project activities in 2010:

Number of surveillance analysis conducted: 1

Other accomplishments

- FETP trainees in Iraq developed a mass gathering surveillance project in Karbala. Findings were presented in Morocco and drafted into a manuscript for publication in a peer reviewed journal supplement on mass gatherings.
- High Diploma was approved in May 2010. Lesson plans and classroom/applied training timetable finalized in October – December 2010.
- The introductory course was abbreviated to two weeks, and conducted in October in Amman, Jordan. This was done with the view towards quickly having the second course, for three weeks, in Atlanta in January, 2010, which was successfully completed. An additional course was held in May 2010 on surveillance and zoonotic diseases, in collaboration with NAMRU-3.
- The first cohort is due to begin their central placements in Baghdad during April 2011 after 12 weeks of classes at Baghdad University and 10 weeks of rotation in public health units to familiarize trainees with the various technical units at Baghdad CDC and other sections of the public health directorate.

Training

Training Type/ Title	Target Audience	Length	Number Trained	Key Outcomes or Comments
Mass Gatherings Surveillance	FETP residents and key leaders in public health preparedness and response	5 days	5	Surveillance project was developed and implemented in Karbala, Iraq with findings reported on and drafted into manuscript for submission to peer –reviewed journal.

Status of program independence and sustainability

The long-term goal for I-FETP is to be a fully funded and independent program within the Iraq MOH. It is anticipated that it will take between five and seven years of sustained support and coordination to achieve this benchmark. There are three critical aspects to this process:

- **Granting of a High Diploma.** Iraq-FETP will be located within the central MOH in Bagdad within the Public Health Directorate. In partnership, the College of Medicine at Baghdad University will grant Iraq-FETP graduates a High Diploma Degree upon fulfilling the graduation requirement. This diploma is critical for providing specialization and advancing graduates in their responsibilities, remuneration, and status.
- **Provision of key services to the Ministry of Health and leadership.** Iraq-FETP graduates are field epidemiologists who can serve at the national or local public health levels within the MOH. Examples of positions appropriate for Iraq-FETP graduates include lead of rapid response teams, surveillance sections officers and managers of various disease control programs.
- **Partnership.** Roles and responsibilities of partners must be well-defined and delineated in such a way that the Government of Iraq is driving the program and supporting the normative costs of the program.

Outcome

As a direct result of the Karbala project, the WHO and MOH are focusing more attention on public health surveillance during mass gatherings.

KENYA FELTP (INCLUDING SOUTH SUDAN)

Program description

The Kenya FELTP was established in April 2004 to strengthen the epidemiologic and laboratory management capacity of Kenya and East Africa region to meet the challenges of emerging infectious diseases and other public health issues. The Kenya FELTP uses the CDC's existing infrastructure investments for emerging infectious diseases in Kenya, and supports national and regional surveillance and response capacity. This program is the first of its kind, combining a laboratory management component and the established applied epidemiology curriculum into a degree granting program. The Kenya FELTP is a regional platform for training field epidemiologists and laboratory managers.

The goals are to:

- develop a sustainable training program in applied epidemiology and laboratory management;
- strengthen the public health surveillance system of Kenya and support timely response to public health outbreaks;
- enhance public health laboratory capacity in Kenya; and,
- ensure public health decision making is based on scientific data.

The Kenya FELTP is a Master's degree program in applied epidemiology and public health laboratory management. The two-year program emphasizes service to the MOH while the residents are pursuing a Master's degree. Field projects involving outbreak response, surveillance, laboratory methods, and research of public health issues will improve the public health of Kenya and strengthen the capacity of the public health system. The Kenya FELTP has served as a regional program, with residents coming from Kenya, Tanzania, Uganda, Southern Sudan, and Ghana. These participants receive instruction and support in Kenya, but return to their home country to conduct field assignments providing service to the respective MOH. The program graduates are now supporting FELTP programs in Nigeria, Tanzania, and Rwanda. The program now primarily serves South Sudan and Kenya.

Team members

Atlanta-based staff

- Donna Jones, Medical Epidemiologist/Team Lead
- Jim Vaughan, Instructional Designer/IDSR
- Andrew Weathers, Public Health Advisor

Kenya-based staff

- Jared Omolo, Program Director
- Joseph Oundo, Laboratory Advisor, Nairobi
- Samuel Amwayi, Epidemiology Field Coordinator, Nairobi
- Ahmed Mohamed Abade, Lab Field Coordinator, Nairobi
- Christine Ouko, Program Administrative Assistant, Nairobi
- Marion Mwangi, Administrative Assistant through AFENET, Nairobi
- Benadette Atieno Ajwang, Health Records Information Officer

Partners

- Kenya Ministry of Public Health and Sanitation
- Jomo Kenyatta University of Agriculture and Technology/Institute for Tropical Medicine and Infectious Diseases (JKUAT/ITROMID)
- Kenya Medical Research Institute (KEMRI)
- CDC/Kenya (Global Disease Detection, (GDD), Global AIDS Program (GAP), Presidents Malaria Initiative, Influenza Program)
- U.S. Walter Reed Army Institute of Research
- MOH for Southern Sudan
- AFENET
- TEPHINET

Cohort information (Kenya)

- Current number of trainees for cohort 6: 12
- Current number of trainees for cohort 7: 13
- Total number of graduates as of 2010: 31

Cohort information (Sudan)

- Current number of trainees for cohort 6: 0
- Current number of trainees for cohort 7: 3
- Total number of graduates as of 2010: 12

Strengthened public health workforce

- The majority of the graduates are working in Kenya in a variety of public health positions, primarily for the Ministry of Public Health and Sanitation (MOPHS), with 15 at the national level and five at the provincial level. One graduate is the head of the Department of Disease Surveillance and Response in the MOPHS. Others are working with WHO and CDC Kenya as well as the Ministry of Agriculture and the Kenya Military.
- The program director, Dr. Jared Omolo, is a graduate of the second cohort. Ahmed Abade and Samuel Amwayi are graduates of the third cohort, and are field coordinators for the Kenya program. Additionally, the program has provided staff for the program in Nigeria; Dr. Patrick Nguku of the first cohort is now the Resident Advisor in Nigeria. Two Tanzanian graduates are now staff for the Tanzania FELTP.

Investigations and surveillance projects for 2010

- Number of outbreak or emergency investigations conducted and completed: 7
- Number of planned (protocol-based) studies conducted and completed: 15
- Number of surveillance evaluations conducted: 15

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Short course on Principles and Practice of Field Epidemiology for Public Health Professionals, Southern Sudan	MOH, government of South Sudan	2 weeks	30	The course focused on strengthening the capacity of the public health system in responding to disease outbreaks and/or unusual public health events at district level, increasing laboratory participation in outbreak investigation and surveillance, and promoting computer use to manage public health activities effectively.
Laboratory Quality Management Systems	Participants from MOPHS and Ministry of Medical Services	5 days	19	The course focused on strengthening the leadership capacity of the public health laboratory system to improve the laboratory system's response to disease outbreaks and/or unusual public health events at a national level, increasing laboratory participation in outbreak investigation and surveillance, and promoting better laboratory management practices.
GFN(Global Foodborne Infections Network) Anglophone Central and Eastern Africa Course Level III	Participants from MOH, livestock development and universities in 12 Anglophone eastern African countries	6 days	33	<p>The course focused on building capacity within Anglophone/East African reference laboratories to effectively characterize <i>Campylobacter</i> and <i>Salmonella</i> isolates and detect outbreaks by</p> <ul style="list-style-type: none"> Increasing the participants' skill and confidence in performing methods and interpreting results for the isolation and identification of <i>Campylobacter</i> spp. Increasing the participants' skill and confidence in performing methods and interpreting results for the isolation, identification, antimicrobial susceptibility testing and serotyping of <i>Salmonella</i> spp. Familiarizing participants with basic concepts of a laboratory quality management system. Providing a setting that will foster a professional working relationship among the workshop participants, (both epidemiologists and microbiologists) and between the GFN subject matter experts.

Other accomplishments

- The Kenya FELTP was instrumental in the zoonotic technical working group meetings that resulted in the creation of the zoonotic disease unit (ZDU). The ZDU is a new national model that will promote integrated human-animal health approaches in responding to outbreaks, performing surveillance for endemic diseases, and in formulating policy to prevent and mitigate the effects of zoonotic diseases in the country. Establishing and operationalizing the ZDU should result in better plans for prevention and control of zoonotic disease, synergy, optimal use of available resources, efficiency, and prevent duplication of work during detection and containment of the spread of zoonotic diseases. If successfully instituted, it would also provide an ideal system for adoption by many resource-limited countries seeking to better respond to emerging and re-emerging zoonotic diseases.
- Two cohort-6 residents attended and gave presentations during a cholera dissemination workshop at Nyeri organized by the MOPHS, with support from UNICEF. Participants were from districts that have had cholera since 2008. They gave the following presentations:

- The descriptive epidemiology of cholera outbreak in Kenya, 2009, and related surveillance and response challenges.
- The community cholera knowledge, attitudes, and practices (rural and urban)

Status of program independence and sustainability:

The FELTP was placed under the Department of Disease Prevention and Control, Ministry of Public Health and Sanitation and assigned 3 full time staff (all alumni). Additional staff were added to the program – one fulltime driver, a health records, clerk, and an Information Technology specialist.

Monitoring and evaluation activities

The program conducted the self-assessment in March 2010. This provided guidance for program improvement in a number of areas. The program continues to track program activities with EpiTrack and with regular quarterly reports of activities.

MOZAMBIQUE FELTP

Program description

The Mozambique Field Epidemiology and Laboratory Training Program (Mozambique-FELTP) was initiated in August 2010 with a cohort of 11 residents from the Mozambique Ministry of Health (MISAU). The Mozambique-FELTP is a two-year, full-time training program in applied epidemiology and public health laboratory practice. The Mozambique-FELTP will be a long-term, ongoing field-based training program in MISAU to continuously train field epidemiology residents and public health laboratory residents for public health leadership positions in MISAU. The Mozambique-FELTP graduates will receive a Master's degree in Public Health with a specialization in Field Epidemiology or Public Health Laboratory Management. The Mozambique-FELTP residents additionally provide services to MISAU as part of their training through tactical and specific field placements and throughout the Mozambique public health system. The program is administered jointly between MISAU and the University Eduardo Mondlane (UEM). The UEM is responsible for the academic curricula and MISAU is responsible for all applied elements of field activities. The UEM program is located in the Microbiology Department in collaboration with the Department of Community Health. The MISAU program is located in the National Institute of Health. Technical assistance is provided by the US Centers for Disease Control and Prevention (CDC), through the CDC-Mozambique and CDC-Atlanta offices.

Team Members

Atlanta-based staff

- Peter Nsubuga, Branch Chief FELTP Africa
- Yesenia Espinoza, Instructional Designer
- Ken Johnson, Public Health Advisor

Mozambique-based staff

- Cynthia Sema, MOH FELTP Program Director
- Tim Doyle, FELTP Resident Advisor
- Catia Taibo, FELTP University Coordinator

Partners

- CDC-Mozambique Global AIDS Program
- CDC - Division of Parasitic Diseases and Malaria
- Mozambique Ministry of Health
- University of Eduardo Mondlane
- African Field Epidemiology Network

Cohort Information

- Current number of trainees for cohort 1: 11

Training

Training Type/ Title	Audience	Length	Number Trained	Key Outcomes or Comments
Outbreak investigations and response (short course)	Potential first responders to an outbreak	Training took place over 15-week period	26	This was the second short course taught in Mozambique. The MISAU is currently evaluating the role of the short course format and curriculum relative to ongoing training needs for district and provincial level staff, and developing a proposal for ongoing training in this area. This may involve some revisions to the content and format used during the first two short courses.

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 2
- Number of surveillance analyses conducted: 1

Outcomes

The investigation of a measles outbreak provided additional information on age distribution and risk groups of recent measles cases. This may result in better planning for an upcoming national measles vaccination campaign scheduled in 2011. The investigation of the measles outbreak identified areas for improvement in existing measles surveillance.

Other accomplishments

- The first two-year cohort of residents was selected and enrolled in the program
- Policies and procedures for current and future program operations were developed
- The first classroom modules, field assignments, field investigations, mentor training, supervisor orientation, and other activities related to establishing a new FELTP program were completed.

NIGERIA-FELTP

Program description

The Nigeria Field Epidemiology Laboratory Program (N-FELTP) was established in 2008 as a long-term ongoing training program providing public health epidemiology services to the Nigerian Federal Ministry of Health (FMOH), the Federal Ministry of Agriculture and Rural Development (FMA&RD) and respective state ministries. Training public health epidemiology residents, public health laboratory residents, and veterinary epidemiology residents for leadership positions in both ministries, N-FELTP is the first FELTP to offer a distinct track for veterinary epidemiology. N-FELTP works towards improving public health systems within Nigeria through training, increasing collaborations, and strengthening linkages between epidemiologists and laboratorians, as well as linkages between the human and animal health sectors. N-FELTP truly functions under a holistic “One Health” strategy that appreciates and understands the fundamental interconnectedness of microorganisms and the environment. It is through these three distinct scientific disciplines that N-FELTP works to reach a more comprehensive approach toward obtaining better health for humans and animals while also improving our environment. Other partners implementing N-FELTP include Ahmadu Bello University (ABU) and the University of Ibadan (UI), which provide a master’s degree certificate upon successful completion of the program. Fiscally, the program is being sustained primarily through support from USAID and PEPFAR. To address the need for training veterinarians, CDC’s Division of Public Health Systems and Workforce Development (DPHSWD) collaborates with the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID). The goals of this collaboration are providing technical support to the Nigerian FMOH and FMA&RD to enhance the quantity and quality of applied epidemiology training with an emphasis on zoonotic diseases, especially avian influenza, and enhance disease specific program monitoring and evaluation leading to evidence-based decisions for the overall improvement of public health practice in Nigeria. Funding for N-FELTP during FY 2010 was primarily provided by CDC-Nigeria through PEPFAR as a health systems strengthening activity, and secondarily, from USAID.

Team members:

Atlanta-based staff

- Peter Nsubuga, Branch Chief FELTP Africa
- Carol Rubin, One Health Office Director, NCEZID/CDC
- Nykiconia Preacely, Epidemiologist
- Michele Evering-Watley, Instructional Designer
- Ken Johnson, Public Health Advisor

Nigeria- based staff

- Henry Akpan, Chief Consultant Epidemiologist/Head Epidemiology Division/Health Emergency Response/Central Public Health Laboratory (FMOH)
- Patrick Nguku—Epidemiology Resident Advisor
- Lora Davis, FELTP Veterinary Resident Advisor
- Chinyere Gana, Program Administrator
- Okey Nwanyanwu, Country Director
- Nasir Sani Gwarzo, Medical Epidemiologist

- Samuel Ngobua, Training Coordinator
- Karen Kosinski, ASPH Fellow
- Gabriele Poggensee, Consultant for Applied Research

Partners:

- Federal Ministry of Health (FMOH), Department of Public Health
- Federal Ministry of Agriculture and Rural Development (FMA&RD), Department of Livestock
- State Ministries of Health (SMOH), Departments of Public Health
- State Ministries of Agriculture (SMOA), Departments of Livestock
- Ahmadu Bello University (ABU)
- University of Ibadan (UI)
- African Field Epidemiology Network (AFENET)
- Food and Agriculture Organization of the United Nations (FAO)
- United States Agency for International Development (USAID)
- World Health Organization (WHO)

Cohort information

- Current number of trainees for cohort 1: 13
- Current number of trainees for cohort 2: 13
- Current number of trainees for cohort 3: 39

Investigations and surveillance project activities in 2010:

- Number of completed outbreak or emergency investigations: 7
- Number of planned (protocol-based) studies conducted and completed: 13
- Number of surveillance evaluations conducted: 13
- Number of surveillance analyses conducted: 13

Other projects or programs conducted in 2010

The program has supported other FELTP programs in Rwanda, Burkina Faso, and Cameroon. Patrick Nguku, Epi-Resident Advisor, traveled to Rwanda and provided in-country support in training their residents in basic epidemiology. In Burkina Faso, Patrick also helped with the resident selection process. The Resident Advisor for the West Africa FELTP, Yassa Ndjakani, spent a week with N-FELTP meeting the Nigerian stakeholders to understand the dynamics of FELTP. N-FELTP also provided him with training materials. In Cameroon, one of the Central Africa Resident Advisors, Dieula Delissaint, spent a week with N-FELTP learning from them and also provided training materials. Resident of cohort #1, Dr Biya, also travelled to Cameroon to support a cholera outbreak response.

PAKISTAN FELTP

Program description

The Pakistan FELTP is one component of a broader CDC effort to strengthen Pakistan's disease surveillance and response capacity. The Pakistan FELTP is also assisting in implementing the Pakistan national plan of action for surveillance, which focuses on the country's priority diseases such as influenza, hepatitis, and polio. To strengthen Pakistan's surveillance and response capabilities, the Pakistan FELTP has been assisting the MOH in developing a legal framework for surveillance, demonstrating best practices in surveillance methodologies, developing an electronic information management system, and establishing quality laboratory testing for hepatitis and influenza. These systems, and the lessons learned, will then be expanded to address other priority diseases.

Each of the Pakistan FELTP components is described in detail below.

Pakistan FELTP

The Pakistan FELTP is a 2-year, in-service training program in field epidemiology. The program currently includes 32 fellows; 30 of the fellows are employed by MOHs from all provinces, Azzad, Jammu, Kashmir, federally administered areas, and national programs. Additionally, two Afghan fellows from the Afghanistan MOH are also enrolled in a current cohort. The Pakistan FELTP has been accredited by the University of Health Sciences, Lahore, Pakistan. The graduates of the program receive a Master's degree in Field Epidemiology after successful completion of a final examination administered by the University. Additionally, under a collaborative agreement, the fellows also have the opportunity to earn a certificate from the University of Washington, Seattle. The first and second cohorts of residents graduated in the fall of 2009 and 2010, respectively. The third and fourth cohorts are currently enrolled. Recruitment for the fifth cohort will begin in June-July 2011.

Viral hepatitis

Viral hepatitis is a priority under the Prime Minister's National Plan for Hepatitis. In support of this plan, the Pakistan FELTP established hospital-based sentinel surveillance in five pilot sites: Islamabad, Peshawar, Lahore, Karachi, and Quetta. These sites are staffed by medical officers and laboratorians to coordinate data and sample collection, analysis, and reporting. The effort has generated factor based data for 6,053 suspected, and 2,330 lab confirmed, cases by December 2010.

Legal framework for surveillance

CDC, WHO, and the MOH developed draft legislation after consultations with provincial departments of health. The MOH is currently holding consultations with different ministries including the Pakistan Law Ministry to provide the said legislation in the wake of recent constitutional amendments. This will provide the legal structure to the proposed integrated disease surveillance system and fulfill the requirements of International Health Regulations.

Laboratory quality systems

In response to an identified need established during a surveillance assessment conducted in 2004, the National Institute of Health (NIH) in Pakistan has proposed establishing a public health laboratory network. In support of this network, the Pakistan FELTP has conducted multiple courses in quality assurance, quality management systems and biosafety practices.

Informatics

CDC has deployed an electronic disease surveillance system at five pilot sites utilizing established surveillance protocols for hepatitis. It may be expanded to other diseases and deployed throughout the country.

Influenza surveillance

In response to outbreaks of H5N1 influenza in poultry in Pakistan in 2006, and to build respiratory disease surveillance, the Pakistan FELTP is working with CDC's National Center for Infectious and Respiratory Diseases (NCIRD) and Pakistan's MOH–NIH to measure the disease burden of influenza through sentinel site surveillance, and to establish a population-based early warning system for pandemic and/or avian influenza.

CDC is also supporting the MOH in establishing epidemic investigation cells at the provincial level that will be responsible for analyzing and responding to data from sentinel and population-based data such as that from the influenza surveillance project.

CDC is supporting the Pakistan National Agricultural Research Council to strengthen human/animal disease investigation and technical assistance to the Ministry of Food and Agriculture.

Team members

Atlanta-based staff

- Henry Walke, Team Lead
- Nabil Ahmed, Public Health Advisor
- Lisa Bryde, Instructional Designer
- Dana Schneider, Health Scientist

Pakistan-based Staff

- Birjees Mazher Kazi, Executive Director NIH – Pakistan
- Rana Jawad Asghar, Resident Advisor
- Rana Muhammad Safdar, Senior Faculty
- Muhammad Salman, Lab Coordinator
- Jamil Ahmad Ansari, Faculty
- Amir Baig, Faculty
- Tamkeen Ghafoor, Faculty

Partners

- Pakistan Federal MOH
- Pakistan NIH
- WHO (Geneva and Pakistan)
- University of Health Sciences, Lahore
- Health Services Academy, Islamabad
- Institute of Public Health, Lahore
- National Agricultural Research Centre
- CDC NCIRD
- CDC National Center for HIV, Hepatitis, TB, STD Programs

- CDC Division of Laboratory Systems
- CDC Division of Viral Hepatitis
- University of Washington, Seattle
- USAID

Cohort information

- Current number of trainees for cohort 3: 14 (includes 2 from Afghanistan)
- Current number of trainees for cohort 4: 18
- Total number of graduates as of 2010: 19

Strengthened public health workforce

First cohort

- Senior faculty, Pakistan FELTP, NIH, MOH, Islamabad
- Faculty, Pakistan FELTP, NIH, MOH, Islamabad
- Senior demonstrator, Community Medicine, Rawalpindi Medical College, Rawalpindi, Department of Health, Punjab
- Program director, District Health Development Centre, Pakpattan, Department of Health, Punjab
- Assistant director (Public Health), Department of Health, Peshawar, Khyber-Pakhtoon Khwa
- NGO training and research coordinator, Provincial AIDS Control Program, Peshawar, Department of Health, NWFP
- Senior medical-legal officer, Attock, Department of Health, Punjab Medical Officer, Bunji, District Astore, Department of Health, Federally Administered National Area

Second cohort

- Senior manager, Serology, National HIV /STI Referral Laboratories, National AIDS Control Program, NIH, Islamabad
- Assistant Professor, Department of Community Medicine, Bannu Medical College, Department of Health, NWFP Senior Medical Officer, Punjab Prisons, Lahore
- Assistant Chief Planning Officer, Department of Health, Quetta, Baluchistan
- Provincial master trainer, Sindh Integrated Management of Childhood Illnesses, Department of Health, Sindh
- Deputy program manager, District Health Information System, Peshawar, NWFP
- District coordinator, National Program for Family Planning and Primary Health Care, Pakpattan, Punjab
- Deputy district officer (Health) Bukkhar, Department of Health, Punjab
- Medical officer, District Okara, Department of Health, Punjab
- Medical officer, Detoxification and Rehabilitation Complex, Quetta, Baluchistan
- Medical officer, District Kashmore, Department of Health, Sindh

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 7
- Number of planned (protocol-based) studies conducted and completed: 3
- Number of surveillance evaluations conducted: 14

Other projects or programs conducted in 2010

Fellows of the third cohort spearheaded the implementation of the disease early warning system (DEWS) in Sindh and KPK province. In Sindh, the Government of Pakistan (GoP) and WHO established two hubs to provide health assistance to the most adversely affected area during 2010. The surveillance effort was lead by FELTP fellows of the second and third cohorts.

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Surveillance and response course	Public sector medical professionals	4 Weeks	20	20 public health professionals from all four provinces, AJK, Federally Administered Tribal Area, and FANA were trained on disease surveillance and outbreak investigation.
Acute hepatitis surveillance	Sentinel site staff Epi and lab	3 days	15	15 surveillance and laboratory professionals trained on standard protocol for surveillance of acute hepatitis and laboratory techniques.
Surveillance and outbreak response during floods	Medical professionals/ surveillance officers of GoP and WHO	2 trainings of 2 days each	85	85 medical professionals trained on surveillance and outbreak response during floods in the province of Sindh

Other accomplishments

- Pakistan FELTP facilitated the submission of the first draft legal framework for disease surveillance in the country to the parliament for review and approval.
- Pakistan FELTP fellows played a key role in the implementation of the Disease Early Warning System (DEWS) in the flood affected areas of KPK, Punjab, and Sindh provinces.
- A Pakistan FELTP fellow of the first cohort represented Pakistan at the meeting of International Surveillance Experts titled “Moving toward comprehensive global disease surveillance” hosted by the US Department of State, Washington DC, June 19–23,2010.
- Three fellows of the second cohort were selected for the Certificate Program for Emerging Infectious Disease Epidemiology conducted by the University of Florida, USA .
- An agreement has been reached for collaborating with University of Washington for faculty support and awarding of joint certificates to the fellows of Pakistan FELTP.

Status of program independence and sustainability

- The Pakistan MOH has provided five large rooms as dedicated space for the Pakistan FELTP in one of its newly constructed buildings free of charge
- The MOH and Department of Health pay many of the living expense costs for the fellows when they attend trainings in Pakistan

- Each cohort of the Pakistan FELTP represents all provinces, AJK, and federally administered areas of Pakistan
- The MOH has provided administrative leave to several employees who serve as instructors for the Pakistan FELTP
- The Pakistan MOH is working closely with the Pakistan FELTP to design and implement an integrated disease surveillance and response program.
- An enhanced/accelerated program for prevention and control of hepatitis has been approved by the GoP to continue the sentinel site-based acute hepatitis surveillance project initiated by FELTP Pakistan.
- A formal coordination mechanism has been established with priority national health programs for the field assignments of the Pakistan FELTP trainees.

Monitoring and evaluation activities

- One faculty member in Pakistan is acting as a dedicated coordinator to monitor the progress of the fellows utilizing the standard FELTP curriculum and also to implement and maintain the Epi track database. An Atlanta-based curriculum specialist is assisting. Frequent internal evaluations of fellows are also being carried out as part of the training schedule.

Outcomes

- The National AIDS Control Program convinced CIDA to provide support for continuing work on an HIV surveillance study in high risk groups by two fellows of the second and third cohorts. The provisions for surveillance have been significantly enhanced in the revised legislative documents of the Prime Minister's program for prevention and control of hepatitis based on hepatitis surveillance evaluations conducted by Pakistan FELTP fellows.
- The HIV and hepatitis screening and case management facilities have been extended to prison inmates in the Punjab province as a result of the study findings of a second cohort fellow working in the prisons department.
- The performance of Pakistan FELTP fellows during floods led to the establishment of a provincial surveillance and response unit in Sindh. The Pakistan FELTP fellows have been designated as epidemic investigation officers.
- The sale of non-iodized salt has been banned and iodization equipment has been provided to all salt manufacturers in District Pakpattan based on recommendations of a study conducted by a second cohort fellow.
- The integration of existing surveillance systems is under serious consideration by the MOH.

RWANDA FELTP

Program description

In 2008, at the request of the Government of Rwanda, CDC began the process of planning and implementing the Rwanda FELTP. In May, 2010 CDC, in partnership with PEPFAR and AFENET, launched the Rwanda FELTP with 15 residents. Dr. Simon Antara is the Resident Advisor hired through AFENET to provide technical assistance to the program.

The Rwanda-FELTP is a 2-year fulltime training program in applied epidemiology and public health laboratory practice, created to be a long-term ongoing program within the national MOH. It is intended to train field epidemiology residents, public health and veterinary laboratory residents, and veterinary field epidemiology residents for leadership positions in various levels of both the MOH and the Ministry of Agriculture. The residents will provide service to the MOH, Treatment and Research on HIV/AIDS Center (TRAC), National Reference Laboratory, district hospitals and health services, and Rwanda Animal Resource Development Authority (RARDA) during their training through field placements.

Team members

Atlanta based staff

- Peter Nsubuga, Team Lead
- Italia Rolle, Epidemiologist
- Hiari Imara, Public Health Advisor
- Juliette Mannie, Program Analyst

Rwanda- based staff

- Isaac Ntahobakurira, Focal Point at The National University of Rwanda
- Thiery Nyatanyi, Field Coordinator
- Asha Nakasi, Program Administrator
- Jean Baptiste Kakoma , MOH Program Director
- Simon Antara, Resident Advisor
- Tura Bora Galgalo, Laboratory Resident Advisor

Partners

- Ministry of Health Ministry of Agriculture and Animals
- TRAC Plus
- National Reference Laboratory
- National University of Rwanda School of Public Health
- AFENET
- CDC – Rwanda

Cohort Information

- Total number of trainees in cohort 1: 15

Accomplishments

In 2010, the first cohort of FELTP residents was established with 9 epidemiology, 3 laboratory, and 3 veterinary science residents.

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 8
- Number of surveillance evaluations conducted: 12
- Number of surveillance analysis conducted: 4

SOUTH AFRICA – FELTP

Program description

South Africa launched its program (South Africa-FELTP) in May 2006, and the first cohort of students enrolled in 2007. It is the second program to have a laboratory component; Kenya was the first. The South African Department of Health, the National Institute for Communicable Diseases (NICD), the National Health Laboratory Services, the US Centers for Disease Control and Prevention (CDC), and the University of Pretoria established this program to build epidemiological capacity and to strengthen public health laboratory practice in South Africa. The South Africa-FELTP's primary accomplishment is producing graduates with a Master's degree in Public Health (MPH) and two years supervised work experience and training aimed at strengthening practical skills and knowledge. The students participate in several core modules at the University of Pretoria and NICD, and work under a supervisor for the remainder of the two years at a field placement site at the national, provincial, or district level within the Department of Health and the NHLS. Two applied field epidemiology short courses are presented annually for public health professionals from national and provincial Departments of Health, as well as from local and municipality metro city councils who are involved in disease control, disease surveillance, outbreak investigations, and data management.

Team Members

Atlanta-based staff

- Peter Nsubuga, Medical Epidemiologist (lead)
- Italia Rolle, Epidemiologist
- Ken Johnson, Public Health Advisor
- Juliette Mannie, Program Analyst

South Africa-based staff

- Bernice Harris, Director, SAFELTP
- Lazarus Kuonza, Medical Epidemiologist
- Khin San Tint, Field and Epidemiology Track Coordinator, NICD, SA-FELTP
- Barbara Temane, Administrative Assistant, NICD, SA-FELTP
- Kate Nkai, SA-FELTP Project Manager

Partners

- Centers for Disease Control – South Africa (CDC- SA)
- National Institute of Communicable Diseases (NICD)
- National Department of Health (NDOH)
- Provincial Departments of Health (PDOH)
- National Health Laboratory Service (NHLS)
- University of Pretoria (UP)
- CDC National Center for HIV, Hepatitis, TB, STD Programs (NCHHSTP), International Laboratory Branch (ILB)

- United States Health and Human Services Pandemic Influenza Fund
- The African Field Epidemiology Network (AFENET)
- World Health Organization - International Health Regulations

Cohort Information

- Current number of trainees for cohort 3: 11
- Current number of trainees for cohort 4: 11
- Total number of graduates as of 2010: 8

Strengthened public health workforce

A total of 22 SAFELTP alumni are employed in public health services as follows:

- Field Epidemiologist with SA-FELTP: 2
- Field Epidemiologist at NHLS: 5
- Field Epidemiologist, NICD: 2
- Field Epidemiologist, Provincial Department of Health: 10
- Deputy Director, Provincial Department of Agriculture: 1
- Field Epidemiologist/Fellow, CDCSA: 2

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 11
- Number of planned (protocol-based) studies conducted and completed: 11
- Number of surveillance evaluations conducted: 11
- Number of surveillance analyses conducted: 11

Training:

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Applied Field Epidemiology short courses	Public health professionals from national, provincial, and local Departments of Health	2 weeks	74	Two courses were taught in Johannesburg. The course was attended mostly by disease control, port health, and epidemiology and surveillance staff from provincial, district, and sub-district levels of the Departments of Health. Two groups totaling 74 participants were taught in March and again in September. Participants included 12 health personnel from Gauteng, 19 from Mpumalanga, 21 from Limpopo, and 11 from Eastern Cape. Thirty-nine participants presented field projects. Note: there was attrition in the second course due to the health care strike in September.

Other accomplishments

- SA-FELTP residents and graduates assisted in preparations for the World Cup and participated in intra- and post- campaign evaluations of the mass measles, polio, and influenza vaccination campaigns. Residents and graduates also supported the Rift Valley fever outbreak response activities in the Free State and Northern Cape Provinces. SA-FELTP residents also worked with the provincial Departments of Health and Agriculture and the NICD's Outbreak and Special Pathogens Units to follow up and investigate cases and deaths, undertake serosurveys on affected farms in the Free State and Northern Cape provinces, and to conduct a serosurvey among all public veterinary officials in the Free State Department of Agriculture. The main purpose of the serosurveys was to contribute to estimating the extent of the outbreak in the country and also to obtain information on risk factors. During the 2010 Soccer World Cup, SA-FELTP staff, residents and graduates supported the National and Provincial Departments of Health, National Health Laboratory Service and NICD in national surveillance and outbreak response activities.
- During the US CDC's Epidemic Intelligence Service conference, the SA-FELTP team was one of four programs to individually meet with the new Director of the CDC, Dr. Thomas R. Frieden, and update him on the scope, achievements, and challenges of the programs. Other staff and student achievements include:
 - » Dr. Modeste Landoh received first prize for best poster presentation at the 6th TEPHINET Global Conference in Cape Town, South Africa.
 - » Mr. Brett Archer, graduate of the 2007 class, received a Merit certificates at the 2010 University of Pretoria Health Sciences Faculty gala function for completing his Master's degree with distinction. He also received an award as first runner up for best publication by a young researcher for an article on the epidemiology and factors associated with fatal cases of pandemic H1N1 Influenza virus infections in South Africa, 2009.
 - » Prof. Tshimanga, Dr. Khin San Tint, Dr. Lazarus Kuonza, and Dr. Bernice Harris were members of the Scientific Committee for the 6th Global TEPHINET Conference.
 - » Prof. Tshimanga was the Chairperson of the AFENET Board of Directors and the African regional representative of the TEPHINET Advisory Board.
 - » Dr. Harris was a member of the National EPI Task Group and is a member of the Board of Directors of AFENET.
 - » Dr. Faustine Ndugulile was a member of the working group for the Centre for Integrated Laboratory Training.
 - » Dr. Khin San Tint was appointed as the instruction coordinator of the WHO International Health Regulation Implementation course 2, and Dr. Bernice Harris was identified as the subject matter expert.

SOUTH CAUCASUS FELTP

Program description

The South Caucasus Field Epidemiology and Laboratory Training Program (South Caucasus-FELTP) began in 2009. This two-year training program enrolled a first cohort of 12 residents and a second cohort of 16 residents. A third cohort of 16 residents from three South Caucasus countries (Armenia, Azerbaijan, and Georgia) is projected to start in June 2011.

South Caucasus -FELTP builds self-sustaining institutionalized capacity in the South Caucasus countries of Georgia, Azerbaijan, and Armenia through a competency-based training program in field epidemiology, veterinary epidemiology, and laboratory quality management systems integrated with epidemiologic practice to achieve organizational excellence in public health practice. Program improvements will be accomplished by leveraging the successes and experience of the Centers for Disease Control and Prevention (CDC): a) Field Epidemiology and Laboratory Training Programs (FELTPs), b) Sustainable Management Development Programs (SMDPs), c) the Division of Laboratory Systems (DLS) expertise in Quality Management Systems, together with the support and sponsorship of the US Department of Defense/Defense Threat Reduction Agency (DTRA), the US Department of State/Biosecurity Engagement Program (BEP), and HHS/Office of Global Health Affairs (OGHA).

Separate memoranda of understanding to establish the South Caucasus -FELTP were signed between CDC and the Georgia National Center for Disease Control and Public Health, the Ministry of Labor, Health, and Social Affairs, and the Ministry of Agriculture in 2008. The Azerbaijan Ministry of Health and Ministry of Agriculture, and the Armenia Ministry of Health and Ministry of Agriculture have signed similar memoranda with CDC. The first South Caucasus-FELTP cohort had participants drawn from Georgia and Azerbaijan. The second cohort had participation from all three South Caucasus countries.

The South Caucasus-FELTP is also linked to a modular style laboratory quality systems and management development program, with collaboration from CDC/Division of Laboratory Systems, as well as DPHSWD/SMDP.

Team members:

Atlanta-based staff

- Russ Gerber, Medical Epidemiologist, Team Lead
- Nabil Ahmed, Public Health Advisor
- Hiari Imara, Public Health Advisor

South Caucasus –based Staff

- Natalia Avaliani, Program Director
- Paata Imnadze, Program Director
- Edmond Maes, Epidemiology Resident Advisor,
- Thomas Rush, Laboratory Resident Advisor
- Tamar Bolkvadze, Administrative Assistant
- Marika Geleishvili, Assistant Advisor
- Manana Kuparadze, Technical Translator and Trainer

Partners

- Georgia National Center for Disease Control, Ministry of Health, Ministry of Agriculture
- Azerbaijan MOH, MOA
- Armenia MOH, MOA

Cohort information

- Current number of trainees for cohort 1: 12
- Current number of trainees for cohort 2: 16

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 4
- Number of surveillance evaluations: 16

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Epi-Info	NCDC	1 week	4	All members of the incoming FETP cohort received this training; 4 NCDC staff members in addition to the FETP cohort received the training
Lab Quality Management Systems (QMS)	Georgia MoH; NCDC; MoA	1 week	12	Trainings on QMS were dispersed throughout the calendar year; presenters included NCDC staff members

Other projects or programs conducted in 2010

- Designed and conducted a survey to estimate prevalence of brucellosis among cattle and sheep by region in Georgia.
- Conducted an evaluation of the effects of high concentrations of environmental manganese on young children in Zestaphoni, Georgia, 2010.
- Modified risk factors for peptic ulcer among persons with *Helicobacter pylori* infection in Georgia.

Other accomplishments

- Assisted CDC/DLS in the development of technical Standard Operating Procedures (SOPs) for DoD/DTRA approved laboratory diagnostics of select agent pathogens.
- Provided laboratory Quality Management Systems (QMS) mentorship for NCDC QMS workgroups on rollout of training and laboratory assessment programs.
- Continued development of FELTP curricula in Russian language.
- Continued development of epidemiology glossary in English-Russian languages.

Status of program independence and sustainability

- Signed memorandum of understanding with Ministry of Health and with Ministry of Agriculture in Armenia.
- South Caucasus-FELTP office and classroom space were provided in-kind by Georgia NCDC.
- Georgia NCDC provided vehicle, driver, and advisor to participate in outbreak investigation.
- Developing collaborations with other multinational agencies such as World Bank.
- Preparing local staff for new surveillance infrastructure and laboratory facilities developed with DoD/DTRA support.
- Change in NCDC leadership (December, 2010) is leading to stronger engagement and collaboration.

Outcomes

The FELTP has begun discussions to establish injury surveillance from motor vehicle accidents. The FELTP has also developed Standard Operating Procedures (SOPs) and policy for surveillance and laboratory diagnosis of select agent pathogens.

TANZANIA FELTP

Program description

The Tanzania FELTP was established in October 2008. It is located in Dar es Salaam. The Tanzania FELTP is a 2-year service-based program in which students receive a Master's of Science degree from Muhimbili University. The primary objectives of the program include:

- developing leadership in public health;
- providing epidemiological services;
- educating and training public health professionals in epidemiology and laboratory sciences;
- supporting public health laboratory services;
- conducting short courses on outbreak management, epidemiology, surveillance, and quality assurance; and,
- supplying technical support and advisory services to key stakeholders such as the MOH.

The program is intended for physicians, public health practitioners, and laboratorians with at least two years of work experience. The program is structured in the following manner: formal didactic instruction taught by instructors from Muhimbili University, Tanzania FELTP staff, CDC-Tanzania and CDC-Atlanta staff, and practical hands-on field placement at the national and/or regional levels.

Team members

Atlanta-based staff

- Italia Rolle, Team Lead
- Andrew Weathers, Public Health Advisor
- Michele Evering-Watley, Instructional Designer
- Peter Nsubuga, Medical Epidemiologist

Tanzania-based staff

- Peter Mmbuji, MOH Program Director
- Fausta Mosha, Laboratory Resident Advisor
- Obinna Oleribe, Epidemiology Resident Advisor
- Janneth Mghamba, Field Coordinator
- Mohamed Mohamed, Field Coordinator
- Patrick Kamugumya, Administrative Assistance

Partners

- Ministry of Health and Social Welfare Muhimbili University of Health and Allied Sciences
- National Institute for Medical Research
- CDC's Global AIDS Program
- President's Malaria Initiative
- AFENET
- WHO

Cohort information

- Current number of trainees for cohort 1: 11
- Current number of trainees for cohort 2: 10
- Current number of trainees for cohort 3 (started 2010):12
- Current number of graduates as of 2010: 11

Strengthened public health workforce:

There are currently 10 Tanzania FELTP graduates working in various capacities within the MOH and other ministries in Tanzania. Three Tanzania FELTP graduates are working at the national level of the MOH, six are working at the provincial/state level, and one FELTP graduate is working in an academic institution. One of the Tanzania FELTP residents is working with the Ministry of Defense in their laboratory.

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 9
- Number of planned (protocol-based) studies conducted and completed: 10
- Number of surveillance evaluations conducted: 10
- Number of surveillance analyses conducted: 10

Other accomplishments

In 2010, the World Bank provided a grant to the MOHSW in recognition of the Tanzania FELTP work in strengthening workforce surveillance. The goal of the grant is to increase the number of trainees who join the Masters of Science Program. The 5-year grant will provide for training eight additional students.

Other projects or programs conducted in 2010

International training program on child survival – reaching the target: project report, home management of diarrhea for under-five children in Biharamulo District-Tanzania, 2009/2010 — Mageda Kihulya.

Status of program independence and sustainability

In 2010, Tanzania FELTP held a strategic planning meeting to begin developing a 5-year strategy that includes a focus on sustainability.

Monitoring and evaluation of activities

A self assessment/evaluation of the competencies achieved by the second cohort of trainees during the first year of the training program was conducted in November, 2010. Results and analysis of the evaluation were shared with the Tanzania FELTP teams in Atlanta and in Tanzania. Recommendations were made to improve specific course materials in the existing curriculum.

WEST AFRICA FELTP

Program description

The West Africa FELTP is a two-year, regional, in-service training program in applied epidemiology and public health laboratory practice, created to be a long-term, ongoing program within the Multi Disease Surveillance Center (MDSC). The program began on January 14, 2010, enrolling 12 residents, three from each of the four participating countries (Burkina Faso, Mali, Niger, and Togo). The West Africa-FELTP trains field epidemiology, public health laboratory, and veterinary residents for leadership positions in various levels of the MOH in their respective countries. The residents will provide service to their home MOH during their training through field placements. The program was initially sponsored by MDSC in partnership with the MOH of Burkina Faso, Mali, Niger, and Togo, with technical assistance provided by CDC.

The West African regional program began with four member countries (Burkina Faso, Mali, Niger, and Togo), with a plan of expanding to include other Francophone countries in Africa after the program is well-established. However, due to the lack of program funds, expanding the program and enrolling a new cohort is delayed until additional funding is identified.

The field epidemiology component is similar to programs that have been established in more than 25 other countries and is modeled after CDC's two-year Epidemic Intelligence Service (EIS) training program. The public health laboratory training component is based on CDC's Emerging Infections Program, a one-year applied laboratory training program. The didactic portion of the training takes place in Ouagadougou, Burkina Faso, and the field portion of the training takes place in the fellow's home country.

Team members

Atlanta-based staff

- Michele Evering-Watley, Team Lead/Instructional Designer
- Peter Nsubuga, Epidemiologist
- Hiari Imara, Public Health Advisor

Country-based staff

- Evariste Mutabaruka), Program Director (based in Ouagadougou)
- Yassa Ndjakani, Resident Advisor
- Patrice Traore, Financial Manager
- Diary Juliette, Administrative Assistant

National focal points

- Sylvestre Tiendrebeogo, Burkina Faso
- Kandoura Toure, Mali
- Rabi Maitournam Riba, Niger
- Douoladi Ibrahim Nasouri, Togo

Partners

- MOHs in Burkina Faso, Mali, Niger, and Togo
- WHO-AFRO/Multi Disease Surveillance Center (MDSC)
- West African Health Organization (WAHO)
- AFENET
- University of Ouagadougou
- University of Lome
- University of Mali
- University of Niamey
- USAID

Cohort Information

- Current number of trainees for cohort 1: 12

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Outbreak Investigation short course in Burkina Faso	District and regional medical officers, surveillance officers, biologists, and pharmacists	10 days	20	Participants presented their mini-projects after three months. They also participated in outbreak investigations and national immunization campaigns within the MOH.
Outbreak Investigation short course in Togo/ Lome	District and regional medical officers, surveillance officers, biologists, pharmacists, and veterinarians	10 days	20	These trained health professionals conducted mini-projects in outbreak investigations, monitoring and evaluation and surveillance, in collaboration with the MOH.
Training workshop for supervisors of internship/Lome	Professors, MOH focal points, Non-profit Organizations academic advisors	2 days	20	Objective of the workshop was to increase capacity to provide practical training of the Master-FELTP, and to be acquainted with the basic principles and content of training FELTP to provide technical support for supervising residents during their field practice.
Outbreak Investigation short course in Mali/ Bamako	District and regional medical officers, surveillance officers, biologists, pharmacists, and veterinarians	10 days	20	Participants presented their mini-projects after three months, and are participating in outbreak investigations and national immunization campaign within the MOH.

Investigations and surveillance project activities in 2010

- Number of completed protocol-based studies: 6
- Number of surveillance evaluations completed: 4
- Number of surveillance analyses completed: 4

Outcomes Improvement in surveillance programs

Residents were in the forefront in the investigation of yellow fever in Bobo/Burkina, measles in Niger, and rabies and cholera in Togo. Our residents are assisting the MOHs in having qualified staff to address public health issues at no cost.

Improved management of acute health events/emergency investigations

- Residents responded quickly and started the investigation as soon as they arrived in the field. This helped residents quickly assess the situation and determine causes of the outbreak.
- West Arica FELTP residents are offering much needed services, such as work in disease surveillance, outbreak investigations, and system evaluation. These included:
 - » Evaluation of the surveillance system of highly pathogenic avian influenza in Burkina Faso, 2010.
 - » Evaluation of epidemiological surveillance system (case of measles in Mali)
 - » Evaluation of the epidemiological surveillance system for meningitis in the health district of Kolokani/Mali - May 2010.
 - » Report to assess the network for epidemiological surveillance of contagious bovine pleuropneumonia in Mali
- The concern is the ability to identify a funding source to keep the program running and to bring on additional cohorts.

Other Accomplishments

- There are currently 12 residents enrolled in the FELTP. All 12 residents are on internship, conducting field work/outbreak investigations and surveillance with the MOH.
- Recommendations for restructuring of program staff to save costs occurred in October, 2010.
- Scientific conferences (Lome and Burkina), for presentation of mini-projects undertaken by participants in short-courses.
- Participation of one of our residents on the introduction of new vaccine (Men- Vac- Africa) campaign in Burkina Faso.
- Steering committee held in September 2010; to evaluate the progress of the West Africa FELTP and provide guidance for future action.
- Review of program expenditures along with program planning for sustainability occurred in October 2010. Meetings were held during that time with key partners to monitor the progress of the program and to address any programmatic or fiscal issues.
- Supervision of residents in the field (Burkina, Lome, and Niamey).

Status of program independence and sustainability

Diligent work is currently being done in-country to sign a Memorandum of Understanding (MOU) with the MOH and universities of participant countries as well as to ensure these partners will be able to support the residents and different activities of the program. Moreover, West Africa FELTP is still under the direction of WHO, but ideally will be led by the MOH (Division of Disease Control) or an organization such WAHO that brings together the MOHs of West African countries. The program's mission is to train health professionals to conduct disease surveillance and investigation and to strengthen the health care system.

YEMEN FETP

Program description

The Yemen Field Epidemiology Training Program (Yemen-FETP) is supported by the Yemen Ministry of Public Health and Population (MOPHP), and the US Centers for Disease Control and Prevention (CDC), with funding from the US State Department's Bio-Engagement Program. The program in Yemen plans to conduct training at multiple levels and for varying periods of time (6 months-two years); at the advanced level, trainees will be provided two-year in-service training. Upon completion of the program requirements, graduates will serve in key epidemiology, surveillance and response positions of the MOPHP. All fieldwork will be carried out in Yemen, with mentoring and supervisory support from the MOPHP and CDC. During the first year, Yemen-FETP officers will be centrally placed at the Ministry of Public Health and Population (MOPHP) in Sana'a. During the second year, some officers will be placed in the governorate-level health directorates where special projects are implemented. Yemen-FETP officers will be supervised and mentored by MOPHP field supervisors and university professors. In addition, officers will frequently receive site visits from the central level by resident advisors (RAs) and other centrally-located supervisors. Graduates will go on to improve disease surveillance systems, strengthen investigation and rapid response, and use data for decision-making. Through these activities, they will better characterize disease burden, assess impact of implemented programs, and support the MOPHP with policy recommendations and capacity-generation to overcome identified challenges

Team members

Atlanta-based staff

- Aisha Jumaan, Team Lead
- Richard Dicker, Epidemiologist
- Lisa Bryde, Instructional Designer
- Steven Becknell, Public Health Advisor

Yemen-based staff

- Abdul-Hakim Al-Kohlani , Program Director
- Nadhira al-Saqqaf, Program Assistant

Partners

- Ministry of Public Health and Population
- US State Department Bio-Engagement Program

Cohort Information

- Current number of trainees for cohort 1: 3

Investigations and surveillance projects for 2010

- Number of outbreak or emergency investigations conducted and completed: 4
- Number of surveillance analyses conducted: 3
- Number of surveillance evaluations conducted: 3

Other projects or programs conducted in 2010

- Investigation of Dengue fever outbreaks by 2nd year FETP officer – Aden and Lahj Governorates
- Investigation and response to cholera outbreak by 2nd year FETP officer – Hodeidah and Shabwah Governorates
- Investigation and response to Chikungunya/Dengue outbreak in Hodeidah by 2nd year FETP officer
- Assessment of epidemiology, surveillance, response capabilities in Yemen and viability of workforce capacity-building program
- Training in Mass Gatherings Surveillance
- Program design workshop led by the MOPHP steering committee and technical working group
- Memorandum of Understanding developed outlining the cooperation between Yemeni Ministry of Public Health and Population and US CDC
- Finalization of a ten-year strategy document for design and implementation of epidemiology/surveillance/response workforce capacity-building in Yemen (November 2010)
- Mass gatherings surveillance project implemented in Aden for the 2010 GCC Football Tournament
- Poster presentation by 2nd year Yemeni officer at TEPHINET Conference in Cape Town, South Africa

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Surveillance during mass gatherings	Select FETP officers in the EMRO/MENA Region	10 days	3	Surveillance project developed and executed in Aden; written up for publication in Eastern Mediterranean Health Journal

Status of program independence and sustainability

- Memorandum of Understanding developed outlining the cooperation between Yemeni Ministry of Public Health and Population and US CDC
- Finalization of a ten-year strategy document for design and implementation of epidemiology/surveillance/response workforce capacity-building in Yemen (November 2010)
- Officers actively engaged in providing critical epidemiologic service to the government and population of Yemen.
- Career path identified for FETP officers post-graduation. Status: In-process. Governorate surveillance officers will return to lead rapid-response teams in their respective locations; however, Governorate Directors General need to be appraised about the program and ensuring that these officers have elevated roles and responsibilities upon their return. Engagement with the Planning Unit is essential to ensure that FETP graduates also have access to a movement up the career ladder.

- Institutionalization of the FETP within the formal FETP structure. Status: Done. The FETP unit is physically within the Epidemiology and Surveillance Unit within the Directorate of Communicable Disease Control at Sana'a MOPHP. It is supported by, the Deputy Minister (DM) for Primary Health Care and has access to all technical units working within that sector and outside of it.
- Assignment of major staff to run Y-FETP office and execute the program Status: In-Process. The FETP has a director, and could benefit from technical and administrative support staff.

Outcomes

- Increased visibility of FETP officers and the role they play with outbreak investigations/ response;
- Increased attention to public health implications of mass gatherings and the need to invest in surveillance, prevention, and control measures.

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BRAZIL FETP

Program description

The Brazil FETP is called the “Programa de Treinamento em Epidemiologia Aplicada aos Serviços do Sistema Único de Saúde” (EPISUS). EPISUS was created by the Brazil MOH in 2000, with support from CDC, the World Bank, and the CDC Foundation. Since 2000, EPISUS has trained over 70 epidemiologists, conducted more than 200 outbreak investigations, and evaluated over 90 surveillance systems. EPISUS is a well-regarded, two-year FETP that is a leading element of the MOH’s surveillance and emergency response apparatus. After the CDC’s Resident Advisor left in 2009, the program became an autonomous, self-sustained FETP under the MOH. Although CDC no longer directly supports EPISUS, CDC and the MOH continue to collaborate in areas of mutual interest.

CGH is currently engaged in two pilot programs with the MOH and EPISUS

1. Implementing an integrated model of surveillance of zoonotic diseases across Brazilian stakeholders
 - Led by a FETP/EPISUS graduate, the zoonotic diseases surveillance pilot project attained early success through formalized cooperation across three federal ministries and the state of Mato Grosso, and the collaboration of several non-governmental entities. The project was defined as a “National Strategy,” a designation indicating the intent to extend the pilot’s practices nationally. In 2010, two workshops of stakeholders were held. An agreement was reached on surveillance for brucellosis (a disease which crosses animal and human populations) and epizootics (disease outbreaks within animal populations). As a result of these workshops, an inter-sectorial committee was established at the state level. At the national level we are seeking a formal collaboration through AIDS cooperative agreement. Additionally, the project officer has advised and mentored current FETP trainees.
2. Improving post-mortem diagnosis in Tocantins state
 - Post-mortem diagnosis is not regularly conducted in Brazil. This collaboration between the MOH and CDC is a pilot program to develop local protocols for sample collection and reporting of unexplained deaths in Tocantins state. The unexplained deaths pilot program was initiated in 2009 and coordinated with the MOH. In 2010, negotiations with state and local-level collaborators were completed, project protocols were developed, and equipment was purchased. Initial reports highlight an increase of 62% autopsies performed in Tocantins from 69 autopsies in 2009 to 112 in 2010.

Team members

Atlanta-based staff

- Jeremy Sobel, Medical Epidemiologist
- Natalie Roberts, Public Health Advisor

Brazil-based staff

- Suely Hiromi Tuboi, Director, Zoonotic Diseases Surveillance Pilot

Partners

- MOH, Brazil, Secretariat of Health Surveillance
- EPISUS
- Fundação para o Desenvolvimento Científico e Tecnológico em Saúde (FIOTEC)
- Escola Nacional de Saúde Pública (ENSP/Fiocruz)
- USAID

ENVIZ inter-sectorial work group

- MOH, including the Transmissible Diseases Section Center for Strategic Information in Health (CIEVS), Section of Laboratories, Department of Environmental Health Surveillance and Occupational Health, and the National Agency for Sanitary Surveillance
- Secretariat for Health in Mato Grosso State, including Superintendency of Health, Surveillance Sections for Epidemiology and Environment, CIEVS, Sanitary Surveillance, and the Reference Center for Occupational Health
- Ministry of Agriculture, including the Secretary of Agriculture and Livestock Health, General Coordination of Laboratory Support, and the Institute for Agriculture and Livestock Health of Mato Grosso
- Ministry of Environment, including the Institute Chico Mendes for Biodiversity Conservation, and Brazilian Institute of Environment and Natural Resources
- WHO Pan-American Health Organization (PAHO) - Panaftosa Group
- University of Sao Paulo, Federal University of Mato Grosso
- Fluminense Federal University, Oswaldo Cruz Foundation
- Wildlife Trust, Wildlife Conservation Society, TRIADE Institute

Status of program independence and sustainability

The program is completely independent and has been functioning without a CDC Resident Adviser since July 2009. The program is formally recognized within the MOH's organizational structure, located in CIEVS.

EGYPT FETP

Program description

The collaboration between the United States Agency for International Development (USAID), Cairo; Ministry of Health and Population (MOH&P), and CDC began in 1993 upon development of the Egyptian Field Epidemiology Training Program (Egypt FETP). The main objective of FETP training has been to provide the MOH&P a continuous supply of physicians with theoretical knowledge and in-depth field experience in the areas of disease surveillance, outbreak investigation, data analysis and use of accurate information for prompt public health action. The first CDC Resident Advisor (RA) worked with the FETP from 1993-1997.

During the past 14 years, Egypt FETP has dramatically strengthened the ability of the MOH&P to perform such core public health and applied epidemiology functions such as disease surveillance, outbreak investigation and rapid response. Egypt FETP conducted numerous outbreak investigations, including Rift Valley Fever virus, typhoid, tetanus and human rabies. Its achievement has reflected a strong partnership among the MOH&P, the Epidemiology and Surveillance Unit (ESU, USAID, CDC, WHO, the U.S. Naval Medical Research Unit No.3 [NAMRU-3]), and other partners in providing resources, technical assistance and training to help develop a cadre of 82 highly-skilled applied epidemiologists who currently perform many of the core functions of the MOH&P related to disease surveillance and outbreak investigation. These activities include developing a national electronic notifiable disease surveillance system, a Nile cruise boat inspection program, core and specialized epidemiologic training, and other key activities, including the training of hundreds of physicians at the district health level in disease surveillance, applied epidemiology, and related skills.

In May 2000, the MOH&P established the ESU. The ESU is responsible for disease surveillance, outbreak investigation and response, training, and other related activities. Egypt FETP became a major organizational component of ESU. Many Egypt FETP graduates and trainees staff the key positions at ESU. In 2003, Egypt FETP conducted an environmental survey and identified an outbreak of lead toxicity due to a contamination of flour in a grinding mill in a village in southern Egypt.

In 2004, the Egyptian Board of Applied Epidemiology was established to provide training to physicians who are interested in public health career. The program includes two years of FETP and two years of clinical rotation. The ESU conducted their first Behavioral Risk Factor Surveillance System (BRFSS) survey in 2004. After funding from USAID ended in 2005, CDC continued providing the technical assistance to Egypt FETP. It played a major role in the outbreak investigation of avian influenza since the first human H5N1 case was notified in February 2006. Of the 43 cases confirmed to date in Egypt, 19 have been fatal. The MOH&P has set up a new rapid surveillance system and ESU staff have trained a large number of public health personnel at the governorate and district levels throughout Egypt. CDC has not provided a RA to Egypt since 1997 due to funding constraints, and since that time, Egypt FETP has operated as an independent program (with CDC technical assistance) and received institutional support from the MOH&P to conduct activities. It has been determined that placement of an RA would improve quality, strengthen linkages between the program and CDC/NAMRU-3 and provide better opportunities for the integration of projects and activities with IEIP and influenza, as well as the expansion of FETP training activities in Egypt and the region. Therefore, at the request of the Egyptian MOH&P, DPHSWD hired a senior-level medical epidemiologist as regional RA with experience both in training Epidemic Intelligence Service officers and fellows in epidemiology as well as programmatic experience in establishing and managing large public health programs.

Team members

Atlanta-based staff

- Tippavan Nagachinta, Epidemiologist
- Michele Evering-Watley, Instructional Designer
- Hiari Imara, Public Health Advisor
- Steven Becknel, Public Health Advisor

Egypt-based staff

- Eman Abdul-Kareem, Ministry of Health Program Director
- Reinhard Kaiser, Resident Advisor
- Salma Affifi, NAMRU-3, Epidemiologist

Partners

- Ministry of Health
- USAID
- U.S. Naval Medical Research Unit No.3 (NAMRU-3)

Cohort information

- Current number of trainees for cohort 17: 14
- Current number of trainees for cohort 18: 8
- Total number of graduates as of 2010: 82

Training

Training Type/ Title	Audience	Length	Number Trained	Key outcomes or comments
Mass gatherings surveillance workshop	FETP officers	5 days	3	Surveillance project developed and executed in Egypt; Results summarized in a report.

Strengthened public health workforce

- To date, the program has graduated 82 medical epidemiologists (including 3 graduates from Sudan). A total of 27 physicians, veterinarians and pharmacists are now in training (10 in the first year and 17 in the second year). Most of the graduates (56) remain in Egypt helping meet the country's public health needs.

Status of program independence and sustainability

- Since the RA left in 1997, Egypt FETP has been sustained by the MOH. However, as anticipated, due to the shortage of qualified training staff and changes in program leadership; over time, the standard of the training has diminished and needs improvement.

Monitoring and Evaluation

A scorecard assessment has been proposed and agreed to by the MOH.

GHANA FELTP

Program description

The University of Ghana, School of Public Health (UGSPH) was established in 1994. The primary objectives of the SPH are to respond to the professional staffing requirements of the MOH, to address the numerous existing and emerging healthcare challenges facing the country, and to train a wide range of public health professionals. The SPH awards a Master's degree in Public Health (MPH) and a Master's degree in Philosophy in Applied Epidemiology and Disease Control (MPhil) to graduates of Ghana FELTP. This program began in October of 2007 as an extension of a previous cooperative agreement with CDC which focused on strengthening capacity in surveillance, outbreak investigation, and response. In keeping with the goal of One Health, each Ghana FELTP cohort consists of physicians, laboratory scientists and veterinary officers.

Team members

Atlanta-based staff

- Michele Evering-Watley, Team Lead, Instructional Designer
- Peter Nsubuga, Epidemiologist
- Hiari Imara, Public Health Advisor

Ghana-based staff

- Josheph Amankwa, MOH Program Director, Ghana Health Service (GHS)
- Fred Wurapa, Program Director, UGSPH
- Edwin Afari, Program Coordinator, UGSPH
- Chima Oluabunwo, Resident Advisor

Partners

- GHS/Ghana MOH
- Ghana Ministry of Food and Agriculture, Veterinary Service Division (VSD)
- UGSPH
- AFENET
- USAID
- UN Foundation

Cohort information

- Current number of trainees for cohort 1: 5
- Current number of trainees for cohort 2: 8
- Current number of trainees for cohort 3: 7
- Current number of trainees for cohort 4: 8
- Total number of graduates as of 2010: 13 graduates (from cohorts 1 and 2)

Investigations and surveillance project activities in 2010

Completed 10 outbreak or emergency investigations and evaluated surveillance systems for several diseases with recommendations for improvement including:

- outbreak of gastrointestinal illness in Western region
- rabies in Eastern region
- measles in Eastern region
- H1N1 in Brong Afoho region
- encephalitis, foodborne outbreak in Eastern region
- cholera in Central region
- cholera, diarrheal disease, measles in Eastern region

Conducted 14 surveillance evaluations and completed secondary data analysis for disease control programs with recommendations leading to public health actions.

Other important projects or programs conducted by trainees or program

Residents led infectious disease control training seminars for district and regional level officers and other stakeholders. Cohorts 1, 2, and 3 conducted seminars for incoming residents.

2010 Trainings

Training Type/ Title	Target Audience	Length	Number Trained	Key Outcomes or Comments
Maternal child health (MCH) epidemiology training	MCH staff and current FELTP residents	7 days	20	Built competencies of attendees to apply epidemiology in public health practice to MCH issues. This course formed the basis of a potential subsequent course that could emphasize topics such as data analysis
Global Information Systems (GIS) training	Residents and partners (i.e., GHS/MOH and veterinary services)	7 days	20	20 people trained to use GIS for epidemiological field work, take coordinates and plot an area using GPS
HIV monitoring and evaluation (M&E) training	National, regional, and district focal persons and M&E officers, data managers	10 days	50	50 national, regional, and district focal persons and M&E officers acquired monitoring and evaluation skills for managing HIV/AIDS program. 48 M&E system improvement field projects completed and presented to stakeholders
Sierra Leone-surveillance and outbreak (cohort 2 resident assisted with training)	National and district surveillance officers and disease-specific program M&E	14 weeks	50	50 national and district surveillance officers or M&E officers trained on public health surveillance and outbreak investigation/response. 50 national-level, district-level or disease-specific surveillance system evaluation or data analysis project completed and presented to stakeholders with recommendations for improvement.

Strengthened public health workforce

The program had five first-year residents in 2010 working in Ghana: two at the national level MOH, two at the provincial/state level, and one at the district/local level. Other positions include:

- Senior veterinary officer, Ministry of Food and Agriculture, Jirapa, Upper Western Region
- Laboratory scientist
- Laboratory scientist, National Public Health Reference Lab
- Laboratory scientist, Korle Bu Central Lab
- Laboratory scientist, Koforidua Regional Lab
- Nurse, GHS, Dormaa Ahenkro
- Deputy district director, veterinary services, Dirim Central District
- Medical superintendent/district director, Health Services, Kwahu South

Status of program independence and sustainability

- Increased participation from the GHS and VSD with ongoing commitments to pay residents' salaries for two years while in Ghana FELTP
- Supported some field activities (i.e., outbreak investigations, transport, and logistics)
- Sustained chairmanship of the steering committee by the MOH and established consistency with participation of all partners
- Established career path within GHS and Veterinary Services Directorate

Monitoring and evaluation

Epidemiology track database tracks residents' activities and alumni activities which are analyzed and reviewed periodically and shared with AFENET.

Outcomes

- Enhanced and intensified surveillance for diseases such as rabies following investigation
- Improved collaboration with zoonotic disease surveillance through joint investigations
- Improved capacity to manage health events/emergency investigations
- Improved investigation and documentation of outbreaks
- Improved surveillance programs

Other accomplishments

- Career path established within GHS and VSD.

Publications in national or international journals/reports

- AFENET Bulletin
- GHS Disease Surveillance Bulletin
- AFENET abstract books

JORDAN FETP

Program description

The Jordan FETP began in November 1998 with the arrival of the first resident advisor. It went through three different phases; the name of the program changed with each phase to reflect its expanding scope.

Phase I (November 1998–October 2001), known as the **Jordan Data for Decision Making Project**, focused on improving data use at all levels of the MOH. Two main applied public health training programs were started: the Jordan FETP and the Data for Decision Making (DDM) program. Efforts to improve the collection, analysis, and response to surveillance data were also initiated.

Phase II (October 2001–September 2004), known as the **Jordan Surveillance Project** (JSP), represented an increased scope of work in response to the MOH's needs and priorities. During Phase II, JSP continued to build capacity for the MOH through the Jordan FETP and DDM activities, and to strengthen the communicable disease surveillance system. Mortality surveillance and the behavioral risk factors surveillance system (BRFSS) were initiated to provide data on the main causes of death, and to measure the behavioral risk factors that contributed to non-communicable diseases.

Phase III (October 2004–September 2008), known as the **Jordan Applied Epidemiology Project** (JAEP), focused on strengthening the surveillance of communicable and non-communicable diseases, including mortality surveillance and BRFSS. Jordan FETP and DDM continued to represent methods for improving human capacity in the MOH, and graduates of the training programs supported the MOH projects and priority efforts to strengthen existing systems and develop new ones.

In 2008, JAEP moved forward in institutionalizing its functions; a cooperative agreement was put into place and funded, and the resident advisor left in May 2008. The program is now fully operational, receiving limited technical assistance from the Division of Public Health Systems and Workforce Development (DPHSWD). Jordan FETP reports directly to the Directorate of the Primary Health Care at the MOH. The program continues to train epidemiologists from neighboring countries.

Team members

Jordan-based staff

- Raja Haddadin, Jordan FETP Director
- Sahar Jrasat, Jordan FETP Director (since September 2010)
- Ibrahim Iblan, Assistant FETP Director (2nd year resident)
- Two administrative staff

Partners

- Jordan MOH
- CDC's National Center for Chronic Disease Prevention and Health Promotion
- CDC's National Center for Health Statistics
- Jordan University for Science and Technology (JUST)
- Yemeni Ministry of Public Health

Cohort information

- Current number of trainees for cohort 8: 7 (includes 3 from Yemen)
- Current number of trainees for cohort 9: 6 (includes 2 from Syria)
- Total number of graduates as of 2010: 42

Strengthened public health workforce

Jordan FETP had 42 graduates by December 31, 2010; nine of those are non-Jordanians. Twenty-three are working with the MOH in Jordan, twelve are working outside the host country - two in Palestinian territories, three in Iraq, four in Yemen, and three in Saudi Arabia. Eleven Jordan FETP graduates are working at the provincial level, one is working with an NGO, and three are working with international organizations (e.g., WHO, UNICEF, etc.)

Investigations and surveillance project activities in 2010

- Number of outbreak or emergency investigations conducted and completed: 11
- Number of planned (protocol-based studies) conducted and completed: 6
- Number of surveillance evaluations conducted: 1
- Number of surveillance analyses conducted: 6

Other projects or programs conducted in 2010

The majority of H1N1 investigations in Jordan were conducted by Jordan FETP residents and graduates. Jordan FETP residents have two weeks – two months rotations at various departments of the MOH: Immunization, Non-communicable Diseases, Surveillance, Zoonotic Disease, Malaria, and Bilharzias, and the STD/HIV Control Program. Jordan FETP residents participate in designing and implementing activities related to the surveillance.

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
H1N1 education	MOH, health workers, schools, universities, and communities	5 hour sessions	350	Raised awareness about the symptoms and prevention of H1N1
Early detection of breast cancer	MOH, health workers, and communities	6 hour sessions	400	Raised awareness about the symptoms and prevention of breast cancer
Surveillance	Health workers in hospitals and health inspectors	5 hour sessions	250	Emphasized the importance of establishing a surveillance system in early outbreak detection

Status of program independence and sustainability

Jordan FETP is a fully sustained program within the Directorate of Primary Health Care. It has played a regional role in health care by training epidemiologists from Palestine and Iraq. There are current plans to train more Yemeni and Syrian epidemiologists. Jordan FETP is a founding member of the East Mediterranean Public Health Network (EMPHNET).

Monitoring and evaluation activities

Jordan FETP residents have regular meetings with their supervisors. The Jordan FETP plans to work with EMPHNET to implement EpiTrack and other monitoring and evaluation activities for the region.

THAILAND FETP

Program description

The Thailand MOPH, in collaboration with WHO and CDC, established the first FETP in Southeast Asia in 1980. The Thailand FETP has since expanded to include other countries and health professionals. In 1998, the program recruited physicians in MOHs in Cambodia, Laos, Malaysia, Myanmar, Southern China, and Vietnam for the international FETP. In 2008, to increase the number of mentors for FETP fellows, Thailand FETP started a six month “training the mentor” program. A complementary FETPV (veterinary) program was developed in 2008 for veterinarians in the Ministry of Agriculture and Cooperatives. In 2011, Thailand FETP will start new programs on wildlife and non-communicable diseases.

With the additional responsibilities of implementing IHR, the need to respond to the natural disasters, and emerging diseases such as highly pathogenic avian influenza and SARS, the MOPH increased the number of trainees from five to ten in the FETP program. To meet these additional activities, the MOPH, in 2006, requested that CDC assign a technical advisor to the Thailand FETP. The advisor was to enhance the quality of the field training and to strengthen its international mentoring component. With the implementing of new FETPs in Southeast Asia in 2010, the CDC technical advisor expanded his responsibilities to other FETPs in the region.

Team members

Atlanta-based staff

- Tippavan Nagachinta, Medical Epidemiologist and Team Lead
- Daniel Frank, Public Health Advisor
- Yesenia Espinosa, Instructional Designer
- Judy Berry, Program Analyst

Thailand-based staff

- Alden Henderson, Resident Advisor
- Yin Moe Aye, Medical Epidemiologist
- Nuanchan Laisuphanwong, Program Manager Assistant

MOH Thailand FETP Staff

- Sopon Iamsirithaworn, Director, Thailand FETP
- Chulee Jirapongsa, Coordinator, Thailand International FETP
- Vanlaya Srethapranai, Program Coordinator, Thailand FETP

Partners

Government agencies

- Thailand MOPH
- Thailand Ministry of Agriculture and Cooperatives
- Thailand National Parks and Wildlife
- WHO Western Pacific Regional Office

- UN Food and Agriculture Organization
- Mekong Basin Disease Surveillance (MBDS)
- South Asia Field Epidemiology and Technology Network(SAFETYNET)
- Regional Emerging Disease Intervention Center (REDI)
- Epidemiology training programs in Vietnam, Lao, Cambodia, Singapore, Malaysia, Colorado State University, USDA Animal and Plant Health Inspection Service (APHIS)

Number of residents and graduates

Thailand FETP has graduated 190 field epidemiologists (157 from Thailand and 33 from Cambodia, Laos, Malaysia, Myanmar, Southern China, and Vietnam). The program currently has 21 residents (12 first year and 9 second year); the international residents are from Laos, Bhutan, and China. The majority (78%) of graduates still work at the Thailand MOPH.

Investigations and surveillance project activities in 2010

- Side effects of H1N1 vaccination in pregnant women
- Adverse effects from MMR vaccine
- Salmonella outbreak in Army recruits
- Fatalities from eating sea turtles
- Cholera outbreak in a migrant worker settlement

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Integrating informal information in national surveillance systems	MOPH staff and FETP trainees and staff	8 hours	35	Aware that other sources of information on outbreaks can be useful and supplement national surveillance
Applied communications (1 day)	FETP and FETP trainees	4 hour session	35	Develop skills to deliver messages to different audiences
Disaster Epidemiology (1 day for Thailand FETP, 2 days for Taiwan FETP)	Thailand MOPH staff and FETP trainees and staff Taiwan FETP trainees and staff	8 hours 16 hours	35 15	Thailand - Increased awareness of what epidemiology activities can be done to support disaster response Taiwan - Increased awareness of what epidemiology activities can be done to support disaster response
Conducting rapid public health assessments (1 day)	Thailand MOPH staff and FETP trainees and staff	8 hour sessions	35	Increased awareness of how to conduct rapid public health assessment and how this data can assist with the disaster response
How to write case studies (1 day)	Thailand FETP and Malaysia EIP staff	24 hours	30	Develop skills on how to write a case study

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
A train-the-trainer workshop with FETP staff from Thailand and Malaysia (3 days)	Thailand FETP and Malaysia EIP staff	24 hours	30	Completed 2 case studies to be used in FETP curriculum
Conducting disease surveillance (Singapore 4 days, Cambodia and Vietnam 2 days)	Singapore FETP Trainees Cambodia AET trainees and Cambodia CDC staff Vietnam FETP trainees and MOH staff	36 hours 16 hours 16 hours	11 5 20	Singapore - Increased awareness of the value of evaluation surveillance systems, how to conduct evaluation and development of 11 protocols on evaluating a surveillance system Cambodia - Increased awareness of the value of evaluation surveillance systems and how to conduct evaluation Vietnam - Increased awareness of the value of evaluation surveillance systems, how to conduct evaluation
Evaluation of surveillance systems (1 day)	Thailand FETP trainees and MOPH staff in province	2 hours	120	Increased awareness of value of surveillance system and how to conduct evaluation

Accomplishments

- Provided a full-time regional advisor to the FETPs in Southeast Asia
- Provided technical assistance to the regional FETPs to sustain the high quality of epidemiology training
- Provided assistance to newly established FETPs in Vietnam, Laos, Singapore, and Cambodia

Regional accomplishments (2010)

- Expansion into wildlife and chronic disease epidemiology
- Publication of scientific articles in OSIR (www.osirjournal.net)
- Evaluation of surveillance of dengue in two provinces bordering Lao and Thailand

Challenges

Thailand FETP

- Coordinating FETP fellows, provincial health departments, and the surveillance and rapid response teams
- Assisting provincial health officers who prefer Thailand FETP staff instead of fellows
- Training in field epidemiology requested by health professionals
- Responding to public health threats that cross international borders
- Recruiting FETP trainees

Regional programs

- Certifying training programs
- Transferring the responsibilities of implementing the FETP from the resident advisor in Vietnam and Lao to the MOH
- Increasing the number of mentors for FETP fellows
- Strengthening collaborations between public health and veterinary health sectors

Future plans

- Strengthen new applied epidemiology training programs in the region
- Foster cross-border investigations
- Strengthen collaboration between Departments of Health and Veterinary Services
- Collaborate with regional networks
- Strengthen scientific communications
- Collaborate with RESPOND
- Establish “centers of excellence” for FETPs in the region

MANAGEMENT **C**APACITY **B**UILDING **P**ROGRAMS

SMDP MANAGEMENT CAPACITY BUILDING INITIATIVES

Increasing the Impact of Global Health Investments in Disease Control and Prevention

CDC's leadership and management capacity building programs develop the competencies and capabilities of individuals, organizations, partnerships, and systems. With technical assistance from CDC, countries assess their management capabilities, address quality standards, and take action to implement policies and practices that improve organizational performance to help deliver maximum public health impact. We encourage country leaders to engage stakeholders as we tackle their challenges together. At the national and district levels we support the development of practical management skills using classroom-based and online learning, applied management improvement projects (MIPs), mentoring, and coaching. Those skills can be applied directly to address current health priorities. By demonstrating how to transfer these skills to other public health issues a country may face, we help develop effective and flexible managers who are capable of meeting today's public health challenges.

System strengthening in PEPFAR countries

Program description

SMDP is conducting country assessments and assisting with management capacity development plans in India, Nigeria, Uganda, Zambia, and Zimbabwe. For example, SMDP is planning to:

- build application-oriented management short courses into the continuing education curricula of Ugandan schools of public health for delivery to public health leaders and managers, especially at the district level; and,
- help implement a year-long health management skills development program for post-internship, pre-service physicians who will be assuming management positions in rural health districts in Zambia.

Team members

- Elizabeth Howze, Chief, SMDP, Team Lead
- Dennis Jarvis, Public Health Advisor
- Brian Robie, Deputy Chief, SMDP
- Felicia Warren, Public Health Advisor

Mapping the Epidemiology, Laboratory, Surveillance, and Response (ELSR) Workforce

Program description

Public health officials need accurate information about staff who are performing epidemiology, laboratory, surveillance, and response (ELSR) functions at the national, provincial, district, and community levels to plan for workforce recruitment, placement, skills training, and other activities to assure that ELSR systems perform as they should. This innovative mapping program is being piloted in four countries - Ethiopia, Zimbabwe, Guatemala, and Vietnam. The goals of the program are to:

- describe the countries' ELSR infrastructure in terms of organization, data and information flow and use, size and location of workforce, and responsibilities and competencies needed by that workforce; and
- estimate the number of trained personnel needed to staff a functional ELSR system in those countries.

The ELSR workforce mapping program is a multi-disciplinary, intra-divisional initiative, supported in part by PEPFAR. The diverse skill sets and perspectives of team members enable the team to undertake the mapping program with a systems perspective as well as extensive knowledge and experience.

Anticipated products include:

- an estimate of each country's human resources within the ELSR system which the MOH can use to project future human resource needs;
- a standard approach for developing evidence-based estimates for a model ELSR workforce; and,
- an ELSR workforce development plan that will specify for each level of the ELSR system
 - » the positions to be filled with trained personnel;
 - » the competencies required for each technical and managerial level;
 - » the number of trained personnel required at that level;
 - » an estimate of training needs for ancillary personnel; and,
 - » a strategy for recruiting and training personnel for each position/position category, with targets and timelines.

After the pilots are conducted and the methodology evaluated, the methodology and tools from this project will be available for use by other countries.

Team members

- Peter Bloland, DPHSWD Associate Director for Science, Team Lead
- Sara Andrist, Public Health Advisor
- Steve Becknell, Public Health Advisor
- Marian Botchway, CDC Foundation Fellow
- Dennis Jarvis, Public Health Advisor
- Donna Jones, Medical Epidemiologist
- Helen Perry, Team Lead, Integrated Disease Surveillance Response
- Brian Robie, Deputy Chief, SMDP
- Denise Traicoff, Training Specialist
- Felicia Warren, Public Health Advisor
- Elizabeth Webster, Senior Public Health Management Specialist

Creating a certificate in applied public health management in Ethiopia

Program description

A priority of PEPFAR and the Global Health Initiative is to strengthen national health systems and to foster country ownership of HIV/AIDS and related programs. In Ethiopia, SMDP is working with the National Association for State and Territorial AIDS Directors (NASTAD) and the Global AIDS Program at CDC to develop a robust, one-year “on the job” training program that will equip existing *woreda* (community) level managers with the essential public health management competencies needed to effectively manage integrated HIV/AIDS and other programs. The MOH is providing guidance and support, while local universities will integrate the program into their institutions for sustainability of the program. After piloting the program in Ethiopia, plans are to establish a similar program for district AIDS coordinators in Botswana in late 2011.

Team members

- Brian Robie, Deputy Chief, SMDP, Co-Team Lead
- Dacia Davis, Public Health Management Training Specialist
- Lucy Slater, Director, Global Program, NASTAD, Co-Team Lead
- Donna Jones, Medical Epidemiologist
- Tom Kenyon, Director, CDC Ethiopia
- Alexandra Zuber, Public Health Analyst, Global AIDS Program

Strengthening management performance: just in time and just enough

Program description

SMDP is committed to expanding its reach and impact so that more health managers in low and middle income countries will have the skills they need to manage health programs and systems efficiently and effectively. It provides high quality, practical, competency-based management curriculum designed for adult learners with a variety of training delivery methods to meet the needs of busy health managers.

The curriculum has been developed with both the instructor and the learner in mind. Instructors can build curricula to suit the needs of their target population with participant workbooks and facilitator guides that lead an instructor through the classroom experience. With highly interactive courses such as project management and team building, participants can apply the skills to their local context. Because travel is costly and health programs are short-staffed, making it difficult or impossible for managers to leave their posts, SMDP has invested in online learning and Web-based approaches. Now, wherever they are and no matter the hour, managers have management tools and information at their fingertips, just in time and just enough to meet their needs.

Team members

- Denise Traicoff, Training Specialist, Team Lead
- Dacia Davis, Public Health Management Training Specialist

Major curriculum accomplishments and outcomes:

SMDP continues to improve its classroom materials to provide learners practical, performance-based experiences that they can apply in their workplace. 2010 accomplishments include

- linking of competencies to SMDP courses and identifying new curriculum opportunities;
- designing, developing, and pilot testing a new course called putting data to work; and,
- revising all course materials to ensure ease of use by all learners, including those who are visually impaired.

Major online learning accomplishments and outcomes:

After the successful pilot and launch of an online community of practice, SMDP continues to build options for on-demand learning at your desk, when you need it. Some recent accomplishments include:

- expansion of the online community of practice for health managers and leaders. The Management for International Public Health (MIPH) community site uses Web 2.0 technology such as discussion boards and blogs to help busy managers stay connected with the latest practices in public health management and leadership. Community members can share ideas, ask questions, and download the latest SMDP training materials for use in their programs. The community site is being integrated with the new TEPHINET Web site which will enable us to expand our services to epidemiologists in managerial positions and FETP fellows in training;

- delivery of four continuing education Webinars to the online community. Topics included introduction to grant writing; stakeholder analysis; getting big things done in government; and manage your time, manage your stress. These courses enable participants to build their skills in advocacy, program planning, and personal resilience; and,
- launch of the E-Note biweekly electronic newsletters to share lessons learned among the online community. Articles describe SMDP partner management or system strengthening activities, share the latest thoughts about leadership, and feature global public health developments of interest to the community.

Management for International Public Health Regional Programs: Helping Countries Create Competent Cadres of Health Managers

Program description:

The CDC MIPH program is part of SDMP's efforts to strengthen global public health management capacity. CDC's MIPH program helps low and middle-income countries build human resources for health (HRH) leadership and management skills to address the shortage of skilled public health managers which threatens healthcare delivery systems in many countries. The regional MIPH program is conducted by SMDP staff for two weeks in partnership with a country host. It is designed as a one-year program that begins with classroom-based instruction, after which participants implement MIPs. They continue to receive coaching and technical assistance from SMDP and have numerous opportunities to continue learning via online learning.

In August 2010, the MIPH program was held in Gaborone, Botswana in collaboration with CDC BOTUSA, the MOH, and the Ministry of Local Government. Course topics included team building, effective training, process improvement, and conflict management. Participants practiced their training skills in teach-back exercises, with feedback from fellow participants and course facilitators. Thirty-three participants from countries in Africa, India, and Vietnam attended the 2010 program. They used the project management methodology taught in the course to plan the management improvement projects they are now implementing in their countries. CDC staff from SMDP is providing coaching and technical assistance to many of the countries as they implement their plans.

Planned projects include:

- strengthening the management competencies of managers of HIV programs in India;
- evaluating the effectiveness and sustainability of the SMDP Botswana program; and,
- improving the quality of patient care at NAUTH and Aminu Teaching Hospitals by utilizing the process improvement method in Nigeria.

The next MIPH program will be conducted in Hanoi, Vietnam in late 2011.

Team members:

- Sara Clements, Public Health Advisor, Team Lead
- Brian Robie, Deputy Chief, SMDP
- Theresa Lawrence, Program Specialist
- Diana Miles, Public Health Advisor
- Elizabeth Webster, Senior Public Health Management Specialist

SMDP STRATEGIC PARTNERSHIPS AND LEADERSHIP PROGRAMS

Developing strong partnerships and providing strategic leadership

SMDP's work in strategic partnerships and leadership leverages wide-ranging expertise from across CDC and other organizations. We work closely with leading global health organizations, such as WHO, to bring their experience and wisdom to our global engagements. We are strong advocates for good management policies and practices and their application to public health programs and services.

Global Health Leadership Forum

Program description

SMDP recognized the need that exists in many countries for effective leadership and management at the highest levels of the health system. To address the need, SMDP launched the CDC 2010 global health leadership forum. Forty-two senior leaders from 15 countries representing MOHs, national health programs, and CDC overseas offices convened as country teams in Atlanta, Georgia in November 2010. They engaged in leadership-related discussions on systems thinking, collaborative leadership, policy advocacy, and workforce development. Speakers included Peter Senge, well-known systems thinker, Jo Ivey Boufford, co-author of *Strong Ministries, Strong Health Systems*, and Bill Eggers, author of *Getting Big Things Done in Government*.

At the forum, country teams developed project plans to address a specific leadership challenge they faced. Over the next nine months, CDC Atlanta provided support to those teams with additional leadership resources, continuing education, mentoring, and technical assistance. For example, SMDP has hosted live, Web-based seminars on management and leadership topics pertinent to public health leaders and managers.

Planning is currently underway for the next global health leadership forum, which is tentatively scheduled for late October 2011 in Atlanta, Georgia.

Team members

- Dennis Jarvis, Public Health Advisor, Co-Team Lead
- Denise Traicoff, Training Specialist, Co-Team Lead
- Sara Andrist, Public Health Advisor
- Marian Botchway, CDC Foundation Fellow
- Sara Clements, Public Health Advisor
- Dacia Davis, Public Health Management Training Specialist
- Elizabeth Howze, Chief, SMDP
- Theresa Lawrence, Conference Planner
- Diana Miles, Public Health Advisor
- Brian Robie, Deputy Chief, SMDP
- Felicia Warren
- Elizabeth Webster

SMDP APPLIED RESEARCH AND EVALUATION PROGRAMS

Growing the Evidence Base Through Applied Research and Evaluation

CDC is respected worldwide for its public health expertise and epidemiological research. From promoting maternal and child health to preventing infectious diseases to strengthening laboratory systems, CDC's knowledge, experience, and global reach are vital for improving health outcomes. CDC draws upon management science, theory, and research as well as practice-based evidence to inform its global health work. As we build the evidence base for effective public health management, we are also finding ways to evaluate and tailor approaches that are appropriate to the cultures, traditions, and resources of the countries with which we work. SMDP is developing evaluation tools such as organizational assessments, indicators, and management and leadership competencies which we will share with our global partners.

Human Resources Information Systems Data for Decision-Making Training Materials

Program description

CDC is partnering with the Emory University Rollins School of Public Health and the Task Force for Global Health to develop a workshop and set of training materials about how to use human resources information systems (HRIS). Effective use of HRIS will enable health managers to better manage their workforce and make better decisions on such matters as recruitment, deployment, and professional development. The training package will consist of a leader's guide, participant workbooks, Power Point™ slides, and handouts. The partners will test the materials in a workshop in Kenya in 2011, incorporate any further refinements needed, and then make the package available to other PEPFAR countries in 2012. Emory University and the Task Force are the primary implementers on this project and SMDP is providing technical assistance and logistical support.

Team members

- Diana Miles, Public Health Advisor, SMDP, Team Lead
- Patricia Riley, Acting Team Lead, Health Services and Human Resources

Building Program Sustainability: A Three-Country Study

Program description

SMDP has extensive experience developing management and leadership capacity building programs in developing countries. That experience provides valuable insights into factors that contribute to program sustainability. Three countries - Botswana, Malawi, and Vietnam - have made notable improvements in management capacity development. To add to our understanding of sustainability factors, we conducted case studies in those countries to determine characteristics identified in the literature that may have contributed to their progress toward achieving sustainability. We also explored opportunities for improvement-based recommendations in the literature. The results of this research will enable us to provide guidance to other countries about steps they can take to ensure that their programs become sustainable.

SMDP staff conducted a literature review, examined historical country program documents, and interviewed key informants in the three countries. Those interviewed included senior level MOH officials (policy makers and program coordinators), graduates of CDC SMDP training programs, senior level staff of key hosting institutions, and staff at CDC who are working on health systems strengthening. The case study countries demonstrated progress towards building program sustainability through country ownership and stakeholder inclusion, alignment of the program to the needs of the target audience, and establishment of the program within an existing institution with relevant technical expertise. The target date for completion of the report is June 2011.

Team members

- Sara Andrist, Public Health Advisor, Team Lead
- Shannon Young, Public Health Advisor, Presidential Management Fellow

Management Improvements Deliver Tangible Results

Program description

Almost a half million children acquire HIV annually, and more than a quarter million children die of AIDS globally; most of these infections are in Africa. Ethiopia has one of the world's lowest coverage rates for services that prevent mother-to-child transmission (PMTCT) of HIV/AIDS. The 2008 reauthorization of PEPFAR set the goal for PMTCT intervention coverage at 80%; Ethiopia's PMTCT program serves only 5.6% of HIV-infected pregnant women in the country.

To increase PMTCT utilization, Ethiopia's Oromia Regional Health Bureau (ORHB) piloted a process improvement (PI) project in 5 of its 18 zones in 2009, with support from SMDP and PEPFAR. Two cadres totaling 59 participants from 14 facilities and zonal health offices attended five-day PI workshops. After the workshops, facilitators mentored participant teams to complete 14 projects targeting PMTCT work process problems at their worksites

Eleven facilities reported service delivery improvements as a result of the PI projects, including an increase in less than a year from

- 59% to 85% of HIV+ women receiving antenatal services who delivered in hospitals;
- 42% to 90% of HIV+ women receiving antenatal care who had their CD4 (T-cell) counts tested;
- 13% to 98% of antenatal care women's partners who were tested for HIV/AIDS; and,
- 20% to 82% of HIV+ pregnant women receiving antenatal care who took prophylaxis.

Based on the success of the pilot, the ORHB plans to standardize and replicate improved processes at other sites and to expand the PI project to six more zones in Oromia.

Team member:

- Brian Robie, Deputy Chief, SMDP

Seeking Evidence of the Impact of Good Management on Health Outcomes

Program description

"Lack of management skills appears to be the single most important barrier to improving health throughout the world." William H. Foege, 2010.

Anyone who has managed a health program or led a health system knows, good management and leadership are important. Yet, unlike epidemiology or other areas of public health, the evidence to support investments in management is largely anecdotal. Recognizing this, SDMP contracted with George Washington University Center for Global Health to assess the current state of the evidence of the impact of good management and leadership of global health programs on health outcomes. The project team has examined the global health literature, case studies in global health, and case studies in other analogous international development sectors that demonstrate leadership and management principles and impact. The background review and case studies have been assembled into a searchable compendium that will be available in the spring 2011.

Team members

- Elizabeth Howze, Chief, SMDP, Team Lead
- Marian Botchway, CDC Foundation Fellow
- Felicia Warren, Public Health Advisor
- E. Anne Peterson, George Washington University, Center for Global Health
- Clifford Davidson, George Washington University, Center for Global Health
- Katya Noykhovich, George Washington University, Center for Global Health
- Kate Wilson, George Washington University, Center for Global Health
- Joseph Dwyer, Management Sciences for Health
- Myra Howze Shiplett, Randolph Morgan Consulting

Communicating the Value of Global Health Management: An Evidence-Based Approach

Program description

Advocating for investments in public health management is challenging. Operating largely behind the scenes, management lacks visibility, which often results in a perception of public health management being of low value, especially when compared to more technical and historically significant areas of public health. To find ways to communicate the value of public health management and leadership, SMDP contracted with Kirby Marketing Solutions to conduct audience research and message development for four core audiences: public health managers, technical assistance providers, researchers, and funders. Researchers used an expert panel and conducted market research to construct and test benefit messages about public health management. From the findings they developed marketing and communication recommendations for tailoring messages for each core audience. SMDP will share its research findings in mid 2011.

Team members

- Marian Botchway, CDC Foundation Fellow
- Sara Clements, Public Health Advisor
- Felicia Warren, Public Health Advisor
- Susan Kirby, Kirby Marketing Solutions
- Danie Watson, Kirby Marketing Solutions

ETHIOPIA – IMPROVING WORK PROCESSES AND HEALTH OUTCOMES

Program description

Established in 2001, the Ethiopian Public Health Management Capacity Building Program focuses on improving management skills and organizational operations to improve the speed of antiretroviral therapy (ART) scale-up and the quality of HIV/AIDS care and treatment.

Ethiopia, with an estimated 74 million people, has a high burden of HIV/AIDS, with recent studies estimating that between 1 and 2.6 million people or (approximately 2.4%) are infected. PEPFAR 2008 data show that coverage for HIV counseling and testing among pregnant women is the lowest among 15 PEPFAR countries. The Ethiopian government is working to improve all aspects of its public health services and systems, including its HIV/AIDS programs. Prevention of mother to child transmission (PMTCT) is a priority objective.

Since 2004, CDC Ethiopia has sponsored attendance at the Management for International Public Health (MIPH) course from: CDC Ethiopia (4), Ethiopian Health and Nutrition Institute (EHNRI) (2), Ethiopian Public Health Association (EPHA) (1), Oromia Regional (ORHB) Health Bureau of the FMOH (1), and Jhpiego Ethiopia (1) who are partners in this endeavor.

CDC SMDP helps Ethiopian public health programs achieve their objectives in several ways. Staff mentor and coach Ethiopia graduates of SMDP's MIPH course as they train public health teams in the methodology and skills associated with improving work processes at hospitals and clinics. Teams to date have come from reference and hospital laboratories, PMTCT offices in the Oromia region, and HIV/AIDS Prevention and Control Office (HAPCO) offices. Ethiopian MIPH fellows are currently assisting process improvement teams to improve PMTCT-related work processes and health outcomes in the Oromia region.

Team member and contact person

- Brian Robie, Deputy Chief, SMDP

Partners

- EHNRI
- EPHA
- ORHB
- Jhpiego Ethiopia
- CDC Ethiopia

Training data

Date Training Started	March 2008	
Target Audiences	<ul style="list-style-type: none">• Laboratory managers• HIV/AIDS Prevention and Control Office managers• PMTCT managers and staff	
SMDP Activities	2010	Cumulative
MIPH Graduates	0	10
Technical Assistance Visits	1	6
Country Managers Trained	19	145

Accomplishments and outcomes

- Trained national and regional reference laboratory managers and HIV/AIDS Prevention and Control Office (HAPCO) managers to improve work processes and outcomes, using SMDP Process Improvement tools.
- Trained two PMTCT teams from the Oromia Region on the use of process improvement tools, coached and mentored them as they conducted management improvement projects (MIPs). Completed over one year, nearly all projects have had favorable public health impacts. For example, the percentage of HIV-exposed infants enrolled in ART rose from 13% (7/53) to 98% (39/40). Pregnant mothers' partners who were tested for HIV increased from 15% (95/619) to 17% (121/714). HIV-positive mothers who started taking prophylaxis to prevent mother to child transmission grew from 20% (1/5) to 82% (11/26).

Program independence and sustainability

- Nineteen graduates of Cohorts 1 and 2 PMTCT Process Improvement training also attended a 5-day training of trainers workshop to prepare them to roll out process improvement training to other teams in their facilities and replicate successful project activities from other worksites at their worksites. These trainers from EHNRI and ORHB are now able to operate independently.
- To strengthen laboratory and PMTCT systems on a large scale, the Oromia Regional Health Bureau, which is responsible for the health of more than 30 million people, is planning to standardize selected processes at worksites that have achieved improvements, and scale up those processes to achieve system-wide impact.

Monitoring and evaluation activities

During 2011, SMDP will evaluate process improvement projects through the measurement of the following indicators: the number and percentage of completed projects having a positive impact on targeted outcomes, the number and percentage of improved work processes from PI projects with positive outcomes standardized for long-term sustainability at the original worksite, and the number and percentage of improved work processes from PI projects with positive outcomes replicated in other sites across the region. Information to evaluate the indicators will be collected from CDC and Ethiopia team reports.

VIETNAM – IMPROVING PROCESSES, IMPROVING OUTCOMES

Program description

The Centers for Disease Control and Prevention (CDC Vietnam and CDC Sustainable Management Development Program (SMDP) began working with the Hanoi School of Public Health (HSPH) Department of Health System Management in 1996 to establish the Vietnam Management and Leadership Training Program (VMLTP). The program initially provided training to the HSPH field supervisors of students. As the VMLTP matured, the HSPH began training tuberculosis (TB) managers within the National Tuberculosis Program, and subsequently provided training to family planning and HIV staff in the provinces. In 2005, the VMLTP began its strategic collaboration with the Ministry of Health's (MOH's) Vietnam AIDS Administration and Control (VAAC) program. The partnership established two regional management training centers in the central and southern areas of Vietnam, in addition to the northern area already covered by the HSPH. They are the Preventive Medical Center in Danang and the Pasteur Institute in Ho Chi Minh City.

The VMLTP design is divided into three phases. The first is a one-week, in-class management skills training. The second is a five to six month period for trainees to implement management improvement projects in their workplaces in the provinces. During that time participants also receive mentoring visits from a HSPH faculty member or regional trainer. The third is a four-day meeting where trainees receive additional training, share their experiences and project outcomes, and graduate from the course.

Since the program began, health service improvements were reported, including improved sputum smear quality, increased completion of follow-up examinations, improved TB case detection rates, increased number of clients visiting and returning for HIV test results, increased patient adherence to treatment for opportunistic infections, and increased outreach activities.

Team members

- Sara Andrist, Team Lead, Public Health Advisor
- Elizabeth Howze, Chief, SMDP
- Shannon Young, Public Health Advisor, Presidential Management Fellow
- Marion Botchway, CDC Foundation Fellow
- Elizabeth Webster, Senior Public Health Management Specialist

Contact person

- Sara Andrist

Partners

- HSPH
- CDC Vietnam
- MOH Vietnam
- VAAC
- Pasteur Institute
- Preventive Medical Center in Danang
- Vietnam Ministry of Defense

Training Data

Start date	1996	
Target audiences	Provincial mid- and senior-level managers in the HIV/AIDS, TB, and reproductive health programs.	
SMDP activities	2010	Cumulative
MIPH graduates	2	14
Technical assistance visits	2	26
Managers trained	152	628

Accomplishments and outcomes

SMDP facilitated two workshops: one on program advocacy for approximately 50 managers and one on mixed methods evaluation (see below);

- Ninety-six managers and other staff from provincial AIDS centers in the central and southern regions completed training provided by the VLMTP on total quality management, project management, supportive supervision, and project evaluation;
- The VLMTP expanded its reach to include total quality management training for 29 medical military department staff who had also completed MIPs;
- An alumni survey of 410 VLMTP graduates was conducted during the national management workshop in April. The data from this survey was used to develop the VLMTP's five-year (2011–2015) strategic plan;
- The VMLTP faculty presented program results during the national management workshop, the National Vietnam Public Health Conference (Nha Trang), the National Scientific AIDS Conference in Hanoi, and the Asia-Pacific Academic Consortium for Public Health Conference in Indonesia;
- At SMDP's invitation, several HSPH faculty members and a director from one of the provincial AIDS Centers attended CDC's Summer Evaluation Institute. This team received additional evaluation training from a senior evaluator from CDC and SMDP. The evaluation capacity built during the June visit will support the monitoring and evaluation activities planned for 2011–2015. The SMDP sent a senior evaluator from CDC to Hanoi to conduct a one-week training on mixed-methods evaluation. Participants included faculty and students from the HSPH, fellows from the current FELTP cohort, and CDC staff;
- Two CDC Vietnam team members who provide technical and administrative support to the VLMTP and contribute to other Vietnam health systems strengthening activities attended SMDP's regional MIPH course held in Gaborone, Botswana.

Program independence and sustainability

- The VLMTP recognized the program needs to broaden its scope beyond training to have a broader impact on strengthening the country's health system and ensure continuation of the existing activities. In 2010, the HSPH and CDC Vietnam solicited support from SMDP to assist with developing and implementing a five-year strategy for the VLMTP. This strategic plan includes building a stronger alumni network, developing advocacy and communications plans, strengthening critical MOH and other partnerships, and building a monitoring and evaluation framework. These activities will help increase the visibility of the VLMTP and alignment of their management and leadership activities with the Vietnam MOH.

Monitoring and evaluation activities

- In collaboration with the HSPH, CDC Vietnam, and other stakeholders, SMDP is assisting the VLMTP in developing and implementing a five-year monitoring and evaluation plan. This plan will improve its capability to assess the quality and effectiveness of the program activities. The plan will include several steps such as obtaining stakeholder input on data collected, received, and used; examining the effectiveness of existing data collection and supporting tools; and conducting pilot projects and operational research projects.

GHANA – BECOMING A CENTER OF EXCELLENCE IN MANAGEMENT AND LEADERSHIP

Program description

In 2007, the Sustainable Management Development Program (SMDP) undertook a partnership with the African Field Epidemiology Network (AFENET) and the University of Ghana School of Public Health (UGSPH) to strengthen public health management competencies of health program managers in Africa. A keystone of the strategy was the establishment of a regional Centre for Improving Management for Public Health Intervention Programs (IMPHI), based at UGSPH. The Centre is open, but not limited to, participants from AFENET member countries. The Centre offers an annual month-long training in Accra. Participants then implement a management improvement project (MIP) over the next three months at their home location. They return to the UGSPH at the end of that time to present their projects and receive a course certificate. Faculty from University of Ghana Business School (UGBS), Ghana Institute for Management and Public Administration (GIMPA), African Field Epidemiology Network (AFENET), and the School of Public Health (SPH) assisted UGSPH in providing instruction during the 2010 course.

The course addressed the following management competencies: planning, staffing, strengthening management systems, using data for decision-making, creating effective teams, and coaching and mentoring.

The course addressed the following leadership competencies: scanning, community engagement, direction setting and alignment, governance, and staff and work climate development.

Team members

SMDP staff

- Denise Traicoff, Team Lead
- Petra Vallila-Buchman, CDC Public Health Prevention Service Fellow
- Elizabeth Howze, Chief

Partners

- University of Ghana School of Public Health
- Ghana Health Service
- AFENET

Contact Person

- Denise Traicoff

Training data

Start Date	2007	
Date training started	June 2009	
Target audiences	District managers and public health officers Hospital directors Mid-level program managers	
SMDP activities	2010	Cumulative
Managers trained	16	38

Accomplishments and outcomes

Conducted a 6-month follow-up field-based evaluation program with graduates from the 2009 class to learn how they had applied the competencies and strategies they had been taught.

- Produced a report with recommendations based on evaluation results
- Produced electronic success story highlighting results of the evaluation
- Advised UG team on development of paper-based success story for program advocacy
- Advised UG team on instruction and evaluation methods
- Developed training program support materials and UGSPH- specific classroom content
- Led or supported instruction on seven topics in the 2010 course that included 16 participants from Ghana, Rwanda, and Nigeria.
- Provided electronic versions of training materials and supplemental information

Other accomplishments

As a result of the training course, graduates recognize the need to be proactive and more outspoken in seeking, obtaining and mobilizing various resources. Graduates have engaged in various forms of advocacy, including writing letters to HR managers and Members of Parliament, placing an advertisement in local newspapers and preparing proposals to obtain external funding from the National AIDS Commission Program. One graduate had been the only medical doctor at his hospital: he was successful in obtaining two additional doctors from the Cuban Medical Brigade, increasing the total number of physicians on staff to three.

Another graduate established an adolescent center from an old shipping container that had been left on the grounds, and furnished the space with materials that were not in use. In addition, the participant reports that he is stretching resources where possible, including the repainting of buildings on the grounds of the hospital. Following this model, he reports his staff are beginning to manage their own resources better and that there has been a decrease in the report of breakages.

Program independence and sustainability

The program is pursuing sustainability by:

- Providing a regional need identified in partnership with WHO
- Concentrating on applied learning and adult learning techniques, which provide measurable value to Ghana Health Services
- Developing a business plan and partnerships to help assure a reliable funding stream and best use of limited resources
- Remaining aligned with AFENET and with the Africa Leadership and Management Network
- Seeking accreditation of the program through UGSPH

Monitoring and evaluation activities

Evaluations have been conducted throughout the course at multiple levels. To gauge participant satisfaction, class surveys and focus groups have been conducted. To evaluate competency development, exercises, field site visits and class presentations have been conducted. In 2009, a Public Health Prevention Service Fellow conducted a 6-month follow-up evaluation of graduates and how they were applying their skills. The Ghana Health Service has agreed to conduct evaluations of future graduates using the methodology that CDC employed in its 6-month evaluation.

BOTSWANA – TESTING A COLLABORATIVE APPROACH TO IMPROVE TB CURE RATES

Program description

The Botswana Sustainable Management Development Program (Botswana SMDP) was established in 2003 to improve public and private sector organizational performance of HIV/AIDS and related programs and services like TB control in order to achieve better program outcomes and, ultimately, health outcomes. In 2008, the HIV/AIDS prevalence rate for Botswana was 17.6% nationally and 25% among adults ages 15 to 49. Botswana SMDP was initiated as a collaborative effort between the: Botswana Ministry of Health (MOH); Botswana Ministry of Local Government (MLG); Botswana Network of AIDS Service Agencies; CDC Botswana (BOTUSA); Institute for Development Management (IDM), CDC's implementing partner; the National AIDS Coordinating Agency (NACA), and CDC SMDP in Atlanta, Georgia.

The original audience for the program was HIV/AIDS program managers; however, demand for the program resulted in its extension to other sectors including tuberculosis, maternal, sexual, and reproductive health, and environmental health. Botswana SMDP staff are mentoring teams of nurses and doctors who have been selected by the MOH to address maternal mortality as part of its response to addressing millennium development goals.

The program has also evolved in other ways. Its focus has shifted from individuals to district- and hospital-based teams and team projects. To improve governance and stakeholder engagement, Botswana SMDP has an established multisectoral technical advisory committee (TAC). The TAC guides the program and helps ensure its activities are integrated into national governmental reforms that improve health service delivery. The TAC has been instrumental in helping the Botswana SMDP strategically build the country's management and leadership capacity and is a strong advocate for the program.

The Botswana SMDP course design is divided into three phases: a two-week management skills workshop for public health managers, a 10-week implementation period for mentored team-based management improvement projects (MIPs) in participant's work setting; and a one-week classroom session during which participants present their completed MIPs.

Because of decreasing cure rates for TB, in June 2010 Botswana implemented a pilot TB improvement collaborative project in two districts. The goal of the pilot is to determine best practices for increasing TB cure rates with the intent of scaling them up to all districts in Botswana. This project is a joint effort among the Botswana National Tuberculosis Program in the MOH, BOTUSA, CDC SMDP and IDM, and will continue to be a primary focus of CDC SMDP technical assistance in 2011.

Team members

SMDP staff

- Sara Andrist, Team Lead
- Sara Clements, Public Health Advisor
- Elizabeth Howze, Chief

Partners

- Botswana Ministry of Health
- Botswana Ministry of Local Government
- Institute of Development Management
- Botswana Global AIDS Program (BOTUSA)

Accomplishments and outcomes

- In June 2010, TB collaborative partners held a kick-off event with teams from two pilot districts. Teams were trained on process improvement techniques specific to the TB program, and planned monitoring and evaluation techniques. The SMDP developed a national-level logic model and evaluation plan and a quarterly reporting template for pilot districts to use.
- Mentoring site visits to both pilot districts were conducted by a national team. Feedback and recommendations were provided to the district teams. Projects are scheduled for completion in 2011.
- Botswana SMDP and CDC SMDP co-hosted the first regional Management for Improving Public Health course in August 2010 in Gaborone. Thirty-three participants from Botswana, India, Kenya, Malawi, Nigeria, South Africa, Uganda, Vietnam, Zambia, and Zimbabwe completed this MIPH course. Course competencies included building effective teams, training adult learners, making effective presentations, managing projects, coaching and mentoring in the workplace, managing conflict, improving work processes, and leading people and organizations. For the next 12 months, participants implemented MIPs they planned during the course. CDC SMDP provides ongoing technical assistance and continuing education to help them succeed.
- In August 2010, the Botswana SMDP conducted a two-day national conference with the theme of “Maximizing Resource Utilization for Improved Public Health Outcomes.” More than 100 health managers at the district and national level from across the country participated. CDC SMDP staff gave a keynote address and led a workshop on leadership development.
- CDC SMDP and Botswana SMDP conducted mentoring visits to participating managers who were implementing MIPs. The purpose of these visits was to assess progress in project implementation and address barriers impeding timely completion of MIPs.

SMDP leadership and management training activities in Botswana

Start Date	September 2001	
Target audience	District and Hospital Health Program Managers	
MIPH graduates	9	18
Technical assistance visits	3	17

Status of program independence and sustainability

An institutional home at IDM has been in place since 2003. The management training program has received high-level support from the Ministry of Local Government (MLG) which until recently had oversight for all district-level public health and clinical services, and more recently from the MOH, which has assumed those responsibilities in addition to ongoing responsibility for the hospital system.

Botswana SMDP has been supported financially by CDC BOTUSA. Funding for the program will decrease in 2011 and will probably continue to decrease in future years. The Botswana SMDP program, with assistance from its TAC, is working toward financial independence by continuing to integrate management and leadership capacity building activities into ministry work force reforms and other programs. The plan is for Botswana SMDP to be fully integrated into the Government's Public Service Reforms and civil society capacity building initiatives by 2013.

Monitoring and evaluation activities

SMDP is providing technical support to Botswana in 2011 on the TB collaborative project and mentorship program. Data from those projects are expected to be available in June 2011.

GEORGIA – STRENGTHENING LABORATORY CAPACITY

Program description

CDC is collaborating with the US Department of Defense's (DOD's) Defense Threat Reduction Agency (DTRA) to establish a public health surveillance system that focuses on Especially Dangerous Pathogens (EDPs) in former Soviet countries. Countries currently in the DTRA program include Armenia, Azerbaijan, Georgia, Kazakhstan, Ukraine, and Uzbekistan.

Strategic development of strong, sustainable laboratory systems for surveillance requires a comprehensive approach that includes technical skill building, improved organizational management and leadership, and cohesive communication and collaboration within and across each level of the human health and animal laboratory systems in the Ministries of Health (MOH) and Agriculture (MoAg). Program strategies involve strengthening Georgia's laboratory network, and providing the skills necessary for leaders and managers to better coordinate their activities and manage the country's biosurveillance and response system.

Following an assessment of major gaps and associated needs within the laboratory systems, three national projects were selected by senior ministry officials and decision makers. Managers working within the National Center for Disease Control (NCDC) in the MOH and within the Laboratory for the Ministry of Agriculture (LMA) were identified for targeted training in quality management systems (QMS) and project management. The trainings and follow-up projects and coaching are expected to lead to increased technical knowledge and managerial capacity for project implementation.

Team members

SMDP staff

- Brian Robie, Deputy Chief, SMDP, Team Lead
- Sara Clements, Public Health Advisor

LSDB staff

- Mark Rayfield, Chief, LSDB, Team Lead
- Adilya Albetkova, Health Scientist
- Pawan Angra, Health Scientist
- Carol Fridlund, Health Scientist
- Sharon Granade, Health Scientist
- Artur Ramos, Biologist
- Celine Taboy, Health Scientist

Georgia FELTP staff

- Ed Maes, Chief, CDC Georgia Country Office
- Tom Rush, Resident Laboratory Advisor

Partners:

- US Department of State/Biosecurity Engagement Program
- DOD/Defense Threat Reduction Agency
- HHS/Office of Global Health Affairs
- Georgia Ministry of Health
- Georgia Ministry of Agriculture
- Georgia NCDC

Program contact

- Brian Robie

Training data

Date QMS training started	2008	
Target audiences	<ul style="list-style-type: none">• Laboratory managers• Epidemiologists• Veterinarians	
SMDP activities	2010	Cumulative
MIPH graduates	0	3
Managers trained	16	27

Accomplishments and outcomes

- Facilitated a Quality Management Systems (QMS) workshop for Georgian laboratory managers. This skills-building workshop highlighted the use of project management methodology as a tool for successful planning, implementation and evaluation of high-level laboratory projects while communicating with stakeholders throughout the process.
- Mentored Georgia teams working on four large-scale projects that will lead to development of a national lab network. One of the four projects was successfully completed in 2010.
- Used project management methodology to successfully plan and implement targeted training for all 34 senior managers working in 14 laboratories within NCDC by the core team of individuals who received the QMS training discussed above. One of those individuals was appointed to be the first NCDC quality manager. She is charged with monitoring the implementation of quality improvement within the organization.
- Worked closely with Booz Allen Hamilton to promote networking, information sharing and collaboration among key international donors working across the Georgian human and animal health system.
- Trained FELTP residents on project management tools to use for Disease Surveillance Evaluation projects they were required to conduct as part of the FELTP program.

Program independence and sustainability

- A national quality assurance office with appropriate leadership and capacity to provide training to other laboratories in the network is being put in place.
- Selected NCDC staff who completed the SMDP Management for International Public Health (MIPH) course in 2008 will continue to use the SMDP project management methodology to implement QMS training at two regional laboratories in Georgia.
- Plans are proceeding to build appropriate government regulation in two areas: 1) laboratory practice based on international standards (e.g., Thailand model that links to ISO standards); and 2) medical devices (test kits) and reagents critical to addressing Georgia's health needs.
- Efforts by SMDP including stakeholder meetings, networking, information sharing, and collaboration are being continued in order to coordinate the activities of donors and make best use of scarce resources.

Monitoring and evaluation activities

SMDP will evaluate lab system strengthening activities through the measurement of the following indicators which are under development: demonstrated project management knowledge and skills, the number of workshops conducted, the number of staff trained, and improvements in laboratory quality indicators.

GLOBAL PUBLIC HEALTH INFORMATICS PROGRAM

GLOBAL PUBLIC HEALTH INFORMATICS PROGRAM

Program description

The Global Public Health Informatics Program (GPHIP) was established to guide and support the agency's global goals and to meet the informatics needs of its global programs. The GPHIP also administers the World Health Organization Collaborating Center for Public Health Informatics (WHO CC) and provides opportunities to work with the global health community to standardize, strengthen, integrate, exchange, share, and interoperate disparate data, tools, and services to impact public health. Improving health requires information on health determinants, outcomes, inequities, and performance of the health system. Timely information and information sharing is needed to protect health in a globalized world where microbes travel rapidly across borders. Information is a cross-cutting foundation across all health system building blocks.

The GPHIP has a vision to transform public health practice through informatics with a mission to improve health outcomes, data quality, and public safety by using interoperable, integrated, and standardized information systems to collect, track, report, and exchange data to provide the tools for improved decisions. This vision focuses on collaborating with US Centers for Disease Control and Prevention (CDC's) Centers, Institutes and Offices (CIOs), Center for Global Health (CGH) and other global partners to improve public health. Its goal is to contribute to the Obama administration's commitment to global health (Global Health Initiatives), to Dr Frieden's vision for strengthening public health science at CDC and global health, and to the global health Health Information System (HIS) agenda. GPHIP priorities are surveillance, epidemiology, and laboratory (CDC); health systems strengthening (United States Government Global Health Initiative(US GHI), CGH, the United States President's Emergency Plan for AIDS Relief(PEPFAR)); and health metrics global HIS framework and international health regulations (IHR), (Global, WHO, HMN).

Team members

Informatics projects require diverse teams and GPHIP has assembled its team through its core and contractual staff in computer science, architecture, informatics standards, health education, medicine, epidemiology, budget, contracts, project management, Global Information System (GIS) management, and mobile computing. The team members are

- Mary Andrus
- Ahmad Baghal
- Mary Lou Blair, Administrative Support
- Robert Fagan, Acting Team Lead
- Osama Ibrahim
- Liz Kim
- Wei Li
- Muzna Mirza
- Matthew O'Shea

GPHIP's role

GPHIP's role is to:

- Provide coordination, leadership, and cross-cutting, comprehensive public health informatics strategies, standards, and architecture support
- Support information systems and tools development for strengthening public health systems and practice of epidemiology, surveillance, laboratory, and patient care to
 - » produce more accurate, timely, and complete information in (near) real time
 - » improve analysis, reporting, and dissemination of data
 - » integrate information systems to extract and exchange data from various sources and systems
- Ensure availability of adequate expertise to support CDC's internal and external information systems needs and to build countries' informatics capacity
- Administer a World Health Organization (WHO) Collaborating Centre for Public Health Informatics (WHO CC) to collaboratively develop and apply informatics solutions and best practices with global partners

Partners

- Global
 - » China CDC
 - » DTRA countries: Uzbekistan, Kazakhstan, Georgia, Azerbaijan, Ukraine, and Armenia
 - » Saudi Arabia King Saud bin Abdulaziz University
 - » Saudi Arabia MOH
 - » Saudi Arabia National Guard Health Authority
 - » WHO/IHR Health Metrics Network (HMN)
- Domestic
 - » US Department of Defense (DoD)/Defense Threat Reduction Agency (DTRA)
 - » PEPFAR/Health Informatics Public-Private Partnership (HI-PPP)
 - » USAID
 - » American Medical Informatics Association (AMIA)/Global Health Informatics Partnership (GHIP)
 - » CDC CIOs and global programs

Key Accomplishments in 2010

- WHO Collaborating Center (WHO-CC) for Public Health Informatics designated at CDC CGH administered by GPHIP.
- Developed and deployed mobile-based infectious disease surveillance system for mass gatherings in the Kingdom of Saudi Arabia (KSA). Provided technical assistance and user's training during the 2010 Hajj season

Saudi Arabia National Guard (SANG) project

- First international health safety network version 1.0.0 developed and deployed in Saudi Arabia National Guard Health Affairs electronic surveillance system (NGHA-ESS), version 1.3.0 is deployed and in production
- NGHA-ESS application configured to authenticate users from NGHA's active directory in Riyadh
- Notifiable Disease System (NDS) 1.0.0 staging system was deployed and testing was completed
- NGHA Infection Control Practitioner (ICP) and IT staff training was conducted

Electronic Integrated Disease Surveillance System (EIDSS) project

- EIDSS Version 2 deployed in Uzbekistan, Kazakhstan, Georgia, Azerbaijan, Ukraine, and Armenia
- EIDSS epi module 6 training completed in all EIDSS countries. New training curriculum is under development
- EIDSS test bed off the CDC network was stood up
- Iterations of the version 3 EIDSS application were received and tested, and provided test reports to DTRA
- Human, veterinary, and laboratory workgroups participated in defining EIDSS v3 and v4 requirements
- Prepared and presented several abstracts at the Biological Threat Reduction Program (BTRP) science review meeting scheduled for March 2011

CIO-supported global database inventory conducted – 68 databases in 6 countries were collected.

- Global Disease Detection (GDD) Technical Support Corps (TSC) geospatial science support team completed geo-informatics assessment and geospatial training in Thailand, Kenya, Guatemala, and Egypt. Other GDD centers (Kazakhstan, China, and India) are being planned.
- Partnership with WHO and international standard development organizations established to develop and promote standardized vocabulary and data exchange/messaging standards and indicators for notifiable diseases.
- Partnership with HMN, Rockefeller Foundation and others established to develop an open eHealth enterprise architecture for developing countries.

Developed a suite of interoperable epidemiologic tools with WHO including:

- IHR monitoring tool; and
- Public health information toolkit web-based launch pad/portal that integrates content software components with ease of navigation across components with guidelines for successful and ongoing collaborative use.

Next steps or future plans

GPHIP will continue to work with its domestic and global partners in public health informatics to increase CDC's global health impact and to strengthen surveillance, epidemiology, and laboratory services. GPHIP will also seek new partnerships and initiate discussions and proposals on the following potential projects:

- Notifiable and chronic diseases surveillance system and electronic laboratory reporting modules development and deployment in KSA;
- Environmental and occupational disease surveillance module deployment in KSA National Guard (SANG) Health Authority;
- Mobile-based surveillance system development and deployment in GDD centers and Hajj/KSA;
- Collaborate with WHO to conduct IHR monitoring tool testing and roll-out;
- Working towards HMN framework adoption and use for CDC HIS operations
- Collaborate with domestic and global partners to adopt/develop informatics vocabulary and exchange standards for surveillance and laboratory services;
- Short-term informatics training for epidemiologists in FETP program;
- New projects initiation with KSA MOH;
- Work towards development CDC mobile-based response capacity to strengthen domestic and global public health surveillance.

INTEGRATED DISEASE SURVEILLANCE AND RESPONSE (IDSR)

INTEGRATED DISEASE SURVEILLANCE AND RESPONSE (IDSR)

Program description

Integrated Disease Surveillance and Response (IDSR) is an approach adopted by WHO Regional Headquarters for Africa (WHO-AFRO) to improve the availability and use of data to take timely and appropriate action to reduce mortality, morbidity, and disability in African communities. IDSR is based on a comprehensive framework that addresses the relevant activities and skills essential at each level of the health system for detecting, reporting, analyzing, confirming, and responding to priority public health events. Surveillance activities for different diseases involve similar functions (detection, reporting, analysis and interpretation, feedback and action) and often use the same structures. IDSR promotes the rational use of resources by integrating and streamlining common surveillance activities, and by building capacity to use data for action. Specifically, the program objectives are to (1) strengthen the capacity of countries to conduct effective surveillance activities; (2) integrate multiple surveillance systems for more efficient use of forms, personnel, and resources; (3) improve the use of information to timely detect changes and effectively respond; (4) improve the flow of surveillance information; (5) strengthen laboratory capacity and involvement in surveillance activities; (6) increase involvement of clinicians and communities in the surveillance system; and (7) use data thresholds to conduct epidemiological investigations and implement appropriate, timely, public health interventions.

Team members

- Helen Perry, Team Lead
- Kevin Embrey, ASPH Fellow
- Victoria Fort, ORISE Fellow

Partners

- WHO AFRO, especially the Integrated Disease Surveillance and the Epidemic Preparedness and Response Units in the Disease Prevention and Control Cluster at AFRO
- USAID Africa Bureau
- Africa 2010

Division role

CDC has provided technical leadership for more than 10 years in the collaboration among CDC, USAID, and WHO AFRO to strengthen public health surveillance, laboratory, and response systems in African countries. This collaboration has resulted in developing, designing, implementing, monitoring, and evaluating a multi-disease, multi-level surveillance system that is comprehensive, addresses each function of surveillance and streamlines resources, processes and networks.

- The role of the division in IDSR is to provide technical assistance to the development of surveillance guidelines, surveillance training materials, including outbreak detection and response, as well as laboratory training and guidelines which WHO-AFRO disseminates to the 46 countries in the African region. IDSR informs didactic and practicum curricula for FELTP residents and implementation strategies for FELTP graduates. We also provide technical assistance and partnership in development of approaches for monitoring progress with implementing public health surveillance systems based on the IDSR framework. We serve as a resource for other CDC disease specific and laboratory programs who work within IDSR programs in many African countries. We also advocate for public health surveillance and laboratory system strengthening through invited participation in national and international conferences, symposia, and consultations.

Key Accomplishments in 2010

After 10 years of implementation, WHO-AFRO and CDC carried out a systematic revision of the WHO-AFRO IDSR Technical Guidelines to incorporate emerging and reemerging disease threats (pandemic influenza, for example), the requirements of the International Health Regulations (2005), and emergent priorities in the African region due to non-communicable diseases and neglected tropical diseases. The 2010 version of the IDSR Technical Guidelines was completed in October 2011 and translations were prepared in French and Portuguese.

- With our partners in WHO-AFRO and Africa 2010, we proposed, designed, and conducted a rapid assessment of progress with implementation of the IDSR strategy in the 46 African countries. Data were analyzed and results provided to WHO-AFRO. A report is being developed to highlight success and challenge areas reported by public health epidemiology and/or surveillance departments in MOHs in African countries.
- Publication of modeling of cost-effectiveness results of an integrated surveillance system. This was a unique study of a comprehensive rather than disease specific surveillance system and showed correlation between investment in and adoption of IDSR and reductions in mortality, morbidity, and time-to-peak of an outbreak.
- To better understand gaps and barriers to effective surveillance and timely response at district level, we analyzed trip reports and evaluation documents about detection and response to outbreak prone diseases such as cholera. We found that among the challenges to more timely detection and response were low use of standard case definitions, inconsistent and unreliable reporting of cases, and low communication between health levels. We continue to work with partners to examine solutions such as creation of simple, field-ready job aids and checklists to support adherence to the IDSR framework to improve detection and response efforts for priority diseases that afflict African communities.

Next steps in 2011

- Accelerate a publication agenda;
- Complete revision of the WHO-AFRO IDSR training materials including field testing; and
- Follow up the rapid assessment of progress with implementation of IDSR with a comprehensive evaluation in at least one country.

O_{TH}**E**R **D**_I**V****I****S****I****O**N **A**_C**T****I****V****I****T****I****E****S**

FETP NETWORKS

CDC's Division of Public Health Systems and Workforce Development (DPHSWD) is focused on strengthening public health systems and workforce development, which can be best achieved through building partnerships with MOHs as well as with local, regional, and global public health institutions. As a result, DPHSWD and its partners have supported the development and establishment of global and regional networks to strengthen FETPs, and to strategically enhance the program's ability to work together and build regional capacity.

Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET)

Created in 1997, TEPHINET is a professional network of FETPs located in 48 countries.

TEPHINET's mission is to strengthen global public health capacity by training and supporting well-qualified health professionals in field epidemiology, and by building capacity through an applied apprenticeship program. FETP trainees master a set of core competencies vital to public health while providing a valuable public health service to their countries and regions.

Strategic Priorities

1. Assure quality training programs;
2. Accredite FETP and certify FETP graduates;
3. Build a community of field epidemiologists and laboratorians;
4. Facilitate information sharing and knowledge development; and,
5. Build organizational capacity and sustainability at the global, regional, and program levels.

TEPHINET program members are affiliated with local, national, and regional organizations including research institutes, institutes of public health, universities, ministries, and other NGOs.

TEPHINET's secretariat collaborates with CDC and WHO to support the development of field epidemiology programs and regional networks around the world. These networks include AFENET, the East Mediterranean Public Health Network (EMPHNET), and the South Asia Field Epidemiology and Technology Network (SAFETYNET).

TEPHINET also participates in WHO's Global Outbreak and Response Network, the Pacific Public Health Surveillance Network, and the American Network of Chronic Disease Surveillance Office, and works with private donors to support activities that offer extensive opportunities for networking and collaboration.

The TEPHINET program and the Task Force for Global Health, Inc., administer numerous public health projects around the world. Many of the projects support FETPs located in various ministries or research institutions in their respective countries, or support the development of regional networks. Other projects work more independently; for example, in the influenza and Global Aids Projects in Guatemala, where the Task Force - TEPHINET program is in the process of registering as an NGO.

Projects range from chronic disease surveillance, in conjunction with local universities, to management training offered in Atlanta, Georgia. In 2010, TEPHINET started an exchange program for two FETP graduates who were assigned to work with experienced resident advisors to gain new skills and competencies. These graduates learned how to track trainees' progress and thus ensure quality training, as well as learning effective surveillance techniques and response to emergency public health situations.

Most of the training that the TEPHINET program supports includes field epidemiologists as well as other local, provincial, and national partners. TEPHINET's current membership include programs in approximately 48 countries, as well as projects in Central and South America, the Middle East, China, and the Mekong Basin. TEPHINET also has global projects that support the entire network of field epidemiology programs in several regions.

African Field Epidemiology Network (AFENET)

AFENET was created in 2004 as a non-profit organization and networking alliance dedicated to helping MOHs in Africa establish strong, effective, sustainable programs, and to build capacity to improve public health systems on the African continent. Ghana, Uganda, Zimbabwe, and Kenya are the founding members of the network. AFENET's membership has expanded to include seven full member countries: Ghana, Kenya, Nigeria, South Africa, Tanzania, Uganda, and Zimbabwe. Associate members include Ethiopia, Rwanda, South Sudan, and West Africa Francophone countries (Burkina Faso, Mali, Niger and Togo).

The AFENET secretariat, which oversees the organization's day-to-day activities, is located in Kampala, Uganda. AFENET works with MOHs and other public health institutions to strengthen their country's epidemiology workforce through FETPs and FELTPs. While initial funding was provided by USAID and CDC's DPHSWD, AFENET established new partnerships and receives funding from CDC programs such as the Global AIDS Program, the Global Immunization Division, and the Influenza Division, as well as the Presidents Malaria Initiative. Others have provided funding for specific projects or to support the development of FELTPs in the African Region.

Southeast Asia Field Epidemiology and Technology Network (SAFETYNET)

In response to the need to develop their public health capabilities and infrastructure, several countries in Southeast Asia developed field-based training programs in applied epidemiology and public health. The primary goal of these training programs was to foster the development of field-trained epidemiologists who are competent in the practical application of epidemiologic methods to treat a wide range of public health problems in their respective areas.

SAFETYNET was incorporated in August 2009 as a non-stock, non-profit organization to foster collaboration and cooperation among countries by supporting applied epidemiology programs and enhancing surveillance systems in the Asia Pacific region. SAFETYNET works in partnership with MOHs, NGOs, international agencies, and other public health agencies to help Asian nations and to enhance opportunities for inter-regional exchange, sharing of expertise, and inter agency and inter disciplinary collaborations their own applied epidemiology capacity.

SAFETYNET has been able to organize and conduct national and international workshops, which is made possible through working with national institutions and FETPs with whom SAFETYNET staff has long-standing professional relationships, and by collaborating closely with international health agencies such as WHO, CDC, and TEPHINET.

Red Suramericana De Epidemiologia De Campo (RED SUR)

To develop, strengthen, and coordinate existing national FETPs and disease surveillance, several countries with existing FETP programs in South America agreed to develop an epidemiology network in South America, and selected RED SUR as its name, which means South Net in Spanish. RED SUR is modeled after the regional network in Central America, and the primary objective of the network is to foster the development of field-trained epidemiologists who are competent in the practical application of epidemiologic methods and to share information and best practices across South America.

To facilitate the development of RED SUR, the FETP coordinators from Argentina, Brazil, Colombia, and Peru agreed to conduct country assessments of their current FETP activities and overarching epidemiology systems utilizing the a score card metric. These assessments were vital for MOH strategic planning, and increased the visibility of the programs within the political leadership inside the MOH. Another major outcome of the assessments was a consensus and recognition that continued external technical assistance is vital to maintain the quality and core attributes of the field component. A formal report of the assessments, including a strategic vision for the development of RED SUR was developed and shared with CDC's Center for Global Health, DPHSWD and TEPHINET in February 2010.

Additional accomplishments in 2010

- Monthly web conference with the FETP coordinators in South America to share information and best practices
- In November 2010, RED SUR organized a short course of Emergency Response in Public Health, focused principally in Incident Command System and Geographic Information System (GIS) with participants who were graduates from the FETPs in the region
- Each program receive two GPS units to increase the capability to develop the GIS skills
- RED SUR start to produce a bi-monthly bulletin about the achievements in each program

In late 2010, a draft vision and work plan were shared with the Red Sur coordinator, TEPHINET, and MOH partners to establish a technical and administrative entity in South America capable of expanding the scope and quality of FETPs to respond to events of public health importance. These events include cross-border outbreaks, chronic disease and injury surveillance and prevention programs, and establishing joint human-animal surveillance programs. Next steps include a meeting in mid-2011 for the countries of South America to discuss options for formalizing the RED SUR network as a legal entity.

Eastern Mediterranean Public Health Network (EMPHNET)

The East Mediterranean Region has been one of the early FETP pioneers. The Saudi FETP was established in 1989 and was soon followed by the Egypt FETP in 1993. With more programs in the region and with additional FETPs starting, the FETP directors met during the TEPHINET regional conference in Amman, Jordan, in the summer of 2006 to discuss the need for stronger collaboration among the programs in the region. It was concluded that a regional network for the FETP was needed and would play a pivotal role in strengthening the practice of public health in the region.

In 2009, EMPHNET was incorporated in Amman, Jordan, with Saudi Arabia, Egypt, Jordan, and Pakistan as founding members. Since then, FETPs in Iraq, Morocco, and Yemen have joined the network. Through the network of FETPs, EMPHNET's goal is to support the effort to prevent and control infectious and non-infectious diseases, conduct multi-disciplinary research, and translate that research into action.

EMPHNET is focusing on building a strong epidemiologic workforce in the region by establishing new programs, providing training for the public health workforce, and improving the quality of the programs and training. EMPHNET is also strengthening collaboration among programs in the region through joint workshops, projects, and outbreak investigations.

The first EMPHNET (and third TEPHINET Regional) conference was held in October 2009. The conference was attended by more than 400 participants from the region, Europe, and Asia. The conference had a major emphasis on non communicable diseases (NCDs) and mental health in the region. The network is also playing a critical role in establishing new FETPs in the region by

partnering with CDC, participating in assessments, conducting workshops, and working with MOHs. The Yemen FETP is the newest program in the network and it participated in the early discussions with the MOH. The Yemen FETP plans to participate in the introductory NCD course planned for January 2011.

Improving the quality of the programs in the region is a major emphasis of the network. EMHNET has been working with CDC and TEPHINET to conduct the scorecard self-assessment. The Jordan self-assessment is planned for early 2011 and will soon be followed with a similar effort in Egypt. The public health mass gathering project is an example of bringing the FETPs in the region together to work on issues that affect most of the countries. A mass gathering workshop was held in September of 2010 and was attended by residents from all the FETPs in the region. The residents selected specific projects to work on and will meet in the first few months of 2011 to present their work and determine the next steps. Given the importance of NCD in the region, EMPHNET has partnered with CDC and the Jordan MOH to develop the FETP-NCD track and to develop a physical activity project in Jordan. Jordan was selected by CDC as one of five focus countries for the implantation of the FETP-NCD track. EMPHNET is currently developing a data base for all FETP graduates in the region and will establish an alumni association.

MONITORING AND EVALUATION FOR PROGRAM IMPROVEMENT

Program description

A program for the systematic, periodic monitoring and evaluation (M&E) of outputs and outcomes is being developed to evaluate program impact on public health systems and, ultimately, public health. This is essential for developing the infrastructure necessary for responding to public health threats and for disease surveillance and outbreak response. The Division of Public Health Systems and Workforce Capacity Development (DPHSWD) M&E work group has been working on refining and broadening the M&E framework for Field Epidemiology and Laboratory Training Programs (FELTPs), Sustainable Management Development Program (SMDP), and the division overall. Goal: DPHSWD will have tools and procedures for the monitoring, evaluation, and quality improvement of all work supported by the division.

Countries included

- All division programs

Team members:

- Sara Andrist
- Peter Bloland
- Victor Caceres
- Suzanne Elbon
- Russ Gerber
- Eric Gogstad
- Libby Howze
- Donna Jones

Partners

- TEPHINET
- AFENET
- RESDUR
- EMPHNET

Major accomplishments in 2010

- Continued refinement and application of the facilitated self-assessment tool or scorecard to summarize progress towards quality and sustainability of FELTPs. This tool has been used in six country programs and looks at level of achievement of a program in the following areas:
 - » Competency-based training
 - » Public health work/field activities
 - » Public health leadership development
 - » Management
 - » Sustainability

- Additional preparation for the multi-site evaluation of several FELTPs was completed. FETP stakeholders representing seven FETPs from four WHO regions, two regional FETP networks, TEPHINET, and WHO Lyon provided guidance on defining the key domains for assessing the quality and impact of an FETP, and developed quality indicators in these domains.
- The division began identifying the gaps in measuring quality within FETPs. We have created an inventory of available tools and are working to further refine these and make them available to programs.
- An evaluation of EpiTrack, a standardized database for monitoring trainee activities, was conducted that is informing the ongoing work in support of developing a standard process for supervision and tracking of required projects and to develop the tools and resources to support that system.
- Ongoing EpiTrack support:
 - » Cameroon – an on-site visit was conducted to 1) assist Central African FELTP establish a standardized process for tracking resident progress toward completion of required activities; and 2) determine how EpiTrack can be applied to the newly proposed AFENET annual quality indicators
 - » Provided technical support to Brazil and Central America to add customizations to EpiTrack
- We provided technical support to other related evaluation activities, including an evaluation of the support provided for resident advisors and evaluation of non-traditional FETPs in Asia.

Priorities for 2011

- **Continued implementation of facilitated self-assessment tool**
 - » Engage with our programs and regional networks to encourage implementation and use. The tool will be assessed and possibly revised for programs with additional tracks or circumstances
- **Short-course evaluation**
 - » To be completed in South Africa in February 2011
- **Multi-site evaluation**
 - » Work with stakeholders and consultants to develop an appropriate proposal and implement across the selected programs
- **Develop division -level logic model and evaluation framework**
 - » Work with stakeholders to develop a logic model and appropriate indicators to monitor and evaluate how well division-level systems, technical support, and program development are working to support country-level work and program sustainability
- **Pilot and implement quality support tools and approaches**
 - » Develop and implement a process for the standard operating procedures in our programs to assure quality mentoring and supervision as well as quality work products and competent graduates
- **Support current users of EpiTrack**
 - » Provide technical support to Central Asia to develop EpiTrack for this regional program; support preparation for Tajikistan Regional program M&E activities

- **Annual report and monitoring**
 - » Continue to use the annual report to provide systematic collection of specific indicators for all DPHSWD supported programs to obtain program and individual data. Planning move to quarterly data reporting
- **EpiTrack**
 - » Develop training materials to support current users of EpiTrack (step-by-step guide for data entry and report generation with versions for POC, trainees and supervisors). Work with individual FETPs to address technical issues with EpiTrack revisions

APPENDICES

PUBLICATIONS AND PRESENTATIONS

Afghanistan FETP

Presentation

- Saeed, Mir Islam. Evaluation of a Tuberculosis Surveillance System in Afghanistan, 6th Global Scientific TEPHINET Conference, December 13-17, 2010, Cape Town, South Africa (poster)

Central America FETP

Publications

- Muñoz KPC. Influenza in Costa Rica 2003–2006, a fundamental issue for the current epidemiological surveillance. *Rev Costarr Salud Pública* 2010;19:25–29.
- de Palma O, Cruz L, Ramos H, et al. Effectiveness of rotavirus vaccination against childhood diarrhoea in El Salvador: case-control study. *BMJ* 2010 June 15;340:1–7.
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- Mejia M, Murillo A, Campos J, et al. Outbreak of staphylococcus aureus in a daycare center in Choluteca, Honduras. *Revista Medica Hondureña* 2010;77:67–70.

Presentations

Belize

- Perez L. (Basic Level, Belize). Diabetes Morbidity and Mortality in Belize, 2004-2009. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Oral).
- Pinelo M. (Basic Level, Belize). A Descriptive Study of Fatal and Non-Fatal Transport Accidents in Belize, 2009. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Poster)

Costa Rica

- Abarca L. (2nd cohort Costa Rica FETP). Prevalence and factors associated with staff burnout syndrome in a clinic, San Jose, Costa Rica 2007. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Oral)
- Abarca L. (2nd cohort Costa Rica FETP). Epidemiological characterization of sexual abuse, Costa Rica, 2005-2009. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Poster)
- Anchia M. (2nd cohort Costa Rica FETP). Associated Factors to Norovirus outbreak in Costa Rica, North Region. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Poster)
- Bastos C. (2nd cohort Costa Rica FETP). Dengue fever outbreak controlled in a marginal urban community, San Jose, Costa Rica. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Poster)
- Calvo O. (2nd cohort Costa Rica FETP). H1N1 Influenza Outbreak in health Personnel from a metropolitan health center in San José, Costa Rica. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Poster)
- Chavez A. (Basic level, Costa Rica). Adverse events following immunization (AEFI) to the influenza A (H1N1) 2009 pandemic vaccine (PV) in a cohort of healthcare workers (HCW) in a sub-tropical American country, February 2010. 6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (Oral)

- Espinoza A. (2nd cohort Regional FETP). Estimation of deaths attributable to main risk factors. Costa Rica, 2005. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Poster)
- Freer J. (2nd cohort Costa Rica FETP). H1N1 outbreak and factors associated with pneumonic infiltrates in patients treated at the National Hospital, San José. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Poster)
- Garcia E. (1st cohort Costa Rica FETP). Implementation of the Sentinel Unit for respiratory viruses: Influenza-like illness and serious acute respiratory infections. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Poster)
- Guzman G. (1st cohort Costa Rica FETP). Acceptability, coverage and adverse events following immunization (AEFI) of seasonal influenza vaccine (SIV) in Health Care Workers (HCW), as a tracer for influenza A (H1N1)2009 – pandemic vaccine (PV) in the Social Security Institute of Costa Rica (CCSS). *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010* (Oral)
- Mata Z. (6th cohort Regional FETP). Analysis of Tuberculosis mortality in Costa Rica, 2006-2009. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010* (Poster)
- Mora E. (2nd cohort Costa Rica FETP). Domestic violence in urban marginal sector, San Jose, Costa Rica, 2004-2008. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Poster)
- Wong R. (6th cohort Regional FETP). Associated factors to *Clostridium difficile* BI/NAP1 outbreak in a general hospital in Costa Rica. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Oral)

El Salvador

- Alberto P. (6th cohort Regional FETP). Outbreak of Poisoning due to Pesticides in a rural school in San Antonio Pajonal, El Salvador, CA April 2010. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Oral)
- De Palma O. (1st cohort Regional FETP). Effectiveness of rotavirus vaccination against childhood diarrhea in El Salvador: case-control study. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Poster)

Guatemala

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- Garcia E. (4th cohort Regional FETP). Implementing TB/HIV Sentinel Surveillance in Guatemala, 2007. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Oral)
- Herrera M. (6th cohort Regional FETP). A rotavirus outbreak in a Nutritional Rehabilitation Centre at Chimaltenango, Guatemala, 2010. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Oral)
- Perez S. (5th cohort Regional FETP). Evaluation of surveillance of pneumonia and bacterial meningitis in Guatemala. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010.* (Poster)

Honduras

- Guillen D. (Intermediate level, Honduras). Nosocomial *Escherichia coli* outbreak in the Neonatal Unit of Hospital Dr. Juan Manuel Gálvez, Honduras, March-May 2008. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010*. (Oral)
- Mejía H. (6th cohort Regional Cohort). Pandemic Influenza H1N1 in Honduras, April to June 2009. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010*. (Oral)
- Mejía M. (5th cohort Regional FETP). Outbreak of Influenza A (H1N1) Honduras, March 2009 - March 2010. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010*. (Poster)
- Ramos A. (6th cohort Regional FETP). Reduction of malaria as a result of interventions in a comprehensive manner in the South Western Peten Health. *6th TEPHINET Global Biannual Scientific Conference, Cape Town, South Africa, December 13-17, 2010*. (Poster)
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Dominican Republic

- Skewes-Ramm R. (6th cohort Regional FETP). Leptospirosis outbreak associated with bathing in a polluted irrigation canal- El Salado Galvan, Baoruco, Dominican Republic. *59th Annual Epidemic Intelligence Service (EIS) Conference, Atlanta, Georgia April 19-23*. (Poster)
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Central Asia FETP

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- Tilloyeva Z. Evaluation of TB surveillance in Kulyab region of Tajikistan. Academy News Journal.
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China FETP

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- Zhang Bike. An Epidemic of Chilblains in Rural Boarding Schools in Southwestern China, 2009. *59th Annual Epidemic Intelligence Service (EIS) Conference, International Night, Atlanta, April 19, 2010. (oral and poster).*
- Han Ke. Glucocorticoid treatment of acute fever is a risk factor for developing critical disease and death from pandemic H1N1 influenza infection: Shenyang, China, October to November, 2009 *International Conference on Emerging Infectious Diseases, Atlanta, US, July 11, 2010. (oral).*
- Liu Mingbin. Outbreak of pandemic H1N1 influenza in an international aircraft — Fujian, China, May 2009. *International Conference on Emerging Infectious Diseases, Atlanta, US, July 11, 2010. (oral).*
- Su Yang. Measles Outbreak in Four Counties: Liaoning, China, 2009. *International Conference on Emerging Infectious Diseases, Atlanta, US, July 11, 2010. (oral).*
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- Xing Xuesen. The characteristics of imported, novel H1N1 cases: May to July, 2009, *International Conference on Emerging Infectious Diseases, Atlanta, US, July 11, 2010. (oral).*
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- Tang Xuefeng. Increased risk of preterm delivery among pregnant women who survived the Sichuan Earthquake: Anxian County, Sichuan Province, China, 2009. *6th TEPHINET Global Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (oral).*
- Fan Chunxiang, Fang Yirong. Injection safety practices in two Chinese counties between 2002 and 2009. *6th TEPHINET Global Scientific Conference, Cape Town, South Africa, December 13-17, 2010. (oral).*
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- Chen Shaoqiong. An outbreak investigation of water borne diarrhea caused by Norovirus type GII-4 in a school in Guangdong Province. *Fifth China FETP National Conference, China, September 2010. (oral).*
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FREQUENTLY USED ACRONYMS

AFENET	African Field Epidemiology Network
AIZIP	Avian Influenza and other Zoonotic Infections Project
BRFSS	Behavioral Risk Factors Surveillance System
CDC	Centers for Disease Control and Prevention
DTRA	U.S. Defense Threat Reduction Agency
DDM	Data for Decision Making
DHMT	District Health Management Team
DLS	Division of Laboratory Systems
EDP	Especially Dangerous Pathogen
EID	International Emerging Infectious Diseases
EIS	Epidemic Intelligence Service
FETP	Field Epidemiology Training Program
FELTP	Field Epidemiology and Laboratory Training Program
GAP	Global AIDS Program
GDD	Global Disease Detection
GOSS	Government of South Sudan
ICMR	Indian Council for Medical Research
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
LSI	Leadership in Strategic Information
MBDS	Mekong Basin Disease Surveillance
MIPH	Management for International Public Health
MOH	Ministry of Health
MOU	Memorandum of Understanding
MPH	Master of Public Health
NACC	National AIDS Control Commission
NCDC	National Center for Disease Control
NCIRD	National Center for Immunization and Respiratory Diseases
NCHHSTP	National Center for HIV, Viral Hepatitis, STD, and TB Prevention
NCZVED	National Center for Zoonotic, Vector-Borne, and Enteric Diseases
NEDSS	National Egyptian Disease Surveillance System
NGO	Non-governmental Organization
NICD	National Institute for Communicable Diseases
NIE	National Institute of Epidemiology
NMCP	National Malaria Control Program
NTP	National TB Program
NURSPH	National University of Rwanda School of Public Health
PEPFAR	President's Emergency Plan for AIDS Relief
TB	Tuberculosis
SMDP	Sustainable Management Development Program
TEPHINET	Training Programs in Epidemiology and Public Health Interventions Network
USAID	U.S. Agency for International Development
WHO	World Health Organization
WHO AFRO	WHO Regional Office for Africa
WHO SEARO	WHO South East Asia Regional Office