Division of Global Public Health
Capacity Development

2008 Annual Report

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
Coordinating Office for Global Health

Division of Global Public Health Capacity Development

2008 Annual Report

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
Coordinating Office for Global Health

Contents

Director's Letter

Welcome to the *Division of Global Public Health Capacity Development (DGPHCD) 2008 Annual Report*. This is our fourth annual report and I am pleased once again to update our growing list of partners and stakeholders about our existing and upcoming global health activities.

Over the past year, we have been actively involved in developing or sustaining programs that fulfill our mission to strengthen public health systems and develop the health workforce using solid science and innovative programs. We have been engaged with Ministries of Health (MOHs) and other partners to build sustainable capacity that meets the unique national health priorities of the countries where we work. For example, in 2008, we have made steady progress in getting ready to implement new regional Field Epidemiology and Laboratory Training Programs (FELTPs) in Central Africa, West Africa, and the South Caucasus, as well as programs in Ethiopia, Nigeria, Rwanda, and Tanzania.

We are also seeing innovations in the structure of our FELTPs. To address the growing threat of zoonotic diseases worldwide, we are adding for the first time a veterinary track to the South Caucasus and the Nigeria programs. Residents of these programs can elect to specialize in one of three tracks: field epidemiology, public health laboratory management, or veterinary epidemiology.

Another major component of our work resides in helping countries develop or strengthen the management skills of their public health leaders. Through strategic partnerships with public health training institutions, faculty development in our Management for International Public Health course, and technical program assistance, we develop leadership and management programs for public health professionals. These programs combine 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. We are currently supporting leadership and management development programs in eight countries (i.e., Botswana, Ethiopia, Georgia, Ghana, Malawi, Nigeria, Rwanda, and Vietnam). In addition, we are working closely with the African Field Epidemiology Network to develop a Center of Excellence for Management to serve as a hub for the Management Capacity Building Program. The center will be located at the University of Ghana in Accra.

To help us accomplish our mission, we have been working in close collaboration with our many partners, including the MOHs of the countries where we are engaged, U.S. government agencies, national and international health organizations, and private organizations and foundations. Of note is our active participation in and sponsorship of the Fifth TEPHINET Global Scientific Conference that took place in Kuala Lumpur, Malaysia, in November 2008.

As you read our annual report, you will find more details about our current and future programs and projects. For the latest updates on our activities, please visit our website at www.cdc.gov/cogh/dgphcd. In addition, we welcome your feedback and ideas; you can e-mail us your comments and suggestions at dgphcdinfo@cdc.gov.

I hope you will find this report informative.

Patricia M. Simone, M.D.
CAPT, U.S. Public Health Service
Director
Division of Global Public Health Capacity Development
Coordinating Office for Global Health
Centers for Disease Control and Prevention

Based in Atlanta, Georgia (U.S.A.), the Division of Global Public Health Capacity Development (DGPHCD) is part of the Coordinating Office for Global Health at the U.S. Centers for Disease Control and Prevention.

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 also believe that strong public health systems globally are needed to improve and protect the public's health and to respond effectively to the ever-changing 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 training programs such as the Field Epidemiology Training Program (FETP), the Field Epidemiology and Laboratory Training Program (FELTP), the Sustainable Management Development Program, Data for Decision Making, 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.

Strategy

We 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 results. We aim to achieve these goals through:

- **Applied Epidemiology.** We work with MOHs and other public health institutions to strengthen their countries' epidemiology workforce through FE(L)TPs, which are residency-based programs in applied epidemiology. A combination of classroom-based instruction and mentored practical work allows trainees to receive hands-on multi-disciplinary training in public health surveillance, outbreak investigation, laboratory management, program evaluation, and other aspects of epidemiology research and methods.
- **Public Health Surveillance and Response Systems.** We work with partner MOHs to strengthen their public health surveillance and response systems for priority disease conditions. FE(L)TPs trainees learn 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.
- **Public Health Leadership and Management.** We help countries develop sustainable public health capacity to deliver effective leadership and management development programs. Through strategic partnerships with public health training institutions, faculty development in our Management for International Public Health course, and technical program assistance, we 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.

Workforce

Our teams of physicians, 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.

For example, we develop customized classroom curricula for epidemiology, biostatistics, management, and public health communication skills. We also provide additional training and technical assistance to sustain FE(L)TPs, management capacity building programs, and related programs around the globe.

Partnerships

Developing partnerships is an important element of establishing, supporting, and sustaining our programs. Therefore, we regularly collaborate with national and international organizations such as the World Health Organization, the U.S. Agency of International Development, the Department of State, the Department of Defense, the Ellison Medical Foundation, the Carter Center, and the World Bank.✦

Section 1 • Division-Supported FE(L)TPs

Program description

The Brazil FETP was created in 2000 by the Brazilian MOH, with support from CDC. The name of the program is "Programa de Treinamento em Epidemiologia Aplicada aos Servicos do Sistema Unico de Saude" (EPISUS).

Since 2000, more than 140 outbreaks have been investigated and more than 70 surveillance systems evaluated. Brazilian public health authorities recognize that EPISUS has created the capacity for scientifically-based outbreak investigation and response in the country. Chronic disease surveillance is a new priority for the MOH; a leading role for EPISUS in this area, with CDC support, is being defined at this time.

The first CDC resident advisor supported the program during 2000–2006 and a technical advisor was hired in 2007 to continue working with the program. EPISUS is currently located organizationally within the Emerging Infectious Diseases Branch of the Epidemiology Surveillance Division of the Secretariat of Health Surveillance (SVS) whose function in the MOH roughly corresponds to that of CDC. Trainees are posted throughout most of the divisions and branches of SVS.

Team members

Atlanta-based staff

- Victor Caceres, Team Lead
- Nathalie Roberts, Public Health Advisor

Brazil-based staff

- Elizabeth David dos Santos, Program Director
- Jeremy Sobel, Technical Advisor
- Denise dos Santos, Senior Staff Supervisor
- Wildo Araujo, Senior Staff Supervisor
- Aglaêr da Nobrega, Junior Staff Supervisor
- Eduardo Macário, Junior Staff Supervisor

Partners

- SVS, MOH Brazil
- United Nations Development Program Brazil
- CDC Foundation
- WHO Global Salm Surv international network of epidemiologists and laboratorians

Strengthened public health workforce

As of 2008, the FETP had 58 graduates: 43 (75%) work at the MOH, 7 (12%) in state health departments, 4 (7%) in municipal health departments, 2 (3%) in academia, and 2 (3%) in the private sector. In recent years, important mid-level supervisory or leadership positions have been assumed by graduates: the positions of chief of the Center for Strategic Information in Health Surveillance (CIEVS, roughly corresponding to CDC's Emergency Operations Center), chief of the Transmissible Diseases Division, chief of Foodborne/Waterborne Branch, chief of the National Dengue Control Program, chief of influenza activity, chief of rabies activity, chief of yellow fever activity, and chief of rodent-associated disease activity have been assumed by graduates. The management and supervision of the FETP itself are handled by graduates: the retiring director, Elizabeth David dos Santos will be replaced by another graduate in 2009, and all staff supervisors are graduates as well.

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 15
- Planned (protocol-based) studies conducted and completed: 10
- Surveillance evaluations conducted: 10

Important projects

Investigation of a nationwide epidemic of cholera in Guinea Bissau, West Africa

The investigation was conducted by a joint FETP-Epidemic Intelligence Service (EIS) team and supervised by a CDC subject-matter expert and the technical advisor.

Epi Bulletin

The bulletin exists principally for electronic posting of FETP trainee investigation and study reports. The editorial staff consists of FETP supervisors. Fourteen reports were published on this platform in 2008.

Program independence/sustainability

- The program has been officially recognized as an entity in the MOH organizational structure by an official announcement in 2008.
- The program is completely supported financially by the MOH, including salaries, travel, and equipment. Administration of some program funds through the U.S. Embassy in Brasilia has been an important mechanism for urgent expenses, because of the embassy's streamlined administrative procedures.
- The program has been transferred to the highly visible CIEVS, resulting in increased visibility for the program. Its new home within CIEVS, which is responsible for emergency surveillance and response, represents both opportunities and challenges for the FETP.
- The program is technically/scientifically mature, with multiple graduates at the MOH supporting training activities.

Monitoring/evaluation activities 2008

The Brazil FETP conducts an external evaluation every 3 years (previous evaluations were conducted in 2006 and 2003). Another review is planned for 2009.

Outcomes

The FETP has provided Brazil with a robust outbreak investigation and response mechanism that did not previously exist in-country. Trainees are viewed as the leading experts in responding to such events throughout Brazil. The following are illustrative examples:

- Investigation and control of an outbreak of suspected Brazilian Purpuric Fever, Pará State. A series of deaths in young children in a remote Amazonian townships was investigated by an FETP team, resulting in the tentative diagnosis, institution of treatment guidelines, surveillance and contact prophylaxis with immediate control of the outbreak.
- Investigation and control of an outbreak of flaccid paralysis in Amazonian Indian villages, Roraima State. Clinical evaluation and empirical treatment confirmed the diagnosis of beriberi (thiamine deficiency). Establishment of surveillance, treatment guidelines, community education, and nutritional supplementation reduced morbidity. A collaboration with the federal agency responsible for Indian health is underway to promote recognition and treatment of beriberi in other areas.
- Investigation and control of a community-wide outbreak of meningitis in Goías State. Epidemiologic investigation of a series of childhood deaths from meningitis C implicated secondary transmission from adults working at one of Brazil's largest food processors. Based on study recommendation, the affected population (more than 10,000 persons) was vaccinated, the largest emergency meningitis vaccination effort ever undertaken in Brazil. Additionally, this investigation generated the first set of specific recommendations for meningitis vaccination for community outbreaks in Brazil.
- Data from multiple nosocomial outbreaks of non-tuberculous mycobacteria conducted by FETP investigators between 2006–2008 identified a nationwide failure of laparoscopic surgery instrument sterilization as the cause of a persistent nationwide epidemic. Findings resulted in the adoption of far-reaching regulatory changes related to hospital infection control in Brazil and an enhancement of regulatory oversight of this previously neglected area.
- Recommendations from surveillance system evaluations are routinely adopted by surveillance system supervisors. Surveillance system evaluation, not a part of public health practice in Brazil, is practiced almost exclusively by FETP trainees, and their recommendations are sought. Because many surveillance systems in Brazil did not have explicit objectives, a contribution of trainees has been proposing such objectives. Affected systems include the national surveillance systems for sexually transmitted diseases, HIV/AIDS, and Hantavirus. This function of trainees is one of the motivations of managers in recruiting trainees to their areas.
- International recognition of the expertise of FETP investigators has resulted in an invitation to assist with response to a nationwide cholera outbreak in Guinea Bissau and to participate in the future construction of FETPs in Angola and Mozambique. Enhanced collaboration between the Brazil FETP and staff members in Lusophone countries of Africa is expected to increase in the future.

Accomplishments

- Trainees and graduates presented a symposium at the 2008 Annual Conference of the American Society of Tropical Medicine and Hygiene, entitled "Update on Vectorborne Diseases in Brazil."
- A graduate is a special guest editor of a forthcoming theme issue of the *Journal of Emerging Infectious Diseases* (April 2009) on "Diseases of the Amazon Region." Three publications by trainees will appear in this edition.

Conferences and publications

- International Emerging Infectious Diseases (EID) Conference, Atlanta: 31 oral presentations
- EIS Conference, Atlanta: 2 oral presentations
- American Society for Tropical Medicine and Hygiene Annual Conference, New Orleans: 5 oral presentations
- TEPHINET Global Scientific Conference, Kuala Lumpur, Malaysia: 23 oral presentations
- Brazilian Society for Tropical Medicine, Florianopolis, Brazil: 3 oral presentations
- World Epidemiology Congress, Porto Alegre, Brazil: 2 oral presentations
- Four manuscripts submitted in 2008 have been accepted for publication in international peer-reviewed journals [Emerging Infectious Diseases (3), Tropical Doctor (1)]
- At least a dozen other manuscripts submitted in 2008, with decisions pending✦

Program description

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

CA FETP is a regional program of five national FETPs representing Costa Rica, the Dominican Republic, El Salvador, Guatemala, and Honduras. The program also includes individual trainees from Nicaragua and Panama. CA FETP is unique in that it was initiated with a regional vision.

The principal goals of the CA FETP are to build institutional capacity within each country for epidemiologic assessment, investigation, and surveillance and foster a scientific, data-based approach for implementing effective public health programs and policies.

The CA FETP has designed and implemented a pyramidal three-tiered FETP which has been cited as a successful model for FETPs in the global network. This model aims to build an effective career track and surveillance network for epidemiologists. The three tiers are:

1. **Basic Level Training:** For local health staff, consists of approximately 88 hours interspersed throughout a 3–5 month field assignment,
2. **Intermediate Level Training:** For mid-level district epidemiologists, consists of 248 classroom hours interspersed throughout a 9-month field assignment, and
3. **Advanced Level Training:** Known as the advanced FETP with a national focus for advanced epidemiologists, consists of 624 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 "multiplier effect" of this model has significantly improved surveillance in remote areas of Guatemala as seen during Hurricane Stan in 2002, where much higher-quality post-hurricane surveillance data were obtained from those health areas employing graduates of the program.

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 initial period of the CA FETP (2000–2005) was characterized as one regional FETP, managed primarily by CDC.

In the current transition (2006 to present), the CA FETP is becoming an interdependent network of national FETPs with countries at various stages of institutionalization.

The regional FETP is accredited with a Masters degree in Field Epidemiology at the University del Valle in Guatemala City.

CA FETP is supported in the field by three resident advisors located in the CDC-Central America and Panama office. Current CDC support is focused on building strong, sustainable national programs, developing high-quality curricular materials with future Web-based delivery options, and developing political leadership and advocacy in the Regional Technical Committee (RTC), the group of national epidemiology directors and FETP coordinators that forms the steering body of the CA FETP.

Team members

Atlanta-based staff

- Victor Caceres, Team Lead
- Nabil Ahmed, Public Health Advisor
- Senia Espinosa, Health Education Specialist
- Denise Traicoff, Health Education Specialist

Guatemala-based staff

- Augusto Lopez, Resident Advisor
- Gloria Suarez, Resident Advisor
- Anaite Diaz, Resident Advisor
- Gabriela Illescas, Administrative Assistant

Partners

- Pan American Health Organization
- Regional Technical Committee
- University del Valle—Guatemala City
- University of North Carolina—Chapel Hill
- Institute of Carlos III—Madrid, Spain
- Universidad Evangelica—San Salvador, Costa Rica
- Universidad Nacional Autonoma—San Juan, Costa Rica
- Universidad Catolica—Tegucigalpa, Honduras
- CDC's Global Disease Detection (GDD) Program
- CDC-CAP, Avian Influenza (AI) activity, other Atlanta-based centers

Strengthened public health workforce

In 2008, the program had 17 residents in regional program and 10 in Costa Rica. There are 64 graduates, 51 of whom work in the MOH.

Several countries made important strides in the development of their pyramidal FETPs; these are described below. The number of graduates from all the countries were 443 from the basic level, 80 from the intermediate level, and 9 from the advanced level FETPs.

Accomplishments of regional program

CA FETP continues to evolve into a strong coalition of independent national programs maintaining a regional vision. The regional advanced-level FETP, which is housed within the Guatemalan National Program, with close oversight by

CDC-CAP FETP staff, fulfills various functions within the overall strategic plan for the region.

In 2008, CDC continued to invite FETP national program coordinators to the regional FETP modules held in Guatemala City. These program coordinators helped to evaluate materials and participate as facilitators and presenters, while being mentored by CDC staff. This modeling of how to conduct an FETP (managerially and technically) enables the coordinators to better lead their national programs.

In 2008, the 2007 regional cohort trainees entered the second year of their FETP. They participated in the following modules: Project Management (February), Prevention Effectiveness (June), and Electives (September). Dr. Andrew Dean, one of the creators of EpiInfo, gave a 2-day seminar during the Electives module.

In 2008, regional cohort trainees were comprised of trainees from the Guatemalan National Program, from the Dominican Republic Program (who do their field work in their own country), and from each of seven countries (Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, the Dominican Republic) who have been sponsored by CDC's AI program. The AI program has committed to sponsoring several trainees in the next regional cohort which will start in March 2009.

The regional FETP received official accreditation of the Masters Degree in Field Epidemiology at the University of del Valle. This was the culmination of several years of curriculum development and negotiation with the university on how to assign credit hours for various aspects of this unique program.

The RTC continued to meet monthly using the virtual internet meeting space "Horizon Live." The chair of the committee was the program coordinator from Honduras. The RTC is gradually taking more responsibilities in managing the regional FETP and is developing plans to evaluate national programs and long-term sustainability of the steering committee.

In collaboration with DGPHCD, the CA FETP held a one week leadership and management workshop in Guatemala City in June. FETP program coordinators and/or directors of epidemiology from 10 countries with FETPs in Central and South America (Argentina, Brazil, Peru, Colombia) participated.

In December, a review article describing the CA FETP was published (Lopez A, Caceres V. "Central America Field Epidemiology Training Program: a pathway to sustainable public health capacity development." *Human Resources for Health* 2008;6:27). CA FETP continued to publish its monthly Regional Field Epidemiological Bulletin (BREC in Spanish) during 2008.

The CA FETP provided technical assistance to South America FETPs. The Brazilian Emergency Response Center director (and supervisor of the Brazil FETP) and one Brazil FETP supervisor visited Guatemala to learn about the pyramid model and emergency response activities at CDC-CAP. The Colombia FETP piloted the broadcasting of some introductory course lectures over CA FETP's Horizon Live site. Discussions were held with several countries in South America regarding program evaluations that are planned in 2009 and official requests for assessments (for starting an FETP) were received from Panama and Belize.

Country highlights

Costa Rica FETP

- Costa Rica has a fully-sustained national FETP (basic and advanced levels) with plans to start an intermediate level program in 2009. The program graduated 9 trainees from the advanced FETP cohort in September, and enrolled 10 trainees in its next advanced FETP cohort.
- Trainees investigated several outbreaks including those occurring in hospitals (foodborne and varicella-associated) and an outbreak of respiratory syncytial virus in the indigenous population.
- Examples of surveillance systems evaluated include those for leprosy, leptospirosis, and dengue.
- Nine articles were published in national peer-reviewed journals and 8 studies presented at the TEPHINET Global Scientific Conference in Malaysia.
- EpiTrack was initiated for monitoring trainees.
- The country coordinator serves as the representative to TEPHINET for the Americas.

Dominican Republic FETP

- The program has five advanced level trainees who received the academic component in the regional program in Guatemala. The MOH is planning to initiate a three-tiered national program in 2009 using the standard regional curriculum.
- Program graduates were named to the following MOH leadership positions: national director of epidemiology, director of national program for tuberculosis (TB), and director for chronic diseases. A current trainee was appointed director of planning and development.
- Examples of outbreaks investigated by trainees include dengue, neonatal infections, hepatitis A, and foodborne infections.
- Examples of surveillance systems evaluated include rabies, maternal mortality, dengue, pertussis, and respiratory viruses.
- Planned investigations looked at the risk factors associated with tetanus, risk factors for malnutrition among school-aged children, and identified reasons for not receiving post-exposure rabies vaccine.

El Salvador FETP

- In 2008 the program graduated 76 trainees from the basic level and 27 trainees from the intermediate level

FETP. Seven basic-level trainings were held in five of the health regions. The intermediate level is accredited by the Universidad Evangelica in San Salvador.
- Health personnel from the Social Security Institute participated as trainees in the basic level.
- Examples of outbreaks investigated by trainees include organophosphate intoxication, hemorrhagic dengue, meningococcal meningitis, human rabies, and several outbreaks caused by foodborne infections.
- The surveillance system for influenza was evaluated and a planned investigation was conducted that identified risk factors for cutaneous leishmaniasis.
- Trainee investigations led to the following types of interventions: training of food handlers, closing of factories, design of new instruments for notification of outbreaks, and improvement of nutritional surveillance.
- Eleven investigations were presented at the Fifth National Epidemiology Scientific Conference in San Salvador, one at the National Epidemiology Scientific Conference in Guatemala City, and one at the TEPHINET Global Scientific Conference in Malaysia.

Guatemala FETP

- In addition to anchoring the regional program, the Guatemala FETP implemented all three levels of the training pyramid, graduating 172 trainees from the basic level and 27 from the intermediate level. The cumulative number of graduates since 2000 for the basic, intermediate, and advanced levels is 946, 154, and 12, respectively.
- The Guatemalan MOH provided financial support for the program at each level and has collaborated with the Social Security Institute in the training of its health personnel (intermediate level).
- Examples of outbreaks investigated by trainees include hepatitis A, pseudomonas aerugenosa in a hospital, measles, TB, and organophosphate poisoning.
- Examples of surveillance systems evaluated include pneumonia in children under 5 years of age, diarrheal disease, HIV/AIDS, rabies, and dengue.
- Forty investigations were presented at the National Epidemiology Scientific Conference in Guatemala, 3 at the TEPHINET Global Scientific Conference in Malaysia, and one at the EIS Conference in Atlanta.

Honduras FETP

- In 2008 the program graduated 135 trainees from the basic level and 26 trainees from the intermediate level FETP. The intermediate level is accredited by the Universidad Catolica in Honduras.
- Examples of outbreaks investigated by trainees include hemorrhagic dengue, varicella, diarrhea, neonatal E. Coli infection, malaria, and mushroom poisoning.
- Examples of surveillance systems evaluated include maternal mortality, hospital TB, and illnesses following extensive flooding.
- Trainee investigations led to the following types of interventions: chlorination of water sources in communities with diarrheal outbreaks and greater monitoring of vendor-compliance with national regulations on handling of dairy products.
- One investigation was presented at the National Epidemiology Scientific Conference in Guatemala and two at the TEPHINET Global Scientific Conference in Malaysia.
- The Honduran program coordinator was chair of the RTC.✦

Program description

The Central Asia FETP was developed in 2003 with the MOHs from five Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), CDC, USAID Central Asia, and the Defense Threat Reduction Agency.

Since 2003, trainees have conducted 88 outbreak investigations and 40 surveillance evaluations. A total of 19 planned research studies have been completed.

The 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

- Edmond Maes, Team Lead
- Hiari Imara, Public Health Advisor
- Judy Berry, Program Analyst

Kazakhstan-based staff

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

Partners

- Kazakhstan MOH and Republican Sanitary Epidemiological Service (SES)
- Kyrgyzstan MOH and Republican SES
- Tajikistan MOH and Republican SES
- Uzbekistan MOH and Republican SES
- Turkmenistan MOH and Republican SES

Strengthened public health workforce

In 2008, the program had 15 trainees. There are 34 graduates, 30 of whom work in MOHs.

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 11
- Planned (protocol-based) studies conducted and completed: 8
- Surveillance evaluations conducted: 6
- Surveillance analysis conducted: 1

Important projects

- Consultation on how to evaluate HiB vaccination, Kazakhstan
- Consultation on how to evaluate efficacy of human immuno vaccination against plague, Kazakhstan
- Typhoid fever vaccination campaign, Kyrgyzstan
- Consultation on how to evaluate HiB vaccination, Kyrgyzstan

Program independence/sustainability

The Kazakhstan MOH provides training offices and the local MOH provides partial lab support when available. To discuss sustainability issues, meeting were held with senior public health officials in Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan.

Scientific accreditation has been discussed with the Academy for Science in Uzbekistan and the National University for Medicine in Kazakhstan. FETP staff are developing the needed documents to that effect.

Outcomes

The human immunodeficiency syndrome outbreak among children in Osh District in Kyrgyzstan was stopped; control measures were implemented based on the evidence from the FETP field investigation.

Other accomplishment

A recent graduate from the FETP won the 2008 EIS/International Foege Award.

Conferences

- EIS Conference, Atlanta: 1 oral presentation
- TEPHINET Global Scientific Conference, Malaysia: 2 oral presentations, 4 posters
- Roundtable meeting attended by the MOH and regional epidemiologists: 1 oral presentation ✦

Program description

The China FETP (C-FETP), was started in 2001 by China CDC. Since then, C-FETP officers and staff have played major roles in China's surveillance, epidemiologic investigation, and response activities.

Over the past 6 years, the C-FETP has conducted about 50 investigations per year on a wide range of public-health problems, including SARS, AI, paraplegia from contaminated methotrexate, severe enterovirus 71, melamine contamination of infant formula, the 2008 Sichuan earthquake, the 2008 central China cold weather disaster, and other public health emergencies of national concern.

With the emergence of AI worldwide, China CDC has tasked the C-FETP to lead the agency's surveillance, epidemiology, and response activities for the disease nationwide. For their 2 years of training through service, C-FETP officers are assigned to either the China CDC in Beijing, or to field sites within China's 31 provinces and administrative regions.

When the program began, there were no field training bases outside of Beijing; since then, the C-FETP has expanded to 15 field training bases with several more in development.

Team members

Atlanta-based staff

- Ronald Moolenaar, Team Lead
- Nathalie Roberts, Public Health Advisor

China-based staff

- Robert Fontaine, Resident Advisor
- Bao-Ping Zhu, Medical Epidemiologist
- Zhang Rui (Ivy), Office Management Specialist

Partners

- China CDC system, including 15 provincial field bases (Shandong Province, Anhui Province, Jiangsu Province, Henan Province, Fujian Province, Guangdong Province, Zhejiang Province, Sichuan Province, Shenzhen City, Chongqing, Shanghai, Bao'An District, Chaoyang District, Ningbo City, Jiangxi Province)
- WHO
- CDC's International Emerging Infections Program
- CDC's Influenza Division
- CDC's Coordinating Office for Terrorism Preparedness and Emergency Response

Strengthened public health workforce

In 2008, the program had 30 trainees. There are 67 graduates, all of whom work in the MOH. Three graduates hold positions as C-FETP staff serving as mentors to the current cohort of trainees and leading major investigations such as Enterovirus 71 and Yunnan Sudden Death.

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 33
- Planned (protocol-based) studies conducted and completed: 37
- Surveillance evaluations conducted: 5
- Surveillance analyses conducted: 23

Training 2008

- Mentor workshop (graduate retraining and local mentor epidemiology and communication skills' training). National participants: 75; international participants: 3.
- Public Health Emergency Response Training (rapid response, general preparedness, health communication/risk communication). National participants: 100; international participants: 8.
- Disaster Response Training (all hazards). National participants: 102; international participant: 1.
- Veterinary Training (rapid response). National participants: 120; international participants: 4.
- Third C-FETP Annual Conference, Epidemiology Scientific Conference with theme on natural disaster response. National participants: 240; international participants:5.
- Epidemiology Training (epidemiology investigation methods). National participants: 200.

Important projects

- Enterovirus 71 comprehensive investigation
- Melamine-contaminated milk investigation
- Yunnan Sudden Death study

Program independence/sustainability

In 2006, the C-FETP was made a permanent part of the China CDC, Office of Epidemiology.

Besides three graduates who have been working for the program as trainers and mentors for several years, another upcoming graduate will be recruited as mentor.

Monitoring/evaluation activities 2008

- Weekly report to trainees
- Weekly routine review meeting among staff
- Products review by each field base in mentor workshop
- Weekly database update

Conferences and publications

- 3rd C-FETP National Conference, Beijing: 22 oral presentations
- EID Conference, Atlanta: 1 oral presentation, 5 posters
- EIS Conference, Atlanta: 1 oral presentation
- TEPHINET Global Scientific Conference, Malaysia: 5 oral presentations, 7 posters
- Eleven articles published in scientific journals✦

CHENNAI FETP

Program description

The India FETP in Chennai is a collaboration between the National Institute of Epidemiology (NIE), Chennai (a branch of the Indian Council for Medical Research [ICMR]), WHO India country office, and CDC.

With assistance from CDC and WHO, NIE has developed and revised a curriculum for a 2-year Masters of Applied Epidemiology (MAE) program and established necessary academic linkages. The first class was enrolled in January 2001 and currently they are training the eighth cohort of 19 trainees.

The program has matured over the last 8 years and the activities (e.g., recruitment of trainees, annual presentations, partnerships) are well organized. Much progress has been made in terms of building partnerships with public health and academic institutes that are involved in epidemiology training in India. CDC provided critical technical assistance to the India FETP faculty in setting up these networking and advocacy workshops.

Team members

Atlanta-based staff

- Ronald Moolenaar, Team Lead
- Nabil Ahmed, Public Health Advisor

India-based staff

- Yvan Hutin, WHO Resident Advisor
- Dr. Kumaraswami, NIE Director
- Dr. Manoj Murhekar, MAE Coordinator

Partners

- ICMR
- NIE
- Several State Health Departments (e.g., Tamil Nadu, Maharashtra, Orissa, Andhra Pradesh, Mizoram, West Bengal)
- U.S. Embassy in New Delhi, Science Section
- WHO India and WHO South East Asia Regional Office (SEARO), New Delhi

Strengthened public health workforce

The program has 45 trainees. There are 43 graduates, all of whom work in the MOH, mostly at the district and state level, as follows:

- 20 public health program managers-district
- 7 public health program managers-state
- 5 surveillance officers
- 5 medical researchers
- 4 state-level trainers
- 2 state epidemiologists for National AIDS Control Program

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 40
- Planned (protocol-based) studies conducted and completed: 25
- Surveillance evaluations conducted: 25
- Surveillance analyses conducted: 25

Important projects

- The FETP-MAE program led to the initiation of an MPH program at the NIE-ICMR.
- Two outbreak investigation mentoring workshops were held for FETP graduates (in collaboration with WHO, CDC, and NICD).

Program independence/sustainability

The program is run entirely by NIE-ICMR staff on NIE-ICMR funds. The resident advisor only makes a 1–2 day monthly visit to the institution.

Outcomes

Malaria

FETP studies have been key in reducing malaria mortality in the district of Jalpaiguri in West Bengal. Those studies included a program evaluation and a case-control study to identify the risk factors for malaria deaths.

Avian Influenza (AI)

The first outbreak of AI in poultry was reported from Jalgaon, district of Maharashtra in 2006. Dr. Ravi Katti, MAE-FETP graduate 2005 and the state surveillance officer played a key role in the containment of the outbreak in the state. He is also a national trainer for state and district Rapid Response Teams for AI outbreak investigations.

The state of West Bengal is at an international crossroad and is key to AI surveillance in India. To combat the threat at its entry point, Dr. Asit Kumar Biswas, MAE-FETP graduate 2004, is assigned to the planning unit of the state public health department. He developed an extensive plan within the government system that now proposes to keep a watch on animal and human diseases.

Diphtheria

Starting with a basic mapping of cases, Dr. Sailaja Bitragunta, MAE-FETP graduate 2005, wanted to understand the persistence of diphtheria in Hyderabad. She combined descriptive epidemiology, a coverage survey, and a case-control study, and concluded that boosters are key for protection among children 5 years of age and above.

This was particularly true for minorities who initially participate in immunization activities but get lost to follow up. On the basis of this evidence, additional resources were invested to increase booster coverage, which is now considered a key monitoring and evaluation indicator.

Female health workers

As a former manager, Dr. Dipankar Maji, MAE-FETP graduate 2006, did not like to see tasks passed on to the sub-centers where over-burdened female health workers constitute the final common pathway of the Indian health system.

To improve their effectiveness, he systematically compared those who performed well with others who did not. His findings suggest that some key elements are essential for success, including sufficient floor space, arrangements for privacy, and supportive supervision. His study also documented that inefficiency in the heavy documentation process may be an obstacle to health services delivery and should be addressed.

Accomplishment

Two FETP graduates (Himachal Pradesh and West Bengal) were appointed as state surveillance officers.

Conferences and publications

- EIS Conference, Atlanta: 1 oral presentation, 1 poster
- TEPHINET Global Scientific Conference, Malaysia: 9 oral presentations, 21 posters
- Seven articles published in scientific journals

NEW DELHI FETP

Program description

The India FETP in New Delhi was started in 2006 as a degree-granting program, offering an MPH in Field Epidemiology. This program is within the framework of the MOH, in the National Institute for Communicable Diseases (NICD).

It takes in recent graduates with a medical degree, typically in their late 20s and from the central and northern region of India, and provides them with a 2-year training program and a degree. Non-medical trainees are also accepted in the program (e.g., laboratory specialists, engineers in biotechnology). Originally, the program was structured more like an MPH program than a classic "training through service" FETP. However, a curriculum revision process in 2008 led to changes that will create a hybrid between a full FETP and an MPH.

Team members

Atlanta-based staff

- Ronald Moolenaar, Team Lead
- Nabil Ahmed, Public Health Advisor

India-based staff

- Yvan Hutin, WHO Resident Advisor
- Dr. Shiv Lal, Director, NICD

Partners

- NICD
- U.S. Embassy New Delhi, Science Section
- WHO India and WHO SEARO, New Delhi

Strengthened public health workforce

A total of 25 graduates are in the health system as of December 2008.

Training 2008

The program had 22 trainees in 2008. There are 35 graduates, 25 of whom work in the MOH. NICD engaged in a 2-week program for district-level epidemiologists on the basis of a competency matrix that is consistent with the 2-year program. See the website at http://nicd.nic.in/IDSP_Docs/IDSP2WKDSOSept08/index2.htm.

Program independence/sustainability

The program is fully funded and staffed through government of India funding.

Monitoring and evaluation activities

An exit survey of graduates was conducted to evaluate the program and guide the curriculum revision process.

Outcome

Graduates of the program work with the Integrated Disease Surveillance Project at the central level.

Other accomplishment

The curriculum was revised.

Conference

TEPHINET Global Scientific Conference, Malaysia: 1 oral presentation, 3 posters✦

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 the use of data at all levels of the MOH. Two main applied public health training programs were started: the 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 a widened scope of work in response to MOH needs and priorities. During phase II, JSP continued to build capacity for the MOH through FETP and DDM activities and strengthened 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), worked on strengthening the surveillance of communicable and non-communicable diseases, including mortality surveillance and BRFSS. FETP and DDM continued to represent strategies to improve human capacity in the MOH and graduates of the training programs supported the projects and priority efforts of the MOH in strengthening existing systems and developing new ones. In 2008, JAEP moved forward in institutionalizing its functions, a cooperative agreement was put in place and funded, and the resident advisor departed in May.

Team members

Atlanta-based staff

- Bassam Jarrar, Team Lead
- Senia Espinosa, Instructional Designer
- Judy Berry, Program Analyst

Jordan-based staff

- Russell Gerber, Resident Advisor (until May 2008)
- Mohannad Al-Nsour, FETP Coordinator

Partners

- Jordan MOH
- USAID
- CDC's National Center for Chronic Disease Prevention and Health Promotion
- CDC's National Center for Health Statistics
- WHO-Iraq Office

Strengthened public health workforce

The program had 8 trainees in 2008. There are 29 graduates and 24 of them are employed by the MOH at the local and central level. Many hold key posts in the MOH. One graduate is working as the FETP coordinator.

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 8
- Planned (protocol-based) studies conducted and completed: 3
- Surveillance evaluations conducted: 4
- Surveillance analyses conducted: 4

Training 2008

- Continuing education for heads of the surveillance units in the governorates (22 trainees)
- Public health inspectors (3 workers, a total of 75 trainees)
- Participated in workshops with the Jordan FDA for heads of Surveillance, Environment and Water Departments in the governorates (100 trainees)
- Disease reporting, surveillance and response for emergency room physicians, 3 workshops (80 trainees)
- Zoonotic disease for public health physicians in coordination with WHO (3 workshops)
- Pandemic influenza exercise for government sector in MOH, MOA, and municipalities

Important project

The program has an electronic Epi bulletin available at www.dcd.gov.jo/EReport.asp.

Program independence/sustainability

The program is fully institutionalized at the Directorate of Primary Health Care. A cooperative agreement with CDC was put in place in 2008.

Conferences and publication

- TEPHINET Global Scientific Conference, Malaysia: 4 oral presentations, 8 posters
- BRFSS Conference. Orlando: 9 posters
- One article published in *MMWR* (Thallium Poisoning from Eating Contaminated Cake – Iraq, 2008. *MMWR*; 1016, September 19, 2008)✦

Program description

The Kenya FELTP is designed to strengthen the epidemiology and laboratory management capacity of Kenya and East Africa to meet the challenges of emerging infectious diseases and other public health problems.

The program is a Masters degree awarding program in applied epidemiology and public health laboratory management. It uses CDC's existing infrastructure investments for emerging infectious diseases in Kenya and supports national and regional surveillance and response capacity.

This program was the first of its kind, coupling a laboratory management component with the established applied epidemiology curriculum into a degree granting program. It is a regional platform for training of field epidemiologists and laboratory managers that covers Ghana, Kenya, South Sudan, Tanzania, and Uganda.

Team members

Atlanta-based staff

- Donna Jones, Team Lead
- Michele Evering-Watley, Instructional Designer
- Juliette Mannie, Program Analyst
- Jim Vaughan, Health Education Specialist
- Andrew Weathers, Public Health Advisor

Kenya-based staff

- Myat Htoo Razak, Epidemiology Resident Advisor
- Joe Oundo, Laboratory Resident Advisor
- Kariuki Njenga, Laboratory Resident Advisor
- David Mutonga, Field Coordinator
- Ahmed Abade, Field Coordinator
- Eric Muchiri, FETP Director

Partners

- Kenya MOH
- Jomo Kenyatta University of Agriculture and Technology/ Institute for Tropical Medicine and Infectious Diseases
- Kenya Medical Research Institute
- CDC Kenya
- MOHs for Tanzania, Ghana, Uganda, and South Sudan
- African Field Epidemiology Network (AFENET)
- CDC Foundation
- Ellison Medical Foundation
- USAID

Strengthened public health workforce

As of 2008, the program has 27 residents. There are 25 graduates, most of whom work for the MOH.

David Mutonga and Ahmed Abede are graduates of the second and third cohorts respectively and now serve as field coordinators for the Kenya program. Additionally, the program has provided staff for the Nigeria FELTP: Dr. Patrick Nguku of the first cohort is the resident advisor in Nigeria. Three Tanzanian graduates are serving as staff for the Tanzania FELTP.

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 7
- Planned (protocol-based) studies conducted and completed: 12
- Surveillance evaluations conducted: 14
- Surveillance analysis conducted: 1

Training 2008

Residents participated in Integrated Disease Surveillance and Response (IDSR) training: four as trainees and two as trainers (a total of 54 trained by them).

Important projects

During the post-election violence in January and February 2008, residents provided services to the communities they were assigned to. Some of them had to be relocated for their personal safety due to the continuing violence.

All Kenyan residents participated in assessment of the impact of post-election violence on health services under the guidance of the MOH. One resident conducted her thesis project on the impact of post-election violence on HIV/AIDS services in Kenya in collaboration with the MOH, CDC Global AIDS Program (GAP), and CDC Kenya.

The program has a publication entitled *Ministry of Public Health and Sanitation Weekly Epidemiologic Bulletin.* There were 52 issues published in 2008.

Program independence/sustainability

The MOH has assigned one more full-time field coordinator (for lab track) in addition to the current full-time field coordinator (for epidemiology track) to the FELTP. There is a plan to support tuition fees for at least one incoming FELTP resident by the MOH.

Outcome

Evaluation of the surveillance system of multi-drug resistant TB by a resident has brought this issue to the attention of national policy makers to improve the surveillance as well as intervention programs in Kenya.

Conferences

- EID Conference, Atlanta: 1 oral presentation
- EIS Conference. Atlanta: 1 poster
- TEPHINET Global Scientific Conference, Malaysia: 1 oral presentation, 8 posters✦

Program description

Communicable diseases remain a major concern in South Sudan. The main causes of morbidity and mortality are infectious and parasitic diseases including diarrheal diseases, malaria, measles, acute respiratory infections, and viral diseases.

South Sudan shares the largest (80%) burden of the total guinea-worm cases worldwide. Other diseases like sleeping sickness and leishmaniasis are endemic in certain parts of the country. Except for the progress in the surveillance and eradication of polio, detection and registering of other disease syndromes has yet to be improved.

In recognition of the urgent need to build surveillance functions for the control of communicable diseases, the MOH of the Government of South Sudan (GOSS) made a decision to adopt and implement the IDSR approach in South Sudan.

The initial activities included sensitization of MOH staff and partners on IDSR and establishment of IDSR. To accelerate the implementation process of IDSR, the MOH requested CDC's technical assistance in the assessment of the national communicable disease surveillance and the development of a plan of action for South Sudan. An assessment was done in July 2006 and a plan of action was developed and adopted.

Communicable diseases continue to be a major threat to the health development in South Sudan. The complex and recurrent epidemics are claiming hundreds of lives every year. The economic and development impact of these epidemics is evident through analysis of various indicators, including health. Despite efforts to contain and control communicable diseases, the activities for control and response are met with various challenges.

AFENET, with support from CDC, continues to assist the GOSS in disease control and has been implementing one of the health policy focus areas: technical support to the Epidemiology and Surveillance Department in the Directorate of Preventive Medicine, State and County Health Departments through strengthening field epidemiology, communicable diseases surveillance, and improving disease outbreaks.

Team members

Atlanta-based staff

- Andrew Weathers, Public Health Advisor
- Italia Rolle, Epidemiologist

South Sudan-based staff

Allan Mpairwe, Surveillance Officer

Partners

- MOH-GOSS
- USAID/Sudan Field Office
- AFENET
- CDC Kenya (International Emerging Infections Program, Refugee Health, GAP)
- WHO

Activities

AFENET posted an epidemiologist in the MOH Epidemiology and Surveillance Department who has continued to support the implementation of the IDSR activities in South Sudan. The medical epidemiologist also doubles as the national focal point for AFENET.

Timely response to outbreaks

The epidemiologist has actively participated in all the outbreaks in South Sudan. AFENET is a member of the National Epidemic and Response (EPR) task force that meets weekly. The EPR is responsible for preparing guidelines and plans for outbreak response, coordinating donor and agency assistance, ensuring adequate supply of drugs and medical supplies, providing technical assistance for outbreak control, advising all levels on best approaches to control outbreaks, providing feedback to the community, and declaring outbreaks.

Below are some of the outbreaks in which the epidemiologist has actively participated:

- Meningitis outbreak in Lobone Payam, Torit County Eastern Equatorial State (EES)
- Cholera outbreak in Owinyi Kibul, Magwi County, EES
- Measles outbreak in Central Equatorial State
- Suspected Viral Hemorrhagic Fever, EES
- Measles outbreak in Kapoeta County, EES
- Cholera outbreak in Parakok, Magwi County, EES
- Cholera outbreak in Juba County, Central Equatorial State

Support to the FELTP

The South Sudan FELTP continues to get both financial and technical support from AFENET. The residential premises of the residents was supported by AFENET this year, which provided a convenient environment for the residents to concentrate on their studies.

Currently, the position of the field supervisor is vacant and the AFENET epidemiologist has been performing this function. The epidemiologist continues to give the residents technical support during field work and outbreak response, review of their protocols and proposals, data analysis and presentation skills among others. This has greatly improved the level of team work in the Department of Epidemiology and Surveillance.

Training 2008

- **Development of guidelines and standard operating procedures (SOPs):** The AFENET epidemiologist participated in the workshop that was organized by the WHO Juba to train health workers on the SOPs on

enhanced surveillance for meningitis in Juba. One of the major outputs of this workshop was the development of EPR plans for the state and national levels for meningitis outbreaks.

- **IDSR training of health workers:** The training workshops on IDSR were organized by state MOHs in collaboration with MOH-GOSS and WHO. These have been conducted in 7 of the 10 states of South Sudan (i.e., Central, Western, Eastern Equatorial, Lakes, Warrap, Unity, and Bentui). Preparations for the states of Jonglei, Northern, and Western Bahar Garzal are underway, and AFENET is actively involved in the preparation of materials and training guidelines. The trainings are yet to be rolled out to cover training at county level. Refresher trainings are planned to cover all states. A total of 252 health workers from all implementing agencies of health and stakeholders involved in health service provision benefited from the trainings. Another 60 people have been trained during outbreak onsite trainings. These workshops were held in recognition of the need to implement IDSR tools and build the capacity of surveillance officers in order to strengthen the surveillance network in all counties. Most of the participants who attended the IDSR trainings were healthcare providers working in different health facilities because they are usually the first contact point with patients and the health facility is the most important level for disease detection and response. Therefore, healthcare providers at the peripheral level play an important role in disease surveillance and they need to be trained on IDSR.

Next steps and future plans

- Complete the preparation of the initial work plan for the AI and other Zoonotic Infections Project (AIZIP) activities
- Facilitate the national stakeholders conference on the AI situation analysis and participate in the development of a preparedness plan for the AIZIP response (tailored to human health) and activities in South Sudan
- Complete the training of the three states in IDSR and roll out the training to cover the counties
- Publish the initial surveillance bulletin of IDSR in South Sudan
- Complete the establishment of the electronic IDSR system database in the Directorate of Preventive Medicine; CDC has pledged to send a consultant to assist in this activity
- Sign a Memorandum of Understanding (MOU) between the MOH and AFENET and have AFENET registered in South Sudan
- Identify a focal point at the MOH to act as a resident field supervisor for the residents
- Establish a Certificate Program in Epidemiology and Laboratory Management through the University of Juba✦

Program description

The 2-year training program is one component of a broader CDC effort to strengthen Pakistan's disease surveillance and response capacity.

The FELTP is helping to implement the Pakistan National Plan of Action for Surveillance, focusing on the country's self-identified priority diseases such as influenza, hepatitis, and polio. To strengthen Pakistan's surveillance and response capabilities, the FELTP is working to revise the legal framework for surveillance, demonstrate best practices in surveillance methodologies, develop an electronic information management system, and establish quality laboratory testing for hepatitis and influenza. These systems, and the lessons learned, will then be expanded to address other priority diseases.

Following is a more detailed description of each of the Pakistan FELTP components.

- **Pakistan FELTP.** The training program in field epidemiology currently includes 19 residents employed by the MOH from all provinces, federally administered areas, and national programs. The FELTP has been accredited by the University of Health Sciences in Lahore and Quaid e Azam University in Islamabad, and graduates will receive a Masters degree in Field Epidemiology. The first cohort of residents will graduate in the summer/fall of 2009.
- **Viral Hepatitis** is identified as a priority under the Prime Minister's National Plan for Hepatitis. In support of this plan, the FELTP is establishing hospital-based sentinel surveillance in five pilot sites in Islamabad, Peshawar, Lahore, Karachi, and Quetta. The FELTP is in the process of hiring medical officers and laboratorians at each of the pilot sites to coordinate data and sample collection, analysis, and reporting.
- **Legal Framework for Surveillance.** CDC, WHO, and the MOH are developing a legal framework for disease surveillance in Pakistan in light of the revised International Health Regulations (IHR). A stakeholders' meeting will be held in Islamabad in March 2009 to discuss this project, the goal of which is to draft legislation that will be submitted to the Government of Pakistan for incorporation into the proposed integrated disease surveillance system.
- **Laboratory Quality Systems.** In response to an identified need established during a surveillance assessment conducted in 2004, the National Institute of Health (NIH) of Pakistan has proposed to establish a public health laboratory network. In support of this network, the FELTP conducted a Laboratory Quality Assurance and Bio-Safety Practices course in Lahore in February 2008. Laboratorians are being hired to perform quality diagnostic testing for influenza and hepatitis at each of the pilot sites for the laboratory network.
- **Informatics.** CDC has deployed an electronic disease surveillance system at five pilot sites using established surveillance protocols for hepatitis and influenza. Following a pilot period, the system will be reviewed and improved based on feedback from medical officers and laboratorians on the ground. If the system proves useful, 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 in order to build respiratory disease surveillance, the FELTP is working with CDC's National Center for Immunization and Respiratory Diseases (NCIRD) and the MOH to measure the disease burden of influenza through sentinel site surveillance and is establishing a population-based early warning system for pandemic and/or AI. CDC is also supporting the MOH in establishing Epidemic Investigation Cells (EIC) 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.

Team members

Atlanta-based staff

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

Pakistan-based staff

Rana Jawad Ashgar, Resident Advisor

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's NCIRD
- CDC National Center for HIV, Viral Hepatitis, STD, and TB Prevention (NCHHSTP)
- CDC's Division of Laboratory Systems
- USAID

Strengthened public health workforce

The program has 19 trainees. Positions of trainees in the health system as of December 31, 2008 are as follows:

- Director, National Epidemic Investigation Cell, NIH, Pakistan/Focal person from MOH on IHR
- Director, Epidemic Investigation Cell, Northwest Frontier Province (NWFP)
- Senior Manager, Seriology, National HIV /STI Referral Laboratories, National AIDS Control Program
- Two Assistant Professors, Bannu Medical College, NWFP

- Provincial Master Trainer, Sindh Integrated Management of Childhood Illnesses, Sindh
- Provincial Deputy Coordinator, Health Management Information System, Balochistan
- Technical Officer-Health, Inspector General Prisons, Punjab Province
- Non-governmental organization (NGO) Training and Research Coordinator, Provincial AIDS Control Program, NWFP
- Deputy District Health Officer Quetta, Balochistan

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 6
- Surveillance evaluations conducted: 8

Training 2008

- Surveillance and Response for NIH and provincial MOH staff, Islamabad
- Laboratory Quality Assurance and Bio-Safety Practices course for national and provincial laboratorians, Lahore
- Joint Animal/Human Health Forum, Islamabad
- National Influenza Laboratory-Based Surveillance course, Lahore

Program independence/sustainability

- Salaries, travel, and per diem for FELTP residents and for participants of screening courses have been provided by national and provincial departments of health.
- In 4 to 5 years, trained Pakistan MOH officials will assume responsibility for the FELTP.

Monitoring/evaluation activities 2008

- The FELTP conducts regular field visits to determine residents' progress toward completion of their competency projects.
- Residents provide weekly performance reports through e-mail.
- Field supervisors evaluate residents' performance twice a year.
- Resident information is captured in an Access database and reviewed by the resident advisor and other staff on a regular basis.

Outcomes

Improvement in surveillance programs

The FELTP has worked with the National Hepatitis Control Program to help develop a data reporting form for acute viral hepatitis. In addition, the program is working with an informatics contractor to develop a flexible-form database that may be expanded to other priority diseases within the integrated surveillance system.

Improved management of acute health events/ emergency investigations

The FELTP is providing technical advice on the establishment of EICs at the national and provincial levels. To date, cells have been established at the national level and within one province. There are plans to expand these cells to all provinces.

Creation or improvement in a public health policy or regulation

In conjunction with WHO, the FELTP is working with legal, health, and government stakeholders to review the existing legislation for public health surveillance in Pakistan. A review has been conducted and recommendations are being formulated for the development of a revised legal framework for surveillance

Conferences

- TEPHINET Global Scientific Conference, Malaysia: 2 posters
- International Congress on Infectious Diseases, Kuala Lumpur, Malaysia: 3 posters✦

Program description

Established in 2006, the South Africa Field Epidemiology and Laboratory Training Program (SAFELTP) was developed to address the increasing burden of infectious and non-infectious diseases in South Africa.

The primary objective of the SAFELTP is to train public health leaders in applied epidemiology and public health laboratory practice to provide public health service to the national and sub-national health authorities in South Africa.

The SAFELTP is ideally suited for building public health capacity by 1) serving the government at the national, provincial, district, and local levels while undergoing training; 2) creating and training a core group of public health workers and leaders to support the South African public health system; and 3) strengthening the capacity of South Africa in applied epidemiology, laboratory, and management across public health institutions.

The program is supported with funds from the President's Emergency Plan for AIDS Relief (PEPFAR) and support from the National Health Laboratory Service (NHLS), National Institute of Communicable Diseases (NICD), and the Departments of Health (DOH) in terms of salaries, administrative assistance, office space, training rooms, laboratories, equipment, and supplies. The program has 19 trainees and the first cohort will graduate in 2009.

Team members

Atlanta-based staff

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

South Africa-based staff

- Chris Tetteh, Epidemiology Resident Advisor
- Faustine Ndugulile, Laboratory Resident Advisor
- Bernice Harris, Program Director
- Elizabeth Prentice, Laboratory Coordinator
- Khin San Tint, Epidemiology Coordinator
- Barbara Temane, Administrative Assistant

Partners

- CDC South Africa
- NICD
- National Department of Health (nDOH)
- Provincial Departments of Health (pDOH)
- NHLS
- University of Pretoria
- CDC's NCHHSTP, International Laboratory Branch

Investigations/surveillance projects 2008

- Outbreak or emergency investigations conducted and completed: 19
- Planned (protocol-based) studies conducted and completed: 10
- Surveillance evaluations conducted: 13
- Surveillance analyses conducted: 6

Training 2008

- Field Epidemiology: Principles and Practice Interactive Short Course; 50 participants from provincial, district, and sub-district health departments and from NHLS and NICD
- Epidemiology, Research Methodology and Monitoring and Evaluation; 30 participants from pDOH

Important project

The SAFELTP is a contributing author to the bulletin entitled *Communicable Diseases Surveillance Bulletin.* Number of issues in 2008: 12.

Program independence/sustainability

The program is based in NICD. A memorandum of agreement has been drafted but not signed. In the 3rd cohort of residents, all but one has been sponsored by either DOH or NHLS.

Monitoring/evaluation activities 2008

- EpiTrack has been installed and limited data have been entered.
- The program conducted a SWOT analysis, which was used as a basis for identifying gaps in the program.
- The program conducted a retreat, with representatives from DOH, to review activities and define a plan for future activities.

Other accomplishments

- The John Snow Award for Outbreak Investigation from the TEPHINET Global Scientific Conference, Malaysia, went to Brett Archer.
- The best poster presentation from the TEPHINET Global Scientific Conference went to Tebogo Mamahlodi.

Conferences and publications

- TEPHINET Global Scientific Conference, Malaysia: 2 oral presentations, 5 posters
- NICD Academic Day, Johannesburg: 2 oral presentations, 15 posters
- 4th Public Health Association of South Africa Conference, Cape Town: 3 oral presentations
- Three articles published in scientific journals✦

Section 2 • FELTPs in Development

Program description

The Central Africa FELTP (CAFELTP) is one component of a larger project funded through the Bill and Melinda Gates Foundation 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 vaccines preventable diseases and poor outbreak investigation, have been 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 objectives of the CAFELTP are to

- Strengthen surveillance and response capacity and quality through training and infrastructure improvements,
- Implement a quality surveillance and response program for vaccine preventable diseases/syndromes, including laboratory capacity, networks, and data management systems, and
- Strengthen communication and develop capacity for advocacy to ensure that these efforts are assumed by the MOHs in the targeted countries.

Veterinary epidemiologists will be trained along with public health professionals 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 animal health sectors.

In addition to the core curriculum, resident will have the option to concentrate in field epidemiology, public health laboratory, or veterinary epidemiology based on their qualifications.

Team members

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

Partners

- Bill and Melinda Gates Foundation
- WHO Geneva, Lyon, and Regional Office for Africa (AFRO)
- CDC Foundation
- CDC's National Center for Immunization and Respiratory Diseases

Accomplishments

On October 28, 2008, the Bill and Melinda Gates Foundation officially awarded a grant to the CDC Foundation to conduct immunizations, integrated disease surveillance and response, laboratory capacity development, and field epidemiology and laboratory training in the Central African region.

The following activities occurred in 2008:

- The CDC Foundation organized the first steering committee meeting in Atlanta on December 9–10.
- A management team was formed comprised of key staff from each of the partner organizations.
- The management team developed a Project Management Charter to define the roles of the partners and key team members, establish initial timelines for meetings and their purpose, establish guidelines governing interactions between programs, and create a mandate for the development of country specific plans.

Next steps and future plans

The official start date for the Gates grant is January 1, 2009. For all of the partners, including the FELTP, 2009 is a planning and program development year with implementation of most activities beginning in 2010. The major activities planned for 2009 are

- A desk review and short listing to select three of the five countries in the region where the program will first be implemented,
- Conduct management team and steering committee meetings in Brazzaville in April 2009,
- Conduct pre-assessment and assessment of the participating countries to determine the level of support for the FELTP from MOHs and institutions in the countries,
- Select a host country for the FELTP and plan meetings with the MOH, universities, labs, and other partners to develop the implementation plan and curriculum, and
- Recruit and hire the resident advisors, field coordinators, and other program staff for the FELTP.✦

Program description

Ethiopia will start the FELTP in February 2009. The Ethiopia FELTP (EFELTP) will be a 2-year, full-time, postgraduate competency-based training program consisting of 25% class work and 75% field residency.

Trainees will be closely supervised and provide epidemiologic service to the MOH. Graduates will receive an MPH in Field Epidemiology. CDC has identified funding for the program. The program will join AFENET, through which it can exchange experiences and collaborate with similar programs of other countries in the region.

Team members

Atlanta-based staff

- Donna Jones, Team Lead
- Wayne Brown, Public Health Advisor
- Michele Evering-Watley, Instructional Designer
- Kenneth Johnson, Public Health Advisor
- Italia Rolle, Epidemiologist

Ethiopia-based staff

Richard Luce, Resident Advisor

Partners

- Ethiopian Federal MOH
- Ethiopian Public Health Association
- Addis Ababa University
- CDC GAP Ethiopia

Accomplishments

- Completed planning for EFELTP
- Assigned resident advisor to Ethiopia
- Recruited the first class of EFELTP from all regions

Other projects

Leadership in Strategic Information (LSI)

LSI is a year-long in-service training that emphasizes learning the skills needed to make programmatic decisions based on current data. The target audience for LSI is health professionals that are currently working in HIV/AIDS.

The first training cohort was completed in 2007 with graduation and project presentations being held in 2008 with and evaluation of the program completed at that time. Since then the program has been revised and planning has occurred for the next cohort to begin in Spring 2009.

Next steps and future plans

- Appoint first cohort of EFELTP officers
- Begin program
- Finalize integration of program into the MOH
- Identify and support field sites for EFELTP officers

The division is also working with the MOH and CDC GAP on management capacity building programs (see page 37 for more information).✦

Program description

The Nigeria FELTP was established in 2008 as a long-term ongoing training program providing public health epidemiology service to the Nigerian Federal MOH (FMOH), the Federal Ministry of Agriculture and Water Resources (FMAWR), and respective state ministries.

Training public health epidemiology fellows, public health laboratory fellows, and veterinary epidemiology fellows for leadership positions in both ministries, the Nigeria FELTP is the first FELTP to offer a distinct track for veterinary epidemiology. The Nigeria FELTP works towards improving public health systems within Nigeria through training, increasing collaborations, and strengthening linkages between epidemiologists and laboratorians, as well as through linkages between human and animal health sectors.

Nigeria's Ahmadu Bello University (ABU) and the University of Ibadan (UI) will provide a Masters degree upon successful completion of the FELTP.

The program is being sustained primarily through support from USAID and PEPFAR.

To address the need for training veterinarians, CDC's DGPHCD collaborates with the National Center for Zoonotic, Vector-Borne, and Enteric Diseases (NCZVED). The goals of this collaboration are to provide technical support to the Nigerian FMOH and FMAWR to enhance the quantity and quality of applied epidemiology training with an emphasis on zoonotic diseases, especially AI; and enhance disease specific program monitoring and evaluation leading to evidence-based decisions for the overall improvement of public health practice in Nigeria.

The FELTP has 13 fellows in its first cohort (6 field epidemiologists, 4 veterinary epidemiologists, and 3 public health laboratorians).

Team members

Atlanta-based staff

- Peter Nsubuga, Team Lead
- Michele Evering-Watley, Instructional Designer
- Kenneth Johnson, Public Health Advisor
- Nykiconia Preacely, EIS officer

Nigeria-based staff

- Patrick Nguku, Resident Advisor
- Samuel Ngobua, CDC-Nigeria
- Obinna Oleribe, CDC-Nigeria

Partners

- FMOH
- FMAWR
- CDC's NCZVED
- USAID
- AFENET
- ABU
- UI

Investigation/surveillance activity 2008

- Planned (protocol-based) study conducted and completed: 1

Training 2008

The program conducted four short courses (two Outbreak Investigation courses and two HIV/TB courses) and 139 people trained in all four courses, as follows:

- Outbreak Investigation course conducted in Zaria: 36 participants
- Outbreak Investigation course conducted in Enugu: 35 participants
- HIV/TB short course conducted in Jos: 37 participants
- HIV/TB short course conducted in Sokoto: 31 participants

The division also works with the MOH on neglected tropical diseases (see page 40 for more information).✦

Program description

At the request of the Government of Rwanda, CDC is in the process of planning and implementing an FELTP.

The Rwanda FELTP is a 2-year full-time 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 and Animals (MOAA).

Residents will provide service to the MOH, Treatment and Research AIDS Center (TRAC Plus), National Reference Laboratory (NRL), District Hospitals and Health Services, and the Rwanda Animal Resources Development Authority (RARDA) during their training through field placements.

The program is sponsored by PEPFAR and technical assistance is provided by CDC and AFENET.

Team members

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

Partners

- Rwanda MOH
- Rwanda MOAA
- TRAC Plus
- NRL
- National University of Rwanda–School of Public Health (NURSPH)
- AFENET
- CDC Rwanda

Accomplishments

- A pre-assessment visit was done to meet with various stakeholders within the MOH and affiliated institutions (TRAC Plus, NRL, RARDA, NURSPH, KTI, WHO, and CDC Rwanda) that support the public health system in Rwanda.
- An assessment and planning visit was done to assess field sites at the national, regional, and district levels. A steering committee meeting was held to discuss planning activities related to the program, and a series of stakeholder sessions were held to discuss implementation activities with in-country partners.

Next steps and future plans

- Initiate Letter of Understanding: the partners included in the letter will be TRAC Plus, RARDA, NURSPH, and CDC (Atlanta and Rwanda)
- Curriculum Development Workshop (March): in preparation for accreditation of the program, a curriculum development workshop will be conducted with NURSPH
- Outbreak Investigation and Response Short Course #1 (March): the 2-week course will be held for national and district level epidemiologists, veterinarians, and laboratorians
- Outbreak Investigation and Response Short Course #2 (July): the second course will concentrate on presentation of results from the field projects, along with additional instruction on surveillance implementation and evaluation
- Advertise, recruit and select residents of the FELTP (August): in preparation for the intake of the first cohort of residents in January 2010, the FELTP will advertise the program amongst national and district level health departments to generate applications from potential candidates
- Identify and select field sites for placements of FELTP residents (September): the program will identify potential field sites for the residents and travel to these sites to conduct a site inspection
- Finalize accreditation with NURSPH (September): the accreditation proposal will be submitted and approved by NURSPH

The division also works in management capacity building (see page 41 for more information).✦

Program description

The Georgia/South Caucasus FELTP (SC-FELTP) will be established in 2009 and will start its first class of 11 trainees in May 2009.

The Georgia MOH, the National Center for Disease Control (NCDC), the Georgia Ministry of Agriculture (MOA), and the Azerbaijan MOA have signed MOUs with CDC (the MOH of Azerbaijan is expected to sign by May 2009). Discussions with the MOA and MOH of Armenia are underway.

The SC-FELTP is linked to a modular style laboratory quality systems and management development program, with collaboration from CDC's Division of Laboratory Systems and DGPHCD.

Team members

Atlanta-based staff

- Edmond Maes, Team Lead
- Russell Gerber, Epidemiologist
- Naile Malakmadze, Assistant Epidemiology Advisor
- Hiari Imara, Public Health Advisor
- Judy Berry, Program Analyst

Georgia-based staff

Edmond Maes, Resident Advisor (relocation in May 2009)

Partners

- Georgia NCDC, MOH, MOA
- Azerbaijan MOH, MOA
- Armenia MOH, MOA (pending)

Training 2008

The introductory training is scheduled to start in May 2009.

Program independence/sustainability

- NCDC of Georgia provides office and classroom space for the program.
- MOUs were signed with Georgia NCDC, MOH, MOA, and with Azerbaijan MOA (MOH pending).
- The Georgia Advisory Committee was formed with representation from MOH, MOA, NCDC, WHO, USAID, and DTRA.

The division also works in management of laboratory systems (see page 38 for more information).✦

Program description

The Tanzania Field Epidemiology and Laboratory Training Program (TFELTP) was officially established in October 2008. It is located in Dar es Salaam.

The TFELTP is a 2-year service-based program that culminates with students receiving a Masters 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 targets physicians, public health practitioners, and laboratorians with at least 2 years of work experience. The program is structured in the following manner: formal didactic instruction which is taught by instructors from Muhimbili University, TFELTP staff, CDC Tanzania and CDC Atlanta staff, and practical hands-on field placement at the national and/or regional levels. Eleven trainees are currently enrolled in the program.

Team members

Atlanta-based staff

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

Tanzania-based staff

- Peter Mmbuji, Program Director
- Janneth Mghamba, Field Coordinator
- Mohamed Mohamed, Field Coordinator
- Fausta Mosha, Laboratory Resident Advisor
- Douglas Klauke, Epidemiology Resident Advisor
- Patrick Kamugumya, Program Administrator

Partners

- MOHSW
- Muhimbili University of Health and Allied Sciences National Institute for Medical Research
- CDC's GAP
- President's Malaria Initiative (PMI)
- AFENET
- WHO

Investigations and surveillance activities

- Outbreak or emergency investigation conducted and completed: 1
- Surveillance evaluations conducted: 11

Training 2008

In March, 12 participants representing a cross-section of surveillance, lab, and epi positions from the national, provincial, and district levels received 4 weeks of instruction in disease surveillance and outbreak investigations, completed a field project, and returned to Dar es Salaam to report on their activities and receive a certificate of completion.

Program independence/sustainability

The FELTP has been embraced by the MOHSW, the Muhimbili University of Health and Allied Sciences, and other partners. There is a functional Steering Committee and Management Team that holds regular meetings to discuss the progress of the program's implementation with the goal of creating a fully sustainable program.

Monitoring/evaluation activities 2008

The first course (5 weeks didactic) was evaluated by students using a survey. EpiTrack will be implemented in 2009 to track the students' progress.✦

Program description

The West Africa Field Epidemiology and Laboratory Training Program (WAFELTP) will be a 2-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). It will train Field Epidemiology Fellows and Public Health Laboratory Fellows for leadership positions in various levels of the MOH in their respective countries.

During their time in the program, trainees will provide service to their home MOH during their training through field placements. The program is sponsored by MDSC in partnership with the MOHs of Burkina Faso, Mali, Niger, and Togo, with technical assistance from CDC.

Although this regional program will begin with four member countries (Burkina Faso, Mali, Niger, and Togo), the plan is to expand to include other Francophone countries in Africa through a phased-approach once the program is well-established.

The field epidemiology component will be similar to programs that have been established in more than 25 other countries. The public health laboratory training component will be based on CDC's Emerging Infections Program which is a one-year applied laboratory training program. The didactic portion of the training will occur in Ouagadougou and the field portion of the training will occur in each fellow's country of origin.

Team members

Atlanta-based staff

- Peter Nsubuga, Team Lead
- Michele Evering-Watley, Instructional Designer
- Kenneth Johnson, Public Health Advisor
- Andrew Weathers, Public Health Advisor

Burkina Faso-based staff

Sennen Hounton, Program Coordinator (based in Ouagadougou)

Partners

- MOHs in Burkina Faso, Mali, Niger, and Togo
- USAID
- WHO-AFRO MDSC
- South Africa FELTP
- AFENET

Activities

Funding received from USAID was obtained to 1) hire a program coordinator, through AFENET, who is stationed at the WHO AFRO MDSC in Ouagadougou, and 2) to conduct a short course on meningitis surveillance, outbreak investigation and response, and EpiInfo.

The short course was held in May 2008 for 25 participants from the four initial countries—they spent 2 weeks in class in Ouagadougou and 3 months in their respective countries working on an applied learning project under supervision of the program coordinator. Participants presented their applied learning projects in October 2008 in a 2-day follow up meeting; participants included surveillance officers and public health laboratorians.

There are funds and plans to conduct another short course later in 2008. Further funding has been identified to send West Africa field epidemiology trainees to the South African FELTP to partake in the didactic component in South Africa interspersed with applied learning training at MDSC. These trainees will help with supervision of the subsequent WAFELTP trainees. The anticipated starting date for the first cohort is 2010.

Additionally, it is envisioned that the program will continue to seek new opportunities to expand and seek new partners that may enhance existing or new activities in the lab or veterinary areas (FELTP-like trainings and improving BSL-2 laboratory capacity) for the program.

Next steps and future plans

Advancing the status of the West Africa FELTP is a major goal for 2009. Activities to support this effort will include

- Hiring two resident advisors (field epidemiologist EIS or equivalently trained and a microbiologist) to start the program,
- Finalizing the curriculum for FELTP training with assistance from the University of Ouagadougou,
- Providing technical assistance in the review, harmonization, and dissemination of training curriculum for field epidemiology and laboratory practice, including both veterinary and human health components,
- Establishing a public health laboratory network. Efforts will include the strengthening of level-2 animal laboratories' diagnostic capacity, a systematic approach to receiving samples from level-1 laboratories, and transport of samples to reference laboratories. These activities are planned to be interlinked with existing activities in West Africa to further strengthen the regional laboratory network of the region.
- Working on efforts to improve the provision of coordinated communications in the public health laboratory system, between level-1 and level-2 labs, and between public health and animal health officials.✦

Section 3 • **Self-Sustained FETPs**

Program description

The FETP started in 1993 to strengthen the Ministry of Health and Population's (MOH&P) capacity to investigate disease outbreak and improve the surveillance system.

In May 2000, the program's success led to the formation of the Epidemiology and Surveillance Unit (ESU) which is responsible for disease surveillance, outbreak investigation and response, training, non-communicable disease surveillance, the Nile Cruise Boat Inspection, and the development of the National Egyptian Disease Surveillance System (NEDSS).

In 2004, the Egyptian Board of Applied Epidemiology was established to provide training to physicians who are interested in public health career.

The FETP has three main components:

- The distance-based FETP (from 27 Governorates; stopped enrollment in 2008)
- The central FETP (mainly from Cairo and Giza Governorates)
- The Egyptian Board of Applied Epidemiology Training Program (4 batches from 2004 to 2007)

During the past 15 years, the FETP has strengthened the ability of the MOH&P to perform such public health and applied epidemiology functions as disease surveillance, outbreak investigation, and rapid response. The FETP conducted many outbreak investigations, including Rift Valley Fever, typhoid, tetanus, and human rabies. For example, in 2003, the FETP did 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.

The FETP became a major organizational component of ESU. Many FETP graduates and trainees staff key positions at ESU. The program includes 2 years of FETP and 2 years of clinical rotation. The ESU conducted their first Behavioral Risk Factor Surveillance System (BRFSS) survey in 2004.

Team members

- Bassam Jarrar, Team Lead
- Tippavan Nagachinta, Medical Epidemiologist
- Hiari Imara, Public Health Advisor
- Michele Evering-Watley, Instructional Designer

Partners

- Egypt MOH&P
- U.S. Naval Medical Research Unit No. 3 (NAMRU-3)
- CDC's Global Disease Detection (GDD) program
- CDC's Division of Public Health and Informatics
- CDC's National Center for Environmental Health

Strengthened public health workforce

To date, the program has graduated 83 medical epidemiologists and 19 are now in training. Most of the graduates (56) remain in Egypt helping meet the country's public health needs. There have been no new enrollment in 2008 for distance-based and Egyptian Board programs.

The FETP provides career ladder for their graduates. Many FETP graduates are currently holding high positions within the MOH&P. Several graduates are working with international organizations, including WHO and NAMRU-3.

Investigations/surveillance projects 2008

Following the first outbreak of AI in Egypt in February 2006, the FETP plays a major role in outbreak investigation and control of AI. The comprehensive surveillance system for AI has been set up to rapidly identify new H5N1 human cases.

The FETP played a major role in the outbreak investigation of AI since the first human H5N1 case was notified in February 2006. As of December 2008, 59 cases of H5N1 have been confirmed, 23 have been fatal.

The MOH&P has set up new rapid surveillance system and ESU staff have trained numerous public health personnel at the governorate and district levels throughout Egypt.

Training 2008

A curriculum development workshop was held in Cairo in March, 2008.

Program independence/sustainability

The Egypt FETP is a sustainable program and received institutional support from the MOH&P. From the establishment of the ESU in 2000, the MOH&P allocated its annual funding in a line item of the national budget toward the institutionalization and sustainability of the FETP.

Outcomes

- Graduated 18 trainees in December 2008
- Received accreditation from the Egyptian Medical Council, making FETP graduates eligible for Board Certification in Applied Epidemiology

Conference

TEPHINET Global Scientific Conference, Malaysia: 1 oral presentation.

Next steps and future plans

- Collaborate with GDD/WHO-Regional Office for Eastern Mediterranean/NAMRU-3 partners to train more epidemiologists in the region
- Place a regional resident advisor in Cairo
- Continue to improve the quality of FETP training
- Assist FETP in training of new trainers and local supervisors✦

Program description

The University of Ghana School of Public Health, was established in 1994. The primary objectives of the School are to respond to the professional manpower needs of the MOH, address the numerous existing and emerging healthcare challenges facing the country, and train a wide range of public health professionals.

The School of Public Health is currently awarding a Masters of Public Health in Philosophy in Applied Epidemiology and Disease Control to graduates of Ghana's FELTP. This program began in October of 2007 as an outgrowth of previous assistance with applied epidemiology training.

Team members

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

Partners

- Ghana MOH
- University of Ghana School of Public Health
- USAID
- UN Foundation
- AFENET

Strengthened public health workforce

The program has five residents: one person from the reference lab, three epidemiologists, and one veterinarian. Cohort 1 residents are currently in their second year of the program. Eight residents have begun Cohort 2 in October 2008.

Activities

The division provided technical assistance to the FELTP despite receiving no specific funding for that purpose. Travel for technical staff to assist in program development, as well as the purchase of books, was supported during 2008.

Next steps and future plans

Funding to provide support for the 2-year FELTP was included in the 2008 Interagency Agreement with USAID. These funds will go to hiring resident advisors and support staff for the program, support the tuition and fees for residents, and provide funding for field activities by the residents and staff.

AFENET will be the primary implementing partner through which assistance is provided to the program.

The following activities are planned for 2009:

- Graduation of the first cohort,
- Recruitment and hiring of resident advisors through AFENET, and
- Recruitment, selection, and enrollment of the third cohort in October 2009.✦

Program description

In 1980, the Thailand Ministry of Public Health (MOPH), in collaboration with WHO and CDC, established the first FETP in Southeast Asia. After 30 years, the program is sustained by financial and managerial support from the Thailand MOPH, CDC, WHO, and USAID. In 1998, the program expanded its capacity by accepting trainees from the neighboring countries of Cambodia, Laos, Malaysia, Myanmar, Southern China, and Vietnam. In 2001, WHO designated the program as a WHO Collaborating Center.

Since its inception, the program has investigated many high-priority disease outbreaks. For example, FETP trainees played a key role in the MOPH response to the HIV/AIDS epidemic since the first case of AIDS was diagnosed in Thailand in 1987. The AIDS-related surveillance activities conducted by FETP trainees led to the creation of the U.S. CDC and Thailand MOPH HIV/AIDS collaboration in 1990. Recent examples of the program's ability to detect and respond to emerging diseases and public health threats are the SARS outbreak, the 2004 tsunami, and the ongoing AI outbreaks. The FETP led the initiation of new surveillance strategies to rapidly detect emerging diseases and health threats by setting up and training over 1,000 Surveillance and Rapid Response Teams throughout the country.

In response to the International Health Regulations, the 2004 tsunami, and ongoing emergence of AI, the MOPH increased the number of Thai FETP trainees and international trainees. To assist with the additional trainees and at the request of the MOPH, CDC assigned a technical advisor to Thailand in March 2006 to help the program enhance the quality of the field training, strengthen its international mentoring component, and assist with the development of new FETPs in Southeast Asia.

Team members

Atlanta-based staff

- Tippavan Nagachinta, Team Lead
- Nathalie Roberts, Public Health Advisor
- Senia Espinosa, Instructional Designer

Thailand-based staff

- Alden Henderson, Technical Advisor

Partners

- Thailand MOPH, Bureau of Epidemiology
- Thailand Ministry of Agriculture (MOA), Division of Livestock Development
- Thailand's MOPH-CDC collaboration
- CDC's International Emerging Infectious Program
- CDC's Immigrant and Refugee Health
- CDC GAP Thailand
- WHO/SEARO sub-unit Bangkok and WHO Western Pacific Region
- Yunnan CDC
- Food and Agriculture Organization (FAO)
- USAID
- Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy/Association of Southeast Asian Nations and the three East Asian nations of China, Japan and South Korea, and Mekong Basin Disease Surveillance (MBDS)
- Cambodia MOH
- Institut Pasteur, Cambodia
- Vietnam FETP
- Laos training program in field epidemiology
- The International Group of Epidemiology and Response (TIGER)

Strengthened public health workforce

As of December 2008, the FETP graduated 165 field epidemiologists (137 from Thailand and 28 from Cambodia, Laos, Malaysia, Myanmar, Southern China, and Vietnam). The program currently has 23 trainees (12 first year and 11 second year); five are from Cambodia, Vietnam, Malaysia and Southern China. The majority (68%) of Thai graduates still work at the MOPH.

Accomplishments and outcomes

In January 2008, the FETP organized a meeting attended by regional country partners, representatives from MBDS, the Asian Development Bank, WHO, and CDC. The goal of the meeting was to initiate TIGER, a regional network in South East Asia. TIGER was established to improve the capacity to conduct disease surveillance and respond, investigate, and control disease outbreaks that occur in Southeast Asian countries.

In June, TIGER received funds from the Global Health Security Initiative, Nuclear Threat Initiative (NTI). One of the TIGER objectives is to increase formal and informal scientific communication among country programs, including communication about the animal-human interface and zoonoses. The technical advisor is a member of the TIGER steering committee and is involved in oversight of their activities.

To increase rapid response capacity for each country in the network, a web-based publication called OSIR (Outbreak and Surveillance Investigation Report) was established to encourage and facilitate communication of public health information and disease reporting in Asia. The first issue was published in December 2008 and included articles on a cluster of enterovirus 71 fatalities, an evaluation of surveillance of mushroom poisoning, and a foodborne outbreak due to *Streptococcus suis*.

TIGER activities are coordinated with MBDS such as participating in a cross-border investigation along the Thai-Laos border, providing assistance to Cambodia, Laos, and Vietnam in establishing training programs in field epidemiology, and establishing collaborations with the Thai Department of Livestock Development to establish an FETP-

Veterinary program. Follow-up TIGER meetings were held at the regional MBDS Meeting in Cambodia in August and at the TEPHINET Global Scientific Conference in Malaysia.

In September, the first coordination meeting on the development of a 2-year international FETP for veterinarians (FETP-V) was organized by the FETP and the Division of Livestock Development (DLD), Thailand Ministry of Agriculture (MOA). This collaborative training project is currently supported by the MOPH, the MOA, FAO, and USAID.

The November meeting generated the vision, goal, and objectives, and a FETPV curriculum. FETPV is a collaborative effort to share resources with the Faculty of Veterinary Medicine from six universities (Mahidol, Kasetsart, Chiang Mai, Chulalongkorn, Khonkhaen, and Songkla-Nakarin).

Program independence/sustainability

After 30 years, the FETP is now well-sustained and well-anchored within the Thailand MOPH and receives its full support. The program also receives financial and managerial support from CDC, WHO, and USAID. In 2008, the MOPH, in collaboration with the Ministry of Agriculture, established the first FETP for veterinarians (FETP-V) in Southeast Asia. The first cohort of FETP-V trainees will begin in June 2009. Trainees will spend their first year with FETP trainees and receive field training from Department of Livestock Development staff. CDC will provide support and assistance in curriculum development for new FETPV training and field assignments.

Other accomplishments

- Conducted the 2008 Field Epidemiology course, which also serves as the FETP introductory course; there were 40 participants, including 11 new FETP trainees
- Graduated 9 FETP trainees (6 domestic and 3 international)
- A 2nd year trainee received the John Snow award at the TEPHINET Global Scientific Conference
- Finalized 2009 workplan in September 2008, which was approved by the MOPH

Conferences and publications

- TEPHINET Global Scientific Conference, Malaysia: 4 oral presentations, 5 posters
- 2008 European Scientific Conference on Applied Infectious Disease Epidemiology, Berlin, Germany: 3 oral presentations, 1 poster
- 17th International Safe Communities Conference, Christchurch, New Zealand: 1 oral presentation✦

Program description

The Zimbabwe MPH started in 1994 with a CDC-trained resident advisor and has been directed by a program graduate since 1996, Dr. Mufuta Tshimanga. It is a collaboration between the Zimbabwe Ministry of Child Health and Welfare (MCHW) and the University of Zimbabwe Department of Community Medicine (UZ DCM).

CDC became more actively involved in 2001 to support expansion of the public health training and to develop the HIV/AIDS module for the program using CDC GAP and USAID funding. The division has continued to support strengthening of the epidemiology and biostatistics training and the HIV/AIDS course that is taught yearly.

To date, an HIV/AIDS intervention course has been developed and has become a standard part of the curriculum, the number of student HIV-related projects has increased, as has the number of students, and the quality of their work.

The division has been providing technical support to the Zimbabwe MPH using a model of a long-distance or "virtual technical advisor." This has allowed the division to assist the program in strengthening their outputs (i.e., well-trained students, excellent student projects and reports/manuscripts) without the need for a CDC resident advisor. This model has allowed for both ongoing technical collaboration and increased oversight and transparency in the work to increase program quality.

FE(L)TPs in the planning stages have looked to Zimbabwe for leadership in how to establish an effective working relationship between MOHs and universities. Additionally, the program and Dr. Tshimanga serve a key role in the success of AFENET.

Team members

- Peter Nsubuga, Team Lead
- Donna Jones, Medical Epidemiologist

Partners

- UZ DCM
- CDC's GAP Zimbabwe
- Zimbabwe MCHW

Accomplishments

Ongoing mentoring and support of Zimbabwe student field activities

- Helped several trainees/graduates present oral and poster presentations at the TEPHINET Global Scientific Conference in Malaysia and the EIS Conference in Atlanta.
- Prepared and provided course materials for the Advanced Epidemiology module
- Continued support of EpiTrack for monitoring program/student progress
- Worked with staff to develop program for tracking project recommendations
- Worked with staff on developing new surveillance analysis activity

Conferences

Trainees presented abstracts at the TEPHINET Global Scientific Conference in Malaysia and the EIS Conference in Atlanta.

Next steps and future plans

The division plans to continue the same level of support as long as financial resources allow.✦

Section 4 • Management Capacity Building Programs

Program description

The African Field Epidemiology Network (AFENET) is an NGO that works with MOHs and other partners to strengthen epidemiology and laboratory capacity in Africa. In 2008, the division worked with the AFENET countries to implement plans to enhance management capacity.

The collaboration addresses the shortage of competent public health leaders and managers, the lack of use of data for decision-making, and a shortage of skills in monitoring and evaluation, which deter the effective operation of member countries' health systems. The key strategy is to develop capacity through competency-based training programs supported by mentoring and technical assistance.

Team members

- John Marsh, Team Lead
- Denise Traicoff, Health Education Specialist

Accomplishments and outcomes 2008

Of four planned activities for 2008, AFENET conducted three, with the division providing assistance. Political difficulties in Zimbabwe prevented a planned workshop there.

- **National Focal Point (NFP) training:** Kampala, Uganda. The goal of this workshop was to prepare AFENET NFPs for their key role in supporting the success of FELTPs in seven African counties by supporting disease control and implementing the new Avian Influenza and other Zoonotic Infections Project (AIZIP). The division assisted with design of the workshop, development of materials and evaluation instruments, instruction, and workshop evaluation analysis. There were seven participants.
- **Managers' course:** Accra, Ghana. This course was entitled Improving Management in Public Health Interventions (IMPHI). Its goal was to improve management and leadership skills of public health officials from the Ghana FETP, Ghana Health Services, and NGOs. The division assisted with design of the workshop, development of materials, and instruction. Twenty participants attended.
- **Establishment of a Center for Leadership and Management Development:** Accra, Ghana. Division support included development of a strategic plan and training of faculty at SMDP's Management for International Public Health course. A detailed curriculum was developed based on management competencies that were found to be lacking among public health managers in Ghana and the region.

Program independence/sustainability

The Center for Leadership and Management Development will ensure sustainability by

- Focusing on a regional need identified in partnership with WHO,
- Concentrating on applied learning and adult learning techniques,
- Remaining aligned with AFENET and with the Africa Leadership and Management Network,
- Accreditation of the program through the University of Ghana, and
- Providing Anglophone and Francophone courses.

Monitoring/evaluation activities 2008

Expected outcomes from these program are a workforce that is more results-oriented, more proactive at addressing public health challenges and which uses data to make decisions that improve public health services.

Examples of expected outcomes are improved hiring decisions, more effective advocacy of technical programs, stronger culture of leadership and leading change, and more frequent and higher quality health problem analyses.

Next steps and future plans

Plans for 2009 including launching the Center for Leadership and Management Development, with a course scheduled to begin in June that will focus on practical application of management and leadership skills. Three MIPH graduates employed at the University of Ghana and two others employed by AFENET will deliver the 2009 program with technical support from division staff.

The division is also working with AFENET on FELTPs (see page 44 for more information).✦

Program description

The 2008 Management for International Public Health course (MIPH) was conducted in Atlanta, Georgia, over five weeks in the fall. This course is part of the Sustainable Management Development Program (SMDP) mission to strengthen global public health management capacity in public health professionals. Thirty public health professionals from 17 countries around the world attended.

The goals of MIPH 2008 were to build practical knowledge and skills in key areas of public health management and leadership and enable participants to train others in program planning, project management, process improvement, and leading and managing people. Participants were taught to

- Plan and manage public health programs for maximum impact,
- Use a methodical approach to improve processes,
- Develop a project work plan,
- Improve teamwork and employee performance,
- Foster a supportive work environment,
- Monitor and evaluate a program or project,
- Train others effectively using adult learning principles, and
- Advocate their programs through strategic communication and leadership.

Accomplishments and outcomes

A number of innovations were introduced in MIPH 2008:

- A shorter course to accommodate busy work schedules
- A curriculum sharply focused on four key areas of management and leadership: program planning, project management, process improvement, performance management and leadership. Streamlined training materials and job aids to use in-country were introduced along with new modules in Performance Management and Values-Based Decision Making.
- A site visit to the Georgia Public Health Laboratory to observe processes and challenges of public health laboratory management
- Opportunities for participants to practice teaching
- Using methodology that has been implemented successfully with GAP, an experienced training specialist facilitated break-out sessions in which participants taught a 45–60 minute lesson and received feedback from their peers and the facilitator. For many this was the first time they had taught or received structured feedback on their teaching skills.
- Three seminars provided an opportunity for informal conversations with public health leaders in the area of management or leadership. Dr. Eric Blank, retired director of the Missouri Public Health Laboratory, discussed systems thinking in the laboratory context. Dr. Patricia Simone, DGPHCD director, discussed lessons she learned moving from technical to management responsibilities. Dr. Stephen Blount, director of COGH, discussed lessons learned about leadership.
- Opportunities to develop country-specific needs assessments
- An Open House to which SMDP invited staff from CDC programs, the Carter Center, and other public health organizations to exhibit and talk with the MIPH fellows about how their organization promotes public health.

This year also brought the introduction of a new training materials template, offering cleaner design and trimmed of excess content, to standardize content and job aids for in-country use. The new training materials included facilitator guides, participant workbooks, and accompanying slide presentations which will benefit both new and experienced trainers, as they prepare and deliver modules in their programs.

Next steps and future plans

SMDP has prioritized expanding its reach and impact in public health systems strengthening and management skill development.

In 2009 and beyond, SMDP will move its train-the-trainer workshops and mentoring from Atlanta to countries and regions where the needs are greatest. Plans are underway to co-host regional training in Southern Africa in early winter 2010, targeting trainers in PEPFAR countries. Instead of five or six weeks, the training will be shorter and focused on priority management domains, such as managing programs, projects, and human resources.

SMDP will also host a Leadership Symposium in Atlanta in late fall 2009 for senior MOH leaders in PEPFAR and other partner countries. The symposium will provide participants with opportunities for strategic thinking and planning across programs and countries with expert advice from officials from CDC and other U.S.-based organizations.✦

Program description

The division is working with several partners to enhance Botswana's organizational performance in delivering HIV/AIDS programs and services by strengthening the leadership and management skills of mid-level public health managers in the country's public, private, and governmental sectors.

The program is a collaboration among Botswana USA (BOTUSA), the Botswana MOH, the Botswana Ministry of Local Government (MLG), the Institute of Development Management (IDM), and CDC.

The Botswana management capacity building program provides management training to HIV/AIDS managers. The goal is to help them learn and apply process improvement tools to public health program processes in order to improve the effectiveness and efficiency of HIV/AIDS counselling, testing, and treatment programs.

Since 2003, the program has graduated eight cohorts, with more than 184 HIV/AIDS program managers from governmental agencies, NGOs, and community-based organizations. Managers and the team members they recruited from their worksites completed 131 applied management improvement projects which have, for example, increased the percentage of women who were counseled and tested for HIV/AIDS with their partners (as opposed to by themselves) from 20% to 50% at the Eastern Military Garrison Clinic (Selibe Phikwe District).

In 2008, CDC also began assisting IDM and the MLG with providing training on program planning and management for district health managers.

Team members

- Elizabeth Howze, Team Lead
- Brian Robie, Public Health Advisor

Program data

Start date	September 2001
Institutional counterparts	▪ MOH ▪ MLG ▪ IDM ▪ BOTUSA
Date in-country training started	June 2003
Target audience	HIV/AIDS program managers

Division activities

	2008	Cumulative
MIPH graduates	2	18
Technical assistance visits	1	12
Completed cycles in-country training	2	8
In-country managers trained	65	165
Number of completed applied management improvement projects	45	131

Accomplishments and outcomes

- In 2008, the program graduated 65 participants from its Process Improvement Workshop. Graduates went home to work with teams from their worksites to complete 45 applied management improvement projects aimed at improving HIV/AIDS work processes. In one project in the Bobirwa Subdistrict, for example, the percentage of HIV positive pregnant women receiving CD4 screening to predict the risk of developing opportunistic infections and neoplasms increased from 33% to 65%.
- CDC assisted IDM and the MLG with facilitating a training-of-trainers in program planning and management using the Healthy Plan-*it*™ curriculum. Thirteen district health managers who are supervisors under the MLG, including the heads of the Antiretroviral Treatment, Health Promotion, Sexual and Reproductive Health, Environmental Health programs, and the managers of two District Health Teams, attended the training. These managers will provide a supportive environment for additional MLG staff who will participate in program planning trainings and applied projects in 2009.

Program independence/sustainability

IDM is working to improve program sustainability by seeking accreditation for the program through the Botswana Training Authority and by working to have the program incorporated into the regular curriculum of managers in the MOH and the MLG.

Monitoring/evaluation activities 2008

- Monitor HIV/AIDS program managers' completion of applied management improvement projects to improve work processes in order to achieve program objectives more effectively and efficiently
- Monitor the DHMTs completion of applied management improvement projects to assist them with more effective program planning and budgeting✦

Program description

Ethiopia has a high burden of HIV/AIDS, with recent studies estimating between 1 and 2.6 million people infected. The government is working to improve all aspects of its public health services and systems, including its HIV/AIDS programs.

To help Ethiopia improve its HIV/AIDS programs, CDC is conducting organizational capacity building workshops and consulting on projects in Ethiopia.

At an organizational level, CDC is providing support in project management and process improvement to help the Federal MOH (FMOH) improve the Ethiopian Public Health Emergency Response System as it creates a new Ethiopian Public Health Agency.

At the local level, CDC is working to improve the function of public health systems by providing training in process improvement for national and regional reference and hospital laboratory managers. CDC also is training Ethiopia's HIV/AIDS Prevention and Control Office (HAPCO) regional bureau chiefs in process improvement and assisting them with applied management improvement projects to improve operational efficiency and effectiveness.

Team members

- John Marsh, Team Lead
- Brian Robie, Public Health Advisor

Program data

Start date	November 2006
Institutional counterparts	▪ Ethiopian Heath and Nutrition Research Institute (EHNRI) ▪ Ethiopian Public Health Association (EPHA)
Date in-country training started	March 2008
Target audience	▪ Lab managers ▪ HAPCO managers

Division activities

	2008	Cumulative
MIPH graduates	3	10
Technical assistance visits	1	2
Completed cycles in-country training	1	1
In-country managers trained	24	24

Accomplishments and outcomes

In March 2008, MIPH graduates and division staff co-delivered process improvement training for 24 lab managers. These managers have been working on projects and will reconvene in March 2009 to review progress to date and plan for completing their projects by June 2009.

At the same time, Dr. Tedros Adhanom Gebreyesus, the Ethiopian Minister of Health, requested assistance from division staff with facilitating the re-engineering of the public health emergency management process. Stakeholders and division staff created a two-level process model and a plan for its implementation.

Program independence/sustainability

The Ethiopian program will

- Assist with the government's strategy to improve how HIV/AIDS health services are provided,
- Improve process and project management skills throughout the public health system,
- Work with the Ethiopian Public Health Agency to establish an institutional home for management capacity building, and
- Align with other CDC initiatives, such as the FE(L)TP and other national initiatives.

Monitoring/evaluation activities 2008

Data to be collected include the number of

- Participants completing Process Improvement workshops, and
- Applied management learning projects completed

The division is also developing an FELTP in Ethiopia (see page 21 for more information).✦

Program description

The U.S. Department of Defense's (DOD) Defense Threat Reduction Agency (DTRA) is establishing a public health surveillance system on especially dangerous pathogens (EDPs) in former Soviet countries. Countries currently included are Georgia, Azerbaijan, Kazakhstan, and Uzbekistan; Armenia and Ukraine may be added. As part of the project, DTRA is building bio-safety laboratories (BSLs) at the 2 and 3 levels with advanced technology in these countries.

DGPHCD is working closely with CDC colleagues in the Division of Laboratory Systems (DLS), the Laboratory Science Office in the Coordinating Office for Global Health (COGH) and the FELTP to enhance the Georgian public health laboratory system.

DGPHCD and DLS have developed in Georgia a laboratory management course covering laboratory Quality Management Systems (QMS) and general laboratory management that integrated DLS and DGPHCD materials. Division staff facilitated the project management portion of the course. Human and veterinarian laboratory managers from all levels of the national public health laboratory system attended the 10-day training.

One direct outcome was the creation of four national laboratory systems strengthening projects addressing laboratory audits, proficiency testing, QMS training and the commissioning of the Central Reference Laboratory (CRL).

Two recent MIPH graduates assisted in the many practical exercises. One of them is leading two projects on quality assurance. The other is a key member of the team working on the CRL.

Team members

- John Marsh, Team Lead
- Brian Robie, Public Health Advisor
- Robert Martin, Laboratory Science Officer (COGH)
- Mark Rayfield, Branch Chief, Laboratory Systems Development Branch (DLS, LSDB)
- Celine H. Taboy, Deputy Branch Chief, LSDB

Program accomplishments and outcomes

- Consulted with participants from the Georgian MOH, the National Center for Disease Control and Public Health, Ministry of Agriculture, several training institutions, and DTRA regarding establishing a management capacity building program in Georgia, after which they agreed to establish one
- Completed an integrated needs analysis covering Georgian epidemiology, laboratory, and management systems
- Developed an integrated curriculum with DLS covering laboratory management and quality system essentials
- Established four major laboratory management improvement projects covering the human and animal public health laboratory system across Georgia; the projects are to
  - Implement a laboratory audit system
  - Implement a system of proficiency testing
  - Strengthen the laboratory infrastructure
  - Ensure all staff are trained in the essentials of laboratory quality management
- Currently providing on-line, continuous mentoring by Atlanta-based subject matter experts

Program independence/sustainability

The Georgian laboratory management project has a high likelihood of sustainability because

- Plans are in place for continuing to grow support for this systems-strengthening program among Georgian stakeholders,
- The approach will continue to be delivered by a mutually supportive, multi-disciplinary team comprising CDC divisions and local human and veterinarian laboratory managers,
- Training is followed by technical assistance on applied management improvement projects, leading to an increasing number of sustainable improvements,
- Mentoring and technical support for strategic projects will be expanded,
- An institutional home for the program is being established, which will enable regional program delivery, and
- New epidemiology and laboratory resident advisors start work in country in June.

This project is under the guidance of the FELTP resident advisors and is intended to become regional for the Caucasus.

Monitoring/evaluation activities 2008

Each national laboratory systems strengthening project has a project agreement, which includes project outcomes specific to the subject matter. Progress on the outcomes and the deadlines will be monitored and supported by the FELTP resident advisors and the Atlanta-based DGPHCD and DLS staff.

The division also is developing an FELTP in Georgia (for more information, see page 24).✦

Program description

The division is working with the Malawi MOH, the Malawi AIDS Counseling and Resource Organization (MACRO), and CDC GAP Malawi to improve public health management capacity in Malawi.

From the management capacity-building program's establishment in 2003 until 2006, management training for program managers from the MOH National TB Programme (NTP) and MACRO focused primarily on quality improvement. Through 2006, 137 public health program managers had completed quality improvement training and, working with teams they recruited at their worksites, had completed 39 applied management improvement projects to improve organizational effectiveness. For example, the projects have

- Increased the percentage of TB patients at Ntchisi District Hospital who receive health talks on TB from 0% to 80%,
- Increased the percentage of postnatal women and babies at Chitipa District Hospital who attend their 2-week postnatal checkups from 48% to 60%,
- Increased the percentage of smear-positive TB patients who begin treatment within 7 days of diagnosis from 50% to 90%, and
- Increased the percentage of HIV positive patients at Kasungu branch referred to support groups from 2% to 53%.

Based on recommendations made at a May 2006 stakeholders meeting led by the Director of Technical Support Health Services at the MOH, stakeholders are currently collaborating to build the capacity of District Health Management Teams (DHMTs) to use program planning and management skills to effectively complete Malawi's annual District Implementation Plans (DIPs). To date, three cohorts of DHMTs have completed a one-week Healthy Plan-*it*™ program planning and management workshop and used the tools to assist them with completing their DIPs.

Team member

Brian Robie, Public Health Advisor

Program data

Start date	September 2002
Institutional counterparts	▪ NTP ▪ MOH ▪ MACRO
Date in-country training started	February 2003
Target audience	▪ TB and HIV/AIDS program managers ▪ DHMTs

Division activities

	2008	Cumulative
MIPH graduates	1	15
Technical assistance visits	2	16
Completed cycles in-country training	1	7
In-country managers trained	43	222
Number of completed applied management improvement projects	5	61

Accomplishments and outcomes

The second cohort of DHMTs completed applied management improvement projects in summer 2008 and a third cohort of 43 participants from 8 DHMTs, 4 health zone support officers, and the Department of Planning and Policy Development at MOH headquarters attended a December 2008 workshop.

Malawi MIPH graduates facilitated the December workshop with assistance from DGPHCD. The involvement of the zone health support officers was a major benefit, as these officers will assist with mentoring/supervising the DHMTs' projects to completion.

In addition, the planning director's support for continuation of the program will help ensure its sustainability over the long term.

Program independence/sustainability

- Professor Maureen Chirwa from the Malawi College of Medicine in Blantyre attended the 2008 MIPH course and has begun incorporating MIPH curriculum into public health management courses at the College of Medicine.
- Malawi stakeholders are completing plans to establish an institutional home for the Malawi management capacity building program, as a means of achieving certification for courses completed and enhanced credibility for the program.
- The planning director from the MOH attended the December 2008 Healthy Plan-*it*™ DHMT workshop and expressed interest in having the program planning and management tools incorporated into the annual DIP process. Final confirmation of this decision will be made at a June 2009 stakeholders meeting.

Monitoring/evaluation activities 2008

Monitor the DHMTs' completion of applied management improvement projects to assist them with completing the Malawi DIP✦

Program description

In developed nations, diseases like elephantiasis and schistosomiasis are frequently referred to as "neglected" or "forgotten" tropical diseases. Generally affecting the poor and disadvantaged in the developing world, they do not affect people in wealthy nations. As a consequence they do not attract media attention and are often ignored in global health development initiatives. Yet they have a devastating impact on more than one billion people worldwide.

Most control and treatment programs for neglected tropical diseases address one disease at a time, but people usually face multiple disease threats simultaneously. Intervention strategies for the different diseases are often similar.

A few years ago, interest in integration of individual prevention and treatment programs into one program started to grow in the international public health community.

The Bill and Melinda Gates Foundation funded five pilot integrated disease control programs to obtain evidence of the feasibility and effectiveness of integration. Of the five, the Carter Center/DGPHCD program was the only one with a management capacity building component.

The goal of the Nigerian program is to determine the feasibility, effectiveness, and cost-benefit of integrating disease control programs on a large scale. These control programs address elephantiasis, malaria, onchocerciasis, schistosomiasis, trachoma, and vitamin A deficiency.

Team members

- Josef Amann, Team Lead
- Janna Brooks, Public Health Advisor

Program data

Start date	2006
Institutional counterpart	The Carter Center Jos, Nigeria
Date in-country training started	2007
Target audience	Public health personnel at all levels of the health system involved in the Integrated Interventions Project

Division activities

	2008	Cumulative
MIPH graduates	2	3
Technical assistance visits	2	4
Completed cycles in-country training	2	3
In-country managers trained	38	38
Number of completed applied management improvement projects	10	10

Accomplishments and outcomes

- Developed a strategy to strengthen the management skills of personnel involved in the integrated interventions through a combination of technical training on
  - Integrated interventions implementation, and
  - Management training on change management, project management, process improvement, and the people management skills of team building, leadership, and conflict resolution necessary to successfully manage the integrated interventions activities.
- Facilitated capacity building activities for three tiers of MOH personnel—senior stakeholders, senior state and local government program and team leads, and local government personnel directly organizing and supervising the integrated interventions implementation at the community level in Plateau and Nasarawa states
- Participants in the workshops completed applied management improvement projects in their programs to demonstrate their competence and the impact of applying their management skills to improve the effectiveness and efficiency of the integrated interventions.

Program independence/sustainability

The Carter Center Jos Management Training Center was established in 1996 in collaboration with CDC and the Emory University School of Public Health.

The center has trained more than 300 public health managers throughout Nigeria prior to the start of the Integrated Interventions Project in 2006. It generated revenue independently by offering management and leadership capacity building to other agencies in the MOH and the Ministry of Agriculture in Nigeria.

Monitoring/evaluation activities 2008

The program will be evaluated to determine if integration is more efficient and effective than focusing on a single disease.

Additionally, the program will seek evidence that building the management capacity of the workforce will support more effective delivery of integrated interventions. If successful, the model used in this project will be implemented for integrated disease control on a national scale by Nigeria's MOH.

The division is also developing and FELTP in Nigeria (see page 22 for more information).✦

Program description

In February 1995, the Rwandan Government issued a new policy to guide the reconstruction of the publicly funded and operated health system. Rwanda adopted a health development strategy based on decentralized management and district-level care.

Since 2000, the District Health Offices operate as autonomous entities in the 30 districts and provide care to well-defined populations in either urban or rural areas. The government has universally implemented the decentralization of financial and logistic resources.

As Rwanda implements a dramatic scale-up in program activities related to PEPFAR, there is a compelling need to increase management and leadership competencies among district level health personnel. To address that need, CDC GAP Rwanda, in partnership with the MOH of Rwanda, decided in 2007 to establish a management and leadership capacity building program.

The program's objective is to develop the institutional capacity of the National University of Rwanda School of Public Health (NURSPH) to deliver public health leadership and management programs. This program will target key personnel at both the central and district health levels to result in specific and measurable improvements in the efficiency and effectiveness of public health programs in Rwanda.

Team members

- Josef Amann, Team Lead
- Sara Clements, Public Health Advisor

Program data

Start date	2008
Institutional counterpart	NURSPH
Date in-country training started	Estimated to start in April 2009
Target audience	▪ Central Level Health Teams ▪ District Level Health Teams

Division activities

	2008	Cumulative
MIPH graduates	3	3
Technical assistance visits	1	1

Accomplishments and outcomes

- Full support for the program from the Rwanda MOH and the National AIDS Control Commission (NACC) was established during an initial March 2008 assessment visit.
- In collaboration with the Payson Center for International Development and Technology Development at Tulane University, GAP Rwanda and CDC selected NURSPH as the program's institutional home.
- Three individuals were trained during the MIPH 2008 course in Atlanta: two are faculty within the NURSPH and the third works within the Policy and Capacity Development Unit at the MOH.
- A 5-year plan of activities for program development, including a proposed budget for the first 2 years of the program, was created.

Program independence/sustainability

The program is designed to build sustainable institutional capacity at the NURSPH. The training of central level health personnel, in addition to district health personnel, will increase the level of program support at the national level.

To align with PEPFAR's movement towards pre-service training, one goal of the Rwanda Management Capacity Building Program is to incorporate management and leadership training eventually into the existing curriculum in the Masters of Public Health program at NURSPH.

Monitoring/evaluation activities 2008

Monitoring and evaluation will be an essential component of the operationalized program plan to be developed in early 2009. The program will be piloted in four districts and then evaluated. Changes to the program will be made based on the results of this initial evaluation, prior to implementation in the remaining 26 districts.

The division also is developing an FELTP in Rwanda (for more information, see page 23).✦

Program description

To combat the HIV/AIDS epidemic in Vietnam, CDC and PEPFAR in Vietnam are collaborating with the Hanoi School of Public Health (HSPH) and the Vietnam Administration of HIV/AIDS Control (VAAC) to improve the delivery and effectiveness of HIV/AIDS services at the provincial and district levels in Vietnam by strengthening management capacity.

Vietnam has established three regional training centers at the HSPH: the Center for Preventive Medicine in Danang, and the Institute for Hygiene and Public Health in Ho Chi Minh City. Vietnamese faculty from the three regional training centers attended SMDP's Management for International Public Health course in Atlanta. After graduation, they returned home to build the capacity of their regional centers, drawing trainers from other organizational partners in their regions.

Subsequently, 28 trainers from the regional centers in Vietnam participated in several intensive training-of-trainers workshops, developed and delivered by faculty from HSPH and CDC. The participants, in turn, agreed to conduct regional training and provide follow-up supervision to HIV/AIDS health managers.

Since 2005, they have trained more than 600 HIV/AIDS health managers across Vietnam.

Team members

- Janna Brooks, Team Lead
- Josef Amann, Medical Epidemiologist
- Sara Clements, Public Health Advisor

Program data

Start date	2004
Institutional counterpart	HSPH
Date in-country training started	July 2005
Target audience	HIV/AIDS program managers

Division activities

	2008	Cumulative
MIPH graduates	1	11
Technical assistance visits	1	13
Completed cycles in-country training	3	6
In-country managers trained	370	678
Number of completed applied management improvement projects	42	142

Accomplishments and outcomes

- Strengthened the decentralized institutional capacity of three regional training centers to deliver public health management training to provincial HIV/AIDS program managers
- Developed the management skills of HIV/AIDS prevention, care, and treatment personnel at provincial and district levels to more effectively and efficiently deliver HIV/AIDS services and achieve PEPFAR targets
- Measurably improved the performance of organizations implementing HIV/AIDS prevention, care, and treatment services through applied management improvement projects
- Strengthened the networking, dissemination, and technical integration strategies in collaboration with VAAC leadership and priorities

Program independence/sustainability

Program capacity is institutionalized at the regional training centers at the HSPH, the Preventive Medicine Center Danang, and the Pasteur Institute in Ho Chi Minh City.

HSPH will develop a standardized management development curriculum endorsed by the VAAC training system in 2009. The curriculum will be reviewed and approved by VAAC as the official management training curriculum for the VAAC human resource training and development plan. HSPH will work with VAAC and other training partners to implement the curriculum through training, applied learning, and team supervision for the VAAC system.

VAAC has a strategic action plan that encompasses nine priority areas for development. In collaboration with the national technical working groups, the management training curriculum will be integrated into training efforts to achieve the national strategies in the VAAC's nine strategic action areas to 2010.

Integration of the program into the VAAC human resource development, technical, and training system will ensure that sustainable capacity to deliver leadership and management development program that strengthen local leadership of HIV/AIDS programs and services in Vietnam is achieved.

Monitoring/evaluation activities 2008

The program is monitored on an ongoing basis. Data are collected on the number of trainers participating in the regional training centers, HIV/AIDS program managers at the provincial and district levels who participate in the program, the projects they complete, and the outcomes of these projects. The data are organized according to national HIV programmatic technical goals.

A mid-term program review was conducted in July 2008 and a report is being finalized. An external evaluation is planned for FY 2010, subject to funding for this activity. ✦

Section 5 • Other Division Projects

Program description

In 2005, the FETPs in sub-Saharan Africa organized to form the African Field Epidemiology Network (AFENET).

AFENET is working with MOHs, non-governmental organizations, international agencies, private corporations, and other public health agencies to help African nations enhance or develop their own applied epidemiology capacity.

AFENET is funded by CDC and USAID through a cooperative agreement managed by DGPHCD. In addition to providing outbreak response, the organization and its membership conduct training in IDSR, provide logistical support to programs, and present scientific information from its members through publications and meetings.

Team members

- Peter Nsubuga, Team Lead
- Eric Gogstad, Public Health Advisor (AIZIP)
- Kenneth Johnson, Public Health Advisor (Western Africa)
- Pascale Krumm, Health Communications Specialist
- Juliette Mannie, Management Analyst
- Andrew Weathers, Public Health Advisor (cooperative agreement)

Partners

- USAID
- MOHs across sub-Saharan Africa
- WHO
- CDC field offices
- CDC's GAP
- PMI
- CDC's Influenza Division

Activities

In 2008, the number and scope of activities funded through the AFENET cooperative agreement expanded greatly. In addition to the ongoing support of member countries to implement IDSR, the following activities occurred:

- **Tanzania:** AFENET became the primary implementing partner for the FELTP funded through a combination of GAP, PMI, and USAID funds. Through technical and logistical assistance provided by AFENET, the first cohort began in October.
- **Nigeria:** AFENET received funding through USAID to begin implementing the FELTP. A graduate of the Kenya FELTP was hired as the resident advisor and the first cohort began in October.
- **Rwanda:** Through the support of GAP, funding was provided to AFENET to conduct an assessment, hire a technical consultant for the MOH, and begin a series of short courses in Rwanda in preparation for the intake of the first cohort in January 2010.
- **West Africa:** Through funding from HHS and USAID, the West Africa FELTP is moving towards implementation through placement of two residents from Burkina Faso and Togo in the South Africa FELTP. These residents will return to their country of origin for the fieldwork and to assist with the planning of the program.
- **AIZIP:** The program implemented this project through funding from USAID to include support for national focal points, conduct training, develop national work plans, support International Health Regulations guidelines development and training, and establish a fund to support outbreak investigations in the region.
- **Public Health Laboratory Network:** AFENET received funding from GAP, International Laboratory Branch, to support the development of a network to share best practices on issues related to Integrated Quality Management Systems Essentials for laboratory diagnosis of multiple diseases of public health importance including HIV/AIDS, TB, and malaria. AFENET has created a discussion forum for regional and district laboratory experts through print and electronic mediums.

Next steps and future plans

- **TEPHINET-AFENET Scientific Meeting:** The meeting will take place in Mombasa, Kenya, in September 2009. It will bring together trainees and graduates of programs from across Africa to present their work in infectious diseases, non-communicable diseases, environmental health, and human/animal diseases.
- **Tanzania:** AFENET will continue to support the implementation of the FELTP through technical and logistical activities for the first and second cohort, which is scheduled to start in 2009.
- **Nigeria:** AFENET will continue to provide consultation to assist the Federal MOH with planning and implementation for the laboratory system strengthening activities in support of field epidemiology investigations and surveillance.
- **Rwanda:** In preparation for the induction of the first cohort of residents, AFENET will provide technical, logistical, and financial support to the FELTP for site and resident selection, program accreditation, and establishment of facilities within the MOH.
- **West Africa:** Through a program coordinator based in Burkina Faso, AFENET will help the FELTP hire resident advisors, develop curricula for the program, and establish a network for laboratories within the region. The two residents in SAFELTP will complete the program in 2010.
- **AIZIP:** AFENET is helping member countries develop and implement plans and MOUs for the surveillance and response to zoonotic diseases of public health importance in Africa.
- **Public Health Laboratory Network:** AFENET will maintain the laboratory network website containing resources, newsletters, and other information for regional and district laboratories and respond to questions related to developing quality, sustainable clinical laboratories.✦

Program description

To ensure that our capacity building programs in field epidemiology and management capacity building are effective, a process for the systematic, periodic monitoring and evaluation of outputs and outcomes is being developed to allow for evaluation of program impact on public health systems and ultimately the health of the public.

Monitoring and evaluation are essential for developing the infrastructure necessary to respond to public health threats and surveillance of diseases of public health importance. The division's Monitoring and Evaluation (M&E) Working Group has been working on refining and broadening the M&E framework for FE(L)TPs, as well as the division in general. The goal is to have processes and documents that can help guide our work, our workplans, and our assessment efforts.

The M&E Workgroup began by articulating what we consider the critical outcomes of our programs. These are what our division is working toward helping countries achieve as they work to improve their public health systems. The M&E system is meant to support achievement of these outcomes. These are the critical public health outcomes:

- Increased Capacity of the Workforce,
- Strengthened Surveillance Systems,
- Improved Preparedness and Response,
- Expanded Collaboration and Networking Within and Across National Boundaries, and
- Enhanced Effectiveness of Policies and Practice.

The goal of this activity is to develop an effective system for monitoring and evaluation of programs that ultimately leads to strengthened public health systems. The evaluation workgroup, with input from Atlanta- and field-based staff, has developed guidelines and a supporting database (EpiTrack) for monitoring and evaluation of programs.

EpiTrack functionality includes data entry screens for the program, trainee information, projects and coursework, and an alumni directory. Report templates are also available for each of the monitoring and evaluation indicators and for commonly used summary reports. EpiTrack-G is customized for individual programs that reflect their respective organization and curriculum. Additional report templates are added as requested to reflect reporting requirements for each program.

Team members

- Donna Jones, Team Lead
- Josef Amann, Medical Epidemiologist
- Wayne Brown, Public Health Analyst
- Suzanne Elbon, Instructional Designer
- Russell Gerber, Medical Epidemiologist
- Eric Gogstad, Public Health Analyst
- Elizabeth Howze, Health Education Specialist
- Edmond Maes, Epidemiologist
- Ron Moolenaar, Medical Epidemiologist
- Dana Schneider, Health Scientist
- Andrew Weathers, Public Health Analyst

Accomplishments

- Worked with SMDP to incorporate their work into critical outcomes
- Held division meeting to obtain consensus on revision of critical outcomes
- Did an EpiTrack conversion from an EpiInfo-based application to an MS Access based application for Central America, Kenya, and Zimbabwe
- Implemented EpiTrack in South Africa, Jordan, Brazil, and AFENET programs
- Developed a standard version of EpiTrack for Central America programs (CAP), includes functionality to merge individual country databases for summarizing CAP data
- Developed a standard version of EpiTrack for AFENET programs, includes functionality to merge individual country databases for summarizing AFENET data
- Trained the AFENET IT officer on EpiTrack development so that AFENET has a resource for trouble-shooting technical issues
- Created EpiTrack Essential (customized to track only key indicators)
- Finalized standard dataset for EpiTrack needed to monitor key indicators
- Collected data for annual report

Next steps and future plans

- Identify the key program details that will be collected routinely for annual reporting from all programs
- Work with DGPHCD-supported programs to develop individual workplan for implementation of routine data collection and reporting systems
- Provide updates to EpiTrack software and technical consultation at the bi-annual regional or international network meetings
- Draft a framework for assessment of FE(L)TPs
  - A protocol will be developed to pilot-test this assessment in requested countries
  - Data collection will occur from the identified sources and the tool will be used to provide recommendations for program improvement
  - Analysis and report of the results of the program data will be used as the basis for a report to be distributed to division senior staff. This will be used to inform the consideration of essential program elements for FE(L)TPs
  - Incorporate assessment of systems level critical

outcomes as part of workplan expectations
- Develop an M & E framework for management capacity building programs (MCBPs)
- Define critical domains of MCBPs
- Define critical competencies for entry-, mid-, and senior level public health managers
- Draft a country self-assessment tool for management capacity building
- Develop process, outcome, and impact indicators for measuring the effectiveness of management strengthening approaches.

Critical public health outcomes

Increased capacity of the workforce

In recent years, important mid-level supervisory or leadership positions have been assumed by graduates in **Brazil**: the positions of chief of CIEVS (roughly corresponding to CDC Emergency Operations Center), chief of the Transmissible Diseases Division, chief of Foodborne/Waterborne Branch, chief of the National Dengue Control Program, chief of influenza activity, chief of rabies activity, chief of yellow fever activity, and chief of rodent-associated disease activity have been assumed by graduates.

An FETP graduate of the first cohort of the **Central American** training program has been chosen for the position of National Health Surveillance Director in Nicaragua.

Several appointments were made in the Dominican Republic MOH. The following are all graduates of the 1st or 2nd cohort FETP: Dr. Raquel Pimental is the new National Director of Epidemiology, Dr. Belkis Marcelina is the new Director of National Program for TB, Dr. Tomiris Estepan is the new Director for Chronic Diseases, Dr. Yira Tavares (current trainees) is the new Director of Planning and Development.

The **Egyptian** MOH appointed Dr. Sami Abdul-Aziz, an FETP graduate, as the executive director of the Epidemiology and Surveillance Unit.

Botswana management capacity building activities: since 2003, the program has graduated 8 cohorts, with more than 184 HIV/AIDS program managers from governmental agencies, NGOs, and community-based organizations completing a 6-month applied management development process.

As part of the program, workshop participants and the team members they recruited from their worksites completed 131 applied management improvement projects which have, for example, increased the percentage of women who were counseled and tested for HIV/AIDS with their partners (as opposed to by themselves) from 20% to 50% at the Eastern Military Garrison Clinic (Selibe Phikwe District).

Strengthened surveillance systems

Our programs and graduates are working to strengthen surveillance systems within their countries. Below are some illustrative examples.

In **Kenya,** a graduate of the FELTP works with the electronic IDSR system to produce the Kenya MOH weekly surveillance report using an EpiInfo-based system developed by division staff. Also in Kenya, the surveillance evaluation work by an FELTP trainee has resulted in significant changes and improvements in the surveillance system for multi-drug resistant TB.

In **Pakistan**, the NIH officially recommended 17 graduates of a FELTP short course in surveillance and outbreak response as leads for surveillance and field investigations of suspected human cases of AI. Additionally, the FELTP team is finalizing the setup of sentinel surveillance sites in five Pakistani sites for Hepatitis.

In **India**, the state of West Bengal is at an international crossroad and is key to AI surveillance in India. To combat the threat at its entry point, an FETP graduate is assigned to the planning unit of the state public health department. He developed an extensive plan within the government system that now proposes to keep a watch on animal and human disease.

Improved preparedness and response

Our programs and graduates have created an improved ability to respond to emergencies in the countries.

In **Kenya**, the MOH frequently responds directly to infectious disease outbreaks with FELTP graduates and trainees when previously it would need to request assistance from international agencies.

In **Brazil**, the FETP has provided Brazil with a robust outbreak investigation and response mechanism that did not previously exist in-country. FETP trainees are viewed as the leading experts in responding to such events throughout Brazil. Now the Brazilian FETP will organizationally become part of the MOH's Emergency Operations Center. This represents an opportunity for more visibility and greater institutional support.

The **China** FETP conducted trainings for the public health workforce to improve emergency epidemiologic response to natural and man-made disasters. These trainings included public health professionals from provincial and Beijing district CDCs as well as Ministry of Agriculture (MOA) veterinarians.

These trainings will better prepare the public health workforce to respond to major events and emergencies as well as improve the response of MOA veterinarians to infectious disease threats in China and foster improved collaboration between the Chinese CDC, the China Animal Disease Control Center, and their provincial arms.

As part of the training on public health response to man-made and natural disasters a U.S. CDC consultant helped the

Beijing CDC install and operationalize the Early Aberration Reporting System (EARS) developed by the U.S. CDC. EARS will be used by the Chinese CDC for early detection of outbreaks of disease, poisoning, or other health events during the Olympics.

In **India**, the FETP has contributed to an improved ability to respond to AI. During the first outbreak of AI in poultry from Jalgaon, district of Maharashtra in 2006, an FETP graduate and state surveillance officer played a key role in the containment of the outbreak in the state. He is also a national trainer for state and district Rapid Response Teams for AI outbreak investigations.

Expanded collaboration and networking within and across national boundaries

Our programs provide opportunities and venues for expanding collaboration across boundaries to improve public health around the world. Dr. Wanderson Oliveira and Dr. Aglaer Nobrega (representing the **Brazil** FETP) visited Guatemala City during November 17–21 to learn about the pyramidal approach to FETP training and discuss ways to strengthen collaboration among FETPs in Latin America.

The Brazilian National Malaria Control Program (NMCP) has initiated a treatment evaluation pilot program, led by Ana Carolina Santelli, an FETP graduate and current GDD-supported person posted to NMCP. Her program was based on methodology she observed with CDC Malaria Branch staff while she was on TDY to Angola in late 2007.

This represents another example of cross-fertilization between FETP, GDD, CDC branches, and will improve public health practice in Brazil. International recognition of the expertise of FETP investigators has resulted in an invitation to assist with response to a nationwide cholera outbreak in Guinea Bissau and to participate in the future construction of FETPs in Angola and Mozambique.

Enhanced collaboration between the Brazil FETP and staff members in Lusophone countries of Africa is expected to increase in the near future.

The **Thailand** FETP has announced the inauguration of the e-journal OSIR (Outbreak and Surveillance Investigation Report). The first issue of OSIR will be available in December 2008. The objectives of OSIR are to publish outbreak reports and surveillance analyses relevant to Asia, especially Southeast Asia, in a freely available e-journal and to increase the number and quality of publications from FETP trainees and alumni in Asia.

Enhanced effectiveness of policies and practice

Through the efforts of the programs and graduates, countries are able to realize enhanced health policies and improved public health management and practice.

Data from multiple nosocomial outbreaks of non-tuberculous mycobacteria conducted by FETP investigators resulted in the adoption of far-reaching regulatory changes related to hospital infection control in **Brazil**, and an enhancement of regulatory oversight of this previously neglected area.

Starting with a basic mapping of cases, an FETP graduate in **India** combined descriptive epidemiology, a coverage survey and a case-control study to better understand the persistence of diphtheria and concluded that boosters are key for protection among children five years of age and above. On the basis of this evidence, additional resources were invested to increase booster coverage, which is now considered as a key monitoring and evaluation indicator.

In **Vietnam**, management capacity building activities have

- Strengthened the decentralized institutional capacity of three regional training centers to deliver public health management training to provincial HIV/AIDS program managers,
- Developed the management skills of HIV/AIDS prevention, care, and treatment personnel at provincial and district levels to more effectively and efficiently deliver HIV/AIDS services and achieve PEPFAR targets, and
- Measurably improved the performance of organizations implementing HIV/AIDS prevention, care and treatment services through applied management improvement projects.✦

Appendices

Table of FE(L)TP Trainees

Country/Program	Year started	Trainees in 2008	Total graduates by 2008
Brazil	2001	18	58
Central America	2000	17	53
Costa Rica	2000	10	16
Central Asia	2003	15	34
China	2001	30	67
India–Chennai	2001	45	43
India–New Delhi	2006	22	35
Jordan	1999	12	29
Kenya *(includes South Sudan)*	2004	27	22
Nigeria	2008	13	–
Pakistan	2007	19	–
South Africa	2007	19	–
Tanzania	2008	12	–
Thailand	1981	23	165
TOTAL	–	**282**	**522**

Acronyms

AFENET	African Field Epidemiology Network
AI	Avian influenza
AIZIP	Avian Influenza and other Zoonotic Infections Project
BRFSS	Mortality surveillance and the Behavioral Risk Factors Surveillance System
BSL	Bio-safety Laboratory
CA FETP	Central America FETP
CDC	Centers for Disease Control and Prevention
C-FETP	China FETP
CRL	Central Reference Laboratory
DIP	District Implementation Plan
DTRA	U.S. Defense Threat Reduction Agency
DDM	Data for Decision Making
DGPHCD	Division of Global Public Health Capacity Development
DHMT	District Health Management Team
DLS	(CDC) Division of Laboratory Systems
EDP	Especially Dangerous Pathogen
EIC	Epidemic Investigation Cells
EID	International Emerging Infectious Diseases
EIS	Epidemic Intelligence Service
EPISUS	Programa de Treinamento em Epidemiologia Aplicada aos Servicos do Sistema Unico de Saude
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
JAEP	Jordan Applied Epidemiology Project
JSP	Jordan Surveillance Project
LSI	Leadership in Strategic Information
MAE	Masters of Applied Epidemiology
MBDS	Mekong Basin Disease Surveillance
MIPH	Management for International Public Health
MOH	Ministry of Health
MOU	Memorandum of Understanding
MPH	Masters of Public Health
NACC	National AIDS Control Commission
NCDC	National Center for Disease Control
NCIRD	(CDC) National Center for Immunization and Respiratory Diseases
NCHHSTP	National Center for HIV, Viral Hepatitis, STD, and TB Prevention
NCZVED	(CDC) National Center for Zoonotic, Vector-Borne, and Enteric Diseases
NEDSS	National Egyptian Disease Surveillance System
NFP	National Focal Point
NGO	Non-governmental Organization
NICD	National Institute for Communicable Diseases
NIE	National Institute of Epidemiology
NMCP	(Brazilian) National Malaria Control Program
NTP	National TB Programme
NURSPH	National University of Rwanda School of Public Health
OSIR	Outbreak and Surveillance Investigation Report
PEPFAR	President's Emergency Plan for AIDS Relief
RTC	Regional Technical Committee
TB	Tuberculosis
SC-FELTP	South Caucasus FELTP
SMDP	Sustainable Management Development Program
SOP	Standard Operating Procedure
TEPHINET	Training Programs in Epidemiology and Public Health Interventions Network
TIGER	The International Group of Epidemiology and Response
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

For more information about our programs, contact:
Division of Global Public Health Capacity Development
Centers for Disease Control and Prevention
1600 Clifton Road, N.E., Mailstop E-93
Atlanta, Georgia 30333, USA
Phone: 404-639-3210
Fax: 404-639-4617

For more information, consult the following websites:

- Division of Global Public Health Capacity Development: www.cdc.gov/cogh/dgphcd
- Coordinating Office for Global Health: www.cdc.gov/cogh
- Centers for Disease Control and Prevention: www.cdc.gov
- U.S. Department of Health and Human Services: www.hhs.gov

Photo legends
Section 1: Local populations in rural Guatemala being interviewed
Section 2: Resident conducting a survey in Africa
Section 3: Laboratorians collecting samples in Central America
Section 4: Nurses working in Thailand
Section 5: Iraqi resident from the Jordan FETP at the 2008 TEPHINET Global Scientific Conference, Malaysia
Appendices: Resident gathering field data in Africa

Printed April 2009