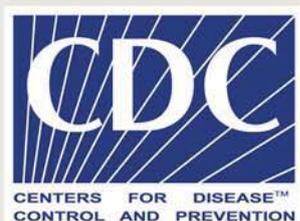


Partners in Progress

Biennial Report 2009–2010

Thailand MOPH – U.S. CDC Collaboration



Thailand MOPH – U.S. CDC Collaboration

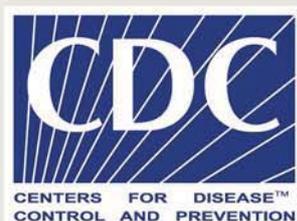
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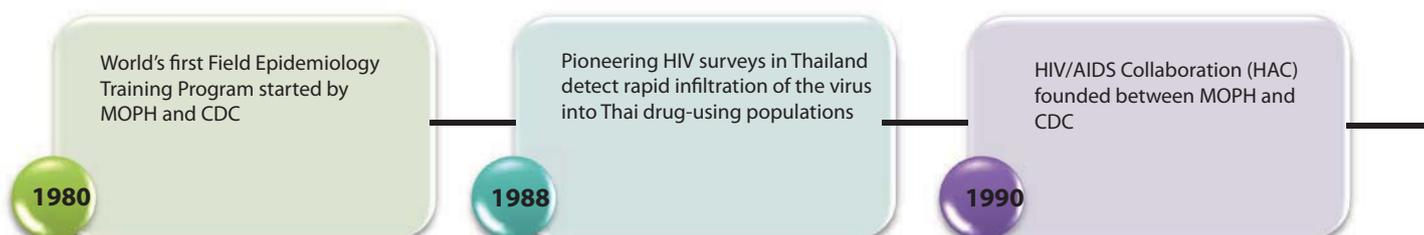
Message from the Thailand MOPH Permanent Secretary

On the auspicious occasion marking the 30th anniversary of the research and technical collaboration between the Ministry of Public Health (MOPH) and the U.S. Centers for Disease Control and Prevention (U.S. CDC), currently in operation under the auspices of the *Thailand MOPH – U.S. CDC Collaboration (TUC)*, I would like to extend my best wishes to TUC's management, staff members, and all parties involved in this important public health endeavor.

Over the past 30 years, TUC has played a pivotal role in fostering a wide range of collaborative public health programs, most notably in disease prevention and control, which have greatly contributed to an enhanced public health system in the Kingdom. Some of the landmark achievements of the Collaboration include the internationally renowned Field Epidemiology Training Program (FETP), advancement in the research and development of HIV/AIDS treatment and care approaches, ongoing technical assistance for HIV/AIDS control and prevention efforts, development of enhanced disease surveillance, prevention and control systems to effectively address the threats posed by emerging and re-emerging infectious diseases, and capacity building programs for medical science laboratories. This success story also underscores the importance of international collaboration to effectively deal with diseases and other health threats.

Last but not least, I would like to take this opportunity to express my heartfelt appreciation and sincere thanks to everyone involved in the successful operation of TUC, especially for its significant public health impact and advancement in the areas of surveillance, prevention, and control of the diseases of major concern such as HIV/AIDS, tuberculosis, and emerging infectious diseases. In the meantime, I do hope everyone will find this TUC Biennial Report 2009–2010 helpful and informative, and I personally wish TUC every success in its future endeavors.

Paijit Warachit, MD





Thailand MOPH and U.S. CDC Collaboration (TUC) - Thirty Years and Still Going Strong

This year (2010) marks the 30-year anniversary of the Thailand Ministry of Public Health (MOPH) – U.S. Centers for Disease Control and Prevention (CDC) Collaboration (TUC). TUC brings Thai and U.S. government scientists together to develop new disease prevention and intervention strategies that have often had global public health implications.

The collaboration began in 1980 with the establishment of the world's first Field Epidemiology Training Program (FETP)—a two-year, field-based training and service program in applied epidemiology modeled on CDC's Epidemic Intelligence Service. This program has now been established in more than 30 countries worldwide and is a core human resource development asset for the MOPH. Many program alumni/ae now occupy key mid- and senior-level positions in the MOPH, and some work for international organizations.

When the HIV epidemic first struck Thailand in the 1980s, the FETP was pressed into service to help characterize this new emerging public health threat. Thailand provided global leadership, being among the first developing countries to use epidemiology as a tool to identify populations with high-risk behaviors. The country quickly implemented practical countermeasures that lowered HIV transmission, particularly among female sex workers. In the 1990s, TUC's observational studies of HIV led to clinical trials that produced the evidence for how to reduce the risk of mother-to-child HIV transmission in limited resource countries. These studies provided the scientific basis for the global strategy to reduce perinatal HIV transmission.

In the 1990s, work carried out by the Bangkok AIDS Vaccine Evaluation Group, a collaboration of CDC, the Bangkok Metropolitan Administration and the MOPH,

Joint mother-child HIV transmission research begun

1992

MOPH and HAC announce zidovudine ("The Bangkok Course") is affordable and effective for preventing perinatal HIV transmission

1998

HIV monitoring system for pregnant women and infants, PHIMS, launched in provincial hospitals

1999

demonstrated for the first time that a scientifically rigorous AIDS vaccine trial could be successfully conducted in a developing country. When the U.S. Government launched the Global AIDS Program (GAP) in 2001, TUC became one of the first field sites in Asia. GAP and the MOPH continue to develop highly successful model programs for HIV prevention, diagnosis, and treatment, many of which are then scaled up to become national programs funded entirely by the Royal Thai Government.

In 2001, an International Emerging Infections Program (IEIP) was added to TUC at the request of the MOPH. IEIP's mission is to help address the area of emerging and re-emerging infectious disease threats. Its work centers on strengthening detection, description, control, and prevention of infectious diseases. IEIP works within WHO's International Health Regulations framework to help identify new emerging human pathogens, strengthen Thailand's laboratory and surveillance capacity, and support outbreak responses. IEIP has contributed to a better understanding of the causes and epidemiology of pneumonia in Thailand, and to improvements in patient management and treatment. Enhanced surveillance for respiratory pathogens in Sa Kaeo and Nakhon Phanom, supported by IEIP, has also helped identify and monitor pandemic H1N1 infections among hospitalized pneumonia patients. The data gathered at the sites were used to describe disease burden and to extrapolate estimates to all of Thailand.

IEIP recently expanded its work in zoonotic diseases, and plans to add a public health veterinarian to strengthen the surveillance of animal diseases that can affect human health. In collaboration with CDC, the Thai FETP has also worked with the Bureau of Livestock Development to establish the world's first FETP-V, an applied epidemiology training program designed specifically to train public health veterinarians.

In 2003, a TB Resident Advisor position was added to TUC to address the high burden of TB in the region and the deadly combination of TB and HIV. In collaboration with USAID's Regional Development Mission for Asia, the MOPH's Bureau of Tuberculosis, and WHO, the TB Advisor has had an important impact on strengthening TB laboratory infrastructure in Thailand. The Advisor has collaborated with the Ministries of Health in Thailand, Cambodia, and Vietnam on research to improve methods for screening and diagnosing TB in persons with HIV, and these important findings have led to changes in global guidelines and policies.

When SARS struck Asia in 2003, TUC staff were at the epicenter of the outbreak, examining infected patients and collecting specimens that ultimately led to the identification of the causative agent. Soon after, sporadic cases of highly pathogenic avian influenza (H5N1) began occurring in humans in a variety of countries around the world, including Thailand. Although influenza surveillance and studies had been part of previous IEIP collaborations, an Influenza Program component was added in 2007 to help the MOPH address this emerging threat.

Thailand MOPH - U.S.
CDC Collaboration (TUC)
formally announced

2000

MOPH and TUC help identify
cause of SARS

2003

TB Active Surveillance Network
established

2004

As a result, influenza detection and response capacity in Thailand has improved, and IEIP and influenza collaborations were crucial in mounting and supporting a response to the 2009 global H1N1 influenza pandemic.

The enhanced surveillance for respiratory pathogens in Nakhon Phanom and Sa Kaeo also provided detailed information on patients hospitalized with pneumonia and has led Thai health authorities to conclude that seasonal influenza is a serious health threat among the elderly. These findings were used to justify national funding for one of the developing world's first routine influenza immunization programs for persons over 65 years of age. Thailand is also currently developing its own influenza vaccine production facility with help from WHO.

In 2006, an Immigrant, Refugee, and Migrant Health Unit was established to help oversee the quality of health screening for U.S.-bound refugees and immigrants. This unit also works with the MOPH to support the Thai Border Health Plan and address outbreaks and disease surveillance in the nine refugee camps along the Thai-Burma border. It also addresses the health needs of Thailand's growing number of migrants, many of whom are undocumented and have little or no access to health care. These hard-to-reach populations are both highly mobile and susceptible to infection with communicable diseases like TB, HIV, malaria, dengue, and chikungunya.

As TUC begins its fourth decade, we are currently exploring ways to broaden our collaboration beyond infectious diseases to meet the growing challenge of non-communicable diseases and injuries that faces both Thailand and the U.S.

Michael D. Malison, MD, MPA

Tanarak Plipat, MD, PhD



Thailand MOPH Permanent Secretary Pajit Warachit and U.S. CDC Director Thomas Frieden in Atlanta, USA, marking 30 years of collaboration.

Thai Border Health Plan supported with formation of TUC refugee and immigrant unit

2006

MOPH decision, backed by MOPH and TUC research, to fund influenza vaccine for seniors with chronic disease

2008

Several SE Asian ministries of health collaborate on improved methods of screening for TB in persons with HIV, leading to changes in global guidelines

2010



I. Creative Partnerships – Leveraging Resources and Expanding Disease Prevention Networks

Working with the Silom Clinic Community

In 2003, surveillance conducted by TUC's HIV/STD Research Program (HSRP) and the MOPH's Department of Disease Control (DDC) found high HIV prevalence (17%) among men who have sex with men (MSM) and attend adult entertainment and related venues in Bangkok. Two years later, despite general high public awareness of HIV, the prevalence rose to 28%. In response, HSRP and local nongovernmental organizations set up the Silom Community Clinic, an HIV clinic for MSM located inside the Bangkok Christian Hospital on Silom Road. The clinic aims to be a model for the integration of HIV prevention research and services among MSM.

The Silom Community Clinic offers free HIV counseling and testing, as well as evaluation for other sexually transmitted infections (STI). Those diagnosed with HIV infection are offered a check of their immune system (CD4 count), to determine any need for antiretroviral treatment. This information facilitates the entry of HIV-infected men into the Thai national health care system, where they can receive further monitoring and, if indicated, free antiretroviral treatment. Men attending the clinic can also choose to be tested for hepatitis B infection and, if eligible, receive vaccination at no charge. Since 2005, the clinic has served approximately 4,000 clients in 12,000 clinic visits for HIV testing, STI evaluation, and other medical procedures.

With the establishment of a large client base at the clinic, a research infrastructure was set up for biomedical HIV prevention trials. The Bangkok MSM Cohort study (BMCS) began in 2006, and since that time approximately 1,700 MSM, 350 of them HIV-infected at the time of enrollment, have joined the study.

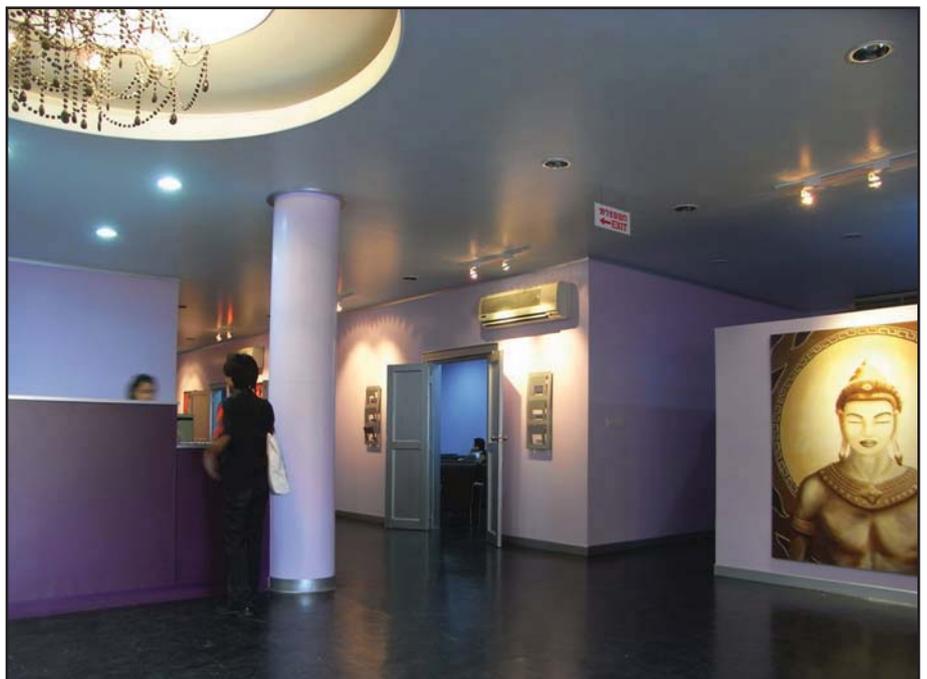
Other BMCS studies have looked at risk factors for HIV infection, distribution of HIV subtypes, sex planning and sex spacing patterns among MSM, and acceptability and willingness to participate in future trials of novel medical approaches to prevent HIV infection. Several other studies are underway to better understand various aspects of the HIV epidemic among MSM in Thailand, such as recreational drug use, exchange of sexual favors in return

Several studies are underway to better understand various aspects of the HIV epidemic among MSM in Thailand.

for money, sexual behavior change patterns; and prevalence and incidence of STIs, including hepatitis A, B and C infection, herpes simplex 1 and 2 infection, and syphilis. (See related story on page 36 about future HSRP research directions.)

Several partners aid TUC and DDC's commitment to the clinic's mission: the Bangkok Christian Hospital, the Bangkok Metropolitan Administration, amFAR, TreatAsia, the U.S. National Institutes of Health, the U.S. Agency for International Development, the Thai Red Cross Society, the Armed Forces Research Institute of Medical Science, Family Health International, the Rainbow Sky Association of Thailand, Bangkok Rainbow Organization, and the MSM Community Advisory Board.

The Silom Community Clinic offers free HIV counseling and testing, as well as evaluation for other sexually transmitted infections.





Many of Thailand's successful HIV prevention and care models are being shared with other countries. International teams have also met with leaders at the National Health Security Office to learn how Thailand pays for health care.

Hosting International Colleagues for HIV Technical Assistance

Thailand was one of the very first developing countries to bring the HIV epidemic under control. In the process, the country created many successful prevention and care models. Together with the MOPH's Department of Disease Control (DDC) and other departments, TUC's Global AIDS Program (GAP) has fostered technical collaborations to share these successful models with other countries. In 2010, several teams from Asia and Africa arrived to examine these Thai innovations. The international colleagues also met with GAP and MOPH experts to explore a range of programmatic issues, including laboratory accreditation and health systems strengthening. Site visits and discussions with regional, provincial, and district staff provided real-world examples of successful programs at every level of development. As a result of this South-to-South cooperation between Thailand and other countries, a voluntary exchange of best practices has been established.

South-to-South cooperation between Thailand and other countries has led to a voluntary exchange of best practices.

In one area of special interest, visitors studied how Thailand's laboratory accreditation program was developed and implemented, paying special attention to the stepwise progression that has lifted many Thai laboratories beyond national, to international accreditation. Discussions were held with key MOPH officials from the Department of Medical Sciences' Bureau of Laboratory Quality Systems and National Institute of Health to clarify how government authorities can better share in planning and budgeting laboratory improvements.

The international teams also met with leaders at the National Health Security Office to learn how Thailand pays for health care. GAP staff coordinated meetings between personnel with similar jobs from across Thailand, so they could compare experiences and learn from one another.

Visitors to Thailand benefit from learning about the organization of MOPH systems, including its clearly defined staff roles, and enhanced service delivery efficiency gains. The teams appreciate opportunities to question Thai personnel directly involved in establishing quality systems. Such sharing provides unique perspectives, compared to similar discussions in Western Europe or America. There, such systems have existed long enough that workers do not always remember life without them. In Thailand, improvements are recent enough to elicit insightful comparisons. Follow-up visits in 2011 are planned in several technical areas.

Partnering with Global Health Funders

Thailand was chosen to be one of seven locations to conduct the Pneumonia Etiology Research for Child Health (PERCH) study, funded in part by the Bill & Melinda Gates Foundation.

Pneumonia is the leading killer of children under the age of five, and 97% of these cases occur in developing countries. In competition with 50 applicants from around the world, Thailand was chosen to be one of seven locations to conduct the Pneumonia Etiology Research for Child Health (PERCH) study. Funded in part by the Bill & Melinda Gates Foundation, PERCH aims to identify the current causes of severe pneumonia among children under five years old, in an effort to improve diagnostic and treatment formulas. The study also aims to identify effective prevention strategies for areas of limited means.

The research in Thailand will be based at two provincial active pneumonia surveillance sites that were developed through a partnership among TUC's International Emerging Infections Program, the MOPH's Bureau of Epidemiology, National Institute of Health, and Sa Kaeo and Nakhon Phanom provincial health offices.

In Thailand and the six other locations, the study will use a case-control design and advanced diagnostic techniques to identify the most common pathogens causing childhood pneumonia; collect information on treatment approaches and outcomes; and assess risk factors for disease. The findings will guide national policies and update WHO diagnostic and treatment guidelines. Current prevention and treatment strategies are primarily based on pathogens identified in the last pneumonia etiology studies thirty years ago. Since then, major changes in the etiology of childhood pneumonia have occurred, underscoring the importance of PERCH, which gets under way in 2011.

These data will also be used to estimate the preventable fraction of pneumonia attributable to pathogens for which vaccines are currently available or under development, and to inform future vaccine policy and development.

Building Border Health Partnerships

Border populations living in Thailand are often mobile and vulnerable to disease. For these groups, TUC's Immigrant, Refugee, and Migrant Health Program (IRMHP) partners with the MOPH's Bureau of Policy and Strategy (BPS), multilateral and non-governmental health organizations, and academic institutions to provide support for surveillance and other public health activities.

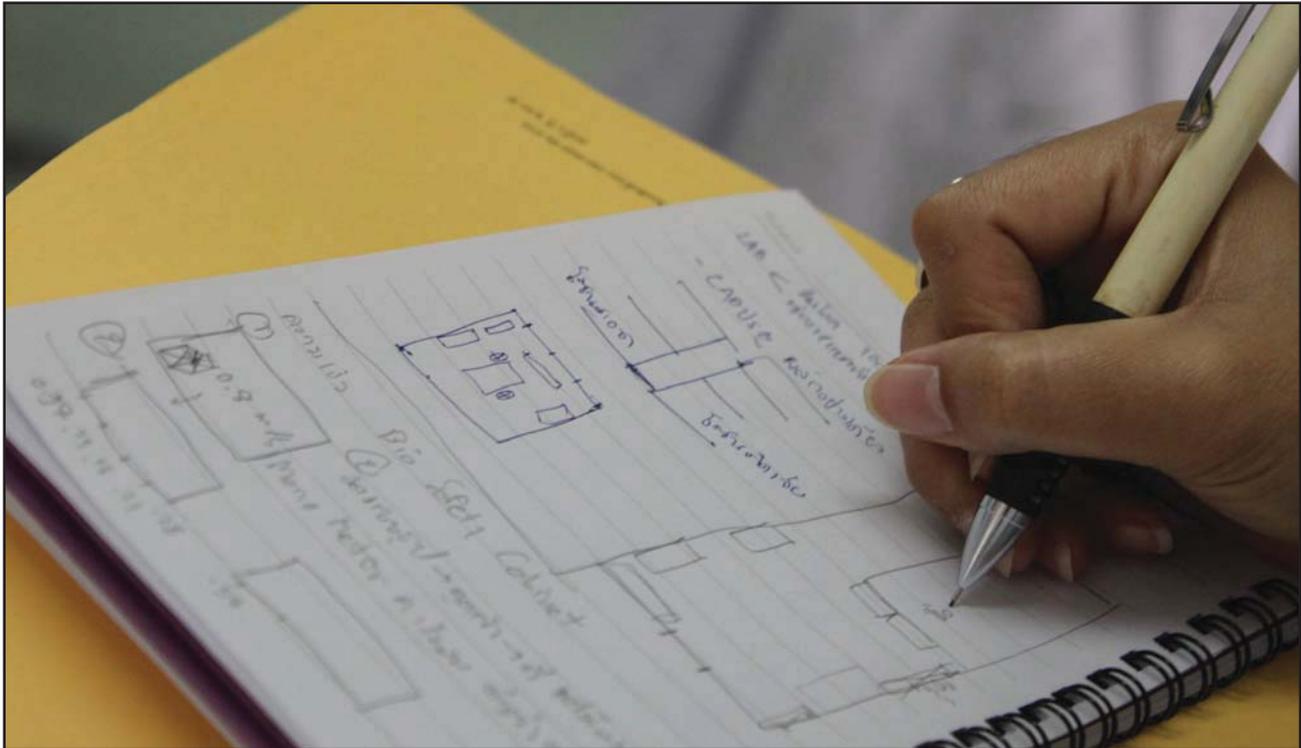
As BPS completes the Border Health Master Plan for 2012–2016, IRMHP will coordinate the engagement of other TUC programs, such as the International Emerging Infections Program, in disease prevention and control.

Shoklo Malaria Research Unit and IRMHP established a laboratory-enhanced surveillance system in Maela camp, home to nearly 50,000 refugees, located on the Thai-Burma border. Using a standard surveillance form, basic epidemiologic data is collected for refugees seeking care for respiratory illness. Specimens are tested at the Shoklo laboratories. The data provide a mechanism to detect outbreaks, such as H1N1 influenza or other emerging threats. The system also measures pathogen prevalence, which is helpful in planning vaccine or other interventions.

IRMHP also supports general public health in border areas, through systematic trainings for community health workers and medical officers working in the nine refugee camps along the Thai-Burma border. These trainings, conducted in collaboration with WHO, strengthen field staff skill and confidence in data collection and outbreak investigation, reinforcing the importance of reliable surveillance systems.



Trainings for community health workers and medical officers support general public health in border areas.



Infection control nurses work together to solve ventilation and other environmental challenges in their hospitals.

Improving Respiratory Infection Control

The MOPH has long been active in monitoring and battling the spread of respiratory diseases in hospitals and other health care settings. Most hospital-acquired infections can be prevented with appropriate infection control measures by a trained, vigilant hospital staff.

A new respiratory infection prevention and control curriculum, developed jointly by TUC's International Emerging Infections Program (IEIP), TUC's Influenza Division, and several other international public health organizations, is being used to teach health practitioners how to prevent the spread of respiratory disease in health care settings. Incorporating the latest WHO and CDC infection control guidelines for influenza, acute respiratory infections, and tuberculosis, the train-the-trainer curriculum applies adult learning techniques and hands-on skill-building. Other partners involved in developing the training included WHO, the REDI Centre of Singapore, TUC's Regional TB Program, the MOPH's Department of Medical Services and Bamrasnaradura Institute, and Jhpiego, an international nonprofit health organization affiliated with Johns Hopkins University.

Initially, 75 infection control practitioners from Thailand and eight other countries were trained with the new curriculum. CDC offices in India and China have since adapted it to train more than 120 others. Most recently, in Thailand, the MOPH's Department of Medical Services and IEIP have added the curriculum to a comprehensive national training plan for frontline

The new curriculum is generating fresh interest in developing new collaborations for nosocomial infection surveillance.

infection control nurses. Three national training workshops have been held, and evaluations will be used to refine and expand the program to best meet Thailand's needs. This project is generating fresh interest in developing new collaborations for nosocomial infection surveillance.

TUC's Regional TB Program designed a similar competency-based training for infection control nurses working on improved airborne infection control plans for their hospitals. The two-part training includes interaction among the participants, who work together to solve specific ventilation and other unique environmental challenges in their respective hospitals.

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II. Innovations – Early Disease Detection, Surveillance, and New Pathogen Discovery

Detecting Tuberculosis Early

Early diagnosis and treatment of tuberculosis (TB) improves treatment outcomes and minimizes the risk of TB transmission within households, hospitals, and the community. TUC's International Emerging Infections Program (IEIP) and Regional TB Program, along with the MOPH's Bureaus of Epidemiology and Tuberculosis, have been working to identify ways to enhance TB case-finding in the active population-based pneumonia surveillance systems in Nakhon Phanom and Sa Kaeo provinces.

In the past, IEIP and the Bureau of Epidemiology documented that only 27% of patients hospitalized with clinical pneumonia were fully evaluated for TB, despite the fact that Thailand is one of 22 WHO-designated high-burden TB countries. To study the burden of TB among patients hospitalized with pneumonia, U.S. and Thai partners for the first time are systematically seeking sputum samples for acid fast bacilli (AFB) microscopy from all hospitalized pneumonia patients over 15 years old. Preliminary results show 8.5% of the patients tested had at least one AFB-positive sputum smear. TB was suspected in only about half of AFB-positive patients at the time of admission. Compared to routine case finding described in a previous study, enhanced detection roughly doubled the number of cases found.

Among infected patients not suspected of having TB at admission, just over 25% had a history of chronic cough. This result suggests that case finding could also be improved by not limiting evaluations to patients with classical signs and symptoms of TB. Additional analyses are underway to define sensitive and efficient TB case-finding algorithms among hospitalized patients, and to improve sensitivity and speed of diagnosis, which is especially important in counties with a high TB burden such as Thailand.

Compared to routine case finding, enhanced detection roughly doubled the number of cases found.

Identifying New Pathogens

Emerging diseases sometimes look and behave like existing ones, as new pathogens often produce non-specific symptoms. In such cases, first-line treatments and prevention measures may fail, allowing new diseases to spread undetected and undeterred. Thailand's National Institute of Health (NIH), Bureau of Epidemiology (BOE), and Ministry of Agriculture are collaborating with TUC's International Emerging Infections Program (IEIP) and the Thai Red Cross to identify new pathogens, analyze specimens for new species, and answer questions about the causes and transmission routes of new infectious diseases with similar clinical presentations.

The partnership is currently focusing on *Bartonella* and other emerging zoonotic and respiratory pathogens. IEIP, BOE, and NIH played a lead role in the 2007 discovery of *Bartonella tamiae*, a pathogen new to the world, and the first culture-confirmed *Bartonella* infection in Thailand. Since that discovery, IEIP and NIH have reported four additional *Bartonella* species linked to human disease that may be novel to Thailand and possibly the world. These pathogens are being characterized using genomic methods. In addition, IEIP and Khon Kaen University, in collaboration with CDC Atlanta, are studying the causes of culture-negative endocarditis in Northeastern Thailand, with specific attention to the proportion of endocarditis cases caused by *Bartonella* and other zoonotic pathogens. This study will lead to better understanding of pathogenic causes and risk factors, improved diagnostic capabilities, and perhaps ways to reduce the high mortality associated with this disease.

Building on these efforts, IEIP, NIH, and BOE have found evidence for new human and zoonotic pathogens, including a new species of *Legionella*, which causes severe pneumonia in humans. IEIP, along with the Thai Red Cross, is also looking at bats as a possible reservoir for a number of pathogens with potential to affect humans, including Nipah virus, leptospirosis, *Bartonella*, and *Salmonella*.

Thai laboratorians are currently focused on identifying *Bartonella* and other emerging zoonotic and respiratory pathogens.





In one northern city, surveillance results showed that about one-third of the female sex workers surveyed were students, providing key information for intervening with this population.

Enhancing HIV Surveillance among High-Risk Populations

High-quality HIV surveillance is at the core of good public health practice in any country, yet the most at-risk populations are often hidden and hard to reach. These highly vulnerable groups include men who have sex with men (MSM), injection drug users (IDU), and female sex workers (FSW). Pilot studies conducted jointly by TUC and the MOPH have demonstrated the successful application of state-of-the-art integrated biological and behavioral surveillance sampling methodologies among these groups. The results have contributed to the national HIV prevention strategy and to the creation of innovative prevention models. Programs aimed at improving the country's surveillance system have resulted from technical collaboration between the MOPH's Bureau of AIDS, TB, and STIs; the Bangkok Metropolitan Administration; and two TUC programs, the HIV/STD Research Program and the Global AIDS Program.

The MOPH's Bureau of Epidemiology (BOE) and TUC piloted several rounds of venue daytime sampling among MSM in 2007. This strategy has now been integrated into routine surveillance by BOE, and TUC continues to help with infrastructure. The results help document the increasing trend in HIV prevalence in this population, and have proven useful in developing prevention outreach models using peers in several Thai provinces. Rapid HIV counseling and testing with same-day results was also piloted at several MOPH sites around Thailand to increase the number of MSM accessing testing and care.

Surveillance results contribute to the national HIV prevention strategy and to innovative prevention models.

In order to assess the HIV infection levels and risk behaviors among non-venue-based FSWs, TUC collaborated with BOE to pilot an innovative surveillance strategy called respondent-driven sampling (RDS). An RDS survey of mainly street-based FSWs in Bangkok and Chiang Rai found a tenfold-higher HIV prevalence than previously documented among FSWs using routine sentinel site surveillance. In addition, the results showed that about one-third of the FSWs surveyed in Chiang Rai were students, providing key information for intervening with this population. The survey was the first in Thailand to enroll clients of FSWs. It identified a high HIV-prevalence group of men, and demonstrated that the RDS method is feasible for reaching this important high-risk group.

In 2009, TUC provided technical support for a pilot survey on HIV prevalence and risk behavior using the RDS methodology among community-based IDUs not routinely surveyed at treatment centers in Chiang Mai and Bangkok. The method adds another tool to BOE's multifaceted surveillance system.

Diagnosing Drug-Resistant Tuberculosis

Tuberculosis, including multidrug-resistant (MDR) strains, remains a serious public health threat across Southeast Asia. Thailand is ranked 18th of 22 high-burden TB countries in the world. As a result, TUC's Regional TB Program and partners at the MOPH Bureau of TB and the Bangkok Metropolitan Administration (BMA) are investigating new and faster diagnostic techniques.

One such rapid assay for diagnosing MDR-TB, GenoType® MTBDRplus, has demonstrated both speed and accuracy, making it a promising tool. After validation, this assay was introduced in active TB surveillance network laboratories in Thailand for one year to evaluate its public health benefits. New techniques must be tested in different settings, where their ultimate value can be based on clinician decisions and treatment outcomes. Results of these studies may help TB patients in Thailand, particularly those with MDR-TB, to begin treatment early enough to prevent spreading the disease to others. The new techniques also have the potential to improve patient outcomes, reduce TB transmission, and reduce drug resistance.



Shorter disease reporting times, greater accuracy, and improved ties between the Thai and Lao FETPs resulted from joint evaluations of disease surveillance.

Evaluating Cross-Border Surveillance

Every day large numbers of people and products, some carrying diseases, cross back and forth along the nearly 5,000 kilometers of land boundaries separating Thailand from its neighbors. To strengthen disease surveillance between Thailand and Laos, the Thai and Lao Field Epidemiology Training Programs (FETP) completed two surveillance evaluations in the neighboring provinces of Mukdahan, Thailand and Savannakhet, Laos; and also in Nong Khai, Thailand and Vientiane, Laos. Provincial health staff from these provinces joined FETP staff and fellows to evaluate surveillance for pneumonia and dengue fever.

Surveillance improved markedly as a result, with shorter disease reporting times, and greater accuracy. In addition, collaboration was strengthened between the Thai and Lao FETPs and local public health staff on both sides of the border, improving the ability to detect and control outbreaks in these areas.

Provincial health staff joined FETP staff and fellows to evaluate surveillance for pneumonia and dengue fever.

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III. Successful Scale-Up – Developing and Sharing Models That Work

Making High-Quality HIV Care the Standard

MOPH officials report that over 500,000 persons in Thailand are HIV-infected, and over 75% of eligible people living with HIV/AIDS (PLHA) are on antiretroviral treatment. (Universal access to these life-saving drugs for PLHA became Thai policy in 2004.) Yet despite national guidelines, coverage for some key aspects of HIV care, such as screening for cervical cancer and tuberculosis, and viral load testing, has remained low. To build capacity for HIV care and treatment, TUC's Global AIDS Program (GAP) worked with the MOPH's Department of Disease Control to develop and pilot the HIVQUAL-T model, an initiative for performance measurement and quality improvement with infrastructure support. Through a partnership with the National Health Security Office (NHSO), nearly 80% of the country's public hospitals now participate in HIVQUAL-T. As a result, quality-of-care indicators in those hospitals are on the rise.

The HIVQUAL-T model incorporates NHSO guidelines as standards for quality of HIV care. Measurement of the HIVQUAL-T indicators highlights missing or substandard services. By following the model's quality management techniques, health care providers improve their teamwork and bring new services into standard practice. Coaching and group learning components of the model promote continuous quality improvement.

HIVQUAL-T allows providers and hospital program managers to use data to inform decision-making, and to assess improvements over time. This data review has improved provider and program manager satisfaction, as well as program quality. Key indicators such as checks of the immune system (CD4 count), viral load monitoring, opportunistic infection prevention, tuberculosis screening, and promotion of antiretroviral treatment adherence are now increasingly common at HIV clinics in Thailand, thanks to HIVQUAL-T. Hospital administrators appreciate HIVQUAL-T because it is now tied to NHSO reimbursement procedures and the national hospital accreditation system.

Nearly 80% of public hospitals now participate in HIVQUAL-T. Quality-of-care indicators are on the rise.

In 2010, NHSO budget support for HIV quality improvement totaled 30 million baht (1 million USD) annually; the money paid for quality improvement trainings, networking, coaching, and related activities. Many partners are involved in implementing the HIVQUAL-T model, including provincial medical offices, PLHA networks, the Institute of Hospital Accreditation, and the MOPH's Office of Disease Prevention and Control. NHSO also supported the representation of PLHA, nongovernmental organizations, universities, and others involved with quality management on the national HIVQUAL committee.

Because of the HIVQUAL-T model's success and acceptance, new modules have been developed, including one for sexually transmitted infection clinical care and another for voluntary counseling and testing programs. Other countries have also shown interest in Thailand's implementation of HIVQUAL-T as they plan to develop programs of their own. GAP staff members have provided technical assistance with HIVQUAL in Papua New Guinea, Uganda, and Vietnam. In 2010, they hosted an intensive multicity site visit for 25 Vietnamese officials interested in developing a Vietnam HIVQUAL program.

MOPH hosted Vietnamese officials who were interested in developing a HIVQUAL program of their own.





Chances that people living with HIV have TB are greatly increased if they report any one of the following symptoms in the previous four weeks: cough (any duration), fever (any duration), and drenching night sweats for more than three weeks.

Screening for Tuberculosis among People Living with HIV/AIDS

Tuberculosis (TB) is the leading cause of death in people with HIV/AIDS (PLHA). TUC's Regional TB program, the MOPH's Bureau of TB, and the ministries of health in Cambodia and Vietnam helped develop a simple and standardized algorithm that clinicians in Southeast Asia or anywhere else in the world can use to more effectively screen PLHA for TB.

An initial study suggests the chance that a patient has TB is greatly increased if they report the presence of any one of the following symptoms in the previous four weeks: cough (any duration), fever (any duration), and drenching night sweats for more than three weeks. New WHO guidelines, released in late 2010, have already been updated with these evidence-based findings. Cambodia has implemented this algorithm as its national policy, while Thailand and Vietnam are evaluating it at pilot sites. CDC and WHO

collaborated on a combined analysis of this study and 11 others, in order to develop new guidelines for TB screening and case finding for PLHA.

Limited laboratory capacity and funding in some countries may make it hard to adopt the new algorithm worldwide, but in an analysis of cost and effectiveness (see related story on page 27) the Regional TB program concludes the approach saves money in clinical care. What's more, it should help clinicians detect TB earlier, and help them identify groups of patients without active TB who could benefit from isoniazid preventive therapy. The study concludes the algorithm would be the best option for the Thai health care system.

Monitoring the Spread of Bacterial Infections

TUC's International Emerging Infections Program (IEIP) has joined together with Thailand's National Institute of Health (NIH) to support and help align two invasive bacterial infection surveillance systems. The coordinated approach is expected to better monitor epidemiologic trends, identify high-risk populations, detect antimicrobial resistance, and measure the effects of prevention and control programs.

The framework of the Thailand Invasive Bacterial Infection Surveillance (Thai IBIS) system, which has been collecting data and isolates through the MOPH's Department of Medical Science since 2004, was combined with the population-based surveillance system for bloodstream infections conducted collaboratively by the MOPH's Bureau of Epidemiology, NIH, and IEIP, in partnership with provincial health offices in Sa Kaeo and Nakhon Phanom provinces. The enhanced system integrates laboratory, clinical, and epidemiological data on invasive infections, focusing on specific pathogens. This approach allows calculation of disease incidence, which is vitally important to policymakers.

The merged system, known as Thai IBIS-Plus, is a powerful new tool that is well positioned to help local and national health authorities detect and respond to emerging public health threats, such as the recent global spread of gram-negative bacteria with multidrug resistance.

The Thai IBIS-Plus system is a powerful new tool that will help health authorities detect and respond to emerging public health threats.

Disclosing HIV Status to HIV-Infected Children

A team from Queen Sirikit National Institute of Child Health, Siriraj Hospital, and TUC are making a difficult conversation a bit easier. The team has developed educational materials that help caregivers explain to children with HIV what it means to be infected and how they can cope positively in their daily lives. HIV-infected children almost always have had the virus since birth, yet many are not told about their status. Healthcare providers and caregivers are often afraid the news will lead to psychological harm or stigma. Some caretakers also feel guilt or sadness about their own role in transmitting the infection to the children.

The disclosure model provides the first practical guidelines in Thailand for discussing the sensitive topic with HIV-infected children. The MOPH's Bureau of AIDS, TB, and STIs has delivered manuals and training to 450 providers from more than 100 hospitals across the country. An ongoing evaluation of the Thai model suggests, just as has been seen in other countries,



Children's self-esteem and family relationships improve after they know their disease status. Caretakers often feel relieved that they don't have to keep the diagnosis secret any longer.

HIV-infected children almost always have had the virus since birth, yet many are not told about their status.

children's self-esteem and family relationships improve after they know their disease status. Caretakers often feel relieved that they don't have to keep the diagnosis secret any longer. The model also promotes antiretroviral adherence.

The pediatric disclosure model has attracted international interest. It was presented by a Thai expert at a 2009 WHO meeting in Geneva, and will contribute to WHO guidelines for counseling and HIV testing in children. Also, the materials were shared with health care worker teams from the region and several African countries.

Following many years of TUC financial and technical support, the Global Fund to Fight AIDS, TB, and Malaria began funding disclosure training as part of the pediatric HIV network in 2009 (see story on page 22). A pediatric HIV disclosure indicator was recently incorporated into pediatric HIVQUAL (see story on page 16). The program exemplifies the goals of the MOPH and TUC working as technical partners to develop, expand, and evaluate effective models that become candidates for incorporation into national programs.

Publishing Southeast Asia Disease Outbreak Investigation Reports Online

The Thailand Field Epidemiology Training Program (FETP) is publishing an online journal called OSIR (Outbreak, Surveillance and Investigation Reports) to expand scientific communication among public health professionals across Asia. Since the first issue in 2009, this forum for FETP fellows and alumni has appeared four times, carrying studies and projects on investigations of dengue fever, Japanese encephalitis, and H1N1 influenza outbreaks. The journal includes figures and photographs to display data and methods.

Articles appear in English and the native language of the first author. In addition to epidemiological studies, OSIR contains posters that have been presented at recent international conferences and a graphic of the month.

The new journal is listed on the WHO's "Health Science Journals in Thailand" website, and has been promoted at scientific conferences around the world. Subscribers receive alerts after each new issue or poster is published. Articles are available for download without charge at <http://www.osirjournal.net>.



Exemplary pediatric care and treatment networks include mental health support activities like art therapy and recreation, which help children express emotions.

Expanding Care Networks for HIV-Infected Children

Quality and convenience are emerging as clear benefits to a new coordinated care program for children with HIV.

In 2010, the MOPH's Bureau of AIDS, TB, and STIs (BATS) and Thailand's universal health care scheme, the National Health Security Office (NHSO), approved a plan for further improving the quality of pediatric HIV care. The plan is based on a successful pilot project in Chiang Rai province that showed how network training benefits community hospitals. The model was promoted, evaluated, and expanded by BATS, TUC's Global AIDS Program (GAP), the Global Fund to Fight AIDS, TB, and Malaria, and several provincial medical offices. Together, BATS and GAP scaled up the approach, reaching community hospitals throughout Thailand. As a result, many of the approximately 9,000 Thai children receiving antiretroviral treatment in 2010 were able to receive care closer to their homes.

As a result of the scale-up, many of the approximately 9,000 Thai children receiving antiretroviral treatment in 2010 were able to receive care closer to their homes.

Taking care of HIV-infected children is complex. Pediatric antiretroviral treatment must be carefully monitored by caregivers, with doses regularly adjusted as the child grows. Typically, it is available only at provincial hospitals, making clinic visits difficult for families in remote communities. Exemplary pediatric care and treatment networks will be expanded to all interested provincial hospitals in Thailand's 76 provinces by 2013.

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IV. Public Health Policy Development – Building Evidence to Support Decision-Making

Vaccinating to Prevent Influenza

In 2008, Thailand moved toward greater protection of vulnerable elderly persons by committing to fund influenza vaccine for seniors with chronic disease. This evidence-based policy decision was notable for a middle-income nation because, even though it promised substantial benefit, it also required a large government investment. Over five million people living in Thailand are over the age of 65 and many have serious conditions such as bronchitis, emphysema, asthma, heart disease, renal disease, diabetes, and hypertension. Without seasonal flu shots, they face increased risk for severe complications of influenza infection.

The government's new policy was influenced in part by results of a collaboration among TUC's International Emerging Infections Program (IEIP) and Influenza Division, and the MOPH's Bureau of Epidemiology and National Institute of Health. The provincial health offices in Sa Kaeo and Nakhon Phanom have conducted active surveillance of hospitalized patients with respiratory illness since 2003, with support from IEIP. The surveillance has produced high-quality data on the incidence, cost, risk factors, and seasonality of influenza-associated hospitalizations. It demonstrated that the disease burden and cost of influenza in Thailand was substantially greater than had previously been believed. Scientists identified the very young and elderly, as well as those with underlying chronic disease—especially cardiopulmonary—as being at substantially high risk for severe complications from influenza infection.

In 2009, during the H1N1 influenza pandemic, seasonal influenza vaccine policy in Thailand was expanded again, to align the country with global recommendations for the pandemic vaccine. The changes remained in place for seasonal influenza vaccination in 2010, subject to future review. Data from the enhanced surveillance system in Sa Kaeo and Nakhon Phanom support the expanded recommendations.

The MOPH has been able to turn surveillance data into sound public health policy.

Thailand purchased about two million doses of the pandemic vaccine, and efforts to build influenza vaccine production capacity in the country are underway. Thailand's aggressive steps to reduce disease and death from influenza viruses and to prevent pandemics demonstrate how the MOPH has been able to turn surveillance data into sound public health policy.



Minister of Public Health Jurin Laksanawisit encourages a Thai government policy of influenza vaccination by getting immunized himself.

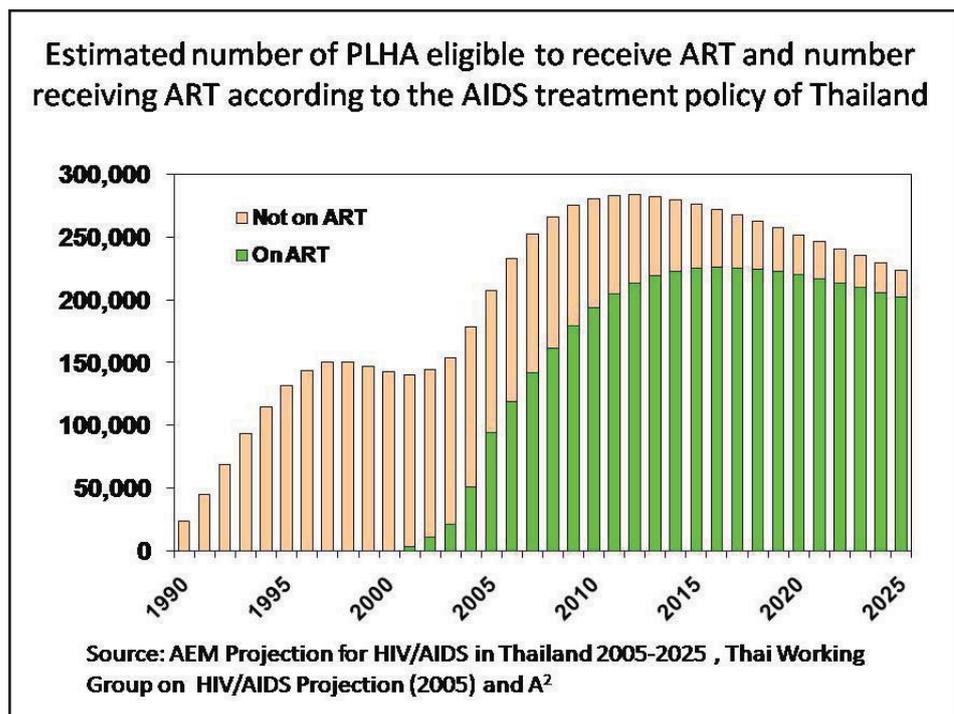
Increasing Data Use for National Program Improvement

Universal access to life-saving drugs for Thai people living with HIV/AIDS (PLHA) became national policy in 2004. Each month in Thailand, more than 1200 new names are added to the antiretroviral therapy (ART) rolls. Yet despite steady improvements in care and treatment, over 900 Thai PLHA still die every month. In their quest to save more lives, national program planners are turning to improved analysis of national data. TUC's Global AIDS Program (GAP) provides technical assistance to these planners to use existing data to improve the national program's effectiveness.

The primary collaborators in this effort are GAP, the MOPH's Department of Disease Control (DDC), and the National Health Security Office (NHSO), Thailand's national health care system. This group is examining the reasons for treatment failure and the high PLHA death rate. Answers may lie in a large database overseen by NHSO. By piecing together clues from the database, investigators are discovering ways to encourage early treatment, increase adherence, reduce loss to follow-up, and strengthen PLHA networks.

Thai policymakers from DDC and the MOPH's Department of Health will announce new approaches to data management and utilization for program improvement in 2011. GAP tools, training, and advocacy are focused on increasing the investigative capacity of Thai government staff at the facility

Each month in Thailand, more than 1200 new names are added to the antiretroviral therapy (ART) rolls.



level. Through these efforts, staff will interpret data, identify weaknesses in care and treatment, and attempt to identify the main factors associated with drug resistance, treatment failures, and other HIV care and treatment concerns.

GAP and DDC have organized courses on applied epidemiology and informatics, aimed at NHSO staff and regional health officials. This human capacity building and systems strengthening effort, using NHSO data, is partly designed to promote hospitals' access to their own datasets and data analysis software. Hospital staff are encouraged to create their own action plans and ensure the sustainability of the analysis efforts, in consultation with the regional officials.

Evidence-based analysis of NHSO data is now informing Thai national health policy on critical questions such as when PLHA should begin ART. GAP is also working with DDC and NHSO to sharpen the focus of Thailand's HIV drug resistance early warning indicators. This set of WHO-designed red flags alert ART providers to several factors that can improve program quality, such as prescribing practices and patients lost to follow-up. Early warning indicators also help planners create policies that will save lives and prevent drug resistance, while minimizing costs so the maximum number of persons can receive essential services.

Assessing the Cost Effectiveness of Tuberculosis/HIV Screening

Tuberculosis (TB) screening and diagnosis algorithms—step-by-step methods for solving problems—produce accurate results, but often at a high price. Using a health care provider perspective, the MOPH's Health Intervention and Technology Assessment Program and TUC's Regional TB Program assessed the cost effectiveness of a newly proposed algorithm, consisting of a combination of symptoms (see related story on page 18), aimed at persons living with HIV/AIDS. The two programs then weighed the findings against the algorithms recommended by Thailand's National Tuberculosis Program and WHO.

The assessment developed a model to measure direct and indirect costs and outcomes in terms of quality-adjusted life-years (QALY). According to the model, the new algorithm is a cost-saving option, yielding higher QALYs at a lower cost. It could save treatment costs and offer better health outcomes compared with algorithms currently in use.

Operational research of this kind has proven useful to Thai policymakers in the past, as it can lead to evidence-based decisions. Follow-up discussions with the MOPH's Department of Disease Control and the National Health Security Office about the recent assessment suggest that the best algorithm for the Thai health care system may be the one proposed recently by the Regional TB Program and its collaborators in Thailand, Vietnam, and Cambodia.



Thailand was the first country to request a joint review of its response to the H1N1 pandemic.

Reviewing H1N1 Influenza Preparedness and Response

During the peak of the 2009 H1N1 influenza pandemic, the Thailand MOPH and WHO invited TUC's International Emerging Infections Program (IEIP) to collaborate on a comprehensive assessment of the country's H1N1 preparedness and response. The assessment was implemented through several separate teams, focused on priority areas such as clinical case management, laboratory capacity, public communications, surveillance and epidemiology, logistics, public health interventions and infection control, and special policies for non-Thai populations.

IEIP staff joined or led international teams that included WHO consultants and MOPH senior staff. The teams' reports outlined policies, strategies, plans, and lessons learned. The newly released combined key findings and recommendations will guide future pandemic response policies and resource allocation at the highest levels of the Thai government. Thailand was the first country to request a joint review of its response to the H1N1 pandemic.

Prior to the review, TUC staff participated in Thailand's National Technical Advisory Committee, which contributed to decisions about outbreak management and response. For many years, IEIP has worked with the MOPH's Bureau of Epidemiology and National Institute of Health to enhance surveillance for pneumonia and influenza.

Tracking Lead Poisoning in Children near the Burma Border

Lead poisoning in children can seriously affect their brain development. A field investigation to determine causes of elevated blood lead levels in children at three refugee camps along the Thai-Burma border was conducted in 2009 by TUC's Immigrant, Refugee, and Migrant Health Program (IRMHP) and the International Organization for Migration, after consultation with Thai district health officials. Results of the investigation showed lead levels in U.S.-bound Burmese refugee children were significantly higher than the levels reported among the general child population in the U.S. The investigation's main recommendation was to target specific lead poisoning prevention efforts to children under the age of two years to protect them from damaging health effects.

Partly in response to the investigation, Queen Sirikit National Institute of Child Health (QSNICH) launched a separate study, which found that lead poisoning is a problem in many areas of Thailand. Among 200 children aged 2-5 years from six villages near the Thai-Burma border camps, one quarter were affected. Boys were at higher risk than girls. Other risk factors included living outside the district area, using non-tap water, and exposure to refilled batteries.

QSNICH and the MOPH have coordinated a "Safe Foods for Healthy Child" project since 2007. This project encourages Thai children to make smart food consumption choices. Lead poisoning in foods, drinks, and dust is thought to be a particular risk for children, whose ability to absorb lead is 5-10 times greater than adults'. In 2011, QSNICH and IRMHP will discuss possible areas of technical assistance and project collaboration in lead poisoning prevention.

A study by Queen Sirikit National Institute of Child Health found that lead poisoning in children is a problem in many areas of Thailand.

A photograph of a decorative wall with colorful tiles in shades of green, yellow, and red. The wall features a repeating pattern of circular motifs. In the foreground, there is a staircase made of reddish-brown tiles. The text 'V. Readiness – Strengthening Core Capacities' is overlaid in white on the upper part of the image.

V. Readiness – Strengthening Core Capacities

Supporting Laboratory Infrastructure Development and Training

Effective laboratories help health care providers and public health officials to detect, identify, and respond rapidly, and make informed decisions. TUC has worked with the MOPH to strengthen Thailand's laboratory capacity and expertise by upgrading laboratory equipment and expanding training, and by strengthening laboratory systems.

A major laboratory renovation project was completed in 2010, ensuring a safe and secure work environment. Two separate facilities on the MOPH campus were made state-of-the-art, providing space for training, laboratory testing, and technology transfer. Both Thailand's National Institute of Health and TUC's International Emerging Infections Program (IEIP) will benefit. TUC's Influenza Division and Global Disease Detection Program also supported establishment of a laboratory freezer facility in Bangkok for a safe storage of regional and local medical specimens, and a stockpile for regional and local medical reagents and supplies. Both will be operational in 2011.

Recent laboratory training opportunities have strengthened infectious disease surveillance and response capacity. In 2010, TUC and the MOPH's Bamrasnaradura Institute co-sponsored several workshops. Most of these trainings were specific to single diseases, but they also focused on general theory and troubleshooting principles, and many involved real-time polymerase chain reaction (PCR) and biosafety. Trainings are organized according to the train-the-trainer model, allowing benefits to multiply quickly. IEIP also helped bring PCR capability to two rural Thai provinces, enabling real-time detection of novel viral strains.

During the 2009 H1N1 influenza pandemic, these enhanced laboratory efforts provided critical support and information to the entire Southeast Asia region. IEIP, along with the TUC Influenza Division, WHO, and staff from the National Influenza Center of Thailand helped develop diagnostic capacity and expertise throughout the region to enable detection and identification of the new influenza strain in those countries.

During the 2009 H1N1 influenza pandemic, enhanced laboratory efforts provided critical support and information to the entire Southeast Asia region.

TUC and the MOPH are working together to be sure that Thai laboratories comply with the newly mandated International Health Regulations. TUC's Global AIDS Program (GAP) has worked with the MOPH to expand external quality assessment systems for HIV and HIV-related testing and is now broadening that support to other clinical laboratory testing. GAP also works with a regional center of the MOPH's Department of Medical Sciences to support laboratory accreditation. Additionally, IEIP and CDC Atlanta have been actively participating in a WHO-MOPH-led project to assess the national public health laboratory system of Thailand.



Polymerase chain reaction (PCR) clinical laboratory capability in Thailand's provinces enables real-time detection of novel viral strains.



Essential primary health care modules for the trainees include a large component on infectious diseases commonly found along the border.

Training Medics at the Thai-Burma Border

Humanitarian nongovernmental organizations (NGOs) provide healthcare to the nearly 150,000 Burmese refugees now living in nine temporary camps along the Thai-Burma border. To help their doctors treat and triage the large number of refugees seeking care, these NGOs train refugees as medics.

In 2010, TUC's Immigrant, Refugee, and Migrant Health Program supported the development of an innovative medic training package that provides 750 hours of instruction to the trainees. Using role plays, hands-on exercises and trials, photographs and drawings, and graduated supervised patient interactions in the clinics, the package employs adult learning strategies for trainees with potentially limited literacy and numeracy skills. Essential primary health care modules include basic anatomy and physiology, and how to examine and take a history from a patient.

Additional modules cover cardiovascular diseases, respiratory diseases, basic surgical procedures, and basic obstetrics. The package also includes a large component on infectious diseases commonly found along the border, following closely the Burmese Border Guidelines, along with modules on hygiene and sanitation, immunizations, and the integrated management of childhood diseases.

Doctors and medics participating in a Training of the Trainers have overwhelmingly supported this initiative and feel that the package will assist them in providing better quality care in the camps where they work. An evaluation of the package is planned for the end of 2011.

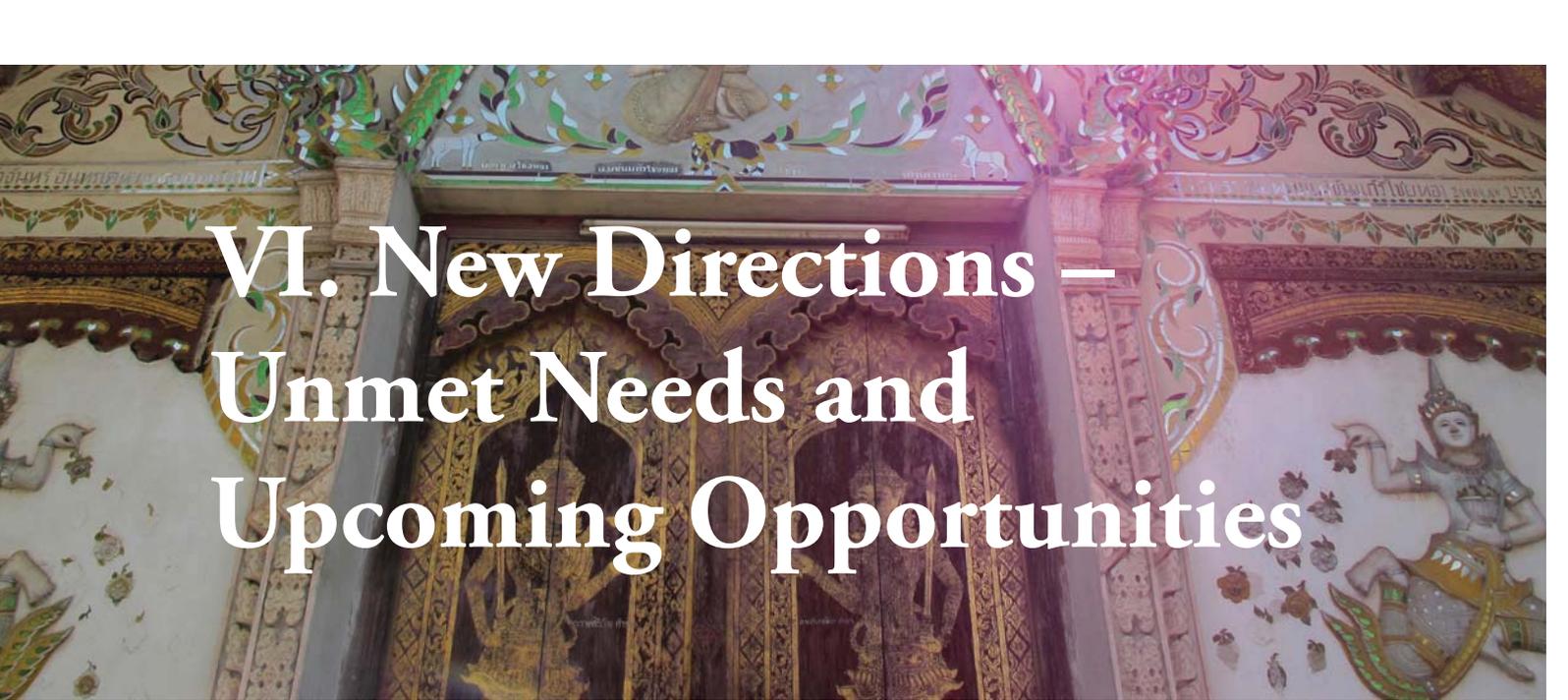
Assisting with H1N1 Influenza Response and Surveillance

At the beginning of the 2009 H1N1 influenza pandemic, TUC's International Emerging Infections Program (IEIP) and TUC's Influenza Division worked with the Thai Bureau of Epidemiology to enhance surveillance for pneumonia and influenza. IEIP and Influenza staff participated in the Thailand National Technical Advisory Committee on pandemic response and interventions, which contributed to decisions about outbreak management and response.

In addition, active surveillance sites identified and monitored pandemic H1N1 infections among hospitalized pneumonia patients from 20 hospitals in Sa Kaeo and Nakhon Phanom provinces. Clinicians at these sites received real-time results to guide patient care, while rapid case identification allowed collection of additional clinical and risk factor information from patients before discharge. These data, in addition to daily reporting of influenza-like illness cases from an ongoing influenza transmission study, were used to describe disease burden, extrapolate estimates to all of Thailand, and guide MOPH risk communication, response planning, and resource allocation. The Severe and Fatal Pneumonia Project, run by the MOPH's Bureau of Epidemiology with some IEIP support, also provided data that were used to guide clinical practice guidelines.

The advisor to the Thailand Field Epidemiology Training Program (FETP) assisted with the investigations of H1N1 outbreaks in schools and provided technical assistance to the Thailand FETP during the early stages of the pandemic. In 2010, IEIP and the MOPH's Bureau of Emerging Infectious Diseases co-sponsored seminars on diagnosis and clinical management of influenza, designed to enhance public health personnel capabilities and increase knowledge and awareness of seasonal influenza and novel pandemic influenza.

The data were used to describe disease burden, extrapolate estimates to all of Thailand, and guide MOPH risk communication, response planning, and resource allocation.



VI. New Directions – Unmet Needs and Upcoming Opportunities

Strengthening Collaboration on Non-Communicable Diseases

This century, non-communicable diseases (NCDs) have replaced infectious diseases as the leading threats to human health. Cancer, cardiovascular disease, diabetes, and injuries account for more than sixty percent of all illnesses and deaths. NCDs and their risk factors—tobacco use, physical inactivity, obesity, and excessive use of alcohol—are projected to increase over the next decade. Low- and middle-income countries are most affected by this trend.

Recently, CDC and the MOPH have joined to strengthen Thailand's response to the burden of NCDs. At a meeting in August 2010, directors of 35 Thai programs and CDC staff discussed the country's needs, interests, and capacity to address the growing problem. MOPH participants included the Deputy Permanent Secretary; directors of the Bureaus of Epidemiology, Chronic Disease, and Nutrition; and representatives from the National Cancer Institute, Queen Sirikit National Institute of Child Health, and Thai Field Epidemiology Training Program (FETP), among others.

The collaboration plans to build on success of current programs in Thailand and the U.S., particularly in the areas of tobacco control, diabetes, hypertension, obesity, traffic injuries, and cancer. Moving forward, the participants agreed to share technical and policy experiences, critically examine the effectiveness of interventions, and collaborate on research projects. Priorities for 2011 include creating an NCD track in the Thailand FETP to produce epidemiologists with skills in chronic diseases, and other activities aimed at building this capacity, such as conducting workshops on injury epidemiology and on health survey systems such as the Behavioral Risk Factor Surveillance System.

A related NCD project is a nutritional assessment at the Thai-Burma border, where surveys in refugee camps have been conducted by nongovernmental organizations and university researchers since the mid-1990s. Recent studies there have shown lowered rates of acute malnutrition, as measured by children's weight for height. However, chronic malnutrition—a measure

The collaboration plans to build on success of current programs in the areas of tobacco control, diabetes, hypertension, obesity, traffic injuries, and cancer.

of height for age—remains a concern, along with anemia among children younger than five years, inadequate supplemental feeding program coverage, and recent interruptions in the vitamin A supply.

TUC's Immigrant, Refugee, and Migrant Health Regional Program, at the request of a consortium of border NGOs, conducted a comprehensive review of nutritional assessments done during the past 15 years. The review aimed to determine priorities for intervention and gaps in current camp nutrition initiatives. The resulting report identified potential options and strategies for addressing key nutritional concerns, documented past successes, and presented a framework for NGOs to prioritize and enact future interventions.



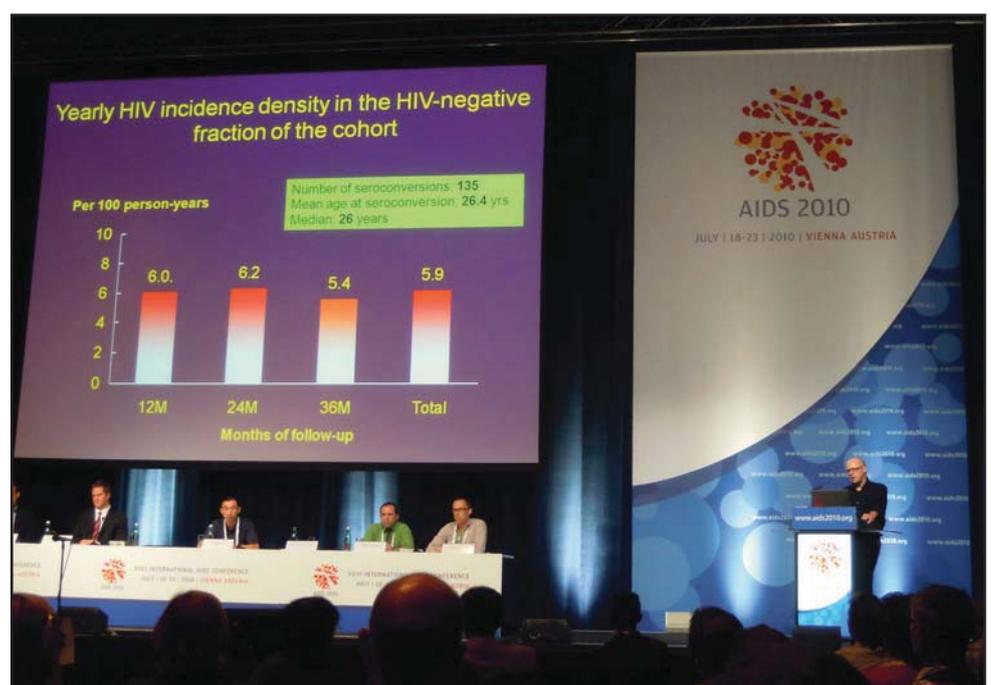
Although recent nutrition surveys in Thai-Burma border refugee camps show lowered rates of acute malnutrition, concerns remain. TUC's Refugee Health Program reviewed 15 years of such surveys, documenting past successes and outlining future priorities.

Advancing HIV Research

The Silom Community Clinic (see related story on page 2), a collaborative effort of TUC, the MOPH's Department of Disease Control, and several other organizations, is expected to soon become a full-fledged clinical trial site of the HIV Prevention Trials Network (HPTN) and the Microbicide Trial Network (MTN). In 2011 and 2012, two important and challenging tasks await the clinic: the start of the ADAPT Study (HPTN 067), investigating the behavioral use of intermittent pre-exposure chemoprophylaxis to prevent HIV infection among men who have sex with men (MSM); and MTN 017, a study of the safety and acceptability of a rectal tenofovir gel with a similar objective. These studies will be essential to inform and improve the HIV prevention toolbox for MSM.

The HIV prevention field eagerly awaits the final results, in 2011-12, of another study managed by TUC and the Bangkok Metropolitan Administration (BMA), known as the Bangkok Tenofovir Study (BTS). This Phase II/III randomized, placebo-controlled clinical trial, a collaboration between TUC, the MOPH, and BMA, is being conducted in 17 drug treatment clinics aims to determine if a daily dose of oral tenofovir (an antiretroviral drug widely used for the treatment of HIV/AIDS) is safe and can prevent HIV infection among intravenous drug users (IDUs). This concept is called pre-exposure prophylaxis (PrEP), and BTS is the only PrEP trial being conducted among IDUs in the world. Close collaboration with IDUs and IDU community representatives enabled trial enrollment to begin in June 2005. Enrollment

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was completed in 2010, with over 2,400 eligible IDUs randomized to receive either tenofovir or placebo. Study volunteers chose to follow up with daily directly observed taking of study drug, or monthly without direct observation. Interim safety and efficacy analysis are conducted by an independent data and safety and monitoring board (DSMB). Rates of adherence to daily tenofovir or placebo have been good, and daily directly observed pill taking has been successfully implemented in all 17 clinics. The DSMB has recommended trial continuation following each annual review.

The importance of BTS results was spotlighted when another PrEP trial, conducted in Peru and five other countries, announced results in 2010. The study, called iPrEx, examined whether tenofovir plus emtricitabine (brand name Truvada®) can prevent HIV infection among MSM. Among volunteers reporting high levels of adherence to the pills (taking them on 90% or more days), the risk of HIV infection was reduced by more than 70%.

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Expanding Field Epidemiology Training

In 1980, the Thai Field Epidemiology Training Program (FETP), started by the MOPH and CDC, focused on producing epidemiologists with the expertise to control and prevent infectious disease outbreaks. Today the program's success at producing professional epidemiologist makes it a cornerstone of the MOPH's disease control operation.

At the same time, the growth of disease control knowledge has made the program's role more complicated and important, particularly in connection with diseases among humans that originate from an animal host. FETP has expanded accordingly, taking a multi-disciplinary approach to disease control and prevention. The program now teaches veterinary epidemiology and covers zoonotic and chronic diseases. FETP has also developed a new collaboration with the wildlife sector through a project on influenza surveillance among workers and animals in national parks. The important problem of non-communicable diseases in Thailand may also be added to the curriculum soon.

In addition to expansion of the Thai FETP, three countries in Southeast Asia have recently started a training program in applied field epidemiology and a fourth will start one in 2011. The fellows in these programs will receive training in basic epidemiology, disaster epidemiology, hospital infections, non-communicable diseases, use of informal information in disease surveillance systems, leadership, management, and scientific writing. A mentorship training module has been developed to provide guidance to the programs' training staffs. TUC is glad to have had a part in supporting the expansion of the FETPs in Thailand and other countries in the region.

Responding to Zoonotic Diseases

An estimated 75% of emerging infectious diseases among humans originate from an animal host. Severe Acute Respiratory Syndrome (SARS), H5N1 influenza (bird flu), and the 2009 H1N1 influenza pandemic are recent examples of global health threats that are believed to have been transmitted from animals to humans. TUC programs and partners at the MOPH, including the Bureau of Epidemiology, the Field Epidemiology Training Program (FETP), the National Institute of Health, and the Bureau of General Communicable Diseases, have prioritized the expansion of collaborative activities focusing on zoonotic diseases. Such projects emphasize “One Health” strategies, which take into account important interrelationships among the human, animal, and environmental sectors.

One project now underway includes the creation of a two-year International Field Epidemiology Training Program for Veterinarians (FETP-V), which aims to increase expertise and capacity in zoonotic epidemiology. The FETP-V was created by a coalition of partners that includes the MOPH, the Thai Ministry of Agriculture and Cooperatives (MoAg), TUC, USAID, and the United Nations Food and Agriculture Organization. This training program adapts successful training experiences of FETP and includes links to tools used by MoAg.

Additional examples of active projects to improve understanding and control of emerging zoonotic disease threats include a pilot project in Lampang for joint human-animal surveillance of *Streptococcus suis* in humans and pigs, and a study examining the zoonotic causes of infective endocarditis in Khon Kaen. These joint surveillance and research projects will be used to guide planning, implementation, and evaluation of programs designed to manage, treat, control, and prevent zoonotic diseases.

Plans are underway to conduct new One Health projects in the coming year: 1) enhanced surveillance for the re-assortment of flu viruses among swine, 2) a study of market factors that influence the movement of animals across borders, and 3) surveillance of influenza viruses among wildlife and wildlife workers. TUC’s International Emerging Infections Program is recruiting for a local veterinary epidemiologist to support further collaborations with the MOPH. These efforts and newly proposed collaborative projects will help build sustainable, integrated capacity and expertise to address zoonotic emerging disease threats in Thailand and throughout the region.

‘One Health’ strategies take into account important interrelationships among the human, animal, and environmental sectors.

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