Updates From the Field

Protecting Health and Building Capacity Globally

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Increase in Human Anthrax Cases in Georgia Sparks Outbreak Investigation

Submitted by: Archil Navadarshvili, MD – South Caucasus FELTP Resident

While conducting an investigation on the incidence of anthrax in Georgia as part of my field epidemiology training, I noticed a sudden three-fold increase in human cases of cutaneous anthrax in the first months of 2012. Suspecting an outbreak, I alerted my FELTP director, and two U.S. CDC anthrax experts were dispatched to the Georgia National Center for Disease Control and Public Health (NCDC) to help with the investigation. A team comprised of U.S. CDC and NCDC specialists and South Caucasus FELTP residents worked to confirm the outbreak, evaluate the risks to humans, and assess the impact of animal and environmental factors on the number of cases and the spread of the disease.

Black eschar (dead tissue) caused by cutaneous anthrax.

Anthrax occurs seasonally in Georgia, often in summer. It is caused by bacteria that live in soil and form inactive spores under harsh conditions, enabling them to survive in the soil for decades. Animals often contract the disease when they eat or inhale the bacteria or spores while grazing in contaminated fields. Cutaneous anthrax mainly affects the skin. In humans, it is most commonly caused by having a break in the skin which comes into direct contact with the blood or body fluids of an infected animal, by preparing, handling, cooking or eating the flesh. It can also be contracted by handling products made from hides, hair, bone or other parts of animals with the disease.

A laboratorian from the Georgia National Center for Disease Control collects samples of potentially contaminated soil.

Based on the results of the investigation, the team recommended assessing animals as well as humans when investigating an outbreak,

Skin ulcer caused by cutaneous anthrax.

vaccinating livestock for anthrax, which had not been done since 2008, and launching a public education campaign. The education campaign advises farmers not to kill and bury sick animals, to call in a veterinarian to examine them, and to arrange for their proper disposal to prevent contamination of the soil if they have anthrax. Farmers are also warned not to slaughter, eat or sell the meat of a sick animal. To further address the problem, I and other FELTP residents have joined with veterinarians to form a working group to assist the Georgia Ministry of Health and the Georgia Ministry of Agriculture, who recently signed a cooperative agreement to work together to reduce the risk of future outbreaks.

For further information please contact: Dr. Archil Navadarshvili at a.navdarashvili@yahoo.com.

Inside this issue:

Center for Global Health

Division of Global Health Protection (Proposed)

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CDC establishes the Division of Global Health Protection (proposed)

Submitted by: Ruth Cooke Gibbs, MIS, MPH CDC – Atlanta

As a result of the Center for Global Health's (CGH) organizational improvement assessment conducted at the beginning of this year, the Division of Global Disease Detection and Emergency Response, the Division of Public Health Systems and Workforce Development and the Non-Communicable Disease Unit have been reorganized and merged into one division. This reorganization was undertaken to increase efficiency, streamline resources, and establish better coordination among programs not only within the division, but also with other centers and divisions across CDC.

Over the past six months, significant progress has been made, and on May 1st, the proposed Division of Global Health Protection began functioning within its new organizational structure. The division integrates CDC programs that promote the advancement of strong health systems, build workforce capacity, and help to improve global health security.

The division is comprised of four branches and one unit. They are the Emergency Response and Recovery Branch, the Field Epidemiology Training Program Branch, the Global Disease Detection Branch, the Global Health Security Branch, and the Non-Communicable Disease Unit.

The Division of Global Health Protection builds public health capacity in countries and international settings by working to prevent disease, disability and death from communicable and non-communicable diseases. DGHP helps to ensure global health security by preparing for and responding to public health emergencies, establishing global disease detection centers, detecting and preventing the spread of disease outbreaks, supporting the development of national public health institutes, advancing non-communicable disease prevention and control, and assisting countries in meeting International Health Regulation requirements.

CDC is committed to saving lives, by leveraging resources and providing leadership and technical expertise to Ministries of Health to help ensure global health security and protect the health of Americans and populations across the globe.

We value our partnerships and look forward to achieving much continued success together.

For further information, please contact Dr. Kashef Ijaz at kil6@cdc.gov.

Seeking Submissions…

If you would like your program to be featured in an upcoming issue of Updates from the Field, please send a 300-400 word summary of your program's activities and jpeg photos to Ruth Cooke Gibbs at icn6@cdc.gov.

Dengue Outbreak Among Aid Workers in Haiti

Submitted by: Stephanie Salyer, DVM, MPH, EIS Officer, CDC Atlanta

In a low lying coastal town about a two hour drive from the capital, Léogâne was the epicenter of the earthquake that devastated Haiti in 2010. As part of my Epidemic Intelligence Service (EIS) fieldwork, I investigated a possible outbreak of dengue among aid workers in Léogâne in 2012.

Since the earthquake, Léogâne has become a site of ongoing infrastructure development, with construction of new roads, and water and sanitation projects. Many non-governmental organizations (NGOs) set up offices in Léogâne. Regardless of the NGO workers country of origin, they face the threat of mosquito-borne diseases, including malaria, lymphatic filariasis, and dengue.

Dengue is a virus transmitted by mosquitoes. Once bitten, a person can experience symptoms such as high fever, severe headache, severe pain behind the eyes, joint pain, muscle and bone pain, rash, and mild bleeding (e.g., nose or gums bleed, easy bruising). Dengue is thought to cause approximately 25,000 deaths every year worldwide. There are two main mosquitoes that are responsible for transmitting dengue virus, Aedes aegypti and Aedes albopictus.

Dr. Stephanie Salyer conducting a dengue outbreak investigation in Haiti.

Ryan Hemme, Epidemiologist in the CDC's Dengue Branch, collecting mosquito larvae in Haiti.

In October 2012, a doctor from the International Federation of Red Cross and Red Crescent Societies (IFRC) contacted the Haiti Ministry of Health and CDC to report that an unusually high number of NGO workers in Haiti – and primarily in Léogâne – had been diagnosed with dengue in the previous 6 months. In response to this alert, the Haitian Ministry of Health, together with CDC, launched an investigation in Léogâne. In addition to myself, our team included residents from Haiti's Field Epidemiology Training Program, epidemiologists from CDC-Haiti, and an Epidemic Intelligence Service officer and entomologist from CDC's Dengue Branch in Puerto Rico.

During our investigation, we observed high numbers of mosquitoes at all the worksites and residences we visited. The majority of these mosquitoes were Aedes aegypti. Buckets and tires containing water were the most common habitats for immature mosquitoes. During our site visits, we educated NGO workers about the importance of emptying out containers with pooled water, and we stressed the importance of creating proper drainage for any outside containers. In addition, because the mosquitoes that transmit dengue primarily bite during the day, we stressed the importance of using mosquito repellent containing 20-30% DEET throughout the day.

Our investigation of nearly 200 NGO workers revealed that one in ten participants had been infected with dengue virus in the last 3 months. Both Haitians and expatriates had been recently infected. The team emphasized that greater efforts should be made to educate all NGO workers on mosquito-bite prevention practices, and that community-wide work should be undertaken to reduce mosquito-producing habitats in and around workplaces and residences. Because no vaccine is currently available to prevent dengue, avoiding mosquito bites is the most effective protection against infection.

Even though our investigation was mainly conducted in Léogâne, we know that dengue likely occurs throughout Haiti. Therefore, we hope that our recommendations from this investigation will be shared with NGOs and health workers throughout the country to help prevent future dengue infections.

For further information, please contact Dr. Stephanie Salyer at wig9@cdc.gov.

Improving Health in Informal Communities in Sub-Saharan Africa through Partnerships and Integrated Care

Submitted by: Nadine L. Sunderland, MPH, MEd, CDC Kenya

Informal settlements near large cities in sub-Saharan Africa are home to many of the world's most vulnerable populations. In Nairobi, Kenya, the living conditions of the densely populated urban slum of Kibera – its close and poorly ventilated quarters, lack of sanitation, and the general poverty of the residents – increase the risk of contracting infectious diseases.

Jeff Raikes, CEO of the Bill & Melinda Gates Foundation (left), and Joel Montgomery, Director, GDD-Kenya, discuss the sanitation conditions in Kibera.

To address this public health challenge, CDC is working with local institutions and organizations in Kenya to study the diseases that affect Kibera residents, develop effective solutions, and provide needed health care services. In partnership with the Kenya Medical Research Institute (KEMRI), CDC conducts household-based infectious disease surveillance among 28,000 residents of Kibera. CDC has also joined with the Tabitha Medical Clinic, owned by Carolina for Kibera, a U.S.-based non-governmental organization, to offer basic medical care. While providing services to the community, the clinic also collects epidemiologic and clinical data and biological specimens from people with symptoms of pneumonia, diarrhea, fever, and jaundice.

A child in Kibera has her temperature taken as part of the regular data collection activities of a household-based disease surveillance system.

This integrated approach to disease surveillance and response among vulnerable populations is an example of how CDC works with partners to leverage limited resources to achieve maximum public health impact. The goals of CDC's surveillance activities in Kibera are to define the burden and causes of infectious diseases and identify emerging pathogens. However, by working with partners like KEMRI and Carolina for Kibera, CDC has been able to assist in implementing interventions, such as vaccination campaigns and water and sanitation projects, which can reduce the burden of disease.

CDC's work in Kibera also demonstrates program integration between its' global disease detection (GDD) and HIV care and treatment activities. CDC's work as part of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) supports services provided at the clinic, while CDC and KEMRI have together investigated the household impact of the HIV epidemic. One recent finding of this joint investigation is an increase in the rates of fever, respiratory, and diarrheal syndromes among all household members living with HIV-positive individuals.

Studying the way vulnerable communities are affected by disease has implications for the health of the global community. Conducting on-going surveillance of fever and pneumonia coupled with confirmatory testing of influenza viruses has helped epidemiologists to identify seasonal patterns of influenza infections in Kenya. In 2009, the surveillance system detected the introduction of pH1N1 influenza virus in the urban slum which made it possible to conduct detailed epidemiologic studies of the new virus in this environment. The data collected through such surveillance helps us to understand how to identify emerging diseases, respond to potential health threats, and implement the interventions which have the most powerful impact on public health.

For further information, please contact Dr. Joel Montgomery, Director, GDD-Kenya, at ztq9@cdc.gov.

CDC joins with International Partners to Improve Electronic Disease Surveillance Systems in Africa

Submitted by: Helen N. Perry, PhD, IDSR Team Lead, CDC Atlanta

Widespread enthusiasm about establishing electronic disease surveillance systems in Africa has prompted countries to develop multiple, independent systems with different standards and requirements. As a result, the systems are not interoperable, which means that they cannot "talk to each other" to share and exchange information.

Attendees at the African Surveillance Governance Board (ASIGB) Planning Meeting, May 15-17, 2013 at the Burgers Park Hotel, Pretoria, South Africa.

To address this and other issues, the World Health Organization Regional Office for Africa (WHO /AFRO) recently convened a meeting of government, multilateral, bilateral and private sector partners to discuss establishing an African Surveillance Informatics Governance Board (ASIGB). Another objective of the meeting was to educate the stakeholders about the ways that well-designed electronic data systems (or eSurveillance) can improve disease prevention, detection, and response. CDC's Integrated Disease Surveillance and Response (IDSR) and Global Health Informatics teams, WHO/AFRO, the Defense Threat Reduction Agency (DTRA), African Field Epidemiology Network (AFENET) and other partners, developed and presented to the participants a proposal for an Africa-led eSurveillance governing board supported by a technical advisory group.

The proposed structure would provide countries with a forum for leadership and oversight, and strategic guidance for strengthening implementation of electronic support to national disease surveillance and response activities. It would also include the establishment of interoperability standards to enable the sharing of information across systems. A Surveillance Informatics Technical Advisory Group, working under the guidance of the ASIGB, would assist countries with assessments, strategic planning, and development of informatics standards.

From left: Dr. Elisa Claudine Seukap of the Cameroon Ministry of Health, Dr. Denis Yelbeogo of the Burkina Faso Ministry of Health, and Professor Mufata Tshimanga, Chairman of the Board, African Field Epidemiology Network (AFENET).

Other participants at the meeting included representatives of eight African countries and stakeholders such as the World Bank, the Bill and Melinda Gates Foundation, the Global Fund, and the U.S. Agency for International Development.

Presentations from WHO, CDC, Nigeria, Kenya, and other countries gave examples of the synergy between IDSR as a surveillance system strengthening strategy and the IHR requirements for improving core detection and response capacities. CDC presented on the importance of including data interchange standards when planning for implementation of electronic systems. Key issues such as policy and legislation, infrastructure, workforce, and resources were examined by breakout groups which made recommendations to the planning committee.

Meeting participants unanimously agreed upon the need to establish an African Surveillance Informatics Governance Board (ASIGB), supported by a Surveillance Informatics Technical Advisory Group. A follow-up meeting is planned for July to develop an implementation plan for standing up the board and its technical advisory group.

For further information, please contact Dr. Helen Perry at hap5@cdc.gov.

China FETP Residents Discover New Species of Deadly Mushroom in Yunnan Province

Submitted By: Robert Fontaine, MD, CDC Atlanta

Editor's Note: A recent article in The Scientist -- "Little White and the Three Toxins," -- tells the story of the decade-long search for the cause of more than 400 unexplained deaths in Yunnan province, China. Dr. Robert Fontaine, an advisor to the Chinese Field Epidemiology Training Program of the Chinese CDC , has been involved in the investigation since 2004.

The previously-undescribed species of toxic mushroom, Trogia venenata, was discovered in Yunnan province, China.

When seemingly healthy people die suddenly from unknown causes, public health professionals sit up and take notice. That's what happened in several remote villages in Yunnan, China, where the number of unexplained deaths increased annually to an average of 30 per year between 1990 and 1998. The deaths occurred in small settlements during the early weeks of the summer monsoon rains and were characterized by the absence of any initial symptoms. Healthy people would suddenly lose consciousness, fall to the ground, lapse into a coma, and die.

Despite multiple investigations by different government institutes, no cause had been identified. In 2005, in an effort to find the cause of these mysterious deaths, the national government of China asked the Chinese Field Epidemiology Training Program (CFETP) to investigate. As a first step, CFETP residents traveled to the villages to gather medical information and exposure histories from the relatives of those who died suddenly of unknown causes.

A China FETP investigator gathers samples of the unusual toxic mushroom Trogia venenata.

Two children whose parents and three siblings died after eating the toxic mushroom, Trogia venenata, now live with their uncle.

The CFETP led case-control studies in the villages to determine what features differentiated those who had died from those who remained healthy. The studies revealed that those who died had consumed either wild mushrooms or untreated surface water while unaffected villagers rarely reported the same exposures. However, the deaths were not consistent with any symptoms associated with death by mushroom poisoning. Nevertheless, the Yunnan provincial government advised villagers in early 2006 not to eat unfamiliar mushrooms and to avoid drinking untreated surface water.

That same year, continuing surveillance and investigations by the CFETP uncovered another important clue. In the first two villages, 100 kilometers apart, where new sudden deaths occurred, the affected families had eaten the same type of mushroom. This was later identified as a new species, Trogia venenata, nicknamed "Little White".

The CFETP followed up on this lead and found more groups of sudden unexplained deaths. There were also more unexplained deaths in villages where the mushroom was found than in villages where the mushroom was not present. Families who ate this mushroom had sudden deaths, while other families in the same villages who did not eat the mushroom were not affected.

Toxicological investigations in mice revealed that an extract of the mushroom, administered into the stomach, lowered blood sugar to fatal levels and killed the mice. These levels of blood sugar were consistent with the sudden loss of consciousness, coma, and death seen in the human victims. Two similar amino acids, isolated from the mushrooms, proved to be the specific toxins. The repeated and ongoing warnings to villagers in the affected areas proved to be a successful intervention. Sudden unexplained deaths decreased from 30 per year before the intervention (1998 to 2005) to 2 per year since the intervention (2006 to 2012).

For further information, please contact Dr. Robert Fontaine at ref1@cdc.gov.

EIS International Night A Resounding Success

Submitted by: Jude Wilson, MA and Ruth Cooke Gibbs, MIS, MPH, CDC Atlanta

More than 500 epidemiologists, academicians, and other CDC global health partners gathered on April 24 for International Night, one of the highlights of the Epidemic Intelligence Service (EIS) Conference in Atlanta, Georgia. Co-hosted by CDC's Division of Global Health Protection (proposed), and its partner, the Training Programs in Epidemiology and Public Health Intervention Network (TEPHINET), International Night provides a unique forum for Field Epidemiology Training Program (FETP) residents from all over the world to share and formally present the results of their work in preventing and controlling disease outbreaks and other health threats.

International Night also offers FETP residents the rare opportunity to meet in person, exchange information and ideas, and develop a sense of camaraderie, building a network that facilitates cross-border collaboration in times of crisis.

In her International Night message, U.S. Department of Health and Human Services Secretary Kathleen Sebelius expressed appreciation to the FETP residents, graduates and advisors, saying, "FETP residents are our "boots on the ground" in the ongoing battle for global health security…They deserve our thanks for their personal courage and commitment to saving and improving lives all across the globe."

A total of 229 abstracts and 100 photographs from FETP residents and graduates in 17 countries were submitted for consideration. Five abstracts were selected for oral presentation, and 15 for poster presentations. Three photographs won certificates for their technical quality and portrayal of FETPs in action. CDC Director Dr. Thomas Frieden and Philippines Secretary of Health Dr. Enrique Ona offered remarks about the importance of working with ministries of health to build capacity to detect and respond to health threats.

Dr. William H. Foege, the former CDC Director after whom the highest International Night honor is named, helped to present the awards. Dr. Foege is credited with devising the strategy that led to the global eradication of smallpox. After presenting the William H. Foege Award for best oral presentation to Ms. Man Wang of the China FETP, Dr. Foege spoke of the future of his young colleagues. "EIS used to be almost the only way you could get into global health. Now there are so many avenues that we are seeing global health just mushrooming around the world… I appreciate all of your coming, and I just wish I were younger so I could do the things you're going to be able to do over the coming years."

Other award winners were Liangliang Cui, also from the China FETP, who won the Best Scientific Poster Award, and Dr. Kayla Laserson from the India FETP, who won first place in the photo contest. Dr. Joseph Kibachio of the Kenya FETP, and Dr. Steve Wiersma of the Tanzania FETP won second and third prizes in the photo contest.

For further information on EIS International Night and FETP, please contact Dr. Linda Quick at maq2@cdc.gov.

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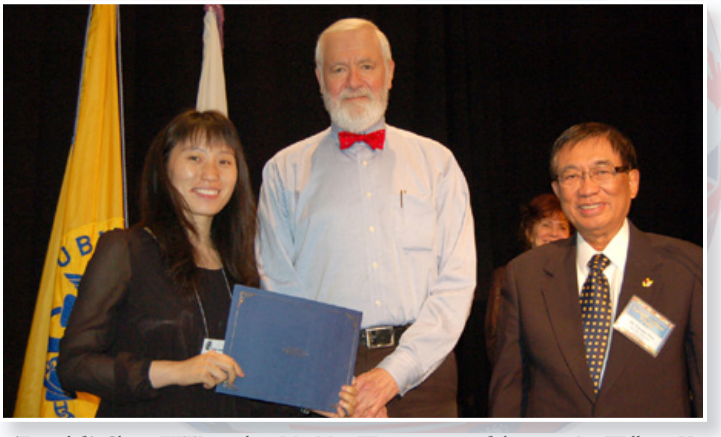

(From left) China FETP resident Ms. Man Wang, winner of the 2013 Dr. William H. Foege Award; Dr. William H. Foege, former CDC Director and current Senior Fellow, The Bill and Melinda Gates Foundation, and Dr. Enrique Ona, Philippines Secretary of Health. Photo courtesy of Ken Johnson.

India FETP resident advisor Dr. Kayla Laserson, winner of the International Night photo contest, accepts her award from Dr. Dionisio Herrera Guibert, Director, the Training Program in Epidemiology and Public Health Intervention Network. Photo courtesy of Sid Slover.

The winning photo in the EIS International Night Photo Contest by India FETP resident Dr. Kayla Laserson depicts an India EIS Officer conducting an immunization coverage survey in Alwar District, Rajasthan, India, October 2012. Photo courtesy of Dr. Kayla Laserson.

Graduate Corner

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Oral Presenter Dr. Mazvita Muropa of the South Africa FETP receives her certificate from EIS International Night's Master of Ceremonies, Dr. Linda Quick, Chief, Field Epidemiology Training Program Branch. Photo courtesy of Ken Johnson.

(Left to Right) Dr. Pattie Simone, Principal Deputy Director of CDC's Center for Global Health; Dr. Dionisio Herrera Guibert, Director, TEPHINET; and Dr. Fadzilah Kamaludin, Head, Office of Deputy Director General of Health Malaysia and International Night co-moderator take a moment to exchange ideas and celebrate their partnership. Photo courtesy of Monique Tuyisenge-Onyegbula.

CDC Director Dr. Thomas Frieden speaks at EIS International Night, held on April 24, 2013 at the Crowne Plaza Ravinia in Atlanta, Georgia. Photo courtesy of Ken Johnson.

Germany FETP resident Dr. Sebastian Haller explains his poster to Ambassador Jimmy Kolker, Principal Deputy Director, Office of Global Affairs, Office of the Secretary, U.S. Department of Health and Human Services, who served as co-moderator for EIS International Night. Photo courtesy of Ken Johnson.

Nigeria FETP resident Dr. Aishatu Abubakar Sadiq shows one of the pictures she submitted for the photo contest. Photo courtesy of Monique Tuyisenge-Onyegbula.

Dr. Wada Imam Bello and fellow Nigerian FETP residents looking at the pictures they submitted for the photo contest at EIS International Night at the Crowne Plaza Ravinia hotel in Atlanta, Georgia, on April 24, 2013. Photo courtesy of Monique Tuyisenge-Onyegbula.

(From left) China FETP resident Ms. Liangliang Cui, winner of the award for best poster presentation with Dr. William H. Foege and Dr. Enrique Ona, Philippines Secretary of Health. Photo courtesy of Ken Johnson.

More than 500 people attended EIS International Night at the Crowne Plaza Ravinia hotel in Atlanta, Georgia, April 24, 2013. Photo courtesy of Monique Tuyisenge-Onyegbula.

Focusing on Mental Health in a Humanitarian Crisis

Submitted by: Barbara Lopes Cardozo, MD MPH, CDC Atlanta

The Syrian refugee crisis represents the culmination of the conflict between the Syrian government and its own people, a violent conflict that has greatly affected the civilian population and caused them to flee in large numbers. Up to 1,000 Syrians are now leaving the country a day; most are heading to Jordan but some have also fled to Turkey, Lebanon, and even Iraq. There is no end in sight as the conflict continues.

Small tent in a Syrian refugee camp in Jordan.

The Syrian refugee camp in Jordan is right along the border of the two countries. It is in the middle of the desert, a flat, featureless, dusty landscape that is hot in the summer and cold in the winter. Around 800,000 Syrians have now settled within Jordan. The single refugee camp is fairly crowded, and attitudes there, while not openly hostile, still render it unsafe for outsiders.

This March, a team from the Emergency Response and Recovery Branch facilitated a training with UNICEF, WHO, UNHCR, and local non-governmental organizations to plan for the public health needs of the refugee community. Topics ranged from a measles vaccination campaign, mortality surveillance, to shelter provision; we were also able to begin to address the psychological needs of the community. For refugees being driven out by a very violent situation, addressing the psychological wounds of war in the community as well as the mental health of aid workers is an important component of public health interventions. It is an area that is often overlooked in the haste to address more immediate health problems.

After the training in Jordan, CDC collaborated with the International Medical Corps (IMC) in order to establish an outcome evaluation to assess the effectiveness of their mental health intervention. Using a case management approach, the IMC team of experts, which includes psychologists, psychiatrists, nurses, and social workers, assess each new case individually in order to create a tailored treatment plan according to the needs of the patient. Because of the strength of evidence based interventions, and the lack of them that specifically address mental health, this outcome evaluation is especially important for demonstrating the effectiveness of the case management approach; an approach that we hope to continue using in this population.

By caring not only for a population's physical health, but also for the psychological wounds caused by the violence, we can begin to take a more holistic approach with our public health interventions that allows for healing on multiple levels.

For further information, please contact Dr. Barbara Lopes Cardozo at bhc8@cdc.gov.

Woman walking across the expansive Syrian refugee camp in Jordan.