

Global Disease Detection Program Key Part of Worldwide Network (2007)

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Washington -- When AIDS arose in animals in western Africa, jumped to people, evolved over decades and then emerged in 1981 as clusters of unusual disease in New York and San Francisco, there was no systematic way to detect potentially global diseases.

Today, a handful of international networks crisscross the globe, working together to respond to disease outbreaks, build laboratory capability in nations that need such help, and train scientists and others in each region to detect, confirm and contain pathogens.

The U.S. Centers for Disease Control and Prevention (CDC) in Atlanta has been working since 2004 to build the newest network -- the Global Disease Detection (GDD) program.

"The GDD program was funded by Congress in the wake of SARS [severe acute respiratory syndrome]," said Dr. Scott Dowell, CDC director of global disease detection and emergency response, in a June 26 USINFO interview, "and the appreciation from the U.S. point of view that we needed to do a better job of detecting these [outbreaks] early and containing them before they spread internationally."

SARS caused an epidemic between November 2002 and July 2003, with more than 8,000 cases and 774 deaths. It was first reported in Asia, and over a few months spread to more than 24 countries in North America, South America, Europe and Asia.

GLOBAL OPERATIONS

The CDC program has five centers so far -- fully functioning centers in Thailand and Kenya, and new centers established in 2006 in Guatemala, China and Egypt that are expected to be fully staffed and operational in 2008.

Linking each laboratory is the GDD Operations Center, an analytical clearinghouse and coordination point at CDC in Atlanta.

The operations center gathers outbreak information, coordinates responses and supports the World Health Organization's (WHO) Global Outbreak Alert and Response Network, a technical collaboration of institutions that pools human and technical resources to allow rapid identification, confirmation and response to outbreaks of international importance.

GDD works with other international networks and laboratories, like the U.S. Defense Department's Global Emerging Infections Surveillance and Response System and its overseas laboratories, including the U.S. Army Medical Research Unit in Kenya and the U.S. Navy Medical Research Unit No. 3 (NAMRU-3) in Cairo, Egypt.

The international networks are “very complementary programs,” Dowell said. “Our relationship with the Department of Defense centers varies in how robust it is, from a good cordial working relationship with occasional collaborations with Army centers in Athens and Thailand, to full collaboration with NAMRU-3 in Cairo.”

In Cairo, the most recently established GDD outpost, the center is nested within NAMRU-3.

Key activities at each center include a regionally networked outbreak response, population-based surveillance, scientific research, field epidemiology and laboratory training, and networking with other organizations.

Population-based surveillance is a special kind of high-intensity surveillance, Dowell said. In practice – in the case of monitoring the causes of pneumonia – it means very clearly defining geographic areas, confirming every suspected case with X-rays, intensively investigating for the bacteria, viruses and other organisms that cause pneumonia, and tracking the disease over time.

Such surveillance is done, he said, “so we have a sense of burden of disease and seasonal trends and other things. It’s the kind of surveillance that’s done at 12 sites across the United States, but very few other places around the world are able to afford it.”

DISEASE RESPONSE

In fiscal year 2006, the five centers responded to more than 144 outbreaks of avian influenza, hemorrhagic fever, meningitis, cholera and unexplained sudden death. Effective responses to those cases prevented thousands of other infections and dozens of deaths.

In China, for example, there was an 83 percent decline in a severe form of streptococcus infection. In Thailand, delivery of a botulism antitoxin prevented multiple deaths. In Nicaragua, investigation and control measures saved hundreds of lives put at risk by methanol intoxication.

On June 15, the revised International Health Regulations became effective, bringing a comprehensive set of rules and procedures into force for WHO and its member states, and changing the way the global community responds to infectious disease threats.

The revisions updated 1969 regulations that addressed only cholera, plague, yellow fever and smallpox, a disease now eradicated. Most countries have adopted the revised regulations as legally binding rules to contain disease threats like avian influenza and SARS that could spread rapidly from country to country.

The regulations have been the focus of discussions among GDD and WHO about the degree to which the GDD centers can be used to help implement the new regulations.

The regulations “put a big burden on countries,” Dowell said. “In many ways, they require all member states to be able to detect new outbreaks, report them right away and contain them,” but many do not have the resources or expertise to do so.

“Positioning these well-resourced GDD centers in different regions is not the whole answer,” Dowell added, “but we hope it’s a contribution toward that.”