

Lessons from the DoD's Biodetection Early Warning System

By Dana Hinesly, on the [BioSecurity 2002 website](#), posted 11.19.02

Acting as emcee, Dr. Miles Shore, Bullard Professor of Psychiatry at Harvard Medical School, Harvard Medical International and Harvard's Kennedy School of Government, reiterated BioSecurity 2002's forward direction Tuesday, continuing from Monday's analysis of the sciences involved in biosecurity, to a focus on systems in place and still needed to increase the nation's surveillance, biodetection and early-warning capabilities.

First to address the topic was Colonel Patrick Kelly, MD, DrPh, DoD-GEIS for the Department of Defense Global Emerging Infections System at the Walter Reed Army Institute of Research.

The session covered the Department of Defense Global Emerging Infections System (DoD-GEIS), established in response to a presidential directive in June 1996. The directive required DoD responsibilities to expand to include the support of global surveillance, training, research and response to emerging infectious disease threats.

To this end, the DoD-GEIS established a central hub that works in concert with a network of medical units in cities around the world, including laboratories in Egypt, Indonesia, Kenya and Thailand. Collectively, these labs employ more than 1,000 people, all conducting research and surveillance "to help identify problems that may affect our soldiers and civilian populations," said Kelly. "We have a powerful network we can use to service the nation."

The DoD also oversees the Early Warning Outbreak Recognition System (EWORS). EWORS is a "hospital-based network of computerized linkages to detect emerging patterns" in patient symptoms, said Kelly. The software is provided to health care professionals, who enter patient symptoms as part of

the treatment process. This helps identify potential infectious diseases that may be of public health importance, Kelly said.

EWORS was used so successfully in Indonesia -- initially its only location -- it is now being implemented in other parts of the world due to its success. [[Click here](#) to read about EWORS in South Korea.]

Currently, EWORS has picked up at least ten outbreaks and though it is designed to track and analyze emerging naturally occurring outbreaks, Kelly believes the software has potential as a tool in and disaster response, as well as detecting biological attacks.

He also sees potential for a civilian application of EWORS as part of the war on terrorism. "To mitigate (public fear), it's critical to have information. EWORS will give civilian authorities the information they can use for effective communication, so the terror will be minimized," said Kelly.

The need to keep communities informed was echoed by Lieutenant Colonel Julie Pavlin, MD, DoD-GEIS for the Department of Defense Global Emerging Infections System at the Walter Reed Army Institute of Research.

Pavlin devotes most of her energy designing real-time, nontraditional surveillance methods for DoD-GEIS. One such method is the Electronic Surveillance System for the Early Notification of Community-based Epidemics ([ESSENCE](#)), which was created in 1997 to analyze and monitor disease trends based on diagnostic codes determined during examinations of military personnel. Following the attacks on September 11, ESSENCE's potential as a nationwide surveillance system became obvious, Pavlin said, and it was expanded to include every fixed military establishment in the world.

Each location can review collected data through a secured Web site, providing quick access and allowing responders to get an idea of what ailments are being seen around the globe.

Through partnerships with the Johns Hopkins University Applied Physics Laboratory, work is also being done on creating a system to track the civilian population. This cooperation has resulted in expanding collected data, including sales of over-the-counter medications and school absenteeism rates, which give even earlier indications of an outbreak, as many people wait two to three days before seeking professional treatment.

"We are using all the resources we have for surveillance ... and that's where we'll have our best ability to detect outbreaks," said Pavlin.

The system is not perfect, Pavlin admits. "Nonspecific information cannot

give you specific answers," she said. Pavlin also stressed the need for continued involvement from public health professionals, as ESSENCE does not eliminate the need for epidemiological investigations of events when they occur. But her aspirations for ESSENCE are that "hopefully we would be able to know something is going on and help before (we) get to a crisis point."



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Global Emerging Infections Surveillance and Response
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