Signals and Surveillance: The Detectors

CORE Series ARTICLE 2

The first signs of trouble surfaced on the Friday before Labor Day, 2011. The Colorado Department of Public Health and Environment posted a media announcement that the number of illnesses caused by *Listeria*, normally about two per month in that state, had spiked to seven in August.

That same day, the Signals and Surveillance Team at the Food and Drug Administration (FDA) had seen the announcement in its continual search for news about foodborne illnesses and was on the case.

The team—part of FDA's Coordinated Response and Evaluation (CORE) Network—was in immediate contact with FDA's Denver district office and worked through the holiday weekend. By the following Tuesday the team knew it was very likely that one food had most likely transmitted the infection, called listeriosis, that causes fever and diarrhea. It can be more serious in those with weakened immune systems, such as the elderly, and fatal to unborn children.

Working with the Centers for Disease Control and Prevention (CDC), the team confirmed that people beyond Colorado were getting sick and that this was a multi-state outbreak.

And the prime suspect was whole cantaloupe.

In CORE, outbreak investigations begin with the Signals and Surveillance Team. Its members are essentially detectives who look for sig-

FDA photo by Michael Ermarth

CORE Team leaders from left: Jeffrey Brown (Signals and Surveillance Team), Carla Tuite (Response Team), Brett Podoski (Post-Response Team), Pamela LeBlanc (Response Team) and William Lanier (Response Team). For captioned photos and quotes from these CORE Team leaders, go to Flickr: *www.flickr.com/photos/fdaphotos/7697419646/*

About this Series

This is the second in a series of four Consumer Updates on FDA's CORE (Coordinated Outbreak Response and Evaluation) teams and their innovative approach to food safety. The next two articles will introduce you to the other CORE teams.

- **CORE's First Year**
- **Response:** Stopping the Outbreak
- **Post-Response:** Preventing the Next Outbreak

For this article and links the other CORE Series articles online, go to *www.fda.gov/ForConsumers/ConsumerUpdates/ucm314544.htm*

FDA CORE NETWORK | COORDINATED OUTBREAK RESPONSE & EVALUATION

"It all starts with signals—any information we can get our eyes, ears and hands on."

nals—bits of data and information that may point to a pending multistate outbreak—and evaluate whether these signals point to trends implicating FDA-regulated products as the cause of the outbreak. If they do, the team performs a kind of triage, evaluating whether to turn the case over to a CORE response team.

The team includes a consumer safety officer (an FDA staffer with a background in science), a policy analyst, a veterinary medical officer, an epidemiologist, and a microbiologist.

"We're like smoke detectors in a fire," says Jeffrey Brown, a supervisory consumer safety officer and leader of the team.

CORE, and the Signals and Surveillance Team, have markedly changed FDA's strategy for dealing with outbreaks. "In the past, we didn't give as much time to looking at signals. We were just responding," says microbiologist Elisa Elliot.

Catching the signals early can result in faster response time.

In the case of the cantaloupes, early detection of a combination of signals enabled response team members to send investigators to the farm in question while the fruit was still on the vine, and to examine the practices that likely enabled the disease-causing bacteria *Listeria monocytogenes* to get into the cantaloupes while the farm was still harvesting and packing them.

Many Sources of Information

So how does the team learn of a potential outbreak? "It all starts with signals—any information we can get our eyes, ears and hands on," Brown says. The team routinely follows the following information sources:

- The PulseNet WebBoard, an online bulletin board coordinated by CDC that is dedicated to states' results of PFGE, or Pulsed Field Gel Electrophoresis testing, which determines the DNA patterns of disease-causing organisms. Scientists are able to compare these patterns to see if clusters of illnesses are related.
- Consumer complaints to FDA
- Epi-X, a CDC and state secure outbreak discussion network
- FDA databases used by field staff, which include information on food sample collections, imports and inspections of food
- CDC FoodNet, which conducts surveillance for foodborne infections
- FDA Center for Veterinary Medicine databases
- European and international notification databases
- Anything found in the public domain, such as on the Internet and in print. One useful online source is Foodtrack, a service that tracks product recalls, outbreaks, tampering incidents and food defense threats.

Several factors determine which incidents get transferred to a CORE response team. Brown said that roughly two thirds of these incidents that the team evaluates do not result in a response that may have unnecessarily used FDA time and resources.

But a response team is brought in when factors include:

- illnesses in people or animals,
- people getting sick in multiple states,
- interstate commerce, and
- An FDA-regulated food or other product.

According to internal CORE files, between its 2011 launch and early June 2012, the Signals and Surveillance Team evaluated 143 incidents. Forty-six were transferred to a CORE response team. In the other cases, the incidents were not transferred because the product involved was not regulated by FDA or could not be identified, among other reasons. Incidents involving products not regulated by FDA were referred to the appropriate regulatory agency.

When the incident is transferred to a response team, the Signals and Surveillance Team provides an information package including an incident summary, information on the suspected or known organism and product, early epidemiological information, and sometimes research on the company, if identified.

In the *Listeria* outbreak, for example, Brown said the team's online research helped CORE's Response Team, the FDA district, and state and local partners track down the specific farm producing the contaminated cantaloupe.

Ultimately, the Signals and Surveillance Team is the front line of the CORE network.

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