

Of peppers and preparedness

by Dr. Andrew Garrett
Tuesday, 28 October 2008

What can a chili pepper teach us about disaster preparedness?

In June, the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) began issuing advisories about a foodborne salmonella outbreak that was detected in the United States.

At the end of August, the agencies announced with little fanfare that the outbreak was over. According to the CDC, there were 1,442 cases in 43 states and at least 286 hospitalizations.

At the outset of the investigation, fresh tomatoes were initially implicated through “guilt by association” with other salmonella outbreaks, and a national advisory was put in place for over 40 days while officials attempted to find the source of the illness. The tomato ban was subsequently lifted, but not before a reported \$100 million damage occurred to the tomato industry’s sales as a result of a conservative, yet possibly false, alarm. In July, additional vegetables were added to the list of suspects, as public confusion continued to mount over what food was safe to eat. In the end, Mexican grown jalapeño and Serrano peppers were genetically “fingerprinted” as being the likely culprits, although tomatoes have not been completely cleared off the suspect list.

This was a difficult investigation for public health officials as well as the public and the food industry. An FDA official stated that this outbreak has been one of the most complex contamination cases he has experienced, and with good reason. The produce in question is so frequently matched together in recipes that the epidemiological investigation of cases has been extraordinarily challenged when officials tried to match effect to cause. Add to this the variables of an election year, multiple agencies involved in investigating this high-profile case and the fact that food alerts issued to protect the public can have enormous financial repercussions in the private sector. It is understandable why many public health officials are frustrated.

Even bigger challenges

An incident of biological terrorism has great potential to pose even greater challenges than the summer’s salmonella outbreak. The substance involved may sound familiar, such as salmonella, E. coli, or botulism, but a carefully orchestrated attack at one or more points high up in the food distribution chain or in a public venue such as a major vacation destination would likely present a true investigative nightmare that would challenge currently available resources.

In many ways, a terrorism-related outbreak investigation would proceed in a traditional fashion—albeit with many additional layers. Cases would need to be located, surveillance conducted, exposures traced and maps drawn. We would be dependent upon an already strained and chronically under-funded public health system to accomplish much of this.

An August 2007 survey of local public health departments conducted by the National Association of County and City Health Officials titled *Federal Funding for Public Health Emergency Preparedness: Implications and Ongoing Issues for Local Health Departments* (purchasable at <http://www.naccho.org/publications/emergency/>) found that 77 percent of the nation's public health workforce felt that improvements are needed to better position their agencies to respond to a public health emergency. Over half stated that they had inadequate funding from the federal government to meet their emergency preparedness deliverables. They also stated that the three hardest positions to fill are those of epidemiologists, nurses and emergency preparedness planners—all of whom play key roles in this type of response.

Lessons learned

Some of the capability-related shortfalls in the summer salmonella investigation hold important lessons for future cases where the occurrence may be non-accidental.

First and foremost is the need for a capable and robust public health infrastructure at the local, state and federal level to take on the boots-on-the-ground investigative and management challenge that an engineered outbreak could pose. This includes well-trained personnel in adequate numbers and access to the appropriate resources to rapidly carry out a complex outbreak investigation.

Appropriately informing the public during this type of emergency also needs to be a top priority. As the salmonella outbreak evolved, the public messages became more confusing—citing a suspect food list that moved around the produce section. Officials expected that consumers would be able to identify the source of their food in the marketplace. For those who chose to find information on the Internet, searching Google for "salmonella outbreak" returned nearly 2 million hits, many of which did not contain current or reliable information, even on the first page of search results. This emphasizes that creating a clear, actionable public message from a trusted source is one of the most important and challenging aspects of responding to this or any type of emergency.

The complexities of responding to a biological terrorism event will dwarf even the most serious accidental outbreak of foodborne illness. However, as a nation we will be best positioned to meet that challenge if we commit to improving the everyday capacity of the public health workforce, funding it appropriately and continuing to build on the ability to use "routine" public health emergencies as proving grounds for the skills that officials will need to use if the unspeakable happens. HST

Dr. Andrew Garrett is the Director of Planning and Response at the National Center for Disaster Preparedness, part of the Mailman School of Public Health at Columbia University in New York City.