Outbreak Investigation – Part 1

Week #1 Materials

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BIGDATA SUMMER IMMERSION

Scene Setup

A large athletic tournament between two academically elite universities occurs annually each autumn in New Haven, Connecticut. The people of all ages are expected to attend the event throughout the week. There are over 20 small food vendors in the vicinity as well as a large central kitchen for the venue.

Three days into the event, a local emergency room has seen four cases of severe vomiting and diarrhea, two of which contained blood. One person is also complaining about a sudden onset of respiratory distress. Noting that all patients attended the same event, the attending physician notifies the local department of health (DOH). DOH advised medical staff to get a food history on the analysis, to rule out the most common food- and water-borne pathogens. CTDPH and Poison Control Center are investigating the following as possible causes of the illnesses: staphylococcus enterotoxin, Bacillus cereus toxins, heavy metals, and other toxins.

Environmental health investigators and a team of epidemiologists from CTDPH are sent to the venue to obtain food and water samples and to interview food vendors. Health investigators arrived to conduct appropriate interviews and inspect the kitchen area. Investigators determined that six food workers from the main food concession stand were not available for interview; two of these individuals were unable to be contacted and could not be located. The workers in question were scheduled to be on duty but had not been

event occurs over the course of five days. Approximately 100,000

patients and any others presenting with similar symptoms. Additionally, two of the patients begin to exhibit symptoms of multiple organ failure, and one patient experiences seizures. By the next morning, 30 additional patients with similar symptoms were treated; they all shared one common element—visiting the event. Due to the number of patients and development of symptoms, local poison control was notified.

Authorities initially suspected an infectious etiology. Blood, stool, and vomit samples were collected and sent to a state laboratory for present at work all day. Investigators suspected that they could possibly be sick as well because often workers consume food from their work establishments. Investigators also discovered two containers with no labels that contain powdery residues of an unknown substance.

On the day symptoms were first reported, an unknown number of attendees may have visited the event. By interviewing vendors, investigators estimated that approximately 40,000 individuals may have consumed food or drinks at the venue. Similar numbers of individuals visited the event on the previous days. According to the estimates, more than 20,000 individuals may have been exposed to the suspected source food or drinks.

Regulatory Agencies

1. How and when would you expect your agency to learn about these illnesses?
2. How and when would you learn about these illnesses, and what action, if any, would your agency take when you learned that the illnesses occurred and screening was planned or underway?
3. What other actions would the incident command take early on, after setting up?
4. Who would make contact with the other states that may be hosting similar large scale events? Who all would be included in these notifications?

Laboratory Group

1. How quickly would you expect to learn about the illnesses at the event?
2. What preparatory actions would you make after learning about the possibility of a food contamination emergency that would require large-scale sample screening?
3. What would be your next steps after screening food samples?
4. Who would deliver clinical samples to the labs?
5. If the incident happened on a weekend, would this slow down the screenings? Could your staff handle this workload or would you need additional surge capacity?

Rapid Response Team

1. Would you expect to learn about the illnesses at the large venue event? At what point? Who would inform you?
2. Would you have consultations with Rapid Response Teams in other states or with regulatory agencies after learning of the illnesses?
3. Once you knew that a large-scale food sampling operation was possible, what preparations (if any) would you initiate?
4. What procedures, if any, are in place for the RRTs to go on alert?