SLO Public Health Laboratory Bulletin

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Nationwide Salmonella Montevideo outbreak

Local, state and federal authorities continue to investigate a 44-state outbreak of Salmonellosis due to serotype Montevideo. As of February 15, 230 cases, including 30 cases in California have been reported. Five cases of Salmonella Seftenberg are under investigation as well. A recall of ready-to-eat varieties of Italian sausage products, especially salami is underway as these products have been linked by epidemiologic analysis, and by recovery of the outbreak strain from product.

This outbreak illustrates how foodborne illness outbreaks are detected when scores of cases are scattered across the US:

- Physicians order stool cultures for patients with a gastrointestinal illness and oversee the collection and transport of the specimen to a clinical laboratory
- Clinical Laboratories culture for Salmonella and other enteric pathogens, conduct identification tests and refer the culture isolates rapidly to their local public health laboratory.
- The local public health laboratory confirms the identification of the Salmonella isolate and may conduct serogrouping. The San Luis Obispo Public Health Laboratory routinely conducts serogroup testing for the most frequently seen Salmonella: groups A, B, C1, C2 and D. Salmonella Montevideo belongs to serogroup C1.
- Isolates are referred to the area PulseNet laboratory for “DNA fingerprinting”, usually Pulsed-field gel electrophoretic typing (PFGE) and Multi-Locus Variable number tandem repeat analysis (MLVA). These methods discern the relatedness of the isolates and which ones belong to the same clone—ie, reveal a cluster of patients infected by a common event. The PFGE patterns –as digital electronic files –are uploaded to the Centers for Disease Control and Prevention (CDC) PulseNet database. Clusters are detected by CDC scientists and reported to the public health authorities.
- Public Health epidemiologists at local, state and the CDC administer exhaustive questionnaires to the Salmonellosis patients in a cluster, and analyze the data from many patients for common exposures—in the case of this outbreak: consumption of salami
- PulseNet laboratories and partner FDA and USDA laboratories obtain samples of the implicated food products and attempt to culture Salmonella. If a culture isolate is recovered from the food, it is subjected to same identification and typing procedures as the human isolate. If the isolate is an exact match, the food product is virtually conclusively determined as the vehicle of transmission.
- However, the source of the Salmonella may require further investigation. Salami is a product made from multiple food sources. In this outbreak, peppercorns may be the source and are being actively studied. In 2007 a noteworthy outbreak of E coli O157 led investigators to announce that tomatoes were the source, only later to determine that jalapeno peppers were the culprit. The blending of tomatoes with peppers in multiple varieties of ready-to-eat products had led investigators in the wrong direction initially.

In these investigations, it also important to remember that for every culture-proven case of Salmonellosis there may be as many of 50 individuals who were infected but never saw a doctor, or saw a doctor and never were cultured, or were cultured and the agent escaped recovery. Only the collaboration of the medical and public health communities allows this state-of-the-art system to work.

Pandemic H1N1 2009 Influenza virus

Transmission of the pandemic H1N1 2009 influenza virus continues as “sporadic” in California, but at a very reduced rate. Seasonal H1 and H3 Type A virus have yet to be detected by the SLO Public Health Laboratory this year. Only 1% of all specimens tested for Influenza PCR by the 26 California local health department laboratories are currently positive for the pandemic H1N1 virus.

What else does a public health laboratory do besides flu testing?

The SLO PHL has validated a PCR assay for poxvirus detection. More in the March issue of the SLO Laboratory Bulletin.