

Legionnaires' Disease Outbreak at a Long-Term Care Facility: Persistence of Low-Level Legionella Contamination in a Water System – North Carolina, 2014

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Date: Tuesday, April 21, 2015
Time: 3:25 pm/et
Location: Dunwoody Suite

Summary: Investigation into a Legionnaires' outbreak at a long-term care facility shows how difficult it can be to get rid of this deadly bug.

Abstract:

Background: During June 5–6, 2014, the North Carolina Division of Public Health was notified of 3 positive Legionella urine antigen tests (LUATs) from persons with radiologic-confirmed pneumonia and exposure to the same long-term care facility (LTCF) within the 10-day incubation period. We investigated to identify the source and prevent additional cases.

Methods: A Legionnaires' disease (LD) outbreak case was defined as a positive LUAT in a person with radiologic-confirmed pneumonia on or after December 1, 2013 (6 months before index case onset) and facility exposure 2–10 days before onset. We collected urine for LUAT from each resident with pneumonia onset on or after December 1, 2013. We conducted an environmental assessment and collected representative bulk water and swab samples for Legionella culture.

Results: We identified 8 cases among 5 residents, 2 visitors, and 1 contractor. Onsets were May 25–June 22, 2014. Seven (88%) patients required hospitalization; no legionellosis-related deaths occurred. We identified water system conditions favorable for Legionella amplification, including areas of stagnation and suboptimal hot water temperatures. A recommended healthcare facility Legionella prevention plan was not in place. *L. pneumophila* serogroup 1 was isolated from 26 (60%) of 43 environmental samples initially collected. Despite remediation including short-term water system superheating and hyperchlorination, increasing hot water temperatures, and minimizing stagnation, Legionella has been persistently isolated from subsequent environmental samples. Control measures, including 0.2 micron point-of-use filter installation, remain in place until complete Legionella eradication is achieved.

Conclusions: An LD outbreak at a LTCF was associated with Legionella in the water system. This investigation demonstrates that low-level contamination can persist despite multiple remediation efforts. Complete Legionella eradication might require secondary disinfection or other protracted remediation efforts.