

## Healthcare-Associated Outbreak of Legionnaires' Disease on an Inpatient Hematology-Oncology Unit – Alabama, 2014

**Author:** Louise Francois Watkins  
**Date:** Monday, April 20, 2015  
**Time:** 9:35 am/et  
**Location:** Ravinia Ballroom

**Summary:** A hospital unit for immune-compromised cancer patients experienced an outbreak of legionellosis, most likely associated with the hospital's water system. This outbreak highlights how vulnerable populations are at risk for healthcare-associated infections, including those from environmental exposures.

### Abstract:

**Background:** In May 2014, the Alabama Department of Public Health detected an outbreak of Legionnaires' disease (LD) associated with a new hematology-oncology unit at Hospital A. Healthcare-associated LD has a 14-40% mortality rate; immunocompromised patients are particularly susceptible. We characterized the outbreak and evaluated contributing factors to stop transmission.

**Methods:** An LD case was defined as radiographically-confirmed pneumonia in a person with a positive urinary antigen test and/or respiratory culture for Legionella and exposure to the hematology-oncology unit. Cases were classified as definitely or probably healthcare-associated based on extent of exposure during the incubation period (2–10 days). Medical charts were reviewed. We conducted an environmental assessment and collected representative water samples for culture. Clinical and environmental isolates were compared by monoclonal antibody (mAb) testing and sequence-based typing.

**Results:** We identified 10 cases (nine inpatients and one visitor), including six definitely and four probably healthcare-associated cases over a 12-week period. Eight patients (80%) had active leukemia and seven (70%) received chemotherapy during the admission prior to LD onset. Environmental sampling revealed Legionella pneumophila serogroup 1 (Lp1) in the potable water at 50% (17/34) of hematology-oncology unit sites, including all patient rooms tested; the three clinical isolates were identical to environmental isolates from the unit (mAb2-positive, sequence type ST36). No new cases occurred with exposure after implementation of water restrictions followed by point-of-use filters.

**Conclusions:** Contamination of the hospital's potable water system with uncommon Lp1 strain ST36 was the likely source of this outbreak. Clinicians caring for immunocompromised patients should maintain a high index of suspicion for healthcare-associated LD. Strict water restriction precautions were effective and should be considered in LD outbreak settings involving immunocompromised patients.