



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Mary T. Bassett, MD, MPH
Commissioner

2015 Alert #45:

Legionnaires' Disease Outbreak in East Bronx: Likely Source Identified

- No outbreak-related cases of Legionnaires' disease (LD) have occurred in the East Bronx since the last patient became ill on September 28, 2015
- Epidemiologic and laboratory investigations identified a cooling tower as the source of the outbreak, and that tower has been disinfected.
- Providers should always consider LD when evaluating adults for community-acquired pneumonia and, if appropriate, perform urine antigen testing and collect respiratory tract specimens for *Legionella* culture.
- Report cases promptly to the NYC Health Department and submit all *Legionella* isolates to the Health Department's Public Health Laboratory for confirmation, serogrouping, and typing.

Please Distribute to All Clinical Staff in Internal Medicine, Pediatrics, Geriatrics, Primary Care, Infectious Diseases, Emergency Medicine, Family Medicine, Laboratory Medicine and Infection Control

November 21, 2015

Dear Colleagues,

Epidemiologic and laboratory investigations of the Legionnaires' disease (LD) outbreak in the East Bronx have identified a cooling tower at the Bronx Psychiatric Center as the likely source of this outbreak.

Evidence supporting this conclusion includes:

- Epidemiologic: The geographic distribution of cases was consistent with community-wide exposure to an aerosol containing *Legionella*. Interviews of patients or their family members did not identify a common exposure among cases other than living or spending time in the affected area.
- Laboratory: *Legionella pneumophila* serogroup 1 (Lp1) isolates from four cases, two who lived in and two who worked in or visited this area, were compared by molecular typing to environmental Lp1 isolates cultured from cooling towers in the East Bronx. The isolates cultured from all four patients were indistinguishable by molecular typing from each other and from the Lp1 isolates cultured from a cooling tower located on the campus of the Bronx Psychiatric Center. Lp1 isolates cultured from other cooling towers (n = 15) in the affected area of the East Bronx were distinct and did not match the "outbreak strain" by molecular typing analysis.

The Bronx Psychiatric Center initiated disinfection on September 29 and completed disinfection on September 30, 2015. The tower was fully compliant with the Health Department's citywide order in

August 2015 to inspect and disinfect. A cooling tower culture sample from August 16 was negative for the presence of *Legionella*.

Outbreak-Associated Cases

There have been no further outbreak-related LD cases with illness onset after September 28, 2015 (See Figure). The Health Department identified 15 cases, including one death, epidemiologically associated with this outbreak. Six of these cases were in persons who reside in the affected zip code (10461) and the remaining cases were in persons who reported visiting or working in this area. The median age was 56 (range 31 to 71 years), and 87% of cases were male. Common comorbid health conditions included chronic obstructive lung disease, other lung diseases, diabetes, and chronic use of alcohol, cigarettes, and/or illicit substances.

The isolates from all four patients that were cultured were indistinguishable from each other and from the Lp1 isolated from a Bronx Psychiatric Center cooling tower water. Most outbreak-associated cases were diagnosed by urine antigen testing only, and, therefore, no cultured isolates were available for molecular typing. It is not possible to confirm that the epidemiologically-linked cases diagnosed without culture were associated with the Bronx Psychiatric Center cooling tower. Some cases in the East Bronx may represent background Legionnaires' disease due to other sources, including other cooling towers. It is also possible that there were additional outbreak-associated cases exposed in nearby neighborhoods that have not been counted in this outbreak, because it is not possible to know how far a contaminated aerosol may have drifted.

Guidance for Clinicians on Diagnosis and Management of LD

This outbreak and the previous outbreak in the South Bronx in July-August 2015 highlight the critical importance of diagnosing and treating LD in adults being evaluated for community-acquired pneumonia. Patients at highest risk for infection and severe disease include the elderly, past or current smokers, and people with immune-compromising conditions, chronic lung disease, or diabetes.

In persons with suspected pneumonia, *Legionella* infection is best diagnosed by urine antigen test and by culture of a respiratory tract specimen (sputum, tracheal aspirate, or bronchoalveolar lavage). Respiratory tract specimens should ideally be obtained before initiation of antibiotics, although antibiotics should not be delayed to obtain a specimen. Routine bacteriologic culture of respiratory tract specimens will not detect *Legionella*. **When ordering cultures, physicians must specify that the culture is for *Legionella*, because the laboratory must use special culture media and methods.** Culture has the added benefit of providing bacterial isolates for molecular typing. With molecular typing of isolates, a patient's isolate(s) can be compared to isolates from environmental sources and other patients to identify a potential source of infection, as in this outbreak. We do not recommend serological testing to diagnose LD or to test patients who do not have LD symptoms.

Empiric treatment of community-acquired pneumonia should include adequate coverage for *Legionella* with either a macrolide (e.g., azithromycin) or a fluoroquinolone (e.g., levofloxacin). Full details on treatment regimens are available on the Infectious Diseases Society of America website at http://cid.oxfordjournals.org/content/44/Supplement_2/S27.full.pdf+html.

To help the Health Department investigate future potential clusters of Legionnaires' disease in New York City, healthcare providers should continue to:

- Maintain a high index of suspicion for Legionnaires' disease among all patients presenting with community-acquired pneumonia
- Specifically request both respiratory tract specimen culture and urine antigen testing for *Legionella* when indicated.
- Report all cases of Legionnaires' disease to the Health Department by calling the Provider Access Line at 1-866-692-3641.
- Send all cultured isolates to the Health Department's Public Health Laboratory for serotyping and molecular testing. Send isolate and laboratory test request form to:
 Public Health Laboratory
 455 First Ave, Room 136
 New York, NY 10016

Additional information for clinicians can be found at <http://www.cdc.gov/legionella/index.htm>. As always, we appreciate our ongoing collaboration with healthcare providers in New York City to help us address emerging infectious disease concerns.

Jay K. Varma
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 New York City Department of Health and Mental Hygiene

Figure. Epidemic Curve for East Bronx Outbreak of Legionnaires' Disease, September 2015

