Report Date 5/29/2015

Summary of Legionellosis Outbreak — Genesee County, June 2014–March 2015

From June 2014 to March 2015, 45 Legionnaires' disease (LD) cases including 7 deaths were reported in Genesee County, Michigan. The Michigan Department of Health and Human Services (MDHHS) assisted the Genesee County Health Department (GCHD) in the investigation.

Data were collected from patient medical record review, the Michigan Disease Surveillance System case report form, and interviews with case-patients or their proxies with an enhanced legionellosis questionnaire. In an attempt to identify community sources, case-patients or proxies were interviewed about travel, work, and locations visited during the 2 weeks prior to symptom onset (considered the incubation period for LD).

All 45 cases were laboratory confirmed by *Legionella* urinary antigen test; one sputum specimen was collected, which was *Legionella* culture negative. Median patient age was 62 years (range: 26–94); 23 (51%) were male. Illness onset dates ranged from June 6, 2014 to March 9, 2015 and peaked in August, 2014 with 10 cases. Multiple attempts by phone and letter were made to contact all case-patients; interviews using the enhanced questionnaire were completed on 30 of 45 (67%). Healthcare-associated LD was suspected for a subset of cases. Nineteen of the 45 (42%) patients were hospitalized during the 2 weeks prior to symptom onset. Of those, 16 (84%) were hospitalized at hospital A, 2 (11%) at hospital B, and 1 (5%) at hospitals A and B. One patient was hospitalized at hospital A during their entire 2-week exposure period. Eight additional persons were exposed to Flint hospitals as outpatients or visitors; 5 (63%) to hospital A, 2(25%) to hospital B, and 1 (15%) to hospitals A and B. In total, 23/45 (51%) patients were exposed to hospital A as an inpatient, outpatient, or visitor. On October 4, 2014, hospital A hyperchlorinated their water system and continues to monitor for *Legionella*.

The municipal water system was an additional suspected source. Twenty-one of 45 (47%) cases occurred in people whose residence received City of Flint water. The majority (10 of 13, 77%) of people interviewed who lived on Flint water reported changes in water quality; 6 of 13 (46%) experienced water main breaks or water line issues at or near their residence prior to illness. Of the 18 persons that did not report healthcare visits, 8 (44%) were exposed to Flint water at their home.

In other exposures, of 30 persons interviewed, 2 (7%) stayed overnight in 2 different hotels, 2 (7%) were exposed to hot tubs and 20 (67%) visited ≥1 grocery store. All locations mentioned were visited by ≤2 patients with the exception of one grocery store outside of Flint that was visited by 5 patients.

Ten cases had no exposure to a Flint hospital in the 2 weeks prior to illness nor were their homes on the Flint water system. Of those, 3 people might have been exposed to Flint water at a grocery store or motel. Additionally, 1 person reported exposure to stagnant water as an industrial painter and one person was hospitalized at hospital A for 10 days immediately prior to their exposure period. The remaining 5 cases have no known exposure to Flint water, healthcare, or travel.

The outbreak is over; the last reported case occurred in March, 2015. The lack of clinical *Legionella* isolates precludes our ability to link cases to an environmental source. As epidemiologic data did not indicate a common community source, we cannot recommend environmental testing or additional patient/proxy interviews. As we enter the summer season, MDHHS recommends vigilant legionellosis awareness and surveillance in Genesee County, including interviewing of cases or proxies with the enhanced legionellosis questionnaire within one week of reporting. MDHHS also recommends the clinical community assist in LD surveillance through accurate identification, testing, and reporting of all suspect cases. Obtaining respiratory specimens in addition to urinary antigen testing is of critical importance in these increased surveillance efforts. Because *Legionella* spp. are commonly found in the environment, clinical isolates are necessary to interpret the findings of an environmental investigation in an outbreak. To assist, MDHHS has prepared updated legionellosis guidance to be distributed to health care providers via the Michigan Health Alert Network.