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A pseudo-outbreak of Legionnaires' disease in an acute-care hospital

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To the Editor—Epidemics of Legionnaires' disease (legionellosis) may involve large numbers of cases, with case-fatality rates of about 10% overall, and 25% in healthcare-associated cases.[1] The sources of legionellosis outbreaks are usually building water systems and devices, including potable water and cooling towers; therefore, any suspicion of a legionellosis outbreak must prompt efforts to identify the source and to stop further transmission.

This is a report on a suspected healthcare-associated legionellosis outbreak in an acute-care hospital involving 10 inpatients who tested positive for urinary antigen of *Legionella pneumophila* serogroup 1 between January and April 2017. Of 160 urinary antigen tests performed during this time period, 10 yielded positive results (positivity rate, 6.3%). In the previous year, only 1 of 76 tests had yielded a positive result (positivity rate, 1.3%).

The public health authority was notified and extensive testing of water samples for *Legionellae* was ordered. These tests only yielded *L. pneumophila* of a serogroup other than 1. Patient data showed that 5 patients had signs of pneumonia on admission: 1 patient had nonrespiratory signs consistent with legionellosis on admission, and 4 patients did not present any signs of pneumonia during their hospital stay. At the time of intervention, all but 1 patient had been discharged. A urine sample of the last patient was divided into 2 portions. One portion was sent to laboratory A, which had issued the positive test results, and the other portion was sent to laboratory B. In laboratory A, the urine sample again tested positive, whereas in laboratory B, the sample tested negative. Confronted with these findings, laboratory A reported having switched to a new urinary antigen test early in 2017, which later turned out to be of poor specificity. After a healthcare-associated outbreak had been ruled out, public health officials ruled out an outbreak altogether, either because legionellosis was not confirmed in the patients presenting signs of pneumonia or because no epidemiological link was found.

In conclusion, the presumptive healthcare-associated legionellosis outbreak caused considerable unrest within the hospital and among the public health authorities, but it proved to be a pseudo-outbreak. Pseudo-outbreaks (or pseudo-epidemics) are real clusters of false infections or artifactual clusters of real infections.[2] The pseudo-outbreak described here was caused by false-positive urinary-antigen test results. Community pseudo-outbreaks of this kind have been reported previously.[3,4] In our case, the pseudo-outbreak was complicated by assuming healthcare

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association. It could have been avoided if some well-established rules had been observed: (1) Every cluster of positive tests for an infectious disease must cause laboratory personnel and clinicians to communicate and confirm true infections, for example, by considering individual symptoms and signs and by using a second diagnostic test. (2) Before establishing an outbreak, a pseudo-outbreak must always be excluded. And (3) diagnosis of an infectious disease some time after hospital admission does not imply that it was acquired in the hospital. The incubation period does not precede the time of diagnosis but the time of onset of the disease.

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