Department of Veterans Affairs
Office of Inspector General

Office of Healthcare Inspections

Report No. 14-03688-399

Healthcare Inspection

Testing for Legionella
VA Pittsburgh Healthcare System
Pittsburgh, Pennsylvania

July 6, 2015

Washington, DC 20420

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Executive Summary

The VA Office of Inspector General Office of Healthcare Inspections conducted an inspection in response to complaints about delayed reporting of positive *Legionella* test results in 2012, potentially delaying treatment and causing death for patients at the VA Pittsburgh Healthcare System, Pittsburgh, PA. The complainant also alleged that water samples for *Legionella* monitoring were collected improperly by excessively flushing the water line prior to collection in order to obtain false negative results.

We substantiated that reporting of positive *Legionella* test results was occasionally delayed but found no evidence of delays in treatment for patients with Legionnaires' Disease, either for those who died or for those who survived. We did not substantiate that water samples collected for environmental cultures of *Legionella* were collected improperly.

We made no recommendations.

Comments

The Veterans Integrated Service Network and Facility Directors concurred with the report. (See Appendixes A and B, pages 5–6 for the Directors' comments.) No further action is required.

JOHN D. DAIGH, JR., M.D.
Assistant Inspector General for
Healthcare Inspections

Purpose

The VA Office of Inspector General (OIG) Office of Healthcare Inspections conducted an inspection to assess the merit of allegations made by a complainant in June 2014 regarding delays in reporting positive *Legionella* test results at the Pittsburgh Healthcare System (system), Pittsburgh, PA.

Background

The system is part of Veterans Integrated Service Network (VISN) 4 and includes three divisions located in Pittsburgh, PA, and five community-based outpatient clinics in nearby counties. The system serves a veteran population of approximately 360,000 in western Pennsylvania, northern West Virginia, and eastern Ohio.

The University Drive (UD) division is a tertiary care facility serving as a referral center for cardiac surgery; liver and kidney transplantation; and, multiple other specialized services, including mental health, oncology, and geriatrics. Acute care services are also provided at the UD division where 146 operating beds are distributed among medicine, surgery, neurology, and critical care. Laboratory services are located at this division, including the microbiology laboratory.

On June 23, 2014, OIG received a complaint that alleged reporting of clinical test results was delayed "for days," delaying treatment that may have prevented deaths of patients with Legionnaires' Disease (LD) associated with a previously reported LD outbreak that occurred at the system in 2012.

The complainant further alleged that samples for testing the water supply for *Legionella* were collected by letting "…the water run for 2 hours prior to collecting the specimen…," in order to obtain negative test results.

Legionella bacteria are known to be present widely in nature, particularly in aquatic environments, but also in soil.[1] Because *Legionella* is widespread in nature, its periodic introduction into building water systems is difficult to prevent. Low numbers of the organism may enter buildings from public water sources and colonize water pipes. *Legionella* thrives in the biofilm that lines water pipes and can proliferate there.[2] Clinical risk of infection is increased when conditions for growth are optimal. Mitigation efforts are undertaken with the goal of maintaining an acceptably low level of risk.

Legionella mitigation can include monitoring for its presence in the environment through routine cultures of water from water outlets such as faucets. The use of environmental

[1] Bartram J, Chartier Y, Lee JV, Pond K, Surman-Lee S, eds. *Legionella and the Prevention of Legionellosis*. Geneva: World Health Organization, 2007.
[2] U.S. Department of Labor. Occupational Safety & Health Administration. OSHA Technical Manual. Section III: Chapter 7, *Legionnaires' Disease*, January 20, 1999.

cultures requires strict attention to procedures for the handling of samples and specialized laboratory testing.

The system microbiology laboratory performs both clinical and environmental *Legionella* testing and has maintained Centers for Disease Control and Prevention (CDC) certification for *Legionella* environmental testing since July 2009. CDC certification indicates that laboratory procedures are consistent with federal recommendations and meet or exceed industry standards for recovery of *Legionella* in water samples.[3]

Human disease caused by *Legionella* is referred to as legionellosis, which manifests either as a self-limiting illness known as Pontiac fever or as LD, a serious and potentially fatal infection of the lungs and other organs. Pneumonia is the most common manifestation of LD.

Clinicians must consider the possibility of LD whenever patients present with pneumonia, especially if the pneumonia is severe or the patient has recently been hospitalized. Testing in most cases can be easily accomplished with a simple urine test.

When patients exhibit signs or symptoms that are suggestive of pneumonia, clinicians may initiate antibiotic therapy empirically (based upon symptoms and the clinician's suspicion of pneumonia) while laboratory test results are pending.

Scope and Methodology

We interviewed the complainant and system staff and reviewed the electronic health records (EHRs) of deceased patients identified during the time of the 2012 outbreak, as well as all patients with positive *Legionella* urine antigen tests from January 1, 2012, through December 31, 2014. We also reviewed committee meeting minutes and remediation activities regarding environmental cultures for *Legionella*.

In our previous Healthcare Inspection report, *Legionnaires' Disease at the VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania,* Report No. 13 00994-180, April 23, 2013, we described patients who were identified with positive *Legionella* cultures during an outbreak of LD, some of whom died. Medical care provided for the six deceased patients was evaluated in regard to the current allegations.

During 2012–14, 5725 urine antigen tests for *Legionella* were reported at the system, of which 25 (0.4 percent) were positive. We reviewed the EHR of each patient with a positive result reported more than 2 days after the date the laboratory received the urine specimen. We limited our review to results reported after 2 or more days because

[3] CDC Web site, https://www.cdc.gov/elite/public/memberlist.aspx. Accessed January 8, 2015.

testing is not feasible at all hours and because results indicated as being reported after fewer than 2 days included results actually reported within 24 hours.[4]

We conducted the inspection in accordance with *Quality Standards for Inspection and Evaluation* published by the Council of the Inspectors General on Integrity and Efficiency.

[4] When elapsed time is recorded, a day is counted as having passed whenever midnight is crossed. For example, a specimen received at 11:00 pm with a result reported at 6:00 am the next day would be designated as having taken one day.

Inspection Results

Issue 1: Alleged Delay in Reporting Positive *Legionella* Test Results

We substantiated occasional delays in reporting of *Legionella* test results; however, we found no evidence of corresponding delays in initiating treatment of patients with LD.

We found evidence of delays in reporting results in 1 of 6 EHRs of deceased outbreak-associated patients and in 2 of 25 EHRs of other patients with positive *Legionella* tests. Three days elapsed before reporting two results, and 4 days elapsed for another. We considered the possibility that weekends or holidays may have accounted for additional time and found that only the result reported after 4 days remained in the laboratory over a weekend. However, for all patients with positive test results, antibiotics effective against *Legionella* had been initiated empirically either prior to the date the test was ordered or on the same date. One patient was discharged home before the test result was reported, and the clinician continued appropriate empiric antibiotic therapy at the time of discharge. When the test result became known, appropriate communication to the patient from system clinicians was documented in the EHR.

Issue 2: Water Sample Collection for Environmental Cultures

We did not substantiate the allegation that water faucets were flushed excessively in order to obtain negative environmental cultures.

The complainant had been employed at the system before 2012 but had no firsthand knowledge of system processes regarding *Legionella* control and could not provide information regarding a timeframe for the allegation or the locations of water samples alleged to be improperly collected. In the absence of specific information, we reviewed system reports of environmental cultures and action plans subsequent to the 2012 outbreak. Environmental cultures from various locations were reported as positive, and the system responded with remediation.

Conclusions

We substantiated that reporting of positive *Legionella* test results was occasionally delayed but found no evidence of delays in treatment for LD either for patients who died or for patients who survived LD. We found no evidence to support the allegation of improper collection of water samples for environmental cultures. We found that positive cultures had been reported and appropriate remediation undertaken.

We made no recommendations.

Appendix A

VISN Director Comments

Department of Veterans Affairs

Memorandum

Date: May 20, 2015

From: Interim Network Director, VA Healthcare - VISN 4 (10N4)

Subj: Draft Report: Healthcare Inspection—Testing for *Legionella*, VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania

To: Director, Washington DC Office of Healthcare Inspections (54DC)
Director, Management Review Service (VHA 10AR MRS OIG Hotline)

1. The response by VA Pittsburgh Healthcare system has been reviewed.

2. Their response is approved.

//original signed by://
Carla Sivek

Appendix B

System Director Comments

Department of Veterans Affairs

Memorandum

Date: May 11, 2015

From: Acting Director, VA Pittsburgh Healthcare System, Pittsburgh, PA (646/00)

Subj: Draft Report: Healthcare Inspection—Testing for *Legionella*, VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania

To: Director, VA Healthcare – VISN 4 (10N4)

1. The findings from the Healthcare Inspection – Testing for Legionella conducted by the Office of Inspector General have been reviewed.

2. The report is accepted as written.

*//Original signed by *
David S. Macpherson, MD, MPH
Acting Director

Appendix C

OIG Contact and Staff Acknowledgements

Contact	For more information about this report, please contact the OIG at (202) 461-4720.
Contributors	Katharine Foster, RN, Team Leader Donna Giroux, RN Jerome Herbers, MD Randall Snow, JD Natalie Sadow, MBA

Appendix D

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