

Legionnaire's Disease Kills Second Patient at St. Peter's Hospital

By Anna Boyd
15:15, September 25th 2008

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Two people have died after contracting Legionnaire's disease, a different but severe form of pneumonia that can be fatal if left untreated, at a New Jersey hospital, state health officials confirmed.

Overall, six patients - three men and three women - at Saint Peter's University had been diagnosed with the disease.

Old Bridge resident Eugene Dutton, 58, died on Sept. 12, a day after testing positive. The second death occurred Monday, two days after the patient tested positive. His identity has not been made public citing confidentiality guidelines. There were 26 patients who could have been exposed to the bacteria, but only six contracted the disease.

Legionnaire's disease affects mostly people who have weakened immune systems, are over the age of 50, are smokers or already have lung problems. Symptoms include high fever, chills and cough. Legionnaires' disease can be successfully treated with antibiotics, and most people recover from the illness. Annually, the disease affects between 8,000 and 18,000 people.

One usually contracts the disease by inhaling a bacterium most often found in sources of standing water, such as air conditioning ducts, storage tanks and rivers.

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According to John D'Anna, the hospital's chief medical officer, tests run on the hospital's water system, after the first diagnosis, showed the presence of Legionella bacteria, which cause the disease. The bacteria were found in both hot- and cold-water samples. The hospital's officials will continue to chlorinate the water in order to get rid of the bacteria. Also patients are provided bottled water until a confirmation about the water quality will be given.

Legionnaire's disease was named and identified in 1976 after a group of American Legion members who were sickened by bacteria in the air conditioning at a Philadelphia hotel where they were attending a convention.

November 10, 2008
Vol. 14, No. 19

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3 patients in N.J. hospital die after Legionnaires' outbreak

Three patients among the eight recently diagnosed with Legionnaires' disease at Saint Peter's University Hospital in New Brunswick, N.J., became the latest victims of *Legionella*-related outbreaks in hospitals.

Hospital-acquired Legionnaires' disease continues to occur despite efforts to minimize *Legionella* colonization of building water systems, says Janet E. Stout, Ph.D., director of the Special Pathogens Laboratory in Pittsburgh, Penn., and nationally known Legionnaires' disease expert.

"These outbreaks are not as uncommon as many believe and actually are increasing in hospitals where the mortality rate is much higher – around 30 percent," she says. Hospital buildings house complex water systems, and many people in hospitals already have illnesses that increase their risk for *Legionella* infection.

In fact, there has been a spike in the incidence of legionellosis in the U.S. since 2003, with most cases reported in the eastern part of the U.S., according to a 2008 study by the Infectious Diseases Society of America. The New York City Health Department alone recorded 180 cases of Legionnaire's disease in 2006 and 120 cases in 2005.

Nationally, the number of reported legionellosis cases jumped by 70 percent from 1,310 cases in 2002 to 2,223 cases in 2003, with an increase of more than 2,000 cases per year from 2003-2005, according to the Centers for Disease Control and Prevention (CDC). Legionellosis includes Legionnaires' disease and Pontiac fever, a milder illness caused by the same bacterium.

All the patients who tested positive for Legionnaires' disease at Saint Peter's, a 478-bed teaching hospital, had been admitted to an oncology wing from late August through September,

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scoring
system
explained**

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according to an Associated Press report. The first patient to test positive died Sept. 11, the second on Sept. 22 and the third patient on Oct. 3. As of Nov. 3, there had been no additional deaths related to the outbreak, says hospital spokesperson Michelle Lazzarotti, who declined further comment.

Stout says she can't share specifics about Saint Peter's Hospital case, but "it's probable that the patients were exposed to the *Legionella* bacteria via the hospital's drinking water."

According to local published reports, hospital officials discovered from water system records that from late August to early September, the level of chlorine in water circulating to the area where the infected patients were housed had dropped below the norm of .3 parts per million to .1 parts per million.

Legionella bacteria, which cause the disease, are more likely to make people sick who are smokers, older than 65 years, have lung disease or a weak immune system. Each year between 8,000 and 18,000 people in the U.S. are hospitalized with Legionnaires' disease, a type of pneumonia, according to the CDC.

Found naturally in the environment, the bacteria usually live in water and grow best in warm water, such as the kind found in hydrotherapy pools, cooling towers, hot water tanks, large plumbing systems, or the air-conditioning systems of large buildings.

People can get Legionnaires' disease when they breathe in a mist or vapor that has been contaminated with the bacteria. The disease, named

in 1976 when an outbreak occurred at a Philadelphia convention of the American Legion, is not spread from person to person.

Bringing *Legionella* under control

Hospitals often use guidance documents to help in preventing Legionnaires' disease; however, a consensus opinion for prevention of this disease doesn't exist, says Stout. That's because the role of environmental monitoring in determining the risk for hospital-acquired Legionnaires' disease continues to be debated and the guidance varies as to when and how to perform disinfection of a water system, she says.

The first step in controlling *Legionella* is knowing you have the problem in your hospital, says Stout. She recommends testing the water system for the organism and performing a culture.

Hospital water systems that add copper and silver, or chlorine dioxide to kill *Legionella* have been used successfully to disinfect water in hot-water distribution systems, says Stout, a research professor at the University of Pittsburgh.

Methods typically used to control *Legionella* are super chlorination (which can eat away at the piping if too much chlorine is used) and raising the temperature of the water system to kill the bacteria. But these are short-term solutions that will clear the problem up for a week or two, according to J. Glenn Morris, director of epidemiology and preventive medicine at the University of Maryland Medical Center (UMMC).

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SUBSCRIPTIONS: \$427/year for 24 issues. For questions about newsletter delivery and account status, call (888) 287-2223, or e-mail customer@decisionhealth.com

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UMMC uses a water decontamination system to control waterborne pathogenic bacteria. The method takes positively-charged copper and silver ions and places them into the water directly, creating an environment in which pathogens can't survive. The ions also can penetrate biofilm that typically collects inside piping, explains Morris.

Water temperature, cleaning and recordkeeping

OSHA recommends maintaining sump water at a low temperature (20 degrees C, 68 degrees F) to control *Legionella* growth. Other OSHA pointers include:

1. Clean and disinfect cooling towers quarterly or at least twice a year if the unit is not used year round. Any system that has been out of service for an extended period should be cleaned and disinfected. New systems require cleaning and disinfecting because construction material residue can collect and contribute to *Legionella* growth.
2. Inspect equipment monthly. Drain and clean quarterly or at least twice a year if the unit is not used year round. Treat circulating water for control of microorganisms, scale and corrosion. Include systematic use of biocides and rust inhibitors. Monthly microbiologic analysis is needed to ensure control of biological contamination.
3. Document operations and maintenance in a log book. List dates of inspections, cleaning, water-quality test results, outbreak investigations and maintenance. Maintain an up-to-date description of the operating system. Develop written procedures for proper operation and maintenance of the system that indicate the corrosion inhibitors

and antifoaming agents. Written records of biocide or chlorine use should be readily available.

The OSHA Legionella Chapter 7, however, is a non-enforceable standard, and it has not been validated scientifically, says Stout.

Tactics not proven effective

The following strategies should *not* be used to control *Legionella*, says Stout.

- Removing and disinfecting showerheads and aerators. Studies have found that descaling, disinfection and/or replacement of faucets and showerheads does not minimize *Legionella* colonization in hospitals.
- Routine maintenance of hospital water systems. "This is just paying lip service to the problem," says Stout. "Studies have refuted the assumption that average, routine maintenance helps minimize *Legionella* colonization."
- Maintaining a hot water storage temperature of 140 degrees F. While many guidelines recommend that hot water tanks be set to 140 degrees and the circulating hot water temperature be set to 124 degrees, one study showed that sites remained heavily colonized despite higher recirculation temperatures, says Stout.

Legionella in hospital water systems and the risk it poses to hospitalized patients is a serious problem that has received far too little attention, says Stout. The passive nature of the disease system leads to underreporting of cases, according to a 2008 article in the journal Clinical Infectious Diseases, suggesting that more than three-quarters of cases are currently undiagnosed or unreported. ♦--JoAnn Blake

HAC Candidate	Medicare Data (FY 2007)	CC/MCC (ICD-9-CM Code)	Selected Evidence-Based Guidelines
Legionnaires' disease	<ul style="list-style-type: none"> • 351 cases • \$86,014 per hospital stay 	482.84	http://www.legionella.org http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis_g.htm

From the Federal Register, April 30, 2008

Note: Physicians often diagnose Legionnaires' cases as "pneumonia."