



Dennis Nett / The Post-Standard

ON JUNE 24, several patients at Community General Hospital began getting sick mysteriously. Public health officials, with the cooperation of Community General Hospital, identified and tracked down the source of the outbreak — legionella bacteria in a cooling tower.

# QUICK WORK CRACKS LEGIONNAIRES' CASE

## HOW HEALTH OFFICIALS TRACKED DOWN THE BUG TO COMMUNITY GENERAL'S COOLING TOWER

**By James T. Mulder**  
Staff writer

Public health officials say a combination of dogged detective work, swift action and luck helped solve the recent outbreak of deadly Legionnaires' disease on Onondaga Hill.

The severe form of pneumonia sickened 13 people — one of whom died — beginning in late June. Public health officials say the victims, ages 19 to 90, were

probably infected after breathing in bacteria-laden air emitted by an air-conditioning cooling tower at Community General Hospital.

Public health officials believe say the area's first Legionnaires' outbreak is over because there have not been any new cases reported in more than two weeks. They expect to wrap up their investigation in a few weeks. The 12 patients have all been discharged from hospitals and are recovering.

Pinpointing the source of a Legionnaires' outbreak had to be done rapidly. "The longer it takes to identify the source, the more likely you are to have additional cases," said Amy Burns, a state Health Department epidemiologist.

This is the story of how public health officials, with the cooperation of Community General Hospital, tracked down this bug.

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NEWS

# Second cleansing' eliminated bug

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## 'A big deal'

Legionnaires' is relatively rare. Only five to 10 isolated cases are reported to the Onondaga County Health Department annually.

So public health officials knew something was unusual when seven cases popped up between June 30 and July 8.

"This was a big deal," said Dr. Joshua K. Schaffzin, medical director of the state Health Department's regional epidemiology and infection control program. "This was a relatively out of the ordinary outbreak that was a high priority for us."

The detective work began with the Onondaga County Health Department's communicable disease nurses. They interviewed patients, asking where they had traveled in recent weeks and if they had been near large water fountains, spas or cooling towers - common sources of Legionnaires' disease. The bacteria - known as Legionella - that causes the disease can flourish in these water systems. Instead of being transmitted from person to person, the bacteria is spread through the air in water droplets or vapor.

Dr. Cynthia Morro, the county's health commissioner, alerted local hospital emergency rooms, urgent care centers and doctors' offices. They were asked to test all patients coming in with pneumonia symptoms for Legionnaires'. The disease often goes undetected because it has many of the same symptoms as pneumonia and flu, and can only be diagnosed with special lab tests.

Onondaga Hill was a common thread that quickly emerged from patient interviews. The patients all said they had been in that area, some of them on the Community General campus.

Investigators honed in on potential sources.

"We look at what's been as-

## Expert advice

Before the outbreak, the hospital had been disinfecting the tower as part of a routine maintenance program. After it learned one of its towers might be the source, the hospital brought in outside engineers and experts for help. One of them was Janet Stout, a microbiologist from the University of Pittsburgh, who is a national expert on Legionnaires'.

She recommended the hospital disinfect the tower a second time using a chemical shock treatment for 48 hours. Subsequent tests showed the second cleansing wiped out the bug.

Even properly maintained cooling towers can cause outbreaks, according to Stout. She said up to 50 percent of cooling towers test positive for Legionella, which is commonly found in water systems.

David Dziewulski, of the state Health Department's Bureau of Water Protection Supply, agreed. "When something like this occurs it's usually not one thing that causes the problem," he said. "It's a conspiracy of events. It could be weather conditions, prevailing winds, the status of the cooling tower, people being in the right place at the wrong time. It's usually a cascade of events that leads to a problem."

The hospital tested all employees who had been sick with respiratory illness for Legionnaires'. They all tested negative. The hospital also continued its long-standing policy of testing all patients with pneumonia symptoms for Legionnaires'.

Special meetings were set up to keep employees abreast of the outbreak investigation. Quinn mailed a letter explaining the situation to about 200 homeowners who live close to the hospital. The hospital also set up a telephone information line that fielded about 150 calls from people with questions and concerns about the outbreak.

Two patients canceled surger-

## FAQs

**Q.** What is Legionnaires' disease?  
**A.** A type of pneumonia or lung infection caused by bacteria called Legionella. The bacteria got its name in 1976 when many people at an American Legion convention in Philadelphia became ill from an outbreak of this disease.

**Q.** How widespread is it?  
**A.** Fewer than 100 cases are reported each year in Upstate New York. Most cases occur as single isolated events.

Outbreaks like the recent one on Onondaga Hill are rare. Between 8,000 and 18,000 people are hospitalized each year in the United States with Legionnaires'. Many cases, however, are not diagnosed or reported, so the number may be higher. Most cases occur in the summer and early fall.

**Q.** How serious is it and what's the treatment?

**A.** It can be a mild respiratory illness or severe enough to cause death. Most cases can be treated successfully with antibiotics such as erythromycin, levofloxacin or azithromycin.

**Q.** How do you get it?

**A.** By breathing in a mist or vapor that has been contaminated with the bacteria. The bacteria are not spread from one person to another.

**Q.** Where does the bacteria come from?

**A.** Usually water. The bacteria grow best in warm water, like the kind found in cooling towers, hot tubs, hot water tanks, large plumbing systems or part of air-conditioning systems of large buildings. They do not seem to grow in car or window air conditioners.

**Q.** Who is at the highest risk of getting it?

**A.** People 65 and older, smokers, people with lung disease and people with weak immune systems from diseases like cancer, diabetes or kidney failure.

**Q.** What are the symptoms?

**A.** Early symptoms may be flu-like with muscle aches, headache, tiredness and dry cough, followed by fever, chills and diarrhea.

**Q.** How is Legionnaires' diagnosed?

**A.** Through a blood test.

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 Air-conditioning cooling towers have been the culprits in many Legionnaires' outbreaks. Cooling towers at a hospital in Murcia, Spain, caused the world's largest outbreak in 2001 that infected 449 people.

So Community General's cooling towers quickly became prime suspects. Investigators collected samples from both towers and sent them to the state Health Department's Wadsworth laboratory in Albany for testing. They also collected samples from nearby VanDuyn Home & Hospital nursing home.

Instead of waiting two weeks for results, public health officials advised the hospital to disinfect the 200-gallon cooling tower near the Physician Office Building that several of the Legionnaires' patients had visited.

"If we can do something to intervene and it turns out to be the source, then we stopped it before it causes more illness," Schaffzin said.

Tom Quinn, Community General's president and chief executive officer, was on vacation. At noon July 3, he and his wife were in the rose garden of Thornden Park in Syracuse and it was raining. On that same date 37 years ago, they had gotten married in the park. They were trying to take some photos to mark their anniversary. While he was in the rose garden, Quinn got about 15 calls on his cell phone from staff at the hospital informing him of the health department's suspicions and recommendations.

The next day, the hospital doused the tower with chemicals.

"You had to assume you had a site that is potentially exposing people and you have to treat it aggressively," Quinn said.

ies because of concern over the outbreak, according to Quinn. Other than that, the crisis has had no impact on patient volume, he said.

The hospital has not yet tallied the financial cost of the outbreak.

"It's pretty significant — tens of thousands of dollars," Quinn said.

### Cracking the mystery

A sample of sputum or phlegm from one of the Legionnaires' patients provided investigators with evidence they needed to link the outbreak to the cooling tower. Lab tests showed the samples from the patient and the tower had the same exact fingerprint.

Because that was the only patient sample, public health officials will never be able to say with 100 percent certainty the other 12 people were infected by vapors from the tower.

"If we get a sputum sample, it's a bonus for the epidemiological study, but the goal is to keep people from getting sick," said Gary Sauda, the county's director of environmental health.

The outbreak could have been a lot worse, Stout said.

"If the hospital and public health officials had not acted as quickly, there could have been many more cases," she said.

Some disease outbreaks remain unsolved mysteries.

In 2005, three cases of the food-borne illness listeriosis were reported to the county Health Department within 24 hours. "Despite looking everywhere, we were never able to find out what happened," Morrow said.

The Legionnaires' outbreak was like a complicated puzzle, she said.

"In this situation, the puzzle pieces fit," Morrow said.

tests involving culture of the patient's sputum, phlegm or a urine test.

Source: New York State Health Department, federal Centers for Disease Control and Prevention

### Outbreak chronology

June 10: The date Onondaga County Health Department officials believe exposure began.

June 24: Patients start getting sick.

June 30: First two confirmed cases reported to health department.

July 4: Community General Hospital disinfects cooling tower.

July 8: County health officials announce outbreak has infected seven people over the last 10 days.

July 9: County reports two more cases, bringing total to nine.

July 10: County officials announce water samples from tower tested positive for Legionella bacteria. They also report another case, bringing total to 10.

July 11: One

of the Legionnaires' patients dies.

A family member confirms his identity as Leo Burris

(right), 62, of Onondaga.

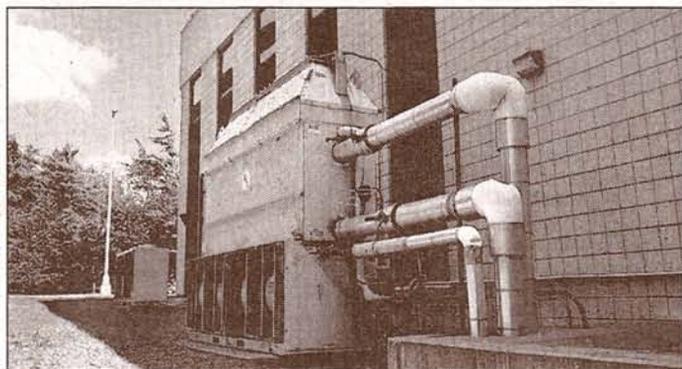
July 12: The hospital disinfects its cooling tower for a second time, using a process that lasts 48 hours.

July 15: Community General gets test results showing Legionella was still present in cooling tower after it was disinfected the first time July 4.

July 16: County officials reveal that as part of the outbreak investigation, Legionella bacteria was found in water system of Van Duyn Home & Hospital, but say it's probably not the cause of outbreak. They also report another case, bringing total to 12.

July 17: County health officials confirm a 13th case.

July 25: County and hospital officials announce bacteria from one of the infected patients has been matched to a sample from the cooling tower. The hospital also announces its second attempt to disinfect the cooling tower was successful.



Heather Bragman / The Post-Standard

THE COOLING TOWER (center), located adjacent to the Physician Office Building at Community General Hospital, was the source of the recent Legionnaires' disease outbreak on Onondaga Hill.

Source: Onondaga County Health Department, New York State Health Department

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