

# Death toll rises in North Carolina disease outbreak tied to state fair

 [foxbusiness.com/markets/north-carolina-legionnaires-disease-state-fair](https://www.foxbusiness.com/markets/north-carolina-legionnaires-disease-state-fair)

Daniella Genovese

North Carolina health officials say four people have died following an outbreak of Legionnaires' disease, a type of pneumonia, which has been associated with hot tubs on display at a state fair.

As of Oct. 17, the North Carolina Division of Public Health confirmed 141 cases of Legionnaires' involving residents from multiple states and North Carolina counties who attended the 2019 North Carolina Mountain State Fair which spanned just over a week ending on Sept. 15.

Eight of those confirmed cases were Pontiac fever, which is a milder form of the disease. In addition to the deaths, 94 people were hospitalized, according to officials.

After establishing, through interviews, that the fair appeared to be the only common factor linking these cases, the department notified the public regarding the exposure on Sept. 24, roughly a week after the fair came to a close.

The North Carolina Division of Public Health worked with the local public health staff and with the North Carolina Department of Agriculture and Consumer Services to identify and address any possible sources of ongoing exposure. Officials say the sources included hot tubs and diffusers that had been on display at an event center.

According to preliminary findings, those who were diagnosed were more likely to have walked by hot tubs at an event center during the latter half of the fair compared to those who did not get sick.

Legionnaires' disease is a type of pneumonia caused by Legionella bacteria. People can become infected by breathing in mist or accidentally swallowing water that contains the bacteria, according to the Centers for Disease Control.

The bacteria live in freshwater environments and can become a health concern — as in this case — when it grows and spreads in human-made building water systems.

The number of cases reported to the CDC has been on the rise since 2000 with almost 7,500 cases being reported in 2017, according to government data.

In North Carolina, more than 150 cases of Legionnaires' are reported each year, according to health officials.

Symptoms typically begin as soon as two days after exposure and can include coughing, shortness of breath, fever, muscle aches and headaches.

Legionnaires' can be treated effectively with antibiotics, while Pontiac fever resolves without treatment, health officials said.

# A third person has died after a Legionnaires' disease outbreak in North Carolina

 [cnn.com/2019/10/15/health/legionnaires-north-carolina-deaths/index.html](https://www.cnn.com/2019/10/15/health/legionnaires-north-carolina-deaths/index.html)

October 16,  
2019

(CNN)A third person has died from an outbreak of Legionnaires' disease in North Carolina, state health officials said.

None of the victims has been identified by authorities and health officials have not discussed the circumstances of their deaths.

In recent weeks, health officials have confirmed 140 cases among people who attended the NC Mountain State Fair in Fletcher, North Carolina, last month have been diagnosed with Legionnaires' disease, an airborne lung infection, or Pontiac Fever, a milder form of the disease.

The 140 cases involve people from several North Carolina counties and a few other states. Ninety-four people have been hospitalized, health officials said.

[A hot tub display at a North Carolina state fair may be the origin of a deadly outbreak of Legionnaires' disease](#)

The outbreak has been linked to a hot tubs display in one events center and officials said it took place during the last five days of the fair, a preliminary report shows.

There were no other significant sources of aerosolized water -- small droplets of water or mist that can be inhaled -- at the event center, and no other ongoing potential sources of exposure identified, the health department has said.

[Legionnaires' disease](#) is a lung infection contracted when people breathe in the Legionella bacteria through a mist or by accidentally getting water into their lungs that contains the bacteria.

The disease is serious but can be treated with antibiotics, the department said. About 1 in 10 people who get sick from Legionnaires' disease die, a recent [government report](#) found. Legionella bacteria are found naturally in the environment but can become a health concern when they "spread in human-made water systems like hot water tanks, cooling towers of air conditioning systems, decorative fountains and hot tubs or spas that are not properly maintained," the North Carolina health department said.



# North Carolina

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 [charlotteobserver.com/news/state/north-carolina/article235748132.html](https://www.charlotteobserver.com/news/state/north-carolina/article235748132.html)

October 3, 2019

Legionnaires' disease is a severe form of pneumonia, or lung inflammation caused by infection. Here are the symptoms, treatment and causes. By David Caraccio

**UPDATE:** The outbreak has been tied to a hot tub display at the fair, the North Carolina Department of Health and Human Services said Thursday afternoon. Below is the original story, with updated numbers.

The number of cases of Legionnaires' disease, a potentially fatal lung condition, continues to grow in western North Carolina, public health officials say.

One person has died and public health officials have confirmed 124 cases of the disease that is potentially linked to the North Carolina Mountain State Fair in September, according to the state Department of Health and Human Services.

Six of the confirmed cases are in South Carolina, officials said.

Since the fair, held Sept. 6-15 in Fletcher, North Carolina, 75 people have been hospitalized with the disease, DHHS said.

Legionnaires' cannot be spread between people. Patients contract the disease by getting water with the Legionella bacteria in their lungs, according to the Centers for Disease Control and Prevention. The water can get in people's lungs when they breath in mist or aspirate, the CDC said.

The bacteria "can also cause a milder flu-like illness called Pontiac fever, which resolves without treatment," according to state public health officials.

Buncombe and Henderson counties have seen the most cases, public health officials say.

Here's a breakdown by county of the cases confirmed by DHHS:

- Buncombe County: 47
- Burke County: 2
- Gaston County: 1
- Granville County: 1
- Haywood County: 10
- Henderson County: 32
- Jackson County: 1
- Madison County: 6
- McDowell County: 3

- Mecklenburg County: 3
- Mitchell County: 2
- Polk County: 1
- Rutherford County: 2
- Transylvania County: 3
- Union County: 1
- Watauga County: 1
- Yancey County: 1
- Out of state (SC): 7

# Why Legionnaires' cases keep increasing and what researchers say can halt the trend.

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 [citizen-times.com/story/news/local/2019/10/01/legionnaires-north-carolina-and-united-states-trend-](https://citizen-times.com/story/news/local/2019/10/01/legionnaires-north-carolina-and-united-states-trend-)

Brian Gordon, Asheville Citizen Times Published 12:24 p.m. ET Oct. 1, 2019 | Updated 8:48 p.m. ET Oct. 1, 2019

Western North Carolina's current outbreak of Legionnaires' disease is part of a nationwide trend, one researchers say will continue until government officials mandate more regulation of key water systems.

"Stop letting patients and others be the canary in the coal mine," said Dr. Janet Stout, president of the Special Pathogens Laboratory in Pittsburgh. "We shouldn't wait for them to get sick before acting. Our message is to be proactive and not wait until people get sick and die."

## Cases going up

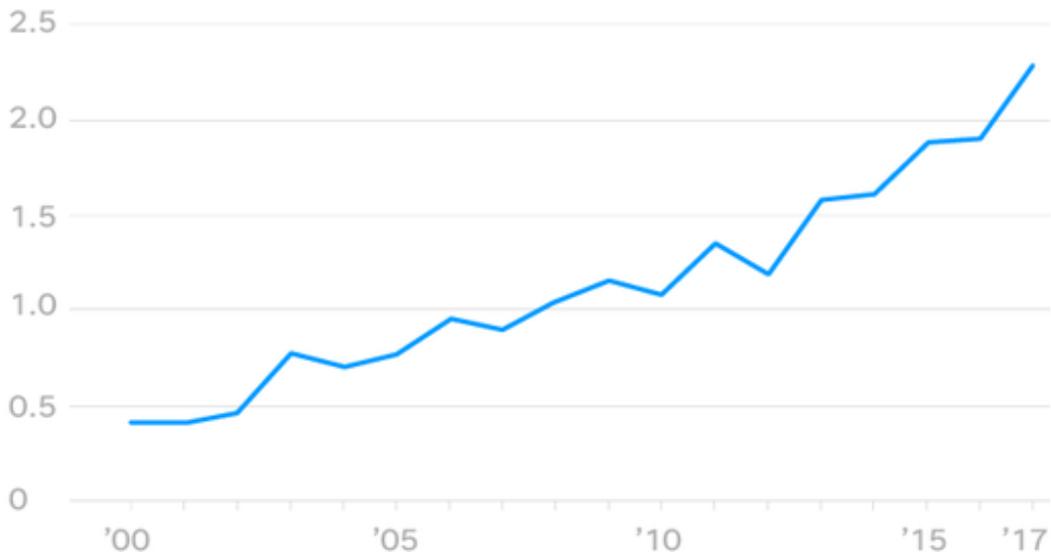
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Since 2000, rates of the respiratory infection in the United States have risen fivefold according to the CDC. The outbreak linked to September's Mountain State Fair had 108 confirmed cases according to the North Carolina Department of Health and Human Services and an additional report from the Henderson County Health Department, the largest in state history. The fatality rate of Legionnaires' is 10% according to the CDC, and one person has died in connection to North Carolina's outbreak.

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## Reported cases of Legionnaires' disease

Cases per 100,000 population:



SOURCE Centers for Disease Control and Prevention; USA TODAY

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021919-Legionnaires-disease (Photo: USA TODAY)

The Legionnaires' increase is due in part to greater awareness and testing. Historically, the presence of the illness went underreported as physicians mistook the relatively new disease (it was only formally discovered in the 1970s) for pneumonia.

Researchers also cited several external contributors to increased cases: people's expanding reliance on warming and cooling systems, population age and climate change.

In its 2019 report on Legionella management, The National Academies of Sciences, Engineering and Medicine wrote "There is a growing dependence on heating, ventilation, and cooling systems."

In addition, the report pointed to the aging population of the United States (Legionnaires' symptoms are more common for individuals over 50) and more humid environments that keep the bacteria airborne for longer.

"Global warming is likely contributing to the increase in cases," the report concluded.

Legionella, the Legionnaires'-causing bacteria, feeds on nutrients and is aided by other microbes in water kept around body temperature, 98.6 degrees Fahrenheit, according to Stout. Whether the water remains hot or eventually cools, it can later be carried through the air as invisible droplets that people are at risk of breathing in.

## Make testing mandatory?

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Stout, who has studied Legionnaires' for close to 40 years, says curbing the growth of Legionella and preventing an outbreak is "absolutely possible" but must start with assessing the risk of systems that, out of convenience or necessity, keep water at a raised temperature like hot tubs, cooling towers and fountains.

"The only way to know for sure whether Legionella is present or not is to test," Stout said. "And that should be the starting point."

North Carolina, like most states, does not require Legionella testing in water systems unless there is reason to believe the bacteria is present. "Now would be the time," Stout said.

"Testing only happens once there is a concern," Henderson County Director of Health Steve Smith said via email. "But the disease is not common enough to mandate testing."

Dr. Janet Stout, of the Special Pathogens Lab, has studied Legionnaires' disease for close to 40 years. (Photo: Courtesy of Janet Horsch)

Stout also advocates for adding extra disinfectant in municipality water to kill harmful Legionella. The National Academies of Sciences, Engineering and Medicine concurs, writing, "Maintenance of a disinfectant residual can be an integral part of a building's water management plan for control of Legionella."

From 2013-17, an average of 181 Legionnaires' cases were confirmed annually in the state according to the North Carolina Division of Public Health. While large-scale breakouts grab headlines, most Legionnaires' cases are sporadic, individual occurrences. Even before NCDHHS began its ongoing investigation into the cases of fair attendees, North Carolina had 96 Legionnaires' reports in 2019.

Rep. Susan Fisher is receptive to legislative steps to confront Legionnaires'.

"We cannot be too careful," she said. "And if it came to it, I would be in favor of something that mandated testing, particularly when you're looking at large numbers of people in a public space."

Others say preemptive monitoring is not currently feasible.



"The disease is too global to take preventative steps to prevent an outbreak," Smith said. "However, we can share information to the public for awareness about common sources of infection outbreaks of Legionnaires' disease — for example, cooling towers, hot tubs, etc."

Kandi Kilpatrick of Asheville, whose husband is awaiting results from his Legionnaires' test after the couple attended the Mountain State Fair, sees both potential and limitations to robust laws.

"I don't know how much you can mandate every vendor," Kilpatrick said. "But it would be better to have a more stringent testing process overall."



## The New York model

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In response to a spate of outbreaks across the Bronx in 2015, New York became the first state to require the regular testing and disinfecting of cooling towers and hospital water systems. Health officials are to be notified when Legionella levels elevate beyond a safe point.

Monitoring the systems and adding disinfectant costs thousands of dollars, according to a 2016 report by the Special Pathogens Lab. Stout believes the preemptive expenses are worth it.

Most other states have yet to copy New York's regulations.

"There have been laws in Europe and across the world for decades," Stout said. "So, the United States is different that way.

Stout sees the graphs that show cases per year rising like a mountain.

"My hope is that that line will start to go down," she said. "But it's not going to go down if these requirements are only voluntary. This is human nature."

# 108 cases of Legionnaires'. All fairgoers should take DHHS survey.

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 [citizen-times.com/story/news/local/2019/10/01/97-cases-legionnaires-fairgoers-should-take-dhhs-](https://citizen-times.com/story/news/local/2019/10/01/97-cases-legionnaires-fairgoers-should-take-dhhs-)

Elizabeth Anne Brown, Asheville Citizen Times Published 1:26 p.m. ET Oct. 1, 2019 | Updated 8:51 p.m. ET Oct. 1, 2019

ASHEVILLE - At least 108 people contracted Legionnaires' disease, a potentially life-threatening respiratory infection, at the Mountain State Fair, according to the North Carolina Department of Health and Human Services. One person has died from the disease.

Public health officials have yet to pinpoint the source of the outbreak, although they've declared the state-run WNC Agricultural Center safe for occupancy. All the rides and displays are long since gone.

DHHS is asking anyone who attended the Mountain State Fair to complete a five-minute survey about when they were on fair grounds and whether they've experienced symptoms. Even information from people who didn't get sick is valuable — it will help nail down exactly when and where the contamination occurred.

Fill out multiple versions of the survey if multiple members of your household attended the fair — including children.

## Who are the Legionnaires' patients?

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State DHHS has analyzed 97 of the 108 confirmed cases of Legionnaires' disease. The patients are 24-90 years old, with a median age of 61. Sixty three percent of these cases resulted in hospitalization, and one Buncombe County patient died.

Five of the confirmed cases are actually Pontiac Fever, a milder illness also caused by the bacteria Legionella. Symptoms are the eponymous fever, muscle aches, headache, chills, nausea, vomiting or diarrhea, according to NCDHHS.

According to the CDC, about 10% of Legionnaires' cases are fatal. People who have contracted the disease typically present symptoms within 14 days of exposure to the bacteria. Since the Mountain State Fair ran Sept. 6-15, that incubation period should have closed by Sept. 29.

*Check back with the Citizen Times for daily updates on the Legionnaires' outbreak.*



# Update: 82 cases of Legionnaires': What you need to know

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[citizen-times.com/story/news/local/2019/09/27/legionnaires-outbreak-36-cases-confirmed-wnc-mountain-](https://citizen-times.com/story/news/local/2019/09/27/legionnaires-outbreak-36-cases-confirmed-wnc-mountain-)

Elizabeth Anne Brown and Brian Gordon, Asheville Citizen Times Published 12:15 p.m. ET Sept. 27, 2019 | Updated 6:27 p.m. ET Sept. 29, 2019

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A CDC microbiologist pours water samples from a building experiencing a Legionnaires' disease outbreak into a filtration system to test for Legionella. (Photo: Courtesy of the CDC)

ASHEVILLE — As of Sept. 27, The N.C. Department of Health and Human Services has confirmed 82 cases of Legionnaires' disease, a respiratory infection that can be life-threatening, associated with the 2019 Mountain State Fair. One patient has died, and the CDC says the disease is fatal for 10% of people infected. Here's what you need to know.

## Legionnaires' isn't contagious

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Legionnaires' disease can't spread from person to person. The Legionella bacteria enters the body via contaminated water — but it has to reach the lungs to be dangerous, so it has to be breathed in. The culprit is usually aerosolized water, tiny water droplets suspended in the air by something like a misting station, an air conditioner or steam.

## You may not know you're infected

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Legionnaires' symptoms are very similar to other types of pneumonia.

Go see your doctor if you went to the Mountain State Fair and are feeling short of breath or have a cough, a fever, muscle aches or headaches. Other symptoms include diarrhea, nausea and confusion.

Symptoms typically arise 2-10 days after exposure to the bacteria, but can take as long as two weeks to present, according to the CDC. Since the Fair ran Sept. 6-16, we're still well within the incubation period and public health officials expect new cases to continue to emerge.

## Who can be infected?

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People who contract Legionnaires' are typically over 50, have a history of smoking or lung disease and/or have a weakened immune system, according to the CDC, but people outside this profile also get sick.

Fifty-five of the 82 cases have resulted in hospitalization, according to the latest data. One patient in Buncombe County has died.

## Source of contamination unclear

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Public health officials are still working to pin down the source of the contaminated water at the Mountain State Fair, according to NC and Buncombe County Department of Health and Human Services.

They're inspecting everything that might have created aerosolized water, including a hot tub vendor's display that produced moisture, confirmed Karen Powell, Health Director for Foothills Health District, which covers Rutherford and McDowell Counties.

The WNC Agricultural Center's building and grounds have been deemed safe for occupancy, according to NCDHHS and Ag Center general manager Matt Buchanan.

## Updated counts daily

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NCDHHS will update the number of confirmed cases every afternoon for the duration of the outbreak, but each county's DHHS is allowed to release information about their patients as they see fit. Check back with the Citizen Times for the latest.



# Buncombe health officials confirm nine cases of Legionnaires' disease, one death

 [wlos.com/news/local/several-cases-of-legionnaires-disease-confirmed-in-wnc-health-officials-say](https://www.wlos.com/news/local/several-cases-of-legionnaires-disease-confirmed-in-wnc-health-officials-say)

HENDERSON COUNTY, N.C. (WLOS) — Update: Health officials in Buncombe County reported that as of Tuesday, September 24, there have been nine confirmed cases of Legionnaires' disease reported in Buncombe County and one death caused by the illness.

The investigation into these cases is ongoing. The NC Communicable Disease Branch is working with Mountain State Fair organizers to investigate a possible connection of these cases with attendance at the fair earlier this month.

Legionnaires' disease tied to Mountain State Fair

Legionnaires' disease causes a severe lung infection or pneumonia. Symptoms may include cough, high fever, weakness, muscle aches, headaches, and shortness of breath. Legionnaires' disease is treated with antibiotics. Most people who get sick with it need to be hospitalized, but recover fully. However, according to the Centers for Disease Control and Prevention, about 1 out of 10 people with Legionnaires' disease will die from the infection.

Most healthy people exposed to Legionella do not become sick but certain people are at increased risk for getting Legionnaires' Disease including:

- Those age 50 or older
- Current or former smokers
- Those with chronic lung disease like emphysema or COPD
- Those with weakened immune systems due to disease or medication

If you attended the Mountain State Fair and are sick with symptoms of Legionnaires' disease, we recommend you see your health care provider and discuss Legionnaires' disease with them. If you live in Buncombe County and have questions about Legionnaires' disease, please call Buncombe County Communicable Disease at (828) 250 – 5019.

## **Previous coverage:**

State health officials have confirmed several cases of Legionellosis in Western North Carolina, with "a common factor of all having attended the recent Mountain State Fair."

Jennifer Mullendore, Medical Director at Buncombe County Health and Human Services, confirmed with News 13 that since late last week the county has had several cases of Legionnaires disease reported by local medical providers. All of the cases that have been reported have required hospitalization and there has been one confirmed death.

At this time, officials are still working to determine what the common link between all the cases is.

Henderson County Health Director Steven E. Smith, MPA, sent an email to other county employees, informing them the state confirmed several Henderson and Buncombe County residents were affected.

Buncombe County's Health Department would not confirm the information with News 13 but through a public records request, we were able to confirm the email from state officials stating concerns for fairgoers.

Legionnaires' disease tied to Mountain State Fair

In a press release, NCDHHS officials say Buncombe and Henderson County Health Departments are "investigating multiple cases of Legionnaires' disease reported in individuals who attended the NC Mountain State Fair."

Haywood County Public Health officials said in a news release they are also investigating a case.

"We don't yet know whether people might have been exposed to Legionella bacteria at the NC Mountain State Fair," said State Epidemiologist Dr. Zack Moore. "As a precaution, we are recommending that anyone who went to the fair and has symptoms of pneumonia, like cough, fever or shortness of breath, see a doctor right away and talk with them about Legionnaires' disease."

**According to the CDC**, Legionella is a kind of bacteria that can cause Legionnaires' disease - a serious type of pneumonia.

The email to state officials says:

Yesterday around 5:30 p.m., I received a call from the State Epidemiologist (Dr. Zack Moore) that the state was now aware of several cases of legionellosis (Henderson County and Buncombe County residents) with the common factor of all having attended the recent Mountain State Fair. This was expanded information from an earlier report from our communicable disease nurse, Audrey Shomper, who already had knowledge about an individual case and another suspected one. We are in the very early stages of information gathering and investigation. much of this will be coordinated between the 2 counties and the state. Features, exhibits and rides that incorporated some type of water exposure that created droplets which came in contact with visitors will be our focus. Today there is a conference call at 4:00pm with all partners and we'll know more after that discussion. If you're curious about this disease, a starting point for basic information can be found here: <https://www.cdc.gov/legionella/about/index.html> The only good news is that with the fair over, we believe the exposure threat is no longer present (if it was connected to a vendor or exhibit) or that it can be isolated very quickly if its an integral part of the fairgrounds operations that is still in play. Limiting any future exposures for individuals is an important objective right now. One of the reasons I have included so many people on this communication is that the state has already signaled that some type of broad public information communication is inevitable. With 170,000+ people attending this most recent fair, there is an obligation to get information out in case others may have been exposed and are experiencing symptoms. It will be important for them to seek medical care. It gets more interesting for our department specifically, because I will be away in Boston the rest of this week and our Nursing Director is out on maternity leave. Despite these challenges, we have an excellent Epi Team in house spearheaded by Dr. Curran and all are being briefed this morning. The cases will likely generate a lot of public interest and scrutiny and that's why I felt this advance notice was necessary. We are able to utilize our Local Health Information Team (LHIT) to customize communications with a broad spectrum of partners and will coordinate with the County PIO on public messaging. Although these are very unusual circumstances, this is not daunting for us. This is exactly what we are trained to do and with the help of our partners. we will address this quickly to protect the public's health.

Most healthy people exposed to Legionella bacteria do not get sick. The people at highest risk for Legionnaires' disease include individuals 50 years or older, current or former smokers, and those who have a chronic lung disease or a weakened immune system.

The NCDHHS says people who attended the NC Mountain State Fair and are experiencing cough, fever or shortness of breath should call their health care provider right away.

## Signs and Symptoms

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According to the CDC, people who get sick after being exposed to Legionella can develop two different illnesses: Legionnaires' disease and Pontiac fever.

Legionnaires' disease is very similar to other types of pneumonia; symptoms include cough, shortness of breath, fever, muscle aches and headaches. Legionnaires' disease can also be associated with other symptoms such as diarrhea, nausea, and confusion. Symptoms usually begin 2 to 10 days after being exposed to the bacteria, but it can take longer so people should watch for symptoms for about 2 weeks after exposure.

Pontiac fever symptoms are primarily fever and muscle aches; it is a milder infection than Legionnaires' disease. Symptoms begin between a few hours to 3 days after being exposed to the bacteria and usually last less than a week. Pontiac fever is different from Legionnaires' disease because someone with Pontiac fever does not have pneumonia.

## Treatment

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Legionnaires' disease requires treatment with antibiotics (medicines that kill bacteria in the body), and most cases of this illness can be treated successfully. Healthy people usually get better after being sick with Legionnaires' disease, but they often need care in the hospital. According to the CDC, about 1 out of every 10 people who gets sick with Legionnaires' disease will die due to complications from their illness. For those who get Legionnaires' disease during a stay in a healthcare facility, about 1 out of every 4 will die.

Pontiac fever goes away without specific treatment.

## Causes and Sources

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Legionella is a type of bacterium found naturally in freshwater environments, like lakes and streams. It can become a health concern when it grows and spreads in human-made building water systems like:

- Showerheads and sink faucets
- Cooling towers (structures that contain water and a fan as part of centralized air cooling systems for building or industrial processes)
- Hot tubs that aren't drained after each use
- Decorative fountains and water features
- Hot water tanks and heaters
- Large plumbing systems

## How It Spreads

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After Legionella grows and multiplies in a building water system, water containing Legionella then has to spread in droplets small enough for people to breathe in. People can

get Legionnaires' disease or Pontiac fever when they breathe in small droplets of water in the air that contain the bacteria.

Less commonly, people can get sick by aspiration of drinking water containing Legionella. This happens when water accidentally goes into the lungs while drinking. People at increased risk of aspiration include those with swallowing difficulties.

In general, people do not spread Legionnaires' disease and Pontiac fever to other people. However, this may be possible under rare circumstances.<sup>1</sup>

Talk to your doctor or local health department if

You believe you were exposed to Legionella

AND

You develop symptoms, such as fever, cough, chills, or muscle aches

Your local health department can determine whether to investigate. Be sure to mention if you spent any nights away from home in the last 10 days.

For additional information or to report possible cases of Legionnaires' disease, please call the Division of Public Health at (919) 733-3419 or contact your local health department. In Buncombe County, call (828) 250-5109. In Henderson County, call (828) 694-6019.