What is legionellosis?

Legionellosis is an infection caused by the bacterium *Legionella pneumophila*. The disease has two distinct forms: Legionnaires' disease, the more severe form of infection which includes pneumonia, and Pontiac fever, a milder illness. Extrapulmonary legionellosis can also occur. Legionnaires' disease acquired its name in 1976 when an outbreak of pneumonia occurred among persons attending a convention of the American Legion in Philadelphia. Later, the bacterium causing the illness was named *Legionella*.

How common is legionellosis in the United States?

An estimated 8,000 to 18,000 persons get Legionnaires' disease in the United States each year. An additional unknown number of persons are infected with the *Legionella* bacterium and have mild symptoms or no illness at all. Outbreaks of Legionnaires' disease have received the most media attention; however, most often the disease occurs as single, isolated cases not associated with any recognized outbreak. Outbreaks are usually recognized in the summer and early fall, but cases may occur year-round. Approximately 5-15% of known cases of Legionnaires' disease have been fatal.

In Ohio from 2016-2020, the median number of reported cases was 583 (range 510-950).

What are the symptoms of legionellosis?

Patients with Legionnaires' disease usually have fever, chills, and cough, which may be dry or may produce sputum. Some patients also have muscle aches, headache, tiredness, loss of appetite, and occasionally diarrhea. Laboratory tests may show decreased function of the kidneys. Chest x-rays often show pneumonia. It is difficult to distinguish Legionnaires' disease from other types of pneumonia by symptoms alone; other tests are required for diagnosis. Persons with Pontiac fever experience fever and muscle aches and do not have pneumonia. They generally recover in 2-5 days without treatment. The time between exposure and onset of illness for Legionnaires' disease is 2-14 days; for Pontiac fever, it is shorter, generally within 3 days.

How is legionellosis diagnosed?

The diagnosis of legionellosis requires special tests not routinely performed on persons with fever or pneumonia. Therefore, a physician must consider the possibility of legionellosis in order to obtain appropriate tests. Several types of tests are available. The most useful are detecting the bacteria in sputum and finding *Legionella* antigen in a urine sample.

Who gets legionellosis?

People of any age can develop Legionnaires' disease, but the illness most often affects middle-aged and older persons, particularly those who smoke cigarettes or have chronic lung disease. Also at increased risk are persons whose immune system is suppressed by diseases such as cancer, kidney failure requiring dialysis, diabetes, or AIDS. Persons who take drugs that suppress the immune system are also at higher risk.

Pontiac fever most commonly occurs in persons who are otherwise healthy.

What is the treatment for legionellosis?

Levofloxacin and azithromycin are among the drugs usually recommended for the treatment of Legionnaires' disease. Pontiac fever requires no specific treatment.

How is legionellosis spread?
Outbreaks of legionellosis have occurred after persons have inhaled aerosols that come from a water source (e.g., air conditioning cooling towers, whirlpool spas, showers) contaminated with *Legionella* bacteria. Persons may be exposed to these aerosols in homes, workplaces, healthcare facilities, or public places. Infection cannot be acquired from another person with legionellosis, and there is no evidence of persons becoming infected from auto air conditioners.

Where is the *Legionella* bacterium found?
Legionella organisms can be found in many types of water systems; however, the bacteria reproduce to high numbers in warm, stagnant water, such as that found in certain plumbing systems and hot water tanks, cooling towers and evaporative condensers of large air-conditioning systems, and whirlpool spas. Cases of legionellosis have been identified throughout the United States and in several other countries. The disease likely occurs worldwide.

What is being done to prevent legionellosis?
The development and implementation of water management programs, environmental facility assessments, monitoring of control measures, and subsequent improvements in the design and maintenance of cooling towers and plumbing systems to limit the growth and aerosolization of *Legionella* bacteria are the foundations of legionellosis prevention. During outbreaks, CDC and health department investigators seek to identify the source of disease transmission and recommend appropriate prevention and control measures, such as decontamination of the water source. Current research will likely identify additional prevention strategies.

For more information, please visit these websites:
- CDC *Legionella* (Legionnaires' Disease, Pontiac Fever): www.cdc.gov/legionella

QUICK REFERENCE GUIDE FOR LEGIONELLOSIS CASE DEFINITION, HEALTHCARE-ASSOCIATED DEFINITION, AND OUTBREAK DEFINITION:

LEGIONELLOSIS: STANDARD CASE DEFINITION (see Legionellosis IDCM chapter for complete case definition)
CONFIRMED: Lab Criteria: Isolation of *Legionella*, OR detection of DNA by PCR test, OR positive urine antigen test, OR ≥4-fold rise in antibody titer. Clinical Criteria: Pneumonia or Pontiac Fever or extrapulmonary legionellosis.
PROBABLE: Lab Criteria: None. Clinical Criteria: Pneumonia or Pontiac Fever or extrapulmonary legionellosis. Epidemiologic Criteria: Epi-link to a setting with a confirmed source of *Legionella* (e.g., positive environmental sample), OR epi-link to a setting associated with a confirmed case.

LEGIONELLOSIS: FOR HEALTHCARE-ASSOCIATED CASES (see Legionellosis IDCM chapter)		
	DEFINITION	**RECOMMENDATION**
A Presumptive healthcare-associated case	≥10 days of continuous stay in a healthcare facility in the 14 days prior to onset.	Conduct a full investigation.
A Possible healthcare-associated case	<10 days of continuous stay in a healthcare facility in the 14 days prior to onset.	One case: Consider conducting an investigation. ≥2 cases within 12 months: Conduct a full investigation.
Notes: • Healthcare facility is defined as a hospital, long term care facility, or clinic. Does not include assisted living. • "Continuous stay" means not leaving the building or grounds of a healthcare facility. Any trip outside the facility (e.g., to a private residence, shopping, out-patient visit) constitutes a break in the continuous stay.		

LEGIONELLOSIS OUTBREAK: (see Legionellosis IDCM chapter)

DEFINITION	**RECOMMENDATION**
A legionellosis outbreak is defined as ≥2 cases within a 12-month period with exposure to the same location, such as, the same hot tub, healthcare facility (e.g., presumptive healthcare-associated cases), assisted living, senior living facility, correctional facility, hotel, office building, apartment building, manufacturing plant, place of worship, fitness center, or gym.	Conduct a full investigation.