

**SLIDE 1 TITLE**

**SLIDE 2**

Hi, my name is Sarah Rhea. I am a veterinarian by training and am training with the CDC as an Epidemiologic Intelligence Officer. I have been assigned to the NC Division of Public Health for 2 years. I will be presenting information regarding Legionellosis.

**SLIDE 3**

At the end of this presentation, you should be able to:

1. Identify risk factors for legionellosis
2. Recognize healthcare-associated and travel-associated legionellosis cases as a public health priority, and
3. Understand the role and limitations of environmental testing in a legionellosis investigation.

**SLIDE 4**

Legionella is a gram-negative bacteria that is the causative agent of Legionellosis. Legionellosis, which is typically caused by Legionella pneumophila, is a nationally notifiable disease.

Legionella is found naturally in freshwater environments, but in insufficient numbers to cause disease. Outbreaks of legionellosis commonly involve warm water sources, such as decorative fountains, hot tubs, and cooling towers.

**SLIDE 5**

Legionella is transmitted through the inhalation of mist or vapor that contains the bacteria. It is not transmissible from person-to-person. Most people who are exposed to the Legionella bacteria do not become ill.

**SLIDE 6**

Risk factors for legionellosis include Age greater than 50 years, Chronic lung disease (for example, emphysema), Current or former smoker, being immunocompromised, Use of a CPAP  
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(or Continuous Positive Airway Pressure) machine, Recent travel with overnight stay outside the home, Exposure to whirlpool spas, and Recent repairs or maintenance work on domestic plumbing.

#### **SLIDE 7**

Legionellosis is associated with 2 clinically and epidemiologically distinct illnesses: Legionnaires' disease, which is characterized by fever, myalgia, cough, and clinical or radiographic pneumonia, and Pontiac fever, which is a milder illness without pneumonia.

#### **SLIDE 8**

This table compares a few key features of Legionnaire's Disease and Pontiac Fever. The incubation period for Legionnaire's Disease can be 2 to 10 days, much longer than the 5 to 72 hour incubation period of Pontiac Fever. One of the most important differences between these 2 diseases is that radiographic evidence of pneumonia is present in Legionnaire's Disease but not in Pontiac Fever. Legionnaire's Disease is typically a more severe disease in which hospitalization is common and there is a 5-30% case fatality rate. This is very different from Pontiac Fever, in which hospitalization is uncommon and the case fatality rate is zero.

#### **SLIDE 9**

Now, we'll review the CDC case definition for legionellosis...

- A Confirmed Case is a clinically compatible case that meets at least 1 of the following 3 confirmatory laboratory criteria:
- By culture and isolation of any Legionella organism from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluid;
- By detection of Legionella pneumophila serogroup 1 antigen in urine; or
- By seroconversion, defined as a fourfold or greater rise in specific serum antibody titer to Legionella pneumophila serogroup 1.

#### **SLIDE 10**

A Suspect Case is a clinically compatible case that meets at least 1 of the following suspect laboratory criteria:

- By seroconversion, defined as a fourfold or greater rise in antibody titer to specific species or serogroups of Legionella other than L. pneumophila serogroup 1;

- By seroconversion, defined as a fourfold or greater rise in antibody titer to multiple species of Legionella using pooled antigen; or
- By the detection of specific Legionella antigen or staining of the organism in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody (or DFA) staining, immunohistochemistry (or IHC), or other similar method.

#### **SLIDE 11**

Diagnosis and timely reporting of legionellosis cases are important. Identification of a case of legionellosis implies the presence of an environmental source and indicates that other susceptible individuals may be exposed. There are 2 types of legionellosis cases that are specifically of high-priority to public health, healthcare-associated cases and travel-associated cases. During any legionellosis investigation, remember to ask the patient about his or her healthcare exposures and travel in the 10 days prior to symptom onset.

#### **SLIDE 12**

Travel-associated legionellosis is defined as a case with a history of spending at least 1 night away from home (either in the same country of residence or abroad) in the 10 days before onset of illness. This designation may be used for either confirmed or suspect cases. The Communicable Disease Branch shares detailed travel exposure information with the CDC to identify cases that may be travel-associated.

#### **SLIDE 13**

Healthcare-associated legionellosis is defined as a case with a history of spending the entire 10 days before onset of illness in a hospital or long-term care facility AND has no alternate exposures. Even a single healthcare-associated case requires enhanced surveillance and could require environmental testing.

#### **SLIDE 14**

Environmental testing for Legionella is not routinely done, as these bacteria are commonly found in the environment. However, environmental testing may be performed, under certain circumstances, as part of a legionellosis investigation. These may include...

- If there are 2 or more cases of legionellosis with an epidemiologic link to the same location and an environmental assessment indicates a potential problem at that location;

- If there is 1 case with no alternative exposures and others at high risk, such as at a hospital or long-term care facility; or
- If there is a new case in the setting of a previous outbreak.
- It is important to remember that clinical isolates are necessary to interpret the findings of an environmental investigation of legionellosis. Additionally, finding Legionella in an environmental sample does not necessarily mean that it is the source of the case's Legionella infection.

#### **SLIDE 15**

In summary, there are numerous risk factors for legionellosis, including age over 50 years, chronic lung disease, and immunocompromised. Healthcare-associated cases and travel-associated cases of legionellosis are specifically of high-priority to public health. Therefore, during any legionellosis investigation, remember to ask the patient about his or her healthcare exposures and travel in the 10 days prior to symptom onset. Finally, environmental testing is not routinely performed for legionellosis investigations. However, when environmental testing is initiated, clinical isolates are necessary to interpret the investigational findings.

#### **SLIDE 16**

For additional information about legionellosis, please see the following references

- Legionellosis, CDC
  - <http://www.cdc.gov/legionella/index.html>
- Legionella and the prevention of legionellosis, WHO, 2007
  - [http://www.who.int/water\\_sanitation\\_health/emerging/legionella.pdf](http://www.who.int/water_sanitation_health/emerging/legionella.pdf)
- Local Health Department Disease Investigation Steps – Legionellosis, NC DPH
  - [http://epi.publichealth.nc.gov/cd/lhds/manuals/cd/invest/LEGIONELLOSIS\\_LHD\\_STEPS.pdf](http://epi.publichealth.nc.gov/cd/lhds/manuals/cd/invest/LEGIONELLOSIS_LHD_STEPS.pdf)
- NC Communicable Disease Manual
  - <http://epi.publichealth.nc.gov/cd/lhds/manuals/cd/toc.html>
- Control of Communicable Disease Manual, American Public Health Association, 19th Edition, 2008