Infection Preventionist Lunch and Learn

November 12, 2024

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Series Objectives

- Encourage learning, growth, and networking
- Provide non-regulatory education and information
- Discuss topics relevant to new infection preventionists (IPs)

Legionella and Water Management

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Legionellosis Surveillance Coordinator
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Healthcare-Associated Infections (HAI) Prevention Program
Bureau of Communicable Diseases
Division of Public Health

Agenda

- Background: *Legionella* and Legionnaires' disease
- *Legionella p*revention and water management
- Available resources

Background

Legionnaires' Disease: Background

- Atypical pneumonia caused by *Legionella* bacteria

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Legionnaires' Disease: Background

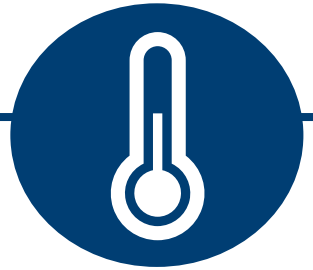
- Atypical pneumonia caused by *Legionella* bacteria
- Grows and spreads in building water systems
- Can be prevented with a water management program

Clinical Features

Symptoms: 2023 Data

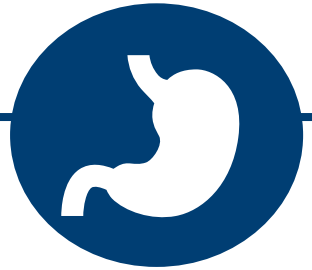
65% presented with **shortness of breath**

74% presented with **cough**



75% presented with **fever**

Symptoms: 2023 Data



59% presented with **gastrointestinal symptoms**, such as diarrhea

33% presented with **altered mental status**

22% presented with **chest pain**

Confirmatory Diagnostic Testing

Urine antigen test (UAT)

This test **only** detects *Legionella pneumophila* serogroup 1.

Confirmatory Diagnostic Testing

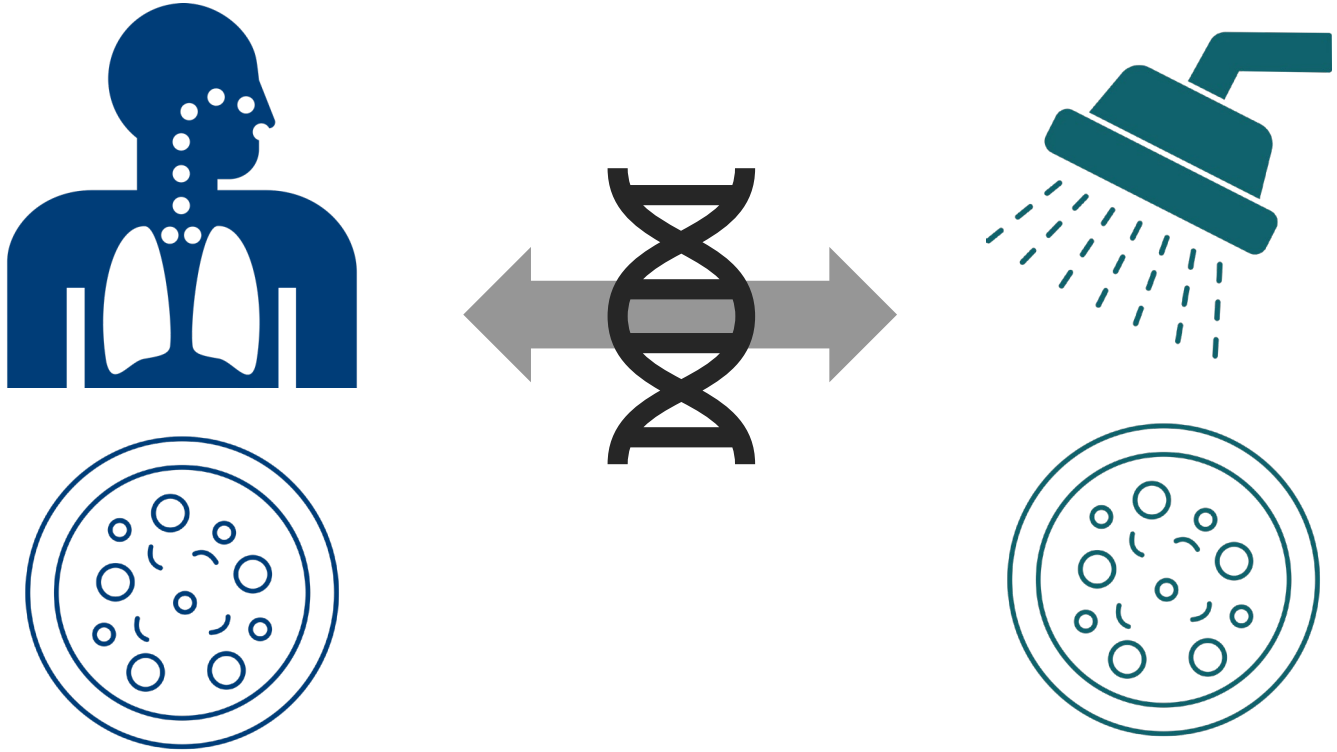
Urine antigen test (UAT)

PCR

Culture

These tests must be resulted from **sputum** or **lower respiratory specimens.**

Diagnostic Testing: Importance of Clinical Isolates

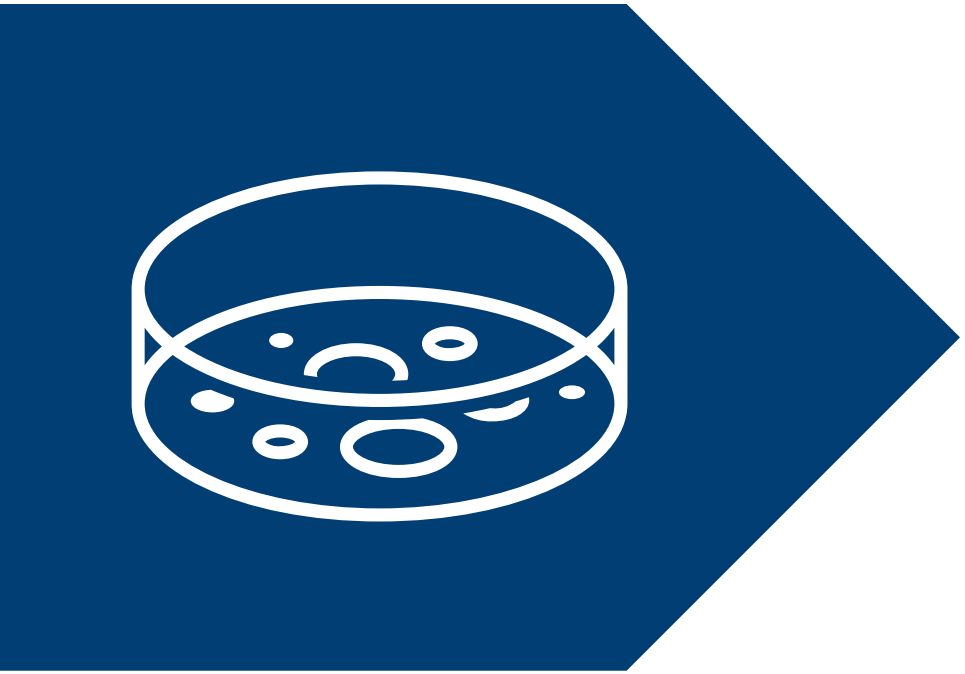


UAT is a confirmatory test, but clinical isolates can be compared to clinical isolates from other patients and environmental isolates.

Diagnostic Testing: *Legionella* Culture

A note on culture: *Legionella* does not grow on routine respiratory cultures. It must be specifically ordered.

Diagnostic Testing: Fee-Exempt Testing



- WSLH offers fee-exempt *Legionella* culture for all UAT-positive cases.
- Other patients with pneumonia may be tested fee-exempt with Bureau of Communicable Diseases approval.

Treatment

Legionnaires' disease can be treated with antibiotics including **respiratory fluoroquinolones** or **macrolides.**

Prognosis

Case fatality rate is approximately **5-10%**. Prognosis is best with diagnosis and treatment at time of admission.

Source: National Library of Medicine article

Prognosis: Patients with Underlying Medical Conditions

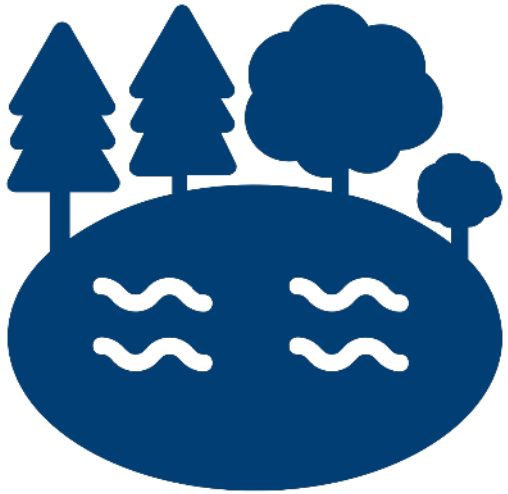
From 2023 data, Wisconsin patients were more likely to die from their illness if they had **underlying medical conditions**.

Prognosis: Recipients of Health Care

Case fatality rate is higher in cases that had **inpatient** health care or resided in a **long-term care facility** during the exposure period.

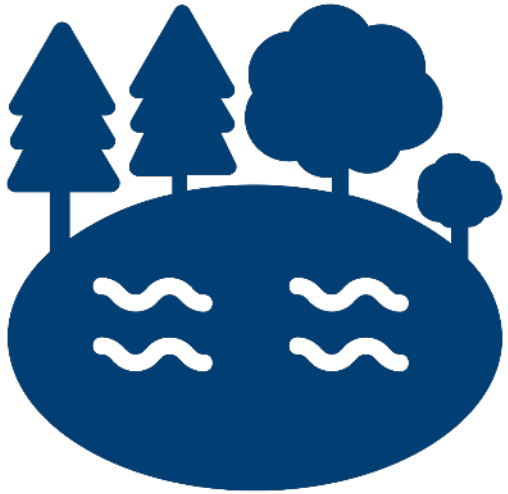
Transmission

Legionella Bacteria: Growth Conditions



Legionella naturally occur in fresh water.

Legionella Bacteria: Growth Conditions



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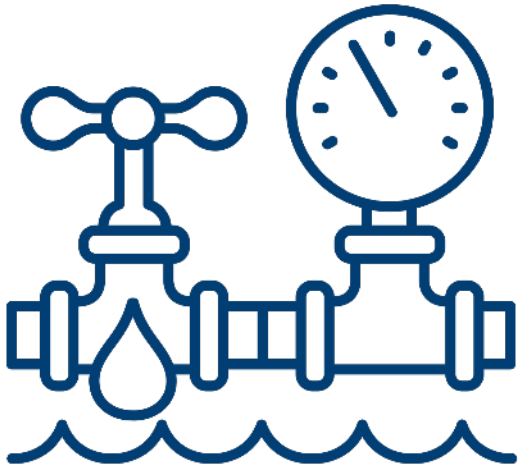
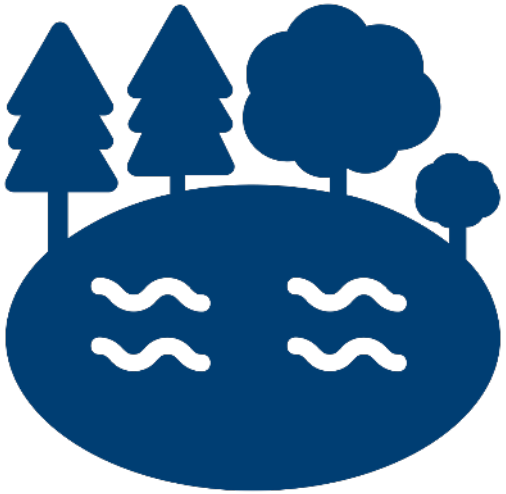


Public water systems or private wells deliver incoming water to buildings.

Legionella Bacteria: Growth Conditions



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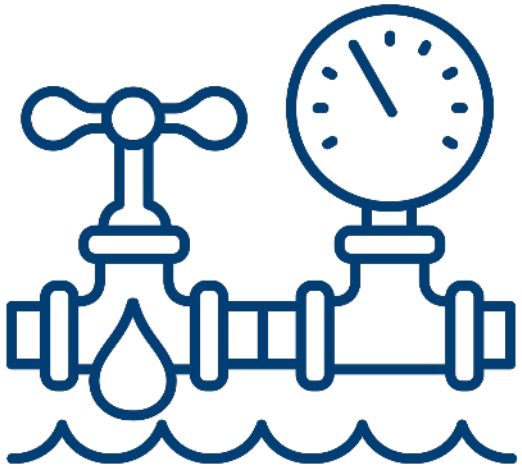
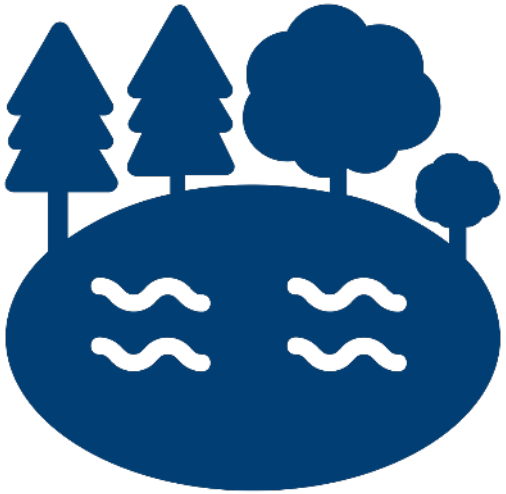


Public water systems or private wells deliver incoming water to buildings.

Water is delivered to fixtures and devices for use.

Legionella Bacteria: Growth Conditions



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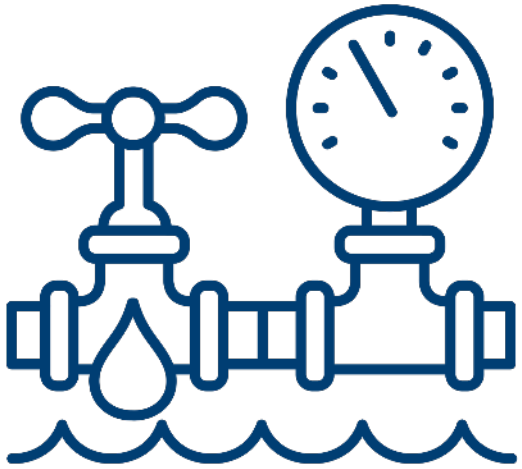

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Legionella Bacteria: Growth Conditions

Legionella grow and amplify in water **77ºF** to **113ºF.**

The Hot Water Dilemma

Anti-scald regulations

Prevent *Legionella*

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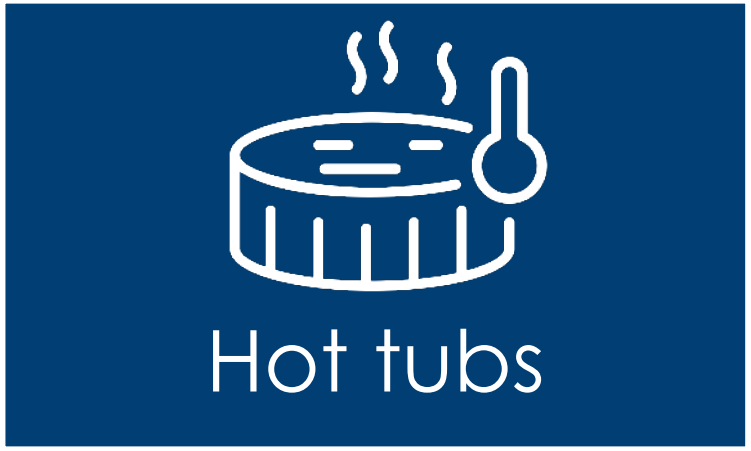
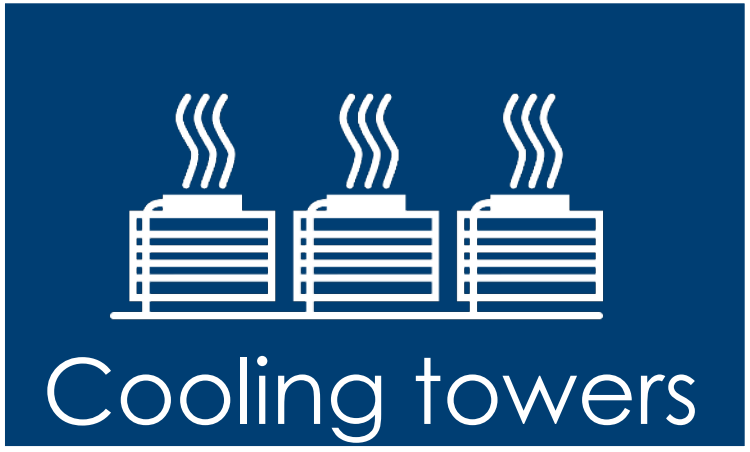
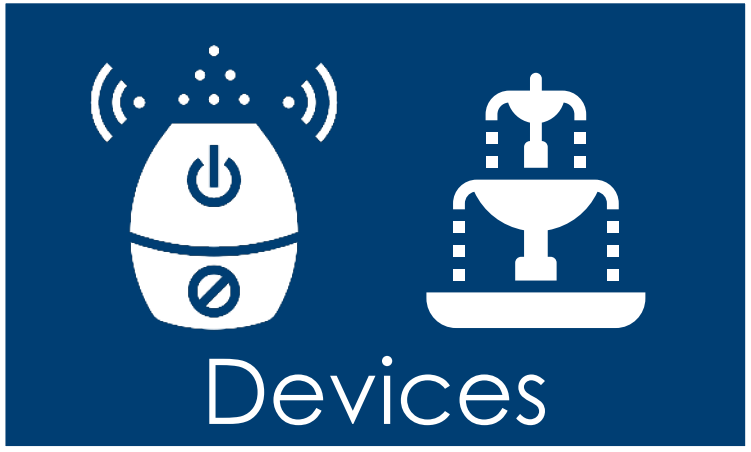
Stagnation and **biofilm** formation contribute to *Legionella* growth.

Legionella is transmitted by **inhalation** or **aspiration** of contaminated water.

Examples of Exposure Sources







Prevention: Water Management Programs

What is a Water Management Program?

A **water management program (WMP)** is the risk management plan for the prevention and control of legionellosis associated with building water systems, including documentation of the plan's implementation and operation.

Requirement for Health Care Facilities

The Centers for Medicare and Medicaid Services (CMS) and the Joint Commission **require hospitals and nursing homes** to have **water management programs**.

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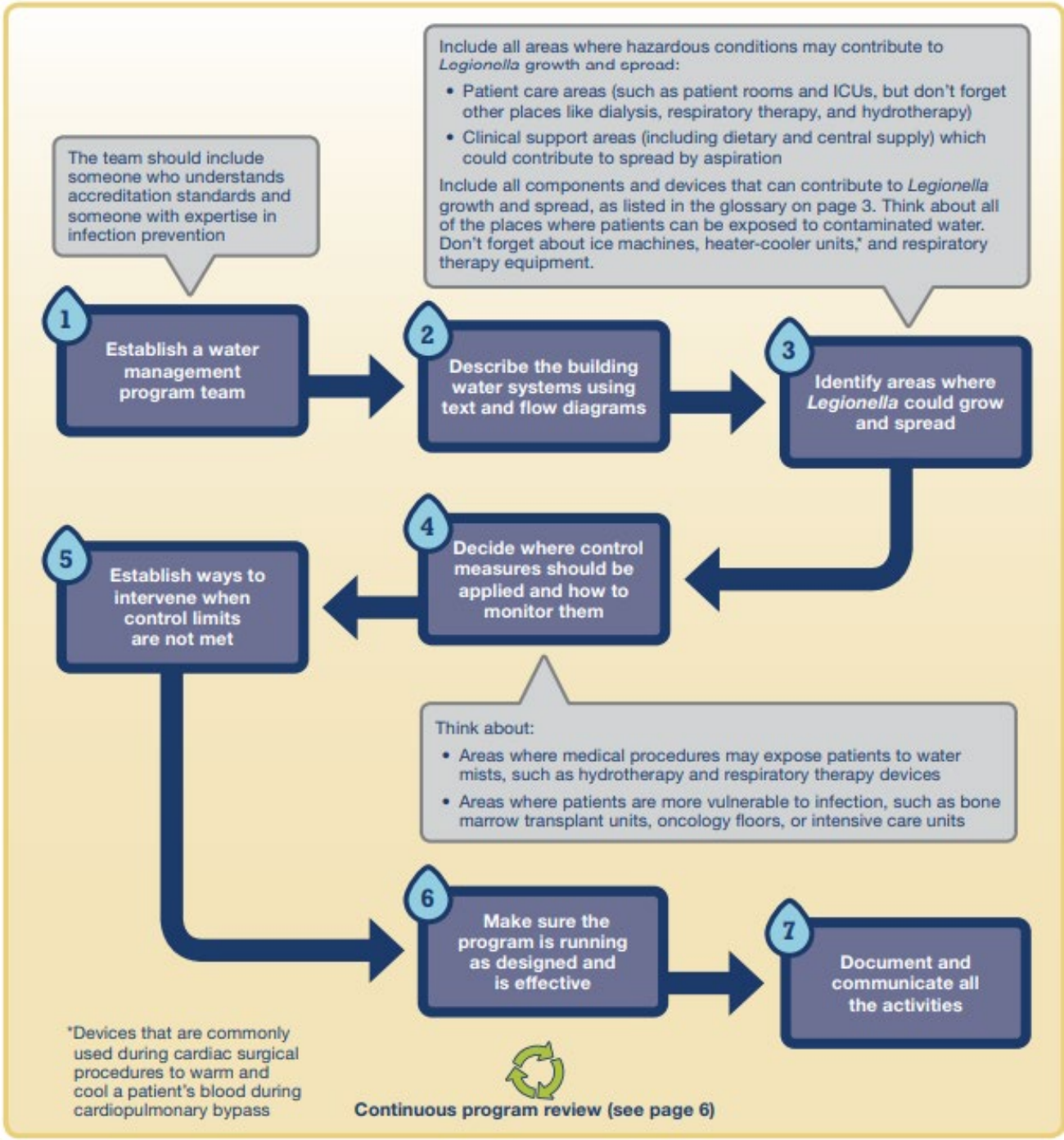
Note: This does not include assisted living facilities.

Elements of a Water Management Program (WMP)



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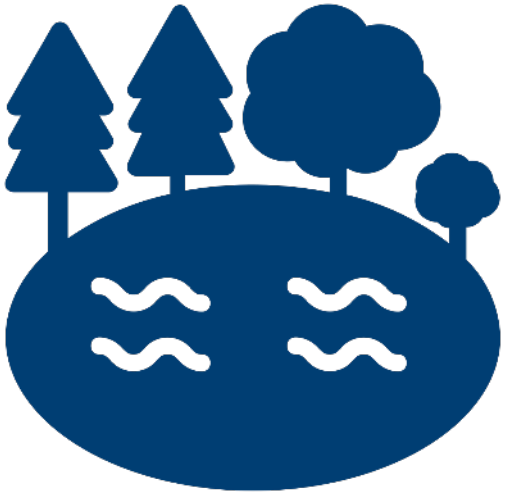

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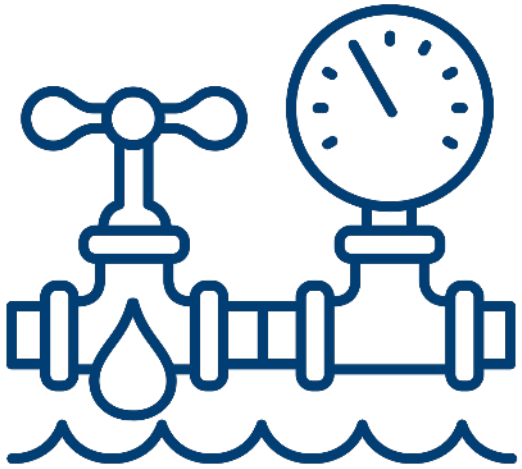

Public water systems or private wells deliver incoming water to buildings.

Water is delivered to fixtures and devices for use.

Incoming Water Considerations

Is your facility's incoming water **disinfected**? Is there a measurable **disinfectant residual**?

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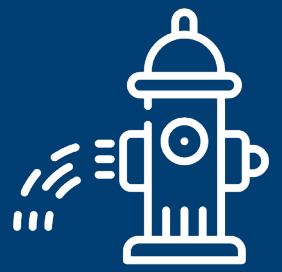

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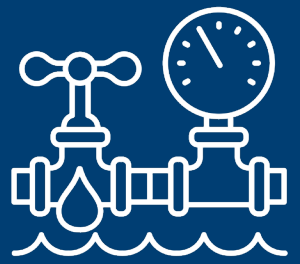

Does the water for fire suppression and potable water come into the facility in a **combined** water service?

Combined Potable Water and Fire System

Legionella Bacteria: Growth Conditions

Legionella grow and amplify in water 77ºF to 113ºF.

Water Temperature Considerations

What is the hot water temperature **at initiation?**

Are there hot water **storage tanks?**

How are hot water temperatures **tempered down?**

Main Thermostatic Mixing Valve

Legionella Bacteria: Growth Conditions

Legionella grow and amplify in water 77ºF to 113ºF.

Stagnation and biofilm formation contribute to *Legionella* growth.

Stagnant Water Considerations

Is there piping that leads to **no usable plumbing fixture** (dead end) in your facility?

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Are there plumbing fixtures or devices in your facility that are **not used** (functional dead ends)?

Are there **unoccupied** areas of the facility?

Dead Ends and Dead Legs

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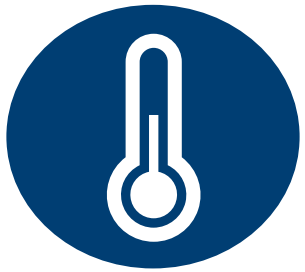
Legionella Bacteria: Growth Conditions



Legionella grow and amplify in water 77ºF to 113ºF.

Stagnation and biofilm formation contribute to *Legionella* growth.

***Legionella* is transmitted by inhalation or aspiration of contaminated water.**

Ice Machines

Perform maintenance and cleaning per manufacturer instructions for use.

Humidifiers

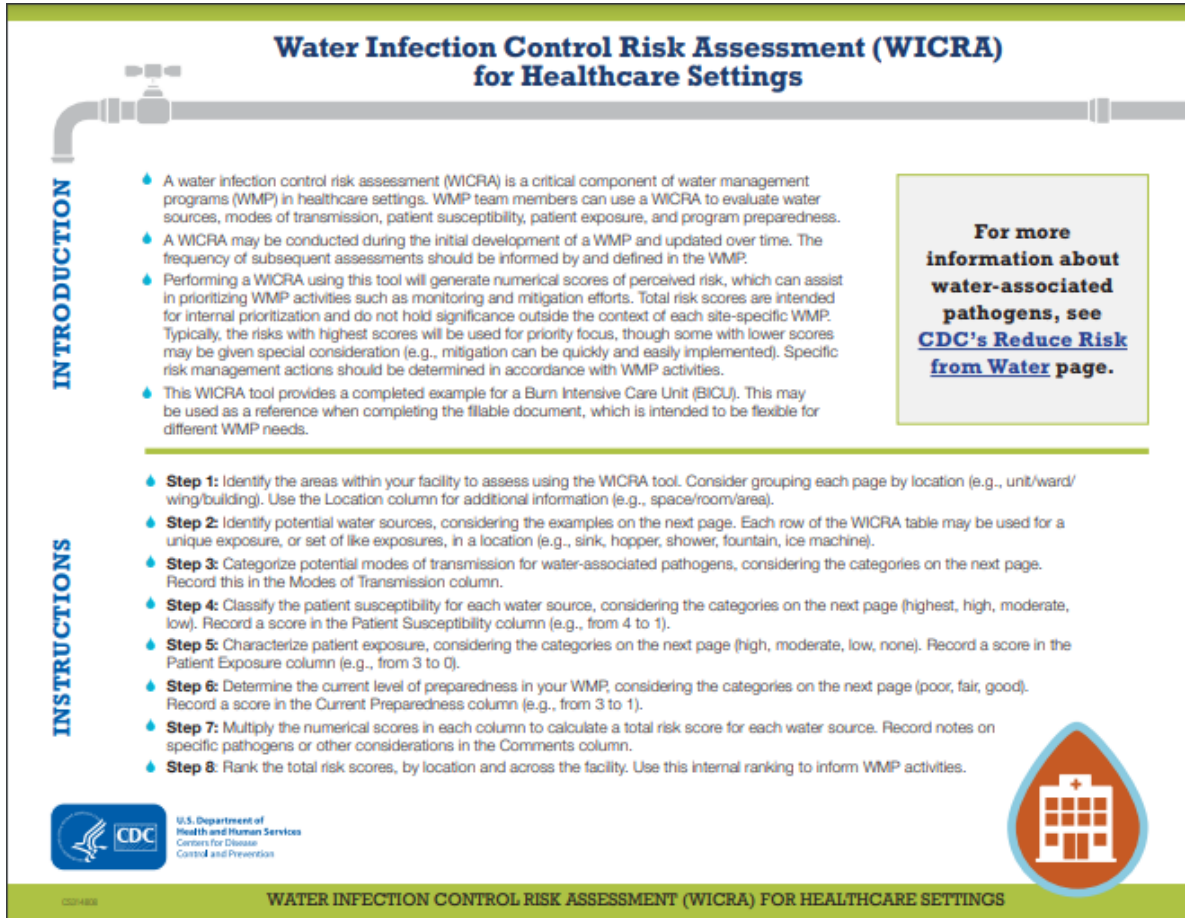
Perform maintenance and cleaning per manufacturer instructions for use.

Cooling Towers

Resources

Helpful Water Management Program Resources

[CDC (Centers for Disease Control and Prevention) Water Infection Control Risk Assessment Form]



Water Infection Control Risk Assessment (WICRA) for Healthcare Settings

INTRODUCTION

- A water infection control risk assessment (WICRA) is a critical component of water management programs (WMP) in healthcare settings. WMP team members can use a WICRA to evaluate water sources, modes of transmission, patient susceptibility, patient exposure, and program preparedness.
- A WICRA may be conducted during the initial development of a WMP and updated over time. The frequency of subsequent assessments should be informed by and defined in the WMP.
- Performing a WICRA using this tool will generate numerical scores of perceived risk, which can assist in prioritizing WMP activities such as monitoring and mitigation efforts. Total risk scores are intended for internal prioritization and do not hold significance outside the context of each site-specific WMP. Typically, the risks with highest scores will be used for priority focus, though some with lower scores may be given special consideration (e.g., mitigation can be quickly and easily implemented). Specific risk management actions should be determined in accordance with WMP activities.
- This WICRA tool provides a completed example for a Burn Intensive Care Unit (BICU). This may be used as a reference when completing the fillable document, which is intended to be flexible for different WMP needs.

For more information about water-associated pathogens, see CDC's Reduce Risk from Water page.

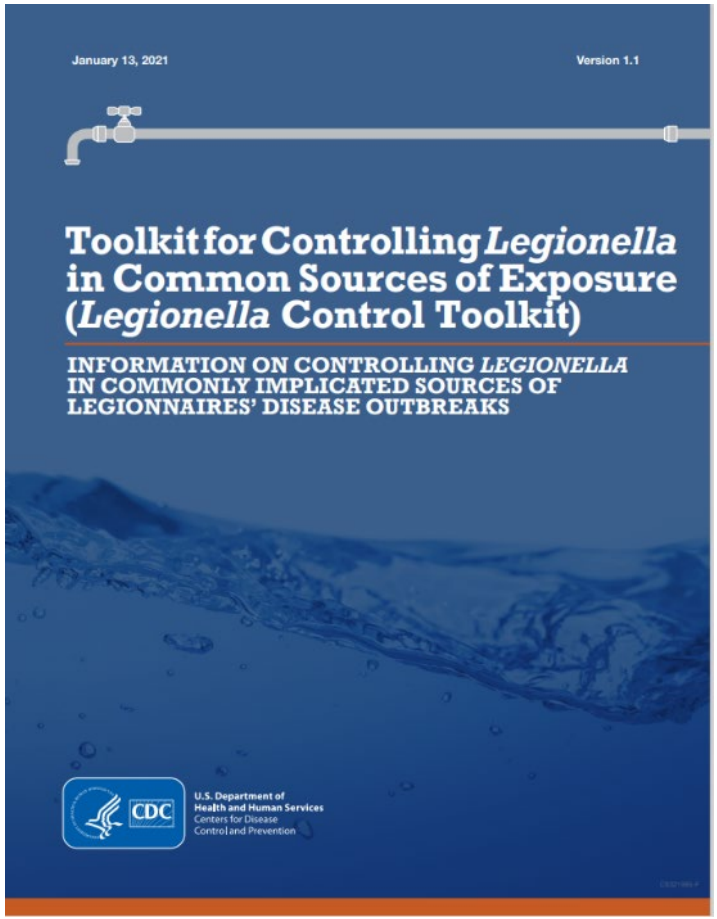
INSTRUCTIONS

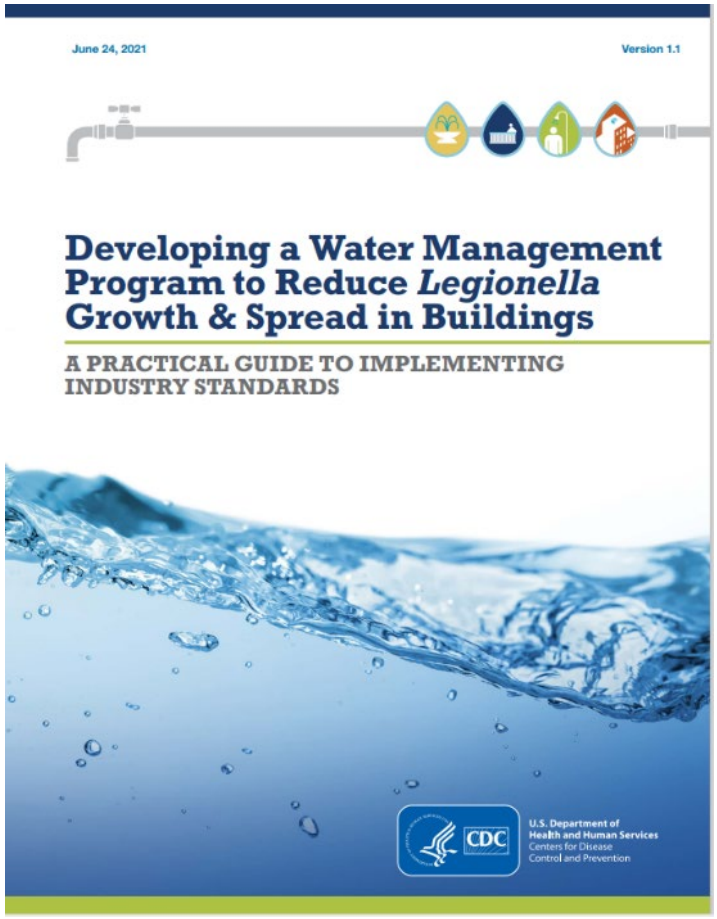
- **Step 1:** Identify the areas within your facility to assess using the WICRA tool. Consider grouping each page by location (e.g., unit/ward/wing/building). Use the Location column for additional information (e.g., space/room/area).
- **Step 2:** Identify potential water sources, considering the examples on the next page. Each row of the WICRA table may be used for a unique exposure, or set of like exposures, in a location (e.g., sink, hopper, shower, fountain, ice machine).
- **Step 3:** Categorize potential modes of transmission for water-associated pathogens, considering the categories on the next page. Record this in the Modes of Transmission column.
- **Step 4:** Classify the patient susceptibility for each water source, considering the categories on the next page (highest, high, moderate, low). Record a score in the Patient Susceptibility column (e.g., from 4 to 1).
- **Step 5:** Characterize patient exposure, considering the categories on the next page (high, moderate, low, none). Record a score in the Patient Exposure column (e.g., from 3 to 0).
- **Step 6:** Determine the current level of preparedness in your WMP, considering the categories on the next page (poor, fair, good). Record a score in the Current Preparedness column (e.g., from 3 to 1).
- **Step 7:** Multiply the numerical scores in each column to calculate a total risk score for each water source. Record notes on specific pathogens or other considerations in the Comments column.
- **Step 8**: Rank the total risk scores, by location and across the facility. Use this internal ranking to inform WMP activities.

CDC U.S. Department of Health and Human Services Centers for Disease Control and Prevention

WATER INFECTION CONTROL RISK ASSESSMENT (WICRA) FOR HEALTHCARE SETTINGS

Helpful Water Management Program Resources

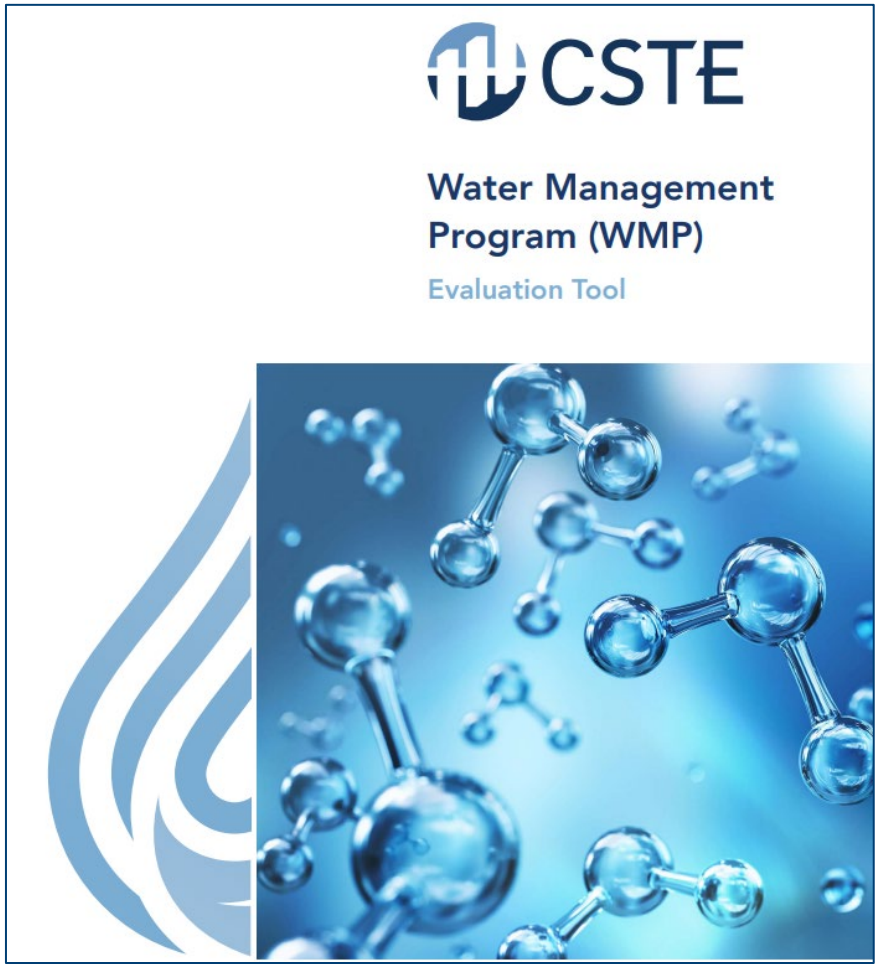




- CDC Legionella Control Toolkit
- CDC Water Management Program Toolkit

Helpful Water Management Program Resources

[CDC Water Management Program Evaluation Tool]



Questions?

IP Starter Kit

- Interactive, web-based resource
- Background information, resources, and templates
- Covers topics applicable to IPs across care settings

Send your questions and topic suggestions.

Submit your ideas to Ashley O'Keefe at ashley.okeefe@dhs.wisconsin.gov.

HAI Prevention Program Contact Information

Email: dhswihaipreventionprogram@dhs.wisconsin.gov

Phone: 608-267-7711

Website: www.dhs.wisconsin.gov/hai/contacts.htm

Upcoming Lunch and Learn Session

Date: Tuesday, December 10, 2024

Topic: Annual Infection Prevention Risk Assessment