EISENHOWER HEALTH

Legionellosis Prevention

Implementation of a Hospital Water Management Program

Friday, September 16, 2022
APIC Conference

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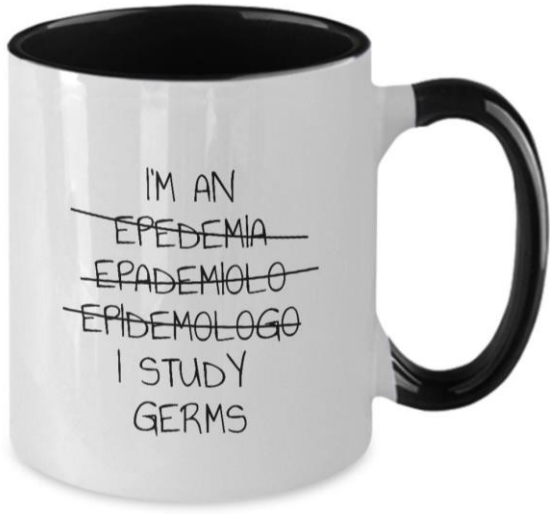
Disclaimer



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Learning Objectives

After this lecture, you should be able to:

1. Describe the epidemiology and identify risk factors for legionellosis
2. Know the ANSI/ASHRAE Standard and TJC Requirements
3. Understand components of a water management program
4. Awareness of the hazard analysis and/or where to find the CDC's WICRA tool

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Palm Springs Outbreak

- **Collaborative investigation**
  - CDC + CDPH + Riverside County Dept's of Public Health and Environmental Health
  - Total cases: 26
    - Onset from Oct 2021 – Apr 2022
  - Hospitalizations: 20/26
  - Deaths: 4/26
  - Positive specimens from pools/ spas and sprinkler water

News

By City News Service

Published March 11, 2022 4:33 PM

Outbreak Of Suspected Legionnaires' Disease Reported in Coachella Valley

MGN

Nearly two dozen cases of Legionnaires' disease identified in the Coachella Valley, going back almost six months, prompted Riverside County health officials to advise anyone feeling symptoms to seek medical attention.

"This is a continuing investigation," county Department of Public Health Officer Dr. Geoffrey Leung said. "The department recommends that individuals who live in the identified areas who become ill with pneumonia- like, respiratory symptoms, such as fever, chills, cough, shortness of breath, muscle aches, and headache, visit their health care provider."

According to the department, 20 cases of Legionnaires' disease have been confirmed since last fall, resulting in two deaths connected to the illness, though one of those fatalities involved a visitor to the county. Officials said the infected patients were residents of Palm Desert, Palm Springs and neighboring communities. None of the parties were identified. The California Department of Public Health is collaborating with the county in seeking to identify potential sources.

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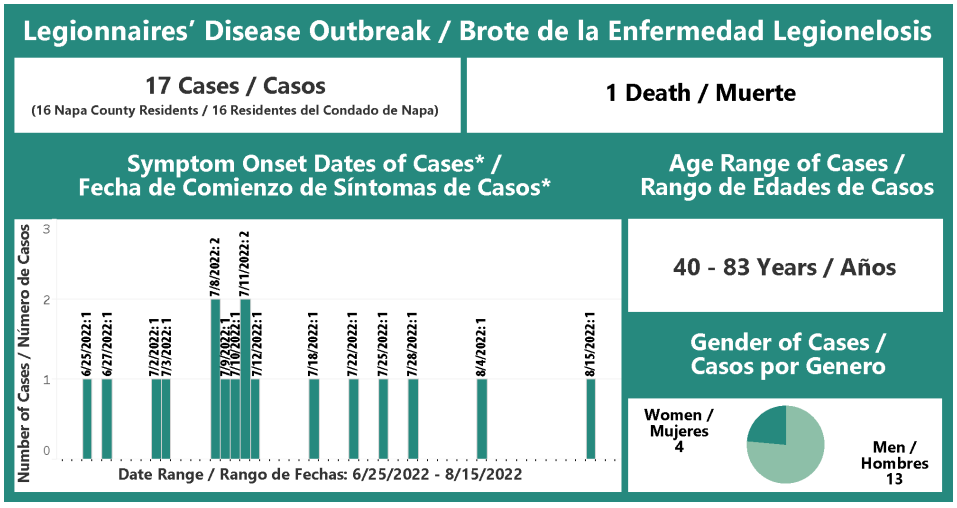
Source: Riverside County Public Health and Riverside County Environmental Health, in collaboration with the Centers for Disease Control and Prevention and California Department of Public Health, Legionella investigation conducted February 2022 to June 2022. Correspondence with Hongbin Jin from Riverside County Public Health. September 14, 2022.

Napa County Outbreak



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Napa County Outbreak

Location	Address	Date Sampled	Remediation Completed?
Hall of Justice	1125 3rd St Napa, CA 94559	7/25/2022	Yes
Embassy Suites	1075 California Blvd Napa, CA 94559	7/25/2022	Yes
Napa Superior Court	1111 Third St Napa, CA, 94559	8/15/2022	Yes
The Riverfront	700 Main St Napa, CA, 94559	8/9/2022	Yes

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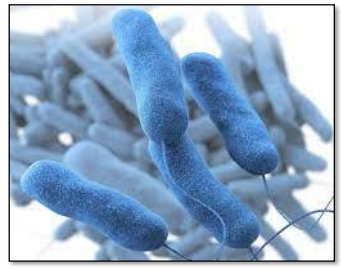
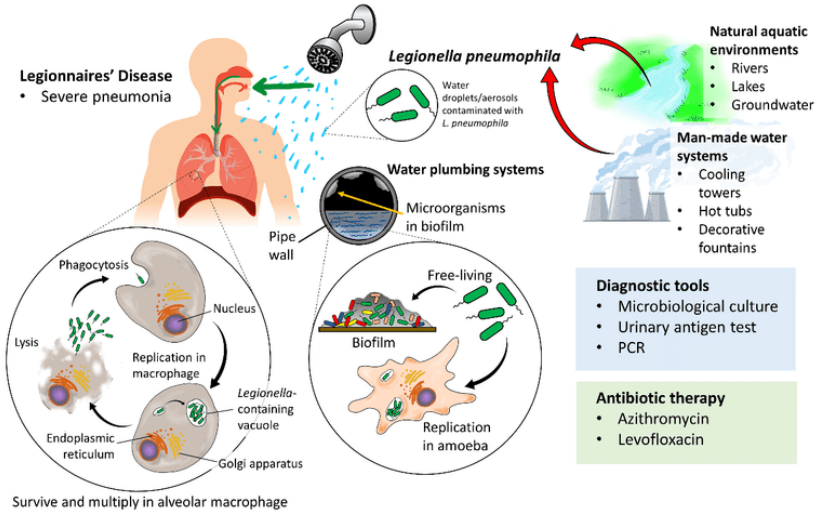
Legionella Bacterium
Etiology and Reservoir

- **Etiologic agent**
  - Aerobic, G-bacteria
  - >60 species; >70 serogroups
    - Most common
      - *Legionella pneumophila* serogroup 1
      - *Legionella longbeachae*
- **Environmental reservoir**
  - Found in nutrient rich environments, warm water temps are ideal
  - Soil and compost (*L. longbeachae)*



UpToDate: https://www.uptodate.com/contents/microbiology-epidemiology-and-pathogenesis-of-legionella-infection

Legionella pneumophila Lifecycle



Source: Teng Hern, Tan & Tee, Wei & Khan, Tahir & Ming, L C & Letchumanan, Vengadesh. (2021). Legionella pneumophila — The causative agent of Legionnaires' disease. Progress In Microbes & Molecular Biology. 4. 10.36877/pmmb.a0000193

Terminology

- **Legionellosis**
  - Refers to 2 distinct clinical illnesses
    - Legionnaires' disease (LD)
    - Pontiac fever
- ***L. pneumophila* was first discovered in July 1976**
  - 100s cases, 29 deaths

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Photo: The Bellevue Hotel – 1976 in Philadelphia where the outbreak occurred and Legionnaires' disease was first discovered.

Legionellosis
LD vs. Pontiac Fever

- **Legionnaires' Disease (LD)**
  - Illness with pneumonia (clinically and/or radiographically)
  - Other SSx: myalgia, malaise SOB, headache, GI symptoms
  - Incubation period: 2-14 days after exposure
  - CFR: 10%
  - Tx: antibiotic
- **Pontiac Fever**
  - Milder, self-limiting, without pneumonia
  - SSx: fever, chills, myalgia, malaise, fatigue, nausea/vomiting
  - Incubation period: few hours – 3 days
  - CFR: extremely low
  - Tx: supportive

Photo credit: Cases Journal –BioMed Central

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UpToDate: https://www.uptodate.com/contents/microbiology-epidemiology-and-pathogenesis-of-legionella-infection
Centers for Disease Control & Prevention: https://www.cdc.gov/legionella/clinicians/clinical-features.html

Summary Table

	Legionnaires' Disease (severe)	Pontiac Fever (mild)
Incubation period	2-10 days	5-72 hours
Radiographic evidence of pneumonia	YES	NO
Hospitalization	Common	Uncommon
Case fatality rate (CFR)	5-30%	0%

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Control of Communicable Diseases Manual, 19th Edition, 2008; David L. Heymann, MD (Ed.) American Public Health Association. http://www.cdc.gov/legionella/clinicians.html

Epidemiology of Legionnaires' Disease

- **Incidence**
  - 8k-18k cases of LD in the U.S.
    - More than 10% of these cases are fatal
  - 1.4-1.8 cases per 100k (U.S., Europe, Australia)
  - 90% of community-acquired cases globally = *L. pneumophila*
    - 85% overall cases = Serogroup 1
  - *L. longbeachae* =4%
    - >50% in Australia and New Zealand

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UpToDate: https://www.uptodate.com/contents/microbiology-epidemiology-and-pathogenesis-of-legionella-infection

Epidemiology of Legionnaires' Disease

Fact Check

Legionnaires' disease most often occurs in large outbreaks.

True or False?

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Epidemiology of Legionnaires' Disease

FALSE

Only 4% of Legionnaires' disease cases are part of known outbreaks.

There are ~8,000 cases per year in the U.S.

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Epidemiology of LD

- **Seasonality**
  - Late summer/ early autumn
  - *L. longbeachae*: spring / early summer

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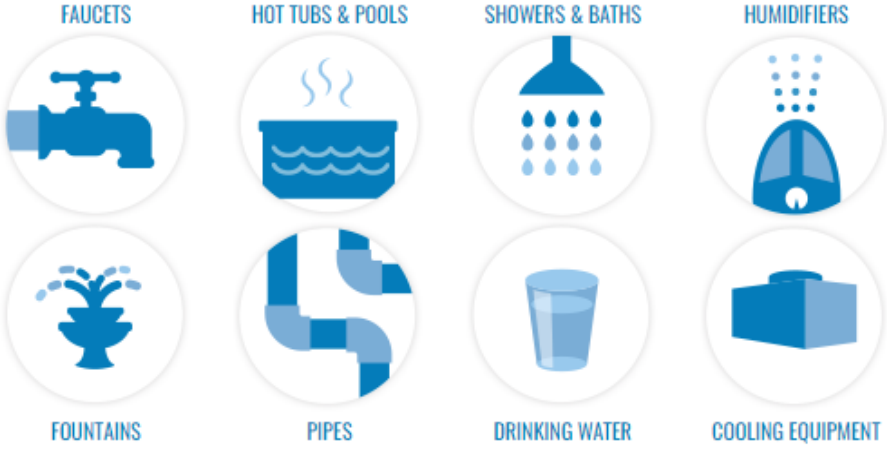
Legionella
Sources of Infection



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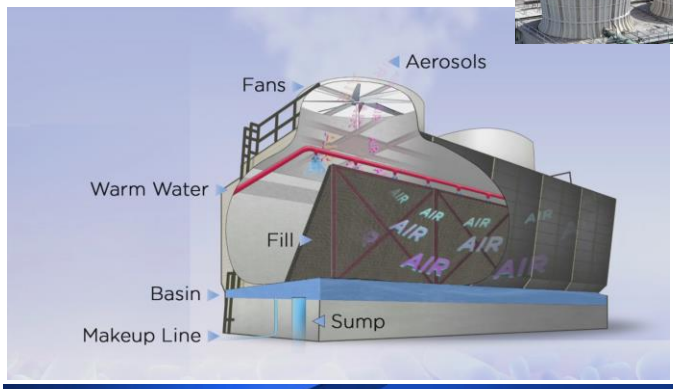
UpToDate: https://www.uptodate.com/contents/microbiology-epidemiology-and-pathogenesis-of-legionella-infection
Centers for Disease Control & Prevention: https://www.cdc.gov/legionella/about/causes-transmission.html

Legionella
Sources of Infection

- **Cooling towers**
  - Contaminated aerosols can travel >6km (~3.7 miles)



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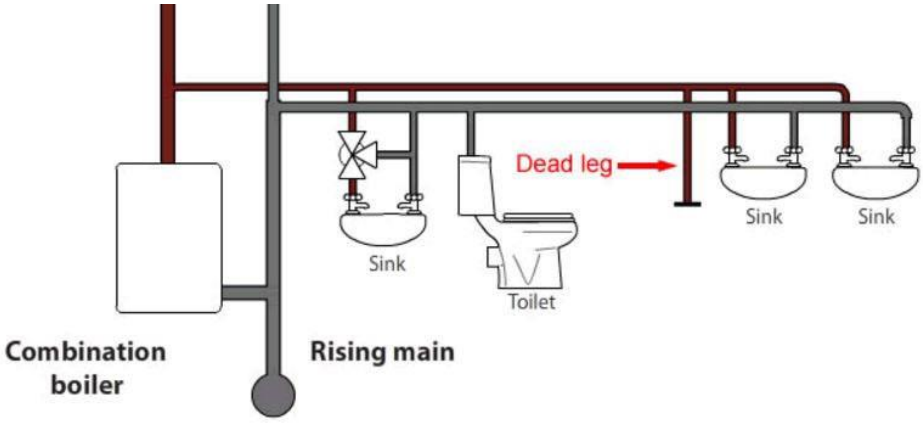
Paschke A, Schaible UE, Hein W. Legionella transmission through cooling towers: towards better control and research of a neglected pathogen. The Lancet. Respiratory Medicine. March 28, 2019. DOI: https://doi.org/10.1016/S2213-2600(19)30041-4

What are Dead Legs?



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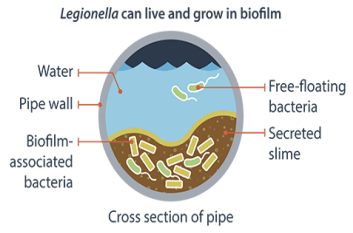
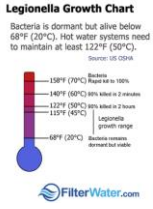
Legionella
Factors Favoring *Legionella* Growth

- **Construction**
- **Water main breaks**
- **Changes in municipal water quality**
- **Biofilm**
- **Scale and sediment**
- **Water temperature fluctuations**
- **pH fluctuations**
- **Inadequate levels of disinfectants**
- **Changes in water pressure**
- **Water stagnation**





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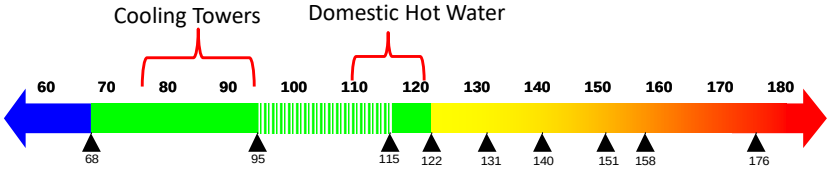
CDC: https://www.cdc.gov/legionella/wmp/overview/growth-and-spread.html

Legionella
Factors Favoring *Legionella* Growth



- **<68°F; survive but are dormant**
- **68°- 122°F; growth range**
- **95°- 115°F; ideal growth range**
- **>122°F; survive but do not grow**
  131°F; die within 5-6 hours [1]
  140°F; die within 32 minutes (Risk of scalding) [1]
  151°F; die within 2 minutes [1]
- **158°-176°F; disinfection range (Dependent on hot water heater capability)**

[1] Sanden, G. N., B. S. Fields, J. M. Barbaree, and J. C. Feeley. "Viability of *Legionella pneumophila* in Chlorine-free Water at Elevated Temperatures." *Current Microbiology* 18 (1989); 61-65.

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Source: Precept Environmental, ASHRAE 188 presentation, 2022.

Legionella Transmission

- **Inhalation of aerosolized water**
- **Aspiration of drinking water**
- **Soil, potting mix, compost exposure**
  - *L. longbeachae*
- **Person-to-person transmission does not occur**
  - However, there has been ONE probable documented case
- **Legionella is NOT generally transmitted into lungs through normal eating or drinking of contaminated water**

UpToDate: https://www.uptodate.com/contents/microbiology-epidemiology-and-pathogenesis-of-legionella-infection

Patient Risk Factors

- **Who is at risk?**
  - Age ≥50 years
  - Smoking (past/current)
  - Chronic lung disease
  - Weakened immune system / immunocompromised
  - Recent travel with an OVERNIGHT stay
  - Recent care at healthcare facility, LTAC, SNF
  - Exposure to hot tubs
  - Patients receiving treatment for burns, chemotherapy, solid organ transplant, bone marrow transplant

Centers for Disease Control & Prevention: https://www.cdc.gov/legionella/index.html

Learning Objective #2

Know the ANSI/ASHRAE Standard and TJC Requirements

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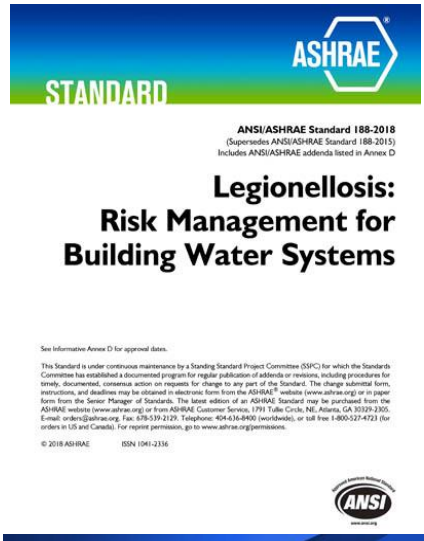
ANSI-ASHRAE Guidelines



- Purpose of the standard is to establish minimum legionellosis risk management requirements for building water systems
- Design, construction, operation, maintenance, repair, expansion of building water systems, etc.

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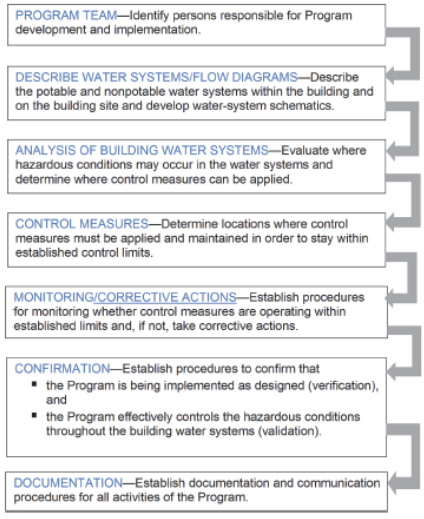
ANSI-ASHRAE Guidelines



- Elements of a water management program
- Additional requirements for health care facilities:
  - Must have a certified infection preventionist (CIC)

  -and/or-

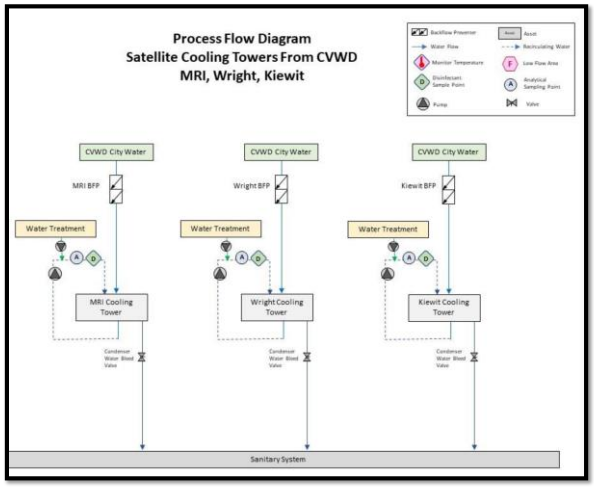
  - Epidemiologist with minimum of a master's degree (MPH)

Flow Diagrams

- **Describe the building water systems (6.2.2)**
  - Locations of end-point uses of potable and non-potable water systems
  - Locations of water processing equipment
  - How water is received, processed, conditioned, stored, heated/cooled, recirculated, and delivered to end-points
- **Flow diagrams describe your water system (6.2.3)**
  - Enables identification, analysis, and management of *legionellosis* risk
  - Graphics/schematics described in 6.2.2:
    - Potable (drinking) water sources
      - Ice machines, drinking water, water used for food prep
    - Non-potable water sources
      - Recycled or reclaimed water, used for irrigation, decorative fountains, etc.

Flow Diagrams: Example

- Process flow diagrams can be very complex
- For example, Eisenhower has 12 pages of flow diagrams describing our water systems



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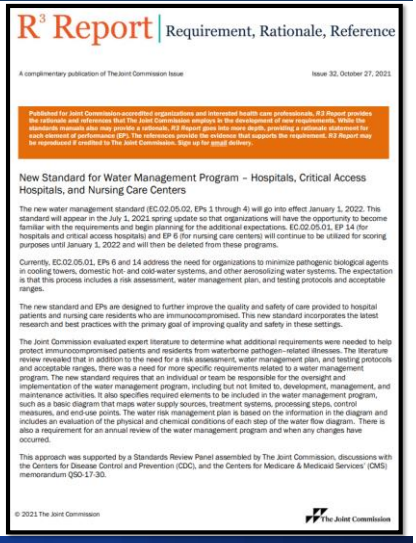
The Joint Commission Requirement

- EC.02.05.02, EPs 1-4
- **Effective: 1/1/2022**
- **Purpose**: improve quality and safety of care to hospital and nursing care residents who are immunocompromised


R³ Report | Requirement, Rationale, Reference

A complimentary publication of The Joint Commission Issue — Issue 32, October 27, 2021

Published for Joint Commission-accredited organizations and interested health care professionals, R3 Report provides the rationale and references that The Joint Commission employs in the development of new requirements. While the standards manuals also may provide a rationale, R3 Report goes into more depth, providing a rationale statement for each element of performance (EP). The references provide the evidence that supports the requirement. R3 Report may be reproduced if credited to The Joint Commission. Sign up for email delivery.

New Standard for Water Management Program – Hospitals, Critical Access Hospitals, and Nursing Care Centers

The new water management standard (EC.02.05.02, EPs 1 through 4) will go into effect January 1, 2022. This standard will appear in the July 1, 2021 spring update so that organizations will have the opportunity to become familiar with the requirements and begin planning for the additional expectations. EC.02.05.01, EP 14 (for hospitals and critical access hospitals) and EP 6 (for nursing care centers) will continue to be utilized for scoring purposes until January 1, 2022 and will then be deleted from these programs.

Currently, EC.02.05.01, EPs 6 and 14 address the need for organizations to minimize pathogenic biological agents in cooling towers, domestic hot- and cold-water systems, and other aerosolizing water systems. The expectation is that this process includes a risk assessment, water management plan, and testing protocols and acceptable ranges.

The new standard and EPs are designed to further improve the quality and safety of care provided to hospital patients and nursing care residents who are immunocompromised. This new standard incorporates the latest research and best practices with the primary goal of improving quality and safety in these settings.

The Joint Commission evaluated expert literature to determine what additional requirements were needed to help protect immunocompromised patients and residents from waterborne pathogen–related illnesses. The literature review revealed that in addition to the need for a risk assessment, water management plan, and testing protocols and acceptable ranges, there was a need for more specific requirements related to a water management program. The new standard requires that an individual or team be responsible for the oversight and implementation of the water management program, including but not limited to, development, management, and maintenance activities. It also specifies required elements to be included in the water management program, such as a basic diagram that maps water supply sources, treatment systems, processing steps, control measures, and end-use points. The water risk management plan is based on the information in the diagram and includes an evaluation of the physical and chemical conditions of each step of the water flow diagram. There is also a requirement for an annual review of the water management program and when any changes have occurred.

This approach was supported by a Standards Review Panel assembled by The Joint Commission, discussions with the Centers for Disease Control and Prevention (CDC), and the Centers for Medicare & Medicaid Services' (CMS) memorandum QSO-17-30.

The Joint Commission

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The Joint Commission Requirement

- Additional components
  - Individual or team be responsible for oversight, implementation of WMP
  - Diagrams of water supply sources, treatment systems, processing steps, control measures, end-use points
  - Evaluation of conditions
  - Annual review of WMP

Requirement	
	EC.02.05.02, EP 1 This element of performance will go into effect January 1, 2022: The water management program has an individual or team responsible for the oversight and implementation of the program, including but not limited to, development, management, and maintenance activities. **EC.02.05.02, EP 2** This element of performance will go into effect January 1, 2022: The individual or team responsible for the water management program develops the following: - A basic diagram that maps all water supply sources, treatment systems, processing steps, control measures, and end-use points Note: An example would be a flow chart with symbols showing sinks, showers, water fountains, ice machines, and so forth. - A water risk management plan based on the diagram that includes an evaluation of the physical and chemical conditions of each step of the water flow diagram to identify any areas where potentially hazardous conditions may occur (these conditions can most likely occur in areas with slow or stagnant water) Note: Refer to the Centers for Disease Control and Prevention's "Water Infection Control Risk Assessment (WICRA) for Healthcare Settings" tool as an example for conducting a water-related risk assessment. - A plan for addressing the use of water in areas of buildings where water may have been stagnant for a period. (for example, unoccupied or temporarily closed areas) - An evaluation of the patient populations served to identify patients who are immunocompromised - Monitoring protocols and acceptable ranges for control measures Note: Hospitals should consider incorporating basic practices for water monitoring within their water management programs that include monitoring of water temperature, residual disinfectant, and pH. Additionally, protocols should include specificity around the parameters measured, locations where measurements are made, and appropriate corrective actions taken when parameters are out of range. **EC.02.05.02, EP 3** This element of performance will go into effect January 1, 2022: The individual or team responsible for the water management program manages the following: - Documenting results of all monitoring activities

The Joint Commission

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Joint Commission Requirement

STANDARD - EPs	See Legend C	NC	NA	IOU	Document / Requirement	Yes	No
EC.02.05.02					**Manages risks associated with utility systems – Water Management Program**		
EP 1					Verify individual or team responsible for oversight and implementation of the water management program		
EP 2					Review water management program to verify the following components are included: • Diagram of water supply sources, treatment systems, processing steps, control measures, and end-use points • Water risk management plan identifies areas where potentially hazardous conditions may occur • Plan for addressing the use of water in areas of buildings where water may have been stagnant for a period of time • Evaluation of immunocompromised patients		

 Organization Guide, January 2022 112

STANDARD - EPs	See Legend C	NC	NA	IOU	Document / Requirement	Yes	No
EC.02.05.02					**Manages risks associated with utility systems – Water Management Program**		
					• Monitoring protocols and acceptable ranges for control measures		
EP 3					Verify that the water management program includes documentation of the following: • Results of all monitoring activities • Corrective actions and procedures to follow if test results are outside of acceptable limits • Corrective actions taken when control limits are not maintained		
EP 4					Verify water management program reviewed annually and when changes have been made to the water system that add risk, new equipment or at-risk systems have been added that could generate aerosols or be source for Legionella		
COMMENTS:							
***Legend: C=Compliant; NC=Not compliant; NA=Not applicable; IOU=Surveyor awaiting documentation**							

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ANSI/ASHRAE + TJC

- How do these work together?
- ANSI/ASHRAE supported by CMS and JC = water safety plan
- TJC EC 02.05.02 more specific

Public Health's Role

- Legionellosis is a reportable disease per Title 17 California Code of Regulations (CCR) §2500 and 2505
- Healthcare providers and labs are mandated to report a case, suspected case, and/or outbreak associated with this organism

Public Health's Role
What defines an "Outbreak"?

6. **Outbreak**:
   a. Per CDC, an outbreak is defined as two or more confirmed LD cases where the onset of illness is closely linked in time and in space, where there is suspicion of, or evidence of, a common source of infection, with or without microbiological support [11].
   b. For the purposes of investigation, the terms "outbreak" and "cluster" are used interchangeably.
   c. For the purposes of investigation, the terms "full investigation" and "outbreak investigation" are used interchangeably.
   d. Healthcare-associated outbreak investigations:
      i. One high-probability definite HAI LD case may warrant a full investigation.
      ii. Two or more low-probability definite HAI LD cases, or two or more possible HAI LD cases, may warrant a full investigation. Per CDC statement on considerations for the LHD [12], the decision to conduct a full investigation is made on a case-by-case basis by ACDC.
   e. Community-associated outbreak investigations: DPH will evaluate and determine community-associated outbreak investigations on a case-by-case basis [12].

Source: Los Angeles County Department of Public Health, Legionella Guidance. August 2019.

Suggested Response Activities per CDC

CDC recommends that public health officials perform a full investigation for the source of *Legionella* in a facility upon identification of:

- ≥1 case of presumptive healthcare-associated Legionnaires' disease at any time
- ≥2 cases of possible healthcare-associated Legionnaires' disease within 12 months of each other

Summary Detection Limits per CDC Method for Viable Legionella Analysis

Sample Volume	Potable Water	Non-potable water	Cooling Towers
250-ml (standard)	0.4 cfu/ml	0.4 cfu/ml	10 cfu/ml
1-Liter (outbreak response)	0.1 cfu/ml	0.1 cfu/ml	10 cfu/ml
Examples:	Domestic water, cold & hot, ice machines	Swamp coolers, decorative fountains	Central plant cooling towers

*Note: test method may vary by the type of water system and the reason for testing.
Source: https://www.cdc.gov/legionella/wmp/control-toolkit/routine-testing.html

What do I do if a case of disease is associated with a water system, as determined by public health?

The CDC recommends:

- Review your WMP verification and validation activities
  - Verification: Are the WMP activities occurring as intended?
  - Validation: Are the WMP activities working as intended and effective for *Legionella* control?
- Re-evaluate and revise WMP, if needed

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Eisenhower Health's Water Management Program:
A Local Hospital Example

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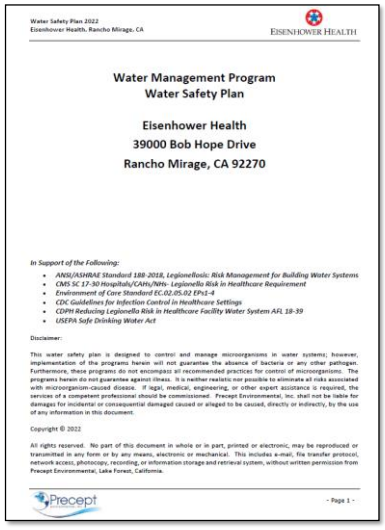
Eisenhower Health's Water Management Program

- **Purpose:** to control the growth and survival of *Legionella* and other waterborne pathogens in water systems, and mitigate any potential risk for outbreaks in the facility.



Water Safety Plan 2022
Eisenhower Health, Rancho Mirage, CA

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Water Management Program
Water Safety Plan

Eisenhower Health
39000 Bob Hope Drive
Rancho Mirage, CA 92270

In Support of the Following:

- *ANSI/ASHRAE Standard 188-2018, Legionellosis: Risk Management for Building Water Systems*
- *CMS SC 17-30 Hospitals/CAHs/NHs- Legionella Risk in Healthcare Requirement*
- *Environment of Care Standard EC.02.05.02 EPs1-4*
- *CDC Guidelines for Infection Control in Healthcare Settings*
- *CDPH Reducing Legionella Risk in Healthcare Facility Water System AFL 18-39*
- *USEPA Safe Drinking Water Act*

Disclaimer:

This water safety plan is designed to control and manage microorganisms in water systems; however, implementation of the programs herein will not guarantee the absence of bacteria or any other pathogen. Furthermore, these programs do not encompass all recommended practices for control of microorganisms. The programs herein do not guarantee against illness. It is neither realistic nor possible to eliminate all risks associated with microorganism-caused disease. If legal, medical, engineering, or other expert assistance is required, the services of a competent professional should be commissioned. Precept Environmental, Inc. shall not be liable for damages for incidental or consequential damaged caused or alleged to be caused, directly or indirectly, by the use of any information in this document.

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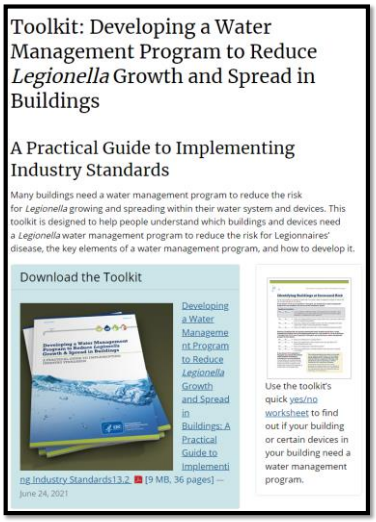
How Do I Put Together a WMP?


Toolkit: Developing a Water Management Program to Reduce *Legionella* Growth and Spread in Buildings

A Practical Guide to Implementing Industry Standards

Many buildings need a water management program to reduce the risk for *Legionella* growing and spreading within their water system and devices. This toolkit is designed to help people understand which buildings and devices need a *Legionella* water management program to reduce the risk for Legionnaires' disease, the key elements of a water management program, and how to develop it.

Download the Toolkit

Developing a Water Management Program to Reduce *Legionella* Growth and Spread in Buildings: A Practical Guide to Implementing Industry Standards13.2 [9 MB, 36 pages] — June 24, 2021

Use the toolkit's quick yes/no worksheet to find out if your building or certain devices in your building need a water management program.

Use these resources:

1. ANSI/ASHRAE Guideline
2. CDC's Legionella Web Site
3. CDC's Toolkit: Developing a Water Management Program to Reduce Legionella Growth and Spread in Buildings
4. CDC's Environmental Investigation Resources
5. CDC's Legionnaires' Disease Resources for Environmental Health Professionals
6. Prevention Legionnaires' Disease: Frontline Tools for Environmental Health Practitioners
7. Water Management Gaps and Legionnaires' Disease Outbreaks

Eisenhower Health's Water Management Program

EC.02.05.02

- **EP1. Verify individual or team responsible for oversight and implementation of the water management program**

Core Team

Name	Title	Department
Patricia Cummings, PhD, MPH	Director	Epidemiology Research & Evaluation
Theresa Perez, MPH	Program Manager	Epidemiology Research & Evaluation
Scott McCabe	Director	Facilities
Kevin Kelly	Stationary Engineer	Facilities, Plant Operations
Massoud Dezfuli, DO, MS	Medical Director	Infection Prevention & Control
Melissa Brown, MSN, RN, BS, NP-C, CIC	Program Manager	Infection Prevention & Control
Michael Connors, BSN, RN, CIC	Infection Preventionist	Infection Prevention & Control
Brigette Davila, BSN, RN	Infection Preventionist	Infection Prevention & Control

*TIP: identify additional members beyond the core team

- Consultant/vendors: chemical acquisition/supplies, water sampling and testing, management program validation and verification
- Environmental services, risk management, and safety team members (as needed/requested)

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- **EP2. Review water management program to verify the following components are included:**
  - Diagram of water supply sources, treatment systems, processing steps, control measures, and end-use points
  - Water risk management plan identifies areas where potentially hazardous conditions may occur
  - Plan for addressing the use of water in areas of buildings where water may have been stagnant for a period of time
  - Evaluation of immunocompromised patients
  - Monitoring protocols and acceptable ranges for control

Eisenhower Health's Water Management Program

EC.02.05.02

- **EP3 and EP4 are both verification requirements of your WMP**
  - Results of all monitoring activities (service logs, etc.)
  - Corrective actions/procedures if test results are outside of acceptable limits
  - Verification WMP is reviewed annually and any changes that may add risk, new equipment that could generate aerosols or be a source for Legionella

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Eisenhower's WMP

- **How do we test?**
  - Vendor comes on-site, bi-annually
  - Part of our routine program verification and validation
  - Vendor works with our Facilities and Epidemiology Depts (or can be your IP team)
  - Sample domestic water and well water, ice machines, cooling towers, fountains, misters, etc.

***Tip:**

If budget is limited, stratify your sampling by risk.

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Case Review

- Perform a retrospective review of patient's medical charts who were positive for *Legionella*
- Identify pneumonia cases that could have been healthcare-associated for the past 12 months
- History of travel during the 10 days before symptom onset (e.g. cruise ships, hotels, resorts)
- Develop a line list of possible and definite cases of possible exposure to the healthcare setting
- Identify all new and recent patients with healthcare-associated pneumonia and test them for *Legionella*
- Environmental assessment and sampling
- Remediation of possible environmental sources and restricting water exposure
- Communicate with the hospital's stakeholders and develop a risk communication plan

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Eisenhower's WMP

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Learning Objective #4

Awareness of the hazard analysis and/or where to find the CDC's WICRA tool

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Hazard Analysis

- **Analysis of building water systems (section 6.2.4)**
  - Use process flow diagrams to evaluate where hazardous conditions have potential to occur in the building water systems
  - Determine where control measures should be applied to control potentially hazardous system conditions
  - Analysis should consider patient susceptibility in each location (e.g., immunocompromised)
  - Analysis should include provisions to respond to water service disruptions

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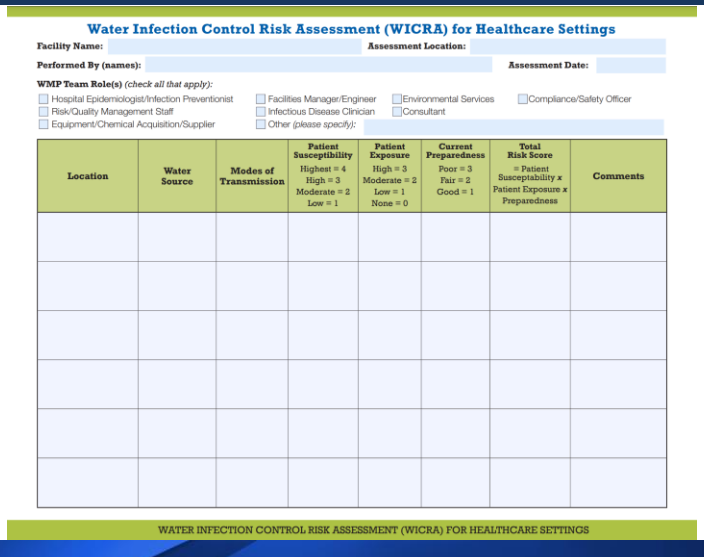
CDC's WICRA Tool



Water Infection Control Risk Assessment (WICRA) for Healthcare Settings

Facility Name: **Assessment Location:**

Performed By (names): **Assessment Date:**

WMP Team Role(s) *(check all that apply):*

☐ Hospital Epidemiologist/Infection Preventionist ☐ Facilities Manager/Engineer ☐ Environmental Services ☐ Compliance/Safety Officer
☐ Risk/Quality Management Staff ☐ Infectious Disease Clinician ☐ Consultant
☐ Equipment/Chemical Acquisition/Supplier ☐ Other *(please specify)*:

Location	Water Source	Modes of Transmission	Patient Susceptibility Highest = 4 High = 3 Moderate = 2 Low = 1	Patient Exposure High = 3 Moderate = 2 Low = 1 None = 0	Current Preparedness Poor = 3 Fair = 2 Good = 1	Total Risk Score = Patient Susceptability x Patient Exposure x Preparedness	Comments

WATER INFECTION CONTROL RISK ASSESSMENT (WICRA) FOR HEALTHCARE SETTINGS

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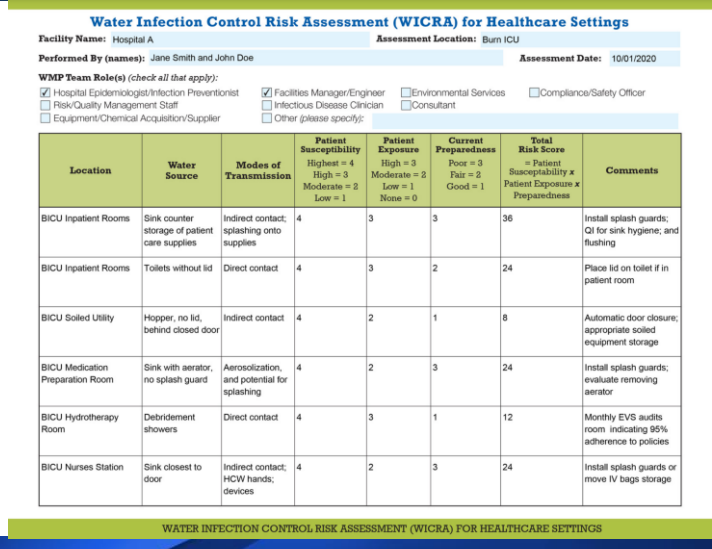
CDC's WICRA Tool



Water Infection Control Risk Assessment (WICRA) for Healthcare Settings

Facility Name: Hospital A **Assessment Location:** Burn ICU

Performed By (names): Jane Smith and John Doe **Assessment Date:** 10/01/2020

WMP Team Role(s) *(check all that apply):*

☑ Hospital Epidemiologist/Infection Preventionist ☑ Facilities Manager/Engineer ☐ Environmental Services ☐ Compliance/Safety Officer
☐ Risk/Quality Management Staff ☐ Infectious Disease Clinician ☐ Consultant
☐ Equipment/Chemical Acquisition/Supplier ☐ Other *(please specify)*:

Location	Water Source	Modes of Transmission	Patient Susceptibility Highest = 4 High = 3 Moderate = 2 Low = 1	Patient Exposure High = 3 Moderate = 2 Low = 1 None = 0	Current Preparedness Poor = 3 Fair = 2 Good = 1	Total Risk Score = Patient Susceptability x Patient Exposure x Preparedness	Comments
BICU Inpatient Rooms	Sink counter storage of patient care supplies	Indirect contact; splashing onto supplies	4	3	3	36	Install splash guards; QI for sink hygiene; and flushing
BICU Inpatient Rooms	Toilets without lid	Direct contact	4	3	2	24	Place lid on toilet if in patient room
BICU Soiled Utility	Hopper, no lid, behind closed door	Indirect contact	4	2	1	8	Automatic door closure; appropriate soiled equipment storage
BICU Medication Preparation Room	Sink with aerator, no splash guard	Aerosolization, and potential for splashing	4	2	3	24	Install splash guards; evaluate removing aerator
BICU Hydrotherapy Room	Debridement showers	Direct contact	4	3	1	12	Monthly EVS audits room indicating 95% adherence to policies
BICU Nurses Station	Sink closest to door	Indirect contact; HCW hands; devices	4	2	3	24	Install splash guards or move IV bags storage

WATER INFECTION CONTROL RISK ASSESSMENT (WICRA) FOR HEALTHCARE SETTINGS

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Hazard Analysis

- **<u>Things to consider</u>:**
  - System location?
    - Is the system in an area with patients who are high risk? (e.g., cancer patients, immunosuppressed)
  - Hazard type?
    - Microbiological, Chemical
  - Risk level?
    - High / Moderate / Low
  - Hazard rationale?
    - What is the proliferation potential?
      - Consider temperatures
    - Is there potential for aerosolization?
    - What is the exposure potential?

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Summary

- LD (severe) vs. Pontiac fever (mild)
- Common sources of Legionella: cooling towers, showers, humidifiers
- Water safety management – keeping systems and water clean, doing routine testing is essential to validate the program (although not required)
- Warm water temp's ideal for bacterial growth and proliferation (68-122°F / 20-50°C)

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Post-Test

1. Legionnaires' disease is frequently characterized as an "opportunistic disease that most frequently attacks individuals who have an underlying illness or weakened immune system.

a) True
b) False

2. Which of the following is NOT a common source of *Legionella*?

a) Cooling towers
b) Showers
c) Humidifiers
d) Toilets

3. Which of the following will help to control the risk of Legionella

a) Allow water spray to be released
b) Ensure water stays warm
c) Allow the water to stagnate
d) Keep the system and the water clean

4. Which water temperatures are most suitable for the growth of *Legionella* bacteria ?

a) 5-15°C (41-59°F)
b) 10-0°C (50-32°F)
c) 20-50°C (68-122°F)
d) 90-100°C (194-212°F)

5. Air sampling for *Legionella* is not recommended as a means of measuring potential exposure

a) **True**
b) **False**

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Acknowledgements

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