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California Department of Public Health

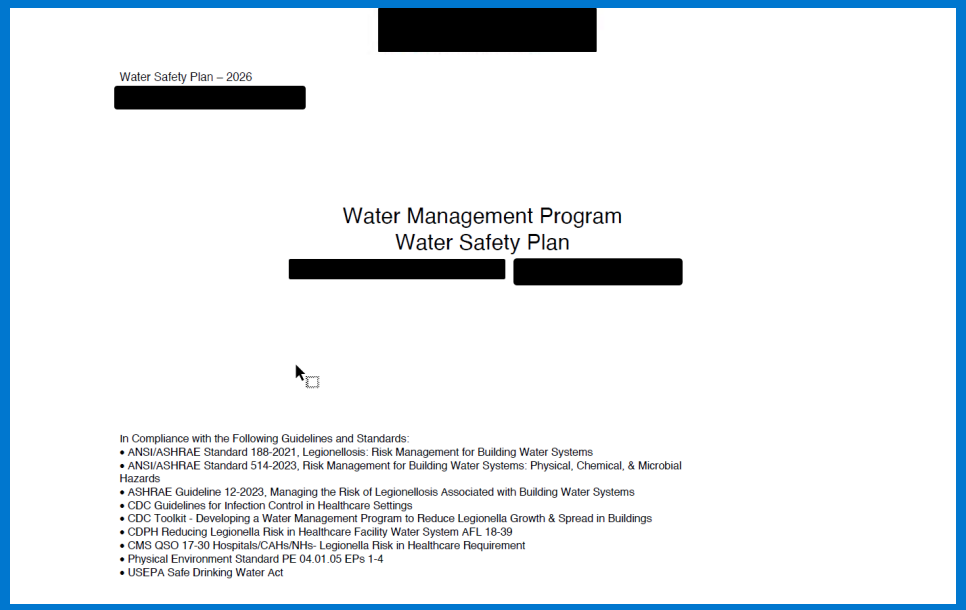
Waterborne Pathogens and Water Management Plans in Skilled Nursing Facilities

San Diego IP Series, May 27, 2026

Objectives

1. Describe regulatory requirements for a water management program (WMP) in healthcare facilities, including skilled nursing facilities (SNFs)
2. Identify waterborne healthcare-associated infections (HAIs)
3. Discuss infection prevention and control (IPC) practices related to water
4. List key elements of a water management program

Why should SNFs have a WMP?



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Water Safety Plan – 2026

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Water Management Program
Water Safety Plan

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In Compliance with the Following Guidelines and Standards:
- ANSI/ASHRAE Standard 188-2021, Legionellosis: Risk Management for Building Water Systems
- ANSI/ASHRAE Standard 514-2023, Risk Management for Building Water Systems: Physical, Chemical, & Microbial Hazards
- ASHRAE Guideline 12-2023, Managing the Risk of Legionellosis Associated with Building Water Systems
- CDC Guidelines for Infection Control in Healthcare Settings
- CDC Toolkit - Developing a Water Management Program to Reduce Legionella Growth & Spread in Buildings
- CDPH Reducing Legionella Risk in Healthcare Facility Water System AFL 18-39
- CMS QSO 17-30 Hospitals/CAHs/NHs- Legionella Risk in Healthcare Requirement
- Physical Environment Standard PE 04.01.05 EPs 1-4
- USEPA Safe Drinking Water Act

To minimize the risk of *Legionella* and other waterborne pathogens like nontuberculous mycobacteria, *Acinetobacter*, and *Pseudomonas*

The CDC recommends, and CMS requires, all healthcare facilities (hospitals and SNFs) have a WMP to control *Legionella* growth

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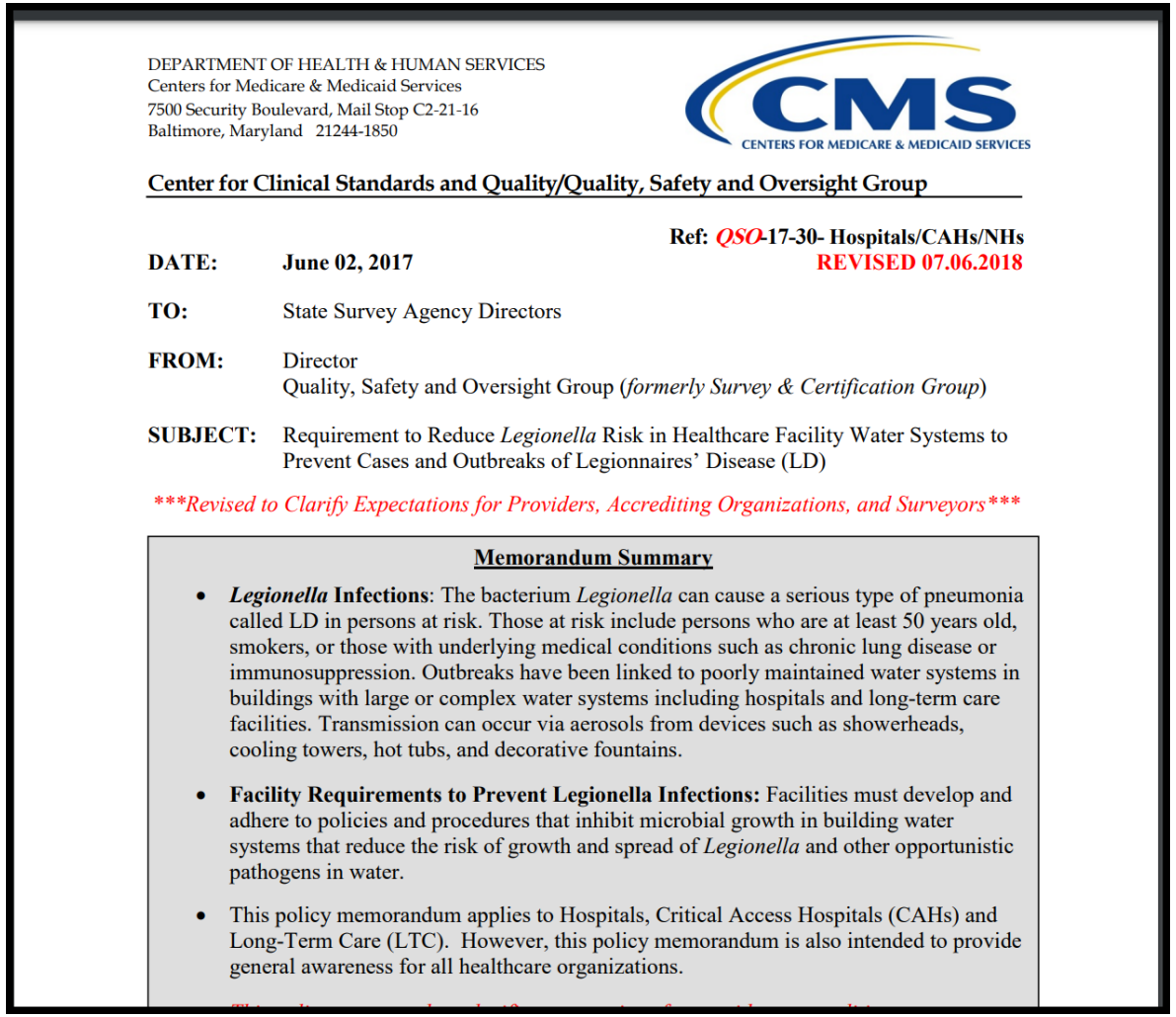
Federal requirement to reduce healthcare facility *Legionella* risk



DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop C2-21-16
Baltimore, Maryland 21244-1850

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Center for Clinical Standards and Quality/Quality, Safety and Oversight Group

Ref: *QSO*-17-30- Hospitals/CAHs/NHs
REVISED 07.06.2018

DATE: **June 02, 2017**

TO: State Survey Agency Directors

FROM: Director
Quality, Safety and Oversight Group (*formerly Survey & Certification Group*)

SUBJECT: Requirement to Reduce *Legionella* Risk in Healthcare Facility Water Systems to Prevent Cases and Outbreaks of Legionnaires' Disease (LD)

****Revised to Clarify Expectations for Providers, Accrediting Organizations, and Surveyors****

Memorandum Summary

- ***Legionella* Infections**: The bacterium *Legionella* can cause a serious type of pneumonia called LD in persons at risk. Those at risk include persons who are at least 50 years old, smokers, or those with underlying medical conditions such as chronic lung disease or immunosuppression. Outbreaks have been linked to poorly maintained water systems in buildings with large or complex water systems including hospitals and long-term care facilities. Transmission can occur via aerosols from devices such as showerheads, cooling towers, hot tubs, and decorative fountains.
- **Facility Requirements to Prevent Legionella Infections:** Facilities must develop and adhere to policies and procedures that inhibit microbial growth in building water systems that reduce the risk of growth and spread of *Legionella* and other opportunistic pathogens in water.
- This policy memorandum applies to Hospitals, Critical Access Hospitals (CAHs) and Long-Term Care (LTC). However, this policy memorandum is also intended to provide general awareness for all healthcare organizations.

[Federal Requirement to Reduce Legionella Risk | CDC](www.cdc.gov/control-legionella/php/healthcare/federal-requirement.html)
(www.cdc.gov/control-legionella/php/healthcare/federal-requirement.html)

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CMS QSO-17-30 minimum facility requirements

- Identify potential areas for waterborne pathogen growth ☑
- Create a WMP following CDC and ASHRAE* guidelines ☑
- Define control measure ranges and corrective actions ☑

*ASHRAE = American Society of Heating, Refrigerating and Air-Conditioning Engineers

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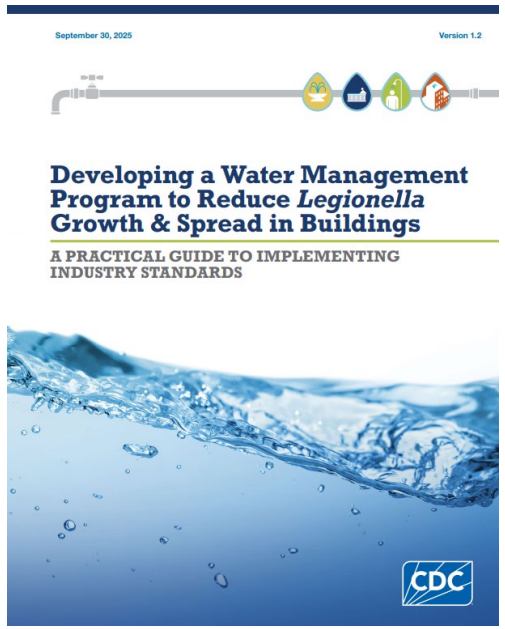
CDC guidance for WMP development



Healthcare Facility Water Management Program Checklist

CDC
U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

Healthcare Facility Water Management Program Checklist

Available from: https://www.cdc.gov/healthcare-associated-infections/php/toolkit/water-management.html

This checklist is intended to assist in the development of an all-microbial hazards approach to water management in a healthcare facility, and can:

- Evaluate a comprehensive water management program.
- Identify individuals to participate in the water management program.
- Assist with assessments, including hazard analyses, environmental risk assessments, and infection control risk assessments.
- Inform water monitoring practices guided by the management program.

Depending on complexity of the building plumbing systems, a comprehensive program may include some water management plans. These plans should include identifying areas within the system where control points are and monitoring methods and procedures (see ASHRAE 188:2021; ASHRAE Guideline 12: 2023; and ASHRAE 514:2023)

Developing a Water Management Program to Reduce Legionella Growth & Spread In Buildings: A Practical Guide to Implementing Industry Standards, https://www.cdc.gov/control-legionella/media/pdfs/toolkit.pdf

Healthcare Facility Water Management Program Checklist, https://www.cdc.gov/healthcare-associated-infections/media/pdfs/PHS-ReduceWaterRisk-ChecklistTool-508.pdf

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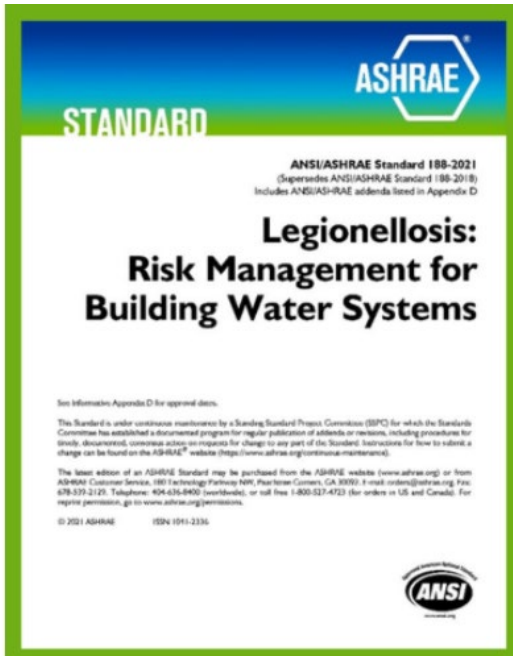
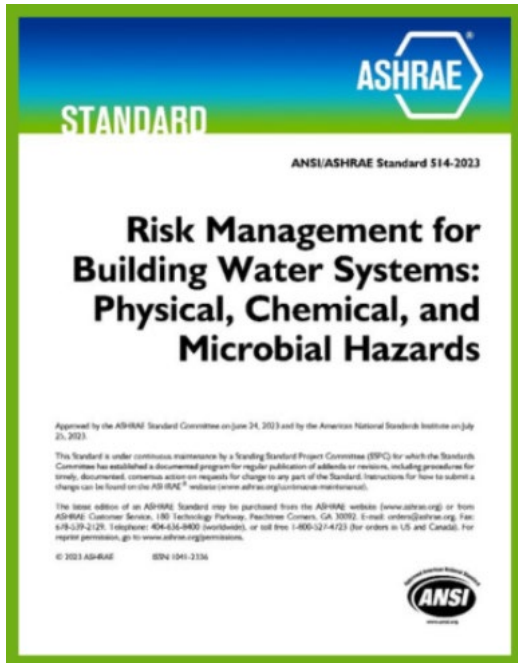
What are the ASHRAE standards for waterborne pathogens?

ASHRAE 188



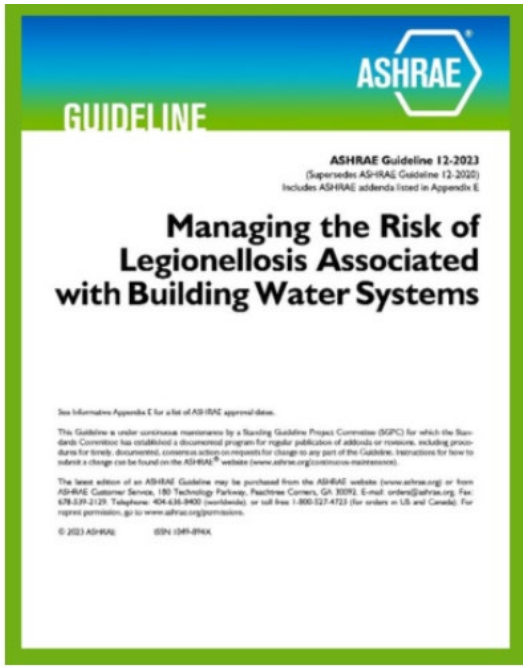
What must be done for *Legionella*

ASHRAE 514



What must be done for all water hazards

ASHRAE Guideline 12



How to implement 188

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Summary of regulations around WMPs for SNFs

SNFs are required to have a WMP

WMPs are developed using CDC and ASHRAE guidance

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Waterborne pathogens that can cause HAIs

- *Legionella*
- Nontuberculous mycobacteria (NTM)
- Many other waterborne pathogens (e.g., *Pseudomonas*, *Serratia, Stenotrophomonas*)

Considerations for Reducing Risk: Water in Healthcare Facilities | HAIs | CDC, https://www.cdc.gov/healthcare-associated-infections/php/toolkit/water-management.html

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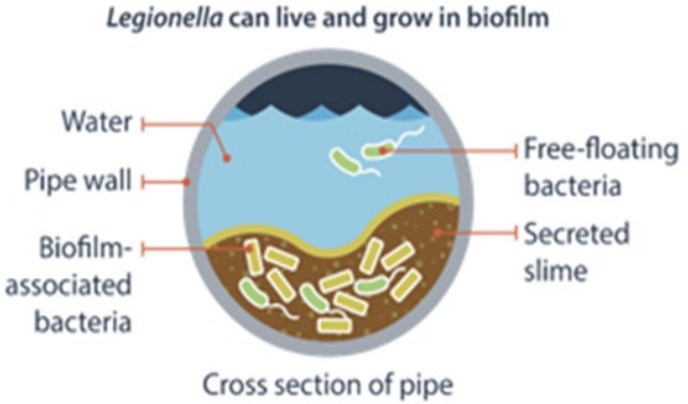
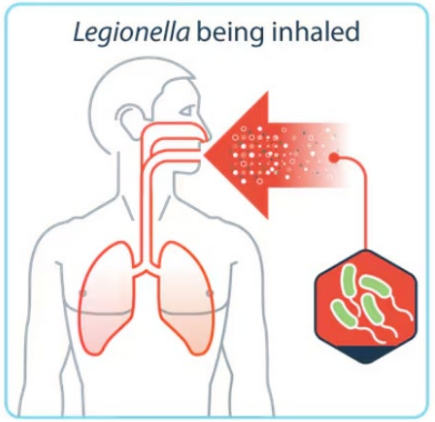
What is *Legionella?*

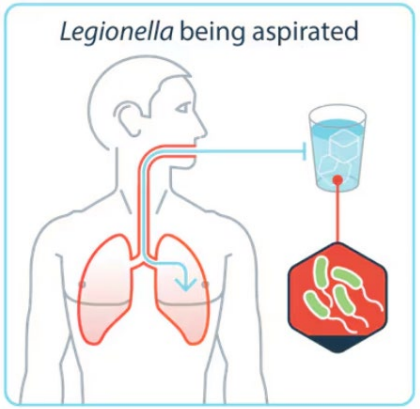
- Gram-negative bacteria, over 60 species and 70 serogroups
  - Found in fresh water and soil
- Cause of Legionnaires' Disease (LD) – pneumonia
  - Most cases are *L. pneumophila* serogroup 1 (Lp1)
- Thrives in stagnant warm water (77-113 °F) and biofilms in building water systems and devices
- Chlorine tolerant
- Healthcare facilities are potential high-risk settings
  - Large complex water systems
  - Vulnerable population



How does a person become infected with *Legionella?*

- **Breathing in aerosols (fine mists) of water contaminated with *Legionella* into the lungs**
- **Aspiration of drinking water contaminated with *Legionella***
  - individuals with swallowing difficulties at increased risk
- *Not* transmitted person-to-person





Clinical presentations of *Legionella* infection

- Legionnaires' disease (LD) is a severe pneumonia
  - Symptoms include fever, cough, shortness of breath, muscle aches, headache, chest pain. May include GI symptoms, altered mental state, coughing up blood.
- Incubation 2-14 days, median 5-6 days
- Most patients require hospitalization
  - 20-40% will require care in the ICU
  - In the general population, about 10% will die

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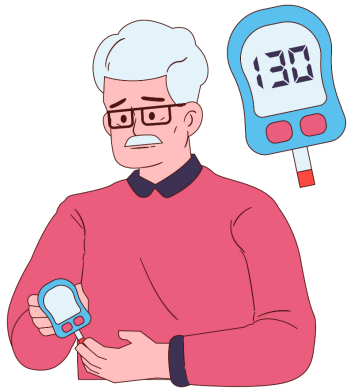
Resident risk factors for Legionnaires' disease

- Immunosuppression due to disease or medication
- Age >50 years
- Smoking (current or historical)
- Chronic lung disease
- Diabetes, renal or hepatic failure, and other underlying conditions



Legionella (Legionnaires' Disease and Pontiac Fever | CDC (www.cdc.gov/legionella)

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Diagnostic laboratory tests for Legionnaires' disease

Urine antigen test

Only finds *Legionella pneumophila* serogroup 1

PCR test

Looks for *Legionella* DNA

Culture

Grows *Legionella* bacteria on a special plate

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Common exposure sources for *Legionella* in SNFs

- Showers and faucets
- Hydrotherapy tubs
- Decorative fountains and other water features
- Medical devices
- Cooling tower (if on a hospital campus)
- Evaporative coolers

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Devices in healthcare can transmit *Legionella*

Any system or equipment containing non-sterile water, if not maintained, can grow *Legionella,* including:

Respiratory therapy equipment (nebulizers, CPAP, bronchoscopes)	**Ice machines/ drinking water**	**Gastric tube flushes using tap water (aspiration risk)**	**Wound care equipment**	**Dental water lines and dental scalers**	**Devices such as birthing tubs, hydrotherapy equipment, heater cooler units**

Controlling Legionella in Other Devices | CDC (PDF)

www.cdc.gov/control-legionella/media/pdfs/Control-Toolkit-Other.pdf

Healthcare-associated Legionnaires' disease in California SNFs

Most SNF residents who develop Legionnaires' disease were exposed at the SNF

To protect other residents, we will recommend:

- Testing for LD when a resident develops symptoms of pneumonia
- Environmental testing with an ELITE*-certified lab
- Review of WMP

We often find that the WMP is incomplete, and will cover this in more detail in a few slides

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ELITE = Environmental *Legionella* Isolation Techniques Evaluation Program

SNF patients with healthcare-associated Legionnaires' disease have a 30-day all cause mortality of ~34%

In California between 2015 and 2023*:		
322 patients with Legionnaires' disease with overnight healthcare exposure	174 patients with SNF exposure	59 of these SNF patients (34%) died within 30 days

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*preliminary data

Other waterborne pathogens

- In addition to *Legionella*, water management plans help protect residents against other waterborne pathogens, including:
  - Nontuberculous mycobacteria
  - Other gram-negative bacteria

  We'll review these very briefly – the principles are the same

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Nontuberculous mycobacteria risks

Frequent resident contact with contaminated water (aerosols or water) directly or via materials (respiratory treatments, showers, faucets, surgical supplies)

Contaminated injectables or water associated with wounds

Biofilm buildup in whirlpool tubs, ice machines, and decorative water features

Clinical Overview of Nontuberculous Mycobacteria (NTM) | NTM | CDC, https://www.cdc.gov/nontuberculous-mycobacteria/hcp/clinical-overview/index.html

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Environmental risks from other waterborne pathogens

Pseudomonas aeruginosa can contaminate sinks and drains

Acinetobacter baumannii can survive in water systems

Stenotrophomonas, Enterobacter, Serratia and *Burkholderia* can live in biofilms in plumbing

Considerations for Reducing Risk: Water in Healthcare Facilities | HAIs | CDC, https://www.cdc.gov/healthcare-associated-infections/php/toolkit/water-management.html#cdc_generic_section_4-opportunistic-pathogens-of-premise-plumbing

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Infection prevention and control practices related to water

- Best practices for sinks
- Plumbing IPC practices
- Sinks, drains & plumbing flyer
- Project Firstline resources

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Best practices for sinks

Choose sinks with offset drains and enough depth to avoid splashing

Remove aerators if installed

Keep patient supplies and personal items out of the sink splash zone (3 feet around)

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Best practices for sinks (cont'd)

Avoid disposing of blood, body fluids, medications, or liquid nutrition in the sink; use proper waste bins

Clean and disinfect nearby countertops daily with an EPA-registered disinfectant

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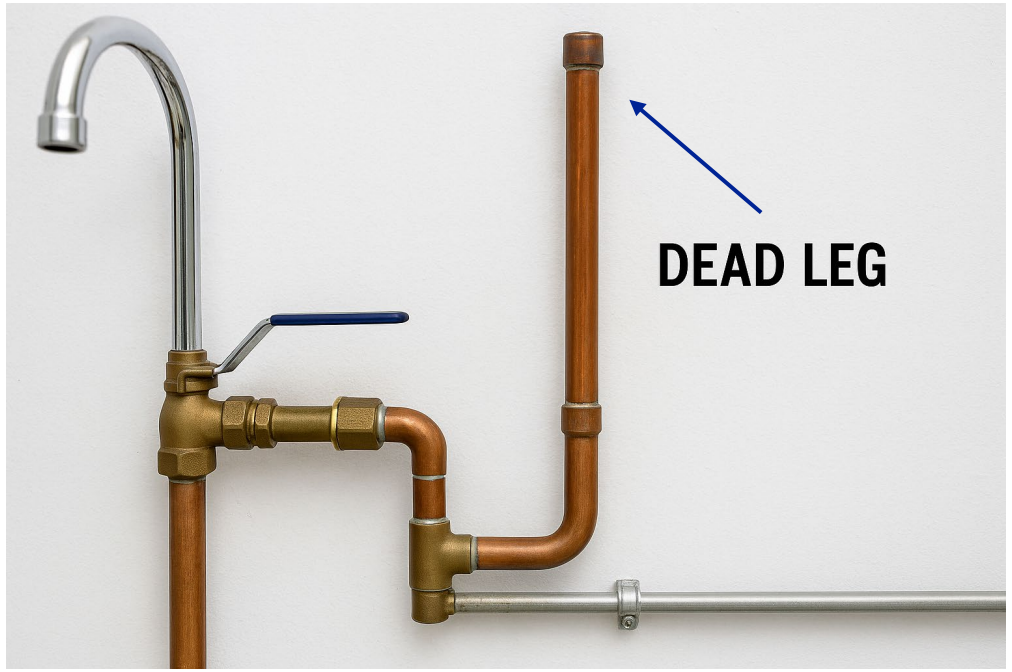
Plumbing IPC practices

- Plumbing layout
  - Remove dead legs
- Maintenance
  - Regular cleaning of drains, traps, aerators



Tap Water Quality and Infrastructure Discussion Guide for Investigation of Potential Water-Associated Infections in Healthcare Facilities, https://www.cdc.gov/healthcare-associated-infections/media/pdfs/PHS-ReduceWaterRisk-DiscussionGuideTool-508.pdf

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Sinks, drains, and plumbing flyer

What Infection Preventionists Need to Know About
Sinks, Drains, and Plumbing

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Sinks and drains can become contaminated with water-associated organisms, such as through the formation of biofilm (germs that stick together). Patients can become exposed to these organisms via water splashes.

Best Practices for Sinks

- Select sinks with offset drains and sufficient depth to prevent splashing
- Remove aerators (mesh covering) if present
- Ensure patient supplies or personal items are not stored under or in the sink "splash zone" (about 3 feet surrounding sink)
- Don't put blood, body fluids, medications, or liquid nutrition down the sink (use appropriate waste receptacle)

Best Practices for Toilets and Hoppers

- Install and use toilet and hopper covers
- Close covers on toilets and hoppers before flushing
- If you can't use a cover, close the door before flushing

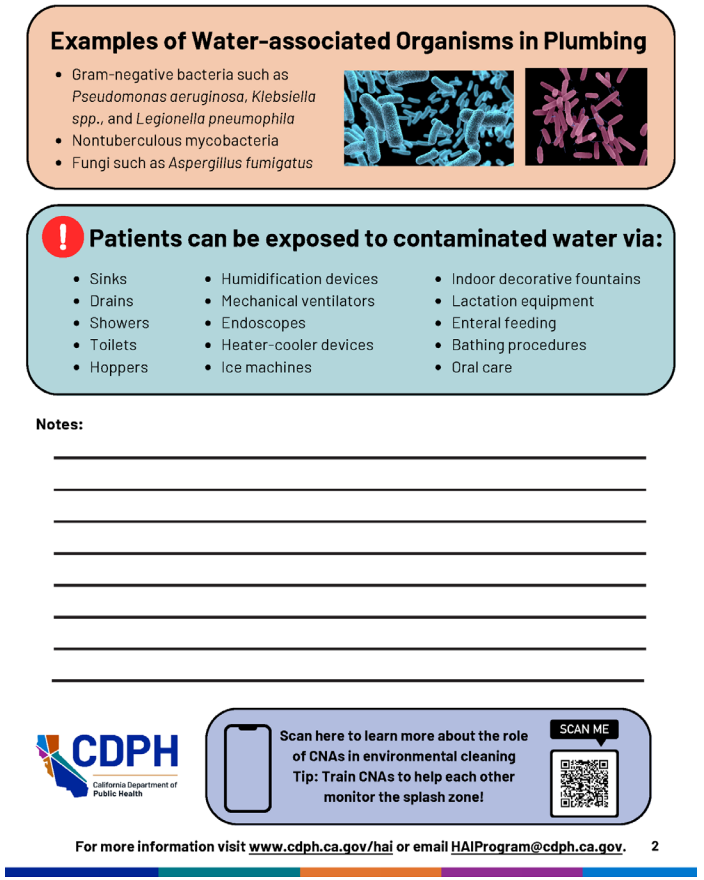
SCAN ME

Scan to access the Water Infection Control Risk Assessment (WICRA)

SCAN ME

Scan to learn more about reducing risk of MDRO spead from water

1



Examples of Water-associated Organisms in Plumbing

- Gram-negative bacteria such as *Pseudomonas aeruginosa*, *Klebsiella spp.*, and *Legionella pneumophila*
- Nontuberculous mycobacteria
- Fungi such as *Aspergillus fumigatus*

Patients can be exposed to contaminated water via:

- Sinks
- Drains
- Showers
- Toilets
- Hoppers
- Humidification devices
- Mechanical ventilators
- Endoscopes
- Heater-cooler devices
- Ice machines
- Indoor decorative fountains
- Lactation equipment
- Enteral feeding
- Bathing procedures
- Oral care

Notes:

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Scan here to learn more about the role of CNAs in environmental cleaning
Tip: Train CNAs to help each other monitor the splash zone!

SCAN ME

For more information visit www.cdph.ca.gov/hai or email HAIProgram@cdph.ca.gov.

2

[Infection Prevention: Sinks and Water Flyer](). https://www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/InfectionPreventionFlyer_SinksDrainsPlumbing.pdf

Project Firstline has helpful resources for training staff

Water Micro Learn
Water in Health Care Micro-Learn,
https://www.cdc.gov/project-firstline/media/pdfs/microlearn-water-508.pdf

Germs live in water and on wet surfaces,
https://www.cdc.gov/project-firstline/media/pdfs/Healthcare-Germs-Environment-WaterAndWetSurfaces-508.pdf

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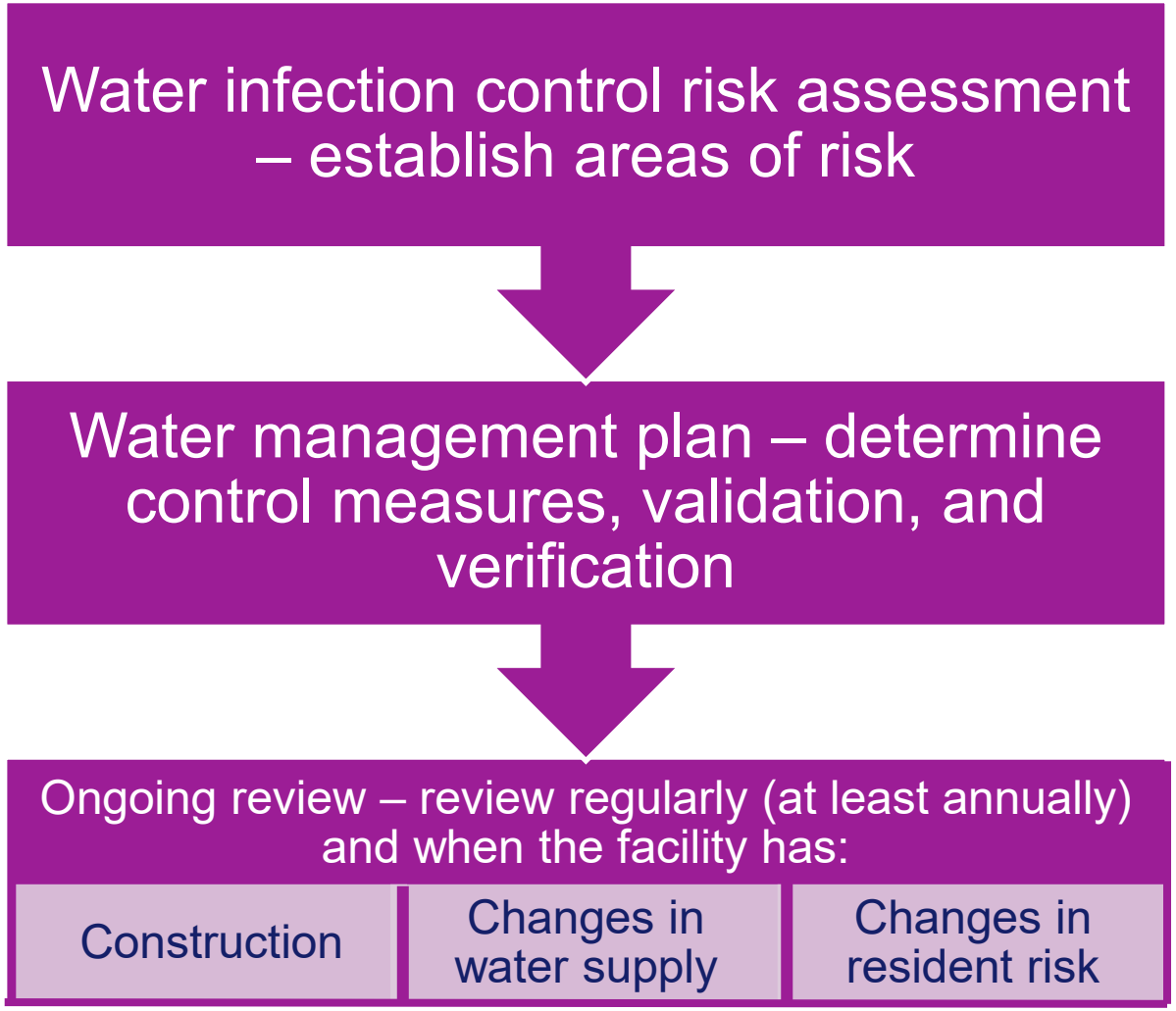
What are the elements of a water management program?



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WICRA

- Water Infection Control Risk Assessment (WICRA) for Healthcare Settings, https://www.cdc.gov/healthcare-associated-infections/media/pdfs/water-assessment-tool-508.pdf

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CS314808

WATER INFECTION CONTROL RISK ASSESSMENT (WICRA) FOR HEALTHCARE SETTINGS

WATER SOURCES

Patients are potentially exposed to water via the healthcare environment, equipment, or procedures. Water sources include, but are not limited to:

- Sinks
- Water source
- Sinks
- Drains
- Showers
- Toilets
- Hoppers
- Humidification devices
- Mechanical ventilators
- Endoscopes
- Heater cooler devices
- Ice machines
- Indoor decorative fountains
- Lactation equipment
- Enteral feeding
- Bathing procedures
- Oral care

MODES OF TRANSMISSION

When assessing risk of healthcare-associated infections caused by waterborne pathogens, consider the diverse modes of transmission, including:

- **Direct contact** *(e.g., bathing, showering)*
- **Ingestion of water** *(e.g., consumption of contaminated ice)*
- **Indirect contact** *(e.g., from an improperly reprocessed medical device)*
- **Inhalation of aerosols dispersed from water sources** *(e.g. faucets with aerators)*
- **Aspiration of contaminated water** *(e.g. use of tap water to flush enteral feedings)*

PATIENT SUSCEPTIBILITY

Patient populations with compromised immune status, comorbidities, and exposure to certain procedures are more vulnerable to infections caused by waterborne pathogens. Units/wards/wings can be classified according to those patients treated in these areas:

- **Highest** *(e.g., BMT, solid-organ transplant, hematology, medical oncology, burn unit, NICU)*
- **High** *(e.g., non-transplant ICUs, ORs)*
- **Moderate** *(e.g., general inpatient units)*
- **Low** *(e.g., waiting rooms, administrative office areas)*

PATIENT EXPOSURE

In order to characterize patient exposure to water sources, consider a categorization scheme that encompasses factors such as the frequency (how often), magnitude (how much), and duration (how long) of exposure:

- **High** *(e.g., high frequency, magnitude, and duration)*
- **Moderate** *(e.g., combination of high and low frequency, magnitude, and duration)*
- **Low** *(e.g., low frequency, magnitude, and duration)*
- **None** *(e.g., patients are not exposed to the water source)*

CURRENT PREPAREDNESS

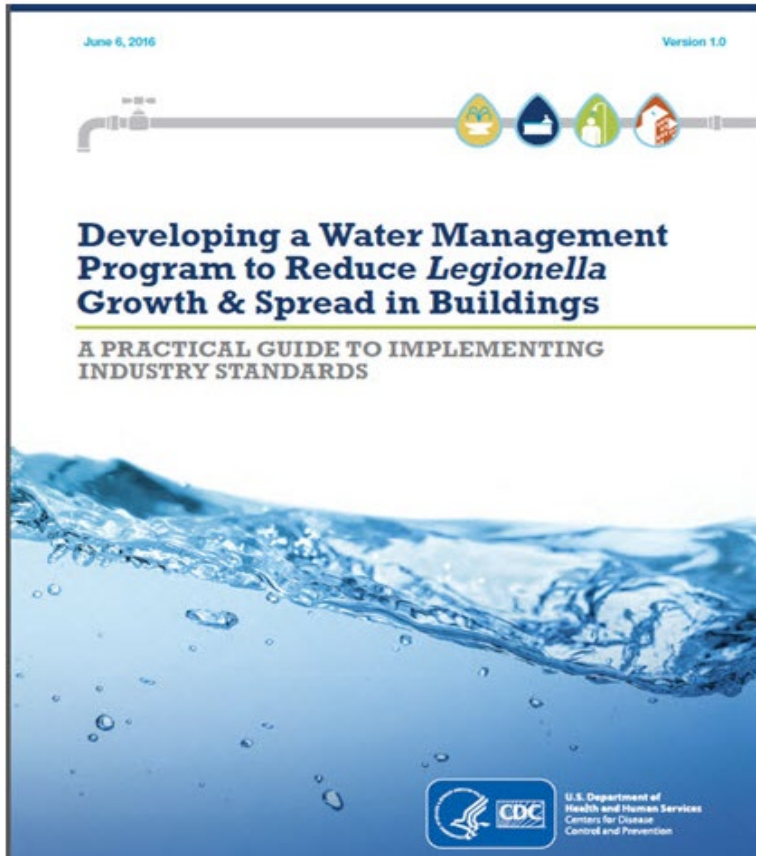
Consider how your WMP addresses different water sources, as determined by factors such as policies and procedures already in place, relevant staff practice, and implemented mitigation strategies.

- **Poor** *(e.g., limited policies and procedures, staff practice, and mitigation strategies)*
- **Fair** *(e.g., some policies and procedures, staff practice, and mitigation strategies)*
- **Good** *(e.g., robust policies and procedures, staff practice, and mitigation strategies)*

Example of WICRA entries for SNF

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
First Floor Dining Room	Ice machines	Ingestion of water, Aspiration of contaminated water	3	2	1	6	Outside company (ICE co) sanitizes ice machines quarterly
100, 200 and 300 wings	Showers	Inhalation of aerosols	3	3	3	27	Ensure there is a routine flushing schedule.

CDC toolkit: developing a *Legionella* water management program



Developing a Water Management Program to Reduce Legionella Growth & Spread in Buildings | CDC (PDF) (www.cdc.gov/control-legionella/media/pdfs/toolkit.pdf)

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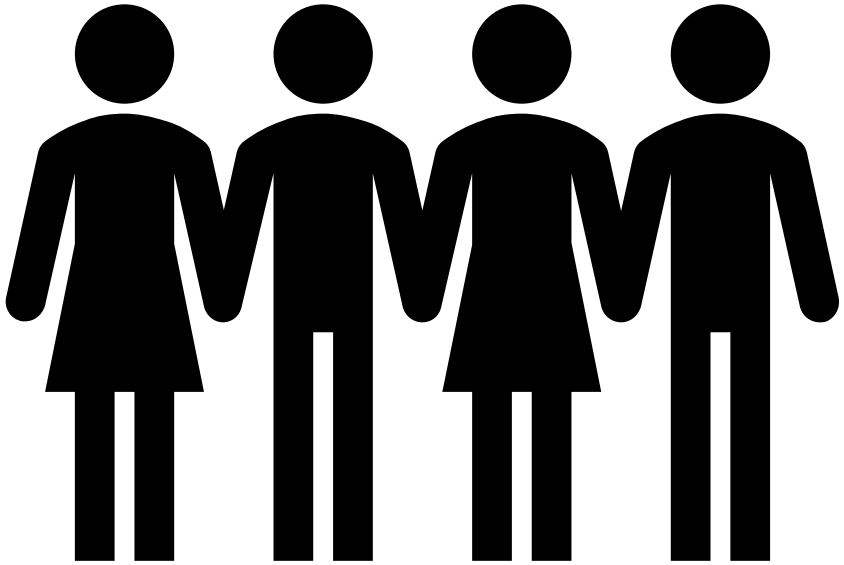
1 Establishing a water management program team.

Water management program: team

Infection prevention

Nursing

Environmental services



Building owner

Administrator

Maintenance

Consultants are often asked to provide expertise on water testing and treatment

Evaluating a water management consultant

- Experience with healthcare and SNF water systems
- Expertise and certifications in ASHRAE 188
- Collaboration with CDC-ELITE or ISO 17025-certified labs for *Legionella* testing
- History of supporting compliance with CMS, Joint Commission, and state health regulations

Working with Legionella Consultants | Control Legionella | CDC, https://www.cdc.gov/control-legionella/php/wmp/consultants-considerations.html#:~:text=Can%20they%20describe%20situations%20where%20they%20remediated%20Legionella%20from%20a,Consider%20looking%20for%20local%20resources

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2 Describing the building water systems using words and diagrams.

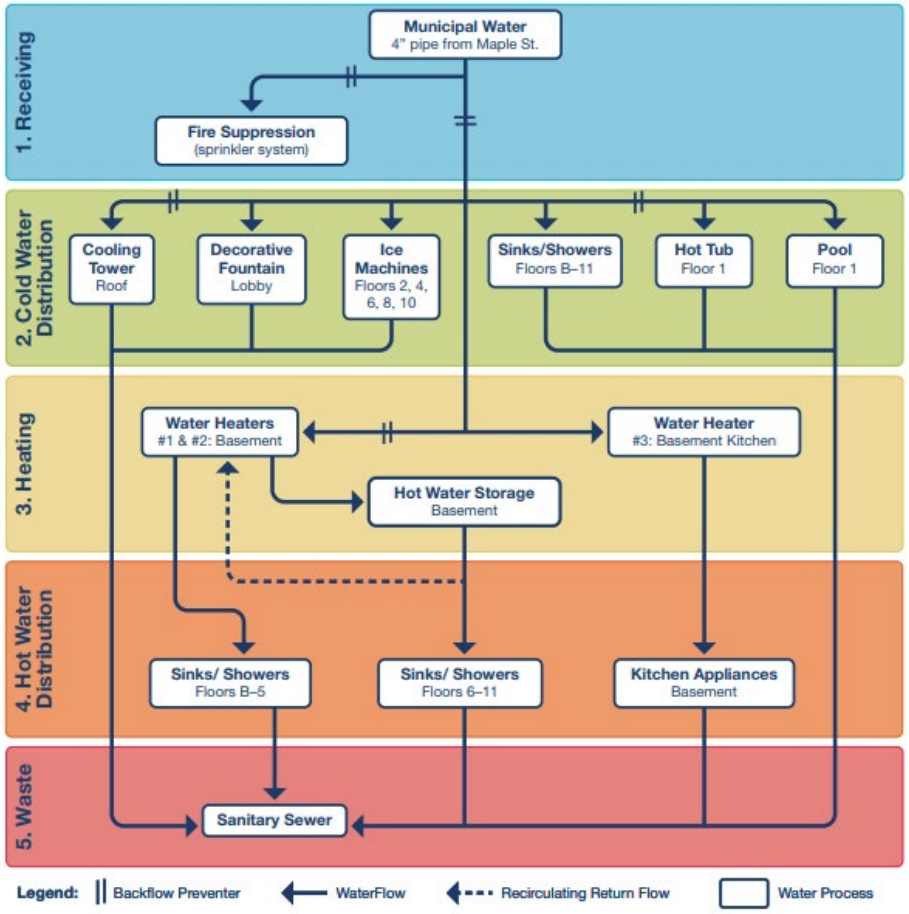
Water management program – describe water system

Text description

- Building's physical characteristics
- Water source, storage, and distribution systems
- High-risk water devices (cooling towers, boilers, hot tubs)

Your WMP should have BOTH a text description and a diagram of your water system

Diagram of water system



Good WMPs contain pictures and details of water hazards

[redacted], Bakersfield, CA

System Identification and Hazard Analysis
[redacted], Bakersfield, CA

Domestic Hot Water Heaters

System Name:	Water Heater	**Building Name:**	[redacted]
How Many:	3	**Location:**	Fire Riser Room
Manufacturer:	America Standard	**Model:**	ULN80-199AS (1)ULN100-270AS (2&3)
Materials:	Steel, Copper	**Treatment:**	Municipality (Chlorine)
Service Areas:	A-Wing Patient Areas	**Set Temp:**	125F
Capacity:	80-gal (1) 100-gal (2&3)	**Arrangement:**	Parallel
Hazard Type:	Microbiological	**Risk Level:**	High
Hazard Type:	Physical	**Risk Level:**	Low
Hazard Type:	Chemical	**Risk Level:**	Low
Hazard Rational:	High proliferation potential (ideal temperatures), high aerosol and exposure potential.		
Prevention Steps:	Routine blowdown on heater, avoiding stagnant conditions, and analytical testing.		

Heate rs 1, 2 & 3 Overview

Heater 1

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Example of a SNF's water system diagram

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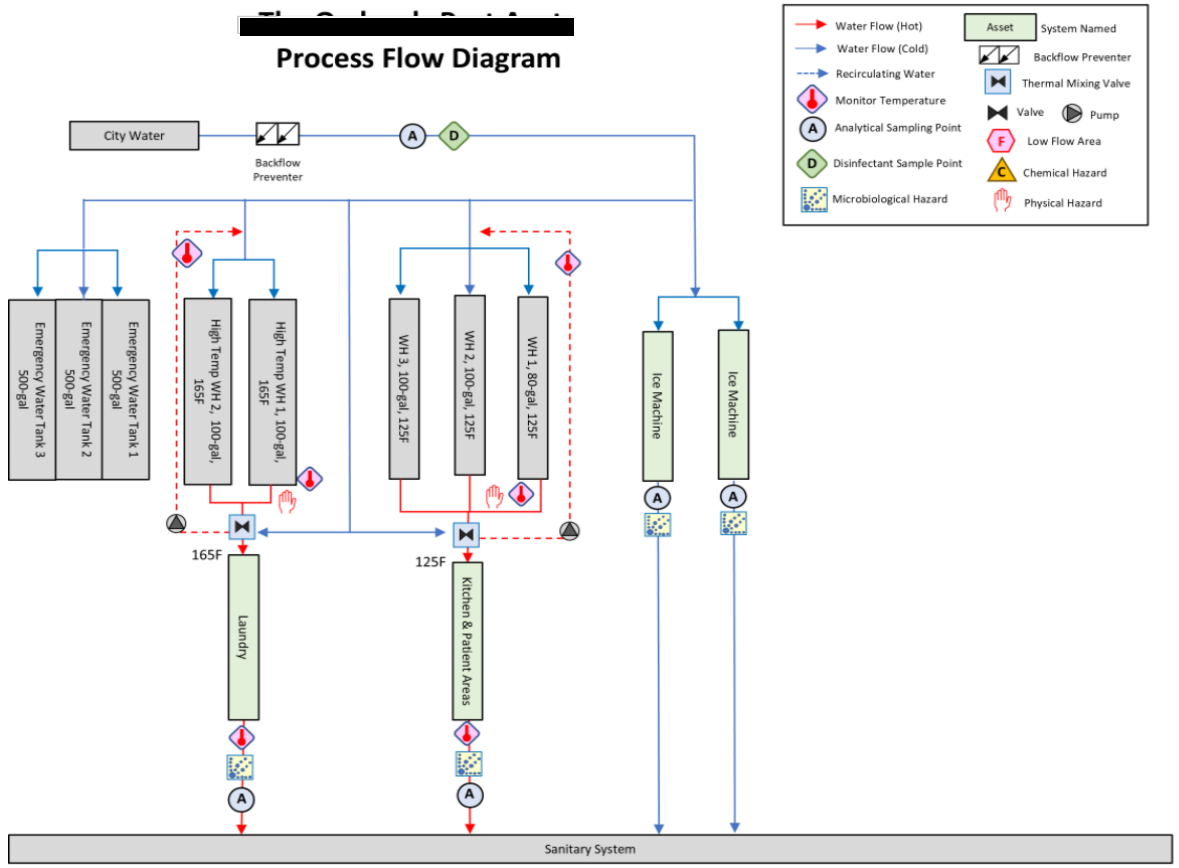
8. Process Flow Diagram



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Include evaporative coolers in your WMP

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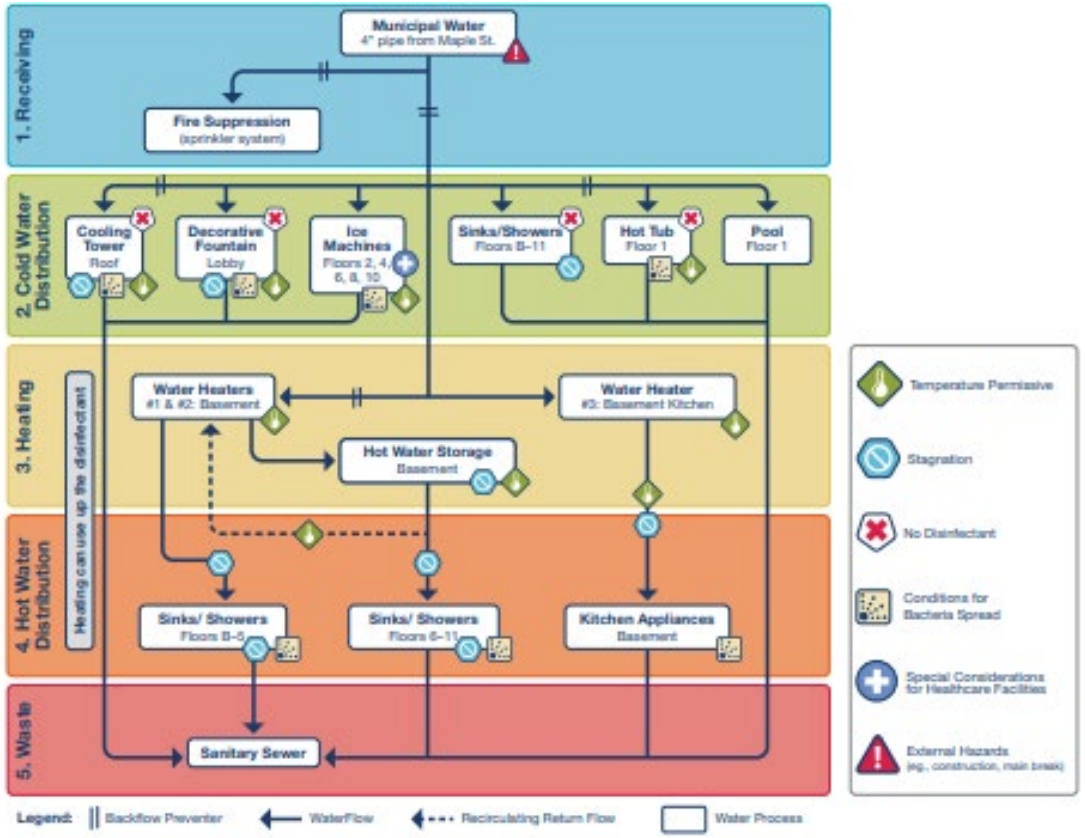
3 Identifying areas where *Legionella* could grow and spread.

Water management program – identify areas where waterborne pathogens can grow and spread

Diagram should note areas of:

- External hazards (water main break, low pressure, low or no disinfectant where water enters facility)
- Possible stagnation
- Low or no disinfectant levels
- Temperature variations
- Favorable conditions for pathogen growth

Sample diagram



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Example of SNF's WMP identifying areas where *Legionella* could grow

Hot Water Temperature Maintenance

For *Legionella* control, hot water should ideally be stored at ≥140°F; however, California Title 22 dictates that hot water must not exceed 120°F at the point-of-use in patient care areas due to scalding risk. Therefore, hot water systems are kept as high as reasonably possible, and monitored.

- Heat exchangers/boilers and the hot water holding tank are set to achieve target point-of-use temperatures of 105-120°F at patient care areas.
- Heat exchangers/boilers and the hot water holding tank have gauges on the supply and return to monitor temperatures.
- Hot water tap temperatures are tested and logged to ensure compliance with Title 22.
- The hot water distributions are recirculated continuously.
- Supply and return temperatures are tested and logged weekly at the heat exchangers/boilers and the hot water holding tank to ensure the setting, thermostat, and system is reaching target.
- Should temperature monitoring reveal inconsistency in temperature maintenance, control strategies are employed to achieve better control. The control strategies employed for temperature maintenance are found in Section 6.

4 Deciding where control measures should be applied and how to monitor them.

Water management program: control measures

Principles

- Keep hot water hot
- Keep cold water cold
- Avoid stagnation
- Maintain disinfectant residual
- Routinely clean/maintain devices


Visual Inspection


Check Disinfectant Levels


Check Temperature


Keep logs

Challenges

- *Legionella* thrives at 77- 113 °F.
  - CA Plumbing Code: hot water <120 °F at the tap in care areas (scald risk)
  - Incoming (cold) water temperatures may be tepid in summers in certain areas
- Flushing challenges with motion-sensor faucets

Legionella Control Toolkit | CDC (PDF) (www.cdc.gov/control-legionella/media/pdfs/Control-Toolkit-All-Modules.pdf)

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Example of SNF weekly water testing log

5.4 Domestic Water pH, Temperature & Chlorine Readings Log Sheet

Domestic Water pH, Temperature & Chlorine Readings Log Sheet					
Time	Location/Room #	Fixture Tested	pH (6.5-8.5)	Temp.	Free Chlorine Residual (<4 ppm)

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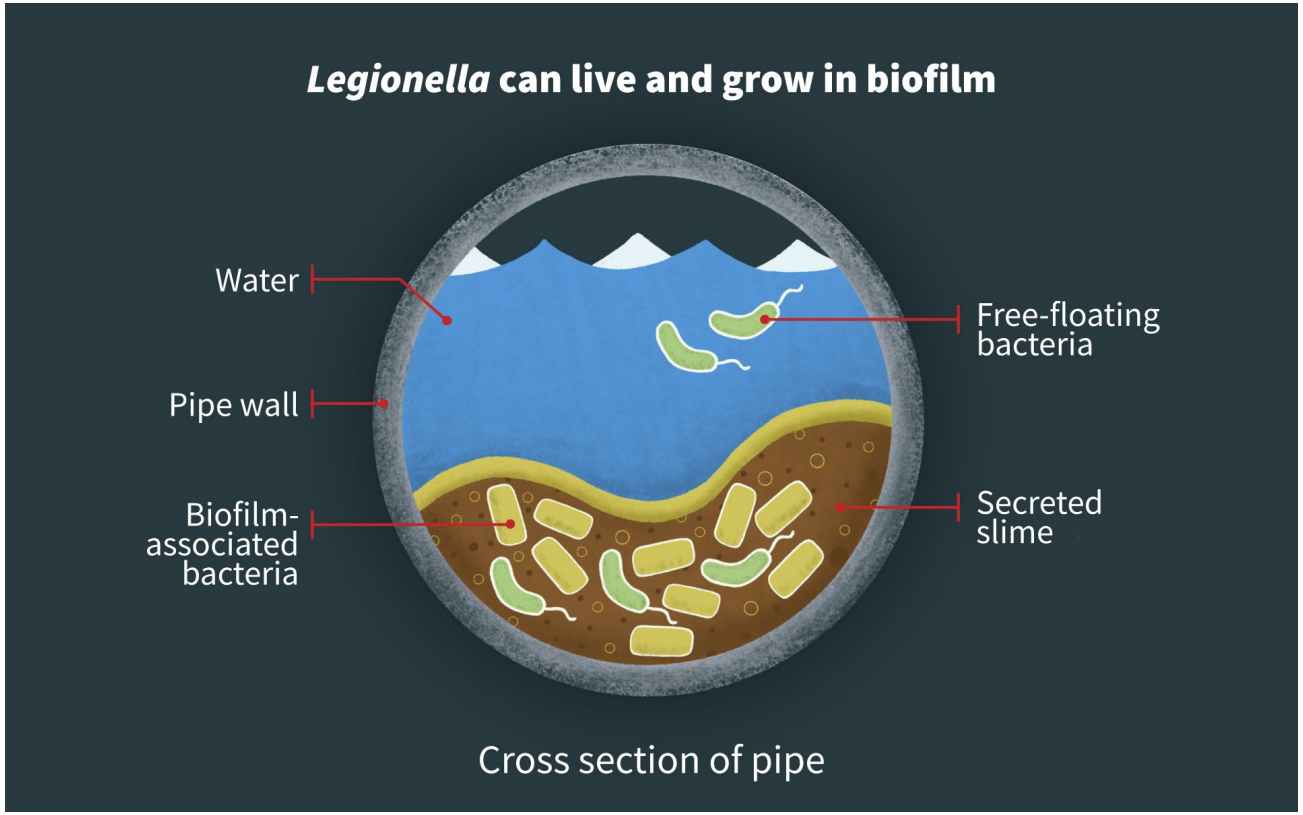
5 Establishing ways to intervene when control limits are not met.

Control measures for *Legionella* in potable water systems

Sediment and Biofilm

- Flushing
- Cleaning
- Maintenance



Legionella biofilm in pipes, https://www.nist.gov/image/legionella-biofilm-pipes

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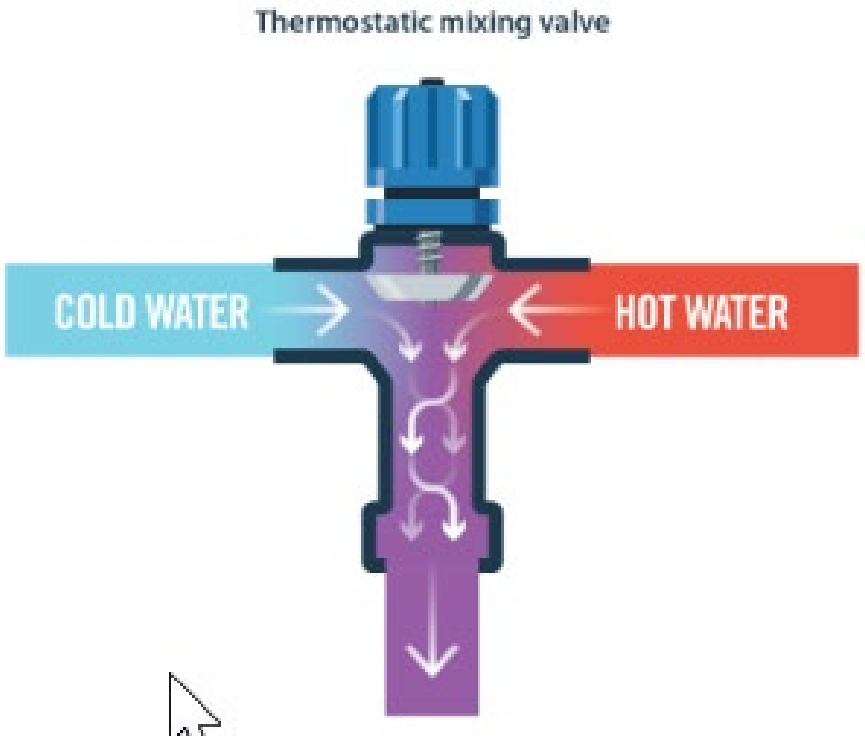
5 Establishing ways to intervene when control limits are not met.

Control measures for *Legionella* in potable water systems

Water Temperature

- Water heater at 140 degrees
- Continuously circulate hot water at 120 degrees or above
- Deliver water to residents at <120 to prevent scalding, ideally at temperatures above *Legionella*'s growth range of 77-113 degrees.
- Cold water < 68 degrees



Thermostatic mixing valves keep water hot until point of delivery and help prevent scalding.

5 Establishing ways to intervene when control limits are not met.

Control measures for *Legionella* in potable water systems

Water age and disinfectant

- Flush infrequently used fixtures weekly
- Set and monitor the level of disinfectant residual at the tap
- Monitor the level of disinfectant in incoming water and the hot water heater

Toolkit: Controlling Legionella in Common Sources of Exposure | CDC
(www.cdc.gov/control-legionella/php/toolkit/wmp-toolkit.html)

Example of SNF corrective action if fixtures have visible mineral build-up

5.8 Fixture De-Scale & Disinfection

Fixture De-Scale & Disinfection	
Date: _____ Fixture ID:_____ Location:_____ Performed By:_____	
Preparation	
o Management has been notified of this task.	
o Area has been isolated.	
o Proper PPE has been utilized.	
De-Scaling Process	
o Add a 10-12% hydrochloric acid solution, or equivalent de-scaler to a plastic container. ◆ Note: if making solution, always add acid to water, not inverse	
o Fixture slowly immersed in the acid solution.	
o After 5 minutes, remove fixture, rinse thoroughly.	
o Has scale been removed? ◆ If NO, repeat or consider fixture replacement. ◆ If YES, continue.	o YES o NO
o Is acid solution <4.0 (using pH strips)? ◆ If YES, add soda ash to raise pH, or dilute heavily with water. ◆ If NO, discharge to sanitary sewer.	o YES o NO
Disinfection Process	
o Prepare a 100 ppm free chlorine solution. ◆ (8 ounces or 1 cup of 10-12% sodium hypochlorite per gallon of water will	_____ ppm

Water management program: verification and validation

Verification

Are we doing what we said we would do?

- Regular audits of water quality parameter logs
- WMP team meetings

Validation

- **Is our program working?**
  - Routine testing for *Legionella*
  - Routine testing for other waterborne pathogens

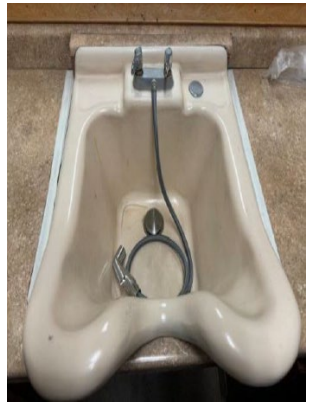
Different individuals or groups should be responsible for verification and validation

6 Making sure the program is running as designed and is effective.

Environmental testing – sampling guidelines

When conducting environmental sampling, you want to collect a representative sample from the sources noted in your WMP

- Where water enters the building
- At hot water tanks
- At sinks and showers
- Ice machines
- Devices such as hot tubs, decorative fountains



(consider beauty salon sinks)

- Legionella Sampling Procedure and Potential Sampling Sites, https://www.cdc.gov/investigate-legionella/media/pdfs/cdc-sampling-procedure.pdf

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Legionella sample collection and testing

6 Making sure the program is running as designed and is effective.

- Use the CDC method to collect samples (Legionella Sampling Procedure and Potential Sampling Sites, https://www.cdc.gov/investigate-legionella/media/pdfs/cdc-sampling-procedure.pdf):
  - Obtain a biofilm swab and bulk water sample (usually 1 liter) from each sampling site
  - Measure water parameters (temperature, pH, disinfectant level)

Samples need to be properly preserved and transported. Many SNFs ask their water consultant to collect samples for environmental testing.

Testing of the samples should be done by an ELITE-certified lab
CDC - ELITE Program, https://wwwn.cdc.gov/elite/public/elitehome.aspx

Common water management program problems

- Water management team only lists one person (facility should have a multi-disciplinary team) 
- Generic plan obtained online – the plan lists the components of a WMP, but it is not completed for the specific facility 
- Specific control limits (temperature, disinfectant levels) are missing 
- Instructions for how samples should be collected for testing are missing 

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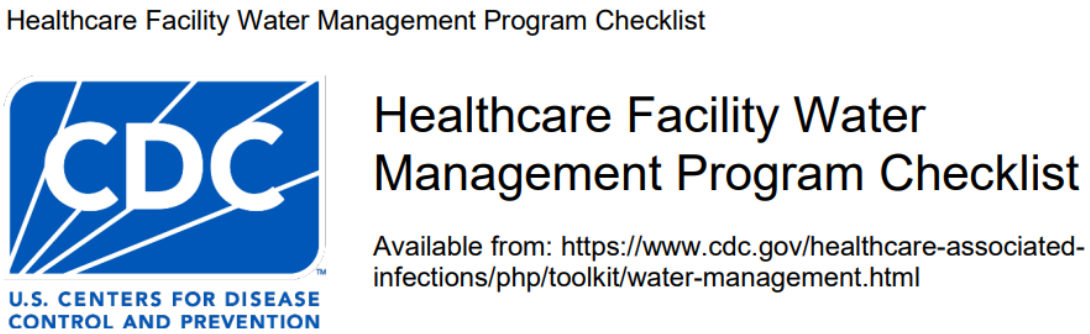
Evaluate your WMP with the CDC checklist



[Healthcare Facility Water Management Program Checklist, https://www.cdc.gov/healthcare-associated-infections/media/pdfs/PHS-ReduceWaterRisk-ChecklistTool-508.pdf]

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Key takeaways

- *Legionella* is a pathogen with substantial morbidity and mortality for SNF residents
- Facility staff should be aware of IPC practices related to water
- To reduce the risk of *Legionella* and other waterborne pathogens, SNFs should develop and follow a robust WMP
- WMPs should follow CDC and ASHRAE guidelines and include control measures and corrective actions

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Public Health is here to help

- Legionnaires' disease cases are reportable to public health
- Even a single case in a SNF resident requires an investigation to protect residents and staff
- Work with public health to investigate all *Legionella* cases and outbreaks in your facility
- CDC offers many resources, which are linked on the following slides
- Please don't hesitate to reach out to us with questions

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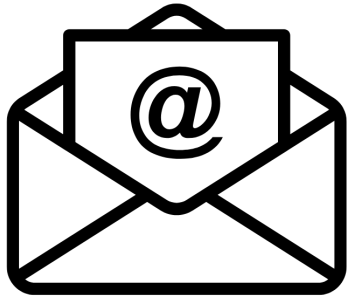
Thank You!

Questions?

For more information, contact
HAIProgram@cdph.ca.gov



CDC *Legionella* resources

1. The main Legionella site has background, disease information, fact sheets, information for clinicians, and surveillance reports: www.cdc.gov/legionella/
   - Site index with all the sub-pages: www.cdc.gov/legionella/site.html

2. Investigating Legionnaires' Disease site with content for public health partners regarding case and outbreak investigations: www.cdc.gov/investigate-legionella/
   - Site index with all the sub-pages: www.cdc.gov/investigate-legionella/site.html

3. Controlling *Legionella* site with information about strategies to prevent LD through control activities and water management programs: www.cdc.gov/control-legionella/
   - Site index with all the sub-pages: www.cdc.gov/control-legionella/site.html

References and resources I

- Healthcare-Associated Legionnaires' Disease Investigation Quicksheet | CDPH (PDF) (www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/HA_LegionnairesDiseaseQuicksheet_12.20.19_final.pdf)
- CDPH IDB Guidance for Legionellosis, March 2023 (PDF)(www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/IDBGuidanceforCALHJs-Legionellosis.pdf)
- CDPH IDB Information for Local Health Departments and Public Health Laboratories (www.cdph.ca.gov/Programs/CID/DCDC/Pages/LegionellosisLHDs.aspx)
- *Legionella* (Legionnaires' Disease and Pontiac Fever) | CDC (www.cdc.gov/legionella/index.html)
- About the Data: Case Definitions | CDC (www.cdc.gov/legionella/health-depts/surv-reporting/case-definitions.html)

References and resources II

- Investigating Healthcare-Associated Cases and Outbreaks | CDC (www.cdc.gov/investigate-legionella/php/healthcare-resources/index.html)
- Federal Requirement to Reduce *Legionella* Risk | CDC (www.cdc.gov/control-legionella/php/healthcare/federal-requirement.html)
- Developing a Water Management Program to Reduce *Legionella* Growth & Spread in Buildings | CDC (PDF) (www.cdc.gov/control-legionella/media/pdfs/toolkit.pdf)
- Healthcare Facility Water Management Program Checklist | CDC (PDF) (www.cdc.gov/healthcare-associated-infections/media/pdfs/water-management-checklist-p.pdf)
- Water Infection Control Risk Assessment (WICRA) for Healthcare Settings | CDC (PDF) (www.cdc.gov/healthcare-associated-infections/media/pdfs/water-assessment-tool-508.pdf)

References and resources III

- Environmental Assessment and Sampling Resources | CDC (www.cdc.gov/investigate-legionella/php/resources/environmental.html)
  - Includes LEAF, LEAF Marking Guide, Sampling Procedures and Potential Sampling Sites, Instructional Videos
  - Cooling Tower Resources
  - Trainings and toolkits on control Legionella and more.
- *Legionella* Environmental Assessment Form | CDC (PDF) for facilities to complete (www.cdc.gov/investigate-legionella/Legionella-Environmental-Assessment-Form.pdf)
- Legionella Environmental Assessment Form Marking Guide (PDF) (www.cdc.gov/investigate-legionella/legionella-environmental-assessment-marking-guide-508.pdf) supplements the LEAF with guided instructions on completing the LEAF such as during LHD-led assessments.

References and resources IV

- Sampling Procedure and Potential Sampling Sites | CDC (PDF)
  (www.cdc.gov/investigate-legionella/media/pdfs/cdc-sampling-procedure.pdf)
- Public Health Strategies for *Legionella* Control | CDC
  (www.cdc.gov/control-legionella/php/public-health-strategy/index.html)
- Water Management in Healthcare Facilities | CDC
  (www.cdc.gov/control-legionella/php/healthcare/water-management.html)
- Monitoring Building Water | CDC
  (www.cdc.gov/control-legionella/php/guidance/monitor-water-guidance.html)
- Toolkit: Controlling *Legionella* in Common Sources of Exposure | CDC
  (www.cdc.gov/control-legionella/php/toolkit/wmp-toolkit.html)