



The Joint Commission's New Water Management Standards and UAB Hospital's Experience

UAB MEDICINE

Knowledge that will change your world

ALASHE Spring Conference
05-06-22



Content

- ❖ UAB Medicine
- ❖ TJC New Water Management Standard
- ❖ UAB Guidelines for Designing New Water Systems
- ❖ Risk Assessment Tool

UAB Medicine



91,635 DISCHARGES FROM UAB HOSPITAL

MORE THAN

1,600,000 CLINICAL VISITS

6,000,000+
SQUARE FEET

1207
BEDS

1,500+
PHYSICIANS

No. 1 Best Large Employer for 2021
by Forbes magazine



8th Largest Public Hospital in the nation

Signature Service Lines

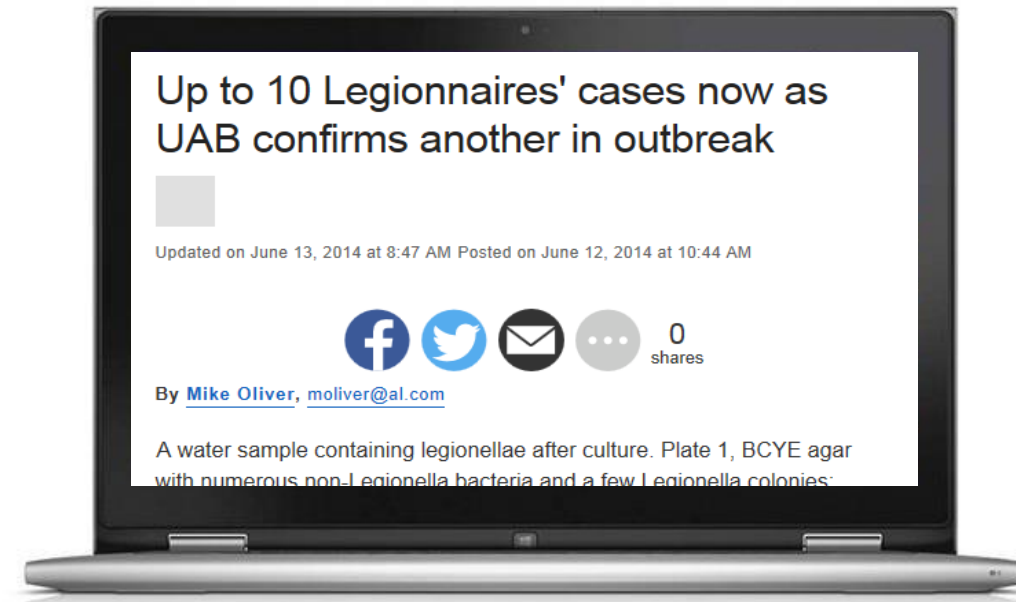
- Comprehensive Cancer Center
- Comprehensive Transplant Center
- Cardiovascular
- Level 1 Trauma Center
- Regional NICU



UAB Water Management Plan

The **Genesis of** UAB's comprehensive Water Safety Program is:

1. 2014 Legionella Outbreak
2. ANSI/ ASHRAE 188 Standard-Legionellosis: Risk Management for Building Water Systems – First published in 2015.
3. CMS memorandum and requirements on Water Management in Healthcare Facilities- First published in 2017
4. The Joint Commission New Standard **EC.02.05.02**- Published in 2021



TJC Standard- EC.02.05.02

The hospital has a water management program that addresses Legionella and other waterborne pathogens.

Note: The water management program is in accordance with law and regulation



Prepublication Requirements

• Issued March 19, 2021 •



New Water Management Requirements

The Joint Commission has approved the following revisions for prepublication. While revised requirements are published in the semiannual updates to the print manuals (as well as in the online *E-dition*®), accredited organizations and paid subscribers can also view them in the monthly periodical *The Joint Commission Perspectives*®. To begin your subscription, call 800-746-6578 or visit <http://www.jcrinc.com>.

Please note: Where applicable, this report shows current standards and EPs first, with deleted language struck-through. Then, the revised requirement follows in bold text, with new language underlined.

APPLICABLE TO THE HOSPITAL ACCREDITATION PROGRAM

Effective January 1, 2022

Environment of Care (EC) Chapter

EC.02.05.01

The hospital manages risks associated with its utility systems.

Element(s) of Performance for EC.02.05.01

14. ~~The hospital minimizes pathogenic biological agents in cooling towers, domestic hot and cold water systems, and other aerosolizing water systems.~~



EC.02.05.02

The hospital has a water management program that addresses Legionella and other waterborne pathogens.
Note: The water management program is in accordance with law and regulation.

Element(s) of Performance for EC.02.05.02

1. **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.**



TJC Standard- Element(s) of Performance EC.02.05.02 1.

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.



UAB Water Safety Committee

- ❖ Interdisciplinary committee to develop and implement a Water Safety Plan
- ❖ Members that can influence *process change*
- ❖ Engage Hospital Maintenance and Technical entities



Reporting Structure



UAB Medicine Water Safety Team

FACILITIES	REGULATORY	INFECTION PREVENTION	CLINICAL
<ul style="list-style-type: none">• Chief Facilities Officer- Co-chair• Director of Hospital Maintenance• Director of Hospital Construction• Hospital Environmental Engineer	<ul style="list-style-type: none">• Hospital Safety Committee Chair	<ul style="list-style-type: none">• Senior Director of Infection Prevention	<ul style="list-style-type: none">• Hospital Epidemiologist- Co-chair• Senior Director Perioperative Services• Ambulatory Surgical Services• Ambulatory Environmental Health and Safety

Water Safety Committee Responsibilities (Element 2)



REVIEWING

routine legionella spp. and water test reports



RECOMMENDING

corrective actions for positive results



COMMUNICATING

results with clinical staff and infection prevention committee



AUDITING

and reassessing the Water Safety Plan

Environmental Manager



Monitor and manage the water systems and supplemental treatment systems within the Hospital and Ambulatory to ensure compliance



Participate in the application and implementation of the Water System Construction and Renovation Risk Assessment (WSCRRA)



Develop and conduct training to Hospital Maintenance and Clinical teams on Water and Air Safety Plans.



Link between the technical teams and Infection Prevention

Hospital Maintenance



9 Plumbers

- Monitor Hot Water Heaters
- Preventative Maintenance of Hot water heaters ▪ Booster Pumps ▪ Pressure reducing valves ▪ Recirculating pumps ▪ TMV's ▪ etc
- Identifying/eliminating dead legs



80 General Mechanics

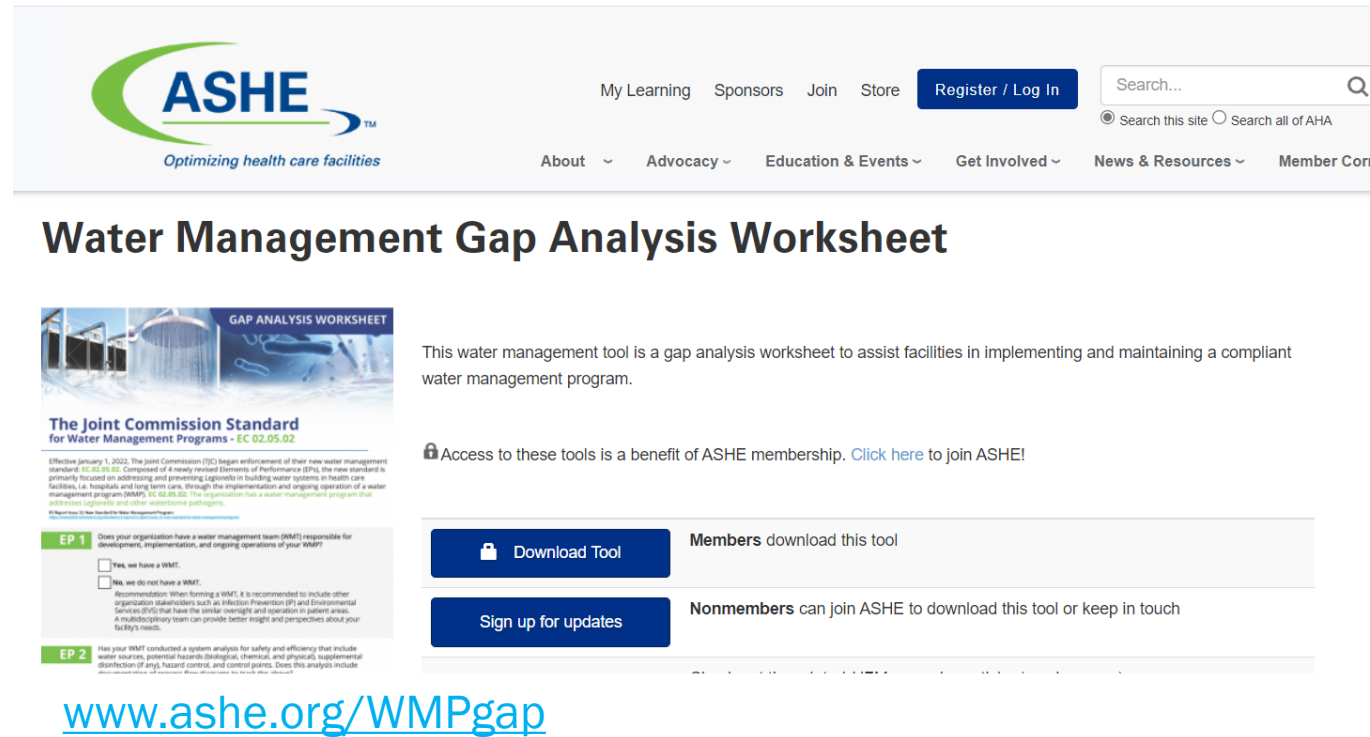
- Monitor distal water temps
- Monitor distal chlorine readings
- Flushing of distal outlets when needed
- Point of use filters replacement

Infection Prevention

1. Review microbiology results for hospital-onset legionellosis, pseudomonas, etc.
2. Educate clinicians on the importance of sending bronchoalveolar lavage cultures for *Legionella* spp.; urine antigen testing is only positive for serotype 1
3. Conduct a risk assessment on where filters need to be installed or when they can be removed
4. Conduct a risk assessment and determine where regular water testing is necessary

How to start building a WSP!!

1. Create a building list
2. Categorize and prioritize the buildings based on the patient population cared for
3. Conduct an Environmental Building Assessment
 - Obtain Plumbing Drawings
 - Process Flow Diagrams
 - **Baseline Bacteriological Testing – Legionella**
 - Identify areas of water stagnation



The screenshot shows the ASHE website header with the logo and navigation links. The main content area features the title "Water Management Gap Analysis Worksheet" and a description of the tool. Below the description, there are two buttons: "Download Tool" and "Sign up for updates". The "Download Tool" button is highlighted, and the text "Members download this tool" is visible next to it. The "Sign up for updates" button is also highlighted, and the text "Nonmembers can join ASHE to download this tool or keep in touch" is visible next to it. The URL www.ashe.org/WMPgap is displayed at the bottom of the page.

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Optimizing health care facilities

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Water Management Gap Analysis Worksheet

This water management tool is a gap analysis worksheet to assist facilities in implementing and maintaining a compliant water management program.

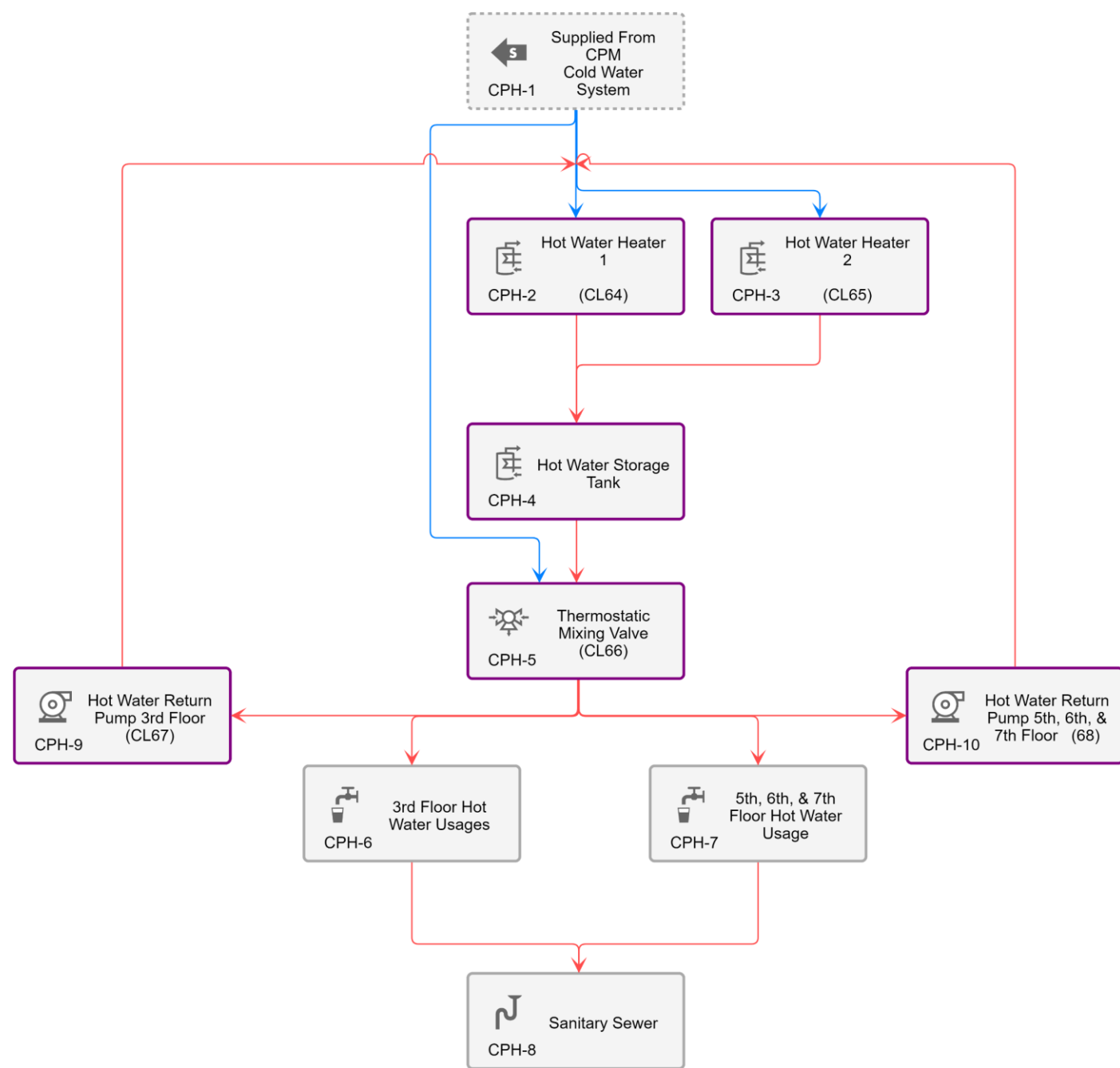
Access to these tools is a benefit of ASHE membership. [Click here](#) to join ASHE!

Download Tool Members download this tool

Sign up for updates Nonmembers can join ASHE to download this tool or keep in touch

www.ashe.org/WMPgap

How to start building a WSP!!



How to start building a WSP!!

4. Generate Equipment and Devices in A Building's Water System

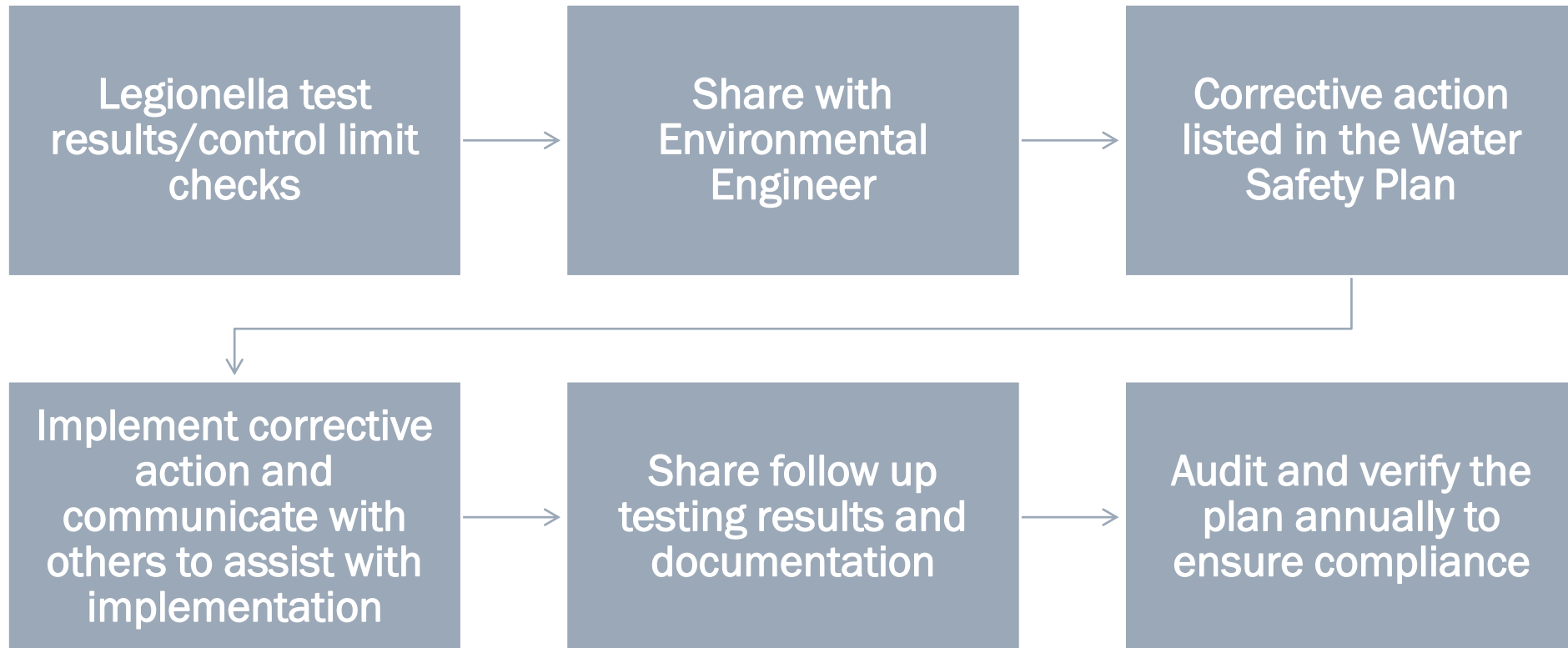
- Backflow Preventers
- Cold Water Booster Pumps
- Pressure Reducing Valves
- Hot Water Heaters
- Thermostatic Mixing Valves
- Heater Recirculation Pumps
- Hot Water Storage Tank

How to start building a WSP!!

5. **Set Control Limits (ASHRAE 188- Standard)**- Water safety term used to describe any step at which control can be applied to prevent, eliminate the occurrence of, or reduce to an acceptable level a hazard

Parameter	Location(s)	Control limits	Monitoring Frequency	Monitoring Method	Responsible Individual(s)
Hot Water Heater Temperature	Hot Water Heaters	120-145°F	Monthly	Thermometer, Inline Temperature Gauges	Hospital Environmental Engineer, Hospital Maintenance
Hot Water Distal Outlet Temperature	Minimum of 10 distal hot water outlets throughout facility.	105-120°F	Quarterly	Thermometer	Hospital Environmental Engineer, Hospital Maintenance
Cold Water Distal Outlet Free Chlorine Concentrations	Minimum of 10 distal hot water outlets throughout facility.	Detectable	Quarterly	Colorimeter	Hospital Environmental Engineer, Hospital Maintenance
Point of use filters	Immunocompromised patient units		62 days	Change out filter	Hospital Maintenance

EP 3 & 4- Reporting and Documentation



Water Safety Approaches

- Multiple training sessions conducted by water safety professionals given to Maintenance, Project Managers and Contractors.
- Involve Plumbers/Maintenance in the discussions regarding water safety
- Provide Education to Infection Prevention Team on basic plumbing tasks and technical activities and how they affect water safety
- Report data on Legionella spp. results and corrective actions to the Health System Infection Prevention team on a regular basis.
- Have a dedicated person to be the link between the technical group and the clinical group

UAB Capital Project Construction Department:

1. Manage all Construction Over \$100,000
2. Largest Project to date is Women & Infants Center at \$200,000,000
3. Manages external Architects & Engineers to deliver Projects
4. Collaborates with Internal Support Services & End Users



New Construction and Water Safety Planning

UAB Project Management teams take measures to **design, implement, and commission** a safe water plumbing system.

UAB's Project Management Process consists of:



Planning and Design

- **Project Team** - UAB project manager, Environmental manager , Architects, Engineers, Infection Prevention, Hospital Maintenance and Hospital Safety
- Project team meets to discuss the design requirements of the new water system
- Code Compliance- International Building Codes, Life Safety Codes, FGI Guidelines, etc.
- Review Drawings, equipment, flushing points, fixtures selection, etc.
- Discuss maintenance schedules, frequencies, and procedures
- Discuss water shutdowns- affected areas, interim measures, affected patient population
- Discuss disinfection options, locations of injection points and water testing sampling points

Construction

- Build the system according to the approved drawings
- Follow UAB's list of requirements for fixture selections, Mixing Valve placements, aerators, sampling points, etc
- Schedule Water Shutdowns with end users and assess the impact on other hospital areas.
- Follow flushing regimens if needed.

Commissioning

- Meeting onsite with the Project Team
- Disinfect and flush the new system 3 weeks prior to beneficial occupancy
- Schedule water sampling of the system
- Confirm that building water system performance meets design performance parameters

UAB Guidelines for Designing New Water Systems

- a) Provide easy access to all equipment and valves for routine maintenance.
- b) Add flushing/sampling points at: 1) Domestic water supply to the building 2) Hot water return 3) Circulating pumps.
- c) **Add inline temperature gauges for hot water supply and return. Locations of where to install the gauges should be discussed with the Plumbing Engineer and Hospital Maintenance during the design phase.**
- d) Aerators shall not be used.
- e) Utilize self-draining showerheads.
- f) Mix hot/cold water as near the showerhead as possible.
- g) Faucets that can accept legionella filters.
- h) **Offset drains in patient care areas to minimize splashing.**
- i) Achieve a goal distal water temperatures of 120F (the range is 105-120F).
- j) **No mixing valves in patient care areas.**

Risk Assessment Tool

WATER SAFETY DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES (WSCRRA)

Routine and Emergency Maintenance Repairs

Replacement of circulating pumps

Leaking valves

Modification/addition or removal of piping etc.

New Hot Water Heater

Pressure relief valves



Step 1: Identify Type of Construction / Maintenance Project

Evaluate the effect of the project on patient care services

Identification of possible disruptions to water services.

Attachment A:

Water System Construction & Renovation Risk Assessment Matrix of Precautions for Water System Construction & Renovation (Complete the 12-Step Assessment to Determine the Level of Precaution Required)

Step 1: Identify the Type of Construction Project/Activity

Using the following table, *identify* the Type of Construction Project Activity (Type A-D)

Type A	Inspection and Non-Invasive Activities. Includes, but is not limited to: <ul style="list-style-type: none">▪ Adjustment and inspection of plumbing systems which do not interrupt water service.
Type B	Small scale, short duration activities which create minor water service interruptions. Includes, but is not limited to: <ul style="list-style-type: none">▪ Plumbing work which can be isolated from the overall water distribution system, or▪ Work which results in water service interruptions to no more than 3 fixtures or in no more than 2 adjacent rooms, or▪ Work which can be completed in a 48 hour period.
Type C	Work that creates a major water service interruption or requires demolition or removal of any fixed building components or assemblies. Includes, but is not limited to: <ul style="list-style-type: none">▪ Major plumbing modifications that result in water service interruption at 4 or more fixtures or multiple rooms, or▪ Work which creates a water service interruption for more than 48 hours, or▪ Work which results in unoccupied units for up to 7 days after water service has been restored.
Type D	Major demolition and construction projects. Includes, but is not limited to: <ul style="list-style-type: none">▪ Requires heavy demolition or replacement of water distribution piping, heating, storage, treatment or associated systems, or▪ New building construction, build out of shell space, major renovations or▪ Work which creates a water service interruption for more than 7 consecutive days, or▪ Work which results in unoccupied units for more than 10 days after water service has been restored.

Step 2: Identify Patient Risk Group

Review planned projects and their potential effect on the anticipated patient population to be housed in the area

Attachment A:

Step 2: Identify the Patient Risk Group(s) that will be affected.

Using the following table of Example Risk Units, identify the Patient Risk Groups will be affected. If more than one risk group will be affected, select the higher risk group.

Risk Category	Patient Risk Groups	
	Inpatient	Outpatient
Low Risk	<input type="checkbox"/> Office areas <input type="checkbox"/> Public Space/Waiting Areas <input type="checkbox"/> Retail Space	<input type="checkbox"/> Office areas <input type="checkbox"/> Public Space/Waiting Areas <input type="checkbox"/> Retail Space
Medium Risk	<input type="checkbox"/> Cardiology <input type="checkbox"/> Echocardiography <input type="checkbox"/> Endoscopy <input type="checkbox"/> Nuclear Medicine <input type="checkbox"/> Physical Therapy <input type="checkbox"/> Radiology/MRI <input type="checkbox"/> Respiratory Therapy <input type="checkbox"/> Food Service	<input type="checkbox"/> Radiology/MRI <input type="checkbox"/> General / Specialty Clinics <input type="checkbox"/> Pharmacy <input type="checkbox"/> Laboratories (specimen) <input type="checkbox"/> Cardiac Cath Lab <input type="checkbox"/> Endoscopy <input type="checkbox"/> Urology
High Risk	<input type="checkbox"/> CCU <input type="checkbox"/> Emergency Room <input type="checkbox"/> Labor & Delivery <input type="checkbox"/> Laboratories (specimen) <input type="checkbox"/> Medical Units <input type="checkbox"/> Newborn Nursery <input type="checkbox"/> Outpatient Surgery <input type="checkbox"/> Pediatrics <input type="checkbox"/> Pharmacy <input type="checkbox"/> Post Anesthesia Care Unit	<input type="checkbox"/> Any area caring for immunocompromised patients <input type="checkbox"/> Central Sterile Supply <input type="checkbox"/> Bronchoscopy (PFT) <input type="checkbox"/> Surgical Clinics (Transplant, etc.) <input type="checkbox"/> Oncology / Infusion Clinics
Highest Risk	<input type="checkbox"/> Any area caring for immunocompromised patients <input type="checkbox"/> Burn Unit <input type="checkbox"/> Cardiac Cath Lab <input type="checkbox"/> Central Sterile Supply <input type="checkbox"/> Intensive Care Units <input type="checkbox"/> Oncology <input type="checkbox"/> Operating rooms including C-section rooms <input type="checkbox"/> Surgical Units <input type="checkbox"/> Transplant Units	

**Revised by Ambulatory Safety Committee 10/16/15, approved by Hospital Safety Committee 10/22/15

Step 3: Class Precaution Matrix

Step 3: Select the Class of Precaution based on Patient Risk Group and Project Type

1. Match the Patient Risk Group (Low, Medium, High, Highest) with the planned...
2. Construction Project Type (A,B,C,D) on the following matrix, to find the...
3. Class of Precautions (I,II,III or IV) or level of infection Prevention activities required.

Patient Risk Group	Construction Project Type			
	TYPE A	TYPE B	TYPE C	TYPE D
LOW	I	II	II	III/IV
MEDIUM	I	II	III	IV
HIGH	I	II	III/IV	IV
HIGHEST	II	III/IV	III/IV	IV

Note: Infection Prevention approval will be required when the Construction Activity and Risk Level indicate that Class III or Class IV control procedures are necessary.

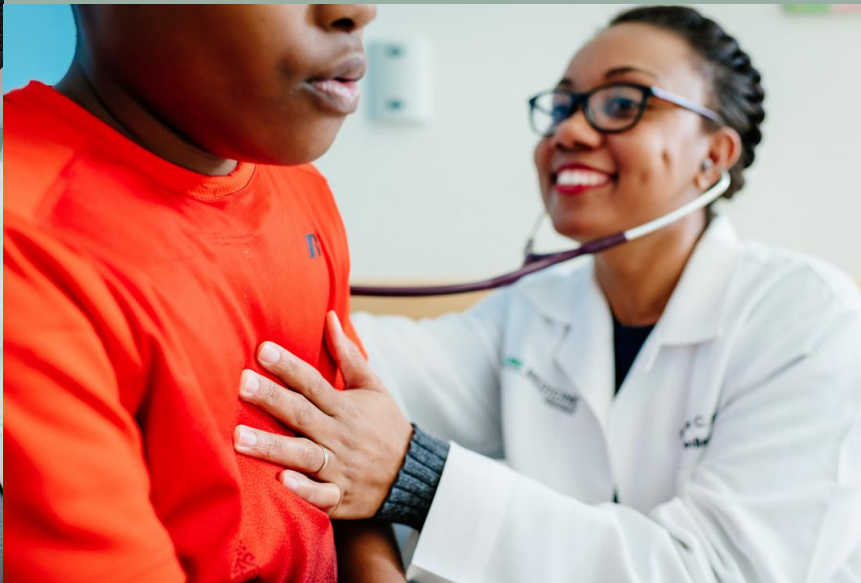
Step 4: Recommended Infection Prevention Precautions by Class

Identify appropriate levels of precaution and containment to minimize the risk of nosocomial infections.

	During Construction Project	Upon Completion of Project
Class I	<ol style="list-style-type: none"> 1. Execute work by methods to minimize disturbing plumbing system from construction operations. 	<ol style="list-style-type: none"> 1. Run a pencil thin stream of hot and cold water from each affected fixture for 1 minute. 2. Clean work area upon completion of tasks.
Class II	<ol style="list-style-type: none"> 1. Isolate water system where work is being performed. 2. Post notices prohibiting the use of water from fixtures impacted by the work. 	<ol style="list-style-type: none"> 1. Flush cold water from each affected fixture for 5 minutes and document chlorine residual and temperature. 2. Flush hot water from each affected fixture for 5 minutes and document temperature. 3. Remove notices prohibiting use of water. 4. Clean work area upon completion of tasks.
Class III	<ol style="list-style-type: none"> 1. Isolate water system where work is being performed. 2. Post notices prohibiting the use of water from fixtures impacted by the work. 3. Do not remove notices until approved by Infection Prevention Department. 	<ol style="list-style-type: none"> 1. Flush cold water from each affected fixture for 5 minutes and document chlorine residual and temperature. 2. Flush hot water from each affected fixture for 5 minutes and document temperature. 3. Collect water samples for <i>Legionella</i> culture: <ol style="list-style-type: none"> a. Less than 10 outlets, 1 sample from each outlet b. More than 10 outlets, minimum of 10 representatives outlets 4. Remove notices prohibiting use of water.
Class IV	<ol style="list-style-type: none"> 1. Isolate water system where work is being performed. 2. Post notices prohibiting the use of water from fixtures impacted by the work. 3. Do not remove notices until approved by Infection Prevention Department. 	<ol style="list-style-type: none"> 1. Flush cold and hot water from each affected fixture until no discoloration is observed. 2. Perform a hyper-oxidation (chlorine or chlorine dioxide) treatment and document results. 3. Collect water samples for <i>Legionella</i> culture: <ol style="list-style-type: none"> a. Less than 10 outlets, 1 sample from each outlet b. More than 10 outlets, minimum of 10 representatives outlets 4. Do not allow water use until test results are returned and system is safe to open for consumption. 5. Flush each outlet for 1 minute at least 5 days out of every 7 days until test results are returned. 6. Remove notices prohibiting use of water.

At UAB Medicine Patient Safety is our primary concern

- Be proactive and inclusive
- Implement plans for water safety
- Learn from our experience
- Involve infection prevention and other clinical teams when designing your projects



Questions?

THANK YOU FOR YOUR TIME
