Local and Tribal Health Department Healthcare-Associated Infection (HAI) and Infection Prevention Training Workbook

Workbook 5: Environmental Infection Risks





Wisconsin Healthcare-Associated Infections Prevention Program

How to Use this Workbook

This workbook covers a number of topics in a variety of different formats to help local and Tribal health departments (LTHDs) increase their knowledge on HAIs and infection prevention and control practices. The scenarios and questions included in this workbook are intended to enhance your own, self-paced learning. Each workbook includes a list of learning objectives, self-paced learning activities, links to additional helpful resources related to a given topic, and an answer key.

Meet Izzy

Throughout the program, you will follow Izzy, a communicable disease investigator at her local health department in charge of all things infection control. Using what you learn in each section, you will help Izzy provide infection control consultation and assistance to those in her jurisdiction.



Workbook 5 Objectives

By the end of this workbook, you will be able to:

- Identify potential environmental infection risks.
- Explain the importance of a water management program.
- Identify infection risks associated with ventilation.
- Explain the purpose of an Infection Control Risk Assessments (ICRAs).

Workbook 5 Activities

Activity 1: Environmental Infection Control 30 minutes

Watch the first 18 minutes of the Department of Health Services (DHS) HAI Prevention Program's <u>New IP</u> <u>Lunch and Learn session</u> on environmental infection control. <u>Slides</u> are also available for your reference.

- a. What is the goal of environmental infection control?
- **b.** True or false: You must clean, or remove debris from surfaces, before disinfecting in order for the disinfectant to be effective.

- **c.** True or false: IPs must take a formal training on air handling and heating, ventilation, and air conditioning (HVAC) systems.
- d. What are three air handling components to monitor as an IP?
- e. Why is it important to maintain appropriate humidity levels?
- **f.** List three areas in a health care facility that could be a source of *Legionella*.
- g. What is an IP's role in laundry practices at health care facilities?
- h. What two types of animals can be service animals?
- i. Who should IPs work with to develop a pet or animal policy for their facility?
- j. What is an ICRA and when should one be used?
- k. Why is it important to control dust at all times?
- I. Fill in the blank: Any porous surface that has been damaged by water must be dried within ______ hours/days/weeks/months.

m. What should be done in the event water damaged materials cannot be replaced within that time frame?

Activity 2: Environmental assessment at a local health department

1 hour 30 minutes

IPs often conduct environmental rounding in health care settings. Watch the North Carolina Statewide Program for Infection Control & Epidemiology's <u>environmental assessment of a local health department</u> and answer the questions below.

- **a.** Why is the height and placement of a sharps container important to consider according to this video?
- **b.** How far away should items be from a sink if there is no splash guard in place? Explain why.
- **c.** Does your LTHD have a dedicated area for device or instrument reprocessing? If so, how does it compare to the area shown in the video?

- **d.** True or false: You may place two or more items in a pill pouch as long as the pouch can be sealed.
- **e.** What is the difference between the exam room and the airborne infection isolation room (AIIR) featured in the video?
- **f.** What sort of potential environmental risks does an IP look for in a medication preparation and storage room?

- g. Storage under sinks is generally discouraged but there are a few exceptions. Some of these exceptions are listed below. Which of the following is not an exception?
 - a. Clean trash bags
 - b. Cleaning agents
 - c. Clean hand soap
 - d. Clean sharps containers
- **h.** Explain why storing items, especially patient care items, in corrugated cardboard containers is discouraged.
- i. True or false: Handwashing sinks should be clearly labeled as dirty sinks.

Activity 3: Environmental rounding in your LTHD 30 minutes

Take a tour of your own environment using your "IP eyes." You may utilize this Health Department Environmental Rounds Worksheet as guidance or for ideas of areas to look at.

a. What were your findings? Describe areas that you thought were compliant and areas that you think could use improvement.

Activity 4: Construction in health care 30 minutes

Watch a short video (about 15 minutes) from the American Society for Health Care Engineering on infection control considerations during construction.

- a. What are the top four patient concerns regarding construction mentioned in the video?
- **b.** List some infection prevention and control practices that may be implemented to keep patients safe during construction projects.

c. True or false: Out of the 90,000 deaths caused by HAIs in the United States, **about 1,000** are contributed to construction, renovation or maintenance activities.

Activity 5: ICRA processes 30 minutes

Read the "ICRA processes" section of *Construction and Engineering Roles in Infection Prevention*.

- **a.** True or false: An ICRA should be done after construction work as already begun.
- b. Who should be a part of a multidisciplinary ICRA team and why?
- c. Which of the following is not done during the ICRA process?
 - a. Identifying hazards/risks
 - b. Conducting satisfaction feedback from health care patients and residents
 - c. Deciding who might be harmed and how
 - d. Deciding on proper precautions
 - e. Proposing infection control actions
- d. What is the purpose of the ICRA precautions matrix?
- e. Which of the following is not a best practice related to the ICRA process.
 - a. Get IPs involved early on in the design process.
 - b. Adhere to standards set by the Centers of Disease Control and Prevention and other professional agencies.
 - c. Only include the precaution matrix for certain projects or populations.

f. After reading the article, identify ways you could help with health care facility construction projects or the ICRA process in your jurisdiction.

Activity 6: Ventilation matters ^{15 minutes}

Watch two short (about 5 minutes each) CDC Project Firstline videos on ventilation and how it can contribute to the spread of infectious diseases. The first video provides an <u>overview of ventilation</u>, the second <u>explains why proper ventilation is important</u>.

- a. Why is it important to have the best possible air movement and quality in health care?
- b. What happens when respiratory droplets enter the air?

- c. True or false: An air exchange is the number of access points to fresh, clean air in a room.
- **d.** True or false: There are simple steps you can take to improve ventilation in health care, such as opening a window or adding a fan.

Activity 7: Infection risks from water 30 minutes

Review the CDC's <u>Considerations for Reducing Risk: Water in Healthcare Facilities webpage</u> on reducing HAI risks from water and facility water systems.

a. What is an example of an upstream factor that can impact water quality within a health care facility?

- **b.** Fill in the blank: Water management programs should assess their facility's unique plumbing factors, such as ______.
- **c.** Describe how sinks and other drains in a health care facility can become contaminated with multidrug-resistant organisms (MDROs).
- d. Explain how patients can become exposed to harmful organisms in drains.

Activity 8: Izzy investigates water management programs 30 minutes

Izzy, a county health department's communicable disease investigator receives a call from a nursing home's director of nursing (DON). The DON is concerned about their facility's water system after hearing about an outbreak of Legionnaire's disease on the news. She asks Izzy for help identifying risks related to the building's water system and asks if the facility should have a water management plan.

The DON provides Izzy with the following information on the building:

- The oldest and main part of the building was built in 1985.
- The facility was originally a state-run inpatient facility.
- The building has undergone several renovations over the years.
- The main area of the building is three stories.
- The facility's HVAC system was recently upgraded to include a centrally installed humidifier.
- Construction for an additional wing was recently completed in 2019. The new wing boasts a resident tiki bar, movie theater, and an atrium complete with a decorative water feature.
- The facility has capacity for 65 residents. The facility currently houses 48 residents, many of whom have immunocompromising and chronic conditions.
- Each resident room has an attached bathroom with a toilet, sink, and shower.

Using the information the DON provided, Izzy wants to assess whether or not the facility is at increased risk for *Legionella* growth and spread. Use the <u>CDC worksheet</u> to help Izzy answer the following questions.



- a. Which devices within the facility need a water management plan?
- **b.** List a few characteristics (included above) that put this building at increased risk for *Legionella* growth and spread?
- c. What other information or advice should Izzy share with the DON?

Additional Resources

The following are optional readings, articles, and other resources for information on the topics covered in Workbook 5.

HVAC

Review <u>Heating</u>, <u>Ventilation</u>, and <u>Air Conditioning</u> (<u>HVAC</u>) and <u>Fan Considerations for Long-term Care</u> <u>during COVID-19</u> from the Minnesota Department of Health.

Construction, renovation, remediation, and demolition

See <u>Infection Prevention Manual for Construction & Renovation</u> from APIC for guidelines on construction in health care settings.

Water management

- See answers to <u>frequently asked questions on water management plans</u> from the CDC.
- Review a checklist for health care facility water management programs from CDC.
- Take the <u>training</u> from CDC and other partners on creating *Legionella* water management programs.

Workbook Key

Activity 1: Environmental Infection Control

(a.) Mitigate infection risks posed by surfaces, air, water, and waste generated by a health care facility. (b.) True. (c.) False; Infection preventionists don't need to be HVAC experts but should have a basic understanding of their facility's system. (d.) Air temperature, humidity, and pressure changes per hour in a particular space. (e.) Prevent mold and bacteria growth. (f.) Dead legs, hoppers, and decorative fountains. (g.) Monitor laundry facilities for cleanliness, understand current practices, identify potential infection risks, and recommend best practices. (h.) Dogs and miniature horses. (i.) Legal or risk management teams. (j.) Infection control risk assessment. They should be used before any construction, renovation, remediation, or demolition in or around the facility. (k.) Fungal spores present in dust can present a health risk to vulnerable populations. (l.) 48 hours. (m.) The material should be removed and replaced.

Activity 2: Environmental assessment at a local health department

(a.) To prevent potential sharps injuries. (b.) Three feet. Splashes can contaminate the counter and any items on the counter that are within three feet of the sink. (c.) Open interpretation. (d.) False; only one item should be placed in a pill pouch. (e.) The ventilation – the isolation room has negative pressure. (f.) Staining or misplacement of ceiling tiles, cluttered cabinets and countertops, lack of separation between clean and dirty items, lack of temperature checks on refrigeration units. (g.) C. Clean hand soap. (h.) Pests can lay eggs in the cardboard. (i.) False; A handwashing sink should be labeled "clean sink."

Activity 3: Environmental rounding in your LTHD

Open interpretation.

Activity 4: Construction in health care

(a.) 1. Infections 2. Physical risks (such as patient falls or fires) 3. Noise and vibrations 4. Noise and vibrations 5. Mistakes. (b.) Preventing the spread of dust, cleaning feet on carpets or mats at construction access points, implementing construction barriers, ensuring negative pressure relationship between construction site and patient care areas. (c.) False; About 5,000 deaths are due to construction, renovation, or maintenance activities.

Activity 5: ICRA processes

(a.) False. (b.) Frontline care givers, facility leaderships, EVS, IPs, architects, engineers, contractors; Each member of the team is the expert in a different topic bringing important knowledge in creating a safe environment and preventing the spread of infections. (c.) B. Conducting satisfaction feedback from health care patients and residents. (d.) To help determine steps to take when conducting a construction project in health care facilities, for example using HEPA filters or cleaning the area after project completion. (e.) C. Only include the precaution matrix for certain projects and populations. (f.) Provide technical assistance or infection control consultation which may include connecting the health care staff with the WI HAI Prevention Program staff, or resources from the Carpenter's Union.

Activity 6: Ventilation matters

(a.) It reduces the spread of viruses and germs. Good ventilation helps move things we don't want to breathe in, such as viruses, out of the air. (b.) In outdoor environments, respiratory droplets quickly get carried away, may be killed by sunlight, or dry out. Indoors, respiratory droplets remain in the air for a period of time. With proper ventilation, the old air is eventually replaced with fresh, clean air and respiratory droplets go away. Air filters can also help clear respiratory droplets from the air. (c.) False; Air exchange is the time that it takes for a room's old air to be completely replaced with or nearly completely replaced with new air. (d.) False; In health care, these steps can change the balance of air across a lot of different spaces (or multiple rooms). Do not try to improve ventilation in a space without reaching out the health care facility's air handling staff.

Activity 7: Infection risks from water

(a.) System disruptions or pressure drops, loss of disinfection residual (such as low chlorine levels), and water main breaks. (b.) Age and overall system design; additions, renovations, and other building modifications; water age; dead ends. (c.) The pathogens can stick to pipes and form biofilms, allowing the MDROs to live in drains for long periods of time. (d.) Water splashes from a contaminated drain cover and flushing a contaminated toilet or hopper can lead to the dissemination of MDRO-containing droplets. The droplets can contaminate the local environment or nearby health care workers or patients.

Activity 8: Izzy investigates water management programs

(a.) Hot and cold water distribution system, decorative fountain, centrally-installed humidifier, ice machines. (b.) Three floors, empty resident rooms (48 of 65 resident rooms are occupied) could contribute to dead legs in the water system, decorative fountain, centrally-installed humidifier (needs it's own water management plan). (c.) Open interpretation.