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

Workbook 3: Laboratory, Surveillance, and Epidemiologic Investigations

WISCONSIN DEPARTMENT of HEALTH SERVICES

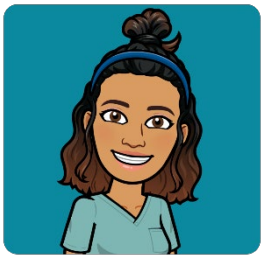
Wisconsin Healthcare-Associated Infections Prevention Program

P-03373B (08/2024)

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 3 Objectives

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

- Describe the importance of laboratory testing in infection prevention and control.
- Describe basic laboratory terms and concepts.
- Describe the purpose of disease surveillance.
- Define an outbreak.

Workbook 3 Activities

Activity 1: Introduction to laboratory and surveillance 20 minutes

Read through the IP Starter Kit: Laboratory and Surveillance webpage to become familiar with key terms and considerations related to lab and surveillance.

a. Why is the laboratory important for preventing the spread of infections?

b. In your own words, define colonization (also known as point prevalence screening) testing.

c. Define surveillance in your own words.

d. True or false: Surveillance data can be used to ensure facilities are complying with federal and state mandates as well as mandatory reporting requirements.

e. Match the following key terms to the appropriate definition:

	Outbreak	a. A measure of frequency of an event in a defined population.
	Incidence rate	b. An increase over the expected occurrence of an event.
	Infection rate	c. A method of collecting data, analyzing intervention effectiveness by reviewing data, and taking appropriate action to reduce risks.
	Standardized infection ratio (SIR)	d. A measure of new cases arising in a population over a given period of time.
	Surveillance	e. A risk-adjusted summary measure used to track HAIs over time in NHSN.

Activity 2: Laboratory basics 1 hour

Watch the IP Lunch and Learn webinar recordings: Laboratory Basics Part 1 (Part 1 slides) and Part 2 (Part 2 slides).

a. Describe how microbiology and other lab tests can be used.

b. True or false: Microbiology cultures may require a specific collection kit, depending on the culture type.

c. True or false: Result reports will differ based on the specimen type.

d. Fill in the blank: Sensitivity results can be qualitative or _____.

e. Which type of test is commonly performed to provide information that can indicate a urinary tract infection?

f. What does an elevated white blood cell count and elevated neutrophils indicate?

Activity 3: Surveillance and data collection systems 30 minutes

Review CDC's About NHSN webpage for a basic understanding of what NHSN is and how it is used.

a. Other than providing data on HAIs, what else can NHSN be used for?

b. What types of facilities can use NHSN?

c. Which care settings report the most data to NHSN?

Activity 4: Wastewater surveillance 15 minutes

Review the DHS webpage on the Wisconsin Wastewater Monitoring Program.

a. List three ways wastewater monitoring can help improve public health.

b. Describe the current SARS-CoV-2 concentration in your area. Note: If your exact city, township, or jurisdiction is not listed, select the nearest location listed.

Activity 5: Disease reporting 30 minutes

Visit the DHS "Disease Reporting" webpage and review Wisconsin's communicable disease reporting requirements.

a. True or false: Cases of *Candida auris (C. auris)* must be reported as a category I communicable disease.

b. Name any category II communicable disease or notifiable condition in which a source investigation by local or state health department is needed.

c. Which communicable diseases or notifiable conditions have you worked with in your role?

Additional Resources

The following are optional readings, articles, and other resources for information on the topics covered in Workbook 3.

Laboratory

- Read the CDC Clinician Brief: Clinical Laboratories' and Infection Preventionists' Roles in the Search for and Containment of Vancomycin-Resistant *Staphylococcus aureus* for key points and background information on clinical laboratories' role in the diagnosis of cases.
- Read the CDC's Introduction to Public Health webpage for an overview of public health laboratory infrastructure, including the core functions of state public health laboratories, laboratory safety, and procedures for submitting samples for testing.
- Watch a video providing basic training and education on testing methods and application for diseases including Lyme disease and viral hepatitis.
- The Association for Professionals in Infection Control and Epidemiology's *The Infection Preventionist's Guide to the Lab* provides infection preventionists with a basic understanding of various lab tests and microbiology.

Disease surveillance and reporting

- See the CDC factsheet on NHSN.
- See the DHS *Reportable Communicable Disease Conditions in Wisconsin* reference guide.

Wastewater surveillance

- See the CDC factsheet on wastewater surveillance systems.
- See the CDC Morbidity and Mortality Weekly Report article on wastewater surveillance for tracking influenza and respiratory syncytial virus in Wisconsin.
- Review the U.S. National Academies of Sciences, Engineering, and Medicine's report on the value of and potential for using wastewater for surveillance beyond COVID-19.

Outbreak investigations and patient notification

See the CDC Healthcare-Associated Infection (HAI) Outbreak Investigation Toolkit for resources to systematically collect data during an outbreak.

Workbook Key

Activity 1: Introduction to laboratory

(a.) Laboratory testing helps inform clinical decision making and detect emerging pathogens, multidrug-resistant organism, and outbreaks in health care facilities. Lab results also indicate which types of precautions are needed within the health care environment. (b.) Colonization screening detects microorganisms that are not currently causing infection, but pose a risk of transmission to others. (c.) Surveillance is a method of collecting data, analyzing intervention effectiveness by reviewing data, and taking appropriate action to reduce risk. (d.) True.

(e.)

b	Outbreak
d	Incidence rate
a	Infection rate
e	Standardized infection ratio (SIR)
c	Surveillance

Activity 2: Laboratory basics

(a.) They are used to provide information and guide decisions. (b.) True. (c.) True. (d.) Quantitative. (e.) Urinalysis. (f.) Some type of infection.

Activity 3. Surveillance and data collection systems

(a.) Track blood safety errors; track health care personnel influenza vaccine status; track infection control adherence rates. (b.) Acute care hospitals (including critical access hospitals); long-term care facilities (nursing homes and assisted living facilities); psychiatric hospitals; rehabilitation hospitals; outpatient dialysis centers; ambulatory surgery centers. (c.) Hospitals and dialysis facilities.

Activity 4. Wastewater surveillance

(a.) Serve as an early warning of increasing COVID-19 activity in communities; inform the public of current COVID-19 levels in their community so that they can take steps to avoid COVID-19; alert health care providers about increasing COVID-19 levels so they can prepare for expected surges.

Activity 5. Disease reporting

(a.) False. (b.) Examples: Syphilis, salmonellosis, mumps, listeriosis, legionellosis, E. coli.