Infection Preventionist Lunch and Learn

June 10, 2025

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Healthcare-Associated Infections (HAI) Prevention Program

WISCONSIN DEPARTMENT *of* HEALTH SERVICES

Series Objectives

- Encourage learning, growth, and networking.
- Provide non-regulatory education and information.
- Discuss topics relevant to new infection preventionists (IPs).

Respiratory Protection

Kelli Humber, MPH
WisCon Public Sector
June 10, 2025

Wisconsin Occupational Health Laboratory
WISCONSIN STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN–MADISON

Objectives

General Awareness to Understand

- Respiratory protection program elements
- Respirator uses
- Types of Respirators

Additional Information

- Medical evaluations
- Importance of fit testing
- Proper use, care, storage and inspection of your respirator

Purpose

- This purpose of this training is to provide you with a high level overview of what is needed for a respiratory protection program and other elements important for respiratory protection.

- Reminder: if a respirator is not worn properly, the respirator will not protect you

- Respiratory protection training needs to be conducted every year

Respirators - When and Why

- Respiratory protection is required when employees are in areas where engineering controls are not able to protect employees' health from:
    - Oxygen deficiency/enrichment
    - Harmful dust, fogs, fumes, mists, gases, smokes, sprays, vapors or particulate biological agents
- Inhalation is the most direct route to the bloodstream

Situations When Respiratory Protection May Be Used

- Required when exposure levels are above OSHA's Permissible Exposure Limit (PEL) or other applicable exposure limits
- During installation of engineering or work practice controls to reduce exposures
- Prevent exposure to healthcare related hazards including bacteria, viruses, and chemicals.

Image :Respiratory Protection - Overview | Occupational Safety and Health Administration

Respiratory Protection Program Elements

- **Conduct a workplace risk assessment to determine the necessity of a RPP per 1910.134**

- **Program elements:**
  - Written Program
  - Respirator Selection
  - Medical Evaluations
  - Fit Testing
  - Proper Use of Respirator
  - Respirator Maintenance
  - Employee Training
  - Program Evaluation

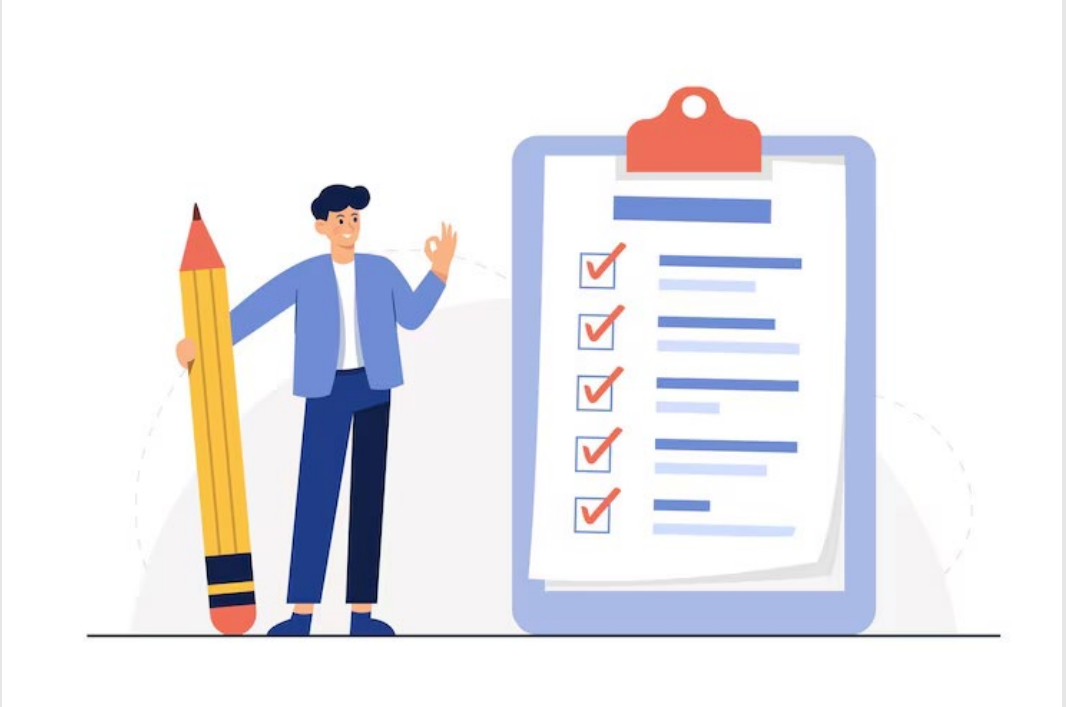


Image: Freepik by JComp

Respiratory Hazards

- Must be evaluated by a manager, supervisor, and/or the Respiratory Protection Program Administrator
  - When an employee is first hired or changes jobs
  - When there is a change in the workplace that has the potential to introduce a new health hazard

Image: Freepik by katemangostar

Written Program

- Administered by a trained program administrator
- Have worksite specific procedures
- Copies of the program must be kept by employer
- Other records to be maintained:
  - Medical Evaluations
  - Fit test records

Medical Evaluation

- Medical evaluations must be provided at ***no cost*** to the employee
- Questions from ***Appendix C*** of the Respiratory Protection standard must be answered in the medical evaluation
- Medical evaluations must be conducted by a physician or other licensed healthcare professional (PLHCP)
- Medical evaluations must be done ***before*** fit testing can occur

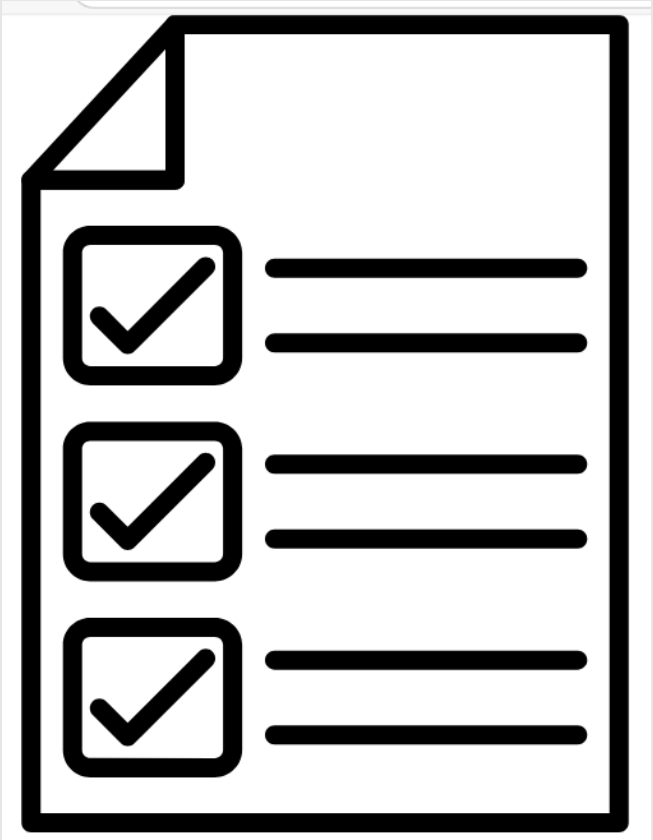


Image: AdobeStock 567346896%20

Medical Evaluation

- Workers need to be medically reevaluated when:
  - The medical evaluation expires
  - Workers have a change in health condition
  - Workers are experiencing adverse health symptoms
  - A medical professional, supervisor, or respirator program admin deem it necessary.

Source: Videoplasty.com, CC BY-SA 4.0, via Wikimedia Commons

Respirator Selection

- Selection is based on the respiratory hazards workers are exposed to, with industrial hygiene sampling to confirm respirator choice(s)
- Only NIOSH certified respirators should be used

Mask vs. Respirator

Mask

- Generally referred to as a surgical mask. Used as a physical barrier to protect the user from splash hazards of large droplets of blood or body fluids.
- Surgical masks are not designed or certified to prevent the inhalation of small airborne contaminants.

Respirators (Negative Pressure)

- Designed to reduce exposure to airborne contaminants.
- Come in various sizes and must be individually selected to fit the wearer's face to provide a tight seal.

Images Source: NIOSH Understanding the Difference, 2018

Surgical Particulate Facepiece Respirators

- Approved by both NIOSH and the Food and Drug Administration (FDA)
- Provides some protection against fluids/splashes

CONSIDERATIONS FOR RESPIRATOR SELECTION IN HEALTHCARE*

	N95 FFR	Surgical N95 FFR	Loose-Fitting PAPR	Elastomeric
Complies with OSHA 1910.134 (RPP Standard)	X	X	X	X
Requires Hazard Evaluation	X	X	X	X
Requires Proper Use Training	X	X	X	X
Requires Fit Testing	X	X		X
Can be used with Sterile Field		X	?†	
Can be used for High-Risk Aerosol-Generating Procedures (additional PPE may be required)		X	X	X

Image Source: NIOSH Considerations for Respirator Selection in Healthcare (2017)

Respirators

- Type and configuration determines
  - Protection against agents/atmospheric conditions
  - Assigned protection factors from 10 – 10,000
- Protection is based on the respirator being worn <u>correctly</u>

PAPR

Filtering facepiece
aka dust mask

Half mask

Full face

Image Source: OSHA Safety and Health Topics, Respiratory Protection, accessed 07/10/2023

Air Purifying

- Air purifying
  - A respirator equipped with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element

Images: NIOSH

Types of Air-purifying Respirators

- Air-purifying – negative pressure - cartridges/canisters are color coded to identify their protective abilities
- Filtering facepiece (dust mask)
- Elastomeric
  - Half-mask
  - Full face

Filtering facepiece (dust mask)

Half-mask

Full face

Images Source: NIOSH Types of Respiratory Protection, September 2019

Nine Classes of Filters

Particle filtering efficiency

- Filters out particles sized 0.3 µm at the following efficiencies:
  - 95%
  - 99%
  - 99.97% (100%)

Resistance to oil

- N, Not resistant to oil
- R, Somewhat resistance to oil
- P, oil Proof

Image Source: NIOSH Respirator Filter Classes (2018)

Regardless of the Type of Respirator

- Manufacturer's warnings must be read and followed including cleaning and storage
    - This information is required for NIOSH certification and includes:
        - Approved respirator protection uses and what the respirator doesn't protect against
        - Instructions
        - Use limitations
        - Storage and shelf life
        - Fitting instructions, including how to conduct a user seal check / fit check

Fit Testing

- Qualitative Fit Test
  - Relies on senses (taste, small, or involuntary cough) to detect agent

- Quantitative Fit Test
  - Uses an instrument to provide numerical measurements of face seal leakage

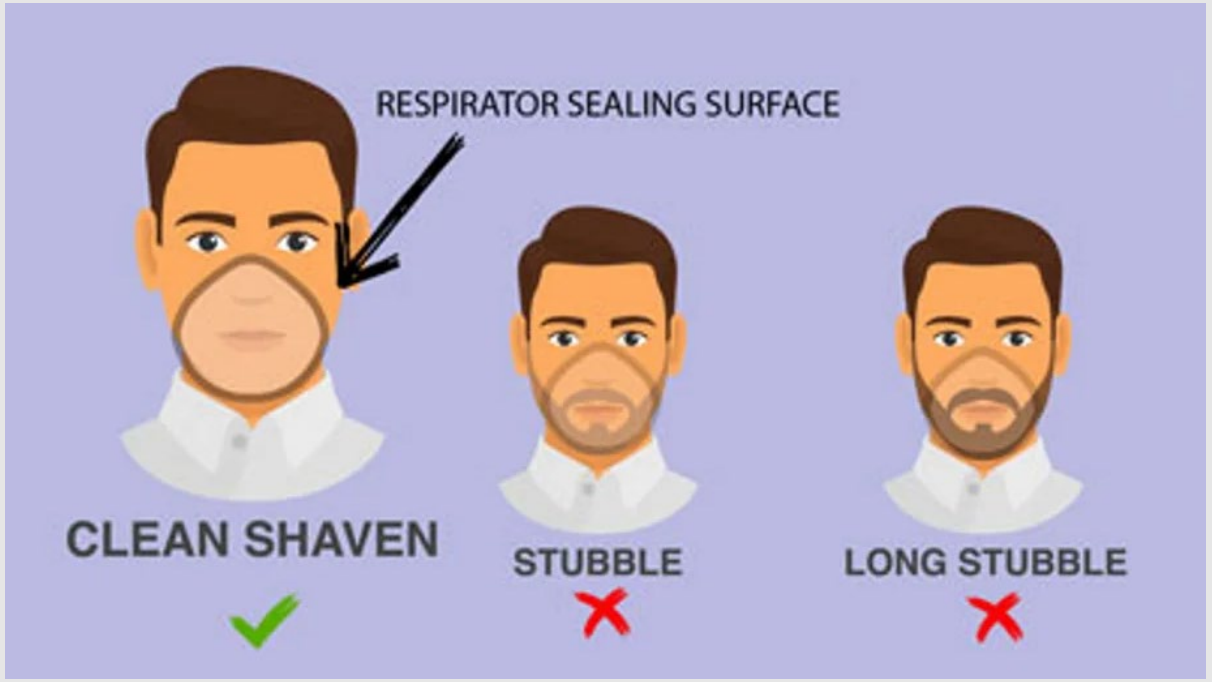
Tight Fitting, Negative Pressure

- Tight fitting, negative pressure – the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator

- Fit testing demonstrates that user can create a seal between their face and the respirator such that “contaminated” air passes through the filters and “clean” air is inside the respirator

Fit Testing Reminders

- Employees must maintain a tight seal between the face and respirator to ensure proper protection
- Possible interferences to maintaining a tight seal:
  - Facial hair
  - Facial scars
  - Makeup/lotions
  - Jewelry
  - Glasses or goggles
  - Other PPE



Facial Hairstyles and Filtering Facepiece Respirators (cdc.gov)

Training

Before Donning Your Filtering Facepiece Respirator (FFR)

- Always use a new FFR
- Clean and thoroughly dry your hands
- Inspect your FFR. If it appears damaged, dirty, damp or the straps are stretched, do NOT use it

Training

Putting on a FFR

Proper Strap Placement

- General instructions:
  - With one hand, hold the respirator to your face
  - While holding the respirator in place, place the top strap near the crown of your head and the bottom strap at the back of your neck

Images: NIOSH, How to Wear Your Filtering Facepiece Respirator

Training

- General instructions:
  - Place your fingertips from both hands at the top of the nose piece. Press down on both sides of the noise piece bar to mold it to the shape of your nose

Image: NIOSH, How to Wear Your Filtering Facepiece Respirator

Fit Check Vs Fit Testing

Required for tight fitting (negative pressure) respirators

Fit Check Performed

- By the user every time they put on a respirator –required by the respiratory protection standard
- Two different types of checks:
  - Negative pressure
  - Positive pressure

Fit Testing Performed

- Yearly
- Change in:
  - Type/model/size of respirator
  - Employee's physical appearance that could affect respirator fit
    - Facial scarring
    - Dental changes
    - Cosmetic surgery
    - Obvious change in body weight

Fit Check aka User Seal Check

- There are two fit checks you can perform:
  - Negative Pressure Check
    - The respirator should remain “collapsed” on your face
  - Positive Pressure Check
    - Your mask should puff out slightly, and remain puffed

Negative Check

- Gently place your hands over the FFR. **Breathe in** sharply and use the bottoms of your hands to block the paths where air could enter the facepiece.
- If the FFR is sealed tightly, the facepiece will slightly collapse under the negative pressure.
- If the facepiece does not collapse, or you feel air leaking beneath, the FFR is not snug.
- Adjust the FFR and try again.

Image: NIOSH, How to Wear Your Filtering Facepiece Respirator

Positive Check

- Gently place your hands over the FFR, covering as much as possible, then **breathe out**.
- If you feel air leaking out from the edges, or if you are wearing glasses and they fog up, the FFR is not snug.
- Adjust the FFR and try again.

Image: NIOSH, How to Wear Your Filtering Facepiece Respirator

Doffing Your FFR

- **Do not touch** the front of your FFR. It may be contaminated.

Image: NIOSH, How to Wear Your Filtering Facepiece Respirator

Doffing Your FFR, cont.

- Remove by first pulling the bottom strap over the back of your head, followed by the top strap—all **without touching the respirator**.

Image: NIOSH, How to Wear Your Filtering Facepiece Respirator

Doffing Your FFR, cont.

- Discard the used respirator in a waste basket.
- Thoroughly wash your hands.

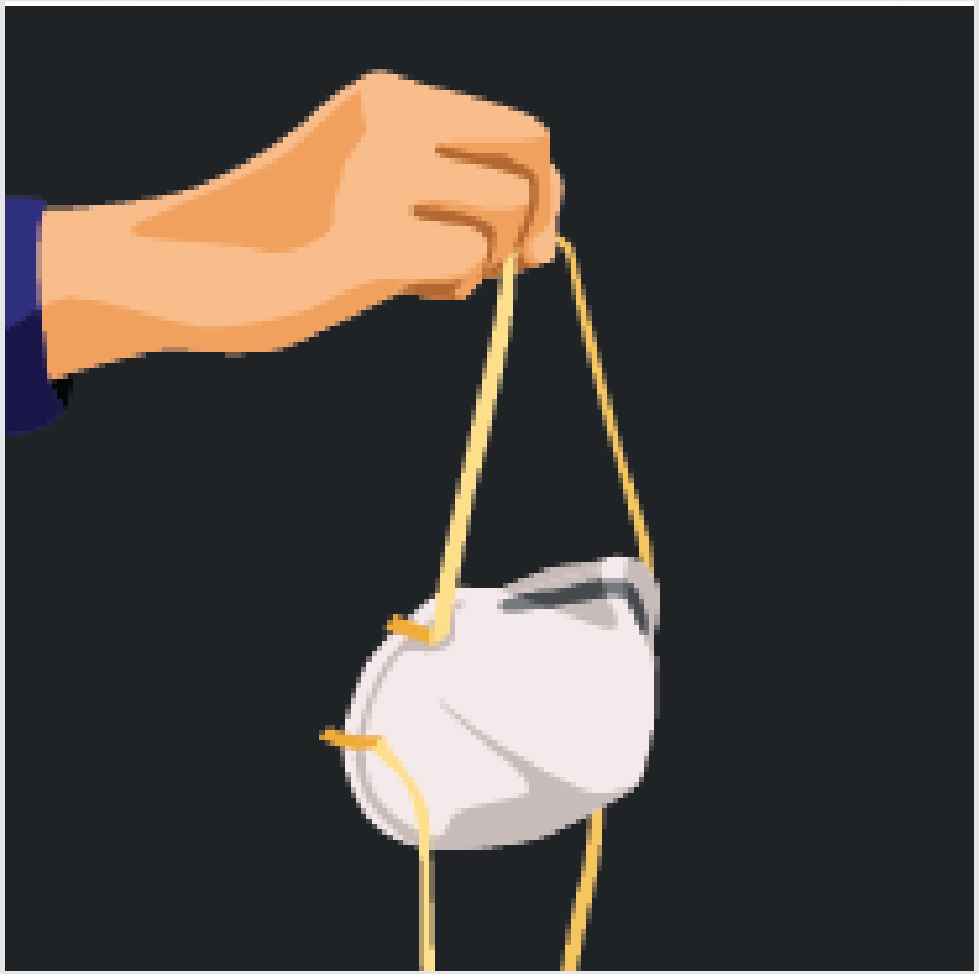


Image: NIOSH, How to Wear Your Filtering Facepiece Respirator

Storing Your Respirator

- If your elastomeric respirator uses cartridges or filter(s), store the cartridges or filters in a separate container from the facepiece so that the cartridges do not contaminate the respirator facepiece.
- When using a dust mask (N95) they should be worn once and then discarded.
- Respirators must be protected from :
  - Extremes of heat or cold,
  - Sunlight,
  - Dust,
  - Excessive moisture, or
  - Damaging chemicals

Recordkeeping

Records Retention:

- Medical clearance evaluations must be kept for 30 years after termination of employment
- Fit test records need to be kept until a new fit test is completed.
  - Info in the fit test record must include:
    - Employee name or ID
    - Type of fit test performed
    - Specific make, model, style, and size of respirator tested
    - Date of test
    - Pass/ fail result
- Copy of current written program

Accessibility of Records:

- All retained written materials must be made available upon request to affected employees and OSHA.

Program Evaluation

Annual Program Evaluation:

- Conduct annual (or as needed) evaluations to ensure program effectiveness.

Employee Consultation:

- Regularly consult employees who use respirators to:
  - Assess their views on program effectiveness.
  - Identify and correct problems.

Assessment Factors:

- Evaluate the following (but not limited to):
  - Respirator fit (including impact on workplace performance).
  - Appropriate respirator selection.
  - Proper respirator use.
  - Proper respirator maintenance.

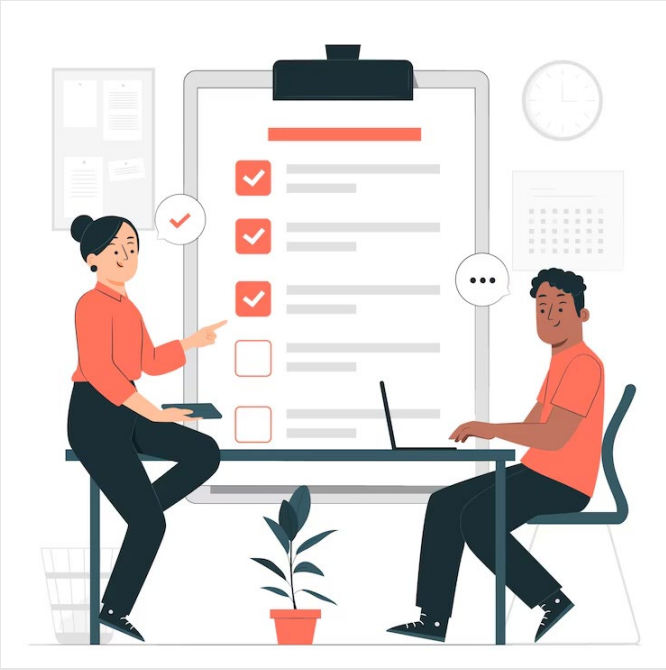


Image: Freepik by StorySet

Image: Pixabay, Questions Answers Signage · Free Stock Photo

THANK YOU!

Wisconsin Safety and Health Consultation Program Public Sector Consultation

Email: PublicSectorConsulting@slh.wisc.edu

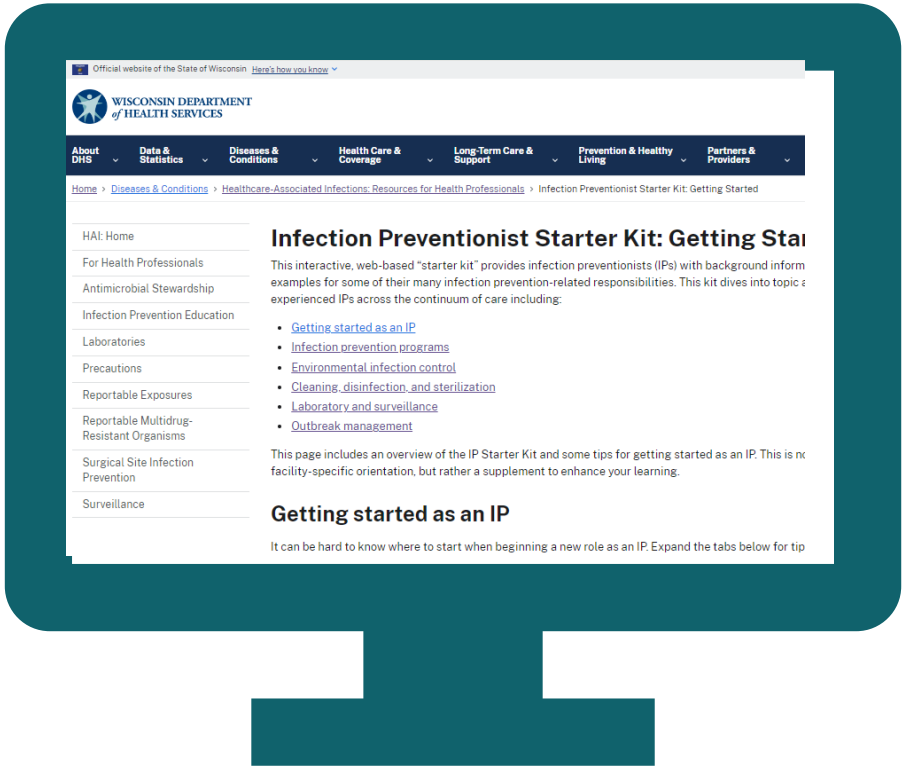
Wisconsin Occupational Health Laboratory
WISCONSIN STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN–MADISON

Additional Resources

- Healthcare-Associated Infections: Respiratory Protection Programs webpage
- Occupational Safety and Health Administration's (OSHA) Respiratory Protection Standard (29CFR 1910.134)

IP Starter Kit

- Interactive, web-based resource
- Background information, resources, and templates
- Covers topics applicable to IPs across care settings



Contact the HAI Prevention Program

 **Email:** dhswihaipreventionprogram@dhs.wisconsin.gov

 **Phone:** 608-267-7711

 **Website:** www.dhs.wisconsin.gov/hai/contacts.htm

Send Questions and Topic Suggestions

Email your ideas to Ashley O'Keefe

Ashley.OKeefe@dhs.wisconsin.gov

Upcoming Lunch and Learn Session

No session in July

Date: August 12, 2025

Topic: Immunizations