

**Infection Prevention and Control
Skills Station Series**

**Use of Simulation to Promote Appropriate Selection and Use of Personal Protective Equipment
(PPE)**

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The contents of this packet include fundamental core infection prevention and control concepts. Simulation scenarios outlined in this packet were developed by the Kentucky Infection Prevention Training Center (KyIP) using fundamental core infection prevention and control concepts in collaboration with the Center of Diseases and Control's (CDC's) Project Firstline training initiative.

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INTRODUCTION TO PROJECT FIRSTLINE

About Project Firstline

Project Firstline is a national collaborative led by the U.S. Centers for Disease Control and Prevention (CDC) to provide infection control training and education to frontline healthcare workers and public health personnel. The Kentucky Infection Prevention Training Center is proud to partner with the Kentucky Department of Public Health and Project Firstline. Funding for the Kentucky Infection Prevention Training Center (KyIP) is provided through the Centers for Disease Control and Prevention (CDC) Epidemiology and Laboratory Capacity (ELC) Enhancing Detection grant supplement award to the Kentucky Department for Public Health (KDPH). CDC is an agency within the Department of Health and Human Services (HHS). The contents of this simulation skill packets do not necessarily represent the policies of CDC or HHS and should not be considered an endorsement by the Federal Government.

Project Firstline provides innovative and accessible infection control education for all frontline healthcare workers – so they can protect their patients, their coworkers and themselves from infectious disease threats in health care. As a collaborative, Project Firstline brings together more than 75 healthcare, academic, and public health partners to reach a wide range of healthcare audiences and settings across the country. Project Firstline offers educational resources in a variety of formats to meet the diverse learning needs and preferences of the healthcare workforce. Resources are designed using adult learning principles, educational best practices, CDC recommendations, and the science that informs them.

Learn more about Project Firstline: https://youtu.be/PUjZlV_lw-I

The Concept of Infection Control

The goal of everything we do in infection control, for any disease, is to keep people from getting sick. The goal of Project Firstline is to make sure you have the infection control knowledge that you need and deserve to keep yourself, your patients, your colleagues, and your family safe.

Link to: What is the goal of infection control?

<https://www.cdc.gov/infectioncontrol/projectfirstline/videos/Ep1-Goal-LowRes-New.mp4>

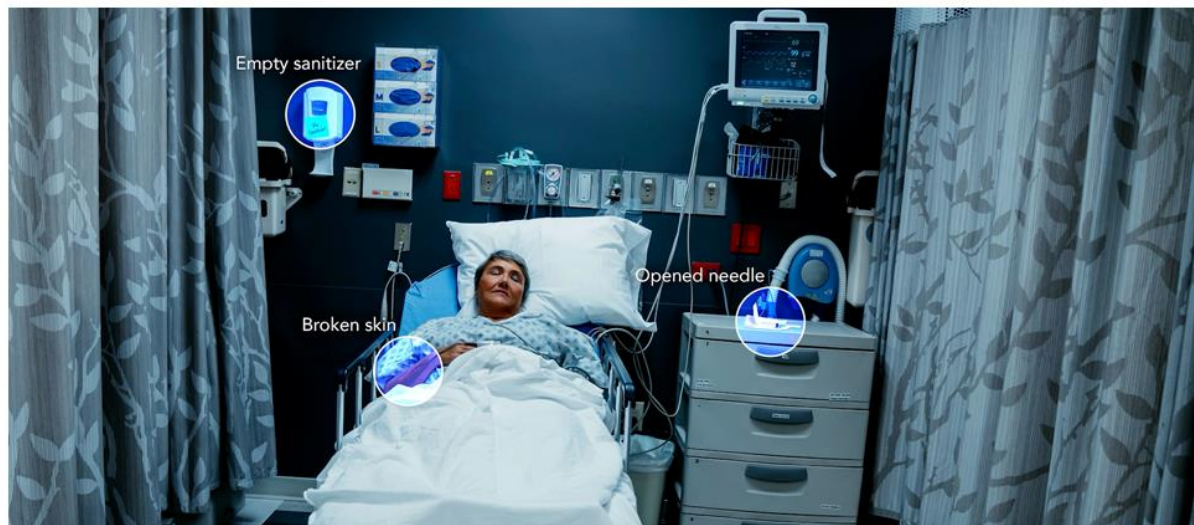
Risk Recognition

Risk recognition is seeing the potential for a problem to happen. You see risk every day at home and at work, and you take steps to minimize it. You can help control infections in healthcare by learning to recognize the risks for germs to spread and cause infection, and not letting it happen. Healthcare is a unique setting – we consider germs differently in healthcare than we do in other places, like at home or in the community. The work that we do in healthcare presents many opportunities for germs to spread. Everyone, no matter your training or role, can recognize an infection risk and take action to keep germs from spreading.

No two days are the same in health care but caring for and protecting patients is always the top priority. This includes protecting patients from getting infections while they are receiving care. With a foundational knowledge about germ spread and the “why” behind infection control, you can recognize infection risks and make the right decisions to prevent people from getting sick, regardless of what the day brings.

Recognize Infection Risks in Health Care

[Español \(Spanish\)](#) | [Print](#)



Source: [Recognize Infection Control Risks in Health Care](#) | [Project Firstline](#) | [CDC](#)

Explore Project First line’s educational content and resources to learn more about **where germs live in healthcare settings** and how to **recognize the risk** for them to spread – which is the first step in understanding when to take action to protect your patients and yourself from infections.



Link to risk recognition in healthcare:

<https://www.cdc.gov/infectioncontrol/projectfirstline/videos/RecognizeRisks-LowRes.mp4>

As you're going about your workday, there are certain things that you are likely already doing to reduce the risk of spreading germs, like cleaning your hands between tasks or cleaning and disinfecting shared medical devices. *Standard Precautions* are the things you are doing, every day, for every patient, to keep germs from spreading. Because risks will always exist in healthcare settings, we follow these Standard Precautions to protect patients and ourselves — regardless of whether you know a patient has a specific infection — because often you do not know.

Recognizing infection risks goes beyond Standard Precautions. Because no two days in health care are ever the same, there will be moments when healthcare workers might need to apply infection control recommendations to situations that are not usually described in guidelines. That is why understanding how germs spread and make people sick is so helpful — **it allows you to recognize infection risks throughout your workday, no matter the moment.**

What are Reservoirs?

“Reservoirs” are the places on, in our bodies, and in the environment where germs live. Germs frequently spread between and among these reservoirs.

Four reservoirs in the human body that are important for infection control are

1. The skin;
2. The gastrointestinal (GI) system or “gut”;
3. The respiratory system; and blood.

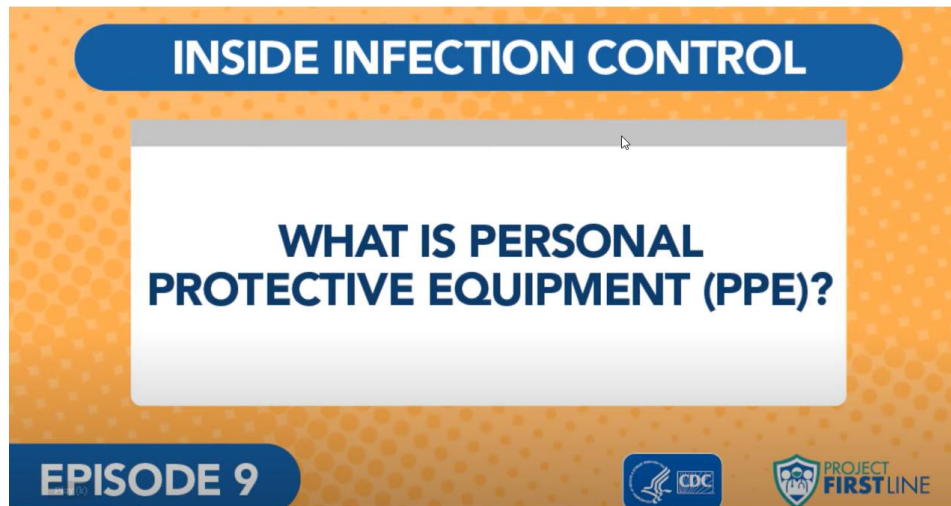
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Understanding where germs live helps us recognize where there is risk for them to be spread, and helps us understand why infection control actions work to stop them from spreading and making people sick.

Project Firstline Vlogs: Personal Protective Equipment

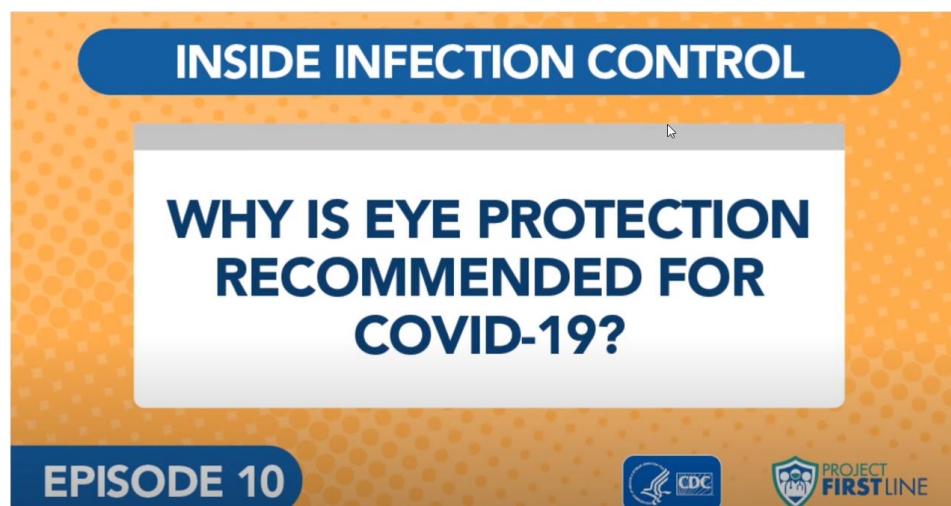
This short (4:23 minute) vlog, Dr. Abby Carlson provides an overview of personal protective equipment (PPE), the gear used to protect yourself, your patients, and everyone in the healthcare environment.

[Episode 9: What is Personal Protective Equipment \(PPE\)? - YouTube](#)



This short (6:02 minute) vlog introduces the concept that protecting your eyes is an important part of infection control. In this episode, Dr. Abby explains why eye protection is part of the recommended personal protective equipment (PPE) for COVID-19 and other pathogens transmissible through the respiratory route.

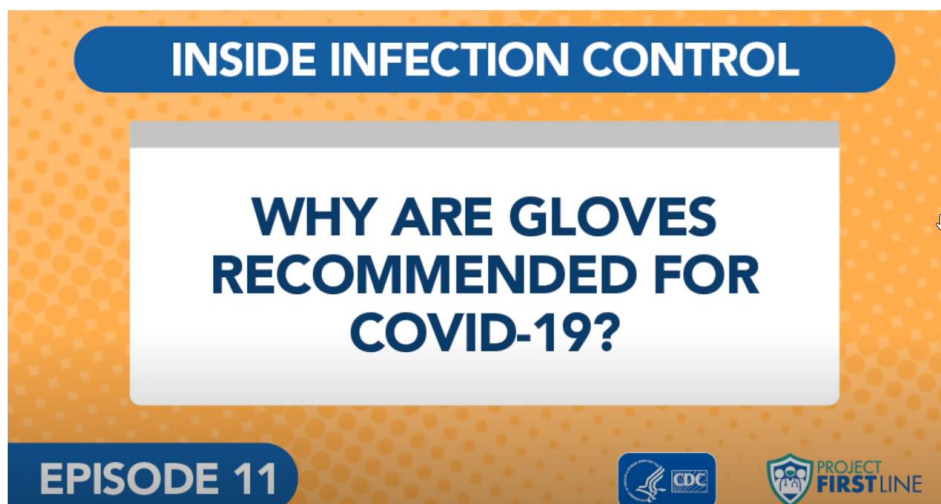
[Episode 10: Why is Eye Protection Recommended for COVID-19? - YouTube](#)



Personal Protective Equipment Packet

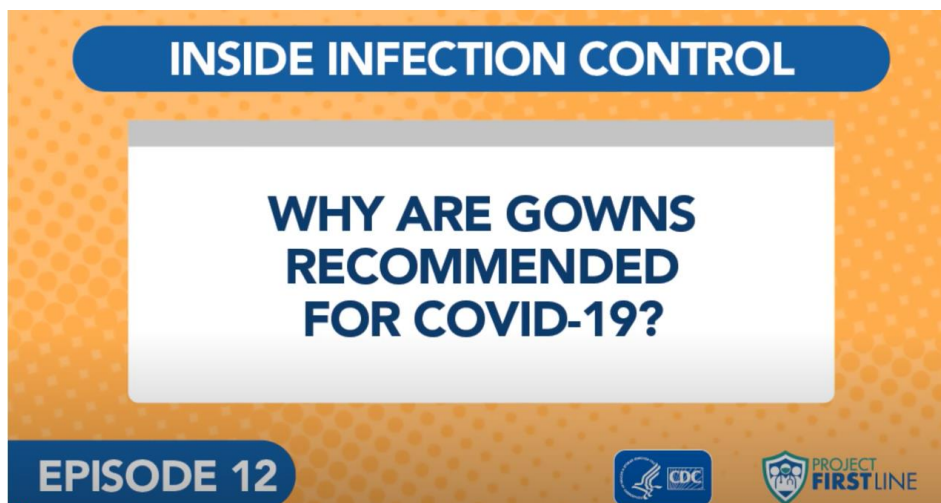
In Episode 11, this short (8:52 minute) vlog shows Dr. Abby talk about the importance of gloves as part of personal protective equipment. The focus of this segment is primarily on glove use as part of COVID-19 care, but basic information regarding glove use is included and is relevant for other patient care situations.

[Episode 11: Why are Gloves Recommended for COVID-19? - YouTube](#)



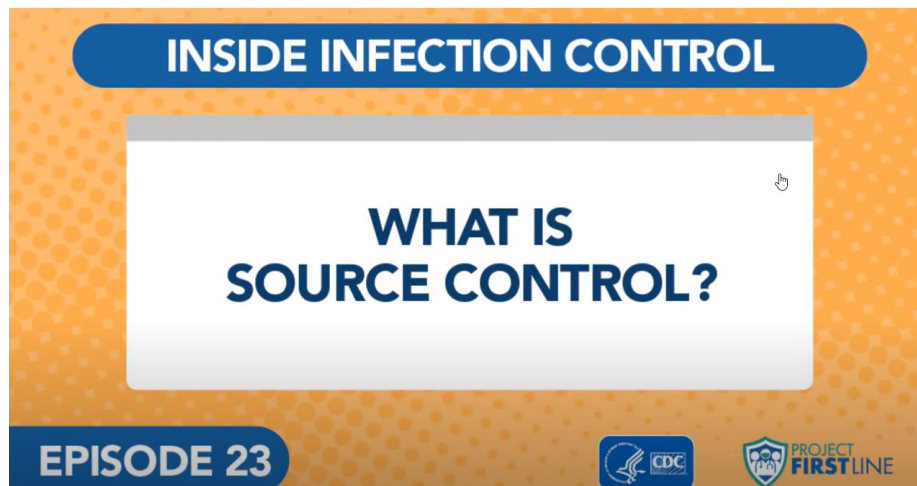
In Episode 12, the short (6:40 minute) vlog, introduces the importance of gown use as part of personal protective equipment. The focus of this segment involves COVID-19, but the basics of gown use are applicable in settings involving other transmissible pathogens.

[Episode 12: Why are Gowns Recommended for COVID-19? - YouTube](#)



Episode 23 is another short (4:24 minute) vlog that introduces how our ability to stop germs at their source is one of the best things we can do for infection control. In this episode. Dr. Abby explains source control and how to stop germs before they can make their way to other people. This segment helps learn more about the importance of covering your nose and mouth with a mask that fits well for COVID-19, and other pathogens transmissible through the respiratory route, and how masks can protect you, patients, and coworkers.

[Episode 23: What is Source Control? - YouTube](#)



Health Equity Guiding Principles for Inclusive Communication

The contents of this packet incorporates the CDC's Health Equity for Inclusive Communication. These principles are intended to help health communicators ensure that their communication products and strategies adapt to the specific cultural, linguistic, environmental, and historical situation of each population or audience of focus.¹



Link to Spanish resources: <https://www.cdc.gov/infectioncontrol/projectfirstline/es/index.html>

INTRODUCING SIMULATION AS A TOOL IN INFECTION PREVENTION EDUCATION AND TRAINING

Every day one out of every 31 hospitalized patients end up with a healthcare-associated infection (HAI).² This leads to an increased number of days hospitalized, a higher risk of mortality, and increased cost to the healthcare system. Unfortunately, HAIs have occurred in virtually all healthcare settings and have affected patients, residents, and healthcare workers. The ongoing rates of HAIs coupled with the challenges posed by the SARS-CoV-2 pandemic have underscored gaps in infection prevention practice and the need to refocus on basic principles of infection prevention.

The goal of the Infection Prevention Skills Stations Series is to provide opportunities for healthcare personnel to review basic infection prevention core practices and apply them through a variety of simulated learning experiences. Simulation is a process where situations encountered during healthcare can be represented, demonstrated, or performed using a variety of educational techniques. This approach serves as a connection between traditional classroom learning with real-world clinical experiences. The benefits of simulation learning include a range of learning opportunities, the ability to make mistakes without harm; the chance for evaluation and feedback, and the opportunity to practice a skill hands-on until proficient, and that is important for all healthcare workers.³ Participants in simulation can apply knowledge and critical thinking in situations that occur in all settings where healthcare is delivered including acute, long term, and ambulatory care and can be used with novice and experienced learners.^{4,5} The key is to make simulations relevant to the individual.

This Skills Station will introduce you to the concept of simulation in healthcare, specifically in the areas of infection prevention (IP) and focused on Personal Protective Equipment. This simulation is designed to reach new and experienced learners in healthcare and seeks to create a fundamental understanding of infection prevention practices using scenarios that will show how various healthcare interactions, even those seemingly small, can lead to devastating complications and negative outcomes. Our hope is that this simulation can be used routinely as part of healthcare education and training, and ultimately decrease infection associated with patient care.

This Skills Station is organized into the following six sections:

1. The name or topic of the simulation is aligned with areas of practice or outcomes included in the Centers for Disease Control and Prevention (CDC) Core Infection Prevention and Control Practices for Safe Healthcare Delivery in all Settings—Recommendations of the HICPAC.⁶
2. Learning objectives are outlined at the beginning of each Skills Station to define the problem and outline intended outcomes for the learner.

3. Each station will be structured into Pre-brief, Simulation, and Debrief segments and designed to take approximately one hour. Now, remember your audience. For novice and beginner learners, education or pre-briefing may be better assigned prior to coming into the simulation and having a quick recap to Pre-brief before the simulation session. For more proficient or expert learners, the Pre-brief may only need to occur right before the simulation begins. Debriefing is the most critical part of the process and should be the segment where sufficient time is devoted for engagement, interaction, and reflection. The Skills Stations have been structured with information for each section to standardize and streamline the process. A variety of simulation approaches have been incorporated across the Series and include video demonstrations, role playing scripts, games, group interactions, and instructions for return demonstrations.
4. A list of supplies needed for the individual Skills Station is provided. If expired supplies are used, it is vital that those supplies remain separated from supplies that will be used in actual patient care situations.
5. The workflow process for each Skills Station is included to help organize the learning session. A suggested time flow for the simulation, and specifics regarding each of the segments, is included in the section below.
6. Evaluation of performance of the learners as well as their perceptions of the experience are important to capture. This information may assist with additions or improvement to the process and serve to demonstrate value to the use of simulation for infection prevention practice for front-line healthcare workers.

TITLE: USE OF SIMULATION TO PROMOTE APPROPRIATE SELECTION AND USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

LEARNING OBJECTIVES:

At the end of this Skill Station, participants will be able to:

- a. Identify patient care situations where eye protection is appropriate
- b. Select gown type appropriate for a variety of fluid exposure situations
- c. Identify correct order of donning and doffing gown, gloves, eye protection/face shield, respiratory protection
- d. Identify when to perform hand hygiene when donning and doffing personal protective equipment

PRE-BRIEF (BACKGROUND)

As we move through these objectives, the information is structured into three sections. The Pre-Brief section provides basic information that establishes background concepts important when outlining the 'why' behind the content. The content is divided into small bite-sized learning opportunities provided in a question and answer format. The second section will contain simulation examples. These examples seek to demonstrate application of the content and visually demonstrate the reason it is important for healthcare workers to understand the rationale, or the 'why', behind infection prevention measures. The last section is the De-Brief. During this last section, participants are guided through discussions that dive deeper into the knowledge application challenges and barriers and help participants take steps enabling them to put knowledge into action that is scalable and transferrable to various situations and care settings.

What is considered PPE?

PPE refers to a variety of barriers such as gloves, gowns, lab coats, face shields or masks and eye protection, and respirators used alone or in combination, to protect mucous membranes, skin, and clothing from contact with infectious agents or from other hazards such as chemicals used in cleaning and disinfection (see chemical manufacturer's recommendations for specific type of PPE). PPE also include mouth pieces, resuscitation bags, pocket masks, or other ventilation devices. The selection of PPE is based on the nature of the patient/chemical contact and likely mode of transmission of the organism(s) involved. Occupational Safety and Health Administration (OSHA) defines PPE as "specialized clothing or equipment worn by an employee for protection against a hazard. A more complete review and definitions of types of PPE can be found in the OSHA Blood-borne Pathogens Standard.⁷ General work clothes, including uniforms and scrubs, are not intended to function as protection against a hazard are not considered to be personal protective equipment.

What are some requirements of the OSHA Blood-borne Pathogen Standard in relation to PPE?

The discussion regarding PPE and the expectations OSHA maintains are primarily included in the Blood-borne Pathogens Standard 29 CFR 1910.1030. This regulatory standard carries the force of law and is available at

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10051

Some of the basic requirements for PPE are included below:

- Appropriate PPE must be **provided at no cost** to employees when there is risk of occupational exposure. “Appropriate” (per OSHA) PPE means that the equipment does not permit blood or other potentially infectious materials to pass through or reach the employee’s work clothes or street clothes, undergarments, skin, or mucous membranes under normal conditions of use and for the duration of time the PPE will be worn.
- The employer shall ensure that the employee **uses** appropriate PPE.
- The employer shall ensure that PPE and **alternatives** (e.g., different sizes of gloves; hypoallergenic gloves, different protective levels of gowns) are **readily accessible** at the worksite.
- The employer shall clean, launder, and dispose of PPE, if reusable, at no cost to the employee.
- If a garment(s) is penetrated by blood or other potentially infectious material, it shall be removed immediately or as soon as feasible.
- All PPE shall be removed prior to leaving the work area and placed in appropriate container.⁷

How does the use of PPE apply to Standard Precautions?

Standard Precautions are based on the concept of treating all patients’ blood and/or body fluids as if they are infectious material. Standard Precautions include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered. Standard precautions are outlined in the CDC 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings.⁸ That guideline also includes a discussion of respiratory hygiene and cough etiquette. This helps clarify that use of masks and eye protection should be considered when it can be reasonably anticipated that the healthcare worker may be exposed to respiratory secretions when a patient coughs or when cough-inducing procedures are performed. Furthermore, mask and goggles, or face shield should be worn when there is any likely splash or spray of bodily fluids. These statements represent use of PPE as a barrier. The use of a respirator to prevent inhalation of respiratory particles is addressed in other documents including the most recent CDC Guidelines for Preventing

the Transmission of Mycobacterium tuberculosis in Health-Care Settings⁹, and more recently, information from the CDC regarding PPE use when addressing SARS-CoV-2 [COVID-19] (CDC,2020a).¹⁰ The use of PPE as part of the foundation for infection prevention and control practice is also included in the CDC's Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings.⁶

Elements of Standard Precautions involving PPE include:

- Performance of hand hygiene
- Use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure (see Sample Guide table below)
- Equipment or items in the patient environment likely to have been contaminated with infectious body fluids must be handled in a manner to prevent transmission of infectious agents (e.g. wear gloves for direct contact, contain heavily soiled equipment, properly clean and disinfect or sterilize reusable equipment before use on another patient).
- Proper respiratory hygiene and cough etiquette.
- Infection control practices for special procedures include the wearing of a surgical mask when placing a catheter or injecting material into the spinal canal or subdural space (i.e., during myelograms, lumbar puncture). This is for the protection of the clinician performing the procedure as well as for the safety of the patient. Such PPE should also be readily considered as a means of protecting the patient when performing other types of injections such as intra-articular medication administration. Think about how microorganisms can be transmitted and select and use PPE to prevent transmission.
- Education and training on the principles and rationale for these practices are critical elements of Standard Precautions because they facilitate appropriate decision-making and promote adherence when healthcare workers are faced with new circumstances.⁸

What is Respiratory Hygiene/Cough Etiquette?

This is a strategy targeted at patients and accompanying family members with undiagnosed transmissible respiratory infections, and applies to any person with signs of illness including cough, congestion, rhinorrhea, or increased production of respiratory secretions when entering a healthcare facility.

Elements of Respiratory Hygiene/Cough Etiquette include:

- education of healthcare facility staff, patients, and visitors

- posted signs, in language(s) appropriate to the population served, with instructions to patients and accompanying family members or friends
- source control measures (e.g., covering the mouth/nose with a tissue when coughing and prompt disposal of used tissues, using surgical masks on the coughing person when tolerated and appropriate)
- hand hygiene after contact with respiratory secretions
- spatial separation, ideally >6 feet, of persons with respiratory illness in common waiting areas when possible. Remember the mask component of respiratory hygiene.⁸

When should gloves be worn?

Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes, non-intact skin, or potentially contaminated intact skin (e.g., of a patient incontinent of stool or urine) could occur. Wear gloves with fit and durability appropriate to the task. Use disposable medical examination gloves for providing direct patient care or disposable or reusable utility gloves for cleaning the environment or medical equipment. Do not wear the same pair of gloves for the care of more than one patient. Do not wash gloves for the purpose of reuse since this practice has been associated with transmission of pathogens. Change gloves during patient care if the hands will move from a contaminated body-site (e.g., perineal area) to a clean body-site (e.g., face). Remove gloves after contact with a patient and/or the surrounding environment (including medical equipment) using proper technique to prevent hand contamination. Remember that gloves are worn primarily to protect the wearer. If gloves are not changed between patient contacts and hand hygiene performed after their removal, the patient may experience harm from this inadequate infection prevention practice.⁸

When should a gown be worn?

Wear a gown, appropriate to the task, to protect skin and prevent soiling or contamination of clothing during activities when contact with blood and other body fluids is anticipated. Wear a gown for direct patient contact if the patient has uncontained secretions or excretions. Remove gown and perform hand hygiene before leaving the patient's environment. Gowns made available for healthcare personnel should be selected based upon their abilities to withstand exposure to body fluids and also maintain their physical integrity during use. The Association for the Advancement of Medical Instrumentation (AAMI) publishes standards that outline the attributes of gowns.¹² These standards are used to define differing levels of gown according to those attributes. For example, Level 1 gown provides minimal protection against fluid exposure or splash while Level 4 gowns have a degree of fluid resistance. Gowns that lack a designated AAMI level should be evaluated prior to use to determine if they do, in fact, provide the level of protection that is

desired when worn for the designated purpose. CDC also maintains information regarding PPE attributes available at <http://wwwn.cdc.gov/PPEInfo/Standards/info/ANSI/AAMIPB70Class3>

What AAMI Standards are of particular importance when considering PPE selection?

The Association for the Advancement of Medicine Instrumentation (AAMI) has been at the forefront of developing standards for healthcare procedures and equipment for more than three decades. Proper protection guidelines for isolation gowning have been outlined in the CDC's 2007 Guideline for Isolation Precautions, OSHA's Blood-borne Pathogen Standard, and, the ANSI/AAMI Standard PB70 *Liquid Barrier Performance and Classification of Protective Apparel and Drapes Intended for Use in Healthcare Facilities* is the most recent objective benchmark for testing protective apparel.^{7,8,11} Adopted by the Food and Drug Administration (FDA), the AAMI standard gives purchasing managers, infection preventionists, and healthcare personnel a tool for gauging barrier properties like strike-through of blood and fluids, product testing, safety classification, and product labeling so they can make better informed product selections.

There are four tests that must be passed to meet AAMI standards:

- Spray Impact Penetration Test- simulates resistance to "arterial spurting," often seen when an artery or blood vessel is damaged during blood draws, I.V. changes, or injections. When checking the AAMI guidelines, the higher the number, the lower the fluid resistance.
- Hydrostatic Head Test- measures liquid penetration like that of a healthcare worker's arm or torso leaning or resting against contaminated fluids on a gown during procedures involving irrigation fluids, tissue fluids, or other liquids. The higher number means better resistance.
- ASTM F1670- used for testing drapes, measures resistance of materials used in protective clothing to penetration by synthetic blood at 2psi under ambient pressure.
- ASTM F1671- used for testing gowns, measures resistance in protective clothing to blood-borne pathogens by viral penetration at 2psi and ambient pressure.¹¹

The AAMI minimum performance levels range from 1 (least protective) to 4 (most protective). These levels apply to the product's critical zones. In gowns, the critical zone is the entire gown, but also includes seams, typically the weakest point, but excludes cuffs, hems and bindings.

- Level 1: *Minimal risk*, to be use used, for example, during basic care, standard isolation, cover gown for visitors, or in a standard medical unit
- Level 2: *Low risk*, to be use used, for example, during blood draw, suturing, in the Intensive Care Unit (ICU), or a pathology lab

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- Level 3: *Moderate risk*, to be use used, for example, during arterial blood draw, inserting an Intravenous (IV) line, in the Emergency Room, or for trauma cases
- Level 4: *High risk*, to be use used, for example, during long, fluid intense procedures, surgery, when pathogen resistance is needed or infectious diseases are suspected (non-airborne).¹¹

Learn more about AAMI and the relevant infection prevention and control standards by going to the website <http://www.aami.org>

When should face and eye protection be worn?

Protect the eyes, nose and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood and body fluids. Select masks, goggles, face shields, and combinations of each according to the need anticipated by the task performed.

During aerosol-generating procedures wear one of the following: a face shield that fully covers the front and sides of the face, a mask with attached shield, or a mask and goggles (in addition to gloves and gown). CDC guidance recommends that the following procedures should be considered as aerosol generating due to the creation of uncontrolled respiratory secretions:

- Open suctioning of airway secretions
- Sputum induction
- Cardiopulmonary resuscitation
- Endotracheal intubation and extubation
- Noninvasive ventilation (NIV) (e.g., BiPAP, CPAP)
- Bronchoscopy
- Manual ventilation¹²

There are limited data on whether other procedures may generate infectious aerosols and represent a transmission risk. These may include, but are not limited to:

- Nebulizer administration
- High-flow oxygen delivery

Since the emergence of SARS-CoV-2 (COVID-19), specific guidelines have been released for those healthcare workers caring for these patients. In addition to standard precautions, a NOISH-approved N95 or higher-level respirator and eye protection should be worn. In areas with high COVID-19 transmission, eye protection is to be worn with all patient care encounters.¹²

Is there a correct procedure for putting on and removing PPE?

According to CDC, there IS a correct way to don (put on) and doff (take off) PPE in order to protect the wearer from skin and clothing contamination, in the case of infectious agents. See the CDC guide in the resource section of this document. A key point is to remove the most contaminated item first (most often gloves), and decontaminate hands immediately.

One way to help healthcare personnel remove PPE in the correct order, is to think alphabetically—gloves, goggles (or face shield), gown, mask, respirator. Always finish the PPE removal process with hand hygiene. CDC provides step-by-step instructions and graphics available at [SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT \(PPE\) \(cdc.gov\)](https://www.cdc.gov/ppe/sequence-for-putting-on-personal-protective-equipment-ppe)

What are the final steps in removing PPE?

Designated containers for used disposable or reusable PPE should be placed inside the patient's room to facilitate disposal and containment of contaminated materials (exception may be airborne diseases where the respirator should be worn until outside of the room and then discarded appropriately). **Hand hygiene** is always done **between removal of individual pieces of PPE** as well as the **final step** after removing and disposing of all PPE.

SIMULATIONS

Workflow for Simulations

- Test all virtual connections including those with learners as well as video access
- Have all videos open and available for rapid and sequential access to minimize down time during the simulation
- Have resources available in PowerPoint format with ability to share screen with virtual learners, or have paper copies if needed for in-person learners. You want all learners to indicate their responses for the scenario questions during Simulations 1 and 3 so determine how to best capture this information. Polling questions, self-reported scores in Zoom chat, verbal responses, or written submissions are examples of methods that can be used.
- Go through each simulation and perform Debrief following all videos, discussions, and scenario responses
- Use the PEARLS Debriefing Tool (Resource section) to help guide the discussion. The goals with the debriefing include:
 - Learner reactions to the simulations
 - Clarifications, if needed
 - How the simulations impact current practices, or not
 - Challenges to performance
 - Additional comments from learners
 - Takeaway points
 - Key learning points (review the objectives)

Simulation #1: Use of eye protection when caring for a coughing patient

Description: This infection control simulation demonstrates the importance of wearing eye protection during a patient encounter. The video depicts an interaction between a healthcare worker, and their patient during a specimen collection procedure. The healthcare worker is wearing the appropriate PPE, and facing the patient, when the patient coughs and the healthcare worker is covered with respiratory droplets. A simulated patient cough is performed in the video using fluorescent powder to visually demonstrate dispersal of respiratory droplets during that coughing process. The patient also audibly coughs to add to the realism. Then the lights are dimmed and a black light is pointed toward the healthcare worker to demonstrate the landing of the respiratory droplets, with an emphasis on the contaminated face shield. In addition, the narrator can point out, while the healthcare worker did have on the appropriate PPE, her position directly in front of the patient provided an opportunity for maximum contamination during the cough occurring as part of specimen collection. Positioning of the healthcare worker can be of potential benefit in minimizing respiratory droplet contact during a cough—whether occurring naturally or when induced during a procedure such as specimen collection. Pathogens cannot be seen, so standard practices using appropriate personal protective equipment must be part of a safe approach to care. Use of visual elements during this simulation help develop the mental model for contamination and patient risk.

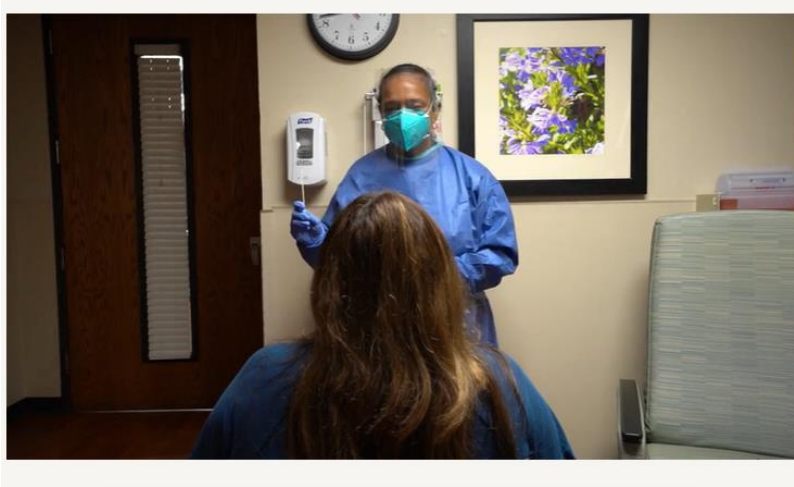
Audience: In-person or virtual learners.

Supply List: Simulation #1

- Video- Cough Simulation
- Equipment to show video in-person or virtually
- Live or virtual connection with learners
- Mechanism for learners to take notes
- PEARLS Healthcare Debriefing Tool for Simulation leader

Additional supplies for in- person simulation set up: (if applicable): PPE including gown, gloves, mask and face shield or goggles. If a simulated cough is to be performed, use an Ambu-bag with a connected endotracheal tube. Add approximately ½ teaspoon of fluorescent powder at the Ambu bag/endotracheal tube connection. Take care when squeezing the ambu bag because this projects the powder out the end of the tube. Keep this out of site until ready to use. When ready, position the bag and tube behind an individual who will pretend to cough. Time the squeezing of the bag to conform with the cadence of the cough. This will project small amounts of the fluorescent powder into the environment. A black light can be used to show how far those particles travel and where they land. A wet cloth with laundry detergent is helpful in cleaning up the powder once the demonstration is done. The person handling the powder may want to wear gloves and avoid wearing dark clothing.

Suggested time flow for the simulation: The video has no sound, so the facilitator can stop and start the 15 second video as needed.



Link to video: [Cough Simulation Video | https://www.dropbox.com/s/0n5h8bui8y96n8p/cough_simulation_08052022_lg.mp4?dl=0](https://www.dropbox.com/s/0n5h8bui8y96n8p/cough_simulation_08052022_lg.mp4?dl=0)

Debrief (Discussion):

What: The importance of face and eye protection when performing procedures and patient care activities that are likely to generate splashes or sprays of blood and body fluids.

Why: Viruses and bacteria can be transmitted through eye contamination via the conjunctiva and the draining connection to the oropharynx.

When: Patient care activities that are likely to generate splashes or sprays of blood and body fluids (e.g., nasopharyngeal swabbing with higher likelihood of producing a cough or sneeze).

How: Wear goggles, a face shield and mask (or combination of these items) to add barrier protection for eyes, nose and mouth.

As facilitators use this video, stop and point out visual evidence of contamination during the black light reveal. Ask for responses to the video. Use this opportunity to make it applicable to the learners' setting. For example, learners may work in long term care facilities so make the setting relevant to their work. You may also use this during educational opportunities for support personnel such as environmental services or other healthcare workers such as respiratory therapists. Make sure to include information specific to those learners to they can better understand and apply the important teaching points. This segment is also useful when introducing the concepts of how to put on (don) and how to remove (doff) PPE in ways that protect the healthcare worker. Graphics provided by CDC are included in the Resource PPE section of this skills station.

Simulation #2: Gown selection

Description: This infection control simulation demonstrates the different levels of gowns that are available, with emphasis on fluid resistance and penetration. Focal attributes of the gowns are shown over ambient music, allowing for narration along with the video. Demonstration shows how the higher the AAMI designation number on the gown, the more fluid resistance to the wearer. Levels of gowns for different types of tasks are also discussed. Please refer to the AAMI section of this packet for more detailed information on AAMI's role and determination of levels. Use of visual elements during this simulation help develop the mental model for contamination and patient risk.

Audience: In-person or virtual learners.

Supply List: Simulation #2

- Video- Gown Selection
- Equipment to show video in-person or virtually
- Live or virtual connection with learners
- Mechanism for learners to take notes
- PEARLS Healthcare Debriefing Tool for Simulation leader

Additional supplies for in- person simulation set up: (if applicable):

1. Gowns (unrated isolation and AAMI levels 1-4)
2. Table paper
3. Facial tissues
4. Spray bottle
5. Water for the spray bottle (may add food coloring for more emphasis)

Suggested time flow for the simulation: The video has ambient background music, so the facilitator can stop and start the 4 minute and 21 second video as needed, and narrate along with the video.



Link to video: [Gown Selection Video |
https://www.dropbox.com/sh/2hkzax08xpof4aj/AADKSaUdR_Xg9j5tE2i-
Dl8ga/ic_sim_gown_recut_08122022_lg.mp4?dl=0](https://www.dropbox.com/sh/2hkzax08xpof4aj/AADKSaUdR_Xg9j5tE2i-Dl8ga/ic_sim_gown_recut_08122022_lg.mp4?dl=0)

If the simulation learning environment allows in-person interactive sessions, show video #2 then consider performing this exercise with live role playing with learners.

Role playing will involve donning and doffing elements of PPE by volunteers. The emphasis will be on gowns as the example. Volunteers will be asked to don five (5) different gown types:

1. Isolation gown, no AAMI level
2. Isolation gown, AAMI level 1
3. Isolation gown, AAMI level 2
4. Isolation gown, AAMI level 3
5. Isolation gown, AAMI level 4

Each volunteer will describe the comfort and the ease of use of donning, movement, and use of their particular gown.

Simulation will involve demonstration of the attributes and characteristics of the gowns. Each volunteer will be given a 2-foot section of exam table paper or 6 facial tissues to place on their abdominal area under the gown. The session leader will use a spray bottle of water and will spray the area of the gown then allowing the volunteer to show the protection that occurs from that water exposure.

The volunteers will demonstrate differences in the gowns with ease of movement, cuffs, comfort and the fluid resistance. Members of the audience will be asked to come forward and feel each gown to see the differences in the material, stitching, and cuffs.

The session leader will then begin a brief discussion outlining the uses of gowns in the care setting and ask the participants about their thoughts regarding gown use and levels of protection. The information provided in Resource PPE may help guide the discussion. This resource enables the learner to select the type of gown/types of gowns most appropriate to the situation. An answer key with rationale is also provided.

Debrief (Discussion):

What are the key considerations for selecting the appropriate level gown (AAMI) for the task?

Personal Protective Equipment Packet

Why is the level of gown important when assessing the protection level needed for the type of task?

When: during patient care activities that involve chance of contact with the patient, and splash/spray opportunities

How: Check the label of the gown, and consider the task you will be performing, and choose your gown accordingly.

As facilitators use this video, stop and point out visual evidence of fluid leakage. Ask for responses to the video. Ask about personal experiences of leakage through a gown. Refer to Resource PPE 2-1: Selecting type of gown for patient scenario to test individual knowledge, or as a group discussion. If able, provide different types of gowns for learners to touch and compare. Encourage discussion.

Simulation #3: Glove removal

Description This infection control simulation demonstrates the importance of sanitizing or washing hands not only before, but after glove removal. Each individual in the video has donned a pair of gloves. Each of their hands are contaminated with a small amount of fluorescent powder simulating hand contamination. Each individual then removes their gloves using various glove removal techniques. A black light is then used to show residual powder that contaminated their hands during glove removal. This simulation emphasizes the need to clean hands after glove removal.

Audience: In-person or virtual learners.

Supply List: Simulation #3

- Video- Removing Gloves and Hand Contamination: A Simulated Training
- Equipment to show video in-person or virtually
- Live or virtual connection with learners
- Mechanism for learners to take notes
- PEARLS Healthcare Debriefing Tool for Simulation leader

Additional supplies for in- person simulation set up: (if applicable): gloves, fluorescent powder or oil, a varying amount may be used based on individual needs for demonstration. Black light and the ability to darken the room.

If the simulation learning environment allows in-person interactive sessions, show video #3 then consider performing this exercise with live role playing with learners.

Role playing will involve a variety of types of gloves by volunteers. The emphasis will be on examination gloves and hand contamination following their removal.

Each volunteer will put on a pair of exam gloves in the size they normally select.

Personal Protective Equipment Packet

Simulation will involve demonstration of the impact on hand contamination that occurs when each volunteer removes their gloves in the manner that reflects their usual practice. Once gloves are donned, a small amount of fluorescent powder will be shaken into the palm of each volunteer. They will be asked to rub their hands together mimicking contamination that may occur on the gloved hands during routine patient care when gloves are likely to be worn. Then, each volunteer will remove their gloves in the manner that reflects their usual practice and a black light will be shown on their hands in order to identify “contamination” by the fluorescent powder.

Suggested time flow for the simulation: The short video has ambient sound, so the facilitator can narrate over the video, or stop and start the video as needed.



Link to video:

[Removing Gloves and Hand Contamination: A Simulated Training |
https://www.dropbox.com/sh/2hkhax08xpof4aj/AABRvmlyg_hnsHXvQL3uZh_Ea?dl=0&preview=ic_sim_gloves_recut_08122022_lg.mp4](https://www.dropbox.com/sh/2hkhax08xpof4aj/AABRvmlyg_hnsHXvQL3uZh_Ea?dl=0&preview=ic_sim_gloves_recut_08122022_lg.mp4)

Debrief (Discussion):

The session leader will begin a brief discussion outlining the critical importance of hand hygiene following removal of gloves as part of consistent and safe practice.

As facilitators use this video, stop and point out visual evidence of contamination during the black light reveal, even after the most careful glove removal techniques. Ask for responses to the video. Use this opportunity to make it applicable to the learners’ setting. For example, learners may work in long term care facilities so make the setting relevant to their work. You may also use this during educational opportunities for support personnel such as environmental services or other healthcare workers such as respiratory therapists. Make sure to include information specific to those learners to they can better understand and apply the important teaching points.

DEBRIEF

1. Set the scene by reviewing the simulation. Use the PEARLS Healthcare Debriefing Tool to open the discussion. Tools are provided in the Appendices.
2. Ask for reactions and use learner responses gathered during the Simulation discussion to probe further.
3. Describe situations in the scenario that seem to be points of confusion or discussion.
4. Analyze the simulation by asking some discussion questions:
 - a. What went well and what would you change?
 - b. Advocacy and Inquiry
 - i. State your observation and opinion
 - ii. Ask how the learner saw it
 - c. Provide constructive feedback to close gaps in knowledge
 - d. Prompts to consider
 - i. "What errors did you identify?"
 - ii. "What is the impact?"
 - iii. "What practices may prevent this issue?"
 - iv. "How far up the chain will you take this?"
 - v. "How can Human Factors Engineering be applied to this issue?"
5. Application and Summary
 - a. Take-away points
 - i. What did the learner take away?
 - ii. What were the key learning points from the instructors view?

RESOURCES

Resource PPE 1A: Selecting Type of Gown for Patient Scenario

Of the four levels of gowns, pick the level most appropriate gown(s) for the following patient scenarios:

1. Resident in long term care facility currently in isolation for a multidrug-resistant organism. Continent of stool and urine

Level 1 Level 2 Level 3 Level 4 Unrated gown None

Learner comments/questions:

2. Patient in emergency department with multiple trauma and involved in resuscitation

Level 1 Level 2 Level 3 Level 4 Unrated gown None

Learner comments/questions:

3. Patient with C. difficile infection and incontinent of stool with frequent episodes of large quantities of liquid stool.

Level 1 Level 2 Level 3 Level 4 Unrated gown None

Learner comments/questions:

4. Holding toddler to comfort them. You are wearing scrubs.

Level 1 Level 2 Level 3 Level 4 Unrated gown None

Learner comments/questions:

5. Changing a decubitus ulcer wound dressing. The patient/resident is in bed.

Level 1 Level 2 Level 3 Level 4 Unrated gown None

Learner comments/questions:

6. Learner to describe a scenario where they are uncertain and indicate their 'guess'.

Level 1 Level 2 Level 3 Level 4 Unrated gown None

Learner comments/questions:

Resource PPE 1B: Selecting Type of Gown for Patient Scenario (Answer key with rationale)
Of the four levels of gowns, pick the level most appropriate gown(s) for the following patient scenarios:

1. Resident in long term care facility currently in isolation for a multidrug-resistant organism.
Continent of stool and urine
Level 1 Level 2 Level 3 Level 4 Unrated gown None
Rationale: Unrated and Level 1 gowns are appropriate for contact with minimal amounts of body fluids. If the resident is in isolation and care involves contact with minimal amounts of fluids during personal hygiene, movement, or general care, then either a Level 1 or unrated isolation gown is appropriate.
2. Patient in emergency department with multiple trauma and involved in resuscitation
Level 1 Level 2 Level 3 Level 4 Unrated gown None
Rationale: In this circumstance, it can be reasonably anticipated that the healthcare worker may come into contact with body fluids in quantities that could soak a portion of the gown. Therefore, higher levels of protection are needed so Level 3 or Level 4 gowns would be appropriate.
3. Patient with *C. difficile* infection and incontinent of stool with frequent episodes of large quantities of liquid stool.
Level 1 Level 2 Level 3 Level 4 Unrated gown None
Rationale: Large quantities of stool may quickly contaminate and soak areas of a gown. Therefore, decisions need to be made regarding consistent gown availability. In this situation, it is likely that a Level 3 gown is sufficient, but a gown that provides greater protection against fluid (Level 4) may need to be available as needed.
4. Holding toddler to comfort them. You are wearing scrubs.
Level 1 Level 2 Level 3 Level 4 Unrated gown None
Rationale: It can be reasonably anticipated that little, if any, potentially infectious body fluid will come into contact with the healthcare worker. Therefore, no gown is required. If there is concern, an unrated gown could also be appropriate.
5. Changing a decubitus ulcer wound dressing. The patient/resident is in bed.
Level 1 Level 2 Level 3 Level 4 Unrated gown None
Rationale: It can be reasonably anticipated that little, if any, potentially infectious body fluid will come into contact with the healthcare worker. Therefore, no gown is required. If there is concern (e.g., draining wound), an unrated gown could also be appropriate.
6. Learner to describe a scenario where they are uncertain and indicate their 'guess'.
Level 1 Level 2 Level 3 Level 4 Unrated gown None
Learner comments/questions:

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Resource PPE 2A: **Selecting elements of PPE for Patient Scenario.** This involves selecting the correct pieces of PPE, putting them on correctly and in correct order, taking them off correctly and in the correct order, and performing hand hygiene at the correct times.

1. Patient in hospital for pneumonia. Patient is coughing sporadically. Continent and cooperative.

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	

2. Resident incontinent of urine and stool. Requires frequent personal hygiene. Uncooperative.

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	

3. Patient having nasogastric tube inserted. Is uncooperative, spitting, and coughing

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	

Personal Protective Equipment Packet

4. Patient environment is being cleaned and disinfected after transfer from medical/surgical area to intensive care following cardiopulmonary arrest. Blood and other body fluids on the floor and counter tops. Trash can full.

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	

5. Patient or resident has COVID-19.

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	☐ Gown ☐ Gloves ☐ Face shield/eye protection ☐ Respiratory protection	

Resource PPE 2B: **Selecting elements of PPE for Patient Scenario.** This involves selecting the correct pieces of PPE, putting them on correctly and in correct order, taking them off correctly and in the correct order, and performing hand hygiene at the correct times. Answer key with rationale.

1. Patient in hospital for pneumonia. Patient is coughing sporadically. Continent and cooperative.

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
3*Gloves 1 Face shield/eye protection 2 Respiratory protection	1* Gloves 2 Face shield/eye protection 3 Respiratory protection	Before entering room; before removal of PPE; after removal of gloves (if worn); after removal of other PPE
Rationale: A patient cough may disperse respiratory particles into the face/eyes of the healthcare worker. Mask and face shield protect the face and eyes. * Gloves may be worn, depending upon the patient contact anticipated to occur during that encounter. Remove most contaminated items first; then proceed with removal in alphabetical order.		

2. Resident incontinent of urine and stool. Requires frequent personal hygiene. Uncooperative.

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
1 Gown 3 Gloves 2* Face shield/eye protection	3 Gown 1 Gloves 2*Face shield/eye protection	Before entering room; before removal of PPE; after removal of gloves (if worn); after removal of other PPE
Rationale: Gown and gloves should be worn whenever encounter with blood or body fluid can be reasonably anticipated. Face shield should be considered if the volume, or the patient encounter (e.g., uncooperative or agitated patient), may result in splash or spray of fluids. Remove most contaminated items first; then proceed with removal in alphabetical order.		

3. Patient having nasogastric tube inserted. Is uncooperative, spitting, and coughing

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
3 Gown 4 Gloves 2 Face shield/eye protection 1*Respiratory protection	4 Gown 1 Gloves 2 Face shield/eye protection 3*Respiratory protection	Before entering room; before removal of PPE; after removal of gloves (if worn); after removal of other PPE.
Rationale: In this situation, body fluids may come into contact with face, eyes, and clothing of healthcare worker so maximal protection is appropriate. Remove most contaminated items first.		

Personal Protective Equipment Packet

4. Patient environment is being cleaned and disinfected after transfer from medical/surgical area to intensive care following cardiopulmonary arrest. Blood and other body fluids on the floor and counter tops. Trash can full.

<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
3 Gown 2 Gloves 1*Face shield/eye protection	3 Gown 1 Gloves 2*Face shield/eye protection	Before entering room; before removal of PPE; after removal of gloves (if worn); after removal of other PPE
Rationale: In this situation, gloves are worn as part of routine contact with germicides as well as the barrier for body fluids. Gown is appropriate to ensure contact with contaminated surfaces by the clothing of the healthcare worker is prevented. Face shield/eye protection may, or may not, be appropriate depending upon opportunities for splash during the cleaning process and trash collection/removal.		

5. Patient or resident has COVID-19.

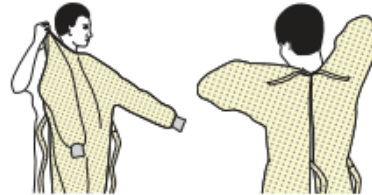
<i>List pieces of PPE to be used for this scenario and rank them according to order you would put them on (don):</i>	<i>Rank those pieces of PPE in order of their removal (doff):</i>	<i>Indicate when hand hygiene would be performed during this process:</i>
3 Gown 4 Gloves 2 Face shield/eye protection 1 Respiratory protection	3 Gown 1 Gloves 2 Face shield/eye protection 4 Respiratory protection	Before entering room; before removal of PPE; after removal of gloves (if worn); after removal of other PPE
Rationale: Full PPE is appropriate for this setting. PPE is removed in alphabetical order with respiratory protection removed last. Respiratory protection should be worn while existing the environment and removed when out of the patient room.		

SEQUENCE FOR **PUTTING ON** PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



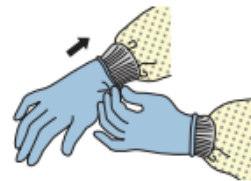
3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene



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HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container



3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container

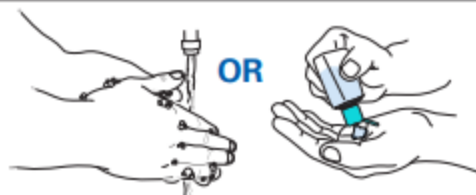


4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS
BECOME CONTAMINATED AND IMMEDIATELY AFTER
REMOVING ALL PPE**



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HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

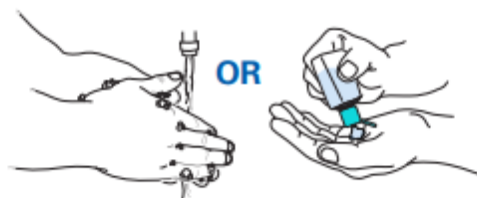


3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — **DO NOT TOUCH!**
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS
BECOME CONTAMINATED AND IMMEDIATELY AFTER
REMOVING ALL PPE**



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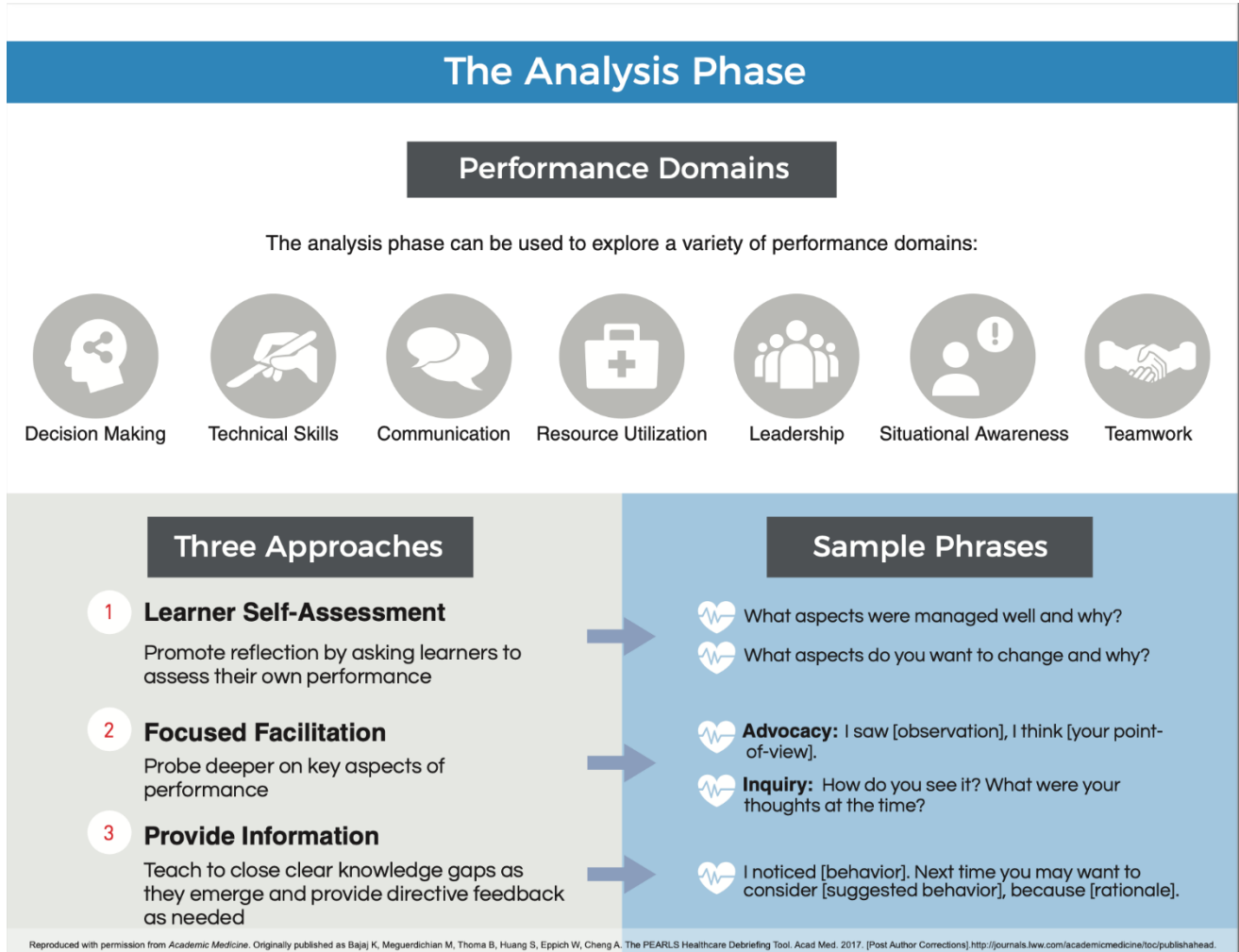
Resource: Post-Simulations: PEARLS for Debriefing

Use these Debriefing resources as a guide for the discussion. The Debriefing Tool provides the facilitator with how to approach the discussion enabling the learners to openly and safely discuss their approaches and ideas. The tool avoids judgmental statements and uses an approach of setting the scene for context learning and allowing learners to explore their reactions and how they perceive the situations.

The PEARLS Healthcare Debriefing Tool			
	Objective	Task	Sample Phrases
1 Setting the Scene	Create a safe context for learning	State the goal of debriefing; articulate the basic assumption*	"Let's spend X minutes debriefing. Our goal is to improve how we work together and care for our patients." "Everyone here is intelligent and wants to improve."
2 Reactions	Explore feelings	Solicit initial reactions & emotions	"Any initial reactions?" "How are you feeling?"
3 Description	Clarify facts	Develop shared understanding of case	"Can you please share a short summary of the case?" "What was the working diagnosis? Does everyone agree?"
4 Analysis	Explore variety of performance domains	See backside of card for more details	Preview Statement (Use to introduce new topic) "At this point, I'd like to spend some time talking about [insert topic here] because [insert rationale here]" Mini Summary (Use to summarize discussion of one topic) "That was great discussion. Are there any additional comments related to [insert performance gap here]?"
Any Outstanding Issues/Concerns?			
5 Application/Summary	Identify take-aways	Learner centered ----- Instructor centered	"What are some take-aways from this discussion for our clinical practice?" ----- "The key learning points for the case were [insert learning points here]."

*Basic assumption. Copyright © Center for Medical Simulation. Used with permission.
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The Analysis Phase tool helps the facilitator use a variety of approaches to explore the learner's abilities and performance during the simulation Debrief. The tool guides the facilitator through samples phrases that can be used to prompt and guide discussion.



Project Firstline Interactive Activities

Check your infection control knowledge and gain valuable feedback in real time with interactive, educational infection control resources. These supplemental activities provide the facilitator and the learner to review Project Firstline activities and use them to augment topic learning.

These two interactive learning experiences provide the opportunity to walk through a patient care situation and select what to do first, then what to do next. Reactions to response selections and rationales are provided for the learner.

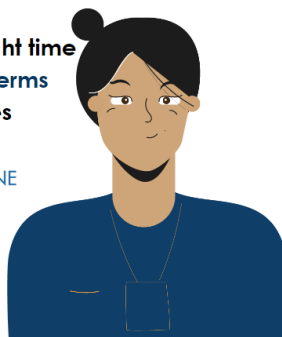
**Using the right PPE at the right time
prevents the spread of germs
in health care facilities**



[Choosing the Right PPE for COVID-19 |](https://www.cdc.gov/infectioncontrol/projectfirstline/resources/PPE-COVID-19.html)

<https://www.cdc.gov/infectioncontrol/projectfirstline/resources/PPE-COVID-19.html>

**Using the right PPE at the right time
prevents the spread of germs
in health care facilities**



[Choosing the Right PPE Throughout Your Workday |](https://www.cdc.gov/infectioncontrol/projectfirstline/resources/PPE-WorkDay.html)

<https://www.cdc.gov/infectioncontrol/projectfirstline/resources/PPE-WorkDay.html>

Personal Protective Equipment Packet

Web Buttons

Ensure frontline healthcare workers know about Project Firstline by adding a web button to your website, blog, or [social media page](#). The address below will allow the image to be embedded into the webpage and allow access to additional information with the click of a button.



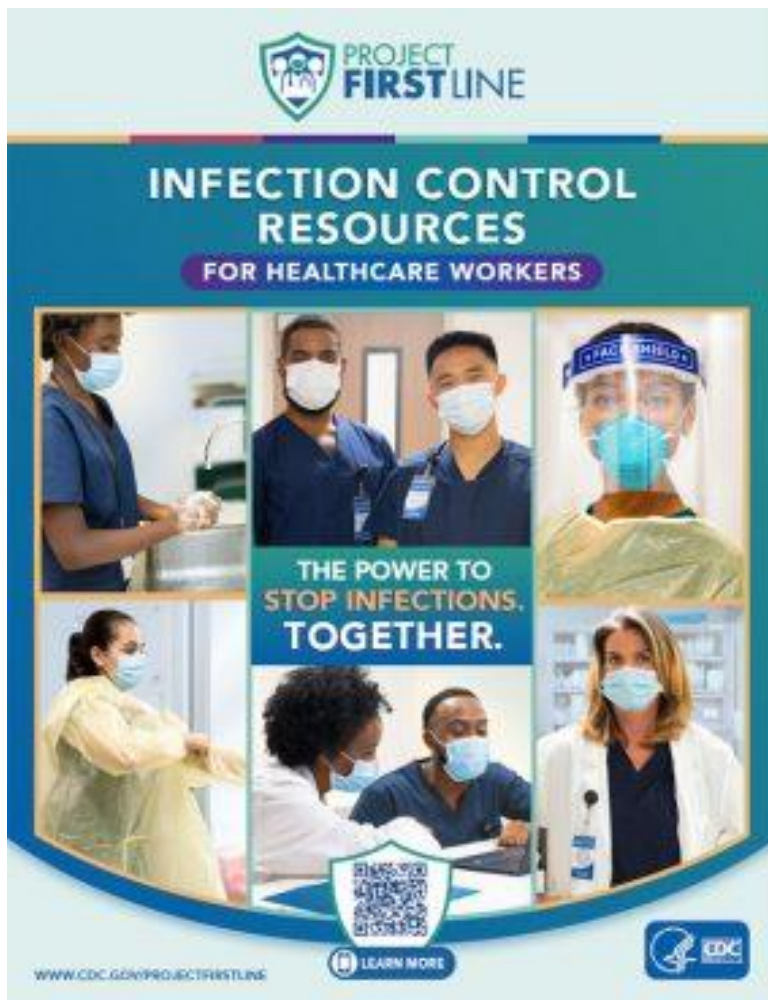
```
<a title="Project Firstline web button woman 300 by 250"
href="https://www.cdc.gov/infectioncontrol/projectfirstline/resources.html?s_cid=dhqp_001"></a>
```



```
<a title="Project Firstline web button man 300 by 250"
href="https://www.cdc.gov/infectioncontrol/projectfirstline/resources.html?s_cid=dhqp_001"></a>
```

Personal Protective Equipment Packet

Source: [Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases \(NCEZID\), Division of Healthcare Quality Promotion \(DHQP\)](#)



[The Power to Stop Infections Together |](#)

https://www.cdc.gov/infectioncontrol/pdf/projectfirstline/PFL_Brand_Poster_Noninteractive-508.pdf

[What's Wrong with This Picture? Emergency Room](#) | [Project Firstline](#) | [Infection Control](#) | [CDC](#)

What's Wrong with This Picture? Emergency Room

[Print](#)



Not Wearing a Mask Over the Mouth and Nose

Next

Some germs can spread through the respiratory droplets that people make when they breathe. When using a mask for source control, it's important that the mask covers both the mouth **and** the nose to keep respiratory droplets from reaching others.

This interactive learning experience provides the opportunity to walk through a patient care situation and select what to do first, then what to do next. Reaction to response selections and rationales are provided for the learner.

[Diarrhea Dilemma](#) | [Project Firstline](#) | [Infection Control](#) | [CDC](#)

Diarrhea Dilemma

[Print](#)

Diarrhea Dilemma

[Print](#)



DIARRHEA DILEMMA

You go to change a patient's bed linens. When you pull back the sheets, you notice there's diarrhea on the sheets, and some may have gotten on your hands.

NEXT

What's the first thing you should do?

Select the correct option.

 Clean Mattress	 Put Clean Linens on Bed	 Put on Gown	 Put on Mask
 Put on Gloves	 Use Hand Sanitizer	 Remove Dirty Linens and Place in Bag	 Wash Hands with Soap and Water

Additional Resources

Personal Protective Equipment Packet

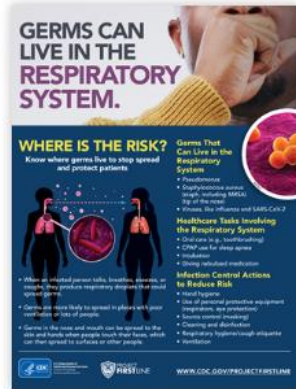
This series of infographics provide an overview of the infection transmission risks and infection control interventions, including use of PPE and hand hygiene.

[Print Materials and Job Aids from Project Firstline | Infection Control | CDC](#)

Infographics



[Skin Profile](#)
[PDF – 1 Page]



[Respiratory System Profile](#)
[PDF – 1 Page]



[Blood Profile](#)
[PDF – 1 Page]



[Gut Profile PDF](#)
[PDF – 1 Page]

This short video shows the importance of source control as our breath, and that of our patients, contains droplets. Source control is an important element of infection prevention

[Did you Know? Germs Live in the Respiratory System - YouTube](#)



EVALUATION

The evaluation method will involve determination of reaction (how learners felt about the experience), learning (did the learner gain knowledge from the experience), behavior (was the learner able to apply the knowledge), and results (impact of the training on learner's practice).

To gather evaluation information, the standard evaluation tool will be used for all Skill Stations learners within this series. An additional evaluation tool is available for sessions provided for facilitators.

Skills Stations Evaluation (Learner):

Simulation Topic: PPE **Date:** __ \ __ \ ____

Circle your response to the following questions:

I was oriented to the purpose of this simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

The simulation experience was conducted in a skillful manner.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

The simulation experience provided me with new knowledge.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

The simulation experience provided me with an opportunity to apply my knowledge.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

My current practice differed from that demonstrated during the simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

I intend to apply what I learned during the simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

My practice will change based upon what I learned during the simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

I found the simulation experience to be beneficial to my practice.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

Comments:

Skills Stations Evaluation (Facilitator):

Simulation Topic: PPE **Date:** __ \ __ \ ____

Circle your response to the following questions:

I was oriented to the purpose of this simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

I was provided with adequate information so I can conduct the simulation experience in a skillful manner.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

The simulation experience provided me with new knowledge.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

The simulation experience provided me with an opportunity to apply my knowledge.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

My current practice differs from that demonstrated during the simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

I intend to apply what I learned during the simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

My teaching approach will change based upon what I learned during the simulation experience.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------

I found the simulation experience to be beneficial to my role.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
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Comments:

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