

**Infection Prevention and Control
Skills Station Series**

Hand Hygiene and Aseptic Technique

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The contents of this packet include fundamental core infection prevention and control concepts. Simulation scenarios outlined in the is packet were developed by the Kentucky Infection Prevention Training Center (KyIP) using fundamental core infection prevention and control concepts in collaboration with the Center for Disease 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. Funding for the Kentucky Infection Prevention Training Center (KylP) is provided through the 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 skills packet 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.

Link to: 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 video](#)

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 healthcare, 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 Healthcare



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: [Recognizing Infection Risks 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're 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 you often don't know.

Recognizing infection risks goes beyond Standard Precautions. Because no two days in healthcare are ever the same, there will be moments when healthcare workers might need to apply infection control recommendations to situations that aren't usually described in guidelines. That's 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 and 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.

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 video vlogs: Hand Hygiene

It is important to understand the role hands play in the transmission of germs. Hands are an ideal place for germs to grow. Whether at work in healthcare, at home, or out in the community, hand hygiene is important to prevent the spread of germs. In episode 21, Dr. Abby Carlson explains why hand hygiene is so important in preventing the spread of germs.



Link to: [Do we really have to talk about hand hygiene? Again? Yes!](https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP21-Hands-LowRes.mp4)

<https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP21-Hands-LowRes.mp4>

Project Firstline video vlogs: How Germs Spread

In order to understand why hand hygiene is so important, you must know how germs spread. In episode 6, Dr. Abby Carlson explains how viruses travel, and how viruses can be transmitted from surfaces to people.



Link to: [How do viruses spread from surfaces to people?](https://www.cdc.gov/infectioncontrol/projectfirstline/videos/Ep6-Spread-LowRes-New.mp4)

<https://www.cdc.gov/infectioncontrol/projectfirstline/videos/Ep6-Spread-LowRes-New.mp4>

Project Firstline video vlogs: Why are Gloves Recommended for COVID-19?

In episode 11, Dr. Abby Carlson discussed why gloves are recommended in some cases. Germs remain on the skin despite hand hygiene. There are appropriate times to wear gloves when working in healthcare.



Link to: [Why are gloves recommended for COVID -19?](https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP11-Gloves-LowRes-New.mp4)

<https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP11-Gloves-LowRes-New.mp4>

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.



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). This leads to an increased number of days hospitalized, a higher risk of mortality, and increased costs 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 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 ². 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 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 asepsis and hand hygiene. 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 infections associated with patient care.

This Skills Station is organized into the following six section:

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.
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 with 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 the 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 Stations 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 improvements to the process and serve to demonstrate value to the use of simulation for infection prevention practice for front line health care workers.

TITLE: USE OF SIMULATION TO PROMOTE ASEPSIS AND HAND HYGIENE

LEARNING OBJECTIVES:

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

1. Identify methods of pathogen transmission by the hands of healthcare workers.
2. Demonstrate opportunities to prevent pathogen transmission by appropriate hand hygiene practices.
3. Review elements of aseptic technique important in prevention of transmission of pathogens.
4. Differentiate between clean and aseptic technique.

PREBRIEF (BACKGROUND)

All infection control and prevention begins with hand hygiene. Before touching a patient, preparing medications, or even putting gloves on, healthcare personnel should clean their hands. As we'll learn in the skills station, and with Project Firstline, hands are an ideal place for germs to live and grow. Because we touch so many things throughout the day, our hands become a vehicle for germs to travel to other objects or people. Failing to use appropriate hand hygiene allows us to spread germs and illness, which can be particularly problematic when working with vulnerable populations – patients! Additionally, use of aseptic technique prevents the spread of germs to patients during invasive procedures. Hand hygiene, and other infection control measures are used to protect patients, our community, and ourselves.

Hand Hygiene and Aseptic Technique

What is basic hand hygiene?

- Overview
 - Hand hygiene or the act of cleaning one's hands is one of the most fundamental components of infection prevention. Hand hygiene can involve use of traditional soap and water hand wash, or use of an alcohol-based hand rub. The CDC promotes the campaign "Clean Hands Save Lives," and it's absolutely true. It is a simple, but effective way to prevent infections. Cleaning your hands can also protect you from colonization or infection from a patient. Hand sanitizer is the recommended method by the CDC in most situations in healthcare ⁶.
 - Alcohol based hand sanitizer destroys more bacteria on the hands and last longer than antimicrobial soap and regular soap ⁹.
 - Additionally, using an alcohol based hand sanitizer can save much time. Hand sanitizer can be easily kept at the point of care and other convenient areas¹².
 - Hand hygiene with an alcohol-based sanitizer or soap and water hand wash should be done at these times:
 - Before touching a patient
 - ***Before performing an aseptic or clean technique***
 - Before moving from work on a soiled body site to a clean body site on the same patient
 - After touching a patient or the patient's immediate environment
 - After contact with blood, body fluids contaminated surfaces
 - Immediately after glove removal
 - Anytime there is concern about hand contamination
 - Hand hygiene should be done with soap and water at these times:
 - When hands are visibly soiled
 - After caring for a person with known or suspected infectious diarrhea
 - After known exposure to spores (B. anthracis, C. difficile)
 - After using the restroom
 - Before eating or handling food

How long?

- Both soap and water hand wash and alcohol-based hand sanitizer should last about 20 seconds. All surfaces of the hands should be scrubbed, including the backs of hands, webbing between fingers, and under and around nails.

Hand maintenance

- Institutions tend to pick matched soap and lotion combinations for their workers. These hand soaps work to reduce the number of microbes on the skin. The matched lotion will reduce the pH of the skin making it harder for normal skin flora to return. Unapproved lotions, especially ones with fragrance, may contain sugar and provide a perfect environment for germs to thrive. While lotions and creams can decrease dryness and prevent infection from cracked skin, it is important to only use lotions approved by your institution. After a two

week time period, alcohol based hand cleaning healthier skin, while using soap and water can cause skin on the hands to be more dry ³.

- Fingernails should be natural. No artificial nails or tips as microbes can live underneath. Natural nail length should be less than ¼". Research is being done to determine if wearing rings could potentially spread infection. So far, some studies have confirmed this ⁶.

How is surgical hand scrub different from basic hand hygiene?

- Overview
 - Surgical hand scrub for surgical antisepsis reduces the risk of surgical site infection. This is a more deliberate than basic hand hygiene. The attention to detail with surgical hand scrub is imperative, and the steps must be followed to ensure surgical site infection. Per the Association of periOperative Registered Nurses (AORN), surgical hand scrub occurs before donning sterile gloves and takes three to five minutes for an effective scrub ¹⁰. The basics of hand maintenance listed above, specifically fingernails, also applies here.

How to perform a surgical hand scrub?

- Remove all jewelry and don a surgical mask. Wash hands and forearms with soap if visibly soiled. Clean under the nails with a disposable nail cleaner. Rinse hands and forearms. Dispense the approved antimicrobial agent used for the scrub, apply with nonabrasive applicator to wet hands and forearms. Scrub for three to five minutes based on the manufacturer's guidelines. If a scrub pad (e.g., applicator) is used, do not use an abrasive pad. Instead, use the sponge side of the pad. Treat each finger as having four sides—scrub each side and the webbing while keeping the hand elevated. Repeat on other hand. Avoid splashing water on surgical attire. Discard sponges appropriately. Rinse hands and arms under water in direction of fingertips to elbows as often as needed. Hold hands elevated above elbows and keep away from surgical attire. Dry hand from fingertips to elbow with one towel. Repeat process on other hand/forearm with clean towel.

What about surgical asepsis with an alcohol-based surgical hand rub?

- Current CDC recommendations indicate that an alcohol-based rub, or one combined with an agent providing a persistent effect (e.g., chlorhexidine) can be used to augment the traditional soap and water surgical hand scrub. At the beginning of the day, one would use a traditional soap and water scrub, followed by the alcohol-based product ⁹.

What is the definition of "asepsis?"

Asepsis is the absence of disease-causing germs (including fungi, bacteria, and viruses), and is also all of the actions and processes designed to achieve asepsis. The goal of asepsis is to protect patients by preventing contamination and the spread of microorganisms. Asepsis can be achieved through purposeful preventative actions, known as aseptic technique, that

interrupt the spread of germs from the environment to patients. Aseptic technique begins with hand hygiene ⁶.

What is the difference in medical asepsis and surgical asepsis?

Medical asepsis (also known as “clean technique”) are the measures taken to control the number of organisms but does not aim for sterility. Surgical asepsis (also known as “aseptic or sterile technique”) is a combination of measures taken to maintain the microbial count at an irreducible minimum and prevent the transfer of organisms from one person to another or one body site to another. Aseptic technique uses barriers such as sterile gloves, sterile gowns, masks, and sterile drapes to prevent transmission of the organisms from the environment to the patient. “Sterile to sterile” involves using only sterile instruments and supplies in changes of dressings; all contact with non-sterile items or surfaces must be avoided. It also involves antiseptic agents on the patient’s skin before beginning the incision in addition to cleaning and reprocessing of all patient care equipment and devices.

Hand hygiene is a necessary first step of the procedure in addition to use of an antiseptic hand rub or antiseptic soap for surgical scrub before donning sterile gloves. In addition to surgical procedures, asepsis is also used for placement of invasive devices.

Clean technique, though, involves strict hand hygiene, maintaining a clean environment by preparing a clean field, using clean gloves (not necessarily sterile gloves), sterile instruments, sterile supplies, and prevention of contamination of supplies. No “sterile to sterile” rules apply with clean technique. Clean technique is non-sterile technique but still aims to prevent the ability of microorganisms to be brought into the technique through poor practice.

Asepsis and aseptic technique are basic principles to be used in all healthcare settings. As more invasive procedures are performed, the level of asepsis should increase. For example, stricter asepsis is needed for surgery than for decubitus wound care. In fact, many of the practices used during some of these procedures all contribute to asepsis. For instance, consider:

- Keeping the door closed during procedures
- Diverting traffic to minimize the number of individuals in a given area
- Cleaning /disinfection of environmental surfaces

How do we teach healthcare workers to practice asepsis?

Asepsis is not a new practice:

- Know what is dirty
- Know what is clean
- Know what is sterile
- Keep the first three conditions separate
- Remedy contamination immediately

Examples

“Dirty” (obviously soiled or used on a patient)	“Clean”	“Sterile”
-Healthcare workers’ unwashed hands that have been in direct contact with a patient -Any patient’s body fluids -Soiled dressings or linens -Soiled toilets or bedside commodes -Used patient equipment such as glucose meters	-An item that has been thoroughly washed -Clean linen or supplies such as drinking cups, urinals, etc. that have not been used on a patient	-Items that enter vascular tissue or sterile areas which have been sterilized such as surgical instruments, intravenous catheters, urinary catheters, etc. -Items used in a sterile field such as a sterile barrier or container

Think “separate” when you think of the 3 categories above. Frequently in healthcare, one sees items such as clean linen and dirty linen stored side by side. This results in an increased chance of contamination of the clean supplies. **Keep clean items away from dirty items. Keep sterile items away from non-sterile items.** For example, do not store clean items in the soiled utility area, do not store soiled items in clean medical preparation areas, and do not store any sterile supplies under a sink or near a sink where wicking of fluid could contaminate sterile packs. Also, when touching a sterile item, wear sterile gloves or when in close contact with a sterile field such as in the operating room (OR), wear maximal sterile barriers such as sterile gloves, gown, masks, hair covering, etc. Always allow for a margin of safety with any possible contact with among sterile, clean, or dirty areas. If you do observe that any of the three areas (dirty, clean, sterile) have not been kept apart, whether in your practice or that of another healthcare worker, act immediately. Every healthcare worker and provider should be patient advocates always looking to protect patients, coworkers, and ourselves. It is EACH person’s responsibility to speak up and protect the patient if a break in technique is observed ⁷.

What are the some of the main principles of “sterile” technique whether in the OR or at the bedside on the unit?

Increasingly, surgical procedures are being performed in areas outside the traditional operative environment. Procedures such as extensive wound debridement, tracheostomies, and port placement, may be performed in the patient room. If so, it is critical that attention be paid to the process in order to ensure a single standard of care and a safe patient experience. There should be one standard of care so the patient is assured that a procedure performed in the patient care area represents no greater risk than the procedure being performed in the operating room. The following are a few concepts to remember:

- All procedures begin with performance of an appropriate level of hand hygiene and personal protective equipment (PPE). This serves to protect the patient and the healthcare worker.
- It is important to follow all cleaning, disinfection, and sterilization practices regardless of the environment in or out of the OR.

- A sterile drape should be used to establish a sterile field. The part of the drape that establishes the sterile field should not be moved once positioned as shifting the drape may compromise the sterility of the field.
- All item used within the field should be sterile and opened and transferred to the field by methods that maintain item sterility.
- Check the indicator for sterilization marker
 - Un-scrubbed person (who has done basic hand hygiene) should open wrapped sterile supplies by opening outer wrapper farthest away from them first to prevent their unsterile arm from reaching across the sterile item. Then, they should open each of the side flaps - with the nearest wrapper flap opened last.
 - The outer 1 inch of the sterile field is considered contaminated.
 - All wrapper edges should be secured when presenting items to the sterile field.
 - No sterile item should ever be “tossed” onto the sterile field.
 - Labeled solutions should be poured away from the label and entire contents poured slowly to avoid splashing. A container’s edge is considered contaminated after contents have been poured and content sterility cannot be ensured if the cap is replaced.
- A sterile field for one patient should be set up in the location in which it will be used. The field should be prepared as close as possible to the time of use. The sterility of an open field is event related (i.e., events determine when it becomes contaminated- such as insects coming into contact with the field unobserved or water splashing on the field), unless the field is monitored.
- All sterile areas should be continuously monitored for possible contamination.
- ***Sterile fields should not be routinely set up then covered, as uncovering the field may contaminate it.***
- Unscrubbed persons should face a sterile field on approach and be aware of the need for distance from the sterile field.

There are some guidelines more specific in the OR setting. What do those look like?

- Hand hygiene- surgical hand antisepsis as reviewed above.
- Wear appropriate PPE and masks.
- Select the gown and drapes appropriate for the barrier class needed.
- Ensure sterile technique when donning and wearing sterile gloves.
- Use sterile drapes where appropriate to maintain your sterile field.
- Be cognizant of your sterile field and what is sterile vs. dirty. Watch movement, barrier use, anything that may unintentionally cause a break in the aseptic technique.

The concept behind glove use is two-fold. First, gloves represent a protective barrier for the healthcare worker so they do not come into contact with organisms that may contaminate the skin of their hands or bypass the protective function of the skin if it is not intact. An equally important concept is the use of gloves to protect the patient. Glove use may prevent contamination of items that will be used during patient care. Typically, we think of sterile glove use, in that instance. It is true that sterile gloves, when used correctly, go a long way in

preventing transmission of organisms but also consider that patient wounds and incisions are not sterile. Even after use of quality skin disinfectants, resident flora quickly begin repopulation. The goal, therefore, is to prevent introduction of new organisms to the wound, not maintenance of sterility ⁴. If it is not possible to avoid direct contact with the wound, most wound dressing kits contain sterile gloves that can be used to prevent any bacterial contamination ⁶.

Can we help motivate staff and providers to use asepsis when needed?

- Each staff member must constantly monitor his/her movement, practice, and barrier use to prevent inadvertent breaks in either clean or sterile technique.
- Each staff member should be taught that they have “permission” to alert others when the field or item becomes potentially contaminated for the safety of the patients they care for—patients who are someone’s mother, father, husband, wife, daughter, son, or friend.
- Ensure policies and procedures are clear. When they address controversial approaches, be sure they have been developed with a multidisciplinary approach and are firmly rooted in evidence-based practice.

We have mentioned the importance of hand hygiene as a critical partner in aseptic technique and patient safety ⁶.

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 3 and 4 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 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- Demonstrate spread of pathogens when hand hygiene not performed

Show video #1 (fluorescent powder simulation). Point out visual demonstration of fluorescent powder left behind on patient and various items in the room when staff does not perform hand hygiene. If possible, allow students to put fluorescent powder on their hand and then touch items. Using a black light, you can see where the powder (and germs) are left behind.

Audience: Virtual and in-person

Suggested time flow for the simulation: 2 minutes

Simulation video shows the following errors:

- Hand hygiene is not performed prior to entering room and touching surfaces/patient
- PPE is not worn appropriately

Supply List:

- Video #1: Improper Hand Hygiene
- Equipment to show video virtually or in-person
- Mechanism for learners to take notes
- Live or virtual connection to learners
- PEARLS Healthcare Debriefing Tool for Simulation leader



Link to: [Improper Hand Hygiene](#)

Simulation #2: Demonstrate why hand hygiene is important even if using gloves

Show photos of exterior of glove box to show contamination.

Audience: Virtual and in-person

Suggested time flow for the simulation: 1 minute

Simulation shows the following errors:

- Glove box images show contaminated areas (fluorescent powder).

- Previous healthcare staff did not perform hand hygiene.

Supply List:

- Glove box photograph
- Equipment to show photo virtually or in-person
- Live or virtual connection to learners
- PEARLS Healthcare Debriefing Tool for Simulation leader

Simulation #3: Demonstrate bacteria spread via cough and touch

Use Resource #1, showing agar plates incubated after various scenarios. Allow participants to match plates to scenarios before showing the correct answer.

Audience: Virtual and in-person

Suggested time flow for the simulation: 5 minutes

Simulation shows the following:

Agar plates with bacterial growth from various sources

Supply List:

- Agar plate photo from Resource #1
- Equipment to show photo virtually or in-person
- Live or virtual connection to learners
- Mechanism for learners to take notes
- PEARLS Healthcare Debriefing Tool for Simulation leader

Simulation #4: Show improper set up of sterile field.

Show video #2 (improper sterile field set up). Have participants point out instances in which sterile field is broken or hand hygiene is not performed correctly. Alternatively, have learners write down all the instances in which sterile field is broken and when other mistakes are made. Allow in-person participants to practice sterile field set up, with close attention to maintaining sterility with setting up field and dropping sterile supplies onto it.

Audience: Virtual and in-person

Supplies Needed: sterile kits, sterile gauze, sterile syringes, trash can

Suggested time flow for the simulation: 5 minutes

Supply List:

- Video #2: Improper sterile field set up
- Equipment to show photo virtually or in-person
- Live or virtual connection to learners
- Mechanism for learners to take notes
- PEARLS Healthcare Debriefing Tool for Simulation leader
- For in-person learners, have supplies for practicing sterile field set up, including sterile kits, sterile gauze, and sterile syringes.

Simulation video show the following errors:

- Table not cleaned with disinfectant prior to setting down sterile kit
- Worker did not perform adequate hand hygiene
- Worker did not keep sterile field visualized when stepping away
- Trash was touching the sterile field
- Glove contaminated when putting it on
- Badge touched sterile field



Link to: [Improper sterile field set up](#)

DEBRIEF Refer to Appendix 1

1. Set the scene by reviewing the simulations. Use the PEARLS Healthcare Debriefing Tool provided in the appendix.
2. Ask for reactions and use learner responses gathered during the simulation discussion to probe further.
3. Describe the situations in the scenarios 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?

Simulation #1 Discussion

Initiate to open discussion with your group focused on:

What were the errors observed?

How can errors be prevented?

When should hand hygiene be performed?

Why is it important to use proper hand hygiene?

How can human factors engineering be applied to this issue?

Key Take Home Points

- When hand hygiene is not performed upon entering a patient room, hands become vehicles for germs to be transferred to surfaces and patients.
- Hand hygiene should be performed before touching a patient.
- Hand hygiene should be performed prior to putting on gloves.

Simulation #2 Discussion

Initiate to open discussion with your group focused on:

What were the errors observed?

How can errors be prevented?

When should hand hygiene be performed?

Why is it important to use proper hand hygiene?

How can human factors engineering be applied to this issue?

Key Take Home Points

- Hand hygiene should be performed prior to putting on gloves.
- Pathogen transmission can occur with any breach in hand hygiene protocols
- Following hand hygiene recommendations can prevent the spread of germs and reduce infection.
- All healthcare personnel must follow infection control guidelines.

Simulation #3 Discussion

Initiate to open discussion with your group focused on:

What were the errors observed?

How can errors be prevented?

When should hand hygiene be performed?

Why is it important to use proper hand hygiene?

How can human factors engineering be applied to this issue?

Key Take Home Points

- Germs are everywhere in our environment.
- Hand hygiene and other infection control practices can help reduce the risk of pathogen spread.

Simulation #4 Discussion

Initiate to open discussion with your group focused on:

What were the errors observed?

How can errors be prevented?

When should hand hygiene be performed?

Why is it important to use proper hand hygiene?

How can human factors engineering be applied to this issue?

Key Take Home Points

- Surfaces must be cleaned prior to opening a sterile kit.
- Staff should perform hand hygiene prior to beginning a sterile procedure.
- Worker should remove any items that may contaminate the sterile field.
- Sterile, clean, and dirty items should be kept separate.
- Once a non-sterile item touches the sterile field, the entire field is contaminated.
- Any breaches in the sterile field or technique can be life threatening for a patient.

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: Asepsis and Hand Hygiene **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: Asepsis and Hand Hygiene **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
----------------	-------	-----------	----------	-------------------

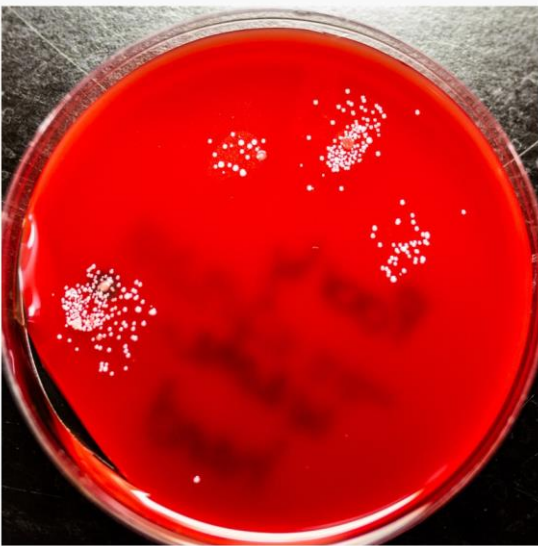
Comments:

RESOURCES

Resource # 1:



Bacteria growth after no hand washing at all



Bacterial growth after poor hand washing



Bacterial growth after proper hand washing



Bacterial growth after proper hand washing, but no drying



Bacterial growth from a cough

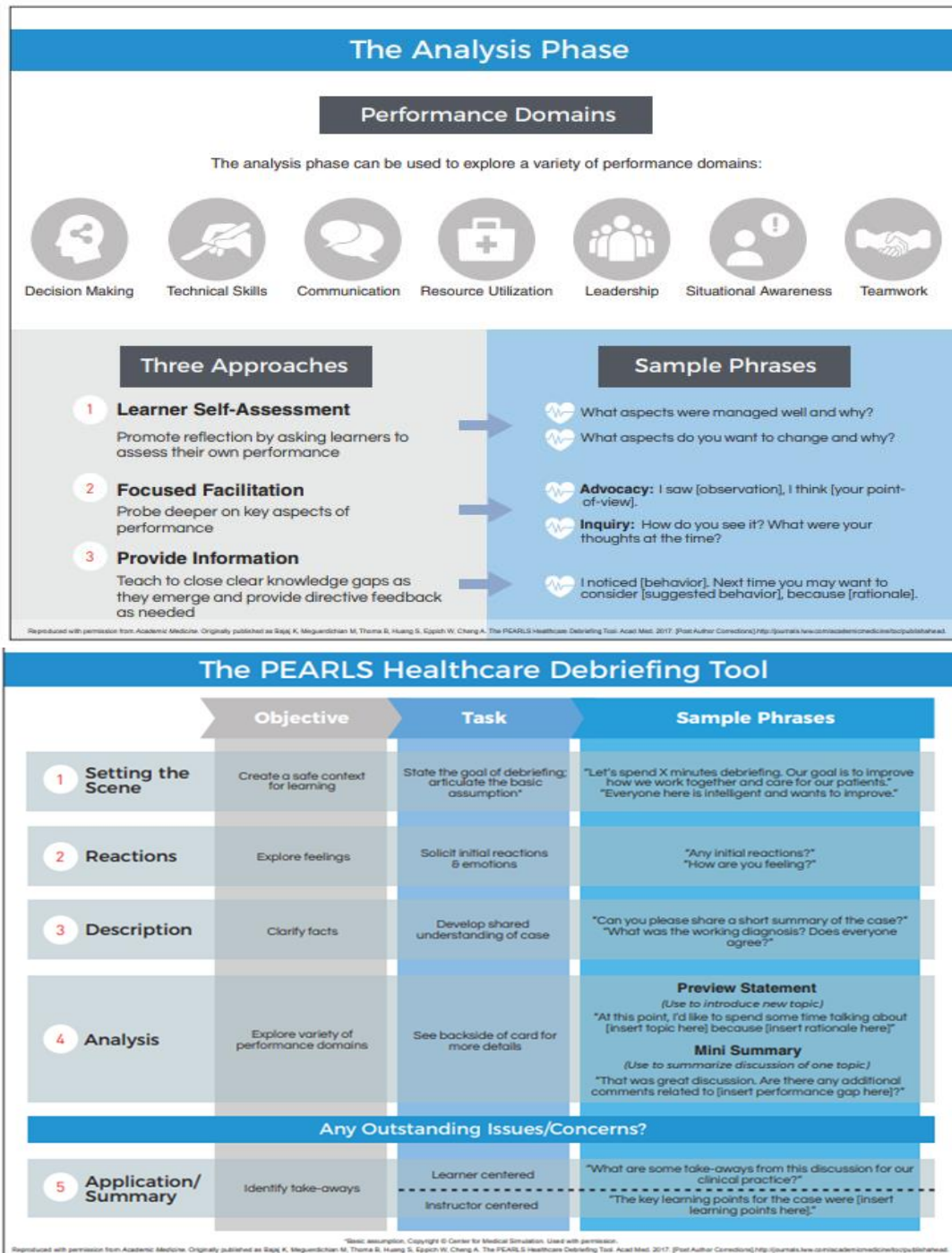


Bacterial growth from a cracker that was on the floor for ten seconds

(All content and media for this simulation was taken directly from Hamilton Health Sciences, 2018)

APPENDICES

PEARLS Healthcare Debriefing Tool



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 <i>(Use to introduce new topic)</i> "At this point, I'd like to spend some time talking about [insert topic here] because [insert rationale here]" Mini Summary <i>(Use to summarize discussion of one topic)</i> "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]."

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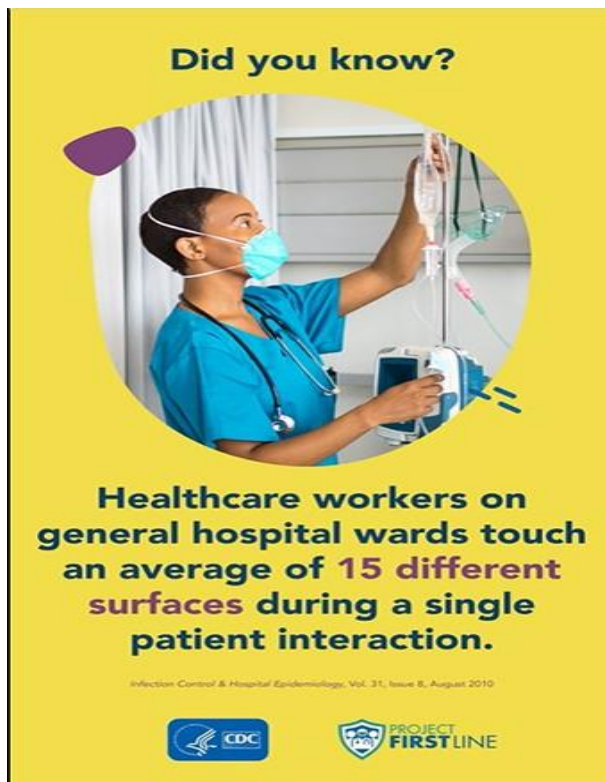
The PEARLS Healthcare Debriefing Tool has been reproduced with permission from Academic Medicine ¹.

Project Firstline Interactive Material:

This graphic is helpful in showing that germs live on our skin. Even new, healthy skin like that of a baby. Because our skin is covered in germs, we must use excellent hand hygiene practices in order to avoid transmitting pathogens from one person to another.



Link to: [Hundreds of millions of germs live on our skin](https://www.cdc.gov/projectfirstline)



This video graphic shows how frequently healthcare workers touch surfaces during their work days. By following hand hygiene guidelines, healthcare workers can interrupt the spread of germs and infections.

Link to: [Did you know? Germs spread through touch](#)



This video graphic discusses the amount of germs on the hands of healthcare workers. Skin is covered in bacteria, most of it harmless. However, any harmful bacteria can be transferred to other people and to surfaces.

Link to: [Did you know? Germs live on the skin](#)

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