



## PARTICIPANT BOOKLET

Introduction to Reservoirs: Where Germs Live

Session 1

# Body Reservoirs

Project Firstline **Infection Control Training Toolkit**



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention



PROJECT  
**FIRSTLINE**

# Overview

## Session 1: Body Reservoirs

### Learning Objectives

- Describe four body reservoirs where germs live that are important for infection control in healthcare.
- Explain how germs can be spread from each body reservoir and cause harm.

### Key Takeaways

- “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 the skin, the gastrointestinal (GI) system or “gut,” 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.

# Skin

Key facts about skin	<ul style="list-style-type: none"> <li>■ Skin, especially the hands, interacts with the environment daily.</li> <li>■ Many germs grow on the skin and help keep it healthy, but some of those germs can be harmful to vulnerable patients.</li> </ul>
Special considerations about skin	<ul style="list-style-type: none"> <li>■ Skin is one of the body's best lines of defense against infection.</li> <li>■ Broken skin, including dry, itchy skin, is likely to have more germs – particularly germs that can cause harm.</li> <li>■ Germs can spread more easily from broken skin.</li> </ul>
Common germs on skin	<ul style="list-style-type: none"> <li>■ <i>Staphylococcus aureus</i> (including MRSA)</li> <li>■ <i>Streptococcus</i></li> <li>■ <i>Candida</i>, a type of yeast (including <i>C. auris</i>)</li> </ul>
Pathways to infection	<ul style="list-style-type: none"> <li>■ Touch</li> <li>■ Breaking down or bypassing the body's defenses, like breaking the skin to insert an IV</li> </ul>
Common healthcare actions involving the skin	<ul style="list-style-type: none"> <li>■ Anything involving touch</li> <li>■ Needlesticks</li> <li>■ Surgery</li> </ul>
Infection control actions	<ul style="list-style-type: none"> <li>■ Cleaning hands and keeping skin healthy</li> <li>■ Using personal protective equipment (PPE), like gloves and gowns</li> <li>■ Cleaning and disinfecting</li> <li>■ Performing safe injections and handling sharps safely</li> </ul>

# GI System

Key facts about the GI system	<ul style="list-style-type: none"> <li>■ The gastrointestinal (GI), or digestive system, has two parts: an upper GI tract and a lower GI tract.</li> <li>■ The lower GI tract, or “the gut,” usually refers to most of the intestines (small and large bowels), rectum, and anus. Most GI germs that cause infection control problems come from the gut.</li> <li>■ The upper GI tract, which includes the mouth, esophagus, stomach, and first part of the small intestine (the duodenum), has different types of bacteria and fungi. We usually think about the upper GI tract separately from the gut.</li> </ul>
Special considerations about the gut	<ul style="list-style-type: none"> <li>■ The intestines are filled with bacteria and some yeasts that are important parts of a healthy immune system. Most gut germs usually don’t cause problems in healthy people.</li> <li>■ Germs that live in the intestines are also found in stool, or poop. Gut germs travel easily in stool from the gut to other places.</li> <li>■ Gut germs are commonly found in places outside the gut, including in the environment – like on surfaces in bathrooms.</li> <li>■ When gut germs are spread to other places or people, they can make people sick.</li> </ul>
Common germs in the gut	<ul style="list-style-type: none"> <li>■ <i>Escherichia coli</i> (<i>E. coli</i>)</li> <li>■ <i>Klebsiella</i></li> <li>■ <i>Candida</i>, a type of yeast</li> <li>■ <i>Clostridioides difficile</i> (<i>C. difficile</i>, or <i>C. diff</i>)</li> </ul>
Pathways to infection	<ul style="list-style-type: none"> <li>■ Touch, especially skin and hands</li> <li>■ Splashes or sprays from toilets</li> <li>■ Breaking down or bypassing the body’s defenses, like surgery or colonoscopy</li> </ul>
Common healthcare actions involving the gut	<ul style="list-style-type: none"> <li>■ Toileting and changing diapers</li> <li>■ Bathing</li> <li>■ Handling bedding and towels</li> </ul>
Infection control actions	<ul style="list-style-type: none"> <li>■ Cleaning hands</li> <li>■ Using personal protective equipment (PPE), like gloves and gowns</li> <li>■ Cleaning and disinfecting</li> <li>■ Handling linens and textiles carefully</li> <li>■ Managing trash and waste appropriately</li> </ul>

# Respiratory System

Key facts about the respiratory system	<ul style="list-style-type: none"> <li>■ The respiratory system consists of the upper airway – including the nose, throat, and windpipe – and the lower airway, which includes the lungs.</li> <li>■ Many germs live in the upper airway. Most of these germs keep those parts of the body healthy.</li> <li>■ The defenses of the nose, mouth, and throat keep a lot of germs from getting to the lungs.</li> </ul>
Special considerations about the respiratory system	<ul style="list-style-type: none"> <li>■ Sometimes germs are found in the respiratory system because someone has an infection.</li> <li>■ When germs get past the defenses of the nose, mouth, and throat and reach the lungs, they can cause an infection.</li> <li>■ Coughing is one of the lungs' defenses for getting germs out, and it is also a way for those germs to spread to others.</li> </ul>
Common germs in the respiratory system	<ul style="list-style-type: none"> <li>■ <i>Pseudomonas</i></li> <li>■ <i>Staphylococcus aureus</i>, including MRSA</li> <li>■ Respiratory viruses, when someone is infected</li> </ul>
Pathways to infection	<ul style="list-style-type: none"> <li>■ Breathing in</li> <li>■ Splashes and sprays</li> <li>■ Touch</li> </ul>
Common healthcare actions involving the respiratory system	<ul style="list-style-type: none"> <li>■ Performing oral care (e.g., toothbrushing)</li> <li>■ Using a CPAP for sleep apnea</li> <li>■ Intubating a patient</li> <li>■ Giving nebulized medication</li> </ul>
Infection control actions	<ul style="list-style-type: none"> <li>■ Coughing into your elbow, cleaning hands, properly disposing of tissues: also known as respiratory hygiene and cough etiquette</li> <li>■ Wearing a mask that covers the nose and mouth for source control, to prevent the spread of respiratory droplets</li> <li>■ Ensuring good ventilation</li> <li>■ Maintaining physical separation in common areas and placing patients with respiratory illnesses in single rooms, when possible</li> <li>■ Using personal protective equipment (PPE), like respirators and gowns</li> <li>■ Cleaning and disinfecting</li> </ul>

# Blood

Key facts about blood	<ul style="list-style-type: none"> <li>■ Blood is sterile and is not supposed to have germs in it.</li> <li>■ Some viruses can cause infections that last for a long time and release virus into an infected person's blood. That blood can then spread the virus to other people.</li> </ul>
Special considerations about blood	<ul style="list-style-type: none"> <li>■ Blood is nutritious food for bacteria.</li> <li>■ If blood gets on germs in the environment, like on linens or a device, those germs are likely to grow and multiply.</li> </ul>
Common germs in the blood	<ul style="list-style-type: none"> <li>■ If someone is infected and untreated: <ul style="list-style-type: none"> <li>▶ HIV</li> <li>▶ Hepatitis B</li> <li>▶ Hepatitis C</li> </ul> </li> <li>■ If blood is outside of the body: <ul style="list-style-type: none"> <li>▶ Bacteria</li> </ul> </li> </ul>
Pathways to infection	<ul style="list-style-type: none"> <li>■ Breaking down or bypassing the body's defenses</li> <li>■ Splashes and sprays</li> <li>■ Touch</li> </ul>
Common healthcare actions involving blood	<ul style="list-style-type: none"> <li>■ Inserting an IV</li> <li>■ Giving an injection</li> <li>■ Performing surgeries and procedures</li> <li>■ Changing soiled laundry</li> </ul>
Infection control actions	<ul style="list-style-type: none"> <li>■ Performing safe injections and handling sharps safely</li> <li>■ Using personal protective equipment (PPE), like gloves, gowns, and eye protection</li> <li>■ Cleaning hands</li> <li>■ Handling linens and textiles carefully</li> <li>■ Cleaning and disinfecting</li> </ul>

## Notes



**For more information, please contact**

Centers for Disease Control and Prevention  
1600 Clifton Road NE, Atlanta, GA 33029-4027  
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348  
E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)  
Web: [www.cdc.gov/projectfirstline](http://www.cdc.gov/projectfirstline)