Introduction to Reservoirs: Where Germs Live

Session 2

Healthcare Environment Reservoirs

Project Firstline Infection Control Training Toolkit
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Overview of Session Plan

The following session plan is provided to support you, as a facilitator of a Project Firstline training, in using Project Firstline materials to create well-rounded training events and to educate your audience about infection control.

Facilitator Instructions

This content can be offered as a stand-alone session, or combined with other Project Firstline sessions to create a longer training event. This session plan includes recommendations for using chat functions and other tools and activities to draw your audience into the material when your time is limited. When you schedule your session, use your knowledge of your audience’s availability and learning needs to adapt these materials as needed.

Session Materials

- Healthcare Environment Reservoirs session plan
- Corresponding PowerPoint slide deck
- Participant booklet

Using the Materials

This session plan is one of three in a series that explores the concept of where germs live on and in the human body and in the healthcare environment, known as “reservoirs,” and why understanding reservoirs is important for infection control. Whether you offer the full series or this session alone, following are things to know:

- Use the session plan and slides as guides for your training presentation.
- The slide numbers in the session plan correspond to the companion slide deck.
- You are encouraged to customize or adapt the sample facilitator scripts to better match your own voice and audience.
- The time recommendations are provided as a guide for short 20-minute training sessions. As needed, take more time with specific sections.
Conducting a Session

Schedule and announce the sessions according to your organization’s needs and requirements. Each session should include, at a minimum:

- specific learning objectives,
- the presentation of core content, and
- opportunities for participants to learn more, understand and connect with the key messages for each topic, act on their learning, and engage with others.

Educational Content at a Glance

Learning Objectives

- Describe four environmental reservoirs where germs live that are important for infection control in healthcare.
- Explain how germs can be spread from each healthcare environment 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 healthcare environment that are important for infection control are water and wet surfaces; dry surfaces; dirt and dust; and devices.
- 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.

Before the Session

In this session, you will lead participants in a discussion of each of the four environmental reservoirs, the risks for germs to spread from them, and possible actions to take to keep germs from spreading from them. The learning activity begins with an “icebreaker” question and transitions to reservoir-specific discussions.

As an alternative to discussing all four healthcare environment reservoirs in one session, you may wish to plan a series of four “mini-sessions,” one on each reservoir. If you choose to split into mini-sessions, modify the script and slides as needed.
Session Slides and Facilitator Notes

1. Welcome and Introductions

1 minute

Slide 1: Welcome and Introductions

Participants log in and get settled.

Slide 2: Agenda

Facilitator Notes

- Welcome the group and add a greeting to the chat box.
- If this session is part of an ongoing series, you may choose to say “welcome back,” “thank you for joining us again,” etc.
- Announce housekeeping notes, either orally or via chat. If needed, provide additional notes specific to the platform you’re using (e.g., how to “raise your hand,” how to post questions).
- Provide an overview of the agenda.
- Adapt this section of the session as needed: for instance, you may choose to spend additional time on introductions if there are new faces, or if participants do not know each other.

Sample Script

“Welcome to Project Firstline. Thank you for joining us! Before we begin, a few housekeeping notes. We’ll meet today for about 20 minutes. Please keep your videos on, to the extent possible, and keep your microphone muted when you are not contributing to the discussion. It’s great to see you all here today!”
“Today we’re going to talk about where germs live in the healthcare environment. We’ll also talk about how our understanding of these environmental reservoirs can be applied to infection control in healthcare, and how you can use your knowledge to anticipate when there could be risk for germs to spread – so you can take action to keep it from happening! We’ll have an opportunity to reflect before we wrap up for the day.”

2. Four Healthcare Environment Reservoirs

2 minutes

Slide 3: Four Healthcare Environment Reservoirs

(Transition slide)

Slide 4: Reservoirs in the Healthcare Environment

Facilitator Notes

- Briefly present and define four reservoirs in the healthcare environment: water and wet surfaces; dry surfaces; dirt and dust; and devices.
- Note that these four reservoirs are not the only places in the healthcare environment where germs live, but they are important focus areas for infection control.
- Explain to participants that this session will focus on why these reservoirs are important for infection control, and how healthcare workers can use their knowledge about them to recognize risks for germs to spread.
- If appropriate for your audience and timeframe, you may choose to incorporate additional points from this session plan’s Content Outline in the Appendix.
- If this session is not presented as part of the Introduction to Reservoirs: Where Germs Live series, consider defining the concept of “reservoir” as described in the sample script for Session Plan 1: Body Reservoirs, found on the Project Firstline website.

Sample Script

“Germs are part of everyday life. The world is covered in germs, especially in healthcare. When we think about where germs live in the healthcare environment and the steps we can take to keep germs from spreading, we think of four core reservoirs: water and wet surfaces; dry surfaces; devices; and dirt and dust.”
“These aren’t the only places where you can find germs in the healthcare environment, but we’ll focus on them for our discussions about infection control because they are common sources of spread. The definitions of these reservoirs are mostly self-explanatory, so today we’ll discuss why they’re so important, and how we can use our knowledge about them to recognize the risks for germs to spread.”

3. Discussion

14 minutes

Slide 5: Discussion

(Transition slide)

Slide 6: Question

Facilitator Notes

- This activity has two parts: (1) an “icebreaker” question; and (2) group discussions of each of the four environmental reservoirs, the risks for germs to spread from them, and infection control actions that can help stop germs from spreading.
  - The icebreaker should take approximately 1 to 2 minutes before you move to the discussion of individual reservoirs, which should take approximately 2 to 3 minutes each.

- As you lead this activity, be aware that different audiences will have different experiences with the reservoirs. In some cases, the infection control actions that can control germ spread will not be part of your participants’ roles or responsibilities.
  - For instance:
    - Facility maintenance and engineering staff are responsible for making sure plumbing pipes are flushed, and for controlling dirt and dust during renovation projects.
    - Dedicated, specialized staff are responsible for reprocessing certain medical devices.
  - When role-related issues such as these are raised, ask participants if they know what to do, or whom at their facility to ask, if they have questions.
- Ask participants to reflect for a moment on which of these environmental reservoirs they interact with, or think about, most on a daily basis.
  - Acknowledge that although people will have more experience with some reservoirs than with others, everyone can recognize an infection risk.
  - If you choose, you can ask for volunteers to share their thoughts in the chat or by using the “raise your hand” function and unmuting when called on.
  - If there are no volunteers, affirm that there will be plenty of time to discuss each reservoir and strategies for recognizing risks for germ spread on the job.
- If you have chosen to split discussions of the environment reservoirs into more than one session, modify the activity and script as needed.

**Sample Script**

“You might have more experience with some reservoirs than others, based on your job, your daily tasks, and your interactions. It’s important to remember that everyone, no matter your training or role, can recognize an infection risk if you understand where germs live and the ways they spread!

“Before we start, I’d like to ask you a question. Based on your own work, are some reservoirs more ‘top of mind’ than others when you think about the risks for germs to spread? Why might that be? Please use the ‘raise your hand’ function or type a response into the chat if you have thoughts about any of the reservoirs on this slide.”

*(Pause for responses.)*

### Slide 7: Water and Wet Surfaces Reservoir

**Facilitator Notes**

- Thank the group and emphasize that each of these reservoirs touches on healthcare workers’ daily work, regardless of their roles.
- Transition to the second part of the learning activity, starting with a discussion of possible risks for germs to spread from the water and wet surfaces reservoir.
- Briefly review the bullet points on the slide.
  - You may wish to refer to the Healthcare Environment informational tables in the participant booklet for additional discussion points.
Sample Script

“Thank you for giving that some thought! Each of these environmental reservoirs has an impact on our daily work lives. We’ll explore some of the more obvious risks of each of these reservoirs, as well as some that might not be so obvious.

“Let’s start our discussion with water and wet surfaces. Water is used a lot in healthcare, and in many different ways. Although tap water is safe to drink for most people, it isn’t sterile. Because most water and wet surfaces are good places for germs to grow, it’s important to be careful with water in healthcare. Germs can spread by water in a few ways: by touch, like when you get germs from water on your hands, or when medical instruments get wet and can then grow germs that can spread to patients. Germs can also spread by splashes and sprays – not just into your eyes, nose, and mouth, but also onto skin or equipment. Breathing in is another way germs can be spread by water – when water gets into the air as very small droplets, it can be breathed in and carry germs to the lungs.”

Slide 8: Water and Wet Surfaces: Taking Action

Facilitator Notes

- Ask participants to think about their profession and job duties, and to identify how they interact with this reservoir in their work.
- Provide a moment for participants to jot down one or two of their day-to-day interactions with water and wet surfaces on the job in their participant booklets.
- Next, ask them to each share one of the interactions they identified in the chat. As participants respond, acknowledge and affirm their ideas.
- As a group, discuss the possible infection risks associated with the identified interactions with water and wet surfaces, and infection control actions to take to keep germs from spreading from this reservoir. Possible answers may include: getting rid of standing water; making sure surfaces like countertops are dry; not using tap water when you should use sterile water; and flushing plumbing pipes as part of routine maintenance. This list is not exhaustive: participants are likely to offer additional, different actions.
- Time permitting, you can pose additional questions to prompt discussion, such as: which actions are unique to specific professions? Which actions apply to us all? Be sure to affirm that, regardless of their professional roles, everyone can take action to address infection risks.
“Now that we’ve described why water and wet surfaces can pose risks for germs to spread, let’s discuss actions we can take to address those risks. Regardless of our professional roles in healthcare, we can also recognize risks with this reservoir. Please take a moment to jot down in your participant booklet how you interact with water and wet surfaces during your workday.”

(Pause for participants to reflect and write down ideas.)

“Now, let’s share some quick ideas. Please type into the chat one interaction that you wrote down.”

(Pause for responses. Acknowledge and affirm responses, as appropriate.)

“Thank you for the great examples. Now, let’s focus on actions we can take to keep germs from spreading from water and wet surfaces. Thinking about the potential risks associated with interactions you thought of, does anyone have ideas about infection control actions we can take to prevent germs from spreading from water and wet surfaces? Please feel free to unmute yourself, or type your ideas in the chat!”

“That was great, thank you! Now let’s talk about dry surfaces. They include high-touch surfaces like bed rails and door handles, as well as surfaces like countertops and bed curtains. Many germs found on the body, in the air, and in stool can end up on dry surfaces, and they can spread very easily! Hands can pick germs up and move them to other surfaces and people. Germs from dry surfaces can also get on devices and can be spread when those devices are used on or in patients.”
Slide 10: Dry Surfaces: Taking Action

Facilitator Notes

- Ask participants to think about their profession and job duties, and to identify how they interact with this reservoir in their work.
- Provide a moment for participants to jot down one or two of their day-to-day interactions with dry surfaces on the job in their participant booklets.
- Next, ask them to each share one of the interactions they identified in the chat. As participants respond, acknowledge and affirm their ideas.
- As a group, discuss the possible infection risks associated with the identified interactions with water and dry surfaces, and infection control actions to take to keep germs from spreading from this reservoir. Possible answers may include: cleaning and disinfecting surfaces regularly, using gowns and gloves, and cleaning your hands regularly. This list is not exhaustive: participants are likely to offer additional, different actions.
- Time permitting, you can pose additional questions to prompt discussion, such as: which actions are unique to specific professions? Which actions apply to us all? Be sure to affirm that, regardless of their professional roles, everyone can take action to address infection risks.

Sample Script:

“How do you interact with dry surfaces at work? Please jot down a few examples in your participant booklet.”

(Pause for participants to reflect and write down ideas.)

“Let’s share some of those thoughts. Please type in the chat one of the ways that you encounter dry surfaces during your workday.”

(Pause for responses in the chat and acknowledge and affirm, as appropriate.)

“Thank you! Now, think about these examples, and the possible risks for germs to spread from dry surfaces. What are some infection control actions that will keep that from happening? Please feel free to unmute yourself, or type your ideas in the chat!”
Slide 11: Dirt and Dust Reservoir

Facilitator Notes

- Briefly review the bullet points on the slide.
  - You may wish to refer to the Healthcare Environment informational tables in the participant booklet for additional discussion points.

Sample Script

“Now, we’ll move to dirt and dust. Outdoor construction projects near a healthcare facility, or indoor projects like building maintenance or renovation, can send dirt and dust into the air. The germs in that dirt and dust can harm certain patients if they’re breathed in. The germs can also spread by touch, especially by hands, when dirt and dust land on surfaces and devices. If the germs are spread to central lines or wounds, they can get into a patient’s body and cause infection.”

Slide 12: Dirt and Dust: Taking Action

Facilitator Notes

- Ask participants to think of their profession and job duties, and to identify how they interact with this reservoir in their work.
- Provide a moment for participants to jot down one or two of their day-to-day interactions with dirt and dust on the job in their participant booklets.
- Next, ask them to each share one of the interactions they identified in the chat. As participants respond, acknowledge and affirm their ideas.
- As a group, discuss the possible infection risks associated with the identified interactions with dirt and dust, and infection control actions and strategies to keep germs from spreading from this reservoir. Possible answers include: good ventilation, construction barriers, and cleaning and disinfecting surfaces. This list is not exhaustive: participants are likely to offer additional, different actions.
- Time permitting, you can pose additional questions to prompt discussion, such as: which actions are unique to specific professions? Which actions apply to us all? Be sure to affirm that, regardless of their professional roles, everyone can take action to address infection risks.
“What are some instances at work when you encounter dirt and dust? Please jot down a few examples in your participant booklet.”

(Pause for participants to reflect and write down ideas.)

“Let’s share some of those thoughts. Please type into the chat one of the things that you thought of.”

(Pause for responses in the chat and acknowledge and affirm responses, as appropriate.)

“Great. Have you ever thought about the potential risks for germs to spread from dirt and dust? What might some of those risks be, and what actions will keep germs in dirt and dust from spreading? Please feel free to unmute yourself or type your ideas in the chat!”

Sample Script

“Now, on to devices. Devices and equipment can have germs on them. Some devices are used on a patient’s body, like a stethoscope or a blood pressure cuff. Other kinds of devices are used in a patient’s body, like an IV needle, an endoscope, or an artificial hip. Germs can spread through devices by bypassing or breaking down the body’s defenses – in fact, devices can be the entryway into the body for germs. When they are used on or in a patient’s body to provide care, any germs on them can be spread to the patient. Touch is another important way that germs can be spread by devices, especially devices and equipment that are shared and used by multiple healthcare workers. They can spread germs between patients, and also pick up germs from a patient and carry them to other surfaces and people.”
Facilitator Notes

- Ask participants to think of their profession and job duties, and to identify how they interact with this reservoir in their work.
- Provide a moment for participants to jot down one or two of their day-to-day interactions with devices on the job in their participant booklets.
- Next, ask them to each share one of the interactions they identified in the chat. As participants respond, acknowledge and affirm their ideas.
- As a group, discuss the possible infection risks associated with the identified interactions with devices, and infection control actions and strategies to keep germs from spreading from this reservoir. Possible answers include: cleaning and disinfection, reprocessing or sterilizing devices, and practicing hand hygiene. This list is not exhaustive: participants are likely to offer additional, different actions.
- Time permitting, you can pose additional questions to prompt discussion, such as: which actions are unique to specific professions? Which actions apply to us all? Be sure to affirm that, regardless of their professional roles, everyone can take action to address infection risks.

Sample Script

“How do you use devices and equipment at work? Please note a few examples in your participant booklet.”

(Pause for participants to reflect and write down ideas.)

“Let’s share some of those thoughts. Please type into the chat one of the ways that you encounter devices.”

(Pause for responses in the chat and acknowledge and affirm, as appropriate.)

“Great, thank you! Now, think about your interactions with devices and the potential risks for germs to spread. What are some infection control actions that will keep that from happening? Please feel free to unmute yourself or type your ideas in the chat!”
4. Bringing It Together

2 minutes

Slide 15: Bringing It Together

(Transition slide)

Slide 16: Reflection

Facilitator Notes

- Explain that by using this approach of recognizing the risks for germs to spread from reservoirs in the healthcare environment, healthcare workers can better protect patients and others and keep their spaces healthy.

- Remind participants of this session’s icebreaker, in which they were asked to identify an instance in which they encountered one of the environmental reservoirs and recognized the risk for germs to spread from it. Encourage participants to jot one to two strategies in their participant booklet that they can use at work to help them remember to recognize risks for germs to spread from reservoirs in the healthcare environment. If needed, you can prompt their thinking with examples, such as creating a mental checklist or a mnemonic device for remembering the environmental reservoirs. Invite participants to share their ideas verbally or in the chat.

Sample Script

“That was a great discussion, thank you! By using this approach – thinking about the places where germs live in healthcare, and the risks for germs to be spread from them – we can understand the infection control actions to take to protect our patients, our colleagues, and ourselves.

“We started this session by thinking of examples of times when we have recognized risks for germs to spread from the environment at work. After our discussion, what are one or two new strategies you can use to apply this thinking? Please take a moment to jot down your ideas in your participant booklet.”

(Pause for participants to reflect and write down ideas.)

“Would anyone care to share their ideas? Please feel free to unmute yourself!”
Facilitator Notes

- Invite additional remaining questions.
- If the answers are information that is already included in this session, please respond.
- If the questions address content that is not covered in this session, please do not attempt to answer. Instead, take note of the questions and consult with CDC resources to follow up with answers after the session.

Sample Script

“We covered a lot today. Does anyone have any questions still remaining, or items I can clarify about the healthcare environment reservoirs?”

5. Conclusion

1 minute

Slide 18: Conclusion

(Transition slide)

Slide 19: Key Takeaways

Facilitator Notes

Thank participants for their time and review the Key Takeaways from the session.

Sample Script

“Thank you for your time and attention today. I hope that you can use these ideas in your work to help stop the spread of germs.”
Facilitator Notes

- Share additional resources from Project Firstline and CDC.
- Explain how participants can reach you, by the means of your choosing, and how they can reach Project Firstline.
- If this session is part of a series, you may choose to describe the themes of upcoming sessions.
- Direct participants to the feedback form.

Sample Script

“Even though we covered a lot today, there is still much more to learn. You can keep exploring these topics on your own using the resources on this slide.

“Project Firstline has a suite of products to help you learn how to recognize infection control risks at work, and to help you learn more about where germs live in healthcare, and how they spread. You can also follow Project Firstline on social media!

“I will stay online for a few minutes after our session ends and will be happy to discuss any other questions!”

(If this session is part of a series) “Next time, we will cover [insert next training topic]. Finally, please let us know how you enjoyed today’s session by completing the following feedback form. Thanks again for joining us today.”
Appendix: Content Outline

General Notes

- “Reservoirs” are the places on and in our bodies and in the environment where germs live. They’re like a natural habitat.
  - Germs frequently spread between and among reservoirs.
- Four reservoirs in the healthcare environment that are important for infection control are water and wet surfaces; dry surfaces; dirt and dust; and devices.
  - These aren’t the only places where you can find germs in the healthcare environment, but they are important focus areas for infection control because they are common sources of germs.
- 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.

Water and Wet Surfaces

- Water is used a lot in healthcare, and in many different ways.
  - Examples include sinks, faucets, ice machines, drains, toilets, and therapy pools.
- Certain germs, especially some bacteria, can grow in wet places.
  - These germs can cause illness in some people, like in patients with weakened immune systems.
  - Examples include Acinetobacter, Serratia, Pseudomonas, and Legionella.
- Tap water is safe to drink, but it is not sterile. It always has some germs in it.
  - Most of the time, the germs in tap water aren’t a problem for healthy people.
  - But because most water and wet surfaces aren’t sterile and can be a good place for bacteria to grow, it’s important to be careful with water in healthcare.
- Germs from water and wet surfaces can spread in a few ways, including by touch.
  - When hands aren’t cleaned, germs from water and wet surfaces can spread from hands to other surfaces, devices, and people.
  - When medical instruments and equipment, like devices or central lines, get wet, they can start growing bacteria.
  - That bacteria can then get into a patient’s blood or other parts of their body and make them sick.
- Germs can also spread by splashes and sprays:
  - Onto equipment or hands
  - Onto the eyes, nose, and mouth, or onto broken or unhealthy skin
- Germs in water can be breathed in when water gets into the air as very small droplets.
Infection control actions that can help stop the spread of germs from water and wet surfaces include:

- Cleaning and disinfecting surfaces
- Sterilizing high-risk devices
- Cleaning hands
- Using personal protective equipment (PPE), like gloves, gowns, and eye protection

### Dry Surfaces

- Germs that are found on the body, in the air, and in stool can often be found on dry surfaces.
  - Most of the time, they won’t harm people, but germs on surfaces can sometimes cause problems in healthcare.
- Certain germs, like spores from *Clostridioides difficile* (*C. difficile* or *C. diff*), can live on dry surfaces for a very long time.
  - They are a big concern in healthcare because they are so durable, and spread so efficiently.
  - Other germs survive for less time – hours, as opposed to days.
- Dry surfaces include “high-touch” surfaces like bed rails, door handles, and light switches.
  - They also include countertops, bed curtains, floors, and things that might not be touched as often.
- Examples of the germs that can be found on dry surfaces, in addition to *C. difficile*, include rotavirus, norovirus, and yeasts, including *Candida*.
- Hands can pick up germs from dry surfaces and transfer them to other surfaces and people.
- If a dry surface comes into contact with a device, germs from the dry surface can spread when the device is used on or in patients.

Infection control actions that can help stop the spread of germs from dry surfaces include:

- Cleaning and disinfecting surfaces
- Sterilizing high-risk devices
- Cleaning hands
- Using PPE, like gloves and gowns

### Dirt and Dust

- Germs live in dirt and soil.
- If dirt gets inside a healthcare facility, it can carry germs that harm certain patients with weakened immune systems.
- When things that move a lot of dirt around, like building construction, happen in or near a healthcare facility, it can send particles that are in the dirt into the air.
  - Dirt contains many germs, such as *Aspergillus* and *Cryptococcus*.
In some patients who don’t have a strong immune system, or whose lungs are damaged, *Aspergillus* can cause infection if it is breathed in.

Germs in dirt and dust can also spread by touch, especially by hands, when dirt and dust land on surfaces and devices.

- If the germs are spread to central lines or wounds, they can get into a patient’s body and cause infection.

Big construction projects aren’t the only thing that creates risk.

Smaller construction and maintenance projects inside a building, like taking out part of a wall or renovating a room, can also create dust that can have germs in it.

Infection control actions that can help stop the spread of germs from dirt and dust include:

- Ensuring good ventilation
- Using barriers and other construction containment
- Cleaning and disinfecting surfaces and devices
- Cleaning hands

### Devices

- Devices, equipment, tools, and supplies are all surfaces that can have germs on them.
- Healthcare workers use and share devices and equipment many times a day and for many different tasks, which makes devices and equipment infection risks.
- Medical devices, such as stethoscopes or blood pressure cuffs, are used on a patient’s body.
  - They’re also used in a patient’s body, such as an IV needle, an endoscope, or an artificial hip.
- When devices are used on or in a patient’s body to provide care, any germs on those devices can spread to the patient’s body.
  - That’s how devices can be an entryway for germs into the body.
- Devices can also pick up germs from a patient’s body, like their skin, gut, and blood.
  - If the devices aren’t handled correctly, they can carry those germs to other surfaces and people.
- Germs can grow on devices that are put into a patient’s body, like an artificial hip, if those devices aren’t handled correctly.

Infection control actions that can help stop the spread of germs from devices include:

- Cleaning and disinfecting
- Sterilizing high-risk devices
- Cleaning hands
- Using PPE, like gloves
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
Web: www.cdc.gov/projectfirstline