



## Project Firstline **Session Plans**

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# Topic Fifteen: Ventilation

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# Overview of Sessions

The following Session Plans for **Topic Fifteen: Ventilation** are to help guide you, as a provider of the Project Firstline training, with the necessary support to use Project Firstline materials to create well-rounded training events and educate your audience about infection control.

## Facilitator Instructions

### Choose Your Session

There are three different session lengths for you to choose from based on time available for training:

- 60 minutes (e.g., dedicated training session)
- 20 minutes (e.g., “Lunch and Learn” or agenda add-on)
- 10 minutes (e.g., “micro-learning” or agenda add-on)

Due to time constraints, the 10- and 20-minute sessions will have less opportunity for interactive discussion. We invite you to extend sessions for greater engagement whenever possible. We have also provided recommendations for using chat functions and other activities to draw your audience into the materials when you are limited to only a short amount of time.

These time lengths are not intended to be prescriptive and are instead provided simply as a tool that you may tailor to best match your specific audience and needs. When you schedule your session, use your knowledge of your audience’s availability and learning needs to adapt these materials as needed.

### Session Materials

- Three different Session Plans: 60 minutes, 20 minutes, and 10 minutes
- Corresponding PowerPoint slide decks: 60 minutes, 20 minutes, and 10 minutes
- Links to Project Firstline videos: *Inside Infection Control* by CDC’s Project Firstline
- Copies, links, or PDFs of a ventilation one-pager
- Ventilation demonstration video
- (Optional) A jar filled with water with a top that can close and food coloring

## Using the Materials

The sample materials are presented in sequence, with the expectation that participants will progress through the series. You may, however, mix and match content to meet participant needs. Following are things to know:

- Use the plans and slides as guides for your presentation.
- The slide numbers in the Session Plans correspond to the companion slide decks provided.
- We encourage you to customize the look and feel of the presentations and to adapt the facilitator script to better match your own voice and audience.
- The time recommendations are provided simply as a guide for the minimum amount of time needed for each section. We encourage you to take more time, as needed, with specific sections.

## Conducting a Session

Schedule and announce the sessions according to your organization's needs and requirements. Each session should include at least the following:

- Specific learning objectives
- Presentation of core content
- Opportunities to understand and engage with the key messages for each topic

Each session should also give participants the opportunity to learn more, to understand and connect internally with the content, and to act on their learning and engage with others.

Additional guidance for facilitators and information about other topics covered in the series are provided in the Project Firstline Facilitator Toolkit Guide.

# Educational Content Outline

## Topic Fifteen: Ventilation

**Content Summary:** Ventilation is the movement of air in and out of spaces. In healthcare, good ventilation is important to ensure staff, patients, and visitors are not exposed to chemicals, dust, and other hazards in the air, and to help reduce the spread of respiratory germs in the facility.

### *Inside Infection Control Videos:*

[Episode 17: What is Ventilation?](#)

[Episode 18: Why Does Ventilation Matter?](#)

## Learning Objectives

- Discuss why good ventilation is important for infection control in healthcare.
  - ▶ Good ventilation in healthcare facilities can help reduce the risk of respiratory infections, including COVID-19, spreading to patients and staff.
- Discuss one (1) way that ventilation works to reduce the amount of germs in the air.
  - ▶ Ventilation replaces the air in a room by moving air out and bringing new air in.
  - ▶ Good ventilation can help remove things that we don't want to breathe in – including small particles that can contain respiratory viruses – from the air in the space we're in.
- Describe one (1) reason why it is important not to take steps to improve ventilation yourself, without working with the staff in your facility in charge of air handling and ventilation.
  - ▶ Simple actions like opening a window may improve ventilation in a room, but doing so may change the air pressure and ventilation in other places in the building.
  - ▶ Always check with the people in your facility who are in charge of air handling and ventilation before making changes to the ventilation in a room.

# Sessions at a Glance

## Topic Fifteen:

Ventilation

### Session Plans and When to Use:

- 60 minutes (e.g., dedicated training session)
- 20 minutes (e.g., “Lunch and Learn” or agenda add-on)
- 10 minutes (e.g., “micro-learning” or agenda add-on)

### Format:

- Online, synchronous

### Special Supplies:

- Registration list
- Participant booklet
- Session feedback form
- Timekeeper
- A jar filled with water with a top that can close and food coloring (recommended)



# 60-Minute Session Plan

## 1. Session Start



### Slide 1: Opening Slide

Participants log in and get settled.

## 2. Agenda, Learning Objectives, and Introductions



**8 minutes**



### 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. Over the next hour, we’ll focus on ventilation in healthcare. 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!

“Our discussion will include what ventilation is, how it works, why it matters for infection control, and how we use it.”



### Slide 3: Learning Objectives



#### Facilitator Notes

Provide an overview of the session's learning objectives.



#### Sample Script

"Here is what we expect to learn today. By the end of today's training, you will be able to describe why good ventilation is important for infection control in healthcare, how ventilation works to reduce germs in the air, and why it's important to work with the people in your facility who are in charge of air handling and ventilation if you think changes should be made to the ventilation in a room."



### Slide 4: Introductions



#### Facilitator Notes

- These questions will give you a better understanding of your participants' backgrounds, experience, and level of knowledge.
- Tailor your slide delivery for the virtual format and platform, and the number of participants:
  - ▶ You may wish to call on participants individually.
  - ▶ You may wish to add role- or facility-specific questions to the introductions.
  - ▶ If you have a large group, you may decide to skip oral introductions and use the chat.
  - ▶ If your group meets regularly, you may wish to skip or shorten the introductions, or use a different "icebreaker" approach.
- Be sure to introduce yourself and anyone who is assisting you.



#### Sample Script

"Let's take a minute to get to know each other. Please share in 30 seconds or less your name and your role, and whether you think your job has responsibilities related to ventilation."





## Slide 5: How does ventilation play a role in our lives?



### Facilitator Notes

- Invite participants to describe, either orally or in the chat, how ventilation is part of their daily lives.
- Affirm examples, which could include:
  - ▶ Opening windows in the house if you burn something in the kitchen and the smoke detector goes off
  - ▶ Rolling down the windows in the car
  - ▶ Hood vents over stoves, dryer vents
  - ▶ You may wish to note that the term can be used figuratively, as in “vent your feelings”
- Connect the discussion to responses to the introductory question, in which they indicated whether their jobs explicitly involve ventilation, and ask participants to define, either orally or in the chat, “ventilation.”



### Sample Script

“Let’s think about ventilation outside of healthcare. **How does ventilation play a role in our lives? What are some specific examples?**”

*(Pause for responses.)*

“Those are great examples. **So, what does ‘ventilation’ mean? Could someone define ventilation in plain language?**”

*(Pause for responses.)*



## Slide 6: Definition

- Either allow time for participants to read the definition themselves or read it aloud.
  - ▶ “The movement of air in and out of an enclosed space. For example, the circulation of fresh air to a room or building.”



### Sample Script

“Before we move on, let’s review a definition of ventilation.”

### 3. Video or Demonstration and Discussion



12 minutes



**Slide 7: How does ventilation work?**



**Facilitator Notes**

Transition to video or demonstration of how ventilation works.



**Sample Script**

“Now that we all know what ventilation is, let’s learn about how ventilation works.”



**Slide 8: Demonstration or Video: How does ventilation work?**



**Facilitator Notes**

- Establish the importance of ventilation in healthcare: Good ventilation in healthcare is important to help reduce the spread of respiratory infections.
- There are three options for this section:
  - ▶ a live demonstration and discussion,
  - ▶ a brief animated video and discussion, or
  - ▶ an episode of *Inside Infection Control* and discussion.
- The following slides and sample script provide guidance for a live demonstration and showing of the animated video, and they may be adapted according to your plan for sharing the content.
- If you choose to provide this demonstration live, stop sharing your slides so that participants can see you in full-screen mode.
  - ▶ Make sure you have all the materials you need within reach and ready to use.
  - ▶ The [Content Outline of Episode 17](#) provides additional talking points that you may wish to incorporate into your demonstration.
- If you choose to show the brief animated video or the *Inside Infection Control* episode, delete the other image on this slide and enlarge the image from the video that you will be showing.

- The brief animated video shows a space without ventilation. It can be viewed here: <https://www.youtube.com/watch?v=zOFA05orOlc>
- If you choose to show Episode 17: *Inside Infection Control: What Is Ventilation?* you may do so here:  
**CDC Website:** <https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP17-Vent-LowRes.mp4>



- OR  
**Project Firstline YouTube Playlist:** [https://www.youtube.com/watch?v=Tos-ecfft\\_A](https://www.youtube.com/watch?v=Tos-ecfft_A)



### Sample Script for Live Demonstration

“In healthcare settings, good ventilation is really important. It helps remove air that contains things we don’t want to breathe in, like small particles that can contain virus. Good ventilation improves air quality and reduces the risk of germs spreading.”

*(Hold up jar filled with water, and food coloring.)*

“Let’s imagine that this jar represents a room, and that this food coloring represents respiratory droplets carrying germs.”

*(Place one drop of food coloring in jar and allow the color to spread.)*

“When we place a drop of food coloring in the jar, it spreads through the water. Look at how that one drop of food coloring spreads throughout the entire jar.

“In this demonstration, the jar is like a room without ventilation. Like the food coloring in the jar, respiratory droplets that are breathed out will spread into the space, because they don’t have anywhere else to go. Respiratory droplets will linger in the air for a little while. Over time, the particles will settle and the virus in them will die, if it doesn’t get picked up by another person.”



### Sample Script for Brief Animated Video

“In healthcare settings, good ventilation is really important. It helps remove air that contains things we don’t want to breathe in, like small particles that can contain virus. Good ventilation improves the air quality and reduces the risk of germs spreading. This brief video shows what happens to respiratory droplets in an enclosed space without ventilation.

“Let’s watch.”

*(Play video.)*

“As you can see, without ventilation, respiratory droplets will linger in the air for a little while. Over time, the particles will settle and the virus in them will die, if it doesn’t get picked up by another person.”



### Sample Script for *Inside Infection Control* Episode

“In healthcare settings, good ventilation is really important. It helps remove air that contains things we don’t want to breathe in, like small particles that can contain virus. Good ventilation improves the air quality and reduces the risk of germs spreading. In this episode of *Inside Infection Control*, CDC’s Dr. Abby Carlson will describe how ventilation works.”

(Play video.)

“As we just heard, good ventilation matters so much in healthcare because it can help move germs out of the air. Without ventilation, respiratory droplets will linger in the air for a little while. Over time, the particles will settle and the virus in them will die, if it doesn’t get picked up by another person.”



### Slide 9: What would good ventilation do?



### Facilitator Notes

- Lead the group in a discussion of what good ventilation would do, in the context of the live demonstration, animated video, or *Inside Infection Control* episode.
  - ▶ You may choose to ask participants to share thoughts orally, in the chat, or both.
- Affirm and emphasize the following points:
  - ▶ (If you showed the live demonstration): A system for the jar that pulls out old water and pushes in new water would eventually remove all the color, and the jar would have nice, clear water again.
  - ▶ When ventilation pulls old air out of a room and pushes new, clean air in, eventually the room is “cleared.”



### Sample Script for Live Demonstration

“Imagine what good ventilation would do in this example. **What if there were a system that pulls the old water out and pushes new water in?**”

(Pause for responses.)

“That’s right. Depending on how fast the new water comes in and the old water goes out, the color will go away. Eventually, we’ll have clear water again.”



### Sample Script for Brief Animated Video

“Imagine what good ventilation would do in this example. **What if there were a system that pulls the old air in the room out and pushes new air in?**”

*(Pause for responses.)*

“That’s right. As the new air replaces the old air, eventually we’ll have entirely new air in this room.”



### Sample Script for *Inside Infection Control* Episode

“So, as we heard from Dr. Carlson, ventilation removes things we don’t want to breathe in from the air, such as respiratory droplets. In an enclosed space, such as a healthcare setting, ventilation can remove the old air, which may have respiratory droplets in it, and replace it with clean, new air.”



### Slide 10: Good Ventilation



### Facilitator Notes

- Emphasize why good ventilation in healthcare is important for infection control.
- Show a brief animated video that shows how ventilation replaces air in a room: <https://www.youtube.com/watch?v=WQcRZHyxlwE>



### Sample Script

“Just to reiterate: ventilation is the movement of air in and out of spaces. Let’s take a quick look at a video to see how that happens.”

*(Play video.)*

“Good ventilation is important in healthcare because it can help remove things that we don’t want to breathe in, like small virus particles. That’s why it’s important that healthcare settings have good air movement. It can help reduce the spread of respiratory infections.

“Let’s keep exploring air quality and ventilation in healthcare.”



### Slide 11: How is ventilation handled at your workplace?



#### Facilitator Notes

- Lead a discussion of other ventilation strategies in place in healthcare, noting that:
  - ▶ Ventilation systems can improve air quality in ways other than moving air.
  - ▶ Some tools, like high-efficiency particulate air (HEPA) filters, improve air quality by filtering air instead of removing it before people breathe it in.
  - ▶ If you chose to do a live demonstration, connect to the example of food coloring in the jar: filtering would be like using something to pull coloring out of the water in order to achieve clear water.
- Reinforce the point that doing things to improve air quality and air movement will help keep viruses from spreading: the fewer virus particles in the air, the less likely you’ll breathe them in, or that they’ll land on your eyes, nose, mouth, or a surface that you might touch.
- You may wish to use the [Content Outlines for Episodes 17](#) and [18](#) of *Inside Infection Control* for reference.



#### Sample Script

“Air movement is important for having good air quality, but there are other ways to improve air quality. Some ventilation systems filter the air instead of removing it before it’s breathed in. **Do any of you work at facilities that filter the air using a tool like a high-efficiency particulate air filter, or HEPA filter?**”

*(Pause for responses.)*

“That’s great.”

*(If you chose to do a live demonstration with the jar of water):*

“With our example of the jar, it would be like using something that pulls the coloring out of the water in the jar, rather than – or in addition to – replacing the water to make sure it’s clean.”

“All of these strategies to improve air quality will help keep respiratory infections from spreading: the fewer virus particles in the air, the less likely you’ll breathe them in, or that they’ll land on your eyes, nose, mouth, or a surface that you might touch.”

## 4. Video and Discussion



15 minutes



**Slide 12: Why does ventilation matter?**



**Facilitator Notes**

Link prior discussion to the upcoming video and to concepts regarding how to improve ventilation.



**Sample Script**

“Now let’s spend some time thinking about good ventilation at work. We’ve been talking a lot about what ventilation is and why it matters, but it’s not always easy to know what we can do about it.”



**Slide 13: Instructions**



**Facilitator Notes**

- You may choose to show Episode 18 of *Inside Infection Control*, or you may choose to show the animated ventilation demonstration video and use the [Content Outline for Episode 18](#) to support discussion.
- Encourage participants, while they watch the video or animation, to think about their workday and instances when their actions may impact ventilation.



**Sample Script**

“As you watch this video [or animation], start thinking about your workday. Jot down in your Participant Booklet some instances when your actions at work impact ventilation.”



### Slide 14: Video: Why does ventilation matter?



#### Facilitator Notes

- Access the *Inside Infection Control* video here:

**CDC Website:** <https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP18-Ventilation-LowRes.mp4>



- OR

**Project Firstline YouTube Playlist:** <https://www.youtube.com/watch?v=FY7FiJDqghE>

- Alternatively, if less time is available, you may choose to show a 1-minute ventilation demonstration video here: <https://www.youtube.com/watch?v=KTjtYVw0Sj4>



### Slide 15: What actions do you take at work that may impact ventilation?



#### Facilitator Notes

- Invite participants to review the notes they wrote down during the video and share, either orally or in the chat, actions that they take at work that may impact ventilation.
- When appropriate, ask follow-up questions and prompt additional discussion regarding why they take these actions, and what they achieve.
- You may wish to use the [Content Outline for Episode 18](#) to reinforce key points for either video.



#### Sample Script

**“As you were watching the video, what occurred to you about your work? What actions do you take at work that may impact ventilation?”**

*(Pause for responses and encourage additional discussion.)*





## Slide 16: Ventilation in Healthcare



### Facilitator Notes

- Invite participants to share ideas about what is important to know about ventilation in healthcare and how to put that knowledge into action.
  - ▶ You may wish to call on participants who have not yet shared during the session.
- Important points to reinforce include:
  - ▶ An air change means the air in a room is replaced with new or filtered air.
    - Air changes are usually measured by the hour, as in air changes per hour (ACH).
    - In healthcare facilities, nearly every type of room has a recommended number of air changes. For example, 12 ACHs are recommended for emergency department waiting rooms.
  - ▶ Rooms used to care for patients with respiratory diseases like COVID-19 should be assessed and maintained by maintenance and facilities engineering staff to ensure correct ACHs.
    - The ACH will tell you how long the room should sit empty after that patient leaves and before another person can come in without the recommended PPE, such as a fit-tested respirator.
    - It is okay to enter a room with the recommended PPE before the air is completely cleared, including while the patient is still there.
- Acknowledge the responses and invite additional discussion.
  - ▶ You may choose to capture high-level summaries of their responses on a slide or in the chat.



### Sample Script

“Let’s talk a bit more about what’s important to know about ventilation, and what we can do about it. **What do you need to know about ventilation?**”

*(Pause for responses.)*

“That’s right – it’s important to know what an air change is. Using COVID-19 as an example, it’s important to know how long a room should sit empty after a patient with COVID-19 leaves it before you can enter the room without the recommended PPE, and that depends on how many air changes the room gets each hour. Of course, it’s okay to enter a room before the air is completely cleared, and even if the patient is still there, if you use the recommended PPE, including a fit-tested respirator.”



## Slide 17: Steps to Support Good Ventilation



### Facilitator Notes

- Encourage participants to think about how they can use their knowledge about ventilation at work.
  - ▶ Know how long it takes for the air in certain rooms, such as patient rooms, to clear.
  - ▶ If you're entering a room without recommended PPE, make sure the air in the room is cleared first.
  - ▶ It is important not to take steps to improve ventilation on your own, because actions like opening windows, or blocking or redirecting vents, can change the balance of air pressure and the ventilation in other spaces in the facility.
  - ▶ Always check with the people in your facility who are in charge of air handling and ventilation before making changes to the ventilation in a room.
    - Their titles may vary, but they could include people who work in building engineering, maintenance, HVAC, or Facilities Managers.



### Sample Script

"Those are excellent points. Let's talk about how to put what we know about ventilation into action. **What are some things we can do, and some things we shouldn't do?**"

*(Pause for responses.)*

"That's right, it's important to know the ACH for certain rooms, and to wait until a room has cleared before you enter without the recommended PPE.

"You can always work with the staff at your facility who are in charge of air handling if you have questions about the ventilation in a room or think changes should be made. It's important, though, not to open a window or do anything else to change the ventilation in a room without asking. It seems simple enough, but opening a window, or blocking a vent because you're cold, can change the air pressure and ventilation in other places in the building."

## 5. Breakout Groups



15 minutes



Slide 18: Breakout Groups



### Facilitator Notes

- Use breakout rooms appropriate to your virtual platform to divide participants into pairs or small groups, ideally no more than 3-5 participants each.
- Task the groups with exploring scenarios involving ventilation in healthcare and rehearsing what they might say in the situations.
  - ▶ As needed, provide instructions related to the breakout room format, such as how to ask questions.
  - ▶ Inform the groups that they have 5 minutes to work together and that they will discuss the scenarios as a large group after they reconvene.
  - ▶ If applicable and possible, try to create groupings of participants who haven't yet had an opportunity to speak together during the training.
- Read the scenarios on the slide, and you may wish to provide them in the chat:
  - ▶ You're concerned about the ventilation in your facility and need to seek help.
    - **Who would you speak to?**
    - **What would you say? What questions would you ask?**
  - ▶ You wish to express appreciation for solving a ventilation problem in your facility.
    - **Who would you speak to?**
    - **What would you say?**
- After the small groups have gathered, depending on your virtual platform, you may use the broadcast message feature or another means to send reminders of the scenarios, how much time is remaining, etc. You may also choose to "visit" each group to encourage conversation and to hear their thoughts.
- Use your chime or timekeeper to warn participants when they have 1 minute remaining.



### Sample Script

"We're going to take a few minutes to split into small groups and practice how to handle some scenarios related to ventilation. In your group, I'd like you to discuss what you would do if you were concerned about the ventilation in your facility and

wanted help. **Who would you talk to? What would you say, and what questions would you ask?**

“Also, think about who you would speak to, and what you would say when you want to say thanks for solving a ventilation problem in our facility.”

“Let’s take 5 minutes to talk about these questions. Then we will come back together to share and discuss.”



### Slide 19: Discussion



### Facilitator Notes

- After 5 minutes, reconvene the groups.
- Lead a discussion of the whole group, encouraging them to share strategies for addressing the scenarios that they discussed in their small groups.
  - ▶ If participants are all at one facility, they may name a specific individual whom they would speak to or thank.
  - ▶ If you are at the same facility, consider identifying the correct point of contact before this training so that you can share the person’s name and contact information.
  - ▶ If participants seem to have first-hand knowledge, potential follow-up questions could be:
    - **Have you had a situation where you needed to ask a question or share a concern about ventilation?**
    - **Can you tell us about it and how you handled it?**
- You may wish to prompt discussion by suggesting potential questions to ask a facility’s air handling or maintenance staff:
  - ▶ **Are there any places in our facility where we can open windows?**
  - ▶ **What do we do if the vents are making noises?**
  - ▶ **What do we do if we notice people without PPE entering rooms that haven’t fully cleared?**



### Sample Script

“Thanks for coming back together. I hope you had good discussions in your groups! Let’s share some of your thinking with the larger group.

“First, I’d love to know if anyone knows who at your facility to go to in order to share concerns or ask questions about ventilation.”

*(Pause for responses and encourage additional discussion.)*

**“Were your groups able to identify situations that would be a potential concern for you?”**

*(Pause for responses.)*

**“What about questions you’d ask?”**

*(Pause for responses and encourage additional discussion.)*

**“Lastly, does anyone have examples of ventilation going well?”**

*(Pause for responses.)*

**“I’m so glad to hear that things seem to be working well!”**

## 6. Reflection and Wrap-Up



**10 minutes**



**Slide 20: Reflection**



**Facilitator Notes**

Invite participants to share what they learned during the session.



**Sample Script**

**“Let’s use our last few minutes together to reflect on what we’ve learned and think about how we can put what we’ve learned into practice.”**



**Slide 21: Reflection, Continued**



**Facilitator Notes**

- Encourage participants to think about how they can put their knowledge about ventilation to use in their work.
  - ▶ You may choose for participants to respond orally or in the chat.
  - ▶ Acknowledge responses and consider reading them aloud if they are in the chat.
- Distribute the job aid as appropriate for your platform (e.g., a link in the chat, PDF).



### Sample Script

"I hope this training gave you some good information about ventilation that you can use in your work.

"Now, please take a minute to think about one action that you could take to support good ventilation in your workplace. Please type the action in the chat."

*(Pause for responses.)*

"That's great – I'm glad to hear that you'll be putting this knowledge to use! I'm also putting a link into the chat for a handout that you can take and share to remind you of the key points we discussed today."



### Slide 22: Questions?



### 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

"Thank you all for your time today! **Does anyone have any questions still remaining?**"

*(Address questions as appropriate.)*

"Thank you for sharing those questions. Project Firstline is actively collecting your questions to help inform more training resources as they're developed. I've written them down, and I will get back to you with responses."



## Slide 23: Resources and Future Training Sessions



### 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.



### Sample Script

"We covered a lot today, and there is still more to learn. You can keep exploring these topics on your own using the resources on this slide. You can also follow us on social media. I will stay on the line 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]."*



## Slide 24: Feedback Form



### Facilitator Notes

Explain how to access the feedback form.



### Sample Script

"And, finally, please let us know how you enjoyed today's session by completing the feedback form. Thanks again for joining us today."

## After the Session



Send list of participant questions compiled during this session to [ProjectFirstline@cdc.gov](mailto:ProjectFirstline@cdc.gov).



# 20-Minute Session Plan

## 1. Session Start



### Slide 1: Opening Slide

Participants log in and get settled.

## 2. Agenda and Learning Objectives



**4 minutes**



### Slide 1: Opening Slide

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. Over the next 20 minutes, we’ll focus on ventilation in healthcare. 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!”



“Our discussion will include what ventilation is, how it works, why it matters for infection control, and how we use it.”



### Slide 3: Learning Objectives



#### Facilitator Notes

- Provide an overview of the session’s learning objectives.



#### Sample Script

“Here is what we expect to learn today. By the end of today’s training, you will be able to describe why good ventilation is important for infection control in healthcare, how ventilation works to reduce germs in the air, and why it’s important to work with the people in your facility who are in charge of air handling and ventilation if you think changes should be made to the ventilation in a room.”



### Slide 4: How does ventilation play a role in our lives?



#### Facilitator Notes

- Invite participants to describe, either orally or in the chat, how ventilation is part of their daily lives. This may include indicating whether their jobs explicitly involve ventilation.
- Affirm examples, which could include:
  - ▶ Opening windows in the house if you burn something in the kitchen and the smoke detector goes off
  - ▶ Rolling down the windows in the car
  - ▶ Hood vents over stoves, dryer vents
  - ▶ You may wish to note that the term can be used figuratively, as in “vent your feelings”
- Ask participants to define, either orally or in the chat, “ventilation.”



#### Sample Script

“But first, let’s think about ventilation outside of healthcare. **How does ventilation play a role in our lives? What are some specific examples?**”

*(Pause for responses.)*

“Those are great examples! Now let’s review a definition of ventilation.”



### Slide 5: Definition



### Facilitator Notes

- Either allow time for participants to read the definition themselves or read it aloud.
  - ▶ “The movement of air in and out of an enclosed space. For example, the circulation of fresh air to a room or building.”



### Sample Script

“Please review this definition of ventilation.”

## 3. Video and Discussion



**3 minutes**



### Slide 6: How does ventilation work?



### Facilitator Notes

Transition to video or demonstration of how ventilation works.



### Sample Script

“Now that we all know what ventilation is, let’s learn about how ventilation works.”



## Slide 7: Animation: How does ventilation work?



### Facilitator Notes

- Establish the importance of ventilation in healthcare: Good ventilation in healthcare is important to help reduce the spread of respiratory infections.
- Show this animated ventilation demonstration video: <https://www.youtube.com/watch?v=WQcRZHxylwE>
- For additional information (and if time allows), you may choose to show Episode 17: *Inside Infection Control: What Is Ventilation?* here:  
**CDC Website:** <https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP17-Vent-LowRes.mp4>



- OR  
**Project Firstline YouTube Playlist:** [https://www.youtube.com/watch?v=Tos-eccft\\_A](https://www.youtube.com/watch?v=Tos-eccft_A)
- Review the [Content Outline of Episode 17](#) for additional discussion points.



### Sample Script

- “In healthcare settings, good ventilation is really important. It helps remove air that contains things we don’t want to breathe in, like small particles that can contain virus. Good ventilation improves air quality and reduces the risk of germs spreading.”  
*(Play animation.)*
- “As we can see in the video, when there is no ventilation in a room, the respiratory droplets that a person breathes out will spread into the space because they don’t have anywhere else to go. Respiratory droplets will linger in the air for a little while. Over time, the particles will settle and the virus in them will die, if it doesn’t get picked up by another person.
- “But, with ventilation, the respiratory droplets are pulled out of the space along with the rest of the air in the room. The ventilation system also pushes new, clean air into the room. Eventually, the room will have entirely clear air. When that happens, the room is considered cleared.”

## 4. Video and Discussion



10 minutes



**Slide 8: Why does ventilation matter?**



**Facilitator Notes**

Link prior discussion to the upcoming video and to concepts regarding how to improve ventilation.



**Sample Script**

“Now let’s spend some time thinking more about why ventilation matters at work, and what we can do about it.”



**Slide 9: Video: Why does ventilation matter?**



**Facilitator Notes**

- Access the video here:

**CDC Website:** <https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP18-Ventilation-LowRes.mp4>



- OR

**Project Firstline YouTube Playlist:** <https://www.youtube.com/watch?v=FY7FiJDoqhE>

- Alternatively, if less time is available, you may choose to show a 1-minute ventilation demonstration video here: <https://www.youtube.com/watch?v=KTjtYVwOSj4>



**Sample Script**

“First let’s hear from Dr. Abby Carlson about why ventilation matters.”



## Slide 10: Ventilation in Healthcare



### Facilitator Notes

- Invite participants to share ideas about what is important to know about ventilation in healthcare and how to put that knowledge into action.
  - ▶ You may wish to call on participants who have not yet shared during the session.
- Important points to reinforce include:
  - ▶ An air change means the air in a room is replaced with new or filtered air.
    - Air changes are usually measured by the hour, as in air changes per hour (ACH).
    - In healthcare facilities, nearly every type of room has a recommended number of air changes. For example, 12 ACHs are recommended for emergency department waiting rooms.
  - ▶ Rooms used to care for patients with respiratory diseases like COVID-19 should be assessed and maintained by maintenance and facilities engineering staff to ensure correct ACHs.
    - The ACH will tell you how long the room should sit empty after that patient leaves and before another person can come in without the recommended PPE, such as a fit-tested respirator.
    - It is okay to enter a room with the recommended PPE before the air is completely cleared, including while the patient is still there.
- Acknowledge the responses and invite additional discussion.
  - ▶ You may choose to capture high-level summaries of their responses on a slide or in the chat.



### Sample Script

“Good ventilation is important in healthcare because it can help remove things that we don’t want to breathe in, like small virus particles. That’s why it’s important that healthcare settings have good air movement. It can help reduce the spread of respiratory infections.

“Let’s talk a bit more about what’s important to know about ventilation, and what we can do about it. **What do you need to know about ventilation?**”

*(Pause for responses.)*

“That’s right – it’s important to know what an air change is. Using COVID-19 as an example, it’s important to know how long a room should sit empty after a patient with COVID-19 leaves it before you can enter the room without the recommended

PPE, and that depends on how many air changes the room gets each hour. Of course, it's okay to enter a room before the air is completely cleared, including while the patient is still there, if you use the recommended PPE, including a fit-tested respirator."



### Slide 11: Steps to Support Good Ventilation



#### Facilitator Notes

- Encourage participants to think about how they can use their knowledge about ventilation at work.
  - ▶ Know how long it takes for the air in certain rooms, such as patient rooms, to clear.
  - ▶ If you're entering a room without recommended PPE, make sure the air in the room is cleared first.
  - ▶ It is important not to take steps to improve ventilation on your own, because actions like opening windows, or blocking or redirecting vents, can change the balance of air pressure and the ventilation in other spaces in the facility.
  - ▶ Always check with the people in your facility who are in charge of air handling and ventilation before making changes to the ventilation in a room.
    - Their titles may vary, but they could include people who work in building engineering, maintenance, HVAC, or Facilities Managers.



#### Sample Script

"Let's talk about how to put what we know about ventilation into action. What are some things we can do, and some things we shouldn't do?"

*(Pause for responses.)*

"That's right, it's important to know the ACH for certain rooms, and to wait until a room has cleared before you enter without the recommended PPE.

"You can always work with the staff at your facility who are in charge of air handling if you have questions about the ventilation in a room or think changes should be made. It's important, though, not to open a window or do anything else to change the ventilation in a room without asking. It seems simple enough, but opening a window, or blocking a vent because you're cold, can change the air pressure and ventilation in other places in the building."

## 5. Reflection and Wrap-Up



**3 minutes**



**Slide 12: Reflection**



**Facilitator Notes**

Invite participants to share what they learned during the session.



**Sample Script**

“Let’s use our last few minutes together to reflect on what we’ve learned and think about how we can put what we’ve learned into practice.”



**Slide 13: Questions?**



**Facilitator Notes**

- Encourage participants to think about how they can put their knowledge about ventilation to use in their work.
  - ▶ You may choose for participants to respond orally or in the chat.
  - ▶ Acknowledge responses and consider reading them aloud if they are in the chat.
- Distribute the job aid as appropriate for your platform (e.g., a link in the chat, PDF).
- 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

"I hope this training gave you some good information about ventilation that you can use in your work.

"I'm putting a link into the chat for a handout that you can take and share to remind you of the key points we discussed today.

**"Does anyone have any questions still remaining?"**

*(Address questions as appropriate.)*

"Thank you for sharing those questions. Project Firstline is actively collecting your questions to help inform more training resources as they're developed. I've written them down, and I will get back to you with responses."



### Slide 14: Resources and Future Training Sessions



### 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.



### Sample Script

"We covered a lot today, and there is still more to learn. You can keep exploring these topics on your own using the resources on this slide. You can also follow us on social media. I will stay on the line 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]."*





### Slide 15: Feedback Form



### Facilitator Notes

Explain how to access the feedback form.



### Sample Script

“And, finally, please let us know how you enjoyed today’s session by completing the feedback form. Thanks again for joining us today.”

## After the Session



Send list of participant questions compiled during this session to [ProjectFirstline@cdc.gov](mailto:ProjectFirstline@cdc.gov).



# 10-Minute Session Plan

## 1. Session Start



### Slide 1: Opening Slide

Participants log in and get settled.

## 2. Agenda and Learning Objectives



### 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. Over the next 10 minutes, we’ll focus on ventilation in healthcare. 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!

“Our discussion will include what ventilation is, how it works, why it matters for infection control, and how we use it.”



### Slide 3: Learning Objectives



#### Sample Script

“By the end of today’s training, you will be able to describe why good ventilation is important for infection control in healthcare, how ventilation works to reduce germs in the air, and why it’s important to work with the people in your facility who are in charge of air handling and ventilation if you think changes should be made to the ventilation in a room.”



### Slide 4: Definition



#### Facilitator Notes

- Either allow time for participants to read the definition themselves or read it aloud.
  - ▶ “The movement of air in and out of an enclosed space. For example, the circulation of fresh air to a room or building.”



#### Sample Script

“Let’s begin with a definition of ventilation.”

## 3. Video and Discussion



### Slide 5: How does ventilation work?



#### Facilitator Notes

- Establish the importance of ventilation in healthcare: Good ventilation in healthcare is important to help reduce the spread of respiratory infections.
- Show this animated ventilation demonstration video: <https://www.youtube.com/watch?v=WQcRZHxylwE>

- For additional information (and if time allows), you can choose to show Episode 17: *Inside Infection Control: What Is Ventilation?* here:

**CDC Website:** <https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP17-Vent-LowRes.mp4>



- OR

**Project Firstline YouTube Playlist:** [https://www.youtube.com/watch?v=Tos-ecctft\\_A](https://www.youtube.com/watch?v=Tos-ecctft_A)

- Review the [Content Outline of Episode 17](#) for additional talking points.



### Sample Script

“We can probably all see that air movement is important, but good ventilation is especially important in healthcare settings. It helps remove air that contains things we don’t want to breathe in, like small particles that can contain virus. Good ventilation improves the air quality and reduces the risk of germs spreading.”

*(Play animation.)*

“As we can see in the video, when there is no ventilation in a room, the respiratory droplets that a person breathes out will spread into the space because they don’t have anywhere else to go. Respiratory droplets will linger in the air for a little while. Over time, the particles will settle and the virus in them will die, if it doesn’t get picked up by another person.

“But, with ventilation, the respiratory droplets are pulled out of the space along with the rest of the air in the room. The ventilation system also pushes new, clean air into the room. Eventually, the room will have entirely clear air. When that happens, the room is considered cleared.”



### Slide 6: Why does ventilation matter in healthcare?



### Facilitator Notes

- For more information and if time allows, show *Inside Infection Control* Episode 18: *Why Does Ventilation Matter?* here:

**CDC Website:** <https://www.cdc.gov/infectioncontrol/projectfirstline/videos/EP18-Ventilation-LowRes.mp4>



- OR

**Project Firstline YouTube Playlist:** <https://www.youtube.com/watch?v=FY7FiJDoqhE>

- Important points to reinforce include:
  - ▶ An air change means the air in a room is replaced with new or filtered air.
    - Air changes are usually measured by the hour, as in air changes per hour (ACH).
    - In healthcare facilities, nearly every type of room has a recommended number of air changes. For example, 12 ACHs are recommended for emergency department waiting rooms.
  - ▶ Rooms used to care for patients with respiratory diseases like COVID-19 should be assessed and maintained by maintenance and facilities engineering staff to ensure correct ACHs.
    - The ACH will tell you how long the room should sit empty after that patient leaves and before another person can come in without the recommended PPE, such as a fit-tested respirator.
    - It is okay to enter a room with the recommended PPE before the air is completely cleared, including while the patient is still there.



### Sample Script

“Now that we understand what ventilation is, let’s briefly touch on why ventilation is so important in healthcare. Good ventilation is important in healthcare because it can help remove things that we don’t want to breathe in, like small particles that contain virus. That’s why it’s important for healthcare settings to have good air movement. It can help reduce the spread of respiratory infections.

#### **“But how do you know if a space, such as a patient’s room, has clean air?”**

Well, nearly every room in a healthcare facility has a recommended number of air changes. An air change is the time it takes to replace the air in a room with new air or filtered air. If you know the air change for a room, you know how long it takes for the ventilation system to replace the air in the room.

“Using COVID-19 as an example, it’s important to know how long a room should sit empty after a patient with COVID-19 leaves it before you can enter the room without the recommended PPE, and that depends on how many air changes the room gets each hour. Of course, it’s okay to enter a room before the air is completely cleared, including while the patient is still there, if you use the recommended PPE, including a fit-tested respirator.”



## Slide 7: Steps to Support Good Ventilation



### Facilitator Notes

- Encourage participants to think about how they can use their knowledge about ventilation at work.
  - ▶ Know how long it takes for the air in certain rooms, such as patient rooms, to clear.
  - ▶ If you're entering a room without recommended PPE, make sure the air in the room is cleared first.
  - ▶ It is important not to take steps to improve ventilation on your own, because actions like opening windows, or blocking or redirecting vents, can change the balance of air pressure and the ventilation in other spaces in the facility.
  - ▶ Always check with the people in your facility who are in charge of air handling and ventilation before making changes to the ventilation in a room.
    - Their titles may vary, but they could include people who work in building engineering, maintenance, HVAC, or Facilities Managers.



### Sample Script

"Let's talk about how to put what we know about ventilation into action. **What are some things we can do, and some things we shouldn't do?**"

*(Pause for responses.)*

"That's right, it's important to know the ACH for certain rooms, and to wait until a room has cleared before you enter without the recommended PPE.

"You can always work with the staff at your facility who are in charge of air handling if you have questions about the ventilation in a room or think changes should be made. It's important, though, not to open a window or do anything else to change the ventilation in a room without asking. It seems simple enough, but opening a window, or blocking a vent because you're cold, can change the air pressure and ventilation in other places in the building."



### Slide 8: Reflection



#### Facilitator Notes

- Invite participants to share what they learned during the session.



#### Sample Script

“Thank you for your time today! Let’s use our last few minutes together to reflect on what we’ve learned.”



### Slide 9: Questions?



#### Facilitator Notes

- Encourage participants to think about how they can put their knowledge about ventilation to use in their work.
  - ▶ You may choose for participants to respond orally or in the chat.
  - ▶ Acknowledge responses and consider reading them aloud if they are in the chat.
- Distribute the job aid as appropriate for your platform (e.g., a link in the chat, PDF).
- 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

“I hope this training gave you some good information about ventilation that you can use in your work.

“I’m putting a link into the chat for a handout that you can take and share to remind you of the key points we discussed today.

**“Does anyone have any questions still remaining?”**

*(Address questions as appropriate.)*

“Thank you for sharing those questions. Project Firstline is actively collecting your questions to help inform more training resources as they’re developed. I’ve written them down, and I will get back to you with responses.”



### Slide 10: Resources and Future Training Sessions



#### 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.



#### Sample Script

“We covered a lot today, and there is still more to learn. You can keep exploring these topics on your own using the resources on this slide. You can also follow us on social media. I will stay on the line 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].”*



### Slide 11: Feedback Form



#### Facilitator Notes

- Explain how to access the feedback form



#### Sample Script

“And, finally, please let us know how you enjoyed today’s session by completing the feedback form. Thanks again for joining us today.”

## After the Session



Send list of participant questions compiled during this session to [ProjectFirstline@cdc.gov](mailto:ProjectFirstline@cdc.gov).



# Appendix: Content Outlines



## Episode 17 Title: *What is Ventilation?*

**Content summary:** Ventilation is the movement of air in and out of spaces. In healthcare, good ventilation is important to ensure staff, patients, and visitors are not exposed to chemicals, dust, and other hazards in the air, and to help reduce the spread of respiratory infections in the facility.

**Topic:** Hierarchy of Controls

### Learning Objectives

After viewing this video, participants will be able to:

- Discuss why good ventilation is important for infection control in healthcare.
  - ▶ Good ventilation in healthcare facilities can help reduce the risk of respiratory infections, including COVID-19, spreading to patients and staff.
- Discuss one (1) way that ventilation works to reduce the amount of germs in the air.
  - ▶ Ventilation replaces the air in a room by moving air out and bringing new air in.
  - ▶ Good ventilation can help remove things that we don't want to breathe in – including small particles that can contain respiratory viruses – from the air in the space we're in.

### Key Educational Takeaways

- Ventilation is the movement of air in and out of spaces.
- Good ventilation can help remove air that contains things that we don't want to breathe in, like small particles that can contain virus.
- In healthcare, good ventilation is important to ensure staff, patients, and visitors are not exposed to chemicals, dust and other hazards in the air, and to help reduce the spread of respiratory infections in the facility, including COVID-19.
- Ventilation replaces the air in a room by moving air out and bringing new air in.
- In a room with ventilation, when old air with particles in it is pulled out, and new, clean air is pushed in, eventually the room is “cleared” of the particles that were in the room, including droplets that could carry infection.
- Some tools like high-efficiency particulate air (HEPA) filters may be used, which filter the air instead of removing it.
- Doing things to improve air quality and the movement of air will help keep respiratory infections from spreading.

## Content Outline

- Ventilation is the movement of air in and out of spaces.
- Good ventilation can help remove air that contains things that we don't want to breathe in, like small particles that can contain virus.
- In healthcare, good ventilation is important to ensure staff, patients, and visitors are not exposed to chemicals, dust, and other hazards in the air, and to help reduce the spread of respiratory infections in the facility, including COVID-19.
- How ventilation helps:
  - ▶ Some respiratory droplets can move and float in the air for a while.
  - ▶ In the outdoors, they get carried away quickly and disperse, or they can be killed, so they can't make someone sick.
- For this example, think of a respiratory droplet like a drop of food coloring:
  - ▶ A drop of food coloring dropped into the ocean is so little, and gets carried away so quickly, that the ocean doesn't turn a different color, and after a moment you can't even see where the droplet is.
  - ▶ On the other hand, if food coloring is dropped into a glass jar of water, where the water isn't moving in or out of the jar, you can see the food coloring spread into the space, and the water in the jar will turn a different color.
  - ▶ The drop of food coloring in the ocean is like breathing outside: respiratory droplets are quickly carried away, and there is less worry about breathing them in because they spread so fast.
  - ▶ The glass jar is like a room without ventilation: just like the food coloring in the jar, when someone who's infected with COVID-19 breathes out in a room, respiratory droplets carrying the virus will spread into the space and stay for a little while because they don't have anywhere else to go.
    - Over time, the particles will settle and the virus in them will die, if it doesn't get picked up by another person.
  - ▶ Imagine if the glass jar has a system that takes out old water and puts in new water.
    - As new, clean water comes in, and the old water carrying the food coloring goes out, the color will go away, and eventually we'll have clear water again.
    - In a room with ventilation, when old air with particles in it is pulled out, and new, clean air is pushed in, eventually the room is "cleared" of the particles that were in the room, including droplets that could carry infection.
- Some tools like high-efficiency particulate air (HEPA) filters may be used that filter the air, instead of removing it.
  - ▶ It would almost be like using something that pulls the food coloring out of the water in the jar.
- Doing things to improve air quality and the movement of air will help keep respiratory infections from spreading.
  - ▶ The fewer virus particles in the air, the less likely someone will breathe them in, or that they'll land on someone's eyes, nose, or mouth, or a surface that they might touch, and infect them.



## Episode 18 Title: *Why Does Ventilation Matter?*

**Content summary:** Having clean air in healthcare can help reduce the risk of germs, including the virus that causes COVID-19, spreading among patients and staff.

**Topic:** Hierarchy of Controls

### Learning Objectives

After viewing this video, participants will be able to:

- Discuss why good air handling is important for infection control in healthcare.
  - ▶ Having clean air in healthcare can help reduce the risk of germs spreading among people, including patients and healthcare workers.
- Describe one reason why it is important not to take steps to improve ventilation yourself, without working with the staff in your facility in charge of air handling and ventilation.
  - ▶ Simple actions like opening a window may improve ventilation in a room, but doing so may change the air pressure and ventilation in other places in the building.
  - ▶ Always check with the people in your facility who are in charge of air handling and ventilation before making changes to the ventilation in a room.

### Key Educational Takeaways

- Having clean air in healthcare can help reduce the risk of germs spreading among people, including patients and healthcare workers.
- Nearly every room inside a healthcare facility has a recommended number of air changes per hour, which is the time it takes for a room's old air to be replaced with new or filtered air.
- When a patient who has, or might have, a respiratory virus like COVID-19 is in a room, it's important to know how often the air in that room is being exchanged or cleared. That will tell you how long the room should sit empty after that patient leaves and before another person can come in without the recommended PPE.
  - ▶ This length of time is important for someone entering without PPE: a person can enter with the recommended PPE before the air has cleared and while the patient is in the room.
- The basic principles of ventilation are important to understand, but for specific questions, consult the experts: your building's engineering or maintenance staff, or the people in your facility who are in charge of air handling and ventilation.

## Content Outline

- Having clean air in healthcare can help reduce the risk of germs spreading among people, including patients and healthcare workers.
- An “air change” means the air in a room is replaced with new or filtered air.
  - ▶ Air changes are usually measured by the hour, so we think about how many times per hour the air in the room is replaced.
  - ▶ Nearly every room inside a healthcare facility has a recommended number of air changes per hour.
- Ventilation is complicated and more than most of us need to be experts on, but it’s important to know the basic principles.
  - ▶ Then consult the experts: your building’s engineering or maintenance staff, or the people who are in charge of air handling and ventilation, or heating and cooling systems. Their titles may vary, but they could be people who work in building engineering, maintenance, HVAC, or facilities managers.
- When a patient who has, or might have, a respiratory virus like COVID-19 is in a room, it’s important to know how often the air in that room is being changed or cleared.
  - ▶ That will tell you how long the room should sit empty after that patient leaves and before another person can come in without the recommended PPE.
  - ▶ It’s really important to note that we’re talking about entering without PPE: you can enter with the recommended PPE before the air has cleared and while the patient is still in the room.
- Even before COVID-19, these recommendations were in place for air changes to help reduce the spread of germs in healthcare settings.
- Some simple things can be done to increase ventilation in a room, like opening a window or turning on a fan. But in healthcare, actions like opening a window, or blocking or redirecting vents because you’re cold, can change the balance of air pressure and ventilation in other spaces in the building.
  - ▶ That’s why it’s important to check with the people at your facility who are in charge of air handling and ventilation and not take action on your own.



**For more information please contact**

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Web: [www.cdc.gov/projectfirstline](http://www.cdc.gov/projectfirstline)