

Healthier Workplaces and Schools

eBook

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Different approaches to help mitigate the risk of spreading airborne infectious diseases depending on your workplace setting.



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HEALTHIER WORKPLACES | A HEALTHIER WORLD

AIHA

3120 Fairview Park Drive, Suite 360

Falls Church, VA 22042

Tel: (703) 849-8888

Email: infonet@aiha.org

aiha.org



Email: info@weareibec.org

weareibec.org

Table of Contents

Disclaimer2

Introduction4

General Office Settings7

Service Sector Businesses11

Healthcare Facilities15

Educational Facilities20

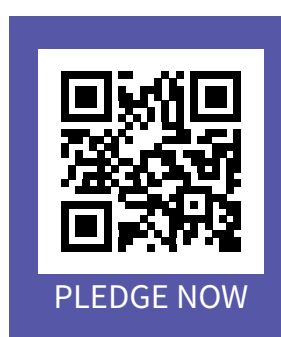
Manufacturing and Warehouses.....25

Large Venues29

Outdoor Activities35

Transit Systems (Buses, Subways, and Light Rails)39

Conclusion44



Introduction

The recent pandemic has taught us many important lessons about the spread of infectious diseases like COVID-19, respiratory syncytial virus (RSV) infections, and measles in indoor environments. As a result, we must take advantage of what we have learned to help ensure our places of work are and continue to be safe places for our workers, customers, and communities.

Many of the steps you can take to help keep people safe and healthy indoors are simple, effective, and can be adjusted to meet the current situation or infectious disease risk. This ebook will walk you through approaches to help mitigate the risk of spreading airborne infectious diseases in your workplace setting. You will be able to select the setting most similar to your workplace at the end of this introduction. First, we will introduce some foundational concepts that impact all workplaces.

First and foremost, when implementing prevention measures to protect your workplace, it is important that you monitor global ([World Health Organization](#) or WHO), U.S. federal ([Centers for Disease Control and Prevention](#) or CDC), state, and local guidelines for changes or updates in recommendations, disinfection strategies, worker protections, and other risk management best practices as they become available for any currently contagious airborne diseases. You'll want to utilize those recommendations in parallel to the suggestions you find in this e-book when dealing with an airborne virus.

Viruses that transmit as airborne particles, such as the viruses that cause COVID-19, flu, and measles, can pose a significant risk as they can sometimes fit into spaces nearly 10,000 times smaller than a human hair, travel distances of 20 to 30 feet, and stay active in the air for at least four hours. When you think about viral aerosols or viruses that transmit as airborne particles, think of them as water moving in a stream. Just like water, they will find the easiest path to get from one point to the next. If there is a rock or log in a stream, the water will find a path around it. Your job is to create as many barriers as possible to reduce the ability of a virus to spread through ventilation, workplace policies, physical distancing, and masks.

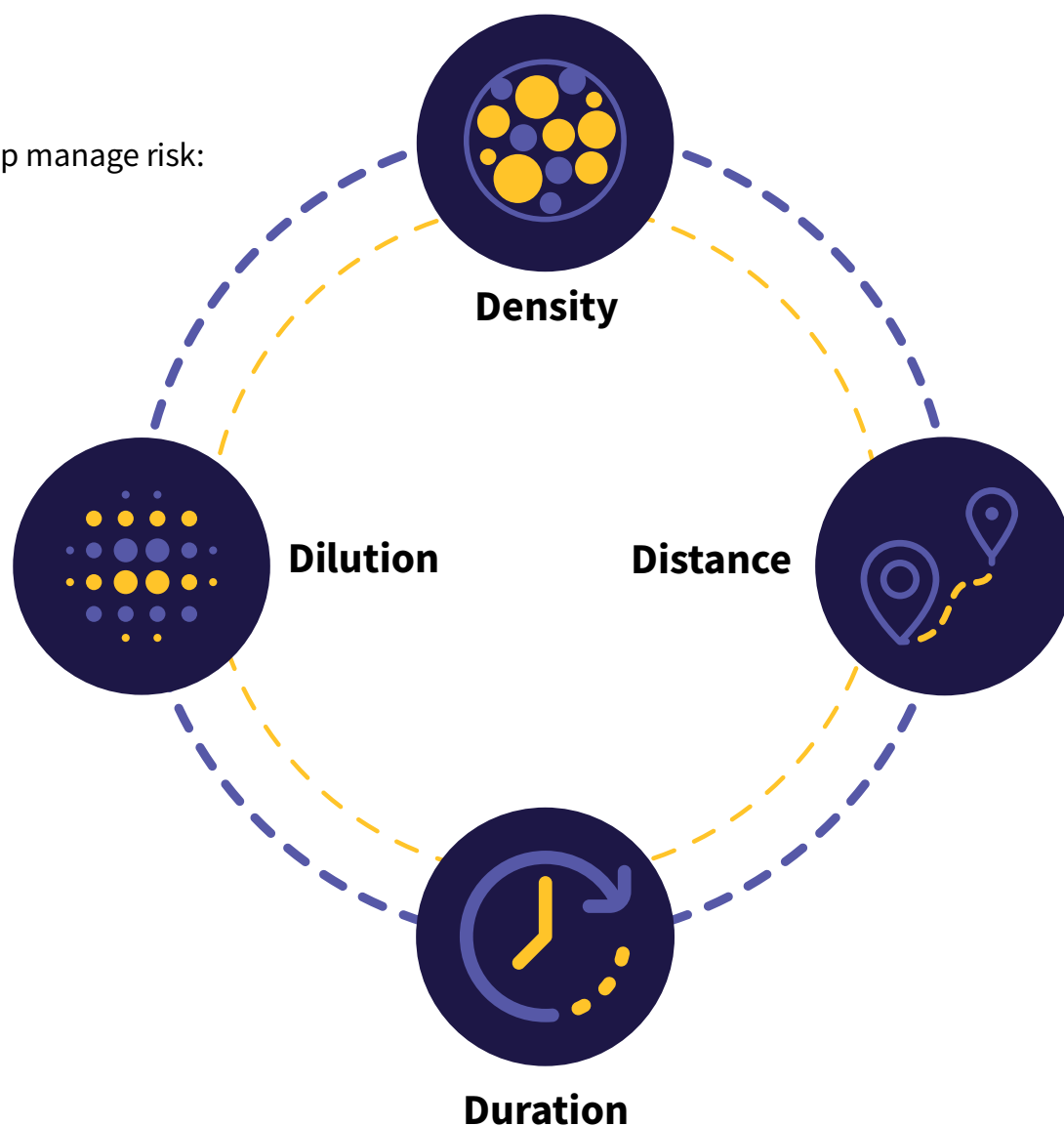
Figuring out how to assess the risk of getting infected or spreading airborne disease in any situation is your number one tool for keeping yourself and others healthy and safe. We typically don't know how much of a virus that's in the air will make us ill, or how bad the illness will be. Often, we don't know what type of virus we've caught until we start feeling sick. But we do know how people catch airborne infectious diseases, how they spread, and how we can reduce the potential for exposure.



You will be able to select the setting most similar to your workplace at the end of this introduction.

How?

By implementing the “Four D’s” to help manage risk:





Duration

How long will employees or others be indoors?

The longer people spend indoors, the more likely the air they're breathing becomes filled with invisible airborne particles.

The risk of transmission while indoors is typically much higher than in outdoor spaces. Without the aid of sunlight to stop the virus or wind to dilute it, the viral particles can remain active for hours.

Even with the best HVAC systems, it can be difficult to recreate outdoor conditions in an indoor space, allowing the virus to build up over time.

Fast Fact:

If people spend more time indoors where there's less sunlight and airflow to weaken the virus, the risk of the virus spreading increases because it can stay active for hours and build up over time, even with good air systems.



Density

How many people are in the space?

How many are not vaccinated?

How many are sick but not showing symptoms?

How many are not wearing masks?

As these numbers increase, so does the risk.

Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread¹.

The more unmasked, unvaccinated, or infected asymptomatic people, the more likely the disease will spread.

Vaccination does not provide immunity from infection, but it does decrease the risk of getting infected and makes it less severe when you do. That's why the vaccination status of the employee and the density of vaccinated individuals are important risk factors to consider.

Fast Fact:

The more unmasked, unvaccinated, or asymptomatic infected people in a space, the greater the chance that the disease will spread, even though vaccinations can reduce the risk and severity of infection.



Dilution

Being outdoors is relatively safe compared to being indoors because more open space, moving air, and sunlight help stop the virus.

One way to reduce the number of viruses in an enclosed space is by diluting the air. Use a good HVAC system to add outdoor, filtered, or filtered recirculated air into the space.

Aging or absent HVAC systems result in greater risk to those in the building. However, in some cases, just opening windows to allow the outdoor air to flow in can help with dilution.

Fast Fact:

If you're outdoors or in a well-ventilated space, the risk of getting the virus is lower because open spaces, moving air, and sunlight can weaken the virus. If a building lacks a good air system, opening windows can help dilute the virus and reduce the risk.



Distance

How far are people located from one another?

Infected individuals can exhale a high number of viral particles, which is why being close to an infected person increases your risk of infection.

The relative distance between people is a risk factor to consider. The further you are from the infected person, the lower your risk of getting infected.

Remembering the Four D's will help you and your employees identify their risk level and define steps your organization needs to take to keep them protected.

We have developed a simple quiz that allows you to quickly and easily determine the potential risk of exposure in your built space. Feel free to test it out now and refer back to it for different situations or scenarios you might encounter within your workplace.

This short quiz tells you what your organization's potential risk is and what you can do in your workplace to help address it.

Fast Fact:

If you're closer to an infected person, your risk of getting the virus is higher. The further away you are, the lower your risk.

¹ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>

The quiz asks questions about duration and density, as they will allow you to determine your risk. For example, it asks how long people in your building typically spend indoors (**duration**), how many people are in your building space, how many are potentially sick and not showing signs, how many can be assumed to be unvaccinated (if relevant to the current infectious disease), and how many are not wearing masks (**density**).

You may be wondering about the two remaining D's, dilution and distance. These can help after you have determined the risk.

This quiz helps reflect your organization's risk of airborne virus transmission among people indoors. It will help you determine where to focus on protecting your organization and your community from airborne diseases like COVID-19, flu, RSV, and measles.

To get the most out of the quiz, you need to understand three concepts:

- **The Source**

This is the person who is infected and spreading the virus through breathing, talking, sneezing, and coughing. A person does not have to show signs of infection to spread the virus. Depending on the virus, even a vaccinated person can be infected and can sometimes spread the virus.

- **The Pathway**

The pathway is the route the airborne virus particles travel through the air from the infected person to an uninfected person.

- **The Receiver**

This is the individual who could become sick or infected by viruses transmitted from the source.

Lastly, you can use this risk assessment quiz for the different scenarios present in your organization to ensure that you are properly reducing risk and protecting your workers and your community.

Your results will outline clear and specific actions to help manage the risk of transmission through dilution and distance. Take a few minutes to [answer these questions to determine your organization's risk](#). Once you complete this risk assessment quiz, you will know whether your risk is low, moderate, or high.

Now that you know the basics about infectious airborne viruses, what the Four D's are and how they help you determine and manage risk, it's time to look at your individual workplace scenario for additional guidance. Select the workplace setting that best matches your own to learn about specific actions you may take to keep your workers and your community safe.



Determine Your Risk Quiz



[General Office Settings](#)



[Service Sector Businesses](#)



[Healthcare Facilities](#)



[Educational Facilities](#)



[Manufacturing and Warehouses](#)



[Large Venues](#)



[Outdoor Activities](#)



[Transit Systems
\(Buses, Subways, and Light Rails\)](#)

CHAPTER 1

General Office Settings



Traditional office settings pose unique challenges to reducing the risk of airborne infectious diseases like COVID-19 and measles due to the large number of people working closely together in cubicles with open floor plans, shared desks, and conference rooms. The extended amount of time spent indoors with coworkers, management, or visitors increases the risk of infection.

In this chapter, you will find guidelines for general office settings. However, because there are many different types and sizes of office buildings, some of the guidelines might not apply to your workplace. Instead of planning to apply them all, implement as many as possible. A multilayered approach will help keep your buildings and the people inside them safer and healthier.

This chapter will detail the areas you can focus on and what actions to consider implementing to reduce the risk of infectious disease transmission.

This section is dedicated to office managers, owners, and those responsible for workplace safety. There is a separate section dedicated to employee responsibilities. If you are an employee looking for ways you can better protect yourself and your community, jump to that section now.



Are you ready to assess your office's potential risk and learn what you can do to help address it?

Take the quiz now! ➔

[Take Me to the Employee Section](#) ➔



The following strategies help keep workers and visitors in your office safer from airborne infectious diseases. These strategies have been divided into five areas of focus:

1. Ventilation
2. Physical Distancing
3. Masking
4. Workplace Policies
5. Training and Communication



Ventilation

Remember the Four D's from earlier? Ventilation is another way of thinking about the third D, dilution. One effective and easy-to-implement method to reduce the number of airborne virus particles in an enclosed space is to dilute the air. To do this, you can add outdoor air or filtered recirculated air into the enclosed space using a good HVAC system.

When reviewing the ventilation in your office building, focus on two critical goals: 1) improving your heating and cooling system and 2) increasing and improving air quality and flow in indoor spaces.

1. Improving Your Heating and Cooling System

Be sure to keep your HVAC system well maintained. This means:

- Cleaning or replacing filters as needed.
- Cleaning air ducts.
- Maximizing air input based on system design.
- Striving to maintain relative humidity at 40 to 60%.

Keep in mind:

- When possible based on your HVAC system and office layout, work with HVAC professionals to ensure that bathrooms are well ventilated.
- If your HVAC system includes filtration, ensure you implement the [best air filtration practices](#).

You can learn more about the importance of general indoor air quality from [AIHA's indoor environmental quality resources](#).

Do you need help updating or reviewing your HVAC system? You can find an HVAC professional certified by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) here: <http://certificants.ashrae.org>.

Occupational and environmental health and safety (OEHS) professionals or industrial hygienists can also help you navigate the complicated world of HVAC and building ventilation. You can find a list of qualified OEHS professionals on AIHA's website: <https://www.aiha.org/consultants-directory>.

2. Increasing and Improving Air Quality and Flow in Indoor Spaces

It's important to consider the use of in-room air cleaners throughout your building, especially where people spend long periods of time. In-room air cleaners can help dilute the air indoors, making it safer for the people inside.

When selecting an in-room air cleaner, you need to look at the independently verified Clean Air Delivery Rate (CADR). This score is determined using the Association of Home Appliance Manufacturers test procedures, which means that devices tested using these protocols can be reliably compared.

Be sure to select an in-room air cleaner with a fan system and filters designed to remove small particles, such as smoke. Also, be sure to select a device designed to work for the size of the space you will use it in.

The higher the CADR, the faster the device will clean the air. Check the air cleaner's label for:

- **CADR scores for smoke, dust, and pollen.** When looking for an in-room air cleaner that can capture viral particles, use the room area value on the CADR label for smoke since these particles are similar in size to viral particles. If the CADR score for smoke is not provided, multiply the manufacturer's general CADR score recommendation by two-thirds to estimate the value for smoke.
- **The largest suggested room size that the unit is appropriate for.** This size assumes a ceiling height of up to 8 feet. If your office ceiling is higher than 8 feet, you will need to consider a unit with a higher capacity or performance.

You should also consider the number of times the air is filtered into the space in an hour. CADR scores are based on approximately five air changes per hour (ACH), a good baseline for non-medical use.

If your air cleaner doesn't have a CADR score, use the following method to determine the air exchange rate needed for your specific room size:

1. Determine the room size where you plan to use the unit by multiplying the room's length, width, and height.
2. Multiply the room size by 5 (remember, five air changes per hour is a good baseline).
3. Divide the result from step two by 60 minutes. This will be the target air exchange rate you want for your space.

Once you have selected an air cleaner, place your unit most effectively by considering the following:

- Ensure your in-room air cleaner is positioned to collect as much room air as possible.
- If you know the potential source of infection, place the unit's intake nearby. If you don't know the potential source, put the unit in a location where it directs clean air to those indoors.
- Ensure that nothing — such as walls or curtains — interferes with the outlet or intake vent.

To ensure the effectiveness of the air cleaner, regularly replace or clean its filters according to the manufacturer's instructions.

Be aware that many new indoor air cleaner products come to market every day and are being sold faster than ever since the start of the COVID-19 pandemic. While many new technologies cite laboratory findings, not everything that happens in a lab can be replicated in real life, and not all studies are independently performed.

To ensure you select the safest and most effective solution for you, your space, and your community, look for cost-effective, well-known, and repeatedly proven air cleaning technologies.

Now that you have added tools to help increase the amount of clean indoor air, consider ways to help move that air throughout the space or building. Fans, whether they are pedestal fans or hard-mounted fans, can be a cost-effective solution for improving air circulation. However, it is important to take certain precautions to minimize the direct airflow from one person to another, especially in situations where there is a potential risk of infection.

In addition to fans or in cases where they are not an option, you can use natural ventilation. Open windows or doors to increase the volume of clean air circulating around the indoor space.



Physical Distancing

Physical distancing, or the fourth D, distance, is important when it comes to preventing the transmission of airborne infectious diseases. When considering distance, ask yourself how far or near people in your office are located with respect to each other. People with airborne viral infections like COVID-19 and measles can exhale a high number of viral particles, which is why being close to an infected person increases the risk of infection for workers or office visitors. The further away an individual is from the infected person, the lower the risk of infection. This is true whether the infected person is showing symptoms or not.

Here are some ways for you to consider and include distance in your plan to reduce the spread of airborne infectious disease:

- Review the workstation setup to minimize prolonged close contact between workers or customers.
- Space chairs or workstations at least 6 feet apart.
- Reduce the occupancy limits for conference rooms or other large areas where people spend long periods of time.
- Consider closing conference rooms that are small and poorly ventilated, or, if necessary, employ tools like in-room air cleaners in these situations.
- Consider alternative methods for handling a reception area. Call-ahead practices, face covering requirements, or the use of outdoor space are examples of how to minimize disease transmission in the reception area.

Layering distance with other strategies such as dilution increases effectiveness and ensures more protection.



Masking

Masking is one of the ways we can address density, the second D. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread². The more unmasked, unvaccinated, or asymptomatic infected people in a space, the more likely disease will spread.

Masking is a strategy that can help reduce the spread of infectious diseases among people in indoor venues. Remember, masking is even more effective as part of a multi-layered approach.

Consider masking or advising workers to mask, especially when:

- There are high levels of infectious disease transmission in the community.
- Individuals are personally vulnerable or interact with vulnerable people.
- You or someone in your organization has been recently exposed to a virus.
- Utilizing mass transportation.

Masks can help reduce the number of aerosol particles or droplets that a wearer may spread from coughing, sneezing, and talking. Masks also reduce the risk of airborne particles in the air around the wearer.

When considering the use of masks in your workplace, use these key training tips to ensure they are as effective as possible:

- Ensure that masks have a tight fit on the wearer's face. A metal nose piece can help shape the mask to their nose to create a tighter fit. Adjustable ear straps provide a better fit around the sides of the face.
- Ensure the mask covers both the mouth and the nose as these are the two primary avenues for spreading or catching a disease. Extending the mask below the chin can also help keep it in place.
- Look for masks with multiple layers of tight-knit materials and avoid those with exhalation vents.

Remember, masking doesn't remove all risk but can significantly reduce it for you and others when you properly select, wear, and care for your mask. Unlike some of the other recommendations in this ebook, masking is one that people can self-select and manage based on their individual situations, risk tolerance, and need.

To learn about masking in general office settings, see [Commit to C.A.R.E.'s risk assessment tools](#).



Workplace Policies

Workplace policies can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's — duration and density — and combining them to address the specifics of your workspace and workforce. Keeping your workforce and workplace in mind, you can design policies that reduce the risk of infectious disease from having too many people indoors for long periods.

Examples of workplace policies that reduce the spread of infectious diseases include:

- Encouraging workers to use virtual meeting tools, including phone calls and teleconference applications, instead of holding in-person meetings, whenever possible.
- Exploring work-from-home options, staggered work shifts or hours, and other flexible approaches for workers.
- Providing paid, flexible sick leave to encourage workers to stay home if they or someone in their household have symptoms of illness.
- Preparing for worker absences by developing plans for alternative shift or task coverage.
- Monitoring and tracking employee absences related to infectious diseases.

When you reevaluate your workplace policies, you add two layers of protection to help against the spread of airborne infectious diseases. These policies can be influenced by factors such as community infection rates, the vulnerability of individual workers or their families, and your organization's ability to add additional layers of ventilation or dilution.



Training and Communication

Training and communication are critical to keeping your workers and communities safe from infectious diseases.

Workforce instructional and communication programs can help workers and office visitors understand the steps your organization is taking to keep them safe and healthy. Understanding these things will help them better self-advocate and identify personal ways to help reduce the risk of spreading infections and diseases.

Depending on the current infectious disease threat or mutation, it is important to share educational materials with your workers to help them recognize symptoms and understand the current advice on what to do if they or someone close to them develops those symptoms.

² Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>

When preparing a communication and training plan, you should keep in mind:

- Communication and training must be easy to understand.
- Translating the content into your workforce’s preferred languages leads to improved adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and physical signage, among others — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your organization and emphasizing transparency will allow workers or office visitors to share concerns, questions, comments, and feedback, ensuring more effective implementation.

When you have a training and communications plan for your workers, you are better positioned to keep those in your building healthier and safe. Training is an excellent complement to the other levels of protection you implement through the Four D’s of duration, density, dilution, and distance.

You now have the knowledge to make your indoor spaces safer and healthier for your workers. Every building and situation is different, so it will not always be possible to implement every recommendation offered by this ebook. But the more layers of protection you add, the more you reduce the risk of infectious diseases in your workplace.

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You can find a variety of foundational education for risk assessment, information about the Four D’s, and other tools to help reduce the spread of infectious diseases in an interactive training program called [Commit to C.A.R.E.](#) Free resources include more than 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color-blind-friendly palette, closed captioning, and translations into eight different languages.



Employee Responsibilities

As a worker in an office setting, you can take some essential steps to help safeguard yourself and others from infectious diseases such as COVID-19 and measles:

- Comply with workplace health and safety policies, which exist to protect you.
- If you can, use online or electronic solutions that limit your engagement or closeness to others indoors.
- Be sure to evaluate your and your family’s health regularly.
- Stay home if you or anyone in your home is showing signs and symptoms that may indicate infectious diseases like COVID-19, RSV, measles, or the flu.
- Disinfect shared or high-touch surfaces like printers or conference tables using a solution with at least 70% alcohol.
- Ensure that you correctly wear an effective and properly fitted mask while indoors or at close quarters within enclosed spaces. Curious about how to find an effective mask or how to be sure it fits properly? Watch these videos to learn more:

– [Why masks work](#)

– [How to properly wear and store a mask](#)

- Limit what you touch, and always wash your hands or sanitize them with a sanitizer that contains at least 70% alcohol before entering and after leaving the facilities.
- Maintain space between yourself and others to limit your risk of infection.

These steps can help reduce the spread of infectious diseases and help keep yourself and others safe.

[Go to the Conclusion](#) ➔



CHAPTER 2

Service Sector Businesses



Businesses in the service sector face unique challenges to reducing the risk of airborne infectious diseases like COVID-19 and measles. These workplaces tend to have larger numbers of people indoors together, extended time spent indoors with coworkers and management, and the added complexity and uncertainty your customer base brings to your workplace.

In this chapter, you will find guidelines for service-based business settings, focusing on mitigation strategies you can control to reduce the risk of airborne infectious disease. However, some of these guidelines might not apply to your organization due to the many different types and sizes of service-based businesses and their buildings.

Instead of aiming to apply them all, plan to implement as many of these strategies as possible. A multi-layered approach will help keep your building and the people inside it safer and healthier. This chapter will detail the areas you can focus on and what actions to consider implementing to reduce the risk of infectious disease transmission.

This section is dedicated to building managers, owners, and those responsible for workplace safety. There is a separate section dedicated to employee responsibilities. If you are an employee looking for ways you can better protect yourself and your community, jump to that section now.

[Take Me to the Employee Section](#) ➔



The following strategies help keep workers and visitors in your workplace safe from airborne infectious diseases. They have been divided into five topics of focus:

1. Ventilation
2. Physical Distancing
3. Masking
4. Workplace Policies
5. Training and Communication



Ventilation

Remember the Four D's from earlier? Ventilation is another way of thinking about the third D, dilution. One effective and easy-to-implement way to reduce the number of airborne virus particles in an enclosed space is to dilute the air. To do this, you can add outdoor air or filtered recirculated air into the enclosed space using a good HVAC system.

When reviewing the ventilation in your building, focus on two critical goals: 1) improving your heating and cooling system and 2) increasing and improving air quality and flow in indoor spaces.

1. Improving Your Heating and Cooling System

Be sure to keep your HVAC system well maintained. This means:

- Cleaning or replacing filters as needed.
- Cleaning air ducts.
- Maximizing air input based on system design.
- Striving to maintain relative humidity at 40 to 60%.

Keep in mind:

- When possible based on your HVAC system and building layout, work with HVAC professionals to ensure that bathrooms are well ventilated.
- If your HVAC system includes filtration, ensure you implement the best air filtration practices.

You can learn more about the importance of general indoor air quality from AIHA's indoor environmental quality resources.



Are you ready to assess your organization's potential risk and learn what you can do to help address it?

Take the quiz now! ➔

Do you need help updating or reviewing your HVAC system? You can find an HVAC professional certified by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) here: <http://certificants.ashrae.org>.

Occupational and environmental health and safety (OEHS) professionals or industrial hygienists can also help you navigate the complicated world of HVAC and building ventilation. You can find a list of qualified OEHS professionals on AIHA's website: <https://www.aiha.org/consultants-directory>.

2. Increasing and Improving Air Quality and Flow in Indoor Spaces

An important tool to consider using throughout your building is in-room air cleaners, especially where people spend long periods of time. In-room air cleaners can help dilute the air indoors, making it safer for the people inside.

When selecting an in-room air cleaner, you need to look at the independently verified Clean Air Delivery Rate (CADR). This score is determined using the Association of Home Appliance Manufacturers test procedures, which means devices tested using these protocols can be reliably compared.

Be sure to select an in-room air cleaner with a fan system and filters designed to remove small particles, such as smoke. Also, be sure to select a device designed to work for the size of the space you will use it in.

The higher the CADR, the faster the device will clean the air. Check the air cleaner's label for:

- **CADR scores for smoke, dust, and pollen.** When looking for an in-room air cleaner that can capture viral particles, use the room area value on the CADR label for smoke since these particles are similar in size to viral particles. If the CADR score for smoke is not provided, multiply the manufacturer's general CADR score recommendation by two-thirds to estimate the value for smoke.
- **The largest suggested room size that the unit is appropriate for.** This size assumes a ceiling height of up to 8 feet. If your office ceiling is higher than 8 feet, you will need to consider a unit with a higher capacity or performance.

You should also consider the number of times the air is filtered into the space in an hour. CADR scores are based on approximately five air changes per hour (ACH), a good baseline for non-medical use.

If your air cleaner doesn't have a CADR score, use the following method to determine the air exchange rate needed for your specific room size:

1. Determine the room size where you plan to use the unit by multiplying the room's length, width, and height.
2. Multiply the room size by 5 (remember, five air changes per hour is a good baseline).
3. Divide the result from step two by 60 minutes. This will be the target air exchange rate you want for your space.

Once you have selected an air cleaner, place your unit most effectively by considering the following:

- Ensure your in-room air cleaner is positioned to collect as much room air as possible.
- If you know the potential source of infection, place the unit's intake nearby. If you don't know the potential source, put the unit in a location where it directs clean air to those indoors.
- Ensure that nothing — such as walls or curtains — interferes with the outlet or intake vent.

To ensure the effectiveness of the air cleaner, regularly replace or clean its filters according to the manufacturer's instructions.

Be aware that many new indoor air cleaner products come to market every day and are being sold faster than ever since the start of the COVID-19 pandemic. While many new technologies cite laboratory findings, not everything that happens in a lab can be replicated in real life, and not all studies are independently performed.

To ensure you select the safest and most effective solution for you, your space, and your community, focus on cost-effective, well-known, and repeatedly proven air cleaning technologies.

Now that you have added tools to help increase the amount of clean indoor air, consider ways to help move that air throughout the space or building. Fans, whether they are pedestal fans or hard-mounted fans, can be a cost-effective solution for improving air circulation. However, it is important to take certain precautions to minimize the direct airflow from one person to another, especially in situations where there is a potential risk of infection.

In addition to fans or in cases where they are not an option, you can use natural ventilation. Open windows or doors to increase the volume of clean air circulating around the indoor space.



Physical Distancing

Physical distancing, or the fourth D, distance, is important when it comes to preventing the transmission of airborne infectious diseases. When considering distance, ask yourself how far or near people in your space are located with respect to each other, including when providing services to customers. People with airborne viral infections like COVID-19 and measles can exhale a high number of viral particles, which is why being close to an infected person increases the risk of infection for workers or customers. The further an individual is from an infected person, the lower the risk of infection. This is true whether the person is showing symptoms or not.

Here are some ways for you to consider and include distance in your plan to reduce the spread of airborne infectious disease:

- Review the service delivery process to minimize prolonged close contact between workers or customers.
- Space chairs or work areas at least 6 feet apart.
- Reduce the occupancy limits for areas where people spend long periods of time.
- Consider closing small, poorly ventilated spaces or, if necessary, employ tools like in-room air cleaners in these situations.
- Consider alternative methods for handling customer service processes. For example, you might eliminate options for waiting inside prior to service delivery or institute virtual ordering and payment processing.

Layering distance with other strategies, such as dilution, increases effectiveness and ensures more protection.



Masking

Masking is one of the ways we can address density, the second D. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread³. The more unmasked, unvaccinated, or asymptomatic infected people in a group, the more likely disease will spread.

Masking is a risk management tool individuals in your workspace can utilize to help reduce the risk of infectious disease transmission. Consider masking or advising workers to mask, especially when:

- There are high levels of infectious disease transmission in the community
- Individuals are personally vulnerable or interact with vulnerable people.
- You or someone in your organization has been recently exposed to a virus.
- Utilizing mass transportation.

Masks can help reduce the number of aerosol particles or droplets a wearer may spread from coughing, sneezing, and talking. Masks also reduce the risk of airborne particles around the wearer.

When considering the use of masking in your workplace, use these key training tips to ensure they are as effective as possible:

- Ensure that masks have a tight fit on the wearer's face. A metal nose piece can help shape the mask to their nose to create a tighter fit. Adjustable ear straps provide a better fit around the sides of the face.
- Ensure the mask covers both the mouth and the nose as these are the two primary avenues for spreading or catching disease. Extending the mask below the chin can also help keep it in place.
- Look for masks with multiple layers of tight-knit materials and avoid those with exhalation vents.

Remember, masking doesn't remove all risk but can significantly reduce it for you and others when you properly select, wear, and care for your mask.

Educate your staff and visitors on masking to help reduce the risk of spreading infectious diseases. Unlike some of the other recommendations in this ebook, masking is one that people can self-select and manage based on their individual situations, risk tolerance, and need. To learn about masking in the service sector, see [Commit to C.A.R.E.'s risk assessment tools](#).



Workplace Policies

Workplace policies can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's — duration and density — and combining them to address the specifics of your workspace and workforce. Keeping your workforce and workplace in mind, you can design policies that reduce the risk of infectious diseases from having too many people indoors for long periods.

Examples of workplace policies that reduce the spread of infectious diseases include:

- Encouraging workers to use virtual meeting tools, including phone calls and teleconference applications, instead of holding in-person meetings, whenever possible.
- Exploring work-from-home options, staggered work shifts or hours, and other flexible approaches for workers.
- Providing paid, flexible sick leave to encourage workers to stay home if they or someone in their household has symptoms of illness.
- Preparing for worker absences by developing plans for alternative shift or task coverage.
- Monitoring and tracking employee absences related to infectious diseases.

When you reevaluate your workplace policies, you add two layers of protection to help against the spread of airborne infectious diseases. These policies can be influenced by factors such as community infection rates, the vulnerability of individual workers or their families, and your organization's ability to add layers of ventilation or dilution.



Training and Communication

Training and communication are critical to keeping your workers and community safe from infectious diseases. Workforce instructional and communication programs can help workers and customers understand the steps your organization is taking to keep them safe and healthy. Understanding these things will help them better self-advocate and identify personal ways to help reduce the risk of spreading infections and diseases.

Depending on the current infectious disease threat or mutation, it is important to share educational materials with your workers to help them recognize symptoms and understand the current advice on what to do if they or someone close to them develops those symptoms.

³ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>

When preparing a communication and training plan, keep in mind:


- Communication and training must be easy to understand.
- Translating the content into your workforce’s preferred languages leads to improved adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and physical signage, among others — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your organization and emphasizing transparency will allow workers or customers to share concerns, questions, comments, and feedback, ensuring more effective implementation.

When you have a training and communications plan for your workers, you are better positioned to keep those in your building healthier and safe. Training is an excellent complement to the other levels of protection you have implemented through the Four D’s of duration, density, dilution, and distance.

You now have the knowledge to make your indoor spaces safer and healthier for workers and customers. Every building and situation is different, so it will not always be possible to implement every recommendation offered by this ebook. But the more layers of protection you add, the more you reduce the risk of infectious diseases in your workplace.

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You can find a variety of foundational education for risk assessment, information about the Four D’s, and other tools to help reduce the spread of infectious diseases in an interactive training program called [Commit to C.A.R.E.](#) Free resources include more than 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color-blind-friendly palette, closed captioning, and translations into eight different languages.



Employee Responsibilities

As an employee of a service-based business, you have some important responsibilities to help keep yourself, fellow workers, and your customers safer from airborne infectious diseases:

- Comply with workplace health and safety policies, which exist to protect you.
- Be sure to regularly evaluate your and your family’s health for signs and symptoms of infectious diseases like COVID-19, RSV, measles, or flu. If either you or a close family member is sick, talk with your employer about alternatives for covering shifts.
- Where possible, rely on virtual service-delivery options.
- Ensure that you correctly wear an effective and properly fitted mask indoors or at close quarters within enclosed spaces. Curious about how to find an effective mask or how to be sure it fits properly? Watch these videos to learn more:
 - [Why masks work](#)
 - [How to properly wear and store a mask](#)
- Be sure to wash your hands or sanitize them with a sanitizer that has at least 70% alcohol upon entering or exiting your building. If you have concerns about masking or personal protective equipment (PPE), be sure to talk to your supervisor.


[Go to the Conclusion](#) ➔





A metal nose piece can help shape the mask to your nose and create a tight fit.





Handle the mask only by grasping either the ear loops or string ties.

CHAPTER 3

Healthcare Facilities



Healthcare settings face unique challenges to reducing the risk of airborne infectious diseases like COVID-19 and measles. Healthcare workers are in close contact with patients and visitors, work indoors with often large numbers of people, and are exposed to saliva, blood, and microorganisms.

In this chapter, you will find guidelines for healthcare settings. However, because there are many different types and sizes of healthcare facilities, some of these guidelines might not apply to your workplace. Instead of planning to apply them all, implement as many as possible. A multilayered approach will help keep your facility and the people inside it safer and healthier.

This chapter will detail the areas you can focus on and what actions to consider implementing to reduce the risk of infectious disease transmission in healthcare facilities.

This section is dedicated to healthcare facility managers, owners, and those responsible for workplace safety. There is a separate section dedicated to employee responsibilities. If you are an employee working at a healthcare facility and looking for ways to better protect yourself and your community, jump to that section now.



Are you ready to assess your healthcare facility's potential risk and learn what you can do to help address it?

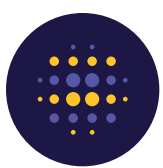
Take the quiz now! ➔

[Take Me to the Employee Section](#) ➔



The following strategies help keep workers and visitors in your healthcare facility safe from airborne infectious diseases. These strategies have been divided into five areas of focus:

1. Ventilation
2. Physical Distancing
3. Masking and Respirators
4. Workplace Policies
5. Training and Communication



Ventilation

Remember the Four D's from earlier? Ventilation is another way of thinking about the third D, dilution. HVAC systems operate differently in healthcare facilities than in other settings like homes or offices. One significant distinction is the emphasis on pressurization.

Healthcare facilities control air movement and decrease the spread of infectious agents from one area to another by adjusting air pressure to create barriers between spaces. This is why, unlike in other settings, it's generally not recommended to open windows in healthcare facilities. Although fresh air might seem like a good idea, healthcare ventilation systems are specifically designed to prioritize patient safety and cleanliness.

When you review the ventilation system in your healthcare facility, you should work directly with an HVAC professional. Their recommendations will likely focus on two critical goals: 1) improving your heating and cooling system and 2) increasing and improving air quality and flow in the facility's indoor spaces.

1. Improving Your Current Heating and Cooling System

Your HVAC professional will look at ways to keep your HVAC system well maintained. This means:

- Cleaning or replacing filters as needed.
- Cleaning air ducts.
- Maximizing air input based on system design.
- Striving to maintain relative humidity at 40 to 60%.

You can learn more about the importance of general indoor air quality from [AIHA's indoor environmental quality resources](#).

If you want to ensure your healthcare facility is safe for workers and patients, always refer to your HVAC professional before implementing any changes.

2. Increasing and Improving Air Quality and Flow in Indoor Spaces

An important tool to consider using throughout your healthcare facility is in-room air cleaners, especially where people spend long periods of time. In-room air cleaners can help dilute the air indoors, making it safer for the people inside.

When selecting an in-room air cleaner, you need to look at the independently verified Clean Air Delivery Rate (CADR). This score is determined using the Association of Home Appliance Manufacturers test procedures, and devices tested using these protocols can be reliably compared.

Be sure to select an in-room air cleaner with a fan system and filters designed to remove small particles such as smoke. Also, be sure to select a device designed to work for the size of your space.

The higher the CADR, the faster the device will clean the air. Check the label on the air cleaner for:

- **CADR scores for smoke, dust, and pollen.** When looking for an in-room air cleaner that can capture viral particles, use the room area value on the CADR label for smoke since these particles are similar in size to viral particles. If the CADR score for smoke is not provided, multiply the manufacturer's general CADR score recommendation by two-thirds to estimate the value for smoke.
- **The largest suggested room size that the unit is appropriate for.** This size assumes a ceiling height of up to 8 feet. If your ceiling is higher than 8 feet, you will need to consider a unit with a higher capacity or performance.

You should also consider the number of times the air is filtered into the space in an hour. CADR scores are based on approximately five air changes per hour (ACH), a good baseline for non-medical use. To learn more about other recommended CADR scores for higher risk environments, consult ASHRAE [Standard 241](#), *Control of Infectious Aerosols*, a code-enforceable standard developed by ASHRAE and published in 2023.

If your air cleaner doesn't have a CADR score, use the following method to determine the air exchange rate needed for your specific room size:

1. Determine the room size where you plan to use the unit by multiplying the room's length, width, and height.
2. Multiply the room size by 5 (remember, five air changes per hour is a good baseline).
3. Divide the result from step two by 60 minutes. This will be the target air exchange rate you want for your space.

Once you have selected an air cleaner, place your unit most effectively by considering the following:

- If you know the potential source of infection, place the unit's intake nearby. If you don't know the potential source, put the unit in a location where it directs clean air to those indoors.
- Ensure that nothing — such as walls or curtains — interferes with the outlet or intake vent.

To ensure the effectiveness of the air cleaner, regularly replace or clean its filters according to the manufacturer's instructions.

Be aware that many new indoor air cleaner products come to market every day and are being sold faster than ever since the start of the COVID-19 pandemic. While many new technologies cite laboratory findings, not everything that happens in a lab can be replicated in real life, and not all studies are independently performed.

To ensure you select the safest and most effective solution for you, your space, and your community, look for cost-effective, well-known, and repeatedly proven air cleaning technologies.

Try to get more fresh air flowing into places where people spend the most time, especially towards areas that might have airborne particles. Think of a hospital waiting room — clean air should go to the places where staff work first, then towards the patients. Also, make sure your room's indoor air cleaner is set up to collect as much air as possible.

You can learn more about the importance of general indoor air quality from [AIHA's indoor environmental quality resources](#).



Physical Distancing

Physical distancing, or the fourth D, distance, is important when it comes to preventing transmission of airborne infectious diseases. When considering distance, ask yourself how far or near people in your healthcare setting are located with respect to each other. People with airborne viral infections like COVID-19 and measles exhale a high number of viral particles, which is why being close to an infected person increases the risk of infection for workers or facility visitors. The further away an individual is from the infected person, the lower the risk of infection. This is true whether the infected person is showing symptoms or not.

Here are some ways for you to consider and include distance in your plan to reduce the spread of airborne infectious disease:

- Rearrange workspaces, beds, machines, and equipment so people don't get too close to each other. Avoid arrangements that require people to be less than six feet apart for 15 minutes or more in a day. Do this for workers, patients, and anyone else who might enter your facility.
- Use signs and markers on the floor to help people remember to stay apart.
- Permit only as many visitors with patients as absolutely necessary.

Do you need help updating or reviewing your HVAC system? You can find an HVAC professional certified by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) here: <http://certificants.ashrae.org>.

Occupational and environmental health and safety (OEHS) professionals or industrial hygienists can also help you navigate the complicated world of HVAC and building ventilation. You can find a list of qualified OEHS professionals on AIHA's website: <https://www.aiha.org/consultants-directory>.

- If patients need to wait inside, spread out the chairs in the waiting room as much as possible based on how many people you expect to check in for care.

Layering distance with other strategies such as dilution increases effectiveness and ensures more protection.



Masking and Respirators

Masking is one of the ways we can address density, the second D. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread⁴. The more unmasked, unvaccinated, or asymptomatic infected people in a space, the more likely the disease will spread.

Consider masking or advising workers to mask, especially when:

- There are high levels of infectious disease transmission in the community.
- Individuals are personally vulnerable or interact with vulnerable people.
- You or someone in your organization has been recently exposed to a contagious pathogen.
- Utilizing mass transportation.

Masking is a risk management tool individuals in different workspaces can utilize to help reduce the risk of infectious disease transmission. Given the challenges and intricacies involved in achieving adequate air dilution and cleaning through HVAC systems in healthcare settings, it becomes necessary to introduce the use of respirators.

N95 respirators reduce the risk of exposure to infectious diseases like COVID-19 and measles. When fitted properly, respirators work even better than masks to keep such infectious particles out.

Particulate respirators, like N95s, work by removing contaminants from the air before you can inhale them. A properly fitted N95 respirator can effectively minimize exposure to infectious diseases, such as COVID-19 and measles, for healthcare workers and others such as construction workers, painters, or individuals working in environments with airborne hazards.

Proper fit and an official NIOSH product approval number are key to ensuring the best level of protection. Only use a NIOSH-approved N95 respirator when it meets OSHA's Respiratory Protection Standard requirements.

These are the three factors you need to consider when using an N95 respirator effectively:

- You must put the respirator on correctly before the exposure and wear it correctly during the exposure.
- The respirator must fit snugly against the user's face to ensure there are no gaps between the skin and the respirator seal. This should be confirmed with a fit test.
- The respirator filter must capture more than 95% of the particles from the air that passes through it.

Alternatives to N95 respirators are available that have been manufactured and approved for use in other countries, such as KN95s. It is important to note that NIOSH does not approve KN95s for protective use as a respirator.

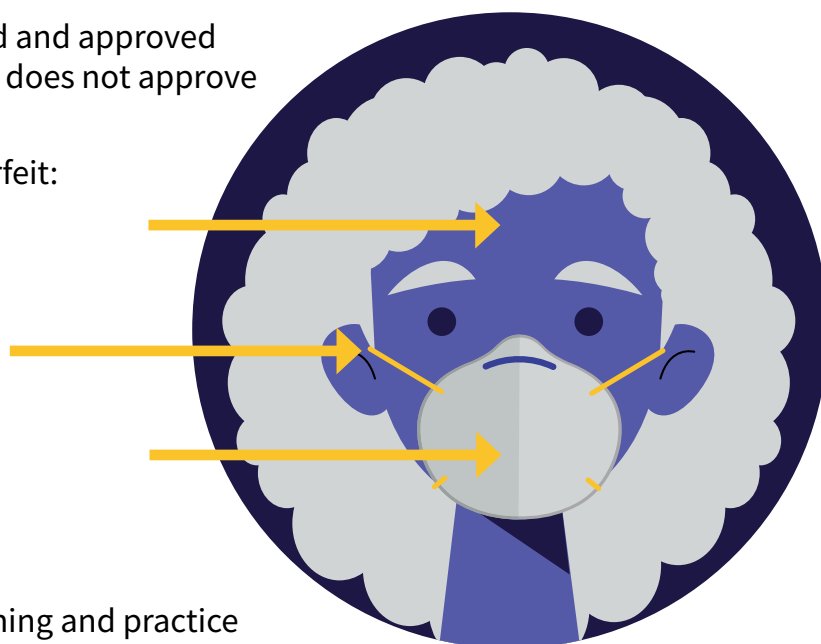
These are some signs that your respirator may be counterfeit:

- No markings anywhere on the filter.
- No approval number on the filter or headband.
- Ear loops instead of headbands.
- No NIOSH markings.
- "NIOSH" spelled incorrectly.
- Decorative fabric such as sequins.
- Claims of approval for children.

While there can be multiple proper ways of putting on your PPE, only training and practice can ensure it always fits properly. Follow these steps when putting on your N95 respirator:

- Wash or sanitize your hands before putting your respirator on.
- Secure the respirator straps at the crown of your head with the top strap, then at the base of your neck with the bottom strap.
- Be sure that the respirator extends under your chin.
- If the respirator has a nosepiece, fit it to your nose with both hands.
- The facepiece should cover your nose and mouth. Facial hair can interfere with the face seal, so be sure to shave before putting on your respirator.
- Be sure that you conduct a user seal check each time you put on your respirator.

During a user seal check, the wearer typically covers the exhalation valve(s) if present with their hands and then exhales gently. They should feel a slight pressure build-up inside the respirator, indicating a proper seal. Alternatively, for respirators without exhalation valves, the wearer may cover the entire mask surface with their hands and inhale gently to check for any inward leakage.



⁴ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>

Follow these tips to properly remove your respirator:

- Don't touch the front of the respirator. It could be contaminated with viral particles.
- While touching only the bottom strap, carefully bring it over your head.
- Next, grasp the top strap and carefully pull it over your head.
- Pull the respirator away from your face. Again, be sure not to touch the facepiece.
- Be sure not to touch your eyes, nose, or mouth when you remove your respirator.
- Throw away your respirator.
- Be sure to wash or sanitize your hands after removing your respirator.

Lastly, remember that N95 respirators are used in high-risk situations and by healthcare personnel for protection against airborne particles. You must wear and take them off properly to ensure maximum protection and reduce your risk of infection.

Educate your staff or visitors about respirators to help reduce the risk of spreading infectious diseases. Unlike some of the other recommendations described in this ebook, using respirators is one that people can self-select and manage based on their individual situations, risk tolerance, and need.

To learn about respirators in healthcare settings, see [Commit to C.A.R.E.'s risk assessment tools](#).



Workplace Policies

Workplace policies can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's — duration and density — and combining them to address the specifics of your workspace and workforce. Keeping your workforce and workplace in mind, you can design policies that reduce the risk of infectious diseases from having too many people indoors for long periods.

Examples of workplace policies that reduce the spread of infectious diseases include:

- Encouraging workers to use virtual meeting tools, including phone calls and teleconference applications, instead of holding in-person meetings, whenever possible.
- Exploring work-from-home options, staggered work shifts or hours, and other flexible approaches for workers.
- Providing paid, flexible sick leave to encourage workers to stay home if they or someone in their household has symptoms of illness.
- Preparing for worker absences by developing plans for alternative shift coverage.
- Monitoring and tracking employee absences related to infectious diseases.
- Closing waiting rooms. Instead, patients can wait outside or in their cars. You can call or text them when it's time for their appointment.

When you reevaluate your workplace policies, you add two layers of protection to help against the spread of airborne infectious diseases. These policies can be influenced by factors such as community infection rates, the vulnerability of individual workers or their families, and your organization's ability to add ventilation or dilution.



Training and Communication

Workforce instructional and communication programs can help workers and patients/clients understand the steps your organization is taking to keep them safe and healthy. Understanding these things will help them better self-advocate and identify personal ways to help reduce the risk of spreading infections and diseases.

Depending on the infectious disease threat, it is important to share educational materials with your workers to help them recognize symptoms and understand the current advice on what to do if they or someone close to them develops those symptoms.

When preparing a communication and training plan, keep in mind:

- Communication and training must be easy to understand.
- Translating the content into your workforce's preferred languages leads to easier adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and signage — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your healthcare facility and emphasizing transparency will allow workers or patients/clients to share concerns, questions, comments, and feedback, ensuring more effective implementation.

When you have a training and communications plan for your workers, you are better positioned to keep those in your building healthier and safe. Training is an excellent complement to the other levers of protection you implement through the Four D's of duration, density, dilution, and distance.

You now have the knowledge to start creating a safer and healthier facility for your workers, patients, and visitors. Remember, every facility and situation is different, so it will not always be possible to implement every recommendation. But the more layers of protection you add, the more you help reduce the risk of spreading infectious diseases in your workplace.



Employee Responsibilities

As a worker in a healthcare facility, you can take steps to help protect yourself and others from infectious diseases such as COVID-19 and measles:

- Comply with workplace health and safety policies, which exist to protect you.
- If you can, use online or electronic solutions that limit your engagement with or closeness to others indoors.
- Be sure to evaluate your and your family's health regularly.
- Stay home if you or anyone in your home is showing signs and symptoms of infectious diseases like COVID-19, RSV, measles, or the flu.
- Disinfect shared or high-touch surfaces like shared printers or conference tables using a solution with at least 70% alcohol.
- Ensure that you wear an effective and properly fitted respirator indoors or at close quarters in enclosed spaces. Curious about how to find an effective respirator or how to be sure it fits properly? Watch these videos to learn more:
 - [Why respirators work](#)
 - [How to properly wear and store a respirator](#)
- Don't share personal protective equipment (PPE). Make sure to clean and disinfect PPE, like safety glasses, goggles, and face shields, before using them again.
- Limit what you touch, and always wash or sanitize your hands with a sanitizer that contains at least 70% alcohol before entering and after leaving the facilities.
- Maintain space between you and others to limit your risk.
- If you wear scrub uniforms or lab coats, don't take them home after your shift.

These steps can help reduce the spread of infectious diseases and help keep yourself and others safe.

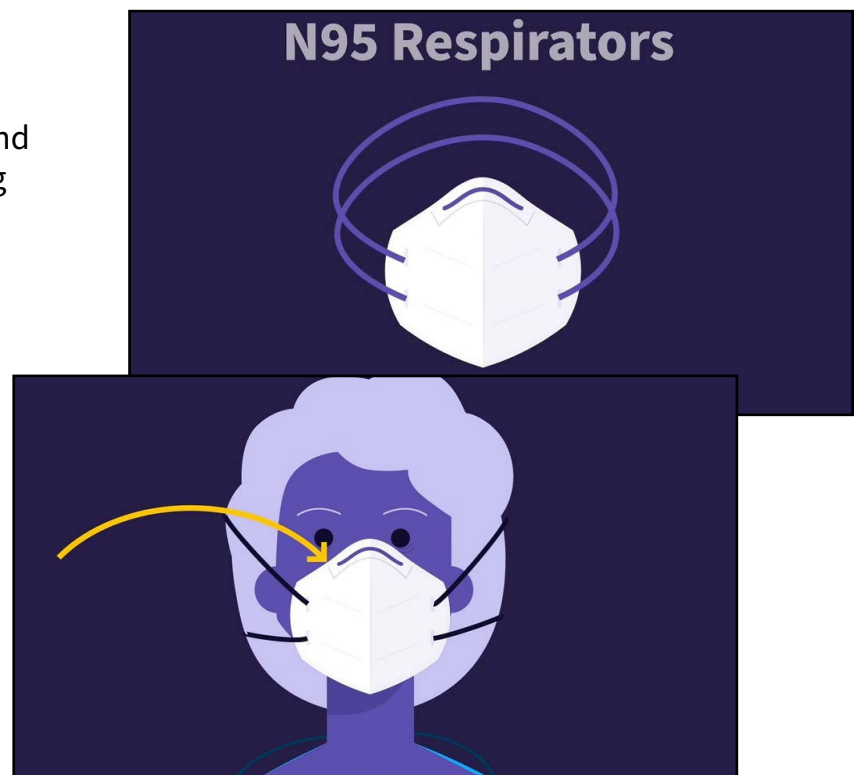
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N95 Respirators



CHAPTER 4

Educational Facilities



Educational facilities like schools, colleges, and universities face specific challenges related to reducing the spread of airborne infectious diseases such as COVID-19 and the flu. In addition to concerns related to the layout of buildings, these institutions often experience a high volume of foot traffic, which can increase the risk of disease transmission.

For example, crowded hallways, classrooms, and common areas within educational facilities present opportunities for close contact among students, faculty, and staff. Conditions like these make it crucial to implement strategies that prioritize health and safety.

Outdated heating, ventilation, and air conditioning (HVAC) systems can present additional challenges. Such systems may lack the capability to efficiently circulate fresh air or properly filter the air in educational facilities. Insufficient ventilation and inadequate air filtration can lead to the buildup of harmful airborne particles, including viruses, thereby increasing the risk of disease transmission.

Despite these challenges, implementing effective measures can minimize the transmission of infectious diseases within educational facilities. In this chapter, you will find helpful guidelines tailored to those responsible for managing and operating educational spaces. It is important to note that not all suggestions may be applicable to every educational facility, as their sizes and layouts can vary. Nonetheless, these guidelines provide a foundation for developing a mitigation strategy tailored to the specific needs of each educational facility.

Instead of aiming to apply them all, plan to implement as many strategies as possible. A multi-layered approach will help keep your buildings and the people inside safer and healthier.

This chapter also details the categories of impact you can focus on and actions to consider implementing to reduce the risk of infectious disease transmission in educational facilities.

The following section is dedicated to building managers, owners, and those responsible for educational facility safety. There is a separate section for employee responsibilities. If you are an employee looking for ways you can better protect yourself and your community, jump to that section now.

[Take Me to the Employee Section](#) ➔



The following strategies help keep staff, students, and visitors in your educational facility safer from the spread of airborne infectious diseases. These strategies have been divided into five areas of focus:

1. Ventilation
2. Physical Distancing
3. Masking
4. Workplace Policies
5. Training and Communication



Ventilation

Remember the Four D's from earlier? Ventilation is another way to think of the third D, dilution. One effective and easy-to-implement way to reduce the number of airborne virus particles in an enclosed space is by diluting the air. To do this, you can add outdoor or filtered, recirculated air into an enclosed space using a good heating, ventilation, and air conditioning (HVAC) system.

When reviewing the ventilation in your facility, you will want to work directly with an HVAC professional. Their work focuses on two critical areas: improving your current heating and cooling system and increasing and improving air quality and flow in the indoor space.

1. Improving Your Current Heating and Cooling System

Your HVAC professional will recommend ways to keep your HVAC system well maintained. This means:

- Cleaning or replacing filters as needed.
- Cleaning the air ducts.
- Maximizing air input based on your system design.



- Striving to maintain relative humidity at 40 to 60%.

You can learn more about the importance of general indoor air quality from [AIHA's indoor environmental quality resources](#).

2. Increasing and Improving Air Quality and Flow in Indoor Spaces

It's important to consider the use of in-room air cleaners throughout your educational facility, especially where people spend long periods of time. In-room air cleaners can help dilute the air indoors, making it safer for the people inside. You should consult with your HVAC professional to determine the effectiveness of and ideal locations for in-room air cleaners.

When selecting an in-room air cleaner, you need to look at the independently verified Clean Air Delivery Rate (CADR). This score is determined using the Association of Home Appliance Manufacturers' test procedures, which means that devices tested using these protocols can be reliably compared. Be sure to select an in-room air cleaner with filters designed to remove small particles such as smoke and one that includes a fan system. You should also be sure to select a device designed to work for the size of your space.

The higher the CADR, the faster your device will clean the air. Check the label for:

- **CADR scores for smoke, dust, and pollen.** When looking for an in-room air cleaner that can capture viral particles, use the room area value on the CADR label for smoke since these particles are similar in size to viral particles. If the CADR score for smoke is not provided, multiply the manufacturer's general CADR score recommendation by two-thirds to estimate the value for smoke.
- **The largest suggested room size that the unit is appropriate for.** This size assumes a ceiling height of up to 8 feet. If your building's ceiling is higher than 8 feet, you will need to consider a unit with a higher capacity or performance.

You should also consider the number of times the air is filtered into the space in an hour. CADR scores are based on approximately five air changes per hour (ACH), a good baseline for non-medical use. To learn more about other recommended CADR scores for higher risk environments, consult [ASHRAE Standard 241](#), *Control of Infectious Aerosols*, a code-enforceable standard developed by ASHRAE and published in 2023.

If your air cleaner doesn't have a CADR score, use the following method to determine the air exchange rate needed for your specific room size:

1. Determine the room size where you plan to use the unit by multiplying the room's length, width, and height.
2. Multiply the room size by 5 (remember, five air changes per hour is a good baseline).
3. Divide the result from step two by 60 minutes. This will be the target air exchange rate you want for your space.

Once you have selected an air cleaner, place your unit most effectively by considering the following:

- Ensure that your in-room air cleaner is positioned to collect as much room air as possible.
- If you know the potential source of infection, place the unit's intake nearby. If you don't know the potential source, put the unit in a location where it directs clean air to those indoors.
- Ensure that nothing — including walls or curtains — interferes with the air cleaner's outlet or intake vent.

To ensure air cleaners' effectiveness, be sure to regularly replace or clean filters according to the manufacturer's instructions.

Be aware that many new indoor air cleaner products come to market every day and are being sold faster than ever since the start of the COVID-19 pandemic. While many new technologies cite laboratory findings, not everything that happens in a lab can be replicated in real life, and not all studies are independently performed.

To ensure you select the safest and most effective solution for you, your space, and your community, focus on cost-effective, well known, and repeatedly proven air-cleaning technologies.

Now that you have added tools to help increase the amount of clean indoor air, consider ways to help move that air throughout the space or building. Fans, whether they are pedestal fans or hard-mounted fans, can be cost-effective solutions for improving air circulation. However, it is important to take certain precautions to minimize the direct airflow from one person to another, especially in situations where there is a potential risk of infection.

In addition to fans, or in cases where they are not an option, you can use natural ventilation by opening windows or doors to help increase the volume of clean air indoors and its circulation around the indoor space.

Do you need help updating or reviewing your HVAC system? You can find an HVAC professional certified by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) here: <http://certificants.ashrae.org>.

Occupational and environmental health and safety (OEHS) professionals or industrial hygienists can also help you navigate the complicated world of HVAC and building ventilation. You can find a list of qualified OEHS professionals on AIHA's website: <https://www.aiha.org/consultants-directory>.



Physical Distancing

Physical distancing, or the fourth D, distance, is important when it comes to preventing the transmission of airborne infectious diseases. When considering distance, ask yourself how far or near people in your facility are located with respect to each other. People with airborne viral infections, like COVID-19 and measles, can exhale a large amount of viral particles, which is why being close to an infected person increases the risk of infection for staff, students, and visitors. The further an individual is from an infected person, the lower the risk of infection. This is true whether the infected person is showing symptoms or not.

Due to the diverse nature of educational facilities, recommendations for physical distancing may vary depending on factors such as layout, capacity, and the nature of activities conducted at each site. Therefore, the guidance in this section is divided into distinct protocols for different types of facilities. This allows you to navigate directly to the section most relevant to your specific facility in order to find information about appropriate physical distancing measures.

For Childcare Centers:

- If feasible, limit the number of children per classroom in childcare centers to ensure physical distancing.
- Ideally, have each group of children stay in a separate classroom.
- Avoid communal tables and group work. If desks are used, they should be spaced for physical distancing and all face the same direction.
- Implement methods to physically separate employees, children, and their guardians within the facility, such as in break rooms and entrance or exit areas.
- Use signage around the facility to remind everyone to maintain physical distancing at all times.
- Consider using all building entrances for drop-off and pick-up locations, not just the main entrance. Stagger arrival and departure times to prevent mixing of children and their guardians from different classrooms or cohorts.



For K-12 Schools:

- Mark 6-foot distances on the ground outdoors at the school entrance so that students, teachers, and school staff keep apart when entering.
- Use individual desks rather than communal tables whenever possible.
- Desks should be spaced 3 to 6 feet apart, depending on grade level, and should face the same direction, not towards each other or the center of the classroom.
- Consider outdoor learning or hold classes in larger venues such as auditoriums.
- Limit the density of students in classes and minimize close contact for group projects.
- Encourage one-way traffic through hallways. Use floor markings and signs to guide students, teachers, and staff.
- Stagger activities requiring students, teachers, and staff to be in common areas to reduce density and limit group mixing.
- Use signage around the school to remind everyone to maintain physical distancing at all times.



For Institutions of Higher Education:

- Adjust workstations to keep faculty away from each other, staff, and students, where possible. Keep everyone at least 6 feet apart.
- Use signs around campus to remind everyone to keep their distance.
- Separate faculty, staff, and students in common areas like entrances, exits, and classrooms.
- Use visual signs, such as floor markings, to show 6-foot distances at outdoor areas and building entrances.
- Have assigned seating in classrooms to assist in contact tracing.
- For large lecture halls, tape off seats or rows to maintain distance.
- Limit the number of in-person attendees by conducting smaller classes in larger rooms.
- Consider a hybrid approach to learning, mixing online and in-person lessons.
- Hold classes outdoors if possible.
- Stagger class schedules to reduce the number of students in busy areas.
- Consider closing staff lounges or limiting the number of people allowed in at one time.





Masking

Masking is one of the ways to address density, the second of the Four D's. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread.⁵ The more unmasked, unvaccinated, or asymptomatic infected people in a space, the more likely disease will spread.

Masking is a strategy that can help reduce the spread of infectious diseases among staff and students. Due to the difficulty and complexity of proper air dilution and cleaning in educational facilities, masking is an additional tool to consider for those inside the buildings. Consider masking or advising staff and students to mask, especially when:

- There are high levels of infectious disease transmission in the community.
- Individuals are personally vulnerable or interact with vulnerable populations.
- You or someone in your organization has been recently exposed to the threat.
- Utilizing mass transportation or an internal transportation system.

Masks can help reduce the number of aerosol particles or droplets a wearer may spread from coughing, sneezing, and talking. Masks also reduce the risk of airborne particles in the air around the wearer. When considering the use of masks in your educational facility, use these key training tips to ensure they are as effective as possible:

- Ensure that masks have a tight fit on the wearer's face. A metal nose piece can help shape the mask to the wearer's nose and create a tight fit. Adjustable ear straps produce a better fit around the sides of the face.
- The mask needs to cover both the mouth and nose as these are the two primary avenues for spreading or catching a disease. Extending the mask below the chin can help keep it in place.
- It is important to look for masks with multiple layers of tight-knit materials and avoid those with exhalation vents.

Remember, masking doesn't remove all risk but can significantly reduce it for you and others when you properly select, wear, and care for your mask. Unlike some of the other recommendations in this publication, this is one that people can self-select and manage based on their individual situation, risk tolerance, and need.

To learn about masking in educational facilities, see [Commit to C.A.R.E.'s risk assessment tools](#).



Workplace Policies

Workplace policies and practices can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's — duration and density — and combining them to address the specifics of your workspace and workforce. Keeping your workforce and workplace in mind, you can design policies and practices that reduce the risk of having too many people indoors for long periods of time.

The implementation of workplace policies and practices can significantly differ among the vast variety of educational facilities. Therefore, the guidance in this section is divided into distinct protocols based on the nature of different facilities. This allows you to navigate directly to the section most relevant to your specific facility in order to find information about implementing appropriate workplace policies.

For Childcare Centers:

- The same childcare providers should stay with the same group of children each day. If feasible, childcare providers should not rotate between classrooms.
- Schedule drop-off and pick-up times in advance so that employees can anticipate arrivals and departures. This helps prevent all children from being dropped off or picked up simultaneously.
- Childcare providers should ideally greet children outside as they arrive and escort them to their classrooms rather than letting guardians enter the school. Employees should accompany children to their cars or caregivers outside the building at pick-up time.

For K-12 Schools:

- Classes should include the same group of students and teacher(s) each day; each group has its room and teacher(s), and the students only interact with their classmates.
- Consider offering specialized middle- and high-school classes virtually to limit the mixing of student cohorts.
- Restrict or prohibit visitors, including parents, from entering school buildings.
- Encourage administrative employees to work from home if they can.
- Consider staggering school start times or start dates.
- Consider closing student lounges and cafeterias to limit student interactions to their assigned group and classroom. Consider restricting or prohibiting the use of lockers.

⁵ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>

For Institutions of Higher Education:

- Develop plans for classes or activities where distancing isn't possible and for high-contact activities.
- Consider canceling or postponing significant group events or gatherings. Keep essential events outdoors or online as much as possible.
- Have administrative staff work from home to reduce the number of people in the office area.



Training and Communication

Communication and workforce training are critical tools for keeping your staff, students, and community safe from infectious diseases. Workforce instructional and communication programs can help staff understand what steps your facility is taking to keep them safe and healthy. Understanding these things will help them better self-advocate and identify personal ways to help reduce the risk of spreading infectious diseases.

Depending on the current infectious disease threat or mutation, it is important to share educational materials with your staff to help them recognize symptoms of infection and understand the current advice regarding what to do if they or someone close to them develops those symptoms.

When preparing a communication and training plan to reduce the spread of infectious diseases, keep in mind that:

- Communication and training need to be easy to understand.
- Translating the content into all the preferred languages of your staff leads to improved adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and physical signage, among others — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your facility and emphasizing transparency will allow for communication routes for staff and students to express concerns, questions, comments, and feedback, ensuring more effective implementation.

You are better positioned to keep those in your facility healthier and safe when you have developed and deployed a training and communications plan for your staff. Training can complement the other levels of protection you implement through the Four D's of duration, density, dilution, and distance.

You now have the steps to start creating a safer and healthier educational facility for your staff, students, and visitors. Remember, each facility is different, so implementing every recommendation will not always be possible. But the more you add layers of protection, the more you can help reduce the risk of spreading infectious diseases in your facility.

COMMIT TO



You can find a variety of foundational education for risk assessment, information about the Four D's, and other tools to help reduce the spread of infectious diseases in an interactive training program called [Commit to C.A.R.E.](#) Free resources include more than 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color-blind-friendly palette, closed captioning, and translations into eight different languages.

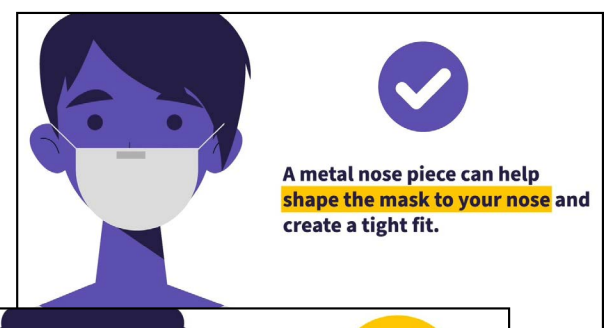


Employee Responsibilities

As part of the staff in an educational facility, you can take some essential steps to help safeguard yourself and others from the spread of infectious diseases such as COVID-19 and the flu:

- Comply with workplace health and safety policies, which exist to protect you.
- If you can, use online or electronic solutions that limit your engagement or closeness to others indoors.
- Be sure to evaluate your and your family's health regularly. Stay home if you or anyone in your home is showing signs or symptoms that may indicate infectious diseases like COVID-19, RSV, measles, or the flu.
- Disinfect shared or high-touch surfaces like shared printers or conference tables using a solution with at least 70% alcohol.
- Ensure that you correctly wear an effective and properly fitted mask while indoors or at close quarters within enclosed spaces. Curious about how to find an effective mask or how to be sure it fits properly? Watch these videos to learn more:
 - [Why masks work](#)
 - [How to properly wear and store a mask](#)
- Limit what you touch and always wash or sanitize your hands with a sanitizer that contains at least 70% alcohol before entering and after leaving the facility.
- Maintain space between you and others to limit your risk.

These steps can help reduce the spread of infectious diseases and help keep yourself and others safe.



[Go to the Conclusion](#) ➔

CHAPTER 5

Manufacturing and Warehouses



Businesses in the manufacturing and warehousing sector experience unique challenges when reducing the risk of airborne infectious diseases like COVID-19 and flu. Buildings in this sector generally have large rooms with high ceilings and limited room enclosures, which makes it difficult to reduce potential exposure risk. The ventilation systems in these types of buildings also struggle to properly ventilate and dilute the air. Despite these challenges, there are effective mitigation strategies you can use to reduce the risk of infectious disease.

In this chapter, you will find guidelines for organizations in the manufacturing and warehousing sector. However, due to the many different types and sizes of warehouse buildings, some of them might not apply to your organization. Instead of aiming to apply them all, plan to implement as many as possible. A multi-layered approach will help keep your building and the people inside it safer and healthier. This chapter also details the areas you can focus on and actions to consider taking to reduce the risk of infectious disease transmission.

This section is dedicated to building managers, owners, and those responsible for workplace safety. There is a separate section for employee responsibilities. If you are an employee looking for ways you can better protect yourself and your community, jump to that section now.



Are you ready to assess your organization's potential risk and learn what you can do to help address it?

Take the quiz now! ➔

[Take Me to the Employee Section](#) ➔



The following strategies help keep workers and visitors in your building safer from the spread of airborne infectious diseases. These strategies have been divided into five areas of focus:

1. Ventilation
2. Physical Distancing
3. Masking
4. Workplace Policies
5. Training and Communication



Ventilation

Remember the Four D's from earlier? Ventilation is another way to think of the third D, dilution. One effective and easy-to-implement way to reduce the number of airborne virus particles in an enclosed space is by diluting the air. To do this, you can add outdoor, filtered, or recirculated air into the enclosed space using a good heating, ventilation, and air conditioning (HVAC) system.

When reviewing the ventilation in your warehouse or manufacturing facility, you should work directly with an HVAC professional. Their work focuses on two critical areas: improving your current heating and cooling system and increasing and improving air quality and flow in the indoor space.

1. Improving the Heating and Cooling System

Your HVAC professional will recommend ways to keep your HVAC system well maintained. This means:

- Cleaning or replacing filters as needed.
- Cleaning the air ducts.
- Maximizing air input based on your system design.
- Striving to maintain relative humidity at 40 to 60%.
- Implementing the [best air filtration practices](#).

You can learn more about the importance of general indoor air quality from [AIHA's indoor environmental quality resources](#).

Do you need help updating or reviewing your HVAC system? You can find an HVAC professional certified by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) here: <http://certificants.ashrae.org>.

Occupational and environmental health and safety (OEHS) professionals or industrial hygienists can also help you navigate the complicated world of HVAC and building ventilation. You can find a list of qualified OEHS professionals on AIHA's website: <https://www.aiha.org/consultants-directory>.

2. Increasing and Improving Air Quality and Flow in Indoor Spaces

It's important to consider the use of in-room air cleaners throughout your building, especially where people spend long periods of time. In-room air cleaners can help dilute the air indoors, making it safer for the people inside. You should consult with your HVAC professional to determine the effectiveness of and ideal locations for in-room air cleaners.

When selecting an in-room air cleaner, you need to look at the independently verified Clean Air Delivery Rate (CADR). This score is determined using the Association of Home Appliance Manufacturers' test procedures, which means that devices tested using these protocols can be reliably compared. Be sure to select an in-room air cleaner with a fan system and filters designed to remove small particles such as smoke. You should also be sure to select a device designed to work for the size of your space.

The higher the CADR, the faster it will clean the air. Check the label for:

- **CADR scores for smoke, dust, and pollen.** When looking for an in-room air cleaner that can capture viral particles, use the room area value on the CADR label for smoke since these particles are similar in size to viral particles. If the CADR score for smoke is not provided, multiply the manufacturer's general CADR score recommendation by two-thirds to estimate the value for smoke.
- **The largest suggested room size for which the unit is appropriate.** This size assumes a ceiling height of up to 8 feet. If your building's ceiling is higher than 8 feet, you will need to consider a unit with a higher capacity or performance.

You should also consider the number of times the air is filtered into the space in an hour. CADR scores are based on approximately five air changes per hour (ACH), a good baseline for non-medical use. To learn more about other recommended CADR scores for higher risk environments, consult [ASHRAE Standard 241](#), *Control of Infectious Aerosols*, a code-enforceable standard developed by ASHRAE and published in 2023.

If your air cleaner doesn't have a CADR score, use the following method to determine the air exchange rate needed for your specific room size:

1. Determine the room size where you plan to use the unit by multiplying the room's length, width, and height.
2. Multiply the room size by 5 (remember, five air changes per hour is a good baseline).
3. Divide the result from step two by 60 minutes. This will be the target air exchange rate you want for your space.

Once you have selected an air cleaner, place your unit most effectively by considering the following:

- Ensure that your in-room air cleaner is positioned to collect as much room air as possible.
- If you know the potential source of infection, place the unit's intake nearby. If you don't know the potential source, put the unit in a location where it directs clean air to those indoors.
- Ensure that nothing — including walls or curtains — interferes with the air cleaner's outlet or intake.

To ensure air cleaners' effectiveness, be sure to regularly replace or clean filters according to the manufacturer's instructions.

Be aware that many new indoor air cleaner products come to market every day and are being sold faster than ever since the start of the COVID-19 pandemic. While many new technologies cite laboratory findings, not everything that happens in a lab can be replicated in real life, and not all studies are independently performed.

To ensure that you select the safest and most effective solution for you, your space, and your community, focus on cost-effective, well known, and repeatedly proven air-cleaning technologies.



Physical Distancing

Physical distancing, or the fourth D, distance, is important when it comes to preventing the transmission of airborne infectious diseases. When considering distance, you'll want to ask yourself how far or near to each other people are in your workplace. People with airborne viral infections, like COVID-19 and measles, exhale a high number of viral particles, which is why being close to an infected person increases the risk of infection for workers or office visitors. The further an individual is away from the infected person, the lower their risk of infection. This is true whether the infected person is showing symptoms or not.

Here are some ways you can include distance in your plan to reduce the spread of airborne infectious diseases:

- Review the current production line setup to minimize employees' prolonged close contact with coworkers.
- Reduce the occupancy limit for break rooms and other areas where people spend long periods of time.

Layering distance with other strategies like dilution increases effectiveness and ensures greater protection.



Masking

Masking is one of the ways to address density, the second of the Four D's. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread.⁶ The more unmasked, unvaccinated, or asymptomatic infected people in a space, the more likely disease will spread.

Masking is a strategy that can help reduce the spread of infectious diseases among staff. Due to the difficulty and complexity of proper air dilution and cleaning in warehouse settings, masking is an additional tool to consider for those inside the buildings. Consider masking or advising workers to mask, especially when:

- There are high levels of infectious disease transmission in the community.
- Individuals are personally vulnerable or interact with vulnerable populations.
- You or someone in your organization has been recently exposed to the threat.
- Utilizing mass transportation.

Masks can help reduce the number of aerosol particles or droplets a wearer may spread from coughing, sneezing, and talking. Masks also reduce the risk of airborne particles in the air around the wearer.

When considering the use of masks in your workplace, use these key training tips to ensure they are as effective as possible:

- Ensure that masks have a tight fit on the wearer's face. A metal nose piece can help shape the mask to the wearer's nose and create a tight fit. Adjustable ear straps produce a better fit around the sides of the face.
- The mask needs to cover both the mouth and nose as these are the two primary avenues for spreading or catching a disease. Extending the mask below the chin can help keep it in place.
- It is important to look for masks with multiple layers of tight-knit materials and avoid those with exhalation vents.

Remember, masking doesn't remove all risk but can significantly reduce it for you and others when you properly select, wear, and care for your mask. Unlike some of the other recommendations described in this publication, this is one that individuals can self-select and manage based on their individual situation, risk tolerance, and need. To learn about masking in manufacturing and warehouses, see [Commit to C.A.R.E.'s risk assessment tools](#).



Workplace Policies

Workplace policies can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's—duration and density—and combining them to address the specifics of your workspace and workforce. Keeping your workforce and workplace in mind, you can design policies that reduce the risk of having too many people indoors for long periods.

Some examples of workplace policies that reduce the risk of spreading infectious diseases include:

- Exploring staggered work shifts or hours and other flexible approaches for workers.
- Providing flexible and paid sick leave to help ensure that workers are encouraged to stay home if they have symptoms or if someone in their family is symptomatic.
- Preparing for worker absences by developing plans for alternative coverage.
- Monitoring and tracking employee absences related to infectious diseases.

When you reevaluate your workplace policies with these recommendations in mind, you add two additional layers of protection to help prevent the spread of airborne infectious diseases. These policies can be influenced by factors such as community infection rates, the vulnerability of individual workers or their families, and your organization's ability to add additional layers of ventilation or dilution.



Training and Communication

Communication and workforce training are critical tools for keeping your workers and community safe from infectious diseases. Workforce instructional and communication programs can help workers understand the steps your organization is taking to keep them safe and healthy. Understanding these things will help them better self-advocate and identify personal ways to help reduce the risk of spreading infectious diseases.

Depending on the current infectious disease threat or mutation, it is important to share educational materials with your workers to help them recognize symptoms of infection and understand the current advice regarding what to do if they or someone close to them develops those symptoms.

When preparing a communication and training plan to reduce the spread of infectious diseases, keep in mind that:

- Communication and training need to be easy to understand.

⁶ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>


- Translating the content into all the preferred languages in your workforce leads to improved adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and physical signage, among others — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your organization and emphasizing transparency will allow for communication routes for workers or warehouse visitors to express concerns, questions, comments, and feedback, ensuring more effective implementation.

You are better positioned to keep those in your building healthier and safe when you have developed and deployed a training and communications plan for your workers. Training can complement the other levels of protection implemented through the Four D's of duration, density, dilution, and distance.

You now have the steps to start creating a safer and healthier building for your workers. Remember, each building is different, so implementing every recommendation will not always be possible. But the more you add layers of protection, the more you can help reduce the risk of spreading infectious diseases in your workplace.

COMMIT TO



You can find a variety of foundational education for risk assessment, information about the Four D's, and other tools to help reduce the spread of infectious diseases in an interactive training program called [Commit to C.A.R.E.](#) Free resources include more than 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color-blind-friendly palette, closed captioning, and translations into eight different languages.



Employee Responsibilities

As a worker in a warehouse or manufacturing environment, you can take some essential steps to help safeguard yourself and others from the spread of COVID-19 and other infectious diseases:

- Comply with workplace health and safety policies, which exist to protect you.
- If you can, use online or electronic solutions that limit your engagement or closeness to others indoors.
- Be sure to evaluate your and your family's health regularly. Stay home if you or anyone in your home is showing signs or symptoms that may indicate infectious diseases like COVID-19, RSV, measles, or the flu.
- Disinfect shared or high-touch surfaces like shared printers or conference tables using a solution with at least 70% alcohol.
- Ensure that you correctly wear an effective and properly fitted mask while indoors or within enclosed spaces. Curious about how to find an effective mask or how to be sure it fits properly? Watch these videos to learn more:
 - [Why masks work](#)
 - [How to properly wear and store a mask](#)
- Limit what you touch and always wash or sanitize your hands with a sanitizer that contains at least 70% alcohol before entering and after leaving the facility.
- Maintain space between you and others to limit your risk.

These steps can help reduce the spread of COVID-19 and help keep yourself and others safe.

[Go to the Conclusion](#) ➔





A metal nose piece can help shape the mask to your nose and create a tight fit.





Handle the mask only by grasping either the ear loops or string ties.

CHAPTER 6

Large Venues



Large venues like events spaces, museums, theaters, and stadiums pose unique challenges when it comes to reducing the spread of airborne infectious diseases such as COVID-19 and flu. Unlike other places, these venues often have big rooms with high ceilings and few walls, which makes it difficult to lower the risk of exposure to airborne diseases. It can also be challenging to get enough fresh air into these buildings while moving stale air out.

Even though it can be difficult, there are effective ways to reduce the risk of transmission of infectious diseases in large venues. In this chapter, you'll find helpful guidelines tailored for people who run these kinds of spaces. Please keep in mind that venues come in all different shapes and sizes, so not all suggestions will work for your space. Still, these guidelines provide a foundation for creating a mitigation strategy tailored to your specific needs.

Instead of aiming to apply them all, plan to implement as many strategies as possible. A multi-layered approach will help keep your building and the people inside it safer and healthier. This chapter details areas on which you can focus and actions to consider taking to reduce the risk of infectious disease transmission in large venues.

This section is dedicated to building managers, owners, and those responsible for workplace safety. There is a separate section for employee responsibilities. If you are an employee looking for ways you can better protect yourself and your community, jump to that section now.

[Take Me to the Employee Section](#) ➔



The following strategies help keep workers and visitors in your building safer from the spread of airborne infectious diseases. These strategies have been divided into five areas of focus:

1. Ventilation
2. Physical Distancing
3. Masking
4. Workplace Policies
5. Training and Communication



Ventilation

Remember the Four D's from earlier? Ventilation is another way to think of the third D, dilution. One effective and easy-to-implement way to reduce the number of airborne virus particles in an enclosed space is by diluting the air. To do this, you can add outdoor or filtered, recirculated air into an enclosed space using a good heating, ventilation, and air conditioning (HVAC) system.

When reviewing the ventilation in your venue, you will want to work directly with an HVAC professional. Their work focuses on two critical areas: improving your current heating and cooling system and increasing and improving air quality and flow in the indoor space.

1. Improving Your Current Heating and Cooling System

Your HVAC professional will recommend ways to keep your HVAC system well maintained. This means:

- Cleaning or replacing filters as needed.
- Cleaning the air ducts.
- Maximizing air input based on your system design.
- Striving to maintain relative humidity at 40 to 60%.

You can learn more about the importance of general indoor air quality from [AIHA's indoor environmental quality resources](#).



Are you ready to assess your large venue's potential risk and learn what you can do to help address it?

Take the quiz now! ➔

Do you need help updating or reviewing your HVAC system? You can find an HVAC professional certified by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) here: <http://certificants.ashrae.org>.

Occupational and environmental health and safety (OEHS) professionals or industrial hygienists can also help you navigate the complicated world of HVAC and building ventilation. You can find a list of qualified OEHS professionals on AIHA's website: <https://www.aiha.org/consultants-directory>.

2. Increasing and Improving Air Quality and Flow in Indoor Spaces

It's important to consider the use of in-room air cleaners throughout your building, especially where people spend long periods of time. In-room air cleaners can help dilute the air indoors, making it safer for the people inside. You should consult with your HVAC professional to determine the effectiveness of and ideal locations for in-room air cleaners.

When selecting an in-room air cleaner, you need to look at the independently verified Clean Air Delivery Rate (CADR). This score is determined using the Association of Home Appliance Manufacturers' test procedures, which means that devices tested using these protocols can be reliably compared. Be sure to select an in-room air cleaner with filters designed to remove small particles such as smoke and one that includes a fan system. You should also be sure to select a device designed to work for the size of your space.

The higher the CADR, the faster your device will clean the air. Check the label for:

- **CADR scores for smoke, dust, and pollen.** When looking for an in-room air cleaner that can capture viral particles, use the room area value on the CADR label for smoke since these particles are similar in size to viral particles. If the CADR score for smoke is not provided, multiply the manufacturer's general CADR score recommendation by two-thirds to estimate the value for smoke.
- **The largest suggested room size that the unit is appropriate for.** This size assumes a ceiling height of up to 8 feet. If your building's ceiling is higher than 8 feet, you will need to consider a unit with a higher capacity or performance.

You should also consider the number of times the air is filtered into the space in an hour. CADR scores are based on approximately five air changes per hour (ACH), a good baseline for non-medical use. To learn more about other recommended CADR scores for higher risk environments, consult [ASHRAE Standard 241](#), *Control of Infectious Aerosols*, a code-enforceable standard developed by ASHRAE and published in 2023.

If your air cleaner doesn't have a CADR score, use the following method to determine the air exchange rate needed for your specific room size:

1. Determine the room size where you plan to use the unit by multiplying the room's length, width, and height.
2. Multiply the room size by 5 (remember, five air changes per hour is a good baseline).
3. Divide the result from step two by 60 minutes. This will be the target air exchange rate you want for your space.

Once you have selected an air cleaner, place your unit most effectively by considering the following:

- Ensure that your in-room air cleaner is positioned to collect as much room air as possible.
- If you know the potential source of infection, place the unit's intake nearby. If you don't know the potential source, put the unit in a location where it directs clean air to those indoors.
- Ensure that nothing—including walls or curtains—interferes with the air cleaner's outlet or intake vent.

To ensure air cleaners' effectiveness, be sure to regularly replace or clean filters according to the manufacturer's instructions.

Be aware that many new indoor air cleaner products come to market every day and are being sold faster than ever since the start of the COVID-19 pandemic. While many new technologies cite laboratory findings, not everything that happens in a lab can be replicated in real life, and not all studies are independently performed. To ensure that you select the safest and most effective solution for you, your space, and your community, focus on cost-effective, well known, and repeatedly proven air-cleaning technologies.



Physical Distancing

Physical distancing, or the fourth D, distance, is important when it comes to preventing the transmission of airborne infectious diseases. When considering distance, ask yourself how far or near to each other people are in your facility.

People with airborne viral infections, like COVID-19 and measles, can exhale a high number of viral particles, which is why being close to an infected person increases the risk of infection for workers, visitors, and clients. The further an individual is away from the infected person, the lower their risk of infection. This is true whether the infected person is showing symptoms or not.

Due to the diverse nature of large venues, recommendations for physical distancing may vary depending on factors such as layout, capacity, and the nature of activities conducted at each site. Therefore, "the guidance in this section is divided into distinct protocols for different types of venues. This allows you to navigate directly to the section most relevant to your specific venue in order to find information about appropriate physical distancing measures.

For Amateur Sports Programs :

- Athletes and coaches should stay at least 6 feet apart during warm-ups, exercises, and socializing.
- Announce the importance of physical distancing before the game starts. Post signs about this at the venue and mention it on the venue website.
- Reduce the number of spectators at amateur sports events to allow enough space between households. Consider livestreaming the event.
- Limit the number of attendees at association or organization meetings to ensure enough space between participants. Virtual meetings are a good alternative.
- At the end of the event, ensure that coaches, athletes, and officials leave in a manner that prevents close interactions.
- Change the layout of check-in desks and concession stands to prevent close contact between employees, event staff, and athletes.
- Implement strategies to physically separate everyone in the facility, including in break rooms and at entrance and exit areas. Remember, barriers can disrupt ventilation and airflow.

For Small and Medium-Sized Sports and Entertainment Venues:

- Adjust workstations to keep employees at least 6 feet apart from each other, customers, and others wherever possible.
- Use strategies to physically separate employees and customers in the facility—for example, in break rooms and at entrance and exit areas.
- Use visual cues like floor markings and signs to promote physical distancing.
- Space chairs at least 6 feet apart. Use barriers such as screens when possible, but keep in mind that these can disrupt ventilation and airflow.
- Post signs around the facility reminding everyone to maintain physical distancing at all times.
- Use visual guides like tape and paint to direct guests to move in one direction.
- Install barriers or partitions between slot machines, games, and other attractions.
- Use assigned seating in theaters and live shows so that guests don't sit next to each other.
- Limit the number of people in karaoke rooms, viewing rooms, and holding areas, and discourage groups from mingling.
- Stagger the timings of screenings, shows, and events so that audiences for different events do not arrive at the same time.

For Museums and Other Cultural Collecting Institutions:

- Restrict the number of staff allowed in closed loading dock areas. If necessary, consider using virtual courier assistance.
- Adjust workstations to keep employees and volunteers at least 6 feet apart from each other and visitors where possible.
- Create one-way foot traffic patterns, particularly on stairs and through special exhibitions or galleries, to prevent people from clustering together.
- Find ways to physically separate employees, volunteers, and visitors throughout the facility in places like break rooms, elevators, galleries, theaters, and entrance and exit areas.
- Use visual cues like floor markings and signs to promote physical distancing.
- If feasible, section off 8-foot areas on benches or replace benches with distanced chairs.
- Install barriers such as screens to separate people, but keep in mind that these barriers can disrupt ventilation and airflow. Ropes with stanchions can help keep a safe distance between exhibits and visitors.
- If necessary, close some galleries, particularly in dead-end areas with limited or poor airflow.
- Limit the number of people allowed in the museum according to local, state, or federal guidelines.
- Consider timed entry or ticketing for your institution or popular exhibitions.

For Worship Services and Religious Gatherings:

- Adjust the layout of workstations and the placement of volunteers and service participants to keep everyone at least 6 feet apart wherever possible.
- Limit the number of attendees for any large worship service or gathering.
- Use different strategies to physically separate employees, volunteers, members, guests, and visitors in the house of worship—for example, in break rooms, seating areas, and entrance and exit areas.
- Use visual cues like floor markings and signs to promote physical distancing.
- Set chairs at least 6 feet apart. Use barriers like screens if needed, but remember that these can disrupt ventilation and airflow.
- Consider having members leave the service at different times to avoid close contact between different groups.
- Try to create a one-way foot traffic pattern for people moving around the house of worship.
- Post signs around the building to remind people to maintain physical distancing.

For Libraries:

- Use clear signage to regulate the use of common areas. Include the maximum occupancy and physical distancing measures for those who aren't in the same family.
- Place marks on the floor wherever a line may form to ensure proper physical distancing. Consider providing infographic sheets on the library's website or post signs as visual reminders.
- Consider limiting the number of patrons in the library at any one time.
- Designate specific days and times for vulnerable populations like seniors to visit the library. Only allow those specific groups entry during these special hours.
- Reposition library computers, desks, and chairs to ensure appropriate physical distancing. Consider staggering computer access times.
- If physical distancing isn't possible for librarians or other library employees, consider using partitions between employees and desks, but remember that these can disrupt ventilation and airflow.

Layering distance with other strategies like dilution increases effectiveness and ensures greater protection.



Masking

Masking is one of the ways to address density, the second of the Four D's. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread.⁷ The more unmasked, unvaccinated, or asymptomatic infected people in a space, the more likely disease will spread. Masking is a strategy that can help reduce the spread of infectious diseases among people in indoor venues. Due to the difficulty and complexity of proper air dilution and cleaning in large venues, masking is an additional tool to consider for workers and others inside the buildings. Consider masking or advising workers to mask, especially when:

- There are high levels of infectious disease transmission in the community.
- Individuals are personally vulnerable or interact with vulnerable populations.
- You or someone in your organization has been recently exposed to the threat.
- Utilizing mass transportation.

Masks can help reduce the number of aerosol particles or droplets a wearer may spread from coughing, sneezing, and talking. Masks also reduce the risk of airborne particles in the air around the wearer.

When considering the use of masks in your venue, use these key training tips to ensure they are as effective as possible:

- Ensure that masks have a tight fit on the wearer's face. A metal nose piece can help shape the mask to the wearer's nose and create a tight fit. Adjustable ear straps produce a better fit around the sides of the face.
- The mask needs to cover both the mouth and nose as these are the two primary avenues for spreading or catching a disease. Extending the mask below the chin can also help keep it in place.
- It is important to look for masks with multiple layers of tight-knit materials and avoid those with exhalation vents.

Remember, masking doesn't remove all risk but can significantly reduce it for you and others when you properly select, wear, and care for your mask. Unlike some of the other recommendations in this publication, this is one that individuals can self-select and manage based on their individual situation, risk tolerance, and need. To learn about masking in larger venues, see [Commit to C.A.R.E.'s risk assessment tools](#).



Workplace Policies

Workplace policies can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's — duration and density — and combining them to address the specifics of your workspace and workforce. Keeping your workforce and workplace in mind, you can design policies that reduce the risk of having too many people indoors for extended periods of time.

The implementation of workplace policies can significantly differ among the vast variety of large venues. Therefore, the guidance in this section is divided into distinct protocols based on the nature of different venues. This allows you to navigate directly to the section most relevant to your specific venue in order to find information about appropriate workplace policies.

For Amateur Sports Programs :

- Use social media, texts, emails, and verbal announcements to remind everyone to wear face masks and avoid crowding during practices and competitions.
- Plan for the coaches, athletes, and officials to leave at the end of an event to prevent close interactions between teams and spectators.
- Adjust the layout of check-in desks and concession stands to reduce close contact between employees, event staff, and athletes.
- Implement methods to physically separate employees, event staff, and athletes in the facility, especially in shared spaces like break rooms and entrances and exits. Keep in mind that barriers can affect ventilation and airflow.

For Small and Medium-Sized Sports and Entertainment Venues:

- Encourage customers to purchase tickets and make reservations online to limit interaction at the point of sale.
- Consider using smartphone apps for food and drink orders to reduce congestion around ordering areas.
- If you can't use prepaid or app-based systems, clearly mark and separate ticket-buying areas to ensure physical distancing.
- Install physical barriers between employees and customers for in-person transactions, but keep in mind that barriers can affect ventilation and airflow.
- To minimize contact between customers, consider allowing small areas of the facility to be used by reservation only (for example, eating tables, bowling lanes, and pool tables).
- Divide groups with marked-off tables, darkened bowling lanes, closed slot machines, and so on.
- Encourage customers to avoid socializing in the lobby or parking lots before or after shows and events.

⁷ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>

For Museums and Other Cultural Collecting Institutions:

- Limit person-to-person contact, monitor the number of visitors, and restrict access to certain areas like elevators, galleries, and gift shops.
- Suspend services that can cause long lines and staff contact with visitors, like coat and bag checks. Consider alternatives like self-serve lockers or self-checks in areas monitored by staff from a distance.
- For exhibits that do not allow for 6 feet of distance between visitors, consider relocating the installations, installing barriers, or temporarily closing exhibit areas.
- Limit the number of participants in group visits, guided tours, public programs, and special events according to local and state guidelines. Consider offering online tours or app-based audio tours that visitors can listen to with their personal headphones.
- Consider hosting events outdoors or projecting screenings onto outdoor museum walls. Keep these events short to avoid overcrowding in outdoor areas where mask wearing isn't required.
- Restrict access to storage and workrooms to essential personnel. Develop a strategy to let others know when these rooms are occupied.
- Limit the number of visitors and seating in libraries, common spaces, and reading rooms to ensure a safe distance between people using collection materials.
- Use assigned seating in theaters and for shows or demonstrations to ensure that different household groups aren't seated next to each other.
- Stagger the timings of screenings, shows, and events so that audiences for different events do not arrive at the same time.
- Post clear signs directing people to entrances and exits, which should be separate to accommodate one-way traffic patterns. Make sure these areas do not become places where people gather or where congestion occurs.

For Worship Services and Religious Gatherings:

- Consider using pre-recorded music or singing and ask congregation members to refrain from singing aloud. This can help reduce the risk of infection among choir members and those seated nearby. Remember that some aerosolized droplets can travel up to 25 feet from the source, depending on the amount of ventilation.
- Encourage livestreaming of religious services and conducting religious services outdoors.
- Investigate religious service-from-home options, staggered service shifts or hours, virtual services, and other flexible approaches for holding worship services.

For Libraries:

- If possible, automate library services like checkout to limit contact.
- Consider allowing patrons to preorder books and other library materials and pick them up from a secure outdoor location.
- Consider canceling or postponing library events like readings, story time, community gatherings, and meetings. Conduct these events virtually instead.
- Encourage employees and families to avoid lingering or socializing in the library. Consider limiting the amount of time patrons can spend in the library or limiting the hours of library operation.
- Encourage employees to avoid lingering or socializing in common areas or break rooms.
- Consider closing or eliminating shared common areas to prevent crowding.
- If possible, arrange for administrative employees to work from home.

When you reevaluate your workplace policies with these recommendations in mind, you add two layers of protection to help prevent the spread of airborne infectious diseases. These policies can be influenced by factors such as community infection rates, the vulnerability of individual workers or their families, and your organization's ability to add layers of ventilation or dilution.

**Training and Communication**

Communication and workforce training are critical tools for keeping your workers and community safe from infectious diseases. Workforce instructional and communication programs can help workers understand not only what steps your organization is taking to keep them safe and healthy but why. Understanding these things will help them better self-advocate and identify personal ways to help reduce the risk of spreading infectious diseases.

Depending on the current infectious disease threat or mutation, it is important to share educational materials with your workers to help them recognize symptoms of infection and understand the current advice regarding what to do if they or someone close to them develops those symptoms.

When preparing a communication and training plan to reduce the spread of infectious diseases, keep in mind that:

- Communication and training need to be easy to understand.
- Translating the content into all the preferred languages of your workforce leads to improved adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and physical signage, among others — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your organization and emphasizing transparency will allow for communication routes for workers and visitors to express concerns, questions, comments, and feedback, ensuring more effective implementation.

You are better positioned to keep those in your building healthier and safe when you have developed and deployed a training and communications plan for your workers. Training can complement the other levels of protection you implement through the Four D's of duration, density, dilution, and distance.

You now have the steps to start creating a safer and healthier venue for your staff and visitors. Remember, each venue is different, so implementing every recommendation will not always be possible. But the more you add layers of protection, the more you can help reduce the risk of spreading infectious diseases in your venue.



Employee Responsibilities

As a worker in a large venue, you can take some essential steps to help safeguard yourself and others from the spread of infectious diseases such as COVID-19 and measles:

- Comply with workplace health and safety policies, which exist to protect you.
- If you can, use online or electronic solutions that limit your engagement or closeness to others indoors.
- Be sure to evaluate your and your family's health regularly. Stay home if you or anyone in your home is showing signs or symptoms that may indicate infectious diseases like COVID-19, RSV, measles, or the flu.
- Disinfect shared or high-touch surfaces like printers or conference tables using a solution with at least 70% alcohol.
- Ensure that you correctly wear an effective and properly fitted mask while indoors or within enclosed spaces. Curious about how to find an effective mask or how to be sure it fits properly? Watch these videos to learn more:
 - [Why masks work](#)
 - [How to properly wear and store a mask](#)
- Limit what you touch and always wash or sanitize your hands with a sanitizer that contains at least 70% alcohol before entering and after leaving the facility.
- Maintain space between you and others to limit your risk.

These steps can help reduce the spread of infectious diseases and help keep yourself and others safe.

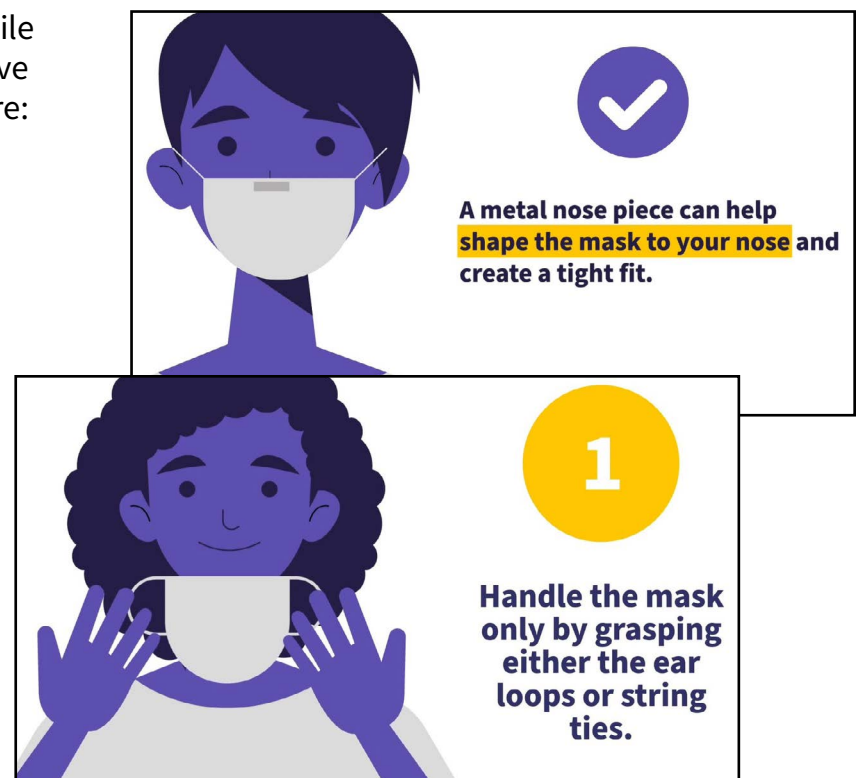
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You can find a variety of foundational education for risk assessment, information about the Four D's, and other tools to help reduce the spread of infectious diseases in an interactive training program called [Commit to C.A.R.E.](#) Free resources include more than 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color-blind-friendly palette, closed captioning, and translations into eight different languages.



CHAPTER 7

Outdoor Activities



Outdoor activities present their own challenges to preventing the spread of airborne diseases like COVID-19 and measles. It's important to distinguish between activities involving vendors, such as farmers' markets, and recreational activities that occur in places like campgrounds, parks, pools, and concerts.

Activities involving vendors can present a higher risk of transmission because of close contact with multiple people. Interacting with vendors and other customers at farmers' markets, for example, often means being close to multiple people for a long time, increasing the chances of exposure to airborne diseases.

Outdoor recreation spaces like campgrounds, parks, pools, and concert venues have different dynamics. Activities in these spaces may still involve close contact but typically with your own group rather than with vendors and other people you don't know. However, you need to keep in mind that spending prolonged periods in large crowds, even outdoors, will increase the risk of exposure.

In this chapter, you will find guidelines for general outdoor activities. Some might not apply to your event or group. Instead of aiming to apply them all, plan to implement as many as possible. A multi-layered approach will help keep your outdoor spaces and the people within them safer and healthier.

This chapter will detail the areas you can focus on and what actions to consider implementing to reduce the risk of infectious disease transmission.

This section is intended for the organizers and coordinators of outdoor activities as well as the professionals responsible for workplace safety in these situations. Employee responsibilities are covered in a separate section. If you are an employee looking for ways you can better protect yourself and your community, jump to that section now.



Are you ready to assess your outdoor activity's potential risk and learn what you can do to help address it?

Take the quiz now! ➔

[Take Me to the Employee Section](#) ➔



The following strategies help keep participants and visitors in your outdoor activities safer from the spread of airborne infectious diseases. These strategies have been divided into four areas of focus:

1. Physical Distancing
2. Workplace Policies
3. Training and Communication
4. Masking



Physical Distancing

Physical distancing, or the fourth D, distance, is important when it comes to preventing transmission of airborne infectious diseases. When considering distance, you'll want to ask how far or near to each other are people in your space. People with airborne viral infections like COVID-19 and measles exhale a high number of viral particles, which is why being close to an infected person increases the risk of infection for workers or customers. The further away an individual is from the infected person, the lower the risk of infection. This is true whether the infected person is showing symptoms or not.

Outdoor activities like farmer's markets, campgrounds, parks, and pools have certain advantages over indoor settings when it comes to preventing the spread of diseases like COVID-19 and measles. Being outdoors provides more space and fresh air, but it is still crucial to prioritize physical distancing.

Activities with vendors, such as farmers' markets, can pose a challenge to maintaining physical distance. Interacting with vendors and fellow customers often involves being in close proximity and potentially facing crowded conditions. The nature of these environments and the need for direct contact with products can make it harder to keep a safe distance from others, increasing the risk of disease transmission.

Outdoor recreation activities like campgrounds, parks, pools, and concerts offer more opportunities to implement and enforce physical distancing measures. These settings generally have more open spaces, allowing individuals to keep a greater distance from one another. However, it's important to be aware of situations where physical distancing may be compromised, such as crowded areas or activities that encourage close contact. Being mindful of these situations will help reduce the risk of disease transmission.

Here are some ways for you to include distance in your plan to reduce the spread of airborne infectious disease at outdoor activities where vendors are present:

- Limit the number of customers allowed at each vendor at one time to ensure physical distancing.
- Use visual cues like floor markings and signs to encourage people to keep a safe distance from each other in crowded areas.
- Provide additional space between vendors, if possible, and consider reconfiguring the layout of the market to allow for better distancing.
- Install plastic partitions at payment kiosks to create a barrier between employees and customers, reducing close contact.
- Encourage customers to pre-order items online and schedule pickup times at designated intervals to minimize crowding.
- Implement measures like pre-bagging items and using numbered menus to streamline the purchasing process and reduce the time people spend in close proximity to each other.
- Clearly display pricing signage to minimize the need for close interactions and explore contactless payment options to reduce contact.
- Discourage customers from consuming food on site and from bringing pets.
- Limit the number of people allowed in restrooms at one time to prevent overcrowding and maintain a safe environment.

Here are some ways for you to include distance in your plan to reduce the spread of airborne infectious disease at recreational outdoor activities in settings like campgrounds, parks, pools, and concerts:

- Limit the number of visitors at any given location to maintain physical distancing.
- Capture the party size of reservations to manage visitor numbers.
- Provide supervision for young children to ensure they maintain physical distancing.
- Encourage leashing of pets to prevent unintended breaches of physical distancing.
- Ensure physical distancing during equipment rental processes.
- Modify workstations to minimize close contact between employees and others.
- Use physical barriers to separate employees and customers in common areas.
- Display signs throughout the facility as reminders to maintain physical distancing.
- Implement a reservation system to manage crowding during peak times.
- Mark 6-foot increments on the floor for proper distancing in restroom and shower areas.
- Limit restroom occupancy and promote handwashing through signage.
- Determine the feasibility of opening shower and locker room facilities based on proper distancing.

Combining distance with other strategies, such as dilution, increases effectiveness and ensures more protection.



Workplace Policies

Workplace policies can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's — duration and density. Combining them can help address the specifics of your workspace and workforce.

Keeping your outdoor activities and workforce in mind, you can design policies that reduce the risk of having too many people congregating closely together for extended periods.

Some examples of workplace policies that reduce the risk of spreading infectious diseases in outdoor activities include:

- Stagger work shifts or hours and adopt flexible schedules for employees.
- Develop flexible attendance and sick leave policies to address employee absences.
- Plan for alternative coverage in case of employee absences.
- Monitor and track employee absences related to infectious diseases like COVID-19, measles, or the flu.
- Avoid offering samples.
- In vendor settings, consider suspending penalties for last-minute vendor cancellations.
- In vendor settings, strategically arrange booths to prevent customers from entering restricted areas and to ensure proper physical distancing measures are maintained.

When you reevaluate your workplace policies, you add two layers of protection against the spread of airborne infectious diseases. These policies can be influenced by factors such as community infection rates, the vulnerability of individual workers or their families, and your organization's ability to add layers of ventilation or dilution.



Training and Communication

Communication and workforce training are critical tools for keeping your workers and community safe from spreading infectious diseases. Workforce instructional and communication programs can help workers understand what steps your organization is taking to keep them safe and healthy. Understanding these things will help workers self-advocate and identify ways to help reduce the risk of spreading infections and diseases.

Depending on the current infectious disease threat or mutation, it is important to share educational materials with your workers to help them recognize symptoms and understand what to do if they or someone close to them develops those symptoms.

When preparing a communication and training plan to reduce the spread of infectious diseases, you should keep in mind:

- Communication and training need to be easy to understand.
- Translating the content into all the preferred languages in your workforce leads to easier adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and physical signage, among others — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your organization and emphasizing transparency will encourage workers and visitors to express concerns, questions, comments, and feedback, ensuring more effective implementation.

Having a training and communications plan for your workers puts you in a better position to keep those in your building healthier and safer. Training is an excellent complement to the other levels of protection you have implemented through the Four D's of duration, density, dilution, and distance.

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You can find a variety of foundational education for risk assessment, information about the Four D's, and other tools to help reduce the spread of infectious diseases in an interactive training program called [Commit to C.A.R.E.](#) Free resources include more than 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color-blind-friendly palette, closed captioning, and translations into eight different languages.



Employee Responsibilities

As a worker engaging in an outdoor venue, you can take some essential steps to help safeguard yourself and others from the spread of infectious diseases such as COVID-19 and measles:

- Comply with workplace health and safety policies, which exist to protect you.
- Be sure to evaluate your and your family's health regularly. Stay home if you or anyone in your home is showing signs or symptoms that may indicate infectious diseases like COVID-19, RSV, measles, or the flu.
- Disinfect shared or high-touch surfaces using a solution with at least 70% alcohol.
- Ensure that you correctly wear an effective and properly fitted mask while indoors or at close quarters within enclosed spaces. Curious about how to find an effective mask or how to be sure it fits properly? Watch these videos to learn more:
 - [Why masks work](#)
 - [How to properly wear and store a mask](#)
- Limit what you touch, and always wash or sanitize your hands with a sanitizer that contains at least 70% alcohol before entering and after leaving the facilities.
- Maintain space between yourself and others to limit your risk.

These steps can help reduce the spread of infectious diseases and help keep you and others safe.

Remember, every situation is different, so implementing every recommendation will not always be possible. But the more layers of protection you add, the more you help reduce the risk of spreading infectious diseases in your workplace.





Masking

Masking is one of the ways we can address density, our second D. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread⁸. The more unmasked, unvaccinated, or asymptomatic infected people in a space, the more likely the disease will spread.

When you're doing things outside, like going for a walk or visiting a park, the need for wearing masks is not as high as when you're indoors. That's because outdoor spaces have more fresh air and room to keep your distance from others. The air outdoors helps disperse airborne particles, making it less likely for diseases to spread through the air.

However, there are situations where it is still important to use masks outdoors. If you find yourself in high-risk scenarios, such as being in close contact with individuals displaying symptoms of an infectious disease, wearing a mask becomes crucial to protect yourself and others. Additionally, in crowded outdoor settings where maintaining physical distancing becomes challenging, wearing a mask can provide an extra layer of protection.

Wearing a mask outdoors is important in certain situations, such as:

- If you cannot consistently maintain a distance of at least six feet from others, wearing a mask is essential. This applies to both indoor and outdoor scenarios.
- Even if you are engaged in outdoor activities, it's crucial to wear a mask if you are around individuals who are not members of your own household. This helps reduce the risk of transmission.
- If you are immunocompromised or have other conditions such as asthma that put you at high risk, wearing a mask is even more essential. These conditions can make you more susceptible to severe consequences if you become infected. Therefore, taking the precaution of wearing a mask, even when the public might not need to, is recommended.
- If you have been in contact with people who are sick or show symptoms consistent with a viral infection, it's important to wear a mask, maintain physical distance, and quarantine according to the guidelines provided by health authorities. This helps prevent you from potentially spreading the virus to others. Also, consider getting tested.

It is crucial to stay informed about local guidelines and regulations regarding mask usage in outdoor settings. These guidelines may vary based on the level of community transmission and specific recommendations from public health authorities. Stay mindful of your surroundings, prioritize the safety of yourself and others, and adapt your mask usage accordingly.

The use of masks remains a critical measure in mitigating the spread of airborne diseases such as COVID-19 and measles, even in outdoor settings like farmer's markets, campgrounds, parks, and pools.

When considering the use of masks in any setting, use these key training tips to ensure they are as effective as possible:

- Ensure that masks have a tight fit on the wearer's face. A metal nose piece can help shape the mask to the wearer's nose and create a tight fit. Adjustable ear straps produce a better fit around the sides of the face.
- The mask needs to cover both the mouth and nose, as these are the two primary avenues for spreading or catching a disease. Extending the mask below the chin can also help keep it in place.
- It is important to look for masks with multiple layers of tight-knit materials and avoid those with exhalation vents.

Remember, masking doesn't remove all risk but can significantly reduce it for you and others when you properly select, wear, and care for your mask.

Masking is another strategy you can use to educate and encourage your staff to help reduce the risk of spreading infectious diseases. Unlike some of the other recommendations in this ebook, masking is one that individuals can self-select and manage based on their specific situations, personal risk tolerance, and need.

[Go to the Conclusion](#) ➔

⁸ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>

CHAPTER 8

Transit Systems (Buses, Subways, and Light Rails)



Public transit systems like buses, subways, and light rails complicate your efforts to stop the spread of COVID-19, flu, and other infectious diseases. You're in a small, tight space with a lot of people, so it's harder to stay away from each other. On top of that, there's not much fresh air coming in, making it harder to keep the air clean and limit the chance of people getting sick.

However, there are effective methods to minimize the risk of transmission of infectious diseases in transit systems. In this chapter, you'll discover guidelines suited specifically for organizations managing transit systems such as buses, subways, and light rails. Please note that some suggestions might not align with your specific situation, given the wide variety of transportation systems and their varying sizes and types. Still, these guidelines provide a solid foundation for creating a mitigation strategy tailored to your specific needs.

Instead of aiming to apply them all, plan to implement as many strategies as possible. A multi-layered approach will help keep your transportation system and the people inside it safer and healthier.

This chapter will detail the areas you can focus on and what actions to consider implementing to reduce the risk of infectious disease transmission in transit systems.

This section is dedicated to system managers, owners, and those responsible for workplace safety. There are separate sections for employee responsibilities and passenger responsibilities. If you are an employee or passenger looking for ways you can better protect yourself and your community, jump to that section now.



Are you ready to assess your transit system potential risk and learn what you can do to help address it?

Take the quiz now! ➔

[Take Me to the Employee Section](#) ➔

[Take Me to the Passenger Section](#) ➔



The following strategies help keep workers and passengers in your transportation system safer from the spread of airborne infectious diseases. These strategies have been divided into five areas of focus, which are:

1. Ventilation
2. Physical Distancing and Vehicle Configuration
3. Masking
4. Workplace Policies
5. Training and Communication



Ventilation

Remember the Four D's from earlier? Ventilation is just another way to think of the third D, dilution. One effective and easy-to-implement method to reduce the number of airborne virus particles in an enclosed space is by diluting the air. To do this, you can add outdoor air or filtered recirculated air into the enclosed space using a good HVAC system.

When reviewing the ventilation in transit systems, you will want to work directly with an HVAC professional. Their work will focus on two critical areas: improving your current heating and cooling system and increasing and improving air quality and flow in the indoor space.

1. Improving Your Current Heating and Cooling System

Your HVAC professional will look at ways to keep your heating, ventilation, and air conditioning (HVAC) system well maintained. This means:

- Cleaning or replacing filters as needed.
- Cleaning the air ducts.
- Maximizing air input based on your system design.

- Striving to maintain relative humidity at 40 to 60%.
- Implementing the [best air filtration practices](#).

You can learn more about the importance of general indoor air quality from [AIHA's indoor environmental quality resources](#).

2. Increasing and Improving Air Quality and Flow in the Indoor Space

An important tool to consider is the use of in-room air cleaners to accommodate differing room sizes and ventilation needs, especially where people spend long periods of time. In-room air cleaners can help dilute the air indoors, making it safer for the people inside.

Offices, common rooms, bathrooms, and other enclosed spaces within the transportation system can represent threats in terms of infectious disease transmission. An in-room air cleaner can help reduce the risk.

When selecting an in-room air cleaner, you need to look at the independently verified Clean Air Delivery Rate (CADR) score. This score is determined using the Association of Home Appliance Manufacturers test procedures, which means that devices tested using these protocols can be reliably compared.

Be sure to select an in-room air cleaner with a fan system and filters designed to remove small particles such as smoke. Also, be sure to select a device designed to work for the size of the space you are in.

The higher the CADR, the faster it will clean the air. Check the label for:

- **CADR scores for smoke, dust, and pollen.** When looking for an in-room air cleaner that can capture viral particles, use the room area value on the CADR label for smoke since these particles are similar in size to viral particles. If the CADR score for smoke is not provided, multiply the manufacturer's general CADR score recommendation by two-thirds to estimate the value for smoke.
- **The largest suggested room size that the unit is appropriate for.** This size assumes a ceiling height of up to 8 feet. If your ceiling is higher than 8 feet, you will need to consider a unit with a higher capacity or performance.

You should also consider the number of times the air is filtered into the space in an hour. CADR scores are based on approximately five air changes per hour (ACH), a good baseline for non-medical use.

If your air cleaner doesn't have a CADR score, use the following method to determine the air exchange rate needed for your specific room size:

1. Determine the room size where you plan to use the unit by multiplying the room's length, width, and height.
2. Multiply the room size by 5 (remember, five air changes per hour is a good baseline).
3. Divide the result from step two by 60 minutes. This will be the target air exchange rate you want for your space.

Once you have selected an air cleaner, place your unit most effectively by considering the following:

- Ensure that your in-room air cleaner is positioned to collect as much room air as possible.
- If you know the potential source of infection, place the unit's intake nearby. If you don't know the potential source, put the unit in a location where it directs clean air to those indoors.
- Ensure that nothing — including walls or curtains — interferes with the air cleaner's outlet or intake vent.

To ensure the air cleaner's effectiveness, be sure to regularly replace or clean filters according to the manufacturer's instructions.

Be aware that many new indoor air cleaner products come to market every day and are being sold faster than ever since the start of the COVID-19 pandemic. While many new technologies cite laboratory findings, not everything that happens in a lab can be replicated in real life, and not all studies are independently performed.

To ensure that you select the safest and most effective solution for you, your space, and your community, focus on cost-effective, well-known, and repeatedly proven air-cleaning technologies.

Now that you have added tools to help increase the amount of clean indoor air, consider ways to help move that air throughout the space or system. Fans, whether they are pedestal fans or hard-mounted fans, can be a cost-effective solution for improving air circulation. However, it is important to take certain precautions to minimize the direct airflow from one person to another, especially in situations where there is a potential risk of infection.

In addition to fans, or in cases where these are not an option, you can use natural ventilation by opening windows or doors to help increase the volume of clean air and circulation around the indoor space.

Do you need help updating or reviewing your HVAC system? You can find an HVAC professional certified by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) here: <http://certificants.ashrae.org>.

Occupational and environmental health and safety (OEHS) professionals or industrial hygienists can also help you navigate the complicated world of HVAC and building ventilation. You can find a list of qualified OEHS professionals on AIHA's website: <https://www.aiha.org/consultants-directory>.



Physical Distancing and Vehicle Configuration

Physical distancing, or the fourth D, distance, is important when it comes to preventing transmission of airborne infectious diseases. When considering distance, ask yourself how far or near to each other people are in your facility. People with airborne viral infections like COVID-19 and measles exhale a high number of viral particles, which is why being close to an infected person increases the risk of infection for workers, visitors, and clients. The further an individual is away from the infected person, the lower the risk of infection. This is true whether the infected person is showing symptoms or not.

Due to the diverse nature of transportation systems, suggestions for ensuring indoor air quality can change depending on the specific transit type. Things like the vehicle's design, how many people it can carry, and what it's used for can all play a role in deciding the best ways to maintain distance. Each type of public transit has its own unique considerations.

Here are some ways for you to consider and include distance in your plan to reduce the spread of airborne infectious disease:

- Adjust workstations to keep employees from getting too close (within 6 feet or less for 15 minutes or more over a 24-hour period) to each other, passengers, and others.
- Mark six-foot increments both inside and outside at transit stops and inside transit vehicles. This can help passengers and operators maintain the right distance while waiting for or onboard vehicles.
- Think about skipping rows of seats to help passengers keep their distance from each other. However, people from the same household can sit together.
- Mark a six-foot radius around vehicle operators' seats to limit close contact between operators and passengers.
- When possible, use screens or other types of barriers to keep employees and passengers separated in the vehicle or station facilities like break rooms, entrances, and exits. Remember, barriers can disrupt ventilation and airflow.
- Try to limit the number of passengers in the transport vehicle and within stations to avoid crowding and maintain proper distancing. You can do this by assigning more buses or train cars to busy lines or scheduling more frequent or longer trains.
- Implement entering and exiting protocols. If a vehicle only has two doors, let passengers outside wait to board until the ones inside have exited. Create a one-way traffic pattern so some doors are used for entering and others are used for exiting.
- Consider closing some station entrances to limit the areas you need to clean and disinfect. Make sure there are enough signs to guide passengers to the available entrances and exits.

Layering distance with other strategies, such as dilution, increases effectiveness and ensures more protection.



Masking

Masking is one of the ways we can address density, our second D. Scientific research indicates that masks can help protect wearers and those around them from infection and viral spread⁹. The more unmasked, unvaccinated, or asymptomatic infected people, the more likely disease will spread.

Masking is another strategy that can help reduce the spread of infectious diseases. Due to the difficulty of achieving proper air dilution and cleaning from an HVAC system in a transit system setting, masking is an additional tool to consider for workers inside buildings.

Consider masking or advising workers to mask, especially when:

- There are high levels of infectious disease transmission in the community.
- Individuals are personally vulnerable or interact with vulnerable populations.
- You or someone in your organization has been recently exposed to the threat.
- Utilizing mass transportation.

Masks can help reduce the number of aerosol particles or droplets a wearer may spread from coughing, sneezing, and talking. Masks also reduce the risk of airborne particles in the air around the wearer.

When considering the use of masks in your workplace, use these key training tips to ensure they are as effective as possible:

- Ensure that masks have a tight fit on the wearer's face. A metal nose piece can help shape the mask to the wearer's nose and create a tight fit. Adjustable ear straps produce a better fit around the sides of the face.
- The mask needs to cover both the mouth and nose as these are the two primary avenues for spreading or catching a disease. Extending the mask below the chin can also help keep it in place.
- It is important to look for masks with multiple layers of tight-knit materials and avoid those with exhalation vents.

Remember, masking doesn't remove all risk but can significantly reduce it for you and others when you properly select, wear and care for your mask. Unlike some of the other recommendations in this ebook, masking is one that individuals can self-select and manage based on their individual situations, risk tolerance, and need.

To learn about masking in larger venues, see [Commit to C.A.R.E.'s risk assessment tools](#).

⁹ Tomshine, J. R., Dennis, K. D., Bruhnke, R. E., Christensen, J. H., Halvorsen, T., Hogan, C. J., O'Horo, J. C., Breeher, L. E., Callstrom, M. R., & Wehde, M. (2021). Combined effects of masking and distance on aerosol exposure potential. *Mayo Clinic Proceedings*, 96(7), 1792–1800. <https://doi.org/10.1016/j.mayocp.2021.05.007>



Workplace Policies

Workplace policies can help you implement risk mitigation strategies by balancing the relative emphasis on two of the Four D's — duration and density — and combining them to address the specifics of your workspace and workforce. Keeping your workforce and workplace in mind, you can design policies that reduce the risk of having too many people indoors for long periods.

Some examples of workplace policies that reduce the risk of spreading infectious diseases include:

- Exploring staggered work shifts or hours and other flexible schedules for workers.
- Providing flexible and paid sick leave to help ensure that workers are encouraged to stay home if they or someone in their family is sick.
- Preparing for worker absences by developing plans for alternative coverage.
- Monitoring and tracking employee absences related to infectious diseases.
- Having separate, clearly marked doors for getting on and off vehicles.
- Trying to add more vehicles or running routes more often during busy times.
- For work areas outside of vehicles, such as break rooms, office spaces, and locker rooms, consider staggering break times for employees.
- Consider scheduling different start and end times for shifts to limit the number of employees who need to access shared spaces like locker rooms, restrooms, and break areas.

When you reevaluate your workplace policies, you add two layers of protection to help against the spread of airborne infectious diseases. These policies can be influenced by factors such as community infection rates, the vulnerability of individual workers or their families, and your organization's ability to add layers of ventilation or dilution.



Training and Communication

Communication and workforce training are critical tools for keeping your workers and community safe from infectious diseases. Workforce instructional and communication programs can help workers understand not only what steps your organization is taking to keep them safe and healthy but why. Understanding these things will help them better self-advocate and identify personal ways to help reduce the risk of spreading infectious diseases.

Depending on the current infectious disease threat or mutation, it is important to share educational materials with your workers to help them recognize symptoms of infection and understand the current advice regarding what to do if they or someone close to them develops those symptoms.

When preparing a communication and training plan to reduce the spread of infectious diseases, keep in mind that:

- Communication and training need to be easy to understand.
- Translating the content into all the preferred languages of your workforce leads to improved adoption and implementation.
- The use of multiple communication methods — such as emails, texts, and physical signage, among others — helps ensure access to timely and accurate information.

Adopting a communication strategy customized to your organization and emphasizing transparency will allow for communication routes for workers and visitors to express concerns, questions, comments, and feedback, ensuring more effective implementation.

You are better positioned to keep those in your building healthier and safe when you have developed and deployed a training and communication plan for your workers. Training is an excellent complement to the other levels of protection you implement through the Four D's of duration, density, dilution, and distance.

You now have the steps to start creating a safer and healthier workplace. Remember, every situation is different, so implementing every recommendation will not always be possible. But the more layers of protection you add, the more you help reduce the risk of infectious diseases in your workplace.

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You can find a variety of foundational education for risk assessment, information about the Four D's, and other tools to help reduce the spread of infectious diseases in an interactive training program called [Commit to C.A.R.E.](#) Free resources include more than 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color-blind-friendly palette, closed captioning, and translations into eight different languages.



Employee Responsibilities

As a worker in a transit system such as a bus, subway, or light rail, you can take some essential steps to help safeguard yourself and others from the spread of infectious diseases:

- Comply with workplace health and safety policies, which exist to protect you.
- If you can, use online or electronic solutions that limit your engagement or closeness to others indoors.
- Be sure to evaluate your and your family’s health regularly. Stay home if you or anyone in your home is showing signs or symptoms that may indicate infectious diseases like COVID-19, RSV, measles, or the flu.
- Disinfect shared or high-touch surfaces like printers or conference tables using a solution with at least 70% alcohol.
- Ensure that you correctly wear an effective and properly fitted mask while indoors or at close quarters within enclosed spaces. Curious about how to find an effective mask or how to be sure it fits properly? Watch these videos to learn more:

– [Why masks work](#)

– [How to properly wear and store a mask](#)

- Limit what you touch, and always wash or sanitize your hands with a sanitizer that contains at least 70% alcohol before entering and after leaving the facility.
- Maintain space between you and others to limit your risk.

Bus, train, or light rail operators should always stick to the rules set by their agency and local authorities. However, they should also ensure passenger safety. Here are some tips:

1. If the transit system gets too crowded, try skipping some stops if allowed.
2. To deter people from walking past the driver, keep the door next to the driver shut during stops.
3. If the transit system only has two doors, ask those waiting to board to let passengers get off first. New passengers can come in through the back door.
4. For transit systems with more than two doors, set up a one-way traffic system. Some doors should be used for getting on, and others for getting off. Use floor markings to guide passengers and let them know about the system.
5. If the front door is the only one equipped with a ramp for passengers with disabilities, it must remain operational for easy access.
6. To reduce contact, keep the door shut until the front seats are set up for wheelchair access.

These steps can help reduce the spread of infectious diseases and help keep yourself and others safe.



Passenger Responsibilities

Keeping public transport safe from the spread of infectious diseases is a task we all share. Buses, trains, and light rails are used by lots of people, so it’s important that we all know what to do to keep ourselves and others healthy.

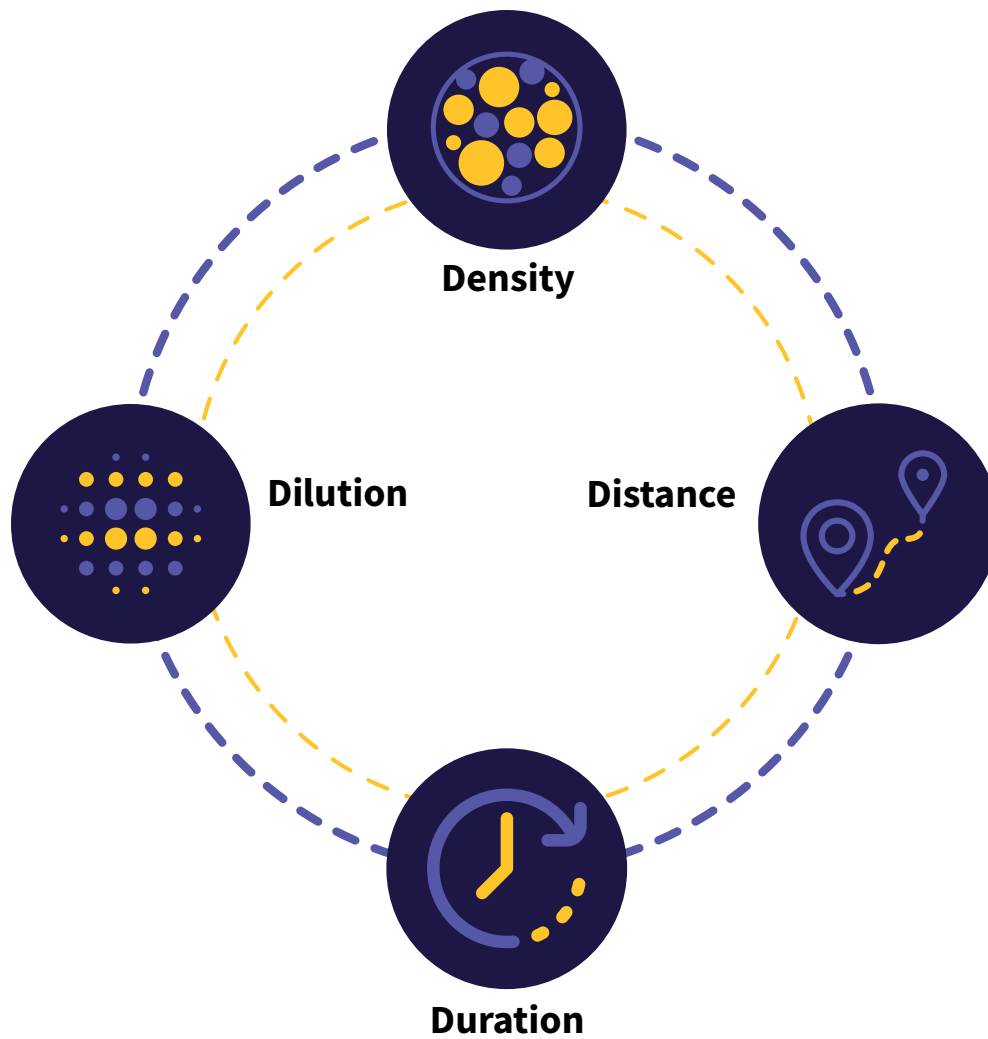
Here are some simplified tips to keep yourself and others safe from the spread of infectious diseases like COVID-19, measles, and the flu when using public transit:

- If you’re going to the doctor or hospital, use a private car or rideshare instead of public transport if possible.
- Before your trip, check with the transport provider for any infectious-disease-related rules passengers need to follow.
- Check the operating times of public transit and keep up with any guidelines on the system’s website or app.
- If you can, travel when it’s less busy to help avoid crowds.
- If it’s allowed, ask the driver to open the windows to let fresh air in.

[Go to the Conclusion](#) ➔

Conclusion

This e-book walked you through different approaches to help mitigate the risk of airborne infectious diseases based on your workplace setting. Assessing the risk of getting infected with or spreading airborne diseases in any situation is your number one tool in keeping yourself and others healthy and safe. The Four D's are essential parts of your toolkit to help determine and manage risk.



Using the Four D's and implementing them with a simple scale can help you manage risk.

You can refer to this e-book and the workplace-specific strategies when dealing with airborne infectious diseases. Additionally, you can find more and up-to-date resources in our program [Commit to C.A.R.E.](#)

By embracing the knowledge and resources from this e-book and diving into Commit to C.A.R.E., you are now better equipped to create a healthier and safer environment for everyone in your building or organization.

Let's prioritize our community's well-being and equip ourselves to tackle infectious disease threats effectively. Together, we can make a positive impact and create a safer, healthier environment for all.

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Inside [Commit to C.A.R.E.](#) you will find a variety of foundational education for risk assessment, the Four D's, and other tools to help reduce the spread of infectious disease.

This free program includes over 20 targeted, short, animated training videos, supporting worksheets, tip sheets, and infographics designed with accessibility in mind, including a color blind-friendly palette, closed captioning, and translations into eight different languages.

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