

Air Purifiers Can Clear 99% of Aerosols in Minutes

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✓ Fact Checked

STORY AT-A-GLANCE

- › Portable air purifiers used in a public hospital in Melbourne, Australia cleared 99% of aerosolized glycerin particles in a patient room within 5.5 minutes. Researchers substituted glycerin for viral particles
- › The Environmental Protection Agency also recommends the use of portable air cleaners or HVAC filters to reduce viral load in indoor areas. Portable air filters should be designed to remove smoke and not pollen or dust, which are much larger than viruses
- › Energy efficient new homes lack adequate ventilation, which can increase the risk of indoor air pollutants, including viruses. The EPA recommends proper ventilation with outdoor air to reduce airborne contaminants, which lowered the spread of COVID-19 in one study 2% more than wearing masks
- › In addition to lowering the viral load, it is important to support a healthy immune system through optimizing vitamin D, eating within a compressed window of time, eating the right type of fat, making time to exercise and trying to make a sauna part of your routine

A recent study¹ published by Cambridge University Press evaluated the use of portable air cleaners to reduce the aerosol transmission of viral disease, specifically coronavirus in a hospital setting. At the start of 2020, many health experts believed that COVID-19 was spread only through droplet transmission in much the same way that influenza is spread.²

When a person with flu coughs, sneezes or talks, droplets from their respiratory system can spread to others up to 6 feet away. These droplets can land on the mouths or noses of uninfected people, or land on a surface that a person may touch and then infect themselves by touching their own mouth, nose or eyes.

In July 2020, a letter from 239 scientists petitioned the World Health Organization to recognize the potential that SARS-CoV-2 was also spread through aerosolized particles.³ The difference between droplets and aerosolized particles is not only in the size but also in the potential that aerosol can travel on air currents, whereas droplets fall to Earth within 6 feet of release.

Shortly after the paper was published, the WHO reiterated their position that transmission is primarily from respiratory droplets that are expelled during a cough, sneeze, speech or while singing.⁴ By November 2020, research published in the Journal of Korean Medical Science⁵ demonstrated that when there was direct airflow, transmission occurred over distances greater than 2 meters (6.5 feet).

One paper published in The Lancet in May 2021, listed 10 evidence-based reasons that the SARS-CoV-2 virus is primarily spread through an airborne route.⁶ As of May 7, 2021, the CDC⁷ states that most infectious sources for COVID-19 are closer than 6 feet.

However, they also state that transmission risk may increase when an infectious person is indoors for more than 15 minutes, thus increasing the concentration of the virus in the air. The recent study⁸ from Cambridge University has implications for reducing the risk of transmission of viral respiratory particles in an enclosed space, such as in a hospital room or along hospital corridors.

Air Purifiers May Lower Concentration of Aerosol Particles

An earlier paper⁹ also published in Infection Control and Hospital Epidemiology in June 2020 suggested that using air purifiers in the dental office may act as a “supplementary protective measure.” During dental procedures, drills and ultrasonic devices can aerosolize saliva and microorganisms from the oral cavity, which may contribute to the spread of infectious diseases.

They cited a previous study¹⁰ published in 2010 that found using air purifiers in specific locations helped to significantly reduce aerosolized particles and reduce the exposure to health care workers of aerosol particles up to 95%.

The scientists¹¹ measured the filtration efficiency of two types of air filters and found those with a high-efficiency particulate air filter (HEPA) H12 class removed 83% of the aerosol and suggested that for dental procedures that generated a high number of aerosols, a HEPA filter may help protect the health care workers.

The current study¹² was performed in a tertiary care public hospital in Melbourne, Australia. The researchers did not use aerosolized viral particles, but instead substituted glycerin-based aerosol to track the transmission from a patient room into the hallway and nurse's station.

The researchers compared the clearance rates measured in the corridors with and without a HEPA filter over time. They found "With two small domestic air cleaners in a single patient room of a hospital ward, 99% of aerosols could be cleared within 5.5 minutes."¹³ They concluded:¹⁴

"Air cleaners may be useful in clinical spaces to help reduce the risk of acquisition of respiratory viruses that are transmitted via aerosols. They are easy to deploy and are likely to be cost-effective in a variety of healthcare settings."

Portable Air Cleaner and HVAC Filter May Slow Infection

The Environmental Protection Agency¹⁵ has also recommended the use of air cleaners and HVAC filters to help reduce the viral load in indoor areas, like your home or business. They include proper ventilation with outside air to help reduce airborne contaminants,¹⁶ but stress that ventilation and filtration are strategies to help reduce risk, but cannot by themselves stop the virus.

Portable air cleaners are also called air purifiers and may be helpful when the outdoor air pollution is high, or the temperature and humidity would compromise health and

safety. They recommend¹⁷ air filters that can remove particles from 0.1 to 1 microns (μm).

To choose the correct unit, select one that was designed for the space in square footage and a unit with a high Clean Air Delivery Rate (CADR) for smoke.

Some units are designed for removing pollen or dust, which are particles much larger than viruses. The second choice is a central furnace or HVAC filter through which the air in your whole home, office, school and commercial building can be filtered. These typically are installed by an HVAC professional.

The EPA recommends considering a portable air filter to supplement a whole building filter when it is difficult to achieve adequate ventilation. It is also crucial for the filter to be changed as often as the manufacturer recommends for it to function appropriately.

Bipolar ionization filter, also called needlepoint bipolar ionization, is a relatively new technology.¹⁸ It generates positively and negatively charged particles that manufacturers claim remove viruses and help maintain surface disinfection. However, currently there is no consensus on the effectiveness of the technology.

June 7, 2021,¹⁹ NBC News reported a federal lawsuit was filed against Global Plasma Solutions claiming the company made “deceptive, misleading and false claims” about the product that is “not applicable to real-world conditions.”

The lawsuit was filed by a Maryland consumer and cites a study done by Boeing²⁰ in which the airline company concluded that air ionization has not shown significant disinfection effectiveness. The company tested the filtration system to disinfect surfaces on their commercial planes and did not test air filtration.

Ventilation Lowers Risk of Infection Greater Than Masks

Newer homes are airtight and energy efficient. Higher efficiency comes with lower energy bills and a smaller carbon footprint. But the flip side of energy efficiency is a lack

of ventilation, a danger of moisture buildup²¹ and a greater potential for a buildup of indoor air pollutants.²²

The EPA has also recommended that proper ventilation with outdoor air should be used to help reduce airborne contaminants, such as viruses.²³ Use caution when using fans to help with ventilation around children. Position them out of reach of small children and ensure stability so they don't fall. The EPA and CDC have several suggestions to help improve natural ventilation, including:^{24,25}

Open windows and screened doors as able.

Use a whole-house fan or evaporative cooler if you have one.

Open the outside air intake of the HVAC system if your system has one (not common).

Operate the bathroom fan when the bathroom is in use.

Avoid continuous ventilation with outside air when the outdoor air pollution count is high, or the weather is too hot, humid or cold. Instead, open windows throughout the home for about 15 minutes each day.

If temperatures inside and outside are similar or there is little wind, you may need to use a fan or open windows on opposite sides of the house for cross ventilation.

You can improve ventilation by opening windows at different levels. For example, opening windows on different floors at the same time, opening the top sash of a double-hung window on one window and the bottom sash on another window.

If you don't get enough air movement, consider using multiple fans to draw air in from one window and push air out through another.

May 2021, the CDC published a study²⁶ in Morbidity and Mortality Weekly Report that found ventilation could lower the spread of COVID-19 by 39% in schools. In contrast, the

incidence of COVID-19 was 37% lower when teachers and staff members were required to wear masks.

Some of the ventilation strategies used by the school system's included open windows and doors and using fans. When this was combined with HEPA filtration it lowered the incidence by 48%.

Indoor Air Pollution Raises Risk of Health Challenges

The clearance rate demonstrated in the featured study for aerosolized particles is encouraging as it has positive implications for protecting indoor air. The EPA²⁷ finds that indoor air pollution is often two to five times higher than outdoor pollution, and occasionally is more than 100 times higher than outdoor levels.

Since most people spend 90% of their time indoors, it is essential to engage strategies that help ventilate your house. According to the World Health Organization,²⁸ 90% of the world lives in areas where pollution is higher than is deemed safe.

Fine particulate matter that measures less than 2.5 micrograms (PM2.5) is one indicator of air pollution. This type of pollution is one of the most widely studied components and consists of particles that are up to 30 times smaller than the width of your hair.²⁹

Fine particulate matter can build indoors,³⁰ raising your risk for several health problems. In one study of over 20,000 people living in China, researchers found that exposure to toxic air triggered a reduction in intelligence.^{31,32}

Emerging evidence has shown PM2.5 can play a role in several diseases you may not have associated with air pollution, including diabetes, attention deficit hyperactivity disorder, autism and sudden infant death syndrome.³³

Studies published in 2019 have also linked air pollution with mental health risks including psychiatric issues,³⁴ anxiety³⁵ and depression.³⁶ Using the same strategies of

air purification and ventilation may also help reduce your exposure to indoor air pollution and is one strategy to help protect your overall health.

Tips to Lower Risk of Upper Respiratory Viral Illnesses

As you may already know, after my articles are up for 48 hours, they are coming down. This means, to reference the information you need to protect your and your family's health, it is crucial that you copy and paste the articles and keep them on your hard drive and share them with your friends.

During my presentation at the Mid-Cape Summerfest 2021 in this video, I discussed several specific strategies you can take to optimize your immune health and reduce your risk of respiratory illnesses and chronic disease. You may want to bookmark the video on [Bitchute](#) to watch it again.

- **Optimize your vitamin D** — If you are familiar with my newsletter, you know that I am passionate about the importance of vitamin D for your overall health and to strengthen your immune system. I recently published a peer-reviewed paper in *Nutrients* discussing the data demonstrating the importance of vitamin D to the risk of COVID-19.³⁷ For more information, and links to the article in *Nutrients*, you can visit [StopCovidCold.com](#).
- **Eat all your meals within a compressed window of time** — Compress your eating window to six to eight hours. It may be somewhat challenging initially, but it's a powerful strategy that will improve your immune function and help your body repair and regenerate. Begin slowly compressing the time until you reach six to eight hours, with the last time you eat at least three to four hours before going to bed.
- **Eat the right types of fat** — Before processed foods became the norm for our diets, only 1% to 2% of your diet came from linoleic acid. However, currently, people are getting upward of 20% of their diet from linoleic acids, which is associated with damaging your metabolic health by damaging your mitochondria. Your body can store linoleic acid for years. It is found in seed oils, such as sunflower, canola, safflower oil and other vegetable oils.

Even healthy olive oil can have up to 20% of linoleic acid. However, most olive oils sold on the market today are adulterated and watered down with linoleic acid to lower the cost, which lowers the health benefit. Most restaurants use adulterated olive oil because pure olive oil is very expensive — added to which, most restaurant food is also high in linoleic acid.

- **Make time to exercise** — Your body is designed to move! By not providing stimulus, it may begin to decline, and you'll lose muscle mass. This increases your potential for becoming frail. Although cardiovascular exercise is important, resistance training is just as important to building your muscle mass.
- **Try making a sauna part of your routine** — Another form of exercise is using a sauna since it's an exercise for your vascular system. Using a sauna is important as it activates your heat shock proteins, which help to refold damaged proteins in your body.

Interestingly, 30% of the proteins in your body, when they are made, are misfolded. This means using a sauna is an important process to reduce your potential for neurodegenerative diseases, such as Alzheimer's and Parkinson's disease.

Sources and References

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