Fresh air in care homes

Introduction

Fresh air is an important measure to help reduce the transmission of Covid-19 in indoor settings. Being in a room with good ventilation can reduce the risk of covid transmission by up to 70% as fresh air disperses virus particles which may linger in the air[[1]](#footnote-1).

When someone with COVID-19 breathes, speaks, coughs or sneezes, they release particles (droplets and aerosols) containing the virus that causes COVID-19. While larger droplets fall quickly to the ground, aerosols containing the virus can remain suspended in the air. If someone else breathes in virus particles that are suspended in the air, they can become infected with COVID-19. This is known as airborne transmission. The more people who use or occupy an area, the greater the risk of airborne transmission. The risk increases if an area is poorly ventilated, but bringing fresh air into a room and removing older stale air that might contain virus particles reduces the chance of spreading COVID-19. Good ventilation will not be able to mitigate against all transmission routes of Covid-19 and does not diminish the importance of other infection prevention and control (IPC) measures that you employ in your settings, such as hygiene measures and PPE use which are particularly important in reducing infection at close proximity.

This explainer lays out four ways to identify and improve poor ventilation, including the use of CO2 monitors and air cleaners. Efforts to improve ventilation sit alongside other infection, prevention and control measures and are not a replacement for them.

Natural ventilation

Natural ventilation just means using windows, air vents and doors to bring in fresh air. You do not need to keep windows fully open for prolonged periods in colder weather. You will want to balance natural ventilation with thermal comfort and further information on this can be found [here](https://www.hse.gov.uk/coronavirus/equipment-and-machinery/air-conditioning-and-ventilation/balancing-ventilation-and-keeping-warm.htm). When opening windows and doors, you should be mindful of wider safety policies or risk assessments, such as on fire safety and security.

Mechanical ventilation

Mechanical ventilation means using a [mechanical ventilation](https://www.hse.gov.uk/coronavirus/equipment-and-machinery/air-conditioning-and-ventilation/how-to-improve-poor-ventilation.htm#mechanical-ventilation) system to suck in fresh air and circulate it through a space.

If you already have a mechanical ventilation system, it is important that it is set to maximise fresh air and minimise air recirculation - otherwise it will only be moving potentially infected air around.

CO2 monitors

Carbon dioxide (CO2) monitors do not improve fresh air, but can help identify poor ventilation so that it can be improved and reduce the risk of spreading COVID-19. CO2 monitors provide an indication of ventilation status but are not detecting the levels of COVID-19.

CO2 monitors should be used by taking a series of readings during busier times. CO2 levels consistently higher than 1500ppm in an occupied room indicate poor ventilation and you should take action. CO2 levels below 800ppm are recommended for areas with increased respiratory activity such as via singing or exercising. Higher readings do not mean that you need to ask people to leave the space or setting immediately, but multiple high readings are a sign that you should take action to bring fresh air into that space.

Many designs are portable so you can easily move them around your full estate. Not all spaces are suitable for CO2 monitoring. Monitors are best suited to spaces with a consistent number of people for at least an hour. In care homes this may mean communal areas, staff or meeting rooms, and other multiple occupancy rooms. They are of limited use in large open spaces with higher ceilings or areas with fewer people, though other IPC measures remain important in these spaces. It is also not advised that CO2 monitors are used in spaces where air cleaning units are being deployed. This is because air cleaning units remove contaminants (such as coronavirus) from the air but do not remove CO2.

Further advice on the use of CO2 monitors can be found [here](https://www.hse.gov.uk/coronavirus/equipment-and-machinery/air-conditioning-and-ventilation/identifying-poorly-ventilated-areas.htm).

Air cleaning devices

The best way of ventilating a space to reduce infection risk is via fresh air, either through natural or mechanical ventilation. However, where this can’t be done, air cleaning devices can be useful in reducing airborne transmission. Air cleaning devices are not, however, a substitute for ventilation and should not be used as a reason to reduce or not remediate poor ventilation in the long term.

There are several technologies used in air cleaning devices. The Scientific Advisory Group for Emergencies (SAGE) have recommended two technologies for settings where the ventilation is poor and it is not possible to improve it by other means:[[2]](#footnote-2)

- High-efficiency particulate absorbing (HEPA) filters, which work by taking in air with the help of a fan and passing it through a very fine filter. Most of the particles and aerosols are caught by the filter and the cleaned air is then returned to the room.

- Covered UV-based germicidal (UV) cleaners, which use ultraviolet light to kill viruses.

A site specific risk assessment should be conducted ahead of their use. SAGE considered that other air cleaning technologies had only limited evidence for tackling COVID-19.

Air cleaning devices will be most effective in communal areas. When deploying an air cleaning device, you should consider:

Whether it is going to be effective for your space (for example, the size of space that it will effectively clean the air in)

If you are using a HEPA filter, how you will manage the replacement and disposal of used filters

If it is useful to have a more portable device that can be moved between occupied areas

The noise or other impacts it could have, including if its placement could present a safety hazard.

For comparison, HEPA filters are currently being used in schools, in classrooms where CO2 monitoring has indicated poor ventilation and other mitigations have not been sufficient. You can see the models they are using [here](https://find-dfe-approved-framework.service.gov.uk/list/air-cleaning). These models have been chosen partly because they are quiet.

There is further advice on the use of air cleaning devices [here](https://www.hse.gov.uk/coronavirus/equipment-and-machinery/air-conditioning-and-ventilation/air-cleaning-and-filtration-units.htm).

1. *SAGE EMG paper, Role of Ventilation in Controlling SARS-CoV-2 Transmission* [↑](#footnote-ref-1)
2. SAGE EMG Paper, Potential application of air cleaning devices and personal decontamination to manage transmission of Covid 19. h[ttps://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/939173/S0867\_EMG\_Potential\_application\_of\_air\_cleaning\_devices\_and\_personal\_decontamination\_to\_manage\_transmission\_of\_COVID-19.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/939173/S0867_EMG_Potential_application_of_air_cleaning_devices_and_personal_decontamination_to_manage_transmission_of_COVID-19.pdf) [↑](#footnote-ref-2)