

**Vent-Axia**<sup>®</sup>

The UK's Leading Ventilation Company

# Importance of Ventilation in the Dental Care Sector

Edition 1

[www.vent-axia.com/ventilation-in-dental-practices](http://www.vent-axia.com/ventilation-in-dental-practices)

A healthcare worker wearing a full white protective suit, a face shield, a white surgical mask, and blue gloves is leaning over a patient. The patient is seated in an orange dental chair, wearing a blue surgical mask and a white protective gown. The worker is holding a dark, rectangular object, possibly a dental X-ray or a small tray. The background shows a clinical setting with a glass partition and a computer monitor.

We're here to help.

# It's never been more important to improve indoor air quality in dental practices

People spend up to 90% of their time indoors, and with growing evidence of airborne pathogens and viruses moving around our buildings, there has never been a more important time to make sure a building has effective ventilation and protect your patients.

## How can ventilation help to keep you operating?

The UK Government recently stated *"Research shows that being in a room with fresh air can reduce your risk of infection from particles by over 70%, as fresh air dilutes the particles\*"*. Using ventilation to either introduce, or increase fresh air circulation in the home is therefore central to reducing infection rates.

With so much to consider due to COVID-19, we are here to help you understand ventilation requirements with this useful guide.

\*SOURCE: SAGE EMG paper, Role of Ventilation in Controlling SARS-CoV-2 Transmission



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# What does the guidance say?

## Why is Ventilation Important in the dental care sector?

With people still needing to attend doctor appointments and dental surgeries it has never been more important to make those spaces safe for practitioners and their patients during the Covid-19 pandemic.

The World Health Organisation (WHO) has advised medical personnel to consider taking 'airborne precautions'. It is important to protect dentists and patients and reduce the amount of spatter produced during dental procedures. In order to prevent airborne transmission, dental offices should be sufficiently ventilated with great emphasis placed upon removing bio aerosols.

Sufficient ventilation can be achieved by increasing the air changes per hour (ACH). ACH is defined as how many times the air is changed per hour in a given space and is necessary to make the space free from any viral or bacterial pathogen. The more air changes per hour, the shorter the fallow time.

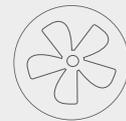
The COVID-19 Infection Prevention and Control Guidance advise:

- Where there is ventilation, but the number of ACH are unknown or there are air changes of 1 to 5 ACH, a baseline post Aerosol Generating Procedures (AGP) downtime of 30 minutes is recommended with mitigation such as high-volume suction/ rubber dam
- Where there are 6 to 9 ACH, a baseline post AGP downtime of 20 minutes is recommended
- Where there are 10 or more ACH, a baseline post AGP downtime of 15 minutes is recommended



Federation of European Heating, Ventilation and Air Conditioning Associations (REHVA)

"In buildings with mechanical ventilation systems, extended operation times are recommended for these systems."



Public Health England

"A treatment room should have at least 10 air changes per hour (ACH)."



Deputy Chief Medical Officer  
Professor Jonathan Van-Tam

"There is a definite truism across all of the science literature, that ventilation is a most critical part of reducing transmission from respiratory viruses."



Our plan to rebuild: The UK Government's COVID-19 recovery strategy

"Use external extractor fans to keep spaces well ventilated and make sure that ventilation systems are set to maximise the fresh air flow rate."

# How to improve ventilation rates

Ventilation is a very important way of diluting any airborne pathogens. Ventilation rate and effectiveness play a role in both airborne exposure and deposition rates.

The diagrams below demonstrate a high concentration of infectious airborne material present with ventilation systems switched off (Fig 1) versus a reduced concentration of infectious airborne material with ventilation systems running (Fig 2). Therefore the non-infected person in Fig 1 is at greater risk of infection than non-infected person in Fig 2.

Ventilation Off  
= Increased Fallow Time

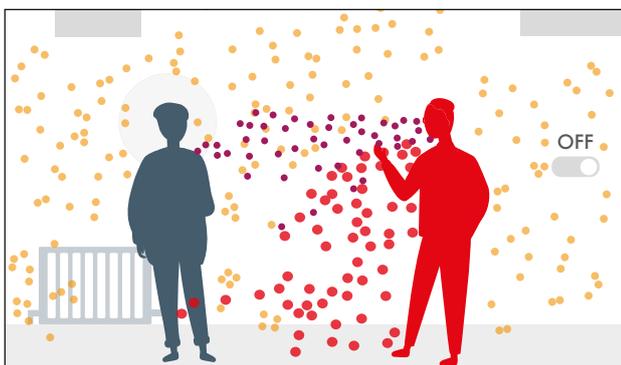


Fig 1. Infected person talking with non-infected person with ventilation system switched off

Ventilation On  
= Reduced Fallow Time



Fig 2. Infected person talking with non-infected person with ventilation system switched on

## Ventilation Checklist

- Keep ventilation running 24/7, especially in toilet areas where flushing can result in virus particles becoming airborne
- Increase ventilation rates even if it is at the expense of thermal comfort
- Supply as much outside air as possible. Open windows to increase airflow and boost ventilation further - apart from in toilets where this could cause cross contamination
- A CO<sub>2</sub> sensor could be used to ensure the air is being effectively ventilated - it will warn when levels get too high, which is a sign that the room is not being ventilated enough
- For Demand Control systems, increase CO<sub>2</sub> set-point to 400ppm to keep ventilation rates at nominal speed
- Do not recirculate air - only use intake and extract systems \* see FAQs
- There is no need to change humidity sensor settings as studies have shown that humidity has little effect on the virus



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# Your questions answered on ventilation systems during COVID-19

## What should I do first?

In the first instance it is important to check that any existing ventilation systems are in working order.

It is then recommended that, as far as possible the fan is switched to a higher airflow.

DO NOT re-circulate air within the building or treatment room.

If there is no ventilation system present, install fans appropriate to the needs of the building.

## Should I open my window?

If it is safe to do so, yes. Increasing the airflow through the building will dilute the virus and therefore the risk for you and your patients.

We would not recommend opening a window in heavily polluted areas with heavy traffic - especially on the ground floor as heavy diesel particulates will be able to enter the room. People may also choose not to open windows for security reasons. In these instances ventilation should be installed.

## Can I still use heat recovery systems?

This depends on the type of heat recovery system. Rotary heat recovery should be avoided as they are prone to high rates of leakage where the virus could transfer from the exhaust air in to the incoming air.

Other types of heat recovery such as plate counterflow and crossflow have minimal leakage rates (1-2%) and therefore the risk is much lower.

Sources:  
These recommendations are based on present industry and scientific knowledge at the date of publication and are subject to modification.



## What about filtration?

If installed it is important to clean or replace filters regularly to ensure they remain effective and that they don't impeded the running of the ventilation system - as this in turn will impact the effectiveness of the ventilation system.

Standard filters used in ventilation systems can capture particles as small as pollen and diesel particulates. Virus particles are much smaller than this, so filters are less effective in stopping the virus.

HEPA filters are commonly used in specialist applications but are not guaranteed to capture 100% of virus particles.

## Should I clean the ductwork

No changes are needed to the regular cleaning and maintenance schedule for ductwork. This is because viruses attached to small particles will not deposit easily in ventilation ducts and will normally be carried out by the airflow.

It is more important that the ventilation rate is increased to bring in fresh air and reduce exposure.

## Can I use air conditioning?

Some systems that are commonly known as 'air conditioning', only condition the air in a room - i.e. warm the air or cool the air, but are not part of the ventilation system. They are more correctly referred to as 'comfort cooling' or 'comfort heating'. These systems take air already in a room and warm or cool it before releasing it back (recirculate it) into the room. It is important to understand that these systems are not delivering outside air and are therefore not diluting any airborne pathogens.



# With Vent-Axia, you can find the perfect solution every time.

## Lo-Carbon T-Series



The Lo-Carbon T-Series commercial fan offers high performance ventilation with low running costs. With both window and wall options available it is durable and reliable. Available with four sizes of extract/intake fans and an easy fit connector Top Socket allowing fast and trouble-free mains connection, the T-Series is easy to install and replace.

## ACM 100-200



For ducted applications, this simple energy efficient ACM Mixed Flow In-Line fans offer quiet ventilation with two and half times the pressure of conventional axial fans. Their compact design also makes them ideal for many ducted applications and they can operate in both horizontal and vertical positions providing supply or extract ventilation.

## Integra



The Integra Heat Recovery unit has been specially designed to provide ventilation for smaller residential or commercial applications up to 180m<sup>2</sup>. With low power consumption, this simple ducted heat recover system has been specially designed to extract heat energy from the outgoing air and transfers this energy to the incoming fresh air tempering it, without the two air streams mixing.

## Sentinel Totus2 D-Erv



This heat recovery unit responds to the exact ventilation requirements of a room at any one time providing airflow only when it is required and to the level that is required, therefore using only the energy that is needed; no more no less.

Air change per hour (ACH) is depended on the size of the room and the unit installed.

## Want to find out more?

We are here to help with any ventilation question you have. Vent-Axia is proud to be the UK's market leader with over 80 years' of ventilation expertise.



Call for FREE ventilation advice today

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