Reducing the exposure of Covid-19 inside our buildings

Guidance for December 2021

Compared to a stuffy room, ventilation can reduce risk of infection by between 2 and 20.
Air purifiers provide further reduction of between 5 and 10.
Social distancing alone provides little protection even at 3 m
Higher protection is provided by FFP2 masks rather than surgical ones.
Wearing of FFP2 masks by all is extremely effective.

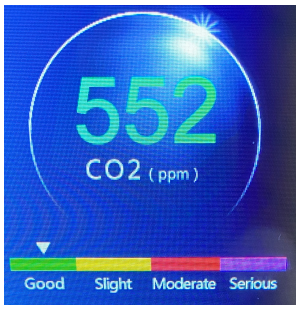
There are strong similarities to our circumstances with last winter. There is a new variant of the Covid-19 virus, Omicron, which appears likely to displace the present predominant one, Delta. We have a very partial picture as yet of the consequences, but the observations from South Africa are:

i) Omicron may well be better at avoiding a person's immunity and so cause infection
ii) There may be an increased risk to young children (under 5)

A difference is that the vaccination campaigns are very effective at mitigating against severe illness from infection. But not all people are vaccinated and some are partially protected.

Our previous advice has been based on 3 measures to reduce infection indoors.

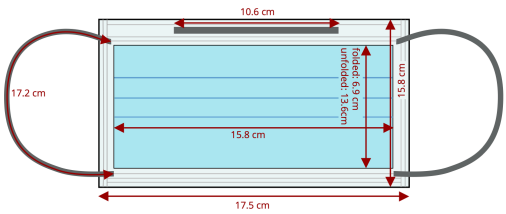
a) One is the **use of CO_2 meters** to gauge the amount of stale air in the room, and improving ventilation to reduce the staleness. **A reading of 800 ppm (and below) would indicate good air quality and the stale air is just 1%**. If the CO_2 level reaches 1200 ppm, that can make people drowsy and the stale air will have reached near 2%. A church service without adequate ventilation can certainly exceed this, and the ventilation should be improved to get down to a 800 ppm reading..

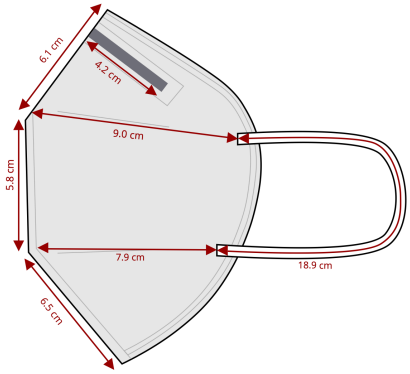


b) Air purifiers do not affect the CO_2 concentration but do reduce the concentration of the virus and the aerosols we exhale. A reasonable guestimate is that they will reduce the airborne virus of a factor of 5, but increased provision of purifiers may nudge this up towards 10. Starting from a properly ventilated room this then will improve air quality by this factor of 5-10.

c) But mixing of the air takes time, and infection may be possible ahead of this happening. Our other options are social distancing and wearing of masks. A very recent study has analysed these options **for 1-to-1 conversations** between an infected and a susceptible person. Their conclusions are as follows:
    a. *Social distancing **without mask-wearing** even at 3 metres leads the risk of infection **just being reduced by 10%** even after only a few minutes conversation.*

b. *If the susceptible person wears a surgical mask **at 1.5 metres from an infected person**, the reduction in risk of infection is only 10% after 30 minutes conversation.*
c. *If both wear a surgical mask, risk of infection remains below 30% after 1 hour (a 70% reduction).*
d. *If the susceptible person instead wears mask of **FFP2 type**, the reduction in risk of infection is still a factor of 5 after 1 hour..*
e. ***If both wear a FFP2 mask** the reduction in risk of infection is still a factor of 250 even after 1 hour.*





Conclusions about services and social events

1. While infection rates are high, it seems to be very risky to rely on social distancing in an indoor space which has little evident ventilation.
2. It is important to avoid close mingling without masks and/or very good ventilation

Here are some potential situations and the change in risk of infection from someone having covid (or cold or flu..) as compared to being in a room with good air quality.

- **To be avoided**

Poor air quality, and only social distancing as mitigation – **Risk <u>increased</u> by 2 to 3**

- **Good provision *(Risk reduced by a factor of 10 or more)***

Very good ventilation and appropriate air purifiers: **Risk <u>decreased</u> by 10 to 50**
Very good ventilation (CO_2 below 520 ppm) and surgical-type masks: **Risk <u>decreased</u> by ~12**

- **High level of protection *(Risk reduced by a factor of 100 or more)***

Outdoors with social distancing
Very good ventilation, appropriate air purifiers and surgical masks
Wearing of FFP2 masks

I have been very impressed by the care that I've seen in churches across the Circuit. I hope these notes help you maintain your actvities in a safe way. I'm happy to mull over options with you if you so wish.

John Evans
7 December 2021