

COVID-19 and face masks: Which ones are most effective?

January 2022

It is now widely accepted in the COVID-19 pandemic that the vast majority of virus transmission is via both respiratory droplets and aerosols. Consequently, the mandatory wearing of masks indoors is an extremely important public health measure to reduce viral spread. The three different types of masks available – cloth; surgical; and respirator (N95/P2) – differ significantly in the level of protection they provide, both to the wearer and others nearby.

With the increased infectivity of the Omicron variant of SARS-Cov-2 (the virus which causes COVID19), a significant number of infection control experts have recommended that people move to wearing respirator masks such as N95 or P2 masks. They have a significantly higher degree of filtration and do not let airborne particles escape or be breathed in as much as cloth or surgical masks, due to their design and ability to form a seal around the mouth and nose.

The US Centres for Disease Control and Prevention (CDC) has recommended that all Americans wear N95 masks, describing them as ‘the most protective mask’¹. Four hundred million masks have already been distributed by the US Government. Germany and France have mandated that its citizens must wear respirator masks (N95, FFP1 or FFP2) in high risk settings such as on public transport, workplaces and shops. A similar requirement came into effect in Austria on 25 January 2022.

Schools may be considering what is the most appropriate mask to be worn in high risk settings and to protect their most valuable resource, their staff. To assist, it is worth reviewing how the different masks compare^{2&3}:

1. Non-medical cloth masks

Non-medical cloth masks made from a variety of woven and non-woven fabrics such as cotton and synthetic blends are designed to protect others from the wearer’s respiratory emissions and offer the wearers some protection. The efficacy of cloth masks varies greatly, especially due to the type of fabric, the closeness of its weave and the number of layers, and are considered to be between 26% – 80% effective. The World Health Organisation recommends a three-layered structure as a minimum.

¹ <https://www.reuters.com/world/us/us-make-400-million-n95-masks-available-free-fight-covid-19-pandemic-official-2022-01-19/>

² <https://www.reuters.com/world/us/us-make-400-million-n95-masks-available-free-fight-covid-19-pandemic-official-2022-01-19/>

³ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html?#crisis>

2. Surgical masks

Surgical masks also protect others from the wearer's respiratory emissions and offer the wearer some protection. Surgical masks which are made from three layers of synthetic non-woven materials with filtration layers sandwiched in the middle generally offer more protection than cloth masks but less than a tightly fitted respirator mask (N95/P2).

3. Respirator masks

Respirator masks, such as N95, P2 or FFP2, which form a seal around the nose and mouth, protect others from the wearer's respiratory emissions and significantly reduce the wearer's exposure to particles. Respirators function as an electrostatic filter to capture particles including viruses. N95 masks have been shown to be at least 95% effective at blocking small and large particles. Certified respirator masks, such as the US manufactured Alpha Pro Tech N95 Face Masks and the Australian manufactured Care Essential N95 Face Masks (which ISV has sourced for its members) are required to undergo rigorous testing and certification by bodies such as the US Centre for Disease Control and/or the Australian Therapeutic Goods Administration.

However, some 'respirator masks' made overseas, which may be stamped as KN95, may not be subject to the same rigorous testing and as such would not be recommended as respirator masks but should be considered as similar to surgical masks.