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Brief Communication

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Do facemasks protect against COVID-19?

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Respiratory viruses like coronaviruses and influenza infect us through inhaling droplets or by touching contaminated surfaces then rubbing our nose, mouth or eyes. Virus can spread further in an aerosol if an infected patient is subjected to an aerosol-generating procedure such as a nebuliser or mechanical ventilation.

There are two major classes of facemask: medical/surgical masks are loose-fitting, disposable masks that filter out droplets, while tight-fitting N95 or P2 respirator masks are designed to be more effective filters of airborne particles. N95/P2 masks are more expensive. Both surgical and N95 masks may become a scarce resource.

Evidence on the efficacy of masks is confounded by whether or not they are being used in a pandemic; whether by health-care workers or the public, and by the concomitant use of hand-washing, social distancing and other personal protective equipment.

A meta-analysis of randomised controlled trials of pre-COVID-19 showed that surgical masks or N95 respirators reduced clinical respiratory illness in health-care workers by 41% and influenza-like illness by 66%: they work but are far from perfect.¹ N95 masks were not statistically better

than surgical masks in preventing proven influenza,² nor in preventing COVID-19, although the latter is based on weak data.³ N95 masks are more efficient filters of small particles, but these findings suggest it is reasonable to recommend that health-care workers use surgical masks when there is risk of droplet spread and reserve precious N95 masks for health-care workers performing aerosol-generating procedures.

Some health-care and ancillary hospital staff have mooted wearing surgical facemasks all the time even when asymptomatic to protect themselves and patients.⁴ However, given the current low and declining transmission within the Australian community, the risk of a health worker inadvertently catching or spreading the infection if not wearing a mask is very low. Symptomatic health-care workers should not return to work until they have been tested and found to be negative for COVID-19.

The public might wear masks to avoid infection or to protect others. During the 2009 pandemic of H1N1 influenza (swine flu), encouraging the public to wash their hands reduced the incidence of infection significantly whereas wearing facemasks did not.⁵ There is no good evidence that facemasks protect the public against infection with respiratory viruses, including COVID-19.⁶

However, absence of proof of an effect is not the same as proof of absence of an effect. During the pandemics caused by swine flu and by the coronaviruses which caused SARS and MERS, many people in Asia and elsewhere walked around wearing surgical or homemade cotton masks to protect themselves. One danger of doing this is the illusion of protection. Surgical facemasks are designed to be discarded after single use. As they become moist they become porous and no longer protect. Indeed, experiments have shown that surgical and cotton masks do not trap the SARS-CoV-2 (COVID-19) virus, which can be detected on the outer surface of the masks for up to 7 days.^{7,8} Thus, a pre-symptomatic or mildly infected person wearing a facemask for hours without changing it and without washing hands every time they touched the mask could paradoxically increase the risk of infecting others. Because the USA is in a desperate situation, their Centers for Disease Control has recommended the public wear homemade cloth masks. This was essentially done in an effort to try and reduce community transmission, especially from people who may not perceive themselves to be symptomatic, rather than to protect the wearer, although the evidence for this is scant. In contrast, the World Health Organization currently recommends against the public routinely wearing facemasks.

In Australia and New Zealand currently, the questionable benefits arguably do not justify health-care staff wearing surgical masks when treating low-risk patients and may impede the normal

caring relationship between patients, parents and staff. We counsel against such practice, at least at present.

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