

# What is the most appropriate respiratory protection against COVID-19?

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The world is suffering from a pandemic of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 or COVID-19), with a mortality rate of up to 4%.<sup>1</sup> COVID-19 infection is seen at disproportionately high levels among healthcare workers.

Current UK guidance regarding the use of personal protective equipment (PPE) for COVID-19 was updated in April 2020.<sup>2</sup> For close contact (<2 metres), the recommended respiratory protection remains a fluid-resistant surgical face mask. However, for areas at higher risk of aerosols, or during aerosol generating procedures, the use of filtering face piece (FFP) mask is advised. These high-risk settings are defined as resuscitation areas within the emergency department and hospital areas using invasive or non-invasive ventilation. Notably, wards caring for non-ventilated COVID-19 positive patients are excluded, as are community care settings and ambulances, where contact with infectious cases is likely. Importantly, there have been no studies comparing the efficacy of surgical masks versus FFP masks for preventing COVID-19 transmission. Instead, the guidance on which mask to use appears to be based on a recent meta-analysis published in March 2020.<sup>3</sup>

We believe that there are substantial flaws in this meta-analysis. All five of the included trials investigated the efficacy of different masks against seasonal respiratory viruses, not COVID-19. Extrapolating results from these pathogens to one that appears to be very easily transmitted, perhaps not only via droplet spread,<sup>4</sup> may not be justified. The trials also compared different interventions; some investigated targeted use, and others continuous use, of masks. The quality of studies in the meta-analysis was low to very low, and no studies were blinded, which can introduce bias.

Furthermore, we have concerns about the interpretation of the results. Although there was no statistically significant benefit seen for FFP masks protecting against transmission of respiratory viruses (RR 0.89, 95%CI 0.70 to 1.11), there could still be anywhere between a 30% benefit and 11% harm. Given the absence of high-quality studies and uncertainty about the mode of transmission, a cautious approach would seem more appropriate. This was the case in the guidance for PPE against Middle East respiratory syndrome coronavirus (MERS-CoV) published in September 2016.<sup>5</sup> Here, recommendations were for the routine use of an FFP mask for all persons entering a room with a suspected case of the virus. There do not appear to have been any further studies published since this guidance, so we assume that the COVID-19 recommendations are based on the same evidence.

Over the coming weeks it is increasingly likely that most hospital admissions will be related to COVID-19. FFP masks are in short supply, but does this justify adopting a stance that may risk the health and well-being of the workforce? There has never been a time in recent memory when it is more important to maintain a healthy workforce. If healthcare staff become infected with this virus, this risks their own health, depletes the number available to combat the disease and increases the likelihood of infecting people admitted to hospital for other reasons.

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