

Duration of surgical mask use for COVID-19 by healthcare workers

Question

How long can surgical masks be used by healthcare workers in a COVID-19 setting?

Answer

Surgical masks can be used for extended periods (eg. 4 - 8 hours) for healthcare workers (HCWs) exposed to patient with (COVID-19), although a specific duration cannot be defined. The main limitations to duration of use are practical ones such as the need for meal breaks. Several important considerations for such use are the need to **replace masks** after a patient contact episode with a confirmed COVID-19 case, and when they are obviously contaminated or become damp or difficult to breathe through. Strict hand hygiene is also crucial due to the risk of self-inoculation through touching of face masks. A cleanable face shield for use over the mask may also minimise surface contamination.

Background

Surgical (also called “medical”) masks are recommended as part of **droplet precautions** for health care workers to stop the spread of COVID-19. The significant expansion in use of personal protective equipment (PPE) during the COVID-19 pandemic has led to concerns about exhaustion of PPE supply. This has led to interest in extended use or re-use of masks (particularly N95 / P2 masks) between patients in high-risk settings such as emergency departments or COVID-19 wards. However, there are few data on the duration that surgical masks can be worn.

An example of a protocol from an Australian Metropolitan Hospital:

In designated COVID areas, surgical masks and eye protection should be worn for all patient care interactions by HCWs on the ward, this also applies for care delivery to non-isolated patients. In these areas the HCW can continually wear the facemask in clinical areas only and the mask must be changed in the following circumstances:

- after providing direct care to a suspected/confirmed case of COVID-19. All other PPE must be removed at end of the interaction and protective eyewear cleaned at end of interaction.
- The mask should be removed when exiting the clinical area (e.g. going to break room), or if the mask is wet or has been worn continuously for >4 hours.
- Staff must not wear and lower the mask throughout the shift or leave hanging around their neck. The front of the mask may be contaminated and increase the risk of self-inoculation. The mask must be changed once the HCW removes it from their face.

The Centers of Disease Control and Prevention (CDC) has provided guidance on extended use and limited re-use of N95 respirators¹. Extended use refers to wearing the same respirator for repeated patient encounters, without removing the respirator. Re-use refers using the same respirator for several encounters but removing it after each encounter. The CDC favours extended use over re-use and states that during extended use respirators must maintain ‘fit and function’. The CDC also notes that workers in other industries wear N95 respirators for several hours at a time, with respirators continuing to function within design requirements for 8 hours of use. In studies with healthcare workers, respirators were used for several hours and maximum length of use appeared to be dictated more by practical considerations (eg. meal or toilet breaks) than a pre-determined number of hours^{2,3}.

While the CDC does not provide specific advice regarding surgical masks, many of the considerations for N95 respirators would have similar implications for surgical masks, namely:

- a) the need to discard masks/respirators if they are obviously contaminated with blood, respiratory or nasal secretions

- b) considering use of a cleanable face shield over the mask/respirator to minimise surface contamination,
- c) minimising unnecessary contact with the mask/respirator surface
- d) strict adherence to hand hygiene if there is any touching/adjustment of the mask/respirator.

The CDC also outlines some risks of extended use, with the most significant of these being touching the surface of a contaminated respirator and subsequent self-inoculation. In one study it was noted that nurses averaged 25 touches per shift to their face, eyes, or N95 respirator during extended use³. Meticulous adherence to hand hygiene following any touching of the mask would therefore be helpful in mitigating this risk. The World Health Organisation recommends replacing single-use masks once they are damp⁴ without providing supporting evidence for this recommendation. In light of the recommendations of the CDC, numerous American bodies have adopted these recommendations not only for N95 respirators but also other masks^{5,6}. Notably, the New York City Department of Health has done this⁵, stating also that extended use of masks/respirators should be done in conjunction with cohorting of patients and designation of specific areas for donning/doffing of PPE. Importantly, the same guidelines state that **after use with patients with confirmed or suspected COVID-19 masks should be considered contaminated and therefore replaced.**

Key Guidelines

Australian Government. COVID-19 Infection Control Training. Available on-line at:
<https://www.health.gov.au/resources/apps-and-tools/covid-19-infection-control-training>

Centers for Disease Control and Prevention. Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings. 2020. Available at:
<https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>.

World Health Organisation. Coronavirus disease (COVID-19) technical guidance: Infection prevention and control / WASH. Available at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/infection-prevention-and-control>

References

1. Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings. 2020. (Accessed April 4, 2020, 2020, at <https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>.)
2. Radonovich LJ, Jr., Cheng J, Shenal BV, Hodgson M, Bender BS. Respirator tolerance in health care workers. JAMA 2009;301:36-8.
3. Rebmann T, Carrico R, Wang J. Physiologic and other effects and compliance with long-term respirator use among medical intensive care unit nurses. Am J Infect Control 2013;41:1218-23.
4. Coronavirus disease (COVID-19) advice for the public: When and how to use masks. 2020. (Accessed April 3, 2020, 2020, at <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks>.)
5. Overview of Strategies for Reuse and Extended Use of Personal Protective Equipment (PPE). 2020. (Accessed April 3, 2020, 2020, at <https://www1.nyc.gov/assets/doh/downloads/pdf/imm/strategies-for-the-conservation-of-respiratory-ppe.pdf>.)
6. Universal Mask Policy and FAQs. 2020. (Accessed April 3, 2020, 2020, at <https://www.nebraskamed.com/sites/default/files/documents/covid-19/surgical-mask-policy-and-faq-nebraskamed.pdf>.)