



Personal Protective Equipment (PPE) Use and Conservation during the COVID-19 Pandemic

The FDA and the CDC have outlined several conservation strategies ([FDA guidance](#) and [the CDC guidance](#)) based on supply levels to assist health care organizations and personnel in managing and conserving items such as respirators, surgical masks, surgical and isolation gowns, and surgical suits.

The Academy encourages members to take steps to preserve protective equipment during the COVID-19 outbreak. Hoarding in all its forms must be avoided so that urgently needed medications, PPE and supplies are available for our patients and health care responders on the front lines. [To donate PPE](#), please reach out to your closest Office of Emergency Management. The Academy also encourages members to donate [viral transport medium supplies](#) as that too has been in short supply during the pandemic.

Guidance on the use of PPE

A systematic review and meta-analysis of standard vs. respirator (N95 or FFP) masks by the Chinese Cochrane Centre had six RCTs with a total of 9171 participants with severe acute respiratory syndrome. The meta-analysis showed no statistically significant difference between surgical masks or respirators in preventing Sars virus (H1N1).¹ Over all, it was concluded that the evidence to inform policies on mask use in health care workers is poor with a small number of studies that are prone to reporting bias and lack of statistical power.

A similar observation was found in another randomized clinical trial where N95 respirators vs. medical masks worn by outpatient health care personnel resulted in no significant difference in the incidence of laboratory-confirmed influenza.²

The center of evidence based medicine (CEBM) updated their guidance on the efficacy of surgical masks vs. respirators on March 24, 2020. To summarize, surgical masks were as effective as respirators in preventing influenza-like respiratory illness. However, either type of mask was recommended to be used in combination with other PPE. Also, respirator masks were recommended for protection during aerosol generating procedures (AGPs).

To better understand the AGPs and risk of transmission of acute respiratory infections to healthcare workers during SARS outbreak, a systematic review was published.³ Briefly, exposure to tracheal intubation appeared to be most consistently associated with transmission of SARS Co-V. Other procedures, including tracheotomy, non-invasive ventilation, and manual ventilation before intubation were also associated with an increased risk of SARS infection. However, the paucity of studies and lack of robustness prevented the authors to draw significant conclusions on the correlation.

A systematic review and meta-analysis was conducted to investigate the optimum distance for avoiding person-to-person virus transmission and to assess the use of face masks and eye protection to prevent transmission of viruses.⁴ The findings of this systematic review of 172 observational studies supported physical distancing of 1 m or more as it was associated with a much lower risk of infection, as was use of face masks (including N95 respirators). While the findings suggested that N95 respirators might be more strongly associated with protection from viral transmission than surgical masks, none of the studies included in the analysis performed a direct comparison between N95 respirators and face masks. Additionally the study combines different viral infections (SARS, MERS, COVID-10) when in fact they may have different transmission patterns. Lastly no randomized controlled studies were available for inclusion. The use of only observational studies required the authors to abandon the standard methodology to test for heterogeneity in the meta-analysis.

Robust randomized trials are still needed to better inform the evidence for these interventions. N95 respirators are protective with procedures that are considered AGPs. However, dermatologic procedures (including biopsies, excisional surgery, Mohs surgery and associated reconstruction) do not meet the criteria to be classified as AGPs.

With the lack of head to head trials using both types of masks in COVID-19, AAD defers to practicing physicians to decide the type of masks to use while performing dermatologic procedures. The AAD would like to remind our members to be mindful of the shortage of N95 masks.

Medical Glove Conservation Strategies

The U.S. Food and Drug Administration (FDA) recognizes the need for personal protective equipment (PPE), such as medical gloves, may outpace the supply available to health care organizations during the Coronavirus Disease 2019 (COVID-19) outbreak.

This [Letter to Health Care Providers](#) refers specifically to potential shortages relating to surgeons' gloves and patient examination gloves. The conservation strategies for use by

health care organizations and personnel are categorized for a range of needs and supply levels and are intended to assist health care organizations as they determine procedures during the COVID-19 pandemic.

Use of Physicians' Own PPE (Or Use of Masks from Home)

For dermatologists who are getting redeployed, the Academy agrees with the AMA and the Joint Commission that physicians should be allowed to use PPE from their office or home, if PPE is not being *routinely* supplied by the hospital or care facility. ([AMA guidance](#)).

Disinfecting PPE:

To seek guidance on ways to disinfect respirators, follow the CDC guidance on ways to decontaminate and reuse filtering facepiece respirators: [the CDC guidance on ways to decontaminate and reuse filtering facepiece respirators](#).

Dermatologists who wish to find additional ways to be helpful may want to engage with local healthcare centers about the possibility of converting phototherapy units to utilize UVC bulbs as a potential way to attempt to decontaminate used PPE. Due to the PPE shortage, these methods warrant consideration, but remain unproven in terms of efficacy at eradicating viral particles and in terms of whether the use of this form of UVC can degrade the integrity of the PPE gear itself. Practices with unused phototherapy units, particularly if near/adjacent/attached to hospitals, could consider discussions with engineering, infection control, and instrument sterilization groups re: this potential repurposing of units during this period. While preliminary results are promising ⁵ ([Hamzavi et al](#)) more data is needed. Also, as a reminder, people should use precaution to ensure they are not exposed to UVC.

Far-UVC light controlling spread of airborne-mediated microbial diseases

In-vitro studies show that far-UVC light (dose of 2 mJ/cm² of 222-nm light) inactivating >95% of aerosolized H1N1 influenza virus⁶ ([Welch et al](#)). It is being hypothesized that very low level overhead far-UVC light in public locations could be a tool to reduce the spread of airborne-mediated microbial diseases. According to the authors 'far-UVC light has a very limited range and cannot penetrate through the outer dead-cell layer of human skin or the tear layer in the eye, thus is not a human health hazard. But because viruses and bacteria are much smaller than human cells, far-UVC light can reach their DNA and kill them'. However, further studies are warranted to support this hypothesis.

References

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