

- Do face masks protect us against viruses?
- Do face masks protect others?
- Are face masks safe to wear?
- Is wearing a face masks dangerous for our health?
- Can face masks cause respiratory diseases?



What do scientists say?

Preliminary report on surgical mask induced deoxygenation during major surgery

Conclusions: considering our findings, pulse rates of the surgeon's increase and SpO2 decrease after the first hour. This early change in SpO2 may be either due to the facial mask or the operational stress. Since a very small decrease in saturation at this level, reflects a large decrease in PaO2, our findings may have a clinical value for the health workers and the surgeons.



<https://pubmed.ncbi.nlm.nih.gov/18500410/>

Universal masking in hospitals in the Covid-19 era

We know that **wearing a mask outside health care facilities offers little, if any, protection from infection.** Public health authorities define a significant exposure to Covid-19 as face-to-face contact within 6 feet with a patient with symptomatic Covid-19 that is sustained for at least a few minutes (and some say more than 10 minutes or even 30 minutes). The chance of catching Covid-19 from a passing interaction in a public space is therefore minimal. In many cases, the desire for widespread masking is a reflexive reaction to anxiety over the pandemic.



<https://www.nejm.org/doi/10.1056/nejmp2006372>

Face masks to prevent transmission of influenza virus: a systematic review

Influenza viruses circulate around the world every year. From time to time new strains emerge and cause global pandemics. Many national and international health agencies recommended the use of face masks during the 2009 influenza A(H1N1) pandemic. We reviewed the English-language literature on this subject to inform public health preparedness. There is some evidence to support the wearing of masks or respirators during illness to protect others, and public health emphasis on mask wearing during illness may help to reduce influenza virus transmission. There are fewer data to support the use of masks or respirators to prevent becoming infected. Further studies in controlled settings and studies of natural infections in healthcare and community settings are required to better define the effectiveness of face masks and respirators in preventing influenza virus transmission.



<https://pubmed.ncbi.nlm.nih.gov/20092668/>

Use of surgical face masks to reduce the incidence of the common cold among health care workers in japan: a randomized controlled trial

Conclusion: face mask use in health care workers **has not been demonstrated to provide benefit in terms of cold symptoms or getting colds.** A larger study is needed to definitively establish noninferiority of no mask use.



<https://pubmed.ncbi.nlm.nih.gov/19216002/>

Effectiveness of surgical and cotton masks in blocking sars-cov-2: a controlled comparison in 4 patients

In conclusion, both surgical and cotton masks seem to be **ineffective** in preventing the dissemination of sars-cov-2 from the coughs of patients with Covid-19 to the environment and external mask surface.



<https://www.acpjournals.org/doi/10.7326/m20-1342>

Headaches associated with personal protective equipment – a cross-sectional study among frontline healthcare workers during Covid-19

Most healthcare workers develop de novo ppe-associated headaches or exacerbation of their pre-existing headache disorders.



<https://pubmed.ncbi.nlm.nih.gov/32232837/>

Optical microscopic study of surface morphology and filtering efficiency of face masks

The pore size of masks ranged from 80 to 500 μm , which was much bigger than particular matter having diameter of 2.5 μm or less ($\text{pm}_{2.5}$) and 10 μm or less (pm_{10}) size. The pm_{10} filtering efficiency of four of the selected masks ranged from 63% to 84%. The poor filtering efficiency may have arisen from larger and open pores present in the masks. Interestingly, we found that efficiency dropped by 20% after the 4th washing and drying cycle. We observed a change in pore size and shape and a decrease in microfibrils within the pores after washing. Stretching of cm surface also altered the pore size and potentially decreased the filtering efficiency. As compared to cms, the less frequently used surgical/paper masks had complicated networks of fibers and much smaller pores in multiple layers in comparison to cms, and therefore had better filtering efficiency. **This study showed that the filtering efficiency of cloth face masks were relatively lower, and washing and drying practices deteriorated**



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the efficiency. We believe that the findings of this study will be very helpful for increasing public awareness and help governmental agencies to make proper guidelines and policies for use of face mask.

<https://pubmed.ncbi.nlm.nih.gov/31289698/>

The use of masks and respirators to prevent transmission of influenza: a systematic review of the scientific evidence

None of the studies established a conclusive relationship between mask/respirator use and protection against influenza infection.



<https://pubmed.ncbi.nlm.nih.gov/22188875/>

A cluster randomised trial of cloth masks compared with medical masks in healthcare workers

Conclusions: this study is the first rct of cloth masks, and **the results caution against the use of cloth masks.** This is an important finding to inform occupational health and safety. **Moisture retention, reuse of cloth masks and poor filtration may result in increased risk of infection.** Further research is needed to inform the widespread use of cloth masks globally. However, as a precautionary measure, **cloth masks should not be recommended for HCWS, particularly in high-risk situations, and guidelines need to be updated.**



<https://pubmed.ncbi.nlm.nih.gov/25903751/>

What to know about respiratory acidosis

Respiratory acidosis develops when air inhaled into and exhaled from the lungs does not get adequately exchanged between the carbon dioxide from the body for oxygen from the air.



<https://www.medicalnewstoday.com/articles/313110>

Face coverings, aerosol dispersion and mitigation of virus transmission risk

The SARS-CoV-2 virus is primarily transmitted through virus-laden fluid particles ejected from the mouth of infected people. In some countries, the public has been asked to use face covers to mitigate the risk of virus transmission – **yet, their outward effectiveness is not ascertained.** We used a background oriented schlieren technique to investigate the air flow ejected by a person while quietly and heavily breathing, while coughing, and with different face covers. We found that all face covers without an outlet



valve reduce the front flow through jet by more than 90 per cent. For the FFP1 and FFP2 masks without exhalation valve, the front throughflow does not extend beyond one half and one quarter of a metre, respectively. Surgical and hand-made masks, and face shields, generate several leakage jets, including intense backward and downwards jets that may present major hazards. We also simulated an aerosol generating procedure (extubation) and we showed that this is a major hazard for clinicians. These results can aid policy makers to make informed decisions and PPE developers to improve their product effectiveness by design.

<https://arxiv.org/abs/2005.10720>

Medical masks

Face masks should be used only by individuals who have symptoms of respiratory infection such as coughing, sneezing, or, in some cases, fever. Face masks should also be worn by health care workers, by individuals who are taking care of or are in close contact with people who have respiratory infections, or otherwise as directed by a doctor. **Face masks should not be worn by healthy individuals to protect themselves from acquiring respiratory infection because there is no evidence to suggest that face masks worn by healthy individuals are effective in preventing people from becoming ill.** Face masks should be reserved for those who need them because masks can be in short supply during periods of widespread respiratory infection. Because n95 respirators require special fit testing, **they are not recommended for use by the general public.**



<https://jamanetwork.com/journals/jama/fullarticle/2762694>

<https://straight2point.info/>

