**Search topic: How effective are home made face masks?**

**Date 21/04/2020**

**Sources:**

* **Proquest Coronavirus research database**
* **Medvix reprints**
* **The Lancet Covid-19 resource centre**
* **WHO Covid-19 database**
* **European Centre for Disease Prevention and Control**
* **Royal College of Nursing Covid-19 resources**
* **medRxiv – COVID-19 SARS-CoV-2 preprints**

**Findings**

**Guidance**

**Public Health England, updated 17 April 2020:**

**Considerations for acute personal protective equipment (PPE) shortages**

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/managing-shortages-in-personal-protective-equipment-ppe>

Concludes there is insufficient evidence to consider homemade masks or cloth masks in health and care settings.

**European Centre for Disease Control, 26 March 2020**

**Cloth masks and mask sterilisation as options in case of shortage of surgical masks and respirators**

<https://www.ecdc.europa.eu/sites/default/files/documents/Cloth-face-masks-in-case-shortage-surgical-masks-respirators2020-03-26.pdf>

Concludes home made masks should be a last resort for healthcare staff and only if there are severe shortages of PPE

**RCN advice – home made PPE and re using PPE**

<https://www.rcn.org.uk/get-help/rcn-advice/covid-19>

States the RCN is clear that health care workers must not accept any PPE hand made donations

**Papers and articles – some are “accepted manuscripts” so not yet published**

**Covid-19: What is the evidence for cloth masks?**

*BMJ* 2020;369:m1422 doi: 10.1136/bmj.m1422 (Published 7 April 2020)

As the US Centers for Disease Control and Prevention has advised all Americans to wear cloth masks in public to prevent the spread of covid-19, The BMJ examines the evidence

What has the CDC recommended?

People should wear cloth face coverings in public places where social distancing measures are “difficult to maintain,” such as supermarkets and pharmacies, the CDC advises. It said the masks can be “fashioned from household items or made at home from common materials at low cost.” It also warned that surgical masks and N-95 respirators should not be used by the public, as these were “critical supplies that must continue to be reserved for healthcare workers and other medical first responders.”

**Informing Homemade Emergency Facemask Design: The Ability of Common Fabrics to Filter Ultrafine Particles**

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medRxiv preprint doi: <https://doi.org/10.1101/2020.04.14.20065375>

Abstract

**Objectives:**

To examine the ability of fabrics which might be used to create homemade face masks to filter

out ultrafine (smaller than 1μm in diameter) particles.

**Method:**

Twenty commonly available fabrics and materials were evaluated for their ability to reduce air

concentrations of ultrafine particles. Further assessment was made on the filtration ability of

select fabrics while damp and of fabric combinations which might be used to construct

homemade masks.

**Results:**

Single fabric layers blocked a range of ultrafine particles. When fabrics were layered,

significantly more ultrafine particles were filtered. Several fabric combinations were successful

in removing similar amounts of ultrafine particles when compared to an N95 mask and surgical

mask.

**Conclusions:**

The current coronavirus pandemic has left many communities without access to commercial

facemasks. Our findings suggest that face masks made from layered common fabric can help

filter ultrafine particles and provide some protection for the wearer when commercial facemasks

are unavailable.

**The scientific rationale for the use of simple masks or improvised face coverings to trap exhaled aerosols and possibly reduce the breathborne spread of COVID-19**

To cite this article before publication: Joachim D Pleil et al 2020 J. Breath Res. in press <https://doi.org/10.1088/1752-7163/ab8a55>

Wearing simple medical masks or improvised facial coverings reduces community exposures from asymptomatic, but unknowingly infectious, individuals. The medical community agrees that breathborne infectious materials can be spread with exhaled aerosols and that asymptomatic people, i.e., those showing no symptoms, could be unknowingly infectious. With the current worldwide pandemic of the respiratory coronavirus disease 2019 (COVID-19), various health bodies and governments are recommending that the population wear some form of mask or improvised facial covers while out in public in an effort to reduce the spread of disease\*. The general concept is that more accessible masks or mask-like materials (scarves, bandanas, etc.) could serve to reduce the amount of infectious aerosol from infected people, and reduce the viral load in the environment. The prevailing consensus at present is “…it couldn’t hurt…”.

**Professional and Home-Made Face Masks Reduce Exposure to Respiratory Infections among the General Population**

van der Sande M, Teunis P, Sabel R (2008) Population. PLoS ONE 3(7): e2618. doi:10.1371/journal.pone.0002618

Abstract

Background: Governments are preparing for a potential influenza pandemic. Therefore they need data to assess the possible impact of interventions. Face-masks worn by the general population could be an accessible and affordable intervention, if effective when worn under routine circumstances.

Methodology: We assessed transmission reduction potential provided by personal respirators, surgical masks and homemade masks when worn during a variety of activities by healthy volunteers and a simulated patient.

Principal Findings: All types of masks reduced aerosol exposure, relatively stable over time, unaffected by duration of wear or type of activity, but with a high degree of individual variation. Personal respirators were more efficient than surgical masks, which were more efficient than home-made masks. Regardless of mask type, children were less well protected. Outward protection (mask wearing by a mechanical head) was less effective than inward protection (mask wearing by

healthy volunteers).

Conclusions/Significance: Any type of general mask use is likely to decrease viral exposure and infection risk on a population level, in spite of imperfect fit and imperfect adherence, personal respirators providing most protection. Masks worn by patients may not offer as great a degree of protection against aerosol transmission.

**Testing the Efficacy of Homemade Masks: WouldThey Protect in an Influenza Pandemic?**

Anna Davies, BSc, Katy-Anne Thompson, BSc, Karthika Giri, BSc, George Kafatos, MSc,

Jimmy Walker, PhD, and Allan Bennett, MSc

Disaster Med Public Health Preparedness. 2013;7:413-418

ABSTRACT

Objective: This study examined homemade masks as an alternative to commercial face masks. Methods: Several household materials were evaluated for the capacity to block bacterial and viral aerosols. Twenty-one healthy volunteers made their own face masks from cotton t-shirts; the masks were then tested for fit. The number of microorganisms isolated from coughs of healthy volunteers wearing their homemade mask, a surgical mask, or no mask was compared using several air-sampling techniques.

Results: The median-fit factor of the homemade masks was one-half that of the surgical masks. Both masks significantly reduced the number of microorganisms expelled by volunteers, although the surgical mask was 3 times more effective in blocking transmission than the homemade mask.

Conclusion: Our findings suggest that a homemade mask should only be considered as a last resort to prevent droplet transmission from infected individuals, but it would be better than no protection.

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