## ARE MASKS REALLY EFFECTIVE AGAINST COVID-19?

<table>
<thead>
<tr>
<th>Type of Mask</th>
<th>Effective For Healthcare Workers?</th>
<th>Effective For the General Public?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multilayer Cloth Masks and Face Coverings</td>
<td>No. Excellent Evidence</td>
<td>Probably. Good Evidence. Protects wearer from spreading infection to others.</td>
</tr>
<tr>
<td>N95 Respirators</td>
<td>Yes. Required for caring for COVID-19 patients. Protects wearer from acquiring infection from others.</td>
<td>Yes, but not recommended. PPE being reserved for healthcare workers.</td>
</tr>
</tbody>
</table>
EFFICACY OF FACE MASK IN PREVENTING RESPIRATORY VIRUS TRANSMISSION

- Total of 21 studies met inclusion criteria.
- **Meta-analyses suggest mask use provided a significant protective effect.**
- Use of masks by healthcare workers (HCWs) and non-healthcare workers (Non-HCWs) can reduce the risk of respiratory virus infection by 80% and 47%.
- Protective effect of wearing masks in Asia appeared to be higher than Western countries.
- Masks had a protective effect against influenza viruses, SARS, and SARS-CoV-2.
- In the subgroups based on different study designs, protective effects of wearing masks were significant in cluster randomized trials and observational studies.

EFFECTIVENESS OF CLOTH MASKS: A SYSTEMATIC REVIEW

In this systematic review of 10 studies, cloth masks are not as effective as medical masks but may be better than no masks at all.

▪ Recommendations are to standardize masks with use of materials proven to have high filtration efficacy.

▪ Leakage needs to be minimized as much as possible.

▪ Use of cloth masks should not lead to a neglect of other infection control measures and are not recommended for healthcare workers.

Researchers identified 172 observational studies across 16 countries and six continents, with no randomized controlled trials and 44 relevant comparative studies (n=25 697 patients).

Transmission of viruses was lower with physical distancing of 1 meter or more, compared with a distance of less than 1 meter (n=10 736); protection was increased as distance lengthened.

Face mask use could result in a large reduction in risk of infection (n=2647), with stronger associations with N95 or similar respirators compared with disposable surgical masks or similar (e.g., reusable 12–16-layer cotton masks).

Eye protection also was associated with less infection (n=3713).

Optimum use of face masks, respirators, and eye protection in public and health-care settings should be informed by these findings and contextual factors. Robust randomized trials are needed to better inform the evidence for these interventions.

GUIDELINES ON HOW TO PROPERLY WEAR A CLOTH MASK IN PUBLIC

▪ Many citizens are concerned that people are wearing masks incorrectly.

▪ According to the WHO, the mask should fit snugly without any gaps. Masks should also cover all of the nose and below the chin.

▪ Hands should also be washed prior to putting the mask on.

FACE MASK USE BY PUBLIC OFFERS SIGNIFICANT BENEFIT WHEN USED CONSISTENTLY

▪ Use of face masks in general population offers significant benefit in preventing spread of respiratory viruses, but utility is limited by inconsistent adherence to mask usage.

▪ Early initiation of mask usage was more effective.

▪ Masks were more effective in viruses that transmit easily from asymptomatic individuals, an issue with the current pandemic.

Citation: Gupta, M., Gupta, K., & Gupta, S. (2020). The use of facemasks by the general population to prevent transmission of Covid 19 infection: A systematic review. medRxiv.
COMMUNITY-WIDE IMPACT OF FACE MASK USE BY PUBLIC

- Face masks are found to be useful with respect to both preventing illness in healthy persons and preventing asymptomatic transmission.

- 80% adoption of moderately (50%) effective masks could prevent 17–45% of projected deaths over 2 months in New York, while decreasing peak daily death rate by 34–58% absent other changes in epidemic dynamics.

Eikenberry, S. E., Mancuso, M., Iboi, E., Phan, T., Eikenberry, K., Kuang, Y., ... & Gumel, A. B. (2020). To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic. *Infectious Disease Modelling.*
ADDNG NYLON LAYER TO FABRIC MASKS INCREASES PARTICLE FILTRATION EFFICIENCY

- Using a modified method of mask fit testing, researchers compared particle filtration efficiency of 10 community-produced fabric mask designs to commercially produced surgical masks.

- A nylon stocking over layer improved particle filtration efficiency for all masks, and brought the efficiency for 5 of the 10 fabric mask designs above the 3M surgical mask baseline.

- Use of this testing method on a wider range of mask material/designs could optimize PPE given available resources.

OF 25 COUNTRIES WITH HIGHEST NUMBER OF CASES, 16 RECOMMEND AGAINST PUBLIC USE OF MASKS

- Quantitative content analysis of health agency mask guidelines performed in late March among 25 countries with highest number of cases.
- Nine countries recommended masks in public/poorly ventilated places.
- Sixteen recommended against it due to masks creating a false sense of security.
- Twelve did not offer recommendations.

CLOTH MASKS CREATE A FALSE SENSE OF SECURITY

- This study, not yet peer-reviewed, shows evidence masks enable disinhibition behavior and Americans spend less time at home and more time in moderate to high-risk locations following orders to wear masks.
- Mask orders provide a sense of protection, leading people to substitute face mask wearing for other nonpharmaceutical interventions like avoiding time in public.

Researchers evaluated filtration properties of natural and synthetic materials using a modified procedure for N95 respirator approval:

- Cotton, polyester, nylon, and silk had filtration efficiency of 5-25%
- Polypropylene spunbond had filtration efficiency 6-10%
- Paper-based products had filtration efficiency of 10-20%

Advantage of polypropylene spunbond is it can be simply triboelectrically charged to enhance the filtration efficiency (from 6 to >10%), without any increase in pressure (stable overnight and in humid environments).

Cotton, polyester, and polypropylene multilayered structures can meet or even exceed the efficiency of materials used in some medical face masks.