

Empirical evidence of the use of masks for respiratory infections.

March 31, 2020

Studies:

Jefferson, T., Foxlee, R., Del Mar, C., Dooley, L., Ferroni, E., Hewak, B., Prabhala, A., Nair, S. and Rivetti, A., 2008. Physical interventions to interrupt or reduce the spread of respiratory viruses: systematic review. *Bmj*, 336(7635), pp.77-80

Methods and Conclusions:

Systematic review. Studies on the 2003 outbreak of SARS found that masks alone were 68 percent effective at preventing the virus.

Barasheed O, Alfelali M, Mushta S, Bokhary H, Alshehri J, Attar AA, Booy R, Rashid H. Uptake and effectiveness of facemask against respiratory infections at mass gatherings: a systematic review. *International Journal of Infectious Diseases*. 2016.

Methods and Conclusions:

Pooled estimate revealed significant protectiveness against respiratory infections (relative risk [RR] = 0.89, 95% CI: 0.84-0.94, $p < 0.01$)

Leung CC, T. H. Lam, K. K. Cheng. Let us not forget the mask in our attempts to stall the spread of COVID-19. *International Journal against Tuberculosis & Lung Disease*. 2020.

Methods and Conclusions: Descriptive editorial providing empirical evidence in substantial reduction of COVID-19 transmission as well as other respiratory viruses in China and Hong Kong.

Feng S, Shen C, Xia N, Song W, Fan M, Cowling BJ. Rational use of face masks in the COVID-19 pandemic. *The Lancet Respiratory Medicine*. 2020.

Methods and Conclusions:

- Evidence that face masks can provide effective protection against respiratory infections in the community is scarce, as acknowledged in recommendations from the UK and Germany.
 - Vulnerable populations, such as older adults and those with underlying medical conditions, should wear face masks if available.
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Rashid H, Booy R, Leon Heron L, Memish ZA, Nguyen-Van-Tam J, Barasheed O, Haworth E. Unmasking Masks in Makkah: Preventing Influenza at Hajj. *Clinical Infectious Diseases*. 2012.

Methods and Conclusions:

Systematic review of RCT's comparing mask and control groups in randomized controlled trials. Masks included surgical masks. Two outcomes were included: (i) influenza-like illness and (ii) laboratory-proven influenza. Among 5 studies included for influenza-like illness there was a protective effect of mask-use (Odds Ratio, 0.80, 95% Confidence Interval, 0.63–1.01). Among 4 studies included for laboratory-proven influenza, no impact was seen (Odds Ratio, 1.60, 95% Confidence Interval, 0.77–3.33) although these studies were severally underpowered with <7 laboratory-proven influenza cases per group in each study.

MacIntyre CR, Cauchemez S, Dwyer DE, Seale H, Cheung PP, Browne G, Fasher M, Wood J, Gao Z, Booy R, Ferguson N. Face Mask Use and Control of Respiratory Virus Transmission in Households. *Emerging Infectious Diseases*. 2009

Methods and Conclusions:

A prospective, cluster-randomized trial of mask use in households was conducted during the 2 winter seasons of 2006 and 2007 (August to the end of October 2006 and June to the end of October 2007) in Sydney, Australia. Enrollment in the study was restricted to households with >2 healthy adults >16 years of age; the adults had known exposure within the household to a child with fever and respiratory symptoms.

- Under the assumption that that the incubation period of influenza is equal to 1 day, protection from masks was estimated to be 74% (0.26 (95% CI [confidence interval] 0.09–0.77; $p = 0.015$)
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MacIntyre, C.R. and Chughtai, A.A., 2015. Facemasks for the prevention of infection in healthcare and community settings. 350, p.h694

Methods and Conclusions:

- mask usage among people in community settings, specifically households and colleges.
 - Some studies produced unclear results,
 - Overall indicated that wearing a mask protected people from infections compared to not wearing a mask (especially true when partnered with handwashing)
 - Adherence was an issue. Often poor adherence.
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Parker et al. Face masks to reduce the spread of COVID-19: People-centered approaches in the context of a global emergency (submitted)

Methods and Conclusions:

Review of published literature on the efficiency of face masks and COVID-19 transmission and prevention. Data was analysed to inform practical and cost-effective prevention measures globally.

- High viral loads occur prior to the onset symptoms; asymptomatic transmission is key. Mask wearing must be included in the mix of prevention strategies. Face masks of any kind reduce viral

transmission; cloth masks can prevent respiratory virus epidemics in community settings. Surgical masks are superior to cloth face masks in healthcare settings and are urgently needed by healthcare and frontline workers due to higher exposure. Homemade cloth face masks for population-level use can be cost-effectively produced using readily available materials and equipment. Makeshift face coverings can be used as an emergency measure.