

## UPDATE ALERTS

**Update Alert 7: Masks for Prevention of Respiratory Virus Infections, Including SARS-CoV-2, in Health Care and Community Settings**

This is the seventh update alert for a living rapid review (1) on the use of masks for prevention of respiratory virus infections, including SARS-CoV-2, in health care and community settings. The first 3 updates (2-4) were monthly, after which the interval was switched to bimonthly (5, 6). After the last update (7), done through 2 June 2021, the interval was extended to biannually. For this update, searches were done from 3 June to 2 December 2021 using the same search methods as the original review. Inclusion was restricted to randomized trials and observational studies that controlled for confounders. Non-peer-reviewed studies were excluded unless they were based on data collected after February 2021, when the Delta variant emerged. The update searches identified 1554 citations. One preprint study (8) done in a health care setting and 6 studies (9-14) done in community settings (including 1 new cluster randomized trial) (9) on masks and SARS-CoV-2 infection met inclusion criteria for this update (Supplement Tables 1 to 3).

**COMMUNITY SETTINGS**

One new cluster randomized trial (9) and 5 new observational studies (10-14) evaluated the effects of mask use in a community setting and risk for SARS-CoV-2 infection.

In previous updates, the evidence for mask use versus no use for prevention of SARS-CoV-2 infection in community settings was previously assessed as low strength favoring mask use, based on 1 prior randomized controlled trial (15) and 3 observational studies (16-18). The new randomized controlled trial was a large cluster randomized trial (>340 000 persons) designed to assess a mask promotion and distribution intervention in Bangladesh (a country with low baseline mask) (Supplement Table 1), with further randomization to surgical or cloth masks along with various other mask promotion interventions (9). Mask promotion intervention villages were associated with decreased symptomatic SARS-CoV-2 seroprevalence (adjusted prevalence ratio, 0.90 [95% CI, 0.82 to 0.995]) and prevalence of COVID-19 symptoms according to World Health Organization criteria (adjusted prevalence ratio, 0.88 [CI, 0.83 to 0.93]) (Supplement Table 5). In an analysis stratified according to mask type, the mask promotion intervention was associated with decreased symptomatic SARS-CoV-2 seroprevalence in surgical mask villages (adjusted prevalence ratio, 0.89 [CI, 0.78 to 0.997]), with no difference in cloth mask villages (adjusted prevalence ratio, 0.94 [CI, 0.78 to 1.10]). Although no statistical test for a subgroup difference was reported, the CIs of the estimates highly overlapped, suggesting no statistically significant subgroup difference. When stratified by participant age, mask use in surgical mask villages seemed to be most beneficial in those aged 60 years or older, although there was no association between older age and mask effectiveness in the cloth mask villages. The trial was rated fair quality because of the open-label design, failure to perform serologic testing in 60% of symptomatic participants (although the proportion was similar in intervention and control villages), and differential recruitment (slightly higher in mask promotion intervention

compared with no intervention villages). Also, the applicability of findings to settings with higher mask use is uncertain.

Five new observational studies (10-14) also provide evidence on mask use in the community and SARS-CoV-2 infection (Supplement Table 2), although all had methodological limitations, including selection and recall bias, and limited ability to control for potential confounders (Supplement Table 4). The new studies consistently found mask use associated with reduced risk for SARS-CoV-2 infection, with adjusted risk estimates ranging from 0.04 to 0.60 (Supplement Table 5). The new evidence was consistent with the previous findings favoring mask use versus no use, and the evidence was slightly strengthened from low to low-moderate, primarily based on the new randomized controlled trial (Supplement Table 6). None of the new observational studies compared mask types.

**HEALTH CARE SETTINGS**

Prior updates included 4 observational studies (19-22) that provided insufficient evidence to determine the effectiveness of N95 (or equivalent) respirators versus surgical masks in health care settings (Supplement Table 6); all were done before the emergence of the Delta variant. One new cohort study (Supplement Table 2) found that health care workers who primarily used FFP2 (N95 equivalent) masks had decreased risk for SARS-CoV-2 infection (adjusted hazard ratio, 0.80 [CI, 0.64 to 1.00]) or seroconversion (adjusted odds ratio, 0.73 [CI, 0.53 to 1.00]) versus health care workers who primarily used surgical masks (Supplement Table 5) (8). In a stratified analysis, the reduction in risk among mostly FFP2 mask users was statistically significant among health care workers with frequent (>20) contacts with patients with COVID-19 (adjusted hazard ratios, 0.66 [CI, 0.54 to 0.81] for SARS-CoV-2 positive polymerase chain reaction and 0.64 [CI, 0.42 to 0.97] for seroconversion). The new study had methodological limitations, including potential recall bias, and has not yet undergone peer review; in addition, most data were collected before the emergence of the Delta variant. Therefore, the strength of evidence comparing N95 respirators with surgical masks for health care workers remains insufficient because of methodological limitations, imprecision, and inconsistency across studies (Supplement Table 6).

In summary, new evidence slightly strengthened the evidence of benefit of masks versus no masks in community settings to low-moderate, with no change in insufficient strength of evidence for N95 versus surgical masks in health care settings. A final update is planned for 6 months.

Roger Chou, MD

Tracy Dana, MLS

Rebecca Jungbauer, DrPH

Pacific Northwest Evidence-based Practice Center, Department of Medical Informatics and Clinical Epidemiology, Oregon Health & Science University, Portland, Oregon

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**Corresponding Author:** Roger Chou, MD, Oregon Health & Science University, 3181 SW Sam Jackson Park Road, Mail Code BICC, Portland, OR 97239; e-mail, [chour@ohsu.edu](mailto:chour@ohsu.edu).

doi:10.7326/L21-0783

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