

## UPDATE ALERT

**Update Alert 5: Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers**

This is the fifth monthly update alert for a living rapid review on the epidemiology of and risk factors for coronavirus infection in health care workers (HCWs) (1). Searches were updated from 25 August to 24 September 2020 using the same search strategies as the original review. The update searches identified 1987 citations. We applied the same inclusion criteria used for the prior update, with previously described protocol modifications to focus on higher-quality evidence (2). Ten studies (3-12) on the burden of and risk factors for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection were added for this update.

The original rapid review included 15 studies on the burden of SARS-CoV-2 infection (1); 52 studies were added in prior updates (2, 13-15) (Supplement Tables 1 and 2). For this update, 3 cohort studies (3, 4, 9) and 5 cross-sectional studies (5-7, 11, 12) were added. Studies were done in Belgium (11), Brazil (6), China (12), France (4), Italy (7), Qatar (3), the United Kingdom (9), and the United States (5).

In the original review and prior updates, the incidence of SARS-CoV-2 infection (polymerase chain reaction positive) ranged from 0.4% to 49.6%, and the prevalence of SARS-CoV-2 seropositivity ranged from 1.6% to 31.6%; the wide ranges in estimates were likely related to differences in settings, exposures, rates of community transmission, symptom status, use of infection control measures, and other factors. Consistent with prior findings, estimates from new studies of SARS-CoV-2 infection in HCWs varied and were within previously reported ranges (Supplement Table 1). Five studies reported rates of SARS-CoV-2 infection based on polymerase chain reaction positivity that ranged from 1.7% to 43.4% (3-7, 9). One study reported a seropositive rate of 6.4% (11), and 2 reported infection rates of 3.4% (12) and 3.5% (7) based on a combination of polymerase chain reaction, seropositivity, or computed tomography scan findings. Limitations of the studies included failure to provide information about the severity or clinical outcomes of SARS-CoV-2 infections in HCWs and, in some studies, small sample sizes or unclear participation rates.

One new study done in China at the beginning of the SARS-CoV-2 outbreak was consistent with prior studies in finding that HCWs had higher levels of depression, anxiety, and insomnia relative to the general population (10). However, the study did not control for baseline symptoms.

The original rapid review included 34 studies on risk factors for coronavirus infections (3 studies on risk factors for SARS-CoV-2 infection, 29 studies on SARS-CoV-1 infection, and 2 studies on Middle East respiratory syndrome-CoV infection) (1). A total of 36 studies (34 studies on SARS-CoV-2, 0 studies on SARS-CoV-1, and 2 studies on Middle East respiratory syndrome-CoV) were added in prior updates (2, 13, 15). For this update, 5 new studies ( $n = 5436$ ) evaluated risk factors for SARS-CoV-2 infection in HCWs (Supplement Table 3) (6-9, 12). Limitations of the studies include limited measure-

ment of exposures, potential recall bias, no control of confounders, and imprecise estimates. Four studies (7-9, 12) indicated no association between sex and risk for SARS-CoV-2 infection, and 2 (6, 7) reported inconsistent findings for the risk for SARS-CoV-2 infection in nurses versus physicians. One small case-control study that did not control for confounders found that providing direct patient care or performing an aerosol-generating procedure on a patient with unknown COVID-19 status was associated with an increased risk for HCW infection (8). Most estimates for personal protective equipment were imprecise, although use of a face shield or goggles was associated with reduced risk for SARS-CoV-2 infection. One study found that infection control education was associated with a decreased risk for SARS-CoV-2 infection (12), and 1 study reported a very imprecise estimate for infection control training (7). Overall, results for risk factors updated with these studies were judged to be consistent with the original review and prior updates (Supplement Tables 4-8).

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**Disclaimer:** The original review was funded by the World Health Organization. The World Health Organization staff developed the key questions and scope for the original review but did not have any role in the selection, assessment, or synthesis of evidence for this update.

**Disclosures:** Disclosures can be viewed at [www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=L20-1227](http://www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=L20-1227).

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doi:10.7326/L20-1227

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