

UPDATE ALERT

Update Alert 4: Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers

This is the fourth 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 July to 24 August 2020 using the same search strategies as the original review. The update searches identified 2494 citations. We applied the same inclusion criteria used for the prior update, with previously described protocol modifications to focus on higher-quality evidence (2). Seventeen studies (3-19) on 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); 42 studies were added in prior updates (2, 20, 21) (Supplement Table 1 and Table 2). For this update, 10 cohort studies (4, 5, 7, 8, 11, 13, 15-18), 5 cross-sectional studies (3, 9, 10, 12, 14), and 1 case-control study (6) on the burden of SARS-CoV-2 infection were added. Of the new studies, 3 were done in the United States (9, 10, 13); 3 in Italy (3, 15, 16); 2 in the United Kingdom (7, 8); 2 in China (18, 19); and 1 each in Belgium (5), Germany (12), Spain (14), Turkey (6), and Egypt (11). The country was not reported in 1 study (4).

As in the prior updates and review, estimates of SARS-CoV-2 infection in HCWs varied (Supplement Table 1). Among the new studies, 9 reported rates of SARS-CoV-2 seropositivity that ranged from 1.6% to 31.6% (3, 5, 7, 9, 10, 12-14, 16), 6 reported rates of SARS-CoV-2 infection (based on polymerase chain reaction positivity) of 0.4% to 23.5% (4, 14, 15, 17-19), and 2 studies reported rates of either SARS-CoV-2 seropositivity or infection (polymerase chain reaction positive) of 12.2% and 43.5% (8, 11). Factors contributing to the variability in estimates likely include differences in locale, SARS-CoV-2 outbreak severity, presence and severity of HCW symptoms, and exposure extent. Limitations of the studies included variability in participation rates and failure to provide information about the severity or clinical outcomes of SARS-CoV-2 infections.

The original rapid review included 31 studies on risk factors for SARS-CoV-2 infection (1); 19 studies were added in prior updates (2, 20). For this update, 15 new studies ($n = 51\ 597$) evaluated risk factors (Supplement Table 3) (3, 5-18). Study limitations include limited measurement and control of exposures, potential recall bias, and failure to address potential collinearity. Ten studies (3, 6, 8, 10-13, 15-17) indicated no association between sex and risk for SARS-CoV-2 infection, and 13 studies (3, 5, 6, 8-11, 13-18) reported inconsistent findings for differences in risk between nurses and physicians. One study found that mask use (FFP2, FFP3, or surgical mask) was associated with increased risk for SARS-CoV-2 infection versus no mask use. Although FFP2 and FFP3 mask use was associated with increased risk for SARS-CoV-2 infection versus surgical mask use, the analysis only adjusted for age (15). Another study found that improper use of personal protective

equipment while caring for patients with suspected or confirmed coronavirus disease 2019 and break room exposure to another HCW without wearing a mask were associated with increased risk for HCW infection, after adjustment for other exposures (6). Results for risk factors updated with these studies were judged to be consistent with the original prior update (Supplement Tables 4 to 7).

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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=L20-1134.

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doi:10.7326/L20-1134

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