

Incidence of SARS-CoV-2 Infection among COVID-19 Vaccinated and Unvaccinated Healthcare Personnel, First Responders, and other Essential and Frontline Workers— Eight U.S. Locations, January–September 2021

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December 2, 2021

Abstract

Background. We sought to evaluate the impact of changes in estimates of COVID-19 vaccine effectiveness on the incidence of laboratory-confirmed infection among frontline workers at high risk for SARS-CoV-2. **Methods.** We analyzed data from a prospective frontline worker cohort to estimate the incidence of COVID-19 by month as well as the association of COVID-19 vaccination, occupation, demographics, physical distancing and mask use with infection risk. Participants completed baseline and quarterly surveys, and each week self-collected mid-turbinate nasal swabs and reported symptoms. **Results.** Among 1,018 unvaccinated and 3,531 fully vaccinated workers, the monthly incidence of laboratory-confirmed SARS-CoV-2 infection in January 2021 was 13.9 (95% confidence interval [CI]: 10.4-17.4), declining to 0.5 (95% CI -0.4-1.4) per 1000 person-weeks in June. By September 2021, when the Delta variant predominated, incidence had once again risen to 13.6 (95% CI 7.8-19.4) per 1000 person-weeks. In contrast, there was no reportable incidence among fully vaccinated participants at the end of January

2021, and incidence remained low until September 2021 when it rose modestly to 4.1 (95% CI 1.9-3.8) per 1000. Below average facemask use was associated with a higher risk of infection for unvaccinated participants during exposure to persons who may have COVID-19, and vaccinated participants during hours in the community. Conclusions. COVID-19 vaccination was significantly associated with a lower risk of SARS-CoV-2 infection despite Delta variant predominance. Our data demonstrate the added protective benefit of facemask use among both unvaccinated and vaccinated frontline workers.

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