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# Reducing Community Exposure to Protect Health Care Personnel in a Pandemic Environment



Health care practices typically have an abundance of evidence-based medicine literature and best practice guidelines on which to base policies and procedures designed to prevent transmission of communicable disease. However, with the coronavirus disease 2019 (COVID-19) pandemic, things were much different. Physicians and their teams practicing in public health, employee occupational health, and infection prevention quickly found themselves asked to make recommendations and decisions to support safety in health care institutions with limited and sometimes conflicting information about severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Guidance from government and regulatory agencies was updated frequently and changed over time.<sup>1,2</sup> These recommendations were impacted by evolving knowledge of the pathogenicity of SARS-CoV-2 and real-world constraints including availability of personal protective equipment (PPE) such as N95 respirators and surgical facemasks. Increased demand coupled with supply chain issues made the availability of PPE uncertain, and health care institutions had to identify ways to preserve PPE supply to mitigate transmission of the virus to health care personnel (HCP) working on the front-lines to care for patients.<sup>3</sup> When the US Centers for Disease Control and Prevention published information on alternatives to manufactured facemasks, including advice on sewing one's own facemask or using a bandana,<sup>4,5</sup> it was clear public health and health care institutions were entering uncharted territory.

The COVID-19 pandemic highlighted the importance of health care worker safety as a prerequisite for HCP to serve the needs of patients.<sup>6</sup> Despite implementation of PPE

recommendations and close contact tracing, the risk of transmission of SARs-CoV-2 to health care workers has been a topic of ongoing interest throughout the pandemic, due in part to questions surrounding increased risk from care of COVID-19 patients and limitations on available data.<sup>7</sup>

In this edition of *Mayo Clinic Proceedings*, Lepak et al<sup>8</sup> from the University of Wisconsin and the Veterans Affairs Medical Center share important research to advance the knowledge of HCP infection characteristics in their manuscript, "COVID-19 in Health Care Personnel: Significance of Health Care Role, Contact History, and Symptoms in Those Who Test Positive for SARS-CoV-2 Infection."<sup>8</sup> Within their study, 7015 symptomatic HCP were evaluated and tested for SARS-CoV-2 with detailed information collected by Employee Health Service staff, including HCP self-reported symptoms, sociodemographics, and known or suspected contact history with an individual with COVID-19 infection. Of those HCP evaluated for SARS-CoV-2, 624 (8.9%) tested positive during the observation period.<sup>8</sup> Their analysis identified that the HCP evaluated had a higher adjusted odds of testing positive for SARS-CoV-2 if they were 1) in a nonprovider role, 2) had contact with a family member or community member with known or suspected COVID-19 infection, and 3) if they had specific symptoms and/or an increased number of symptoms associated with SARS-COV-2.<sup>8</sup>

## ROLE OF HCP ASSOCIATED WITH COVID-19 INFECTION

A very interesting finding from the Lepak et al<sup>8</sup> analysis is that HCP not involved in direct patient care had the second highest rate of COVID-19 infections with Pharmacy

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staff having the highest rate of infection. Working from home was associated with a higher odds of testing positive for SARS-CoV-2 compared to working on campus.<sup>8</sup> This increased rate of COVID-19 in HCP not caring for patients, including those teleworking, is compelling evidence that transmission to HCP is strongly influenced by community and household transmission.

Symptomatic HCP in physician or advanced practice provider (APP) roles had the lowest rate of positive tests in the study (4.0%), despite being expected to have a high prevalence of patient interactions.<sup>8</sup> This could be due to several factors including stringent adherence to infection control practices in the health care setting by physicians/APPs and potential decreased exposure at home and in the community.

#### **CONTACT WITH A FAMILY OR COMMUNITY MEMBER WITH COVID-19 INFECTION OR SYMPTOMS**

Lepak et al<sup>8</sup> found that HCP with known or suspected exposure to a family or community member with COVID-19 had a significantly higher odds ratio for testing positive for SARS-CoV-2 compared to those with an occupational exposure.<sup>8</sup> Contact with COVID-19 patients and/or coworkers (other HCP) was not significantly associated with a higher odds of testing positive.<sup>8</sup> Based on these data, it could be hypothesized that the low rate of COVID-19 infection in physicians and APPs could be influenced by longer working hours on campus during the pandemic. Decreased time away from the hospital/clinic during the pandemic may have resulted in reduced opportunity for potential community exposure. As the authors note, socioeconomic factors may also influence the rate of COVID-19 infection in physicians and APPs, including increased availability of in-home care/education for children during school closures.

#### **ASSOCIATION WITH SPECIFIC SYMPTOMS AND/OR INCREASED SYMPTOM NUMBER**

The current list of symptoms of SARS-CoV-2 is broad and overlaps with symptoms of many other infectious diseases. Common

symptoms of COVID-19 infection as outlined by the US Centers for Disease Control and Prevention include fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches (myalgias), headache, new loss of taste or smell (anosmia or ageusia), sore throat (pharyngitis), congestion, runny nose (rhinorrhea), nausea or vomiting, and diarrhea.<sup>9</sup> In their analysis, Lepak et al<sup>8</sup> found a statistically significant adjusted odds ratio for testing positive for SARS-CoV-2 in individuals with cough, anosmia, ageusia, fever, myalgia, chills, or headache. They also found that for each increase in number of symptoms, the odds of testing positive increased significantly (odds ratio [OR], 1.93; 95% CI, 1.82-2.07;  $P < .001$ ).<sup>8</sup> This finding will be especially important as health care organizations determine approaches to testing and work absence policies during influenza and allergy seasons where single nonspecific symptoms such as rhinorrhea, congestion, and sore throat can be prevalent in the general population and in health care workers.<sup>10</sup> Allowing HCP with low probability of COVID-19 infection, such as those with complete vaccination status and no known exposure, who have a single nonspecific symptom (rhinorrhea, congestion, pharyngitis) to continue to work on campus could be considered.

#### **CONCLUSION**

The analysis by Lepak et al<sup>8</sup> adds important data to the ongoing conversation surrounding health care worker safety as the COVID-19 pandemic continues to evolve. The impact of COVID-19 variants on community transmission is being closely watched, and it is likely that health care organizations will need to respond quickly if COVID-19 variants result in an increase in infections in vaccinated and unvaccinated individuals. The findings from this study are a reminder to look outside of the hospital and clinic walls as we think about how to protect health care workers from community COVID-19 transmission. To ensure adequate staffing and continuity in health care services, protecting health care workers from community

COVID-19 transmission is as important as protecting them from occupational exposure.

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