

Commentary: Rapid Testing of Healthcare Employees for COVID-19: What Can We Learn from the Seattle Experience?

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The impact of the COVID-19 on healthcare providers cannot be understated. On May 6 of this year, the Geneva-based International Council of Nurses reported that more than 90,000 healthcare providers (HCP) worldwide had been infected with COVID-19, but cautioned that actual cases might be twice that.ⁱ In the United States, as of June 19, 2020, more than 80,000 HCP cases of SARS-CoV-2 infection had been reported to the Centers for Disease Control and Prevention (CDC), along with 446 deaths,ⁱⁱ although a collaboration between Kaiser Health News and The Guardian suggest the numbers of deaths are nearly 1.5 times higher.ⁱⁱⁱ In this issue of *Clinical Infectious Diseases*, Mani and colleagues provide one of the first detailed reports in the U.S., of COVID-19 infection in healthcare employees, describing cases in both frontline and non-frontline employees from the University of Washington (UW) Medicine healthcare system.

The first case of COVID-19 in the U.S. was reported on January 20, 2020 in a man in Seattle, Washington, putting HCP there at the forefront of the U.S. pandemic.^{iv} Within a month and a half, a team at UW launched two high throughput testing centers for employees, with drive-through and walk-up options. They tested 3477 employees in 6 weeks. At a time when many healthcare facilities were struggling with test capacity, UW had test results within 6 to 10 hours. All in all, an enviable achievement.

In the supplemental material for this report, Mani et al. provide detailed instructions, protocols and photos of their clinics that provide a basic toolkit for healthcare facilities seeking to create their own testing facility. From the beginning of the pandemic, UW freely shared their COVID-19 policies and procedures.^v For this, we all owe them a debt of gratitude. In times of crisis, it is helpful to have a starting place, and advice from those with experience.

Detailed demographic data about infections in U.S. healthcare providers are somewhat limited due to incomplete reporting, but based on an initial analysis of 9282 HCP reported to the CDC, the majority of infected healthcare workers have been female (73%), with a median age of 42^{vi} and 38% have had an underlying healthcare condition. Outcome data are known only for a subset, but 723/7,483 have been hospitalized and 27/4407 have died. By comparison, the median age of the positive employees in the Seattle study was 40 years, 61.6% were female and 12.4 % had an underlying health condition. Only six were hospitalized and all recovered.

Presenteeism has long been a problem in U.S. healthcare facilities.^{viiiviii} In one national survey of HCP during the 2014-2015 influenza season, 40% of those with influenza-like illness—fever and cough or sore throat—reported working while sick. Common reasons for doing so include ill but being able to perform one's duties or not being sick enough to stay home.

During the pandemic, the directive “don’t work when you are sick,” took on a new urgency, but the varied clinical manifestations of COVID-19 have forced employee health teams to re-consider what we mean by “sick.” Employees in the Seattle study presented with a range of symptoms, with the most common being fatigue (61.6%) and headache (59.5%). The traditional marker of having an infection, fever, was present in only 38.4%. Before the pandemic, who would have imagined that we would tell tired healthcare workers with a headache to stay home?

Access to rapid, reliable testing is key to maintaining an adequate work force. UW returned employees who tested negative for COVID-19 to work once their symptoms resolved. It should be noted though,

that there are now more than 25 different commercially available SARS-CoV-2 molecular assays, and some clinical laboratories have developed their own tests.^{ix} The sensitivity of some available tests has resulted in some healthcare institutions, including our own, to furlough HCPs with compatible symptoms despite negative tests.

The prevalence of COVID-19 in symptomatic employees in the study by Mani et al. was 5.2%. Published comparative data from other U.S. healthcare facilities is sparse, but UW's findings are higher than the rate of positivity reported in symptomatic individuals in that surrounding community at large. According to a May 1 situation report from the Greater Seattle Coronavirus Assessment Network, only 1.3% of 5194 individuals with COVID-like illness tested positive for SARS-CoV2.^x The reasons for this difference deserves further study.

Although healthcare-associated transmission of COVID-19 to HCP cannot be discerned from this report, it does happen. Out of 1423 infected HCP reported to the CDC who had known exposure history, 780 (55%) had only healthcare exposures. A large hospital in Singapore, that provided care to 68 COVID-19 patients, was able to minimize if not eliminate occupational transmission. No HCP cases were detected despite intense monitoring. Investigators credit "risk-based PPE" determined by the risk of exposure from patient care activities, a robust surveillance system for detecting illness in HCP, and medical surveillance and testing of staff member with symptoms.^{xi} Similarly, in a group of 420 doctors and nurses deployed to work in Wuhan with COVID-19 patients, none developed symptoms of SARS-CoV infection and all tested negative by PCR and antibodies after their deployment.^{xii} Of note, they also had ready access to personal protective equipment, lived in designated hotels, used special shuttles for

transportation, wore masks in public places and practiced social distancing, minimizing chances for community exposures.

Measuring cases of SARS-CoV-2 infection and describing outcomes such as hospitalization and death are two ways to assess the impact of the pandemic on HCP. Measuring less tangible effects, including stress, anxiety, and decreased job satisfaction, is also important. In one survey study of Chinese HCP, participating in the diagnosis, treatment, and care of patients with COVID-19 was associated with a higher risk of symptoms of depression, anxiety, insomnia and distress.^{xiii} U.S. HCP have voiced fear of spreading infection to family members as well as those at work as a significant source of anxiety. Providing easy and rapid access to COVID-19 testing for sick HCP, as the UW team did, is one way to minimize that concern, and demonstrate institutional support and concern for those employees working on the frontlines.^{xiv} Other healthcare facilities would be well-served to implement a similar model.

Potential Conflicts of Interest

K.A.B. reports being an investigator on multicenter vaccine trials for Pfizer, outside the submitted work. K.A.B. is President of Pediatric Infectious Diseases Society; the opinions herein do not necessarily reflect the positions of PIDS. P.I. has no conflicts to disclose.

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