Identifying asymptomatic healthcare workers with COVID-19 in a community hospital: an institution’s experience

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**ABSTRACT**

The outbreak related to SARS-CoV-2 or COVID-19 has been classified as a pandemic. Many healthcare institutions enacted policies to limit the spread within their facility. As hospitals begin to return to normal particularly with elective procedures, a common concern is how an organization should react in the event that healthcare workers test positive for COVID-19. When our organization had a cluster of positive inpatient healthcare workers, we elected to test all direct patient care healthcare workers. Through this process we learned two valuable lessons that have redefined our practice: 1) the recognition that aggressive contact tracing provides greater yield than testing everyone and 2) organizations must implement effective isolation within each department and how departments interact with each other to limit the scope of contact tracing.

The World Health Organization (WHO) designated Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) or COVID-19 outbreak as a global pandemic [1]. In order to help curtail the spread, national, state, and local officials declared health emergencies and implemented various restrictions ranging from stay-at-home orders, curfews, curtailing social gatherings with regards to size, and mandated quarantines for travelers from designated ‘hot spots.’ [2] While these initiatives may have helped to ‘flatten the curve,’ the economic consequence cannot be understated with employment falling 20.5 million in April 2020 alone [3]. Many institutions and locales suspended elective procedures which provide a vital source of economic activity [4]. To help reopen the economy safely, the White House released a series of guidelines [5] which were utilized by state and local officials to guide resuming elective procedures, hospitality, tourism, and recreational activities.

Many healthcare organizations have implemented daily point-of-entry screening for employees to identify possibly symptomatic individuals who may be inadvertently shedding the virus and posing a risk for patients, particularly those admitted for elective procedures, to acquire COVID-19 within the institution [6]. Although identification and isolation of symptomatic individuals are beneficial, it has been postulated that asymptomatic carriers and patients who have not developed symptoms can actively transmit COVID-19, thereby contributing to local outbreaks [7,8]. Black, et al. highlighted that expanding testing to asymptomatic healthcare workers may decrease and ultimately limit nosocomial spread [9]. Therefore, a rather common question becomes how do we respond when healthcare workers test positive for COVID-19? This question was faced by our organization, and here, we highlight our experience.

White River Medical Center (WRMC) is the largest acute care facility for White River Health System and serves 10 counties in North Central Arkansas. After a cluster of healthcare workers tested positive for COVID-19, our organization was in a unique position. Due to having plentiful supplies and resources in an area with relatively low incidence, the organization elected to test all employees involved in direct inpatient care who cleared point-of-entry screening via daily temperature checks and did not self-report any symptoms of COVID-19. A total of 647 employees were tested with nearly 81% of the testing being completed within three days. A National Reference Laboratory processed all nasopharyngeal swabs. Of all tested employees, three (0.4%) were positive and asymptomatic. Contact tracing was completed by the organization and the Arkansas Department of Health to identify, monitor, and actively/passively follow potential persons of interest. All positive individuals were quarantined for 10 to 14 business days and were only allowed to return to work after two negative tests in accordance with local recommendations.

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Our experience emphasizes the importance of utilizing contact tracing for positive healthcare workers. In the event of an outbreak, aggressive contact tracing can guide the rapid identification of those who may in fact be asymptomatic and actively shedding the virus and/or those that have a high propensity to become ‘positive.’ We found that it is imperative to include every healthcare worker that has had any interaction near their positive coworkers with a special focus on individuals with sustained and repetitive encounters in various settings (professional, social, and personal) over multiple days. Aggressive contact tracing to identify individuals with multiple connections to either those confirmed positive or with a direct linkage to community ‘hot spots’ will be beneficial in identifying those who are presymptomatic or asymptomatic preventing additional spread.

While contract tracing will identify presymptomatic or asymptomatic employees, organizations must explore staffing models that can limit the scope of contact tracing and potential secondary cases if – but really when – the need arises. In addition to limiting the number of potential asymptomatic/presymptomatic individuals to follow, the major benefit will be to limit the linkage between different groups of employees and naturally hinder the transmission of COVID-19 within the healthcare facility. Most hospitals utilize a float pool nursing model facilitating relief to understaffed units. This poses an inherent risk as a float pool nurse can work in three different units over three different shifts. This has significant implications as individuals who are presymptomatic may already be actively transmitting the virus to close contacts [10]. More simply, employees who later fail screening either via temperature or self-reported symptoms and are later confirmed to be positive have likely already transmitted the virus to patients and/or fellow coworkers.

While we had plentiful testing kits and resources to test all employees with direct patient care at once, we recognize and wish to highlight for other entities considering widespread PCR testing that there are some innate limitations as only individuals with viral copies above a threshold detected are deemed positive [11]. Individuals could test negative even if they have viral copies present, but they were less than the threshold either by being on the upslope (may be positive in the future), the downslope (may have been positive in the past), having an active viral load that is unable to be detected and will remain below detection, or are truly negative.

This poses an even greater challenge for asymptomatic healthcare workers as serial PCR screening showed that roughly 27% of those who tested positive had no symptoms in the week before or after becoming positive, thus making it more difficult to accurately determine all exposed individuals [12]. Effective social distancing can help limit the transmission posed by asymptomatic healthcare workers. Physician models exist to limit intradepartmental interactions and be self-functioning [13,14]; patient–patient interactions are minimized [15], but this needs to be adapted to how departments including nursing, ancillary support services, and administration interact within and with other departments to reduce transmission of COVID-19.

Our attempt to test all inpatient healthcare workers had several identifiable strengths. Team members with varying degrees of patient care involvement from all departments across every shift were tested within one week allowing us to potentially identify any subgroups with a high proportion of asymptomatic carriers. In addition, all tests were processed by an outside reference lab eliminating any institutional influence on identifying asymptomatic carriers.

We had some noteworthy challenges that need to be considered by other institutions that face a similar quandary. Because of the intent to test a large workforce quickly, numerous individuals conducted the testing. While the technique was similar, inherent variation in sample procurement cannot be excluded. In addition, employees were only tested once within a short time frame and not serially which means that the prevalence of asymptomatic carriers cannot fully be determined as we were only able to identify the incidence. Testing was not conducted on furloughed individuals or those primarily with outpatient responsibilities; many of whom interact with inpatient employees excluding a sizable subset of healthcare workers who may in fact be vectors.

In conclusion, any noble attempt to broadly screen all healthcare workers with only PCR to identify those that are asymptomatic may have limited utility compared to aggressive contact tracing. Contact tracing will allow the identification and monitoring of individuals who are possibly asymptomatic or presymptomatic. Organizations may find that the organizational realignment will be beneficial in limiting the need for future contact tracing when the need arises.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

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