Analysis: 'Near-zero incidence' of patients acquiring COVID-19 at Brigham and Women's

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A new study addresses a critical question: Were these infection control measures successful in preventing transmission of COVID-19 to patients

in the hospital? In a paper published in *JAMA Network Open*, a team of investigators from the Brigham report on an analysis of all cases in which a patient tested positive for COVID-19 three days or later after coming to the hospital and up to 14 days after discharge during the first 12 weeks of the surge in Massachusetts. They found that although the Brigham cared for over 9,000 inpatients during this timeframe—including nearly 700 with COVID-19—only two patients likely acquired the disease within the hospital, including one who likely acquired it from his visiting spouse prior to universal masking and restriction of visitors, and one with no clear exposures within or outside the hospital.

"Our data show that in a hospital with robust, rigorous infection control measures, it is very much possible to prevent the spread of COVID-19 to patients," said corresponding author Chanu Rhee, MD, MPH, an infectious disease and critical care physician and associate hospital epidemiologist at the Brigham. "This is an important finding as we know that many patients are avoiding essential care due to fear of contracting COVID-19 in health care settings. Our study shows that the hospital is in fact very safe, and if people need to go the hospital for care, they should go."

Rhee and colleagues conducted their study on data from all patients seen at the Brigham beginning March 7 (when the first patient with COVID-19 was admitted) through May 30, 2020. During that 12-week period, 9,149 patients were admitted to the hospital. More than 7,300 diagnostic COVID-19 tests were performed, with 697 people testing positive. Twenty-three patients were diagnosed with COVID-19 after the third day of hospitalization or within two weeks after discharge. All cases were reviewed in detail by Rhee and hospital epidemiologist and co-author Michael Klompas, MD, MPH, to assess the most likely source of each patient's infection. Of these 23 patients, 14 had symptoms on admission and were deemed to have been infected prior to admission,

while seven were diagnosed following high-risk, post-discharge exposures. Of the remaining two patients who may have acquired their infection in the hospital, one likely acquired his, prior to visitor restrictions and universal masking, from a visiting spouse who was found to have COVID-19. There was only one other patient without a clear exposure who may have been infected in the hospital.

Rhee characterized the team's findings as "an exceedingly low rate of infection" and a "near-zero incidence" of COVID-19 acquisition among patients seeking care at the hospital during the surge.

The authors note that their study cannot determine which infection control measures in place at the hospital were most critical. In addition, while the researchers comprehensively analyzed and reviewed each case, they could not definitively determine the source of infection in every case. Results were also limited to the Brigham and may not be applicable to hospitals that have adopted other infection control measures. The study did not examine infection among health care workers, and the authors believe that this important topic warrants a separate, detailed analysis.

"Overall, our results should provide confidence to clinicians and patients around the country that currently recommended infection-control measures—if carefully implemented and followed—can prevent the spread of COVID-19 within the hospital," said Rhee.

More information: Chanu Rhee et al. Incidence of Nosocomial COVID-19 in Patients Hospitalized at a Large US Academic Medical Center, *JAMA Netw Open.* 2020;3(9):e2020498. DOI: 10.1001/jamanetworkopen.2020.20498

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