




Letter to the Editor

Impact of rigorous clinical and laboratory screening for coronavirus disease 2019 (COVID-19) in a teaching hospital in inner Brazil

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To the Editor—The greater spread of severe acute respiratory coronavirus virus 2 (SARS-CoV-2) variants of concern (VOCs) determines the occurrence of community outbreaks and quickly poses a potential risk for nosocomial outbreaks.^{1,2} Given the estimated basic reproduction number of the virus, the transmission through respiratory droplets, the possibility of transmission of asymptomatic and oligosymptomatic individuals, and the high occupancy rate of the health services, the hospital environment has become a risk scenario, especially susceptible to outbreaks and compromising patients with potential for unfavorable clinical outcomes.³ In February 2022 in Brazil, official data from the Ministry of Health estimated >24,000,000 confirmed cases of COVID-19, with >620,000 deaths. The incidence of transmission of SARS-CoV-2 within hospital settings is unknown. Few hospitals have reported healthcare-associated coronavirus disease 2019 (COVID-19) cases to the Brazilian Healthcare-Associated Infections Program, with rates varying from 0.23% to 2.5% of all admissions.⁴ Policies for identifying COVID-19 among those admitted for other reasons is of utmost importance for preventing outbreaks.

In March 2021, we implemented a clinical and laboratory screening strategy in the emergency unit and hospital wards of the Clinical Hospital of Botucatu Medical School. Our hospital has 500 beds in wards, including 53 in intensive care units and an emergency room (ER). It is the referral facility for tertiary care for an area comprising >500,000 inhabitants in inner São Paulo State, Brazil (22°53'09"S, 48°26'42"W). The γ (gamma) variant was dominant at the time, representing up to 90% of the sequenced samples in Brazil.⁵

In addition to the standard measures of infection control (exclusive wards for COVID-19, restriction of visits and patients' companions, universal use of masks, social distancing measures), a daily checklist of flu-like symptoms was applied throughout the hospital stay for every patient. Those presenting any symptom had the appropriate precautions immediately instituted and were tested for SARS-CoV-2 through real-time polymerase chain reaction (RT-PCR). Additionally, RT-PCR in pooled saliva was performed for all patients on the day of admission.

A similar strategy was used for healthcare workers (HCWs), with daily screening for symptoms and weekly collection of saliva pools for those at high occupational risk. HCWs could report symptoms via mobile phone or through the electronic hospital chart.

From March through October 2021, we identified 25 COVID-19 patients through symptom screening and RT-PCR. The saliva-pool strategy identified 13 additional asymptomatic SARS-CoV-2 infections. Moreover, 134 contacts (ie, patients in the same room as index case) were investigated, both in the ER and in the inpatient wards.

Of the 25 patients identified in symptoms screening, 19 produced no secondary cases, 1 patient transmitted to 1 contact patient each and 1 patient transmitted to 3 contact patients. We also identified 1 case of superspreading to 7 secondary patients. Among the asymptomatic individuals detected through saliva screening, 9 produced no secondary cases and 4 transmitted to 1 contact each. Therefore, the secondary case rate was 0.56 (standard error [SE] ± 0.30) for symptomatic source patients and 0.31 (SE ± 0.13) for asymptomatic source patients, a difference that did not reach statistical significance ($P = .56$).

We performed a single-step Poisson regression model including source patient classification (symptomatic vs asymptomatic) and hospital site where they were admitted (ER vs wards). Results pointed to the ER as a site with greater risk for nosocomial transmission (rate ratio [RR], 2.72; 95% confidence interval [CI], 1.05–7.04; $P < .05$) but no transmission advantage among symptomatic sources (RR, 1.83; 95% CI, 0.61–5.67; $P = .27$).

Due to the scarcity of hospital beds in the peak γ (gamma) variant spread, some patients stayed in the ER for several days. Those who were not admitted with suspected COVID-19 were frequently grouped in large rooms with >50 beds. It is, therefore, no surprise that nosocomial SARS-CoV-2 transmission occurred in the ER.

On the other hand, the number of secondary cases was equally low (and <1 per source) for those detected by symptom screening or by pooled -saliva RT-PCR. We firmly believe that rapid identification and contact tracing were essential for preventing outbreaks.

Our findings are consistent with the literature, which confirms the possibility and reports the occurrence of in-hospital transmission of COVID-19, and suggests that control measures are necessary.⁶ A study from the United Kingdom estimated rates of

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occurrence of in-hospital COVID-19 at up to 15% of all cases admitted after the peak admission period.⁷ In contrast, a cohort study in a large US hospital showed that only 1.7% of patients admitted in 12 weeks had nosocomial COVID-19, demonstrating that strict hospital control makes the transmission of SARS-CoV-2 in their environment rare.⁸

At the peak of COVID-19 deaths in Brazil, infection control policies were required to prevent the collapse of hospitals, which frequently included a shortage of beds and oxygen.⁹ By preventing nosocomial outbreaks, our strategy was partially responsible for keeping the hospital at its total capacity. In conclusion, strict hospital infection control may be associated with lower SARS-CoV-2 transmission in hospitalized patients.

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