


Letter to the Editor

Risk of coronavirus disease 2019 (COVID-19) from hospital admission during the pandemic

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To the Editor—Since the onset of the coronavirus disease-2019 (COVID-19) pandemic, hospitals all over the world have treated an unprecedented number of patients with COVID-19. At the same time, hospitals have noticed a downward trend in hospital admissions for non-COVID-19-related illnesses including diseases that need time-sensitive treatments like strokes and acute coronary syndromes.^{1–3} Elective procedures and surgeries were deferred. One of the potential etiologies for the decrease in hospital admissions could be concerns of contracting COVID-19 in the hospitals. As hospitals gradually return to their routine, the risk of COVID-19 from hospital admissions needs to be examined to ensure patient safety. In this study, we examined the risk of acquiring COVID-19 in the patients admitted to the hospitals with non-COVID-19-related conditions.

Data were obtained from TriNetX, a global clinical research platform that collects de-identified patient data that are updated in real time from 45 healthcare organizations. “COVID-19 Research Network” in TriNetX is a large COVID-19 database, which is also being used by the Food and Drug Administration (FDA) Sentinel Operations Center at the Harvard Pilgrim Health Care Institute to monitor priority drugs used for the care of the hospitalized COVID-19 patients. We analyzed patients who were discharged from the hospital with non-COVID-19-related illnesses (using discharge codes and excluding lab confirmed COVID-19 patients) between January 20, 2020, and June 30, 2020, who later tested positive for COVID-19 by reverse-transcription polymerase chain reaction (RT-PCR) within 14 days of discharge. For comparison, we obtained the total number of COVID-19-positive patients in United States, from the Centers of Disease Control and Prevention (CDC)⁴ up to July 14, 2020, among the total population of the United States from the US Census Bureau. Our local institutional review board deemed this study to be ‘not human subject research’ using global deidentified COVID-19 research network data designated for research use (IRB no. 261137).⁵

In total, 101,533 patients were discharged from the hospitals with non-COVID-19-related illnesses between January 20, 2020, and June 30, 2020. Among them, 44 patients (0.043%) tested

Table 1. Baseline Demographics and Comorbidities of Patients with Hospital Discharge Between January 20, 2020, and June 30, 2020, and Patients Who Acquired COVID-19 After Hospital Discharge

Characteristic	Study Group (n = 101,533)	COVID-19 in Study Group (n = 44)	P Value
Age, median $\bar{y} \pm$ SD	51.4 \pm 23.9	62.5 \pm 14.1	.002
Sex, female, no. (%)	51,505 (50.7)	23 (52.2)	.83
Race, no. (%)			
White	66,225 (65.2)	26 (59.1)	.39
Black	24,794 (24.4)	14 (31.8)	.25
% of patients with comorbid conditions			
Hypertensive	56.7	86.3	<.001
Diabetes mellitus	30.3	43.1	.064
Chronic kidney disease	22.0	40.9	.002
Ischemic heart	28.1	38.6	.122
Congestive heart failure	23.9	36.3	.053
Overweight	23.8	31.8	.214
Chronic obstructive pulmonary disease	15.9	29.5	.013
Asthma	13.2	25.0	.021
Atrial fibrillation	16.5	22.7	.269
Smoking	22.1	22.7	.921

positive for COVID-19 by RT-PCR within 14 days of discharge (see Table 1 for demographics and comorbidities). The percentage of positive COVID-19 patients among the total US population was 1.0353% (3,416,428 of 329,986,480) as of July 14, 2020. The odds of contracting COVID-19 is 24.1 times higher in the general population compared to hospitalized patients (OR, 24.1; 95% CI, 17.9–32.4; $P < .001$).

Overall, this result suggests a low risk of COVID-19 from hospitalization. The proper use of PPE and appropriate precautionary measures may have helped reduce the risk of transmission of COVID-19 during hospitalization. Despite addressing a relevant question, our study has several limitations. Some SARS-CoV-2–

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positive patients may have contracted the virus from another source. Moreover, we did not examine the risk of COVID-19 in the outpatient setting. Nevertheless, this result is reassuring and should encourage timely treatment of healthcare problems, even during the COVID-19 pandemic, to avoid unnecessary complications.

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Prolonged incubation of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in a patient on rituximab therapy

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Abstract

The incubation period of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is rarely >14 days. We report a patient with hypogammaglobulinemia who developed coronavirus disease 2019 (COVID-19) with a confirmed incubation period of at least 21 days. These findings raise concern for a prolonged presymptomatic transmission phase, necessitating a longer quarantine duration in this population.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was discovered in Wuhan, China, and has since become a global pandemic through person-to-person spread. SARS-CoV-2 exhibits presymptomatic transmission during the incubation period, where an individual is contagious prior to symptom onset.¹ Defining the incubation period, therefore, has infection control and public health implications because a longer incubation necessitates a longer quarantine duration after an exposure.

Mean incubation periods range from 5.0 to 7.2 days, and a median incubation period of 5.1 days has been reported.^{2–6} In 2 studies, the 95th percentiles of the distribution were reported as 12.5 days and 13 days, and another 3 studies reported the 99th percentile as 11.9 days, 14 days, and 14.9 days, respectively.^{2–4,6,7} In the vast majority of cases, the incubation period is far less than 14 days, which has helped to inform the Centers for Disease Control and Prevention (CDC) recommendations for a 14-day quarantine period after a known coronavirus disease 2019 (COVID-19) exposure.⁸ However, these cases represent the general

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population and do not provide detailed information on subpopulations in whom the incubation period may differ. Herein, we present a case with objectively confirmed COVID-19 with a prolonged incubation period proven through viral culture.

Case presentation

A 71-year-old female on rituximab for granulomatosis with polyangiitis presented with shortness of breath and nonproductive cough. Six weeks prior to admission, several family members had been diagnosed with COVID-19 infection, prompting her to undergo testing despite being asymptomatic. Her nasopharyngeal (NP) swab polymerase chain reaction (PCR) test for SARS-CoV-2 was positive. She was self-isolating, and her only contact was a family member who had recovered from mild COVID-19 illness and had since been asymptomatic. Repeat NP PCR testing 13 days later was also positive. On day 21 after the first test, the patient developed progressive dyspnea on exertion, a minimally productive cough, significant fatigue, and nonbloody diarrhea.

She was admitted to hospital on day 36 after her first test. She was febrile to 38.8°C and her oxygen saturation was 93% on room air. She was placed on 2 L/minute of supplemental oxygen. Computed tomography (CT) of the chest demonstrated bilateral

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