# Low Infectivity among Asymptomatic Patients with a Positive SARS-CoV-2 Admission Test at a Tertiary Care Center, 2020–2022

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## Introduction

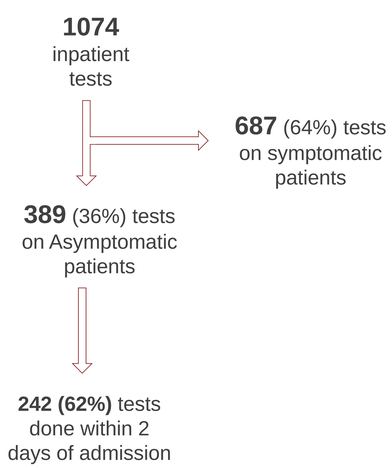
- Many hospitals have implemented admission SARS-CoV-2 testing to evaluate the need for transmission-based precautions.
- A positive test in an asymptomatic patient may represent:
  1) Active infection, signifying infectiousness.
  2) False positivity.
  3) Past infection with prolonged viral shedding, indicating non-infectiousness.
- We used a strand-specific SARS-CoV-2 real-time reverse polymerase chain reaction (rRT-PCR) to assess infectivity among asymptomatic patients with a positive SARS-CoV-2 PCR admission test.
- A positive minus strand PCR signified ongoing viral replication.

## Objectives

- Identify the need for admission testing for asymptomatic patients.
- Describe the characteristics of asymptomatic patients who had a positive SARS-CoV-2 PCR with negative minus strand within 2 days of admission.

## Methods

- We used a 2-step rRT-PCR specific to the minus strand of the SARS-CoV-2 envelope gene.
- We reviewed records of patients with a positive SARS-CoV-2 PCR who were also tested for the strand-specific SARS-CoV-2 PCR within two days of admission at Stanford Health Care during July 2020–April 2022.
- We restricted our analysis to each patient's first test. We calculated the percent of detectable minus strand-specific tests among asymptomatic patients over time and performed descriptive statistics for age, sex, immunocompromised state.




## Results

**Patient and test characteristics**

- A total of 848 admitted patients had strand-specific SARS-CoV-2 assays performed.
- Out of 532 patients with a strand-specific assay done within 2 days of admission, 242 (45%) were asymptomatic.
- Among asymptomatic patients, the mean age was 56 years (range: 19-99 years), 133 were male (55%), 51 had immunocompromising conditions (21%), and 30 were admitted for a surgical procedure (12%).
- Among the 50 tests sent on immunocompromising patients, immunosuppressive conditions were as follows:
  - Solid organ transplant: 12 tests (24%)
  - CAR-T, BMT or active chemotherapy: 15 tests (30%)
  - Biologic agents or steroids: 4 tests (8%)
  - HIV/AIDS, Primary immunodeficiency, & other immunocompromising conditions: 19 tests (38%)
- A total of 21 had detectable minus strand-specific assays (9%, range: 4–25% per quarter).

Figure 1. Demographic data and ICU admission

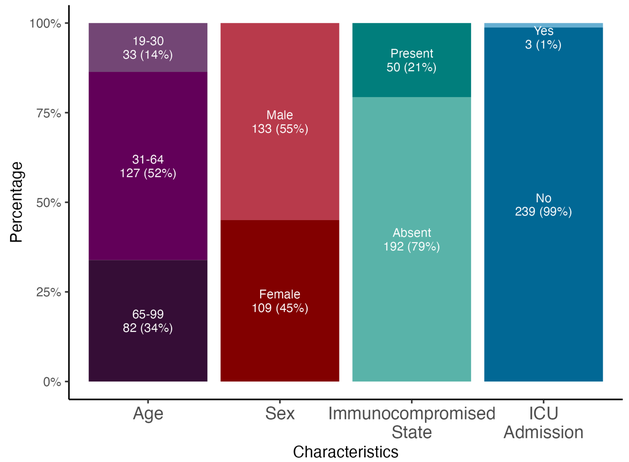
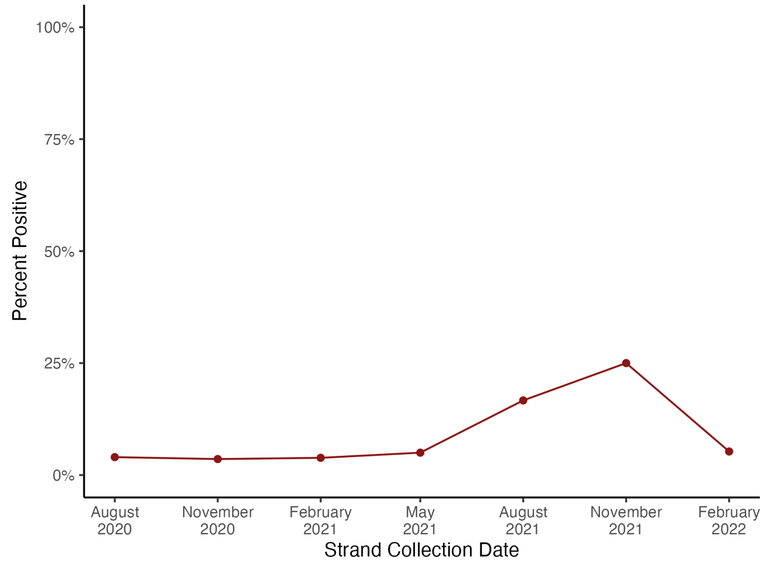



Table 1. Percent positivity of asymptomatic tests done within 2 days of admission per quarter

| Asymptomatic tests/quarter | Minus strand percent positivity |
|---|---|
| August 2020-October 2020 | 4% |
| November 2020-Januanry 2021 | 4% |
| February 2021-April 2021 | 4% |
| May 2021-July 2021 | 5% |
| August 2021-October 2021 | 17% |
| November 2021-January 2022 | 25% |
| February 2022- April 2022 | 5% |

Figure 2. Minus strand-specific SARS-CoV-2 assay percent positivity per quarter among asymptomatic patients tested within 2 days of admission. The peak positivity in November 2021–January 2022 quarter coincided with the omicron surge in our County




## Discussion

- **The majority of patients with positive SARS-CoV-2 PCRs on admission were found to be non-infectious based on strand-specific rRT-PCR testing.**
- **Only 4-25%** of asymptomatic inpatients had a detectable minus strand.
- Our findings agree with prior studies which have identified persistently positive SARS-CoV-2 PCRs without the presence of culturable live virus.
- Positive SARS-CoV-2 PCR in asymptomatic individuals often leads to delays in medical care, highlight the importance of confirming infectiousness.

## Conclusion(s)

- Most asymptomatic patients tested for SARS-CoV-2 on admission were not infectious.
- Hospitals using SARS-Co-V-2 PCR admission testing may need to reevaluate the continued use of this practice.

**References**

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