

The impact of COVID-19 testing on length of hospital stay and patient flow in hospitals

Titilope Olanipekun 

Department of Internal Medicine, Covenant Health System, Knoxville, Tennessee, USA

ABSTRACT

The CDC regularly updates guidance on COVID-19 testing for inpatients and hospital discharges to nursing homes and long-term care facilities. However, most long-term care facilities require a negative COVID-19 test result before accepting patients discharged from the hospital which directly contravenes the CDC guidelines. Due to delays in COVID-19 testing and obtaining test results, patients end up staying additional 2–3 days in the hospital before they can be discharged to nursing care facilities. Furthermore, hospitals have reported facing resistance from health insurance plans to paying for patients' additional days in the hospital while awaiting COVID-19 test results. Hospitals across the country continue to experience an increase in hospitalizations for COVID-19 infection. Complying with the CDC guidance on testing and disposition of patients may prevent delays in transferring patients to long-term lower acuity level nursing facilities, reduce the length of hospital stay, improve patient flow and ultimately free up hospital beds for incoming COVID-19 patients.

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1. Background

As I walked into the hospital's daily multi-disciplinary admissions and discharges conference meeting, I had a smile of contentment on my face because 50% of my patient census was ready for discharge from the hospital. I could not wait to receive the coveted trophy for the highest number of hospital discharges in a day from the hospital case management team. However, little did I know that I was in for a rude shock. 'We are sorry, six out of your nine patients are scheduled to be discharged to either a nursing home or skilled nursing facility and a negative corona virus disease (COVID-19) test result is required before they can be accepted to the facilities'. I looked at the case managers in disbelief of what I had just heard even as I replied, 'they are asymptomatic, have a low risk of COVID-19 infection and moreover, that is against the USA Centers for Disease Control and Prevention (CDC) guidelines on SARS-CoV-2 infection testing and control'. As I would learn during the meeting, most, if not all the long-term nursing facilities in the county required a negative COVID-19 test result before hospitalized patients are accepted into their facilities. Unfortunately, this was a time when there was a significant shortage of available tests and patients had to wait for about 5–7 days to get their COVID-19 test results [1].

The situation was not peculiar to my hospital and the county. I discussed with my colleagues in other states and realized they were also facing similar

challenges. A report published by the office of the inspector general also confirmed that hospitalized patients regardless of COVID-19 symptoms were required to be cleared of COVID-19 with a negative test result before admission or readmission to nursing care facilities due to concerns for asymptomatic transmission [2]. Though this was during the early stages of the pandemic, the situation remains the same five months later.

2. Impact on Length of Hospital Stay (LOS) and patient flow

Length of hospital stay (LOS) is a very important indicator of health services and resource utilization that is used to evaluate the efficiency of hospital administration and patient quality of care [3,4]. Decreased LOS has been associated with reduced risks of nosocomial infections, positive treatment outcomes, and lower mortality rates. Additionally, shorter hospital stays reduce the cost-burden of healthcare [4]. Due to delays in COVID-19 testing and obtaining test results, patients end up staying additional 2–3 days in the hospital before they can be discharged to nursing care facilities [2]. This puts the patients at significant health risks and leads to frustration among their family members. Furthermore, hospitals have reported facing resistance from health insurance plans to paying for

patients' additional days in the hospital while awaiting COVID-19 test results [2].

Patient flow is the movement of patients through a health-care facility from the point of admission to the point of discharge while maintaining the quality of care and ensuring patient satisfaction [5]. An efficient patient flow system contributes to improved patient outcomes and promotes value-based care. Though most hospitals continue to experience a low volume of patients due to the COVID-19 pandemic [6], the hold up in discharging patients to nursing care facilities due to the testing requirements tends to disrupt the patient flow process leading to more patients boarding in the emergency room (ER) longer than recommended by the Joint Commission putting significant strain on health-care staff and adversely impacting the quality of care delivery [7].

3. CDC guidance on COVID-19 infection control and hospital discharge

The CDC recently updated its guidance on Transmission-Based Precautions and disposition of patients with COVID-19 in health-care settings and encourages State and Local health departments to adapt these guidelines in their response to the pandemic [8].

- (1) A patient hospitalized for non-COVID-related illnesses and who is not known to have SARS-CoV-2 infection can be transferred to a nursing home or long-term care facility without testing for COVID-19. If there are concerns that a patient could have been exposed and might subsequently develop SARS-CoV-2 infection while in the long-term care, the patient should be placed on Transmission-Based Precautions in a separate observation area or in a single-person room in the nursing home for 14 days after admission to the facility.
- (2) Patients with suspected or confirmed SARS-CoV-2 infection who have not met criteria for discontinuing empiric Transmission-Based Precautions but otherwise clinically ready for discharge can be transferred to a long-term care facility with the ability to adhere to CDC infection prevention and control recommendations for the care of residents with SARS-CoV-2 infection including placement in a unit or area of the facility designated to care for residents with SARS-CoV-2 infection and provision of recommended personal protective equipment to health-care personnel.

4. Criteria for discontinuing transmission-based precautions

- (1) Negative results from at least one respiratory specimen tested using an FDA-authorized

molecular viral assay to detect SARS-CoV-2 RNA.

- (2) If there is a high level of clinical suspicion for SARS-CoV-2 infection after a negative test result, Transmission-Based Precautions should be maintained and a second test for SARS-CoV-2 RNA performed. Two separate negative results should suffice to discontinue Transmission-Based Precautions.
- (3) If a patient suspected of having SARS-CoV-2 infection is never tested, the decision to discontinue Transmission-Based Precautions can be made using the *symptom-based strategy*.

5. Symptom-based strategy for discontinuing transmission-based precautions

- (1) For patients with mild to moderate illness who are not severely immunocompromised, Transmission-Based Precautions can be discontinued if at least 10 days have elapsed since symptoms (e.g., cough, shortness of breath) first appeared and at least 24 hours have elapsed since last fever without the use of fever-reducing medications and symptoms (e.g., cough, shortness of breath) have improved.
- (2) For patients with severe to critical illness or who are severely immunocompromised [1], Transmission-Based Precautions can be discontinued if at least 10 days and up to 20 days have passed since symptoms (e.g., cough, shortness of breath) first appeared and at least 24 hours have passed since last fever without the use of fever-reducing medications and symptoms (e.g., cough, shortness of breath) have improved.

If patients with suspected or confirmed SARS-CoV-2 infection have met the criteria for discontinuing Transmission-Based Precautions, they can be transferred to long-term nursing facilities and do not require additional restrictions.

6. The role of state and local health agencies

Despite the CDC guidance on hospital discharges, different State health agencies appear to have varying recommendations which sometimes directly contravene the federal guidelines. For instance, the Florida State Agency for Health Care Administration signed an emergency rule in May which required all hospitalized patients with COVID-19 to have two consecutive negative tests 24 hours apart prior to discharge to nursing homes and long-term care facilities [9]. Understandably, long-term nursing facilities have the most vulnerable population to COVID-19 fatality and should be protected. However, given the limited

testing resources in the country currently, it is important for all State and Local health agencies to align their recommendations with the CDC guidelines on infection control and hospital discharges to avoid delays in discharges and inability of hospitals to hospitalize new patients needing inpatient care.

7. Increasing the supply of rapid tests

Testing for COVID-19 is pivotal to the pandemic response and must be adequate with a short turnaround time to improve the efficiency of patient flow and increase the prompt discharge of patients to nursing care facilities. In the early stages of the pandemic, the average turnaround time for a molecular diagnostic test for COVID-19 was 5–7 days due to high demand and a limited number of tests and testing laboratories [1]. Currently, there are available rapid antigen tests for COVID-19 that have turnaround times as quick as 15 minutes [8]. Though the CDC does not recommend using antigen tests to make decisions about discontinuing isolation due to a sensitivity of about 85% compared to molecular RT-PCR (gold standard) [10], rapid antigen tests can be reasonably used to screen patients hospitalized for non-COVID-related illnesses, patients not known to have SARS-CoV-2 infection, and those with very low suspicion of infection, to facilitate their transfer to nursing and long-term care facilities. Unfortunately, these tests are supplied to hospitals in limited quantities. In my hospital with a 220-bed capacity and over 180 daily hospital patient encounters (both emergency room and inpatient hospitalization), we have access to only about 35 rapid test kits per week. Increasing the supply of rapid antigen tests to hospitals may facilitate quicker disposition of patients, improve patient flow and reduce patients' length of emergency room and inpatient stay.

8. The role of hospitals and hospitalists

Hospitalists and inpatient case managers should work on identifying patients that may likely require discharge to long-term facilities early in the hospital course. In my hospital, we designed a tailored algorithm based on the admission diagnosis, residence prior to hospitalization and co-morbidities to determine the likelihood that a patient will require discharge to a long-term nursing facility. These patients are tested early for COVID-19 to avoid hiccups in the discharge process due to delays in test results and reporting.

9. Conclusion

Hospitals across the country continue to experience increase in hospitalizations for COVID-19 infection. Complying with the CDC guidance on testing and

disposition of patients may prevent delays in transferring patients to long-term lower acuity level nursing facilities, reduce length of hospital stay, improve patient flow and ultimately free up hospital beds for incoming COVID-19 patients.

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ORCID

Titilope Olanipekun  <http://orcid.org/0000-0002-8472-6970>

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