

An Approach to Outpatient Screening, Treatment, and Community Health Outreach during the Coronavirus Epidemic in New York City

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Abstract

The emergence of the Severe Acute Respiratory Coronavirus 2 (SARS-CoV-2) pneumonia, also referred to as COVID-19 in New York City in March 2020, has put an overwhelming strain on the healthcare system in the city. Many local hospitals have reported a surge of cases, with most cases presenting with severe respiratory complications. We aim to present a comprehensive surge filter protocol for outpatient programs to mitigate the surge of cases admitted in the emergency rooms and intensive care units (ICUs) of local hospitals in our community. Our surge filter protocol was developed based on a detailed review of how South Korea and Spain mounted their outpatient surge responses. Our preliminary findings revealed that our Four-Ts approach (*i.e.*, Test, Treat, Track, and Teach) has resulted in none of our patients reaching a clinical requirement for inpatient care.

Keywords

Coronavirus, Epidemic, Filter, Protocol, Surge, Quarantine

1. Introduction

The Severe Acute Respiratory Coronavirus 2 (SARS-CoV-2) pneumonia was first reported in Wuhan, China in December 2019 [1]. On January 19, 2020, the first case of the disease was reported in the United States in Washington state [2], and in March 2020, the infection emerged in New York City with an estimated 122,031 confirmed cases and 4159 deaths as of April 5, 2020 [3]. Recent

studies on the SARS-CoV-2 infection revealed that the symptoms of the disease range from mild to moderate flu-like symptoms to severe hypoxemic respiratory failure [1] [2]. Most patients with acute respiratory complications from SARS-CoV-2 infection have been reported to require ICU care and mechanical ventilation [4]. Studies conducted in China, Singapore, and Italy demonstrated that the most alarming consequence of the COVID 19 infection on the healthcare system is the overwhelming demand for ICU care for critically ill cases [4] [5] [6].

With the evolving outbreak of COVID-19 in New York City, hospitals were put to the test and stretched in their resources. Though the role of acute care in the hospitals is vital for the treatment of severely-ill patients due to the virus, there has been little discussion on the role that outpatient community healthcare entities can play to address the epidemic as surge filters to help intercept patients in earlier stages of the disease. This has led to local hospitals being overwhelmed by large numbers of previously unscreened patients, presenting to the hospitals in advanced stages of the disease. Once hospitalized, the increases in morbidity and mortality, particularly in the ICU, are already well known [4] [5].

The goal, therefore, of any outpatient program should be to coordinate their efforts with the local health system to reduce the number of severely ill people presenting at the hospitals, by effectively testing, treating, tracking, and teaching people, their families, and their communities, at the earlier stages of the disease process. We present a comprehensive surge filter protocol, based on the available empirical research to date, with a focus on early testing, treatment, and tracking, while teaching patients the importance of self-isolation, using community health education (CHE) principles, in an effort to help limit the community spread of the virus. In addition to the daily monitoring of patient symptoms from the comfort of their own homes, our goal is to be the surge filter for the local hospitals in our community, in an attempt to significantly reduce the number of people entering their emergency rooms and ICUs. We present our findings to date below.

2. Methods

We also found Spain's primary care response to COVID-19 to be useful.

We developed our protocol based on a review of how South Korea and Spain have tried to address an outpatient surge response.

South Korea's success in containing the epidemic of COVID-19 and mitigating its atrocious demand on the country's healthcare system is attributable to a high level of preparedness and improved hospital infection prevention and control practice that emerged following the country's experience with the Middle Eastern Respiratory Syndrome (MERS) in 2015 [7]. As was the case with MERS, South Korea's response to containing the spread of COVID-19 was early aggressive testing, tracing, and quarantining of cases and their contacts [7]. Also, cases with moderate symptoms received basic medical care with observation, and high-risk patients with underlying health conditions were prioritized for hospi-

talization [7] [8]. Spain recorded more cases and a much higher death rate than South Korea; however, primary care providers in Spain commenced the use of antibiotic therapy for cases with moderate symptoms, which led to some appreciable level of decline in the number of their patients who ended up needing ICU care.

Our approach centered around the 4 T's: Test, Treat, Track and Teach.

2.1. Test

Patients with active symptoms were screened and offered a test for COVID19. Patients were of adult age, and symptoms included documented fever with or without lower respiratory symptoms. Testing was done to date using nasopharyngeal/oral test kits from Labcorp (the only ones available). Staff conducting testing were required to wear full PPE. Due to the limited availability of test kits and PPE, not all patients with COVID-like symptoms were tested. Some patients who were not tested were then evaluated via a telemedicine platform where the provider could visualize the patient and discuss his/her symptoms.

2.2. Treat

For any patient who demonstrated mild/moderate respiratory symptoms, the patient was offered antibiotic therapy, consisting of amoxicillin 1000 mg BID for 7 days, and azithromycin 500 mg QD for 3 days (per Spanish protocol). Criteria to start treatment included the new onset of cough that clinically affected the lower respiratory airway. Antibiotic therapy was offered at any time from the time of testing and throughout the subsequent days.

2.3. Track

Starting from the date the test was performed and/or the telemedicine evaluation date, each patient was contacted once during at least five consecutive days by a member of the clinical staff. For each day, the patient was asked questions about symptoms (e.g. did symptoms worsen or improve), whether the patient was on antibiotic therapy or needed to start antibiotic therapy due to new symptoms, and whether they were self-isolating and taking measures to protect against household spread. Additional questions asked included evaluating whether the patient had access to food and medications from the pharmacy. Patients were offered mental health and spiritual care services to address their needs for counseling support during this stressful time. These daily check-ins allowed for the clinical staff to assess the patient's symptoms and to provide opportunities for intervention to avoid possible emergency room utilization.

2.4. Teach

Starting from the first visit regarding COVID19-like symptoms, we employed the CHE-based approach in educating patients on how to live as possibly being, or actually being infected with COVID19. Isolation protocols were reviewed to

ensure that the patient understood the importance of avoidance of large crowds and self-isolation/self-quarantine. With each subsequent day, the patient spoke with a member of the clinical staff. These interactions allowed for the patient to ask questions about his/her condition and what else could be done during the time of illness and recovery.

3. Results

We are in the early stages of data collection. As of preparing this manuscript, we have evaluated, tested, treated, and tracked forty-seven (47) patients. We have done daily follow-ups with them and their families, reinforcing compliance using community health education (CHE) principles. Thus far, none of our patients have reached a clinical requirement for inpatient care. As the epidemic is ongoing, we will continue to monitor both current and future patients and update our findings as needed.

4. Discussion

The early results of our filter protocol demonstrate the possibility of taking the best from South Korea's testing and tracking approach and combining with a treatment approach from Spain, which has shown a slight decrease in hospitalizations by the centers in Spain practicing this treatment. We are assuming that early antibiotic therapy would intercept the disease process if bacterial overgrowth were involved in the progression of respiratory disease, as has been theorized in some quarters. We believe that since there is still no sure way to predict the disease progression in any specific individual once the cough has commenced, it would be better to overtreat and prevent the potential for further worsening of the respiratory disease.

An additional benefit demonstrated from the early results was observed with the usage of CHE to help further educate patients and their families in the area of self-isolation. Anecdotally, we found that many patients did not take the threat of spread to unaffected members in the same household very seriously. This is a crucial area of compliance that is necessary to help limit spread in a community. This was particularly important for people who did not have English as their primary language.

An unanticipated outcome we observed when completing the daily contacts was how the clinical staff provided a form of socialization for patients. With our community under a lockdown, patients were unable to leave their homes, especially those needing self-quarantine. Our daily contact with the patients provided patients with an opportunity to share how they were coping during this stressful time of their lives. In some situations, the clinical staff identified where there were significant barriers to accessing medications or food because of the patients' inability to leave their homes. And through these daily communications between our staff and patients, we found that these social interactions could be a possible positive contributing factor resulting in a favorable outcome for our pa-

tients and our community.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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