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Integrating Telemedicine Triage and Drive-Through Testing for COVID-19 Rapid Response (Stanford, 3/18)

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What is the message? In two weeks, Stanford Express Care was able to scale up telemedicine triage for COVID-19 screening and combine the online services with drive-through testing.

What is the evidence? On-the-ground experience with rapid innovation.

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The Value of Telemedicine in a Pandemic

The 2019 novel coronavirus pandemic puts healthcare providers in the challenging position of providing high quality care to potentially contagious patients while striving to prevent further exposure to other patients, clinical staff, and the community. Telemedicine, including telephone and video visits, presents a compelling option for reducing the risk of viral exposure during an outbreak while simultaneously addressing the need to increase access for patients without compromising quality of care.

Telemedicine allows health systems to effectively scale the capacity of their providers and provide “forward triage” – the sorting of patients before they arrive at the Emergency Department [1, 2, 3]. One of the major logistical challenges that health systems face in response to the current pandemic is the integration of telemedicine triage with efficient and safe COVID-19 testing and treatment practices [1]. We are using telemedicine tools to address that issue at Stanford Express Care.

Stanford Express Care is positioned within the larger academic health system, Stanford Health Care, in California to offer same day appointments for patients with urgent medical problems that cannot be seen by their primary care providers. Amidst the growing number of COVID-19 positive cases within the local community, the clinic has become the main access point within the Stanford health system for patients with suspected COVID-19 infections that do not require Emergency Department services. The clinic dramatically shifted its operations, moving from predominantly traditional in-person visits to predominantly telemedicine visits, increasing absolute access through increased virtual shifts, and integrating drive-through SARS-CoV-2 PCR testing – and accomplished these changes in under two weeks.

Prior to March 2020, the clinic offered an average of eight video visits a day, which patients scheduled by phone or through an automatic portal. The remaining 120 appointment slots were traditional in-person appointments. The on-line and on-site staffing included one provider performing video visits for a four-hour shift and six providers seeing patients in clinic for a full day. As the number of COVID-19 cases diagnosed outside China grew, clinic staff and providers increasingly recognized the risk that in-person visits for patients with symptoms consistent with COVID-19 posed to their colleagues and patients.

Therefore, in early March, anticipating both increased patient demand and the need to reduce

potential SARS-CoV-2 exposure, the clinic increased the number of video visit appointments to more than 150 appointments per day, a 20-fold increase in virtual contacts. This involved increasing the number of providers performing telemedicine from one to six providers and increased hours from 4-hour to 12-hour shifts.

Patients requesting an appointment with symptoms consistent with COVID-19, including fever, cough, shortness of breath, or sore throat, were triaged into a video slot unless there was a concurrent health concern requiring in-person evaluation, such as chest pain. Given that approximately 50% of all Express Care clinic visits in the winter season were for upper respiratory symptoms or fever, shifting these appointments to a virtual platform represented a significant diversion from typical clinic operations.

At the time of this transformation of clinical services, the U.S. Food and Drug Administration gave permission for non-governmental laboratories to test for COVID-19 [4]. Within two days of the FDA announcement, Stanford Health Care testing for SARS-CoV-2 RT PCR went live [5]. By the following week, the clinic had integrated COVID-19 drive-through testing.

This article highlights how integrated telemedicine triage and COVID-19 testing in under two weeks for Stanford Express Care. Three key activities included: (1) prioritizing video visits as first mode of contact; (2) empowering the provider workforce in clinic and at home; (3) coordinating drive-through testing.

Three Steps to Telemedicine Triage and Drive-Through Testing

Prioritizing Telemedicine Visits

Due to the contagious nature of SARS-CoV-2, Stanford Express Care quickly recognized the need to prioritize telemedicine encounters in order to minimize exposure. The initial efforts focused on screening the schedule for any in-patient visits with upper respiratory symptoms or fever and converting these visits to telemedicine encounters. Next, we initiated new scheduling procedures for any patient meeting criteria across all of Stanford ambulatory care to be redirected to Express Care telemedicine encounter.

A key facilitator specific to Stanford Express Care’s implementation of this program was the

existing provider familiarity with the telemedicine encounter. Training had taken place at multiple provider meetings within the prior year, and nearly all providers had completed at least one video visit shift.

We did need to overcome some reluctance. During implementation there were concerns raised by providers regarding patient acceptance of virtual encounters and if these visits would be refused. However, demand for the service quickly outpaced available capacity, and our observations have been that the majority of patients approved of the video visits with many expressing gratitude for the proactive measures to ensure their safety.

Another concern was our patients' capacity to utilize telemedicine. We found that most patients were not familiar with the logistics of telemedicine scheduling or encounters. However, our medical assistants were able to sufficiently familiarize most patients with the technology during the initial phone call for scheduling of the telemedicine visit.

At the same time, the transition to video had an unforeseen benefit. The request for video visits in order to see a medical provider during the COVID-19 outbreak increased patient awareness of disease containment and exposure prevention.

Nonetheless, we still face challenges. For instance, some patients who screened positive for COVID-19 symptoms where inappropriately scheduled to an in-person visit by the call center. This points out the need for additional feedback and training with the new workflow.

Empowering the Provider Workforce

Partnerships with providers in our network were critically important to implement telemedicine triage. Demand for video visits quickly surpassed the resources the clinic could offer. Therefore, additional primary care providers within the health system were recruited. Despite busy schedules, several providers volunteered for additional shifts. Providers were able to complete video visits in multiple settings: within the clinic, from their own office, or from home with HIPAA-compliant health system laptops. If a provider felt that the patient who was seen on a video visit needed to come to Express Care for a physical exam or additional studies, that provider was responsible for arranging same day follow up.

To maintain provider engagement, we found it necessary to provide close technical support. Critically, the health system's information technology offices configured several laptops to allow video visits from remote locations such as the provider's home. Importantly, this expanded capacity for providers to work from remote locations addressed a supply demand mismatch in the clinical capacity of the hospital system by allowing providers that were otherwise unable to continue clinical care, due to self-quarantine and other social distancing initiatives, to continue productive clinical care while working from home. These providers followed strict guidance regarding HIPAA compliance.

We also needed staffing innovations to support the providers. Expanded medical assistant roles played a crucial part in being able to significantly increase the number of video visits, as they handled testing scheduling for both the clinic and from elsewhere within the health system through triage nurses.

Coordination of Drive-Through Testing

Drive-through testing was a key leverage point that took substantial effort and coordination to integrate into the clinic workflow. When the SARS-CoV-2 RT PCR became available through the system's laboratory, Express Care was the first clinic to offer the test. Since this test was the first in the region, providers were concerned that hundreds of patients would line up in their cars to get tested, causing increased risk of exposure and additional hardship on ill-feeling patients. To prevent this, the clinic created the aforementioned workflow where patients first required a video visit with an Express Care provider who decided if the patient qualified for testing.

The clinic's drive-through testing site helped liberate resources and staff, while also necessitating changes in the routine staff responsibilities [6, 7]. If a patient met criteria to be tested for COVID-19 at completion of the virtual visit a medical assistant scheduled testing at the drive-through facility. The lead medical assistant coordinated with the patient to schedule the drive-through testing, answered any questions, and labeled the vials for the specimen collection with the patients' information. Several rapid cycle improvement processes refined our process and reduced drive-through testing times from an initial 15 minutes to 4 minutes in just two days.

The drive-through testing site was staffed with two providers, or one provider and a medical

assistant, wearing protective personal equipment (PPE) consisting of a gown, gloves, N95 mask, and face shield. When the patient drove up in their car, they were asked to show a government photo identification. The name on the vial was verified with the name on the identification. One provider performed the nasopharyngeal swab while the second provider, or medical assistant, was responsible for preparation of testing equipment. Importantly, working in teams of two increased efficiency and adherence to PPE protocol while minimizing possible contamination of surfaces.

Beyond Stanford Express Care

While many of the ideas for our model came from our own experience, we also reached out beyond the Stanford health system. Learning from the experience of other health systems has been crucial for quickly adapting to the daily updates and changes. A key source of information has been the guidance documents and protocols provided to the public by University of Washington Medicine [7].

In turn, our drive-through model is spreading beyond Stanford Express Care. To increase the capacity for patients to be able to get tested for COVID-19, the clinic has shared its telemedicine integration of drive-through testing with other clinics within the Stanford health system. Key to the success of this integration across the system was the support of division, department, and health system leadership, as well as the clear communication of goals and protocols across the healthcare system.

Looking Forward

Given the high volume of patient demand and pressing need to identify COVID-19 positive patients while maintaining safety for staff and community, we adopted the triage methods described in this report. This method will need to be continuously adapted based on the changing local prevalence of disease, testing availability, and clinical personnel resources. We will continue rapid cycle improvements based on the evolving local factors. Others looking to adopt many of these techniques will need to adapt their approach for their local circumstances as well.

While great strides have been made in shifting in-person visits to video-visits for patients with COVID-19 symptoms, other adjustments may be needed. If testing capabilities become more

ubiquitous, it may be prudent to reconsider the video visit-first approach and consider a protocol similar to South Korea where drive-through testing occurs in combination with screening by a provider [8]. Screening visits may also be supplanted by an automated symptom checker with providers following up only in severe cases or following a positive test.

Historically, consistent reimbursement for telemedicine has been a challenge, but in light of the declaration of the national emergency, reimbursement of additional funds and resources from the Centers for Medicare and Medicaid Services and some commercial payers will support such endeavors [1, 2].

We believe that our experience offers lessons for other health care providers. Prioritizing telemedicine visits, empowering the provider workforce, along with a willingness to borrow others' excellent ideas such as drive-through testing may help mitigate the damage from the current pandemic.

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References:

[1] Hollander JE, Carr BG. Virtually Perfect? Telemedicine for Covid-19. *NEJM.* March 11, 2020; DIO: 10.1056

[2] Lurie N, Carr BG. The role of Telehealth in the medical response to disaster. *JAMA Intern Med.* 2018;178:745-6

[3] Eric Neil. UW Medicine CIO's advice: Prepping IT systems for COVID-19. March 2020. https://www.healthcareitnews.com/blog/uw-medicine-cios-advice-prepping-it-systems-covid-19. Accessed March 15, 2020.

[4] US Food & Drug Administration. FAQs on Diagnostic Testing for SARS-CoV-2. March 2020. https://www.fda.gov/medical-devices/emergency-situations-medical-devices/faqs-diagnostic-testing-sars-cov-2. Accessed March 16, 2020.

[5] Deresinki S, Shin D, Pinsky B. COVID-19. Presented at the Stanford Medicine Grand Rounds: March 11, 2020; Stanford, California

[6] Maxwell DN, Perl TM, Cutrell JB. “The Art of War” in an Era of Coronavirus Disease 2019 (COVID-19). *Clinical Infectious Disease.* March 2020, ciaa229, https://doi.org/10.1093/cid/ciaa229

[7] University of Washington. UW Medicine COVID-19 Resource Site. March 2020. https://covid-19.uwmedicine.org/Pages/default.aspx. Accessed March 14, 2020

[8] Khun A. South Korea’s Drive-Through Testing for Coronavirus is Fast – and Free. March 2020. https://www.npr.org/sections/goatsandsoda/2020/03/13/815441078/south-koreas-drive-through-testing-for-coronavirus-is-fast-and-free. Accessed March 17, 2020