


The COVID-19 Pandemic as an Opportunity for Operational Innovation at 2 Student-Run Free Clinics

Journal of Primary Care & Community Health
Volume 12: 1–5
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/2150132721993631
journals.sagepub.com/home/jpc


Gabriela D.M. Ruiz Colón^{1,2} , Bianca Mulaney^{1,2} , Ruby E. Reed^{1,2},
Sierra K. Ha^{2,3} , Victoria Yuan², Xichong Liu^{1,2}, Siqi Cao^{1,2},
Vardhaan S. Ambati^{2,3}, Belinda Hernandez², Wendy Cáceres^{1,2},
Mina Charon^{2,4}, and Baldeep Singh^{1,2}

Abstract

The onset of the COVID-19 pandemic and subsequent county shelter-in-place order forced the Cardinal Free Clinics (CFCs), Stanford University's 2 student-run free clinics, to close in March 2020. As student-run free clinics adhering to university-guided COVID policies, we have not been able to see patients in person since March of 2020. However, the closure of our in-person operations provided our student management team with an opportunity to innovate. In consultation with Stanford's Telehealth team and educators, we rapidly developed a telehealth clinic model for our patients. We adapted available telehealth guidelines to meet our patient care needs and educational objectives, which manifested in 3 key innovations: reconfigured clinic operations, an evidence-based social needs screen to more effectively assess and address social needs alongside medical needs, and a new telehealth training module for student volunteers. After 6 months of piloting our telehealth services, we believe that these changes have made our services and operations more robust and provided benefit to both our patients and volunteers. Despite an uncertain and evolving public health landscape, we are confident that these developments will strengthen the future operations of the CFCs.

Keywords

underserved communities, quality improvement, program evaluation, community health, efficiency, health outcomes, impact evaluation

Dates received 7 December 2020; revised 17 January 2021; accepted 20 January 2021.

Introduction

Amidst the COVID-19 pandemic, many hospitals and clinics lacked the resources and protocols to keep patients and personnel safe and stopped in-person services. This led to a global crisis of healthcare inaccessibility.¹ Patients felt and continue to feel unsafe seeking in-person care, leading healthcare organizations with the financial and technological means to rapidly develop and deploy telemedicine services. This forced expansion of telehealth will, undoubtedly, benefit patient access and care in the long-term. However, as with most healthcare sector innovations, the most vulnerable and underserved populations are least likely to see benefits in a timely or equitable manner.

Due to safety and health concerns for patients, volunteers, and physicians, Stanford University's Cardinal Free Clinics (CFCs) closed in-person operations in March 2020. Clinic

managers were aware that without access to free clinic services, many patients would go without necessary healthcare. With no existing telehealth infrastructure and with strict university guidelines preventing in-person care, we were tasked with building our virtual operations from the ground up.

¹Stanford University School of Medicine, Stanford, CA, USA

²Stanford University, Cardinal Free Clinics, Stanford, CA, USA

³Stanford University, Stanford, CA, USA

⁴VA Palo Alto Division, Palo Alto, CA, USA

Corresponding Authors:

Gabriela D.M. Ruiz Colón, Stanford University School of Medicine, 291 Campus Drive #5151, Stanford, CA 94305, USA.

Email: grc@stanford.edu

Baldeep Singh, Stanford University School of Medicine, 211 Quarry Road, Suite 301, Palo Alto, CA 94304, USA.

Email: bd Singh@stanford.edu



Despite the challenges that initiating a telehealth model posed, it granted us an opportunity to rethink our current processes and innovate to provide improved patient care.

About the Cardinal Free Clinics

Since 1990, the CFCs have sought to provide culturally appropriate, high quality transitional medical care for underserved Bay Area residents, while educating and empowering a new generation of healthcare leaders. The CFCs are organized and staffed by undergraduates, medical, and physician assistant (PA) students who perform histories and physical exams, social needs screenings, health education, language interpretation, phlebotomy services, vaccinations, and referrals to community partners. Students are supervised by a team of residents and attending physicians. In 2019, the CFCs served 1068 patients through our weekend-only walk-in clinics. Of these patient visits, 60% were conducted in a language other than English, and nearly 65% of patients served reported an annual income under \$25 000.

Opportunities in the Transition to Telehealth

Prior to the COVID-19 pandemic, our patient care visits were exclusively performed in person. The transition to a telehealth model required the development of a new workflow, determination of service offerings, staff training sessions, and operationalization of tools for a remote clinic environment, while ensuring the new model would be compliant with all privacy and legal requirements. Despite these challenges, this effort proved to be an opportunity to evaluate how we could improve our existing clinic operations given our 2-pronged mission of providing quality care to underserved patients and educating future healthcare leaders. In particular, 3 aspects of our clinic day were redesigned for telehealth—clinic day tools and resources, social needs screening, and telehealth education. These redesigns have yielded preliminary evidence demonstrating benefits to both patient care and volunteer education, and we plan to integrate these changes into our in-person operations once resumed.

Clinic Day Tools and Resources

The shift to telehealth necessitated a fundamental change in our infrastructure and operations. Our telehealth clinic operates on Saturdays and Sundays and is hosted on a commercial video platform. Every clinic day is coordinated by a student manager who sets up the clinical environment using the platform's breakout rooms. These breakout rooms are analogous to traditional exam rooms in which every patient is assigned to their own room ("roomed") to protect patient confidentiality. While prior to the telehealth transition our

clinic would see patients on a walk-in, first-come, first-served basis, we are now doing appointment-based scheduling only. Under our current model, to request an appointment, patients call or email our clinic, and the scheduling department calls them to register them in our electronic medical record (EMR), schedule their appointment, and walk them through how to use our platform. If the patient does not have access to video, the visit can be conducted via phone. When a patient joins the platform for their appointment, they are "roomed," and volunteers enter to deliver their services, including providing referrals to laboratory and imaging studies. While the services patients receive largely mirror those from in-person clinic, 2 key changes have allowed for improved operational efficiencies: the development of a clinic flow tracking tool and introduction of after visit summaries (AVS).

Clinic Flow Tracking Tool

Pre-COVID, our clinic struggled to consistently measure and monitor clinic flow in real-time. Previously, our in-person clinics attempted various methods to track patient wait times on spreadsheets and in the EMR. However, the times were recorded retroactively and inconsistently, precluding the opportunity to proactively address wait times. Furthermore, trackers were often not completed if the clinic day was exceptionally busy. The transition to telehealth required us to address the lack of clinic flow tracking tools, given that video conferencing does not allow for the same visual cues of patients and providers moving in and out of rooms. Thus, we developed and implemented a centralized tracker hosted on a secure cloud platform. This tracker is updated by patient health navigators (PHNs)—undergraduate volunteers who remain with the patient at all times to guide them through their appointment. PHNs mark which services the patient has received and those that are outstanding, allowing the manager to track elapsed time and place volunteers in and out of virtual patient rooms with little delay.

After Visit Summaries (AVS)

Beyond the changes to in-clinic operations, we instituted AVSs, which represent a robust mechanism to provide patients with all follow-up resources, including plan, prescriptions, and referrals. Prior to the telehealth transition, all of the aforementioned information was provided at different points throughout the visit by volunteers who printed hardcopies. The AVSs allow patients to receive the information they need in a consolidated manner. Furthermore, pre-clinical medical students benefit from an additional opportunity to learn from and appreciate the diverse expertise of each member of the healthcare team as they take primary responsibility of interfacing with the full team to compile the AVS.

Social Needs Screening and Referral Services

At the beginning of the pandemic, we understood that our patient population—a largely low-income, uninsured, and racially and ethnically diverse population—may be experiencing additional hardships beyond limited access to health-care, consistent with the evidence demonstrating that food insecurity, housing insecurity, and unemployment have increased during the COVID-19 pandemic.²⁻⁵ Thus, we expanded our services to more effectively assess and address social needs alongside medical needs by developing a new social needs screen (SNS) and referrals process based on patients' needs and evidence-based best practices.

Prior to clinic closure, our patients completed a written SNS checklist that was not evidence-based and lacked formal follow-up mechanisms for positive screens. However, these data provided a starting point for SNS development. We expanded upon our SNS protocol based on demographic and public health reports from local counties and insights from research, primary care best practices, and emergency departments on typical needs addressed in care. Our new SNS encompasses a wider diversity of needs than both our previous SNS and many existing SNSs used in pediatric, family medicine, and obstetrics departments.⁶ The SNS asks patients about domestic violence, food insecurity, health insurance, housing, need for prescription assistance, public benefits, substance use, utilities, and legal resources, among other needs.

During development of the SNS, we recognized the need to expand our social services search and referral capacity in order to address identified social needs. After careful review, we selected a publicly available web-based community referral platform and trained our volunteers on its use. We also customized this referral service, incorporating our previous referral processes into the new platform. After the visit, follow-up calls are conducted to confirm the patient has been able to access their referral services.

Telehealth Education

COVID-19 has disrupted the training pipeline for future healthcare workers, forcing the medical education community to adapt to these changes.⁷ By transitioning to a telehealth model, though, the CFCs innovated by providing all volunteers unique learning opportunities. The virtual visit model not only introduced medical and PA students to basic concepts for delivering high quality virtual care but also offered new learning opportunities to undergraduate volunteers in a time when many other clinical experiences were suspended.

All student volunteers participated in basic telehealth training prior to their first shift. The training material was adapted from the Stanford Family Medicine clerkship

curriculum and from publicly available medical education resources. The training consisted of a didactic component discussing the changes to care delivery inherent to the virtual setting—including etiquette, privacy concerns, and communication strategies—followed by guided small group practice. Following positive student feedback after initial training sessions, these sessions were incorporated into the core clinical skills curriculum for first year medical and PA students.

Our virtual model not only continued to welcome undergraduates, but also expanded undergraduate student responsibilities and created new opportunities for them to advocate for their patients. For example, undergraduates were critical in bridging the digital divide by working closely with patients the days before their appointment to identify and overcome technological barriers. During the patient visits, the same student also created continuity by remaining with patients as different members of the team entered and exited the patient room, continuing to advocate for their patients by providing feedback on virtual “bedside manner” and addressing patient concerns. These responsibilities also created shadowing opportunities for undergraduates to observe medical and PA students and attending physicians deliver medical care through telehealth.

Current literature seems to suggest that increased integration of telemedical services may be sustained past the pandemic, but work by Pourmand and colleagues shows that prior to COVID-19, the incorporation of telemedicine training in the medical school curriculum was insufficient.⁸⁻¹² Our model begins to address this critical gap and will help introduce volunteers to the skills necessary for delivering high-quality healthcare in a virtual setting.

Assessment of Operational Innovations to Date

To date, our new processes show preliminary promise for continued implementation post-COVID. From July–September 2020, 89% of patients seen had stable Internet access and were able to connect to our video platform, and we successfully adapted our video visits to phone-only appointments for the 11% without stable access. Moreover, 100% of patients seen were tracked on the centralized tracker with an average total visit duration of 114 min, which includes intake, student and physician interviews, and referrals. Prior to this transition, no formal system was used to consistently track in-person visit duration, though anecdotally, wait time and total visit duration often lasted more than 3 h. Given the documented negative association between longer wait times and suboptimal visit duration with patient satisfaction, confidence in the care provider, and perceived quality, we believe this change is paramount to the improvement of our services.^{13,14} Furthermore, the availability of rich time data will allow us to identify

opportunities for quality improvement to further optimize our patients' time.

Since the implementation of telehealth, 100% of patients have been screened for social needs. Our SNS has identified a higher level and broader set of needs amongst our patient population than our previous checklist screen. A majority of patients (75.9%) identified as having challenges accessing affordable healthcare, compared to 42% who screened positive through our previous screen. We have also found that referral services infrequently requested prior to SNS implementation are now popular. For example, 25.7% of screened patients requested legal services within our new SNS model, compared to 4% of patients prior to implementation. Implementation of an improved SNS was also particularly timely given the documented exacerbation of the COVID-19 pandemic on economic and health disparities which increased patients' needs beyond healthcare.^{4,5} We hope to continue improving our understanding of our patients' social needs. In order to ensure the SNS is meeting patient needs accurately and adequately, we are also piloting a study examining patient and community perspectives on the SNS. Results of this study will directly inform our SNS practices.

Finally, preliminary results from a patient satisfaction survey demonstrate that 92% of existing patients believe telemedicine services are equal or better than in-person offerings and 93% of patients agree or strongly agree that their telehealth visit met their care needs at the time (N=36, 38% response rate). Preliminary results from a volunteer experience survey demonstrate that 97% of volunteers valued the opportunity to learn how to conduct a telehealth visit (N=40). We will continue monitoring patient and volunteer satisfaction as we expand our services and refine our operations.

Looking Forward

The COVID-19 pandemic has presented the CFCs with significant challenges shared by primary care clinics across the country, hindering our ability to staff and operate our clinic and provide patient care. While the timeline for reopening the CFCs for in-person visits remains uncertain, we see a silver lining. The pandemic presented us with the opportunity to innovate as we transitioned to telehealth and identified the changing medical and social needs of the communities we serve. With no prior telehealth experience or infrastructure, we shifted our in-person operations entirely to a virtual platform, implementing mechanisms such as a digital tracker to streamline clinic flow and improve data collection, a new telehealth education module for volunteers that has been incorporated into the formal medical and PA student curriculum, and lastly, a new SNS to address the increased and varied social needs that our patients have faced during COVID-19.

While our new processes show preliminary promise for continued implementation post-COVID, looking forward, adaptation of our new processes post-COVID will depend on a thorough evaluation of these processes' ability to meet our goals of high-quality patient care, education, and operational efficiency. We plan to evaluate the effectiveness of our new programs through a combination of patient feedback, volunteer feedback, and comparison of corresponding pre-COVID and telehealth quality improvement metrics. For example, we aim to compare limited prior wait time data with our telehealth tracking data to identify whether our new workflow and tracking system has decreased patient wait time in between key steps of the visit and/or improved predictability of patient down time. In addition, we are in the process of interviewing patients and community organizations about their opinions of our SNS and whether it adequately and accurately captures their needs. With this feedback, we will continue to improve our understanding of our patients' social needs and our SNS practices. Additionally, we plan to analyze survey data from students and educators to better understand how telemedicine fits into our medical education objectives post-COVID. Lastly, we remain cognizant that virtual telehealth services can present barriers to accessibility to patients who may lack stable internet connectivity or ease with virtual platforms. We will continue to monitor our patient demographics to ensure we are continuing to meet our target population.

We remain optimistic that the operational changes implemented in response to the COVID-19 pandemic will improve future iterations of the CFCs. In addition to incorporating workflow tracking, consolidated AVSs, and SNSs in our future in-person clinics, our telehealth visits and volunteer telehealth education are likely to persist in some capacity. We encourage healthcare organizations facing similar challenges to look for opportunities for operational excellence in the midst of a tumultuous time for healthcare, and we hope that the broader healthcare industry will align its financial incentives with these innovations to ultimately strengthen patient care post-COVID.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Gabriela D.M. Ruiz Colón  <https://orcid.org/0000-0001-8380-4511>
Bianca Mulaney  <https://orcid.org/0000-0002-2210-2783>
Sierra K. Ha  <https://orcid.org/0000-0003-2389-5794>

References

1. Commonwealth Fund. The Impact of the COVID-19 pandemic on outpatient visits: a rebound emerges. Accessed November 11, 2020. <https://www.commonwealthfund.org/publications/2020/apr/impact-covid-19-outpatient-visits>
2. Mar 04 OPP, 2020. Disparities in health and health care: five key questions and answers. *KFF*. March 4, 2020. Accessed November 16, 2020. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/disparities-in-health-and-health-care-five-key-questions-and-answers/>
3. Tai DBG, Shah A, Doubeni CA, Sia IG, Wieland ML. The disproportionate impact of COVID-19 on racial and ethnic minorities in the United States. *Clin Infect Dis*. Published online June 20, 2020. doi:10.1093/cid/ciaa815
4. Leddy AM, Weiser SD, Palar K, Seligman H. A conceptual model for understanding the rapid COVID-19–related increase in food insecurity and its impact on health and healthcare. *Am J Clin Nutr*. 2020;112:1162-1169. doi:10.1093/ajcn/nqaa226
5. Jones A, Grigsby-Toussaint DS. Housing stability and the residential context of the COVID-19 pandemic. *Cities Health*. 2020:1-3. doi:10.1080/23748834.2020.1785164
6. Andermann A. Screening for social determinants of health in clinical care: moving from the margins to the mainstream. *Public Health Rev*. 2018;39:19. doi:10.1186/s40985-018-0094-7
7. Lucey CR, Johnston SC. The transformational effects of COVID-19 on medical education. *JAMA*. 2020;324:1033. doi:10.1001/jama.2020.14136
8. Hollander JE, Carr BG. Virtually perfect? Telemedicine for Covid-19. *N Engl J Med*. 2020;382:1679-1681. doi:10.1056/NEJMp2003539
9. Halamka J, Cerrato P. The digital reconstruction of health care. *NEJM Catal*. 2020;1:8-9. doi:10.1056/CAT.20.0082
10. Smith AC, Thomas E, Snoswell CL, et al. Telehealth for global emergencies: implications for coronavirus disease 2019 (COVID-19): *J Telemed Telecare*. Published online March 20, 2020. doi:10.1177/1357633X20916567
11. Monaghesh E, Hajizadeh A. The role of telehealth during COVID-19 outbreak: a systematic review based on current evidence. *BMC Public Health*. 2020;20:1193. doi:10.1186/s12889-020-09301-4
12. Pourmand A, Ghassemi M, Sumon K, Amini SB, Hood C, Sikka N. Lack of telemedicine training in academic medicine: are we preparing the next generation? *Telemed J E Health*. Published online April 15, 2020. doi:10.1089/tmj.2019.0287
13. Bleustein C, Rothschild DB, Valen A, Valatis E, Schweitzer L, Jones R. Wait times, patient satisfaction scores, and the perception of care. *Am J Manag Care*. 2014;20:393-400.
14. Landau D-A, Bachner Y, Elishkewitz K, Goldstein L, Barneboim E. Patients' views on optimal visit length in primary care. *J Med Pract Manag*. 2007;23:12-15.