



Calling All Coyotes: An On-Call Model for Student-Run Free Clinics

Tiffany Bender, MPH¹; Riley T Paulsen, PhD¹; Alaire Buchholz²; Jamuna Buchanan¹; Mamoon Ahmed, MD^{1,2}; Mark Beard, MD, MHA^{1,3}

¹University of South Dakota Sanford School of Medicine, Sioux Falls, South Dakota, USA

²Department of Internal Medicine, University of South Dakota Sanford School of Medicine, Sioux Falls, South Dakota, USA

³Department of Family Medicine, University of South Dakota Sanford School of Medicine, Sioux Falls, South Dakota, USA

Corresponding Author: Tiffany Bender, MPH; email: johnsontiffanyanne@gmail.com

Published: February 5, 2024

Abstract

To mitigate transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during the pandemic, many ambulatory healthcare practices were either deferred or temporarily discontinued. Concern surrounding exposure risk to the virus has also deterred patients from seeking elective or preventative care. Similarly, medical schools were forced to rapidly adapt and develop protocols to protect students that suspended direct patient contact, especially if this experience was deemed elective to their primary academic requirements. At the intersection of these challenges to providing safe patient care and didactic training for students were student-run free clinics. The Coyote Clinic is a medical student-run clinic affiliated with the University of South Dakota Sanford School of Medicine and Avera Medical Group Health Care Clinic that provides free, basic healthcare services and screening to uninsured community members of the greater Sioux Falls, South Dakota area. On the heels of the coronavirus disease 2019 (COVID-19) pandemic, a decreased patient volume forced multiple instances of closures at the Coyote Clinic. In an effort to catalyze the return of patients to the clinic and enhance the educational enrichment for the student volunteers, a novel on-call workflow was devised that prioritizes walk-in patients. This on-call model is more attractive to attending physician volunteers and offers an alternative learning avenue for trainees. Here, we describe the new model we have implemented at the Coyote Clinic for other student-run free clinics that may be facing similar barriers in re-establishing themselves in their communities.

Introduction

The coronavirus disease 2019 (COVID-19) pandemic brought innumerable challenges and heartbreak to people across the world that extended vastly beyond the virus itself. The precipitous reduction in outpatient visits that coincided with the pandemic is still rebounding, but it has provided an opportunity for introspection and innovation within healthcare operations.¹ Student-run free clinics such as the Coyote Clinic were not immune to reductions in patient volume, and by virtue, significant reductions in student educational and service opportunities. The Coyote Clinic is a student-run free clinic in Sioux Falls,

South Dakota run by medical students from the University of South Dakota Sanford School of Medicine (USD SSOM) in association with the Avera Medical Group Health Care Clinic. The Coyote Clinic was established in 2006 and offers free healthcare to underinsured and uninsured patients in the Sioux Falls, South Dakota area.² According to data abstracted from the clinic's electronic medical records (EMR), the three most common ethnicities of patients seen at the clinic between 2016-2022 were white/Caucasian (40.1%, n = 202), Hispanic (36.6%, n = 180), and black/African American (13.6%, n = 70). The demographics of Coyote Clinic patients differ greatly from the state overall, in which 84.2% of South Dakotans

self-reported as white in the 2021 Census.³

A steering committee of 21 medical students and 1 physician advisor oversee the clinic. The Coyote Clinic offers a weekly internal medicine clinic and a monthly psychiatric clinic under the supervision of internal medicine, family medicine, or psychiatry residents and attending physicians. The clinic also organizes community outreach events, including flu shot drives and medical visits to the local homeless shelters. The mission statement of the Coyote Clinic is “to enhance the well-being of the Sioux Falls community by providing high-quality, free health care to uninsured and underinsured individuals while instilling the values of kindness and service in USD SSOM medical students” (see online appendix A).

Background on the Coyote Clinic

The internal medicine clinic operates every Tuesday evening to accommodate patients who have scheduled an appointment or were referred during one of the clinic’s regular screening services at various local resource locations for underprivileged patients. A significant source of new patients has stemmed from hosting a weekly pop-up Coyote Clinic at a local homeless shelter called the Bishop Dudley Hospitality House the day prior to regular clinic night. The presence of both physicians and students at the hospitality house allows patients to make in-person appointments with Coyote Clinic volunteers who can route the appointment to the Avera host clinic scheduler on their behalf. This removes any communication barriers between the patient and the receptionist at the clinic and improves the access and ease of setting up appointments for the patients.

Once patients arrive, undergraduate volunteers are present to assist clinic staff and Coyote Clinic steering committee members with patient intake: recording vital signs, administering surveys, and ensuring data collection is initiated for each patient. The undergraduate volunteers are local pre-medical students, in good academic standing, who make a rolling commitment to one year of volunteerism with the clinic. They function to increase efficiency of clinic night, and ultimately patient satisfaction, and add another level of education and mentorship within Coyote

Clinic. While patients are roomed, senior medical students are paired with a junior medical student to facilitate peer teaching. The junior medical students are encouraged to practice their history and physical examination skills to the best of their abilities as guided by the senior medical student.

Once patients are handed off to the medical students, this team performs a history and physical on a patient and then presents the case and their recommended assessments and care plan to an attending physician. Together, the students in collaboration with the attending physician will discuss the rationale of the students’ differential diagnosis, recommended assessments, and care plan. Finally, the team will finish the patient encounter by seeing the patient with the attending in the room. The encounter concludes with the medical students, attending physician, and patient using shared decision-making to select laboratory tests, imaging, and treatment options. Receptionists and nurses affiliated with Avera Medical Group Health Care Clinic also volunteer on clinic nights. To support the aforementioned care team, three members of the steering committee are also present to implement clinic management protocols and fill in where necessary.

Services provided and outreach by Coyote Clinic

In addition to traditional clinic nights, on the first and third Monday of each month, medical student volunteers also host a pop-up clinic at the local homeless shelter, the Bishop Dudley Hospitality House. Medical students provide basic services, such as blood pressure and glucose screening, under the supervision of an attending physician. Supplies and medications available during such outreach events are minimal and usually limited to over-the-counter products that have been donated. For this reason, a significant portion of their work is counseling patients on seeking emergent services through the emergency department, or following up with their primary provider if their symptoms are not acute and the patient is stable. As described above, these interactions have facilitated a channel for referrals to the Coyote Clinic. Many patients who utilize the homeless shelter lack

adequate insurance coverage and can benefit from the free healthcare provided at the Coyote Clinic. In addition to outreach at the local homeless shelter, other events such as flu shot drives, and vitals/glucose monitoring at local food shelters have allowed us to spread awareness of our clinic throughout the community.

A large variety of patients are seen at the Coyote Clinic. The most common diagnoses seen in recent years as classified by International Classification of Diseases, Tenth Revision (ICD-10) codes abstracted from the clinic's EMR were related to the musculoskeletal system and connective tissue, ear, nose, mouth, and throat, and the respiratory system. The Coyote Clinic has also focused on offering free sports physicals to junior high and high school students in the Sioux Falls area which has aided in patient recruitment. Currently, the largest referral stream for all patients, regardless of diagnosis, is word of mouth. Data compiled from questionnaires provided to patients at the beginning of the visit show that 39% of patients in recent years were referred to the Coyote Clinic by a friend or family member (n = 133). The second largest referral source is from other healthcare providers (35%, n = 117).

Patient volume changes faced at Coyote Clinic

Prior to the COVID-19 pandemic, 6-8 patients would be scheduled for an internal medicine clinic night, and 3-4 pairs of medical students would be scheduled to volunteer. However, in recent years, the clinic's patient volume has dropped drastically. In 2021, 25.5% of internal medicine clinics were canceled due to no scheduled patients. Similarly, 16.7% of psychiatric clinics were canceled in 2021. Currently, 2 pairs of medical student volunteers are scheduled for each clinic. Amongst the pair of medical students, the clinic may see anywhere from 1-6 patients total during an internal medicine clinic night.

The cause of the change in patient volume is multifactorial. The internal medicine clinic was initially offered only every other Tuesday, but in December of 2020, the decision was made to host weekly clinic nights to simplify scheduling and provide more appointments for patients and volunteer opportunities for students.

Theoretically, this may have lowered clinic night volume as patients were scheduled across four nights a month instead of the previous 2 nights. Decreases in patient volume could also have been affected by patients' hesitancy to go to the clinic for fear of COVID-19 exposure. The daytime healthcare clinic that the Coyote Clinic partners with also saw a decrease in patient volume. Previously, they had referred overflow patients to the Coyote Clinic; however, their decrease in patient volume resulted in fewer patients being referred to the Coyote Clinic.

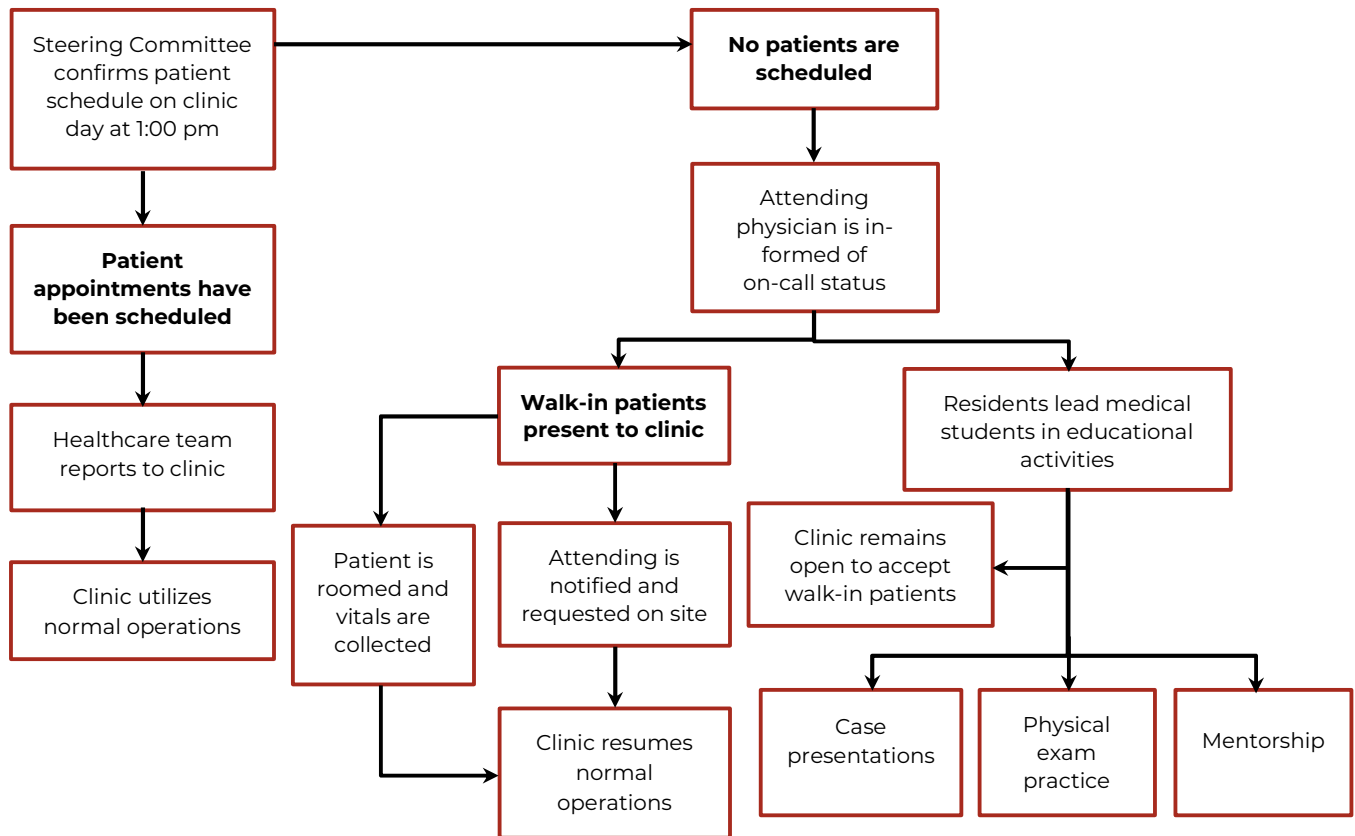
Adoption of an on-call procedure

In an effort to return to pre-pandemic clinic activity and patient volume, the Coyote Clinic steering committee developed an on-call model in September of 2022 to best enhance the experience for attending, resident, and medical student volunteers. In lieu of canceling clinics on nights with no scheduled patients, the on-call procedure allows for the clinic to stay open in the evenings and accept walk-in patients while also providing learning and mentoring opportunities, rather than canceling volunteers completely from participating in the clinic.

The scheduling of the clinic's volunteers remains largely the same: one attending, one resident, three steering committee members, 3-4 medical students, and one undergraduate volunteer per night. In a scenario where there are no scheduled patients, the attending physician is notified that their physical presence is not currently needed but to standby during the hours the clinic is open. If and when walk-in patients present at the clinic, the attending is immediately notified and requested to join the volunteers at the clinic. At this stage, the student-run clinic returns to normal operations.

In the instance there are no walk-in patients, clinic nights are intended to be used by the medical students and residents for education and mentorship. If present, the pre-medical undergraduate students are also encouraged to participate and have the opportunity to discuss the medical school application process with the medical students serving as mentors. During this time, residents can discuss theoretical cases either from their own experience or from clinical

Figure 1. On-call workflow



vignettes found in test preparation materials to aid medical students in developing diagnostic reasoning skills. Similarly, medical students can use this time to practice case presentations and receive feedback from resident physicians to prepare for clinical rotations. Lastly, this downtime allows residents to mentor medical students on the residency application process and interviewing. Figure 1 displays a visual description of the on-call procedure.

Adoption of this new procedure allows for increased access to medical care for the underinsured and uninsured of Sioux Falls and optimization of volunteers' time. Volunteering at Coyote Clinic is one of the earliest opportunities for practical clinical experience in our medical curriculum, as medical students are eligible to volunteer in their first semester of medical school. Forced clinic cancellations were a source of disappointment and frustration for medical students seeking an opportunity for early clinical exposure and ways to help their community. Moreover, the campus for the University of South Dakota

Sanford School of Medicine spans multiple cities, meaning that students may commute up to 80 miles to Sioux Falls to volunteer at Coyote Clinic. Therefore, we needed to ensure that our volunteers would receive a valuable educational experience even if the clinic saw no patients on a given night while remaining open.

While education is part of the Coyote Clinic's mission, the primary goal is to provide care to the underserved community of Sioux Falls. Increasing accessibility to the Coyote Clinic also indirectly increases the number of volunteer opportunities, which reduces the negative impact that lower patient numbers have on our volunteer's time and educational opportunities. Outreach events that take place outside of regular clinic nights can now be utilized as a referral service to the student-run clinic. For example, when students volunteer at the local homeless shelter, a patient can be scheduled for follow-up at the Coyote Clinic the next day or the patient can be counseled to walk in if their symptoms or chief complaint persist throughout the night. By

implementing an on-call system, the steering committee was able to prevent frequent closures and maintain the opportunity to provide services to the community while upholding opportunities for volunteerism, education, and mentorship.

Future considerations

The COVID-19 pandemic forced healthcare systems worldwide to re-evaluate how to provide safe, effective, and equitable care to patients. Student-run clinics were not exempt from this challenge; many of which were forced to close due to university policies or shelter-in-place orders.⁴ This required many student-run clinics to re-evaluate and adapt to meet the needs of their patient population and maintain clinic infrastructure.^{5,6} Student-run clinics responded with a range of creative solutions including telehealth, behavioral health, and vaccination initiatives.^{7,8,9} Despite such creativity, many students were frustrated by closures and advocated for student-run clinics continuing to provide in-person care.¹⁰ Coyote Clinic's adoption of an on-call system has allowed the clinic to slowly recover from the devastation of the pandemic while maintaining the ability to provide in-person medical care and volunteer opportunities.

Attending physician volunteers are a critical component of the student-run clinic. While the clinic is managed by students, attending oversight of clinical encounters is mandatory. Many attendings wish to provide mentorship to students and care to the underserved; however, time constraints like work and family obligations limit their ability to volunteer their free time.¹¹ The creation and adoption of an on-call model was also intended to be attractive to attending physicians, with the hope that they will be more inclined to volunteer knowing their time commitment is flexible and tailored to patient demand.

The new procedure also ensures that students will still have educational or mentorship opportunities, whether or not patients present to clinic. Opportunities for students to participate in clinical encounters outside their traditional curriculum provides opportunities to strengthen communication skills and become more familiar with the clinical setting. The student-run clinic can provide opportunities for self-reflection without

the pressure of formative evaluation. This allows the student to identify strengths and weaknesses in their clinical practice, which ultimately helps build confidence and self-esteem.¹²

Conclusion

The COVID-19 pandemic challenged healthcare and medical education in a multitude of ways. Like other student-run clinics, the Coyote Clinic experienced a decrease in patient volume and activity. With strategic and adaptive leadership, the medical student steering committee was able to implement an on-call procedure which circumvented the need for continuous forced closures. By being available for walk-in services via the on-call procedure, the Coyote Clinic is increasing its availability to see more patients with the hope of reestablishing our impact on the community. The on-call procedure has been a valuable safety net for the clinic to have in circumstances where clinical and volunteering options would have otherwise been canceled. While the adoption of the on-call model is still in its infancy, the clinic is actively tracking qualitative data to investigate the protocol's efficacy in maintaining volunteering opportunities and clinic access for patients.

The on-call procedure is just one way the Coyote Clinic has adapted since the COVID-19 pandemic. Increased awareness of our clinic and increased community presence through outreach have also contributed to the success of improving access to medical care in the community of Sioux Falls. These efforts have not only enhanced the patient's ability to access care through the Coyote Clinic but also bolsters the entire educational experience within the academic setting of clinical medicine and improved volunteer satisfaction.

Disclosures

The authors have no conflicts of interest to disclose.

References

1. Chatterji P, Li Y. Effects of the COVID-19 pandemic on outpatient providers in the United States. *Med Care*. 2021 Jan;59(1):58-61. <https://doi.org/10.1097/MLR.0000000000001448> [LINK](#)
2. Buntrock A, Bormann J, Kazi S, et al. Incorporation of women's health maintenance screening in the USD

- Coyote Clinic. *S D Med*. 2020 Oct;73(10):470-472. <https://pubmed.ncbi.nlm.nih.gov/33264526/> [LINK](#)
3. U.S. Census Bureau. QuickFacts South Dakota [Internet]. Suitland (MD): U.S. Census Bureau; 2021 [updated 2023 Jul 1; accessed 2024 Jan 26] Retrieved from <https://www.census.gov/quickfacts/SD> [LINK](#)
 4. Binks AP, LeClair RJ, Willey JM, et al. Changing medical education, overnight: The curricular response to COVID-19 of nine medical schools. *Teach Learn Med*. 2021 Jun-Jul;33(3):334-42. <https://doi.org/10.1080/10401334.2021.1891543> [LINK](#)
 5. Fabricius MM, Hitchcock NM, Reuter ZC, Simon ME, Pierce RP. Impact of the COVID-19 pandemic & telehealth implementation in a student run free clinic. *J Community Health*. 2022 Apr;47(2):179-83. <https://doi.org/10.1007/s10900-021-01034-8> [LINK](#)
 6. Weiss C, Traczuk A, Motley R. Reopening a student-run free clinic during the COVID-19 pandemic to provide care for people experiencing homelessness. *Acad Med*. 2022 Jun 1;97(6):855-7. <https://doi.org/10.1097/ACM.0000000000004480> [LINK](#)
 7. Colon GDM, Mulaney B, Reed RE, et al. The COVID-19 pandemic as an opportunity for operational innovation at 2 student-run free clinics. *J Prim Care Community Health*. 2021 Jan-Dec;12:2150132721993631. <https://doi.org/10.1177/2150132721993631> [LINK](#)
 8. Fischbein R, Gardner-Buckshaw S, Loucek A, et al. Pandemic productivity: student-run free clinic integrates behavioral health in the wake of COVID-19. *Acad Psychiatry*. 2021 Oct;45(5):608-12. <https://doi.org/10.1007/s40596-020-01368-w> [LINK](#)
 9. Fisher EL, Sack DE, Pena TG, et al. COVID-19 vaccination program at a student-run free clinic: a descriptive study. *Prev Med Rep*. 2022 Dec;30:101992. <https://doi.org/10.1016/j.pmedr.2022.101992> [LINK](#)
 10. Hopfer SE, Miller RM, Neese OR, Swiezy SC. The case for the safe re-opening of student-run free clinics during COVID-19. *J Stud-Run Clin*. 2022;8(1):1-6. <https://doi.org/10.59586/jsrc.v8i1.288> [LINK](#)
 11. Greni S, Radil S, McIntire B, Meaning M. Why do physicians volunteer at student-run free clinics? a look into what drives or hinders their participation. *J Stud-Run Clin*. 2022;8(1):1-8. <https://doi.org/10.59586/jsrc.v8i1.312> [LINK](#)
 12. Nakamura M., Altshuler D, Binienda J. Clinical skills development in student-run free clinic volunteers: a multi-trait, multi-measure study. *BMC Med Educ*. 2014;14:250 <https://doi.org/10.1186/s12909-014-0250-9> [LINK](#)