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Descriptive Report

An Algorithm for Free Clinic Deployment: Bridging the Gap in Healthcare Access in Rural Pennsylvania

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Abstract

Student-run free clinics play an essential role in meeting the needs of underserved populations while providing service-learning opportunities to health professions students. While these clinics have been an asset for many institutions, the success hinges on the successful selection of clinic locations, studying resource utilization, the receptiveness of the local population, and effective strategic planning. The Student-led and Collaborative Outreach Program for Health Equity (SCOPE) Free Mobile Clinic at the Pennsylvania State University College of Medicine was established in 2017 to address the needs of underserved populations in Central Pennsylvania. Starting from one clinic, SCOPE has grown to twelve different sites across the county and has addressed different needs in diverse populations from rural to urban. The clinic has reached 435 individuals, provided 95 consultations with attending physicians, and distributed more than 120 vaccinations in the three years it has been fully active. During its evolution, the organization has developed a guidance algorithm that is critical to its operations and expansion initiatives. This algorithm has enabled strategic community resource deployment, garnered interest from private nonprofit collaboration and local government investment. Based on objective data, we identified new patient populations and clinic sites. Here we describe our experience developing and utilizing our deployment algorithm and the challenges and lessons we learned in growing a novel clinic model in a rural landscape.

Introduction

Student-run free clinics have been an asset for many institutions as medical schools have grown in size. They simultaneously help fill the ever-increasing gap in medical access across many communities in the United States and provide incredible opportunities for students to gain community clinical experience in an inter-professional setting.[1,2] The gap in medical access is compounded by the shortage of family medicine and primary care doctors.[3] Student-run free clinics provide an opportunity to close the access gap among patients while providing clinical and healthcare systems exposure to student learners[4]. Additionally, several studies have demonstrated that gaining experiences in serving rural environments motivates many trainees to continue serving these populations as residents and attending physicians.[4-6] Nevertheless, despite the positive impact of student-run free clinics for all stakeholders,[7-9] the process of establishing and maintaining these healthcare organizations meets significant challenges.[10-12] Multiple stakeholders and logistical issues must be considered when deploying clinics and organizing events in our target communities.[13] This article will describe how we deploy clinics, address challenges, and maintain our outcomes as a relatively new institution. We will also define future steps aimed to expand the capacity and effectiveness of our student-run mobile clinic.

The SCOPE Student-Run Mobile Free Clinic

The Student-led and Collaborative Outreach

Program for Health Equity (SCOPE) is a student-run free mobile clinic affiliated with the Pennsylvania State University (Penn State) College of Medicine. SCOPE is led by an executive board consisting of 12-15 medical students and is advised by faculty members and previous student officers. The student leaders work extensively alongside community human resource departments, the Penn State Community Health Group, the Penn State Department of Family and Community Medicine, other nonprofit and student organizations. Founded in 2017, SCOPE aims to bridge the gap in access to care by conducting community needs assessments, and providing community-based interventions such as vaccinations, blood pressure check-ups, and basic physical exams. We also connect our patients to more advanced medical services by partnering with local clinics and hospitals in Central Pennsylvania, regardless of health insurance status. In the past year, SCOPE also expanded its services by offering free colorectal cancer screenings to those ages 50-75. Like many brick-and-mortar clinics,[14] SCOPE also provides medical students the opportunity to practice clinical, patient navigation, and leadership skills.

Clinic Deployment Algorithm

SCOPE establishes and maintains clinics by using a multi-step approach that is customized based on community needs, restrictions, and available resources. The organization's clinic deployment algorithm was created to streamline the process of identifying potential locations, offering services, and assessing success and sustainability (Figure 1). By answering "yes" or "no" questions, we can systematically determine whether our services and workforce are compatible with the needs of a specific community.

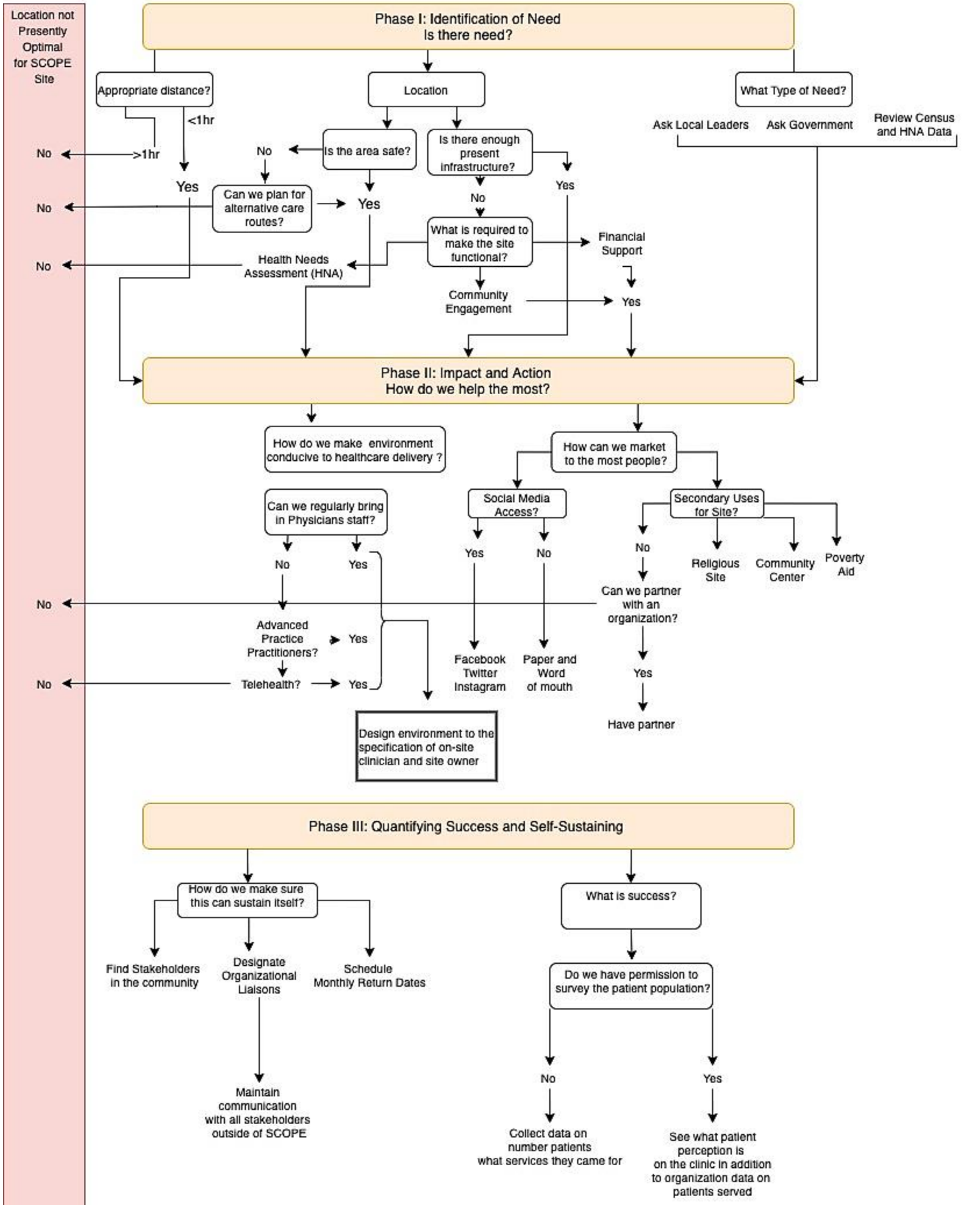
After a community partner and event site have been identified (Stage 1), the clinic progresses through a series of planning, execution, and evaluation steps, as summarized in Figure 2. Stage 2 of the workflow requires the decision to set event date. Considerations at this step include the weather, local and national guidelines for large gatherings, availability of supplies for the desired scope of practice, and readiness to assist patients with access to local health resources. For example, it is necessary to outline a network of local primary care providers and free clinics willing and able to accept new patients. Once these conditions are met, an event date is set.

In addition to setting a date, the number of attendees must be estimated in Stage 2. In an ideal setting, patients are registered for specific time slots, shortening patient wait times. Provisions must also be made for walk-in patients. Advertising is done through trusted community partners, and can include ads on social media, pamphlets distributed to local churches, mailed invitations, and radio and TV advertising. This approach is preferred as patients are observed to trust a community leader or member rather than an "outsider" group.

Stage 3 focuses on organizing workforce and resources before the event. Student volunteers are recruited, trained, and assigned to perform anticipated tasks in the clinic. Interpreters may also be incorporated in clinics depending on our target patient population for the given date. Appropriate supplies such as educational tools, vaccines, clinic equipment, and other consumables are secured based on relevant information from Stages 1 and 2. Because travel time to our clinic locations can vary from 30 to 60 minutes, we also secure transportation from committed volunteer drivers to and from our clinic sites. A roster of backup volunteers and drivers is maintained to account for an unforeseen change in volunteer and/or driver availability.

Stage 4, as outlined in Figure 2, depicts a workflow for an event that includes both a primary care visit and a vaccination. Similar flow charts can be developed to adapt to any clinic and follow several core principles. First, upper-class students (3rd and 4th-year medical students) are paired with lower-class students (1st and 2nd-year medical students) to facilitate mentorship between co-volunteers. Similarly, more experienced volunteers and officers guide the new cohort of volunteers in the clinic. Second, the medical learners interview the patients and perform focused physical exams independently before presenting to an attending physician or nurse practitioner. Additional screening tests are also conducted when available and appropriate. Treatment plans and referrals are ultimately made to address the medical needs of the patients.

Figure 1. Algorithm for site identification and need assessment



SCOPE: Student-led and Collaborative Outreach Program for Health Equity

Figure 2. Clinic flow algorithm after site identification

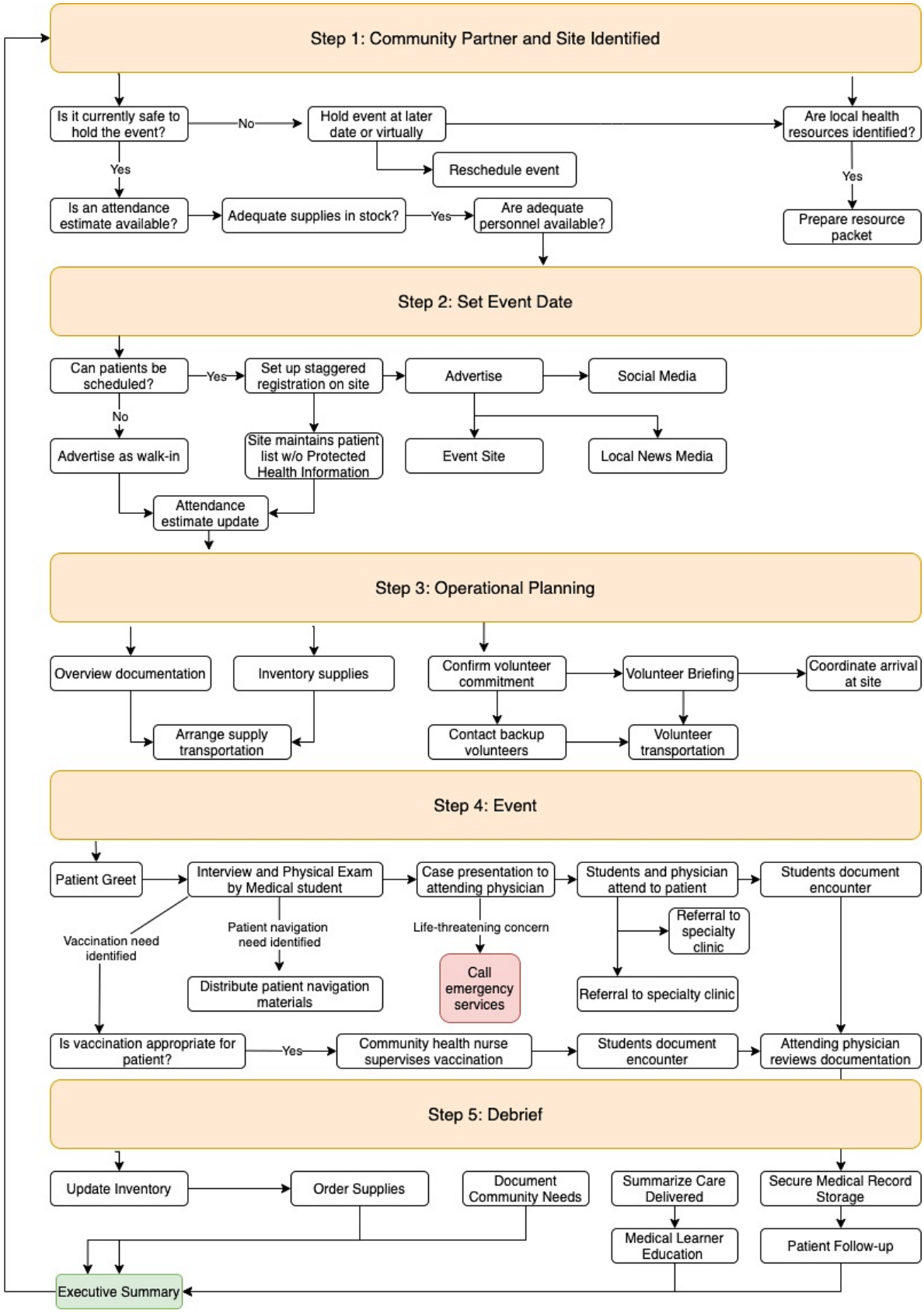


Table 1. Recent clinic events utilizing algorithm

Location	Distance from college (miles)	Events/ Total people reached (N)	Services Provided	Summary of Event(s)
Food pantry in Grantville, Pennsylvania (PA)	9.8	4/25	Needs assessments, vaccinations, blood pressure checks, smoking cessation, physician referrals, patient navigation.	Student-led and Collaborative Outreach Program for Health Equity (SCOPE's) first successful community site was located at a community food pantry adjacent to a church. SCOPE members canvassed the neighborhood in advance of the events, initiating contact with community members, and posting pamphlets in local community centers. Needs assessments comprised a key part of these events, which were subsequently used to tailor outreach efforts in the area to the needs of the community. Several factors complicated the events. Despite canvassing, community awareness of the events was low. Due to low awareness and time constraints, most community members had not made advanced arrangements to spend more time at the screening stations. Additionally, the cramped physical layout of the food pantry left little space for free movement of community members.
Women's shelter in Ephrata, PA	29.9	3/15	Needs assessments, health screenings, medical consultations, patient navigation, health education.	This shelter facility for women and children was a departure from SCOPE's original model as community members were already living on site and event awareness could be improved. The resulting atmosphere made for extended and personal connections between the volunteers and community members. Due to the low number of residents (13) and variable schedules, it was difficult to find a scheduled time slot to work for everyone. This challenge was partially overcome by scheduling appointments for specific time slots while leaving room for walk-ins. It was also difficult to find physician volunteers willing to travel 1 hour away for a few clinic attendees.
School in Middletown, PA	7.4	1/150	Vision screenings	For this event, SCOPE students teamed up with Pennsylvania State University (PSU) Health Nursing and the Community Health Department to administer vision screenings to middle-school children in Central PA.
Bhutanese/ Nepali Evangelical Church	12.0	1/100	Flu shot, diabetes, blood pressure, dental, vision & hearing, women's health, weight loss & rehab, behavioral health, pharmacy chat	SCOPE students worked with the nonprofit group Professional Women, Women Entrepreneurs, the PSU Health Nursing, and the Community Health Department to perform blood pressure checks and flu shot administration. Although SCOPE was minimally involved in planning and organizing this event, the group provided a significant amount of manpower and support during the event. This effort also served as a great opportunity for the group to learn about setting up health fairs for immigrant populations.
Hamilton Health, Harrisburg, PA	11.6	6/6	Colorectal cancer screening/colonoscopy follow-up	SCOPE partnered with this prorated payment clinic to address the low number of follow-up screening colonoscopies following a positive fecal immunochemical test (FIT). Few patients are able to follow-up on a positive FIT test due to various social determinants of health such as lack of insurance, inadequate access to

				transportation, and lack of health literacy. SCOPE had a focused approach to this problem by first collaborating with the Pennsylvania State University (PSU) gastrointestinal department to provide diagnostic colonoscopies for patients with positive FIT tests. Next, a grant to cover Uber Health rides between the patient's home and the colonoscopy center was obtained. Finally, SCOPE developed a protocol where volunteer PSU medical students accompany the patients throughout the colonoscopy process. The cost of providing a FIT kit and subsequent patient transportation ranges from $300-$750. Based on this successful collaborative project, SCOPE is currently expanding this free colonoscope service to Beacon Clinic (a free clinic in downtown Harrisburg) and other community members screened at SCOPE-associated events. Challenges with the project include coronavirus disease 2019-related disruptions, volunteer availability, and coordination between multiple stakeholders.
Police Station in Steelton, PA	10.9	2/45	Flu shots, cardiovascular disease screenings	SCOPE partnered with the community health team to deliver flu vaccinations and cardiovascular disease screenings to community members of this underserved Harrisburg suburb. Future plans include a series of events that engage community members though art projects while addressing their health needs through vaccination drives and patient navigation.
Community Center in Lykens, PA	39.2	1/200	Flu shots, colorectal cancer screening, health education, pharmacy chat, Naloxone distribution, community partner interaction.	This drive-through clinic model was organized at a community center in the geographically/culturally isolated region of Northern Dauphin County. A longstanding relationship between the community center and the local residents, of whom 25% live at an income 200% below the federal poverty line, ensured large event attendance. This initial health fair included vaccination, patient education, cancer screening, a food drive, and community health needs assessments. The event was well-received, with community members receiving a multitude of services throughout a 30-minute drive-through. Community partners were also happy with this model as interaction with each community member was guaranteed. Difficulties of this event primarily centered on traffic flow as certain stations required a prolonged interaction, leading to traffic backup. Future drive-through events should consider these differing time requirements and implement pull-off areas for prolonged interactions. Future plans include establishing a monthly primary care screening clinic at the site, building on the multifaceted experience of SCOPE at prior clinics.

In the event of emergencies, concerns are communicated to the attending physician, who then determines the next course of action for the patient. Lastly, patients also have the option to be counseled on health topics, which can include nutrition, exercise, smoking cessation, Narcan utilization, and a community-specific list of resources.

Finally, a debriefing step is conducted in Stage 5 to assess the impact and weaknesses of our clinics. In this stage, we integrate feedback from volunteers, community partners, and patients, and update our supplies inventory. We prepare a comprehensive summary to document quantitative (e.g., number of flu shots and the number of patients seen) and qualitative results (e.g., increased knowledge about vaccines and salt intake), highlighting the overall impact of the clinics. Additionally, actionable areas of improvement are emphasized in the summary. These weaknesses may involve problems with clinic flow, amount of workforce and supplies, marketing, and referral system. The summary is shared among SCOPE board members, volunteers, and community partners. The stakeholders use the summary as a learning tool to improve our deployment workflow and as a guide to assess the feasibility of holding additional clinics in specific sites.

Outcomes

Using our deployment algorithm, SCOPE has established clinic sites in Grantville, Harrisburg, Ephrata, and Elizabethtown and has organized a total of 12 outreach clinics since its inception in 2017 (Table 1). These outreach clinics served 435 individuals, provided 95 consultations with our attending physicians, and administered more than 120 vaccinations. Referral agreements have been placed with local free clinics (LionCare, Volunteers in Medicine, and CURE Physical Therapy) to provide more extensive care for our uninsured and/or underinsured patients. Our colorectal cancer screening program has assisted nine patients in completing their colonoscopies at no cost. Due to the positive results of our clinics and screening efforts, our organization has become a patient navigation site for medical students at the Penn State College of Medicine under the Health Systems Course since 2019. As a patient navigation site, SCOPE mentors a group of students in their first year of medical school in helping patients from low socioeconomic backgrounds to navigate the complexities of healthcare.

Considerations and Lessons Learned

While our algorithm enabled us to deploy clinics in a streamlined manner, we learned that customization of this workflow was necessary to meet the unique challenges of various sites, especially during a pandemic. Additionally, we found that the success of each event hinged on leveraging existing community relationships to bolster attendance, developing strong partnerships with existing healthcare organizations, consistently visiting various sites, and nurturing a group of dedicated student volunteers. In terms of student volunteers, we anticipate modifying this algorithm to regularly involve more students from other professions, such as nursing, pharmacy, physical therapy, occupational therapy, and public health[1].

Conclusion

Establishing and maintaining pro bono clinics requires meticulous and effective logistical planning. While reports on free clinic structures have been published, an adaptable algorithm in deploying student-run clinics in multiple locations remains scarce. SCOPE had the unique opportunity to create and document its workflow as a relatively new clinic, starting from identifying clinic sites to evaluating its impact and weaknesses. We have distilled the challenges and lessons that we learned throughout building SCOPE into a simplified algorithm that could be especially beneficial to new student-run clinics. More established clinics could also adapt our workflow in developing outreach efforts in new target sites. By doing so, clinics can optimize their time, workforce, and other resources; thereby focusing more on delivering quality care and mentorship of student learners.

Disclosures

The authors have no conflicts of interest to disclose.

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