PERSPECTIVES A Proposal of a Student Run Clinic Medical School Elective to Improve Adherence to Postoperative Follow-Up

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Abstract: Patient nonadherence to healthcare follow-up appointments is an ever-growing problem leading to worsened health outcomes and increased morbidity and mortality. Social factors, namely lack of transportation, are commonly implicated as a cause for the lack of following up. Medical students make up a significant portion of the healthcare team but are mostly viewed as passive learners on clinical rotations and do not receive many active opportunities to engage in direct clinical care. Here, an elective for 4th year medical students where students operate a clinic and work alongside residents to hold virtual surgical follow-up appointments to assess for complications and monitor healing is proposed. This could potentially bypass many of the social barriers that patients face while giving students a more direct role in patient care and a focused educational experience while reducing stress on the physical healthcare clinic system. Keywords: student, clinic, follow-up

Introduction

Patient care has traditionally relied on a close relationship between practitioner and patient that is developed longitudinally through multiple encounters. When treatment is administered or counseling is provided, follow-up care is usually scheduled to monitor the patient's response and determine if further changes need to be made. This is especially notable in the surgical setting where patients who have undergone a surgical procedure, whether elective or emergent, should be monitored afterwards for complications, healing progress, and steps going forward. Adequate follow-up is undoubtedly crucial to ensuring positive health outcomes.

Lack of follow-up is a common occurrence in medicine. This is more pronounced in the surgical field, where patients undergo an operation, and fail to participate in later scheduled clinic visits to monitor healing. This can have profoundly negative consequences in some instances like infection or impaired surgical site healing. One study looking at bariatric surgery patients months after their operation found that less than 30% of patients kept up to date with their postoperative management.¹ Another study aimed to find causes for nonadherence, citing social factors such as lack of transportation and health literacy being top reasons.² Indisputably, lack of follow-up is evidently a major issue that worsens health outcomes and may lead to increased morbidity and mortality.

Interventions to improve adherence to follow-up have been studied in the literature. One retrospective chart review study looked at whether phone calls were sufficient for follow-up and noted that they were sufficient for both the patient and surgeon and allowed for increased continuation of care post operatively.³

Medical students make up a significant part of the healthcare team. Although the main responsibility of students is learning, they frequently help with patient care duties and assist practitioners. For example, to help mitigate nonadherence to medical appointments, one medical center had medical students call postpartum patients to check in and screen for possible complications and depression symptoms. Here, they found that a high number of patients were successfully followed up, including people who had no intention of following up in person.⁴

As mentioned previously, students are primarily learners. However, most of the learning in the clinical setting is through passive observation. There are few opportunities for direct, active education on a busy ward service in a clinic that is running behind. Students are often viewed as "add ons" in the hospital setting with little to no student-centered clinical experiences in undergraduate medical curricula.

The idea of a "student run clinic" is one concept designed to allow students to be the directors of medical care in a controlled setting while allowing for low cost (or in many cases free) healthcare for underserved populations. According to the AAMC, 75% of accredited medical schools around the country hosted at least one student run clinic and these clinics have treated at least 140,000 patients as of 2014.⁵ Outcomes from the existing student run clinics have been favorable, for students and patients alike, in that students get hands on practice and opportunities to hone their skills, while patients receive affordable, convenient healthcare and reliable management of chronic and acute conditions. However, while these clinics are prevalent and benefit providers and patients, most of them are mostly extracurricular, not built into medical education, and are limited to primary care, leaving students who do not have time outside of school to miss out on this opportunity and patients who need more specialized care to have to look elsewhere.

In an attempt to address the lack of student focused clinical opportunities while aiming to improve patient nonadherence to follow-up in the surgical setting, a student run surgical clinic elective where students conduct virtual visits with patients postoperatively is thus presented.

Proposal

This proposed elective titled, "Surgical Telehealth Follow-Up" will be available to 4th year medical students who have successfully completed their core clerkships. The duration may vary depending on the institution's typical lengths of electives, but it will be at least 4 weeks. The elective will be split up into two parts: a didactic/training phase, which will be 1 week long, followed by the predominant clinical portion.

Prior to the start of the elective, students will be given a survey asking them to rate their level of confidence and knowledge on certain topics such as telehealth, surgical follow-up, and clinical history taking. This will serve as the baseline for those students before going through the 4-week course.

The first week of the elective, which will consist mainly of didactics, is focused on learning the knowledge and skills that will be utilized in the latter portion of the rotation. Two broad topics will be taught during this week: (1) How to run a telemedicine visit and (2) common surgical procedures, their respective complications, and counseling topics. The week will consist of virtual lectures, given either synchronously or asynchronously, and active practice sessions for students to implement the lecture material. A sample of a typical didactic week, with example session titles and durations, is depicted in Table 1. The duration, order, and content of the sessions can be customized by the course lead depending on their preferences. The didactic week would culminate in an OSCE (or other direct observation examination) which would assess students' ability for a virtual postsurgical follow-up encounter as well as a written multiple-choice exam assessing

Monday	Tuesday	Wednesday	Thursday	Friday
0800–0820	0900-1000 (1 hr):	0900–1030	Study	0900–0945
(20 min):	Lecture:	(90 min)		(45 min):
Orientation	Telehealth Best	Lecture:		OSCE
0830–0930 (1 hr):	Practices	EMR walkthrough and Q&A session		1000-1045
Lecture:	1015-1100	1045–1200 (75 min)		(45 min):
Intro to Telehealth	(45 min):	Lecture:		Surgical procedures, complications, and
0945–1045 (1 hr):	Student Practice	Practice session with postoperative		focused H&P Written Exam
Student Practice	1100-1200 (1 hr):	clinic patient vignettes		
1100–1200 (1 hr):	Lecture:			
Lecture:	Common Surgical			
Common surgical procedures	Complications			
and indications				

Table I Didactic Week Student Schedule Example. Beginning and End Times Along with Durations of Sessions Listed are Suggestionsand Able to Be Modified at the Discretion of the Course Lead

the lecture material. After participating in the sessions, students should be able to conduct a telehealth visit, recognize common postsurgical complications, and acquire a focused postoperative follow-up history and physical.

The rest of the time in the rotation will be spent in the clinic, under resident and attending supervision. The students will be assigned patients who have had a surgical procedure and are scheduled for a virtual follow-up appointment with no emergent or major chief complaint. The encounter will start off with a thorough chart review going over procedure done, indication, perioperative course, etc. The student will then log in to the virtual meeting with the patient and proceed to ask relevant history questions, assessing for any postoperative complications and allowing the patient to perform a brief physical exam on camera, ie surgical site inspection and palpation. The patient will be instructed to take a picture of their surgical site and upload it to the EMR at that time. Afterwards, patient questions may be fielded and either answered by the student or deferred to the resident/attending. Once the initial student evaluation is complete, the student will present the patient to the surgical resident, who will log on to meet the patient and perform a brief confirmatory history, physical exam, and answer any questions. The attending will also log in to also perform an assessment. If the patient has no complaints and there are no pertinent findings on history and physical, then the visit will conclude. However, if concerning signs or symptoms are noted such as complaints of fever or surgical site erythema, tenderness, or purulence, then the patient will be told to either go to the ER or come into the clinic for an in-person evaluation.

At the end of the course, the same survey that the students completed at the beginning of the course will be readministered. Statistical analysis (*t*-test) comparing students' survey answers before and after taking the course would be done after multiple iterations of the course in order to build up a significant sample size. Along with the survey, a comprehensive evaluation requesting feedback on their experiences as well as suggestions for improvements. Both students and instructors will be receiving the evaluation, and any and all feedback and criticisms on the course will be welcomed which will be used to improve the next iteration of the elective.

Clinical and social patient-centered outcomes can also be studied with this course. Patients who had a virtual postoperative visit with a student would be asked to fill out a post visit survey immediately afterwards consisting of questions related to ease of scheduling the appointment, transportation accessibility, satisfaction with visit, etc., and then a survey six months after the visit asking about complications, scar healing, quality of life, etc. A group of patients either in the same practice or another practice elsewhere who had traditional in-person follow-up visits can be given the same surveys immediately after the visit and six months after to serve as the control group, and both groups can be compared statistically. To minimize confounds, only patients who have had a specific operation that was uncomplicated would be included in the study i.e. only including patients who have had routine appendectomies in the control and intervention groups.

Barriers to Implementation

One setback to successful implementation that may frequently be encountered is the lack of patient access to a device to conduct the virtual visit on. This may be mitigated through insurance or medical programs that provide a device. Another barrier may be the liability that comes with not seeing a patient physically in the office and the lack of a reliable physical exam. To overcome this, the clinic may be tailored towards patients whose follow-up consists mainly of history taking such as such as patients who have undergone simple routine uncomplicated operations who have no complaints.

Impact/Conclusion

This proposed course will have multiple impacts on various aspects of medical education and healthcare administration. Students will have the opportunity to learn about surgical follow-up and procedures and apply this into clinical practice very soon after. Typical medical school electives and rotations rely on passive interspersed learning in the clinical setting and have minor student involvement in patient encounters, thus making this proposed course an opportunity for students to provide students a higher quality, focused educational experience and more involved participation. Not only will students greatly benefit but patient care would significantly improve in many ways. Through the virtual format, many social factors, such as lack of transportation and scheduling problems, will be circumvented, and patient adherence to follow-up will be increased, thus reducing complication rates and improving outcomes. The telemedicine format would be more convenient for both practitioner and patient and allow for a lesser load on staff, and low-risk patients who are recovering well would be able to avoid coming into the clinic altogether.

Future Endeavors

This concept of a dual didactic and clinical elective may be expanded to specialties outside of surgery. Primary care fields such as family or internal medicine may greatly benefit from this to reduce clinic load, improve continuity of care, and give medical students more meaningful clinical experiences. As the shift towards telemedicine becomes greater, incorporating this course into the curriculum will better prepare students for real practice.

Disclosure

The authors report no conflicts of interest in this work.

References

- 1. Schlottmann F, Baz C, Pirzada A, Masrur MA. Postoperative follow-up compliance: the achilles' heel of bariatric surgery. *Obesity Surg.* 2023;33 (9):2945–2948. doi:10.1007/s11695-023-06769-y
- 2. Falkenstein K, Flynn L, Kirkpatrick B, Casa-Melley A, Dunn S. Non-compliance in children post-liver transplant. who are the culprits? *Pedia Transp.* 2004;8(3):233-236. doi:10.1111/j.1399-3046.2004.00136.x
- 3. McVay MR, Kelley KR, Mathews DL, Jackson RJ, Kokoska ER, Smith SD. Postoperative follow-up: is a phone call enough? *J Ped Surg*. 2008;43 (1):83–86. doi:10.1016/j.jpedsurg.2007.09.025
- 4. Abraham C. Successful implementation of a medical student postpartum follow-up phone call project. *MedEdPORTAL*. 2021;17(1):11109. doi:10.15766/mep_2374-8265.11109
- Rupert DD, Alvarez GV, Burdge EJ, Nahvi RJ, Schell SM, Faustino FL. Student-run free clinics stand at a critical junction between undergraduate medical education, clinical care, and advocacy. Acad Med. 2022;97(6):824–831. [Epub 2021]. doi:10.1097/ACM.00000000004542

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