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My Thoughts / My Surgical Practice

Strategic surgery recruitment programs can enhance diversity and reinforce pipelines

The COVID-19 pandemic exposed stark racial and ethnic health inequities. One proposed solution to addressing these inequities is to ensure that future physicians represent the growing diversity of the United States.[1–8] Yet, structural barriers remain pervasive for women and historically excluded and underrepresented groups in medicine (URiM), which includes Black/African American, Hispanic/Latinx (i.e., mainland Puerto Rican and Mexican American), Native American (i.e., American Indian, Alaska Native, Native Hawaiian), Pacific Islander, and 'Other' populations.[2–6] Although Black and Hispanic groups comprise 12.5% and 18.3% (totaling 30.8%) of the US population, representation in medical schools, surgical training programs, and surgical faculty is disproportionately low according to Aggarwal et al. using the AAMC (American Association of Medical Colleges) data reports.[4] For example, Black and Hispanic men represent 2.9% and 3.2% of matriculating medical students, respectively, but an even lower proportion of surgical trainees and faculty.[4] Contrarily, White and Asian groups comprise 60.4% and 5.7% of the US population groups but are overrepresented in surgery and surgical subspecialties by making up 65% and 17% of trainees and 69.8% and 17.7% of faculty, respectively.[4] General Surgery reflects this disparity because there is a lack of racial/ethnic and gender diversity, particularly in leadership positions.[3,4,7] Full professors are more likely to be men than women amongst all races/ethnicities. Most department leaders are White men; about 80% of current department chairs are White, and 85% are men.[3,7] Meanwhile, Black and Hispanic women constitute only 1.3% and 0.7% of faculty, respectively.

The current pipeline is leaking and asymmetric, so recruitment and retention programs are necessary methods for its reinforcement. Physician workforce diversity, equity, and inclusion (DEI) have been shown to improve the quality of the learning environment and overall patient care.[1,5–8] Most importantly, working in groups with racially/ethnically diverse membership is more efficient and innovative than analogous homogenous groups because DEI injects the intellectual abilities of the URiM contingent that would otherwise be missing from the overall workforce, thereby enriching the surgical dialog both locally and nationally. Therefore, surgical departments must prioritize DEI by establishing innovative recruitment (pipeline) and retention strategies to improve the proportion of surgical URiMs, specifically from male students to surgical trainees and female trainees to surgical faculty and leaders.[2,5–8]

Strategically designed pipeline programs have been shown to successfully recruit and graduate women and URiM students in the health sciences and ultimately into surgical residency programs.[5–9] Toney's article chronicles a pipeline program that spanned from preschool through graduate school. The Urban Health Program (UHP) via the Early Outreach Program (EOP) that was active between 1978 and 2011, resulted in 5,327° awarded by University of Illinois Chicago to UHP students.[10] Of these, 40% were from the medical school and 17% were in applied health sciences.[10] Mason et al. describes the Nth Dimensions Summer Internship program, in which 118 medical students completed the program between 2005 and 2012 with a 75% overall retention rate and 72.3% residency match rate across the eight cohorts into procedure-based specialties.[8] Deas et al. successfully implemented their strategic diversity initiative, expanded pipeline/recruitment programs, and integrated cultural competency throughout the medical school curriculum.[9] They increased URiM matriculating students, trainees, and faculties, as well as advanced women and URiMs into leadership positions.[9] For instance, their program doubled the number of URiM students (21% of the student body) and matriculated 10 African American males as first-year medical students annually for four consecutive years.[9] Butler et al. used longitudinal analysis to evaluate the outcome of the 76 URiM general surgery residents that participated in the Diverse Surgeons Initiative (DSI) from 2002 to 2009.[11] They found that the DSI successfully provided mentorship, minimally invasive skills training, and prepared URiM surgery residents for careers in academic surgery. Most of the residents excelled in their training and transitioned into practice, produced publications, obtained postsurgical fellowships, acquired faculty appointments, and attained leadership positions.[11] Another such successful endeavor was the Miller-Stahl PREP (Premedical Research and Education Program) project which ran from 1975 to 1986 and was aimed at producing long term career success in surgery and other medical fields. Three of its distinguished alumni presented at a panel on the creation of pipelines into surgery for Black and other URiM students at the American College of Surgeons (ACS) Clinical Congress of 2021.[12]

As part of a DEI initiative in 2021, our SUNY (State University of New York) Downstate Health Sciences University Department of Surgery leaders collaborated with the Office of Diversity and Inclusion to create the Surgery Summer Experience to Enhance Diversity (SEED) Elective. Of the eight medical students that applied, three URiM preclinical (matriculating second-year; MS2) medical students were selected. The three students identified as Black, Hispanic, and Other (Table 1). This was a paid elective; students received a stipend of $2000. The curriculum was coordinated by the URiM Resident Mentor and a diverse group of institutional leaders. There was program-wide announcement of the Surgery SEED elective, including a flyer containing information about the initiative, student photos with corresponding medical school level and gender pronouns. Students began with in-person orientation and corresponded via e-mail and a web-based messaging service with elective coordinators. The first two weeks were spent at the SUNY Downstate Health Sciences University Hospital of Brooklyn, followed by two weeks

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at the Kings County Hospital Center, New York City Health and Hospitals' (NYCHH') only Level 1 Trauma Center in Brooklyn. Students met with leaders within the surgery department (i.e., chairperson, program director, chief of transplantation surgery, clerkship director). Patient care exposure consisted of clinic/office hours, morning rounds, conferences, and operating room cases. Patients varied by race, ethnicity, and social determinants of health. Students accompanied trauma or general surgery interns and consult residents, and they participated in three trauma overnight calls. They visited the Surgery Research Laboratory, participated in experiments, met a diverse team of researchers, and attended lab meetings. There were also discussions based on DEI journal articles.

Program assessment was accomplished through qualitative analysis of narrative reflections in which medical students gauged their individual perspectives on the program (Table 1). Evaluations were obtained via semi-structured questionnaires, regular in-person meetings, and a wrap-up/feedback session as well as reflective short paper submissions. The SEED student narratives were read, and similar concepts were grouped into categories which were then aggregated to form themes, providing an overall assessment of the program. Four themes emerged from student narrative reflections on the program: 1) Gaining clinical exposure 2) Networking with diverse mentors 3) Learning in a supportive environment 4) Broadening the understanding of the role of surgeons (Fig. 1).

For all the medical students, this was their first shadowing experience in surgery. Students also had the opportunity to participate in acute patient care. The perceived value of networking with diverse mentors was a recurring theme amongst all the students. The diversity of the program created a supportive learning environment in which students could learn about surgery as a profession. Participation in the program broadened the understanding of surgery as a profession and the academic roles that surgeons may play in research, administration, and leadership. The themes that emerged in this assessment are like that of Bryant et al.'s Service Through Surgery (STS) program, in which they implemented a series of seminars for underrepresented students in their pre-clinical years.[13] The STS webinar program, while it did not provide clinical exposure also served to provide diverse role models, helped to expand student perspectives on the field, and created a supportive learning environment.[13]

Initially, students wanted to get exposure to surgery to determine whether it would appeal to them. At the end of the Surgery SEED elective, all students reported interest in a surgical career and would recommend the elective to other students. Specifically, students felt welcomed by the surgical teams, enjoyed being in the operating room, clinic/office hours, and research lab. Surgery SEED students found interacting with patients in the perioperative setting, meeting with faculty/leaders and working with the Resident Mentor (Black woman) very meaningful. All students are provided with post-elective advice and mentorship and are coauthors of this article.

Therefore, it is imperative to align mentorship programs with recruitment programs by capitalizing on both URiM and non-URiM culturally sensitive faculty, residents, and senior medical students.[5,6] URiM residents and faculty can be empowered by spearheading initiatives that improve DEI within the institution, foster mentorship bidirectionally, lead to professional fulfillment, and contribute to the cultural diversity within academic surgery. However, institutions must

Table 1
The Direct quotes from the three Summer Experience to Enhance Diversity (SEED) Elective second-year medical students' reflective short-papers.

Race/Ethnicity/ Nationality and Gender Pronouns	Specific Experience(s)	Overall Elective
Student 1 Other/Caribbean/ Guyanese He/Him/His	"I was uniquely fascinated in the different types of wound healing and the indications for certain surgeries that required secondary intention to heal. Certain surgeries were made to heal differently to decrease the risk of infections and recurrence…For example, in General Surgery clinic we saw a patient who had diverticulitis and underwent surgery with temporary abdominal closure… Also, it doesn't surprise me that my best interaction in this program was with someone of color who cared about making a difference in our lives. This resident mentor took the initiative in showing us the ins and outs of succeeding in medical school to stand out to surgery programs that other people of privilege might know more easily. There were also people in the program who were not minorities that surprised me as well because they were invested in my development and enriching a diverse surgical population."	"I am interested in the idea of Surgery as a career in the future, and through this program I was able to see how surgeons interact with patients in pre-op, the OR, and in the post-op encounters…It's not just enough to increase diversity among surgeons; they must know that there will be more obstacles even when they are in positions that historically lack diversity. I have been fortunate enough to read and experiences these events because of this program. I am very thankful to have been given this opportunity to gain insight into general surgery and diversity among physicians, and I hope to carry that which I have learned throughout my career in medicine."
Student 2 Black/Afro-Caribbean/ Jamaican & Haitian He/Him/His	"There was a patient who got hit by a car and was in critical condition. I was told he would code throughout the night and won't make it. Me being a naïve medical student was sad about the news but did not anticipate him coding while I was there which is exactly what happened. The patient lost his pulse … A nurse screamed for me to do CPR, but my only knowledge was my 2-h BLS course in which I performed once on a dummy. I then started doing chest compressions ... My mind was racing with thoughts of "why am I doing this" and "when will someone else take over" but then it occurred to me that I am in medical school, and these are the skills that I will have to develop to save lives. The attending physician came in shortly after and handled the situation very calmy and organized. I saw what all these years of training will amount to, and it was impressive. Thankfully, we were able to stabilize him."	"For the most part, everyone was terrific between Kings County and University Hospital at Brooklyn. My observation of patient encounters spoke to me about the importance of my education and how much impact I can have on decreasing healthcare disparities by being an African American physician in a predominantly Black neighborhood. Also, Dr. [Resident Mentor] has done a fantastic job promoting diversity within healthcare by constantly highlighting how important our roles are, guiding us through this program, and answering questions that others would not have felt they had the time. According to research, diversity within surgery has been increasing, which is excellent, but it has not been reflected in leadership titles, which is vital for diversity trickling down. Similarly, I commend [our non-URiM Surgery leaders] for actively seeking to help diversify healthcare given their roles within Downstate."
Student 3 Hispanic/Afro-Caribbean/Dominican He/Him/His	"The most exciting part of the program was being able to observe surgical procedures in the OR. I was even able to scrub into a below-knee amputation under the supervision of Dr. [Clerkship Director]! Even though I felt like a kid in a candy store walking around the hospital, I had a sobering realization. A lot of the patients that I was seeing had similar comorbidities: diabetes, hypertension, and cardiovascular diseases. These illnesses seem to be plaguing our communities and the role of a general surgeon seems to be damage control. Unfortunately, many of the patients that I saw under the general surgery service were there because their conditions spiraled so out of control that it requires surgical intervention... such as the amputation of a leg or removal of the gallbladder."	"Surgery is a mentally and physically taxing field to be in; however, I was inspired by the camaraderie and leadership that the surgical residents demonstrated in times of high stress. Additionally, the program would have been difficult to navigate if it weren't for our fearless group leader Dr. [Resident Mentor]. I was able to learn through shadowing that the enthusiasm for research and passion for patient care is not lost even in a career that is emotionally and as physically taxing as surgery."

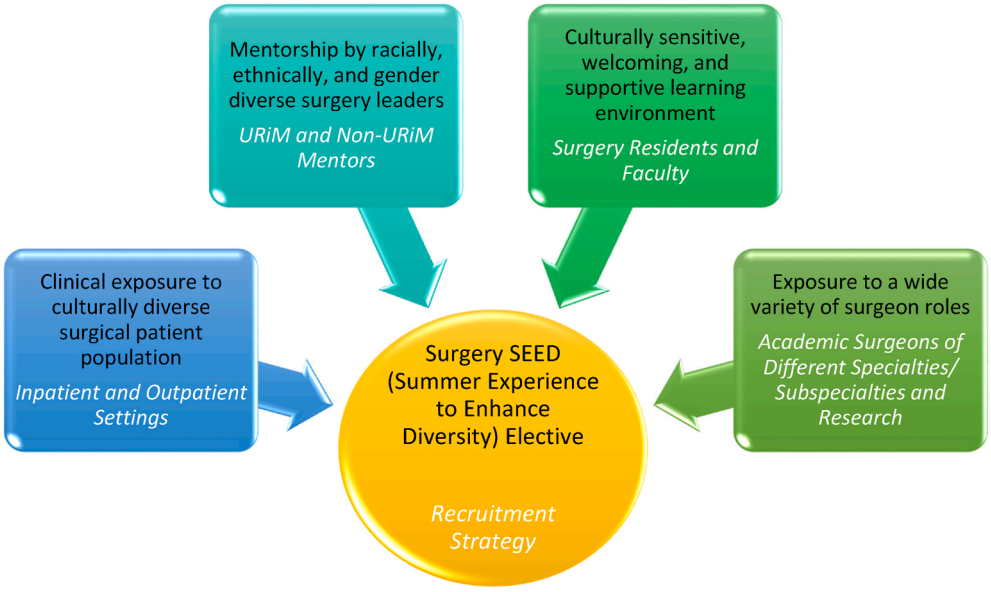

Fig. 1. The themes derived from second-year medical student assessments of the Summer Experience to Enhance Diversity (SEED) Elective.

be cognizant of a "minority tax," which places the burden of increasing "minorities" in surgical programs on the existing "minority" surgical trainees and faculty.[14] Measures must also be taken to mitigate undesirable consequences such as physician burnout and attrition amongst URiM. Also, institutions that evaluate the process and outcomes of recruitment programs can successfully promote change over time.[4,8]

Our Surgery SEED study has limitations because it is a pilot study with mostly subjective and short-term data. The number of URiMs in medical school is already scarce, so finding interested participants and scaling up the program will require multiple cohorts and time. Accordingly, we plan to increase the number of Surgery SEED student participants, perform a pretest posttest experiment using a standardized assessment tool, and track future cohorts to evaluate their advancement into surgical training and practice. Nonetheless, our first Surgery SEED cohort has had an overwhelmingly positive experience and provided us with proof of concept. So, the purpose of publishing our findings is to encourage and outline how other local surgery residency programs can implement similar recruitment strategies sooner rather than later.

In conclusion, successful strategic recruitment and retention programs will benefit academic institutions and reconstruct the surgical pipeline by providing students with early exposure to surgery, mentorship, intentional allyship rather than performative allyship, scholarly advancement, and deterrence of attrition. Current evidence supports such DEI initiatives because they yield a diverse, culturally sensitive learning environment, satisfactory representation of URiMs in academic surgery, and improve the quality of patient care by reducing healthcare disparities and inequities. However, the impact of newly implemented recruitment strategies, such as our Surgery SEED elective, must be determined by performing summative and formative evaluations of participating students who subsequently become surgeons.

Conflicts of interest/disclosures

There are no relevant conflicts of interest or disclosures.

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