

MEDICAL SCHOOL HOTLINE

The Value of Medical Student Mentorship in Surgical Specialties

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In 1993, the Medical School Hotline was founded by Satoru Izutsu PhD (former vice-dean UH JABSOM), it is a monthly column from the University of Hawai'i John A. Burns School of Medicine and is edited by Kathleen Kihmm Connolly PhD; HJH&SW Contributing Editor.

Abbreviations

AAMC = Association of American Medical Colleges

JABSOM = John A. Burns School of Medicine

LOR = Letter of recommendation

USMLE = United States Medical Licensing Exam

"If I have seen further it is by standing on the shoulders of giants." – Isaac Newton¹

Introduction

Mentorship holds a historical role in surgery, facilitating the dynamic, long-term, and symbiotic relationship between mentor and student. Mentors provide career guidance, clinical and operative knowledge, research opportunities, networking, and sponsorship. In turn, students gain research opportunities, keep the mentor current, and provide the mentor gratification. This relationship benefits the institution, improving research productivity, faculty satisfaction, and educational performance.²

Surgical specialties are becoming more popular as residency applications have rapidly outpaced available positions (**Figure 1**).³⁻⁵ Students at the John A. Burns School of Medicine (JABSOM) consistently pursue surgical specialties, with the majority matching into general surgery, orthopaedic surgery, and ophthalmology (**Table 1**). From 2017-2023, 16% of successfully matched JABSOM students entered surgical specialties, including 25% of students in 2023 (**Figure 2**). Given the rising competitiveness of attaining a surgical residency, the value of long-term mentorship cannot be understated. However, various challenges to attaining quality mentorship exist that are consequential to priorities and infrastructures of academic institutions. The purposes of this article are to highlight the barriers students face in attaining quality surgical mentorship, the importance of mentorship during medical school, and the ways students can find and utilize mentorship.

Barriers to Mentorship

Regardless of where students attend medical school, there will be barriers to finding high-quality mentorship. This is

attributed to oversaturation of students pursuing a specialty, mentors with limited time, mentors uninvested in students' careers, or difficulty accessing mentors.⁶⁻¹⁰ Although 95% of medical students perceive mentorship as important, only 33% have access to it.¹¹ The main limitation to surgical mentorship at JABSOM is the availability of mentors with adequate time. On the 2022-2023 JABSOM career advisor list, there are 21 advisors listed for general surgery, neurosurgery, ophthalmology, orthopaedic surgery, otolaryngology, plastic surgery, urology, and vascular surgery. However, there is only 1 advisor listed for ophthalmology, orthopaedic surgery, plastic surgery, urology, and vascular surgery. By contrast, there are 18 advisors for internal medicine, 8 for psychiatry, 6 for pediatrics, and 5 for family medicine. Although one may argue that the number of advisors is relatively proportional to the number of students applying into that respective specialty, students with 1 advisor option are at a disadvantage if the advisor has limited availability, connections, and responsiveness, or if the student is looking for multiple perspectives. Consequently, many students must spend additional time and effort seeking mentors who are the right match within the community. This is not an easy task.

Intuitively, adding more advisors would overcome this barrier. However, these are primarily voluntary roles. If a physician in private practice sacrifices clinical and/or operative time to meet with students, then this becomes a financial burden. If a physician sacrifices his/her free time, then this becomes a personal and/or family burden. Allocating funds, particularly for surgeons in private practice, and incorporating protected advising time for employed physicians can mitigate potential burdens.¹²⁻¹⁷

Furthermore, there is no formal surgical mentorship program at JABSOM compared to other medical schools.¹⁸⁻²⁴ Studies demonstrate a positive correlation between a formal surgical curriculum and the formation of mentor-student relationships.^{22,23,25} Implementation of a preclinical one-on-one mentorship program would be beneficial, as the majority of surgical residents find a mentor during their first 2 years of medical school.²⁶ Additionally, over 80% of students entering plastic and orthopaedic surgery have attributed their decision to pursue the specialty or a specific residency program to an influential mentor.^{23,27} For example,

the New York University Neurosurgery Mentorship Program connects students with potential mentors who can offer career guidance, shadowing opportunities, and research.¹⁸ This may benefit students regardless of intended specialty, as a one-on-one otolaryngology mentorship program helped students feel more prepared for clinical years.²¹ This is a consideration given the recent transition of the United States Medical Licensing Exam (USMLE) Step 1 becoming pass/fail, which was previously an important objective metric used to screen and evaluate residency applicants, as well as the removal of the USMLE Step 2 Clinical Skills exam. Subsequently, residency programs are emphasizing clinical grades and the USMLE Step 2 Clinical Knowledge when screening and evaluating applicants.

No Residency, No Problem

JABSOM does not have residency programs in neurosurgery, ophthalmology, otolaryngology, plastic surgery, urology, or vascular surgery. JABSOM students pursuing these specialties have limited access to faculty, residents, and research opportunities compared to medical students with home residency programs. Students should identify the JABSOM division chief in their specialty of interest as early as possible. It is also important to connect with physicians in the community through the division chief, student interest group, JABSOM Office of Student Affairs, Association of American Medical Colleges (AAMC) career night, or upper-level medical students.

Despite not having a home program or a formal research infrastructure, students can still engage in productive research and develop meaningful, long-term mentors. Medical students without a home otolaryngology program have gained mentors and conducted research through a local private practice group.²⁸ Alumni in the continental United States can also be resources for guidance and remote research opportunities. Internships during the summer between the first and second years of medical school and research years are viable options as well.

Diversity, Equity, and Inclusion

Diversity in mentorship is an important factor in providing role models and attracting students from underrepresented backgrounds. Physicians from underrepresented groups are more likely to provide care to and have better patient satisfaction with underserved populations.^{29–33} This is relevant, given the population of Native Hawaiians and other Pacific Islanders in Hawai'i and the health disparities that affect them.^{34–40} Currently, there are discrepancies in the proportion of racial, ethnic, and gender minorities in surgery.^{41–46} Barriers to surgical mentorship include lack of mentors, equity for underrepresented groups, and formal specialty exposure.^{47–49} At JABSOM, the *Pū Pa 'akai* Native Hawaiian Tiered Mentoring Program pairs Native Hawaiian students with Native Hawaiian physicians in the specialty of interest.⁴⁹ JABSOM students may also seek national programs implemented to help students from

underrepresented backgrounds acquire well-connected mentors. For example, the Nth Dimensions, Perry Initiative, and Ruth Jackson Orthopaedic Society provide mentorship and opportunities for women and/or underrepresented minorities interested in orthopaedic surgery.^{50–53} The American Academy of Otolaryngology-Head and Neck Surgery implemented mENTor, a program providing one-on-one mentorship to medical students interested in otolaryngology.⁵⁴ Students should keep in contact with these mentors for future opportunities, career guidance, and sponsorship.

Research Year

Given the desire to make one's application more competitive, many students are utilizing a "research year" between the third and fourth years of medical school to develop mentors and advocates during a pivotal time in their career.^{2,55–62} This can be either clinical or basic science (laboratory) research, although clinical research may be preferred due to the ability to complete more projects within a shorter timeframe.^{63,64} The AAMC reported that the number of students taking a non-degree research year during medical school has more than doubled from 1995-2010.⁶⁵ An astounding 32% of students applying to orthopaedics pursue this option and the number of research year applicants has nearly doubled from 2014-2021.⁵⁹ These can be through formal programs or unpaid positions. In turn, research years are associated with an increased likelihood of matching into surgical specialties.^{61,62,66} Egol et al found students who completed a research year matched into orthopaedics at a higher rate than those who did not complete a research year (91.0% vs. 67.9%).⁶¹ Interactions through research activities provide mentors with more opportunity to get to know students and thus, advocate on their behalf.⁶¹ Prior to committing, it is important students discuss the following with current and prior researchers: (1) financial implications (eg, travel, cost of living, stipends), (2) match success of prior researchers, (3) research productivity, and (4) the faculty they will be working with.

Who Is Giving Advice?

Students may also find mentors in attendings, residents, and medical students. However, it is important for students to be cognizant regarding advice they are given. Career advising should be limited to physicians within that specialty or faculty who have access to historical data. With the transition of the USMLE Step 1 to pass/fail, addition of the supplemental residency application, and new ability for students to "signal" a limited number of residency programs that they're notably interested in when applying, physicians who are more "up-to-date" may be better equipped to advise students. Despite limited data and understanding regarding these implications, finding mentors who are, or know faculty who are, involved in the residency selection can provide students with better insight regarding their true competitiveness and how these changes will impact their application.

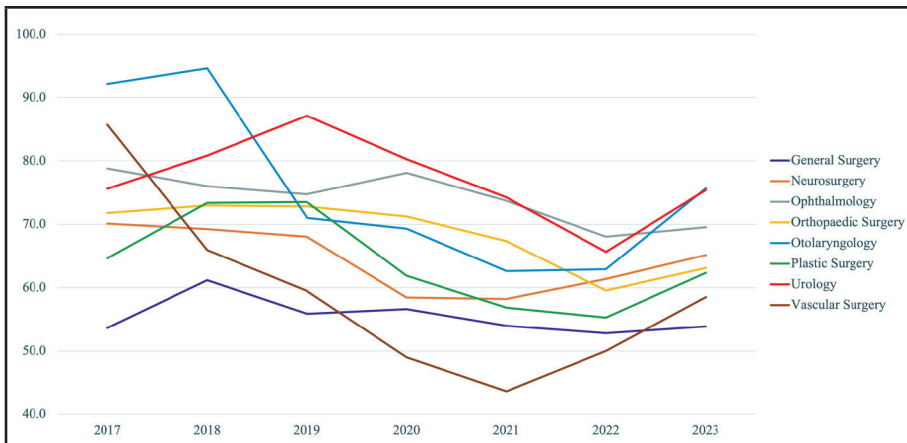


Figure 1. Percentage of Categorical Postgraduate Year-1 (PGY-1) Residency Positions to Applicants: 2017 to 2023

Table 1. Number of John A. Burns School of Medicine Students Matching into Surgical Specialties: 2017 to 2023

Specialty	2017	2018	2019	2020	2021	2022	2023	Total
General Surgery	8	5	7	3	5	2	7	37
Orthopaedic Surgery	0	2	1	3	0	3	5	14
Ophthalmology	1	0	4	1	1	2	2	11
Neurosurgery	1	0	0	0	2	2	0	5
Otolaryngology	1	0	0	0	0	0	3	4
Vascular Surgery	0	0	0	1	0	0	0	1
Urology	0	1	0	0	0	0	0	1
Plastic Surgery	0	1	0	0	0	0	0	1
Total	11	9	12	8	8	9	17	74

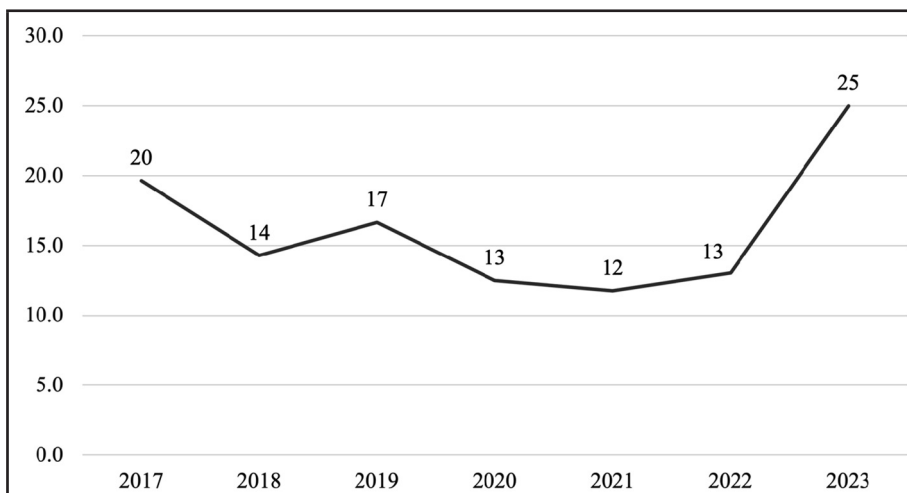


Figure 2. Percentage of John A. Burns School of Medicine Students Matching into a Surgical Specialty: 2017 to 2023

Residents can be a valuable resource and may be perceived as better clinical mentors than attendings due to greater interactions and relatability.⁶⁷ Residents can provide perspectives on programs, specialty insight, sub-internship guidance, research opportunities, and advocacy during selection. Medical students should identify which residents are equipped to offer advice aligned with their career goals. Strategies to consider include: (1) engaging upper-level residents, (2) asking which residents might provide useful advice, and (3) reaching out to recent JABSOM alumni.

Lastly, upper-level medical students can be valuable resources. Although their experience may be limited, they can offer personal experience through low-pressure relationships.⁶⁸ Upper-level medical students may become residents at mainland institutions and can broaden a student's network going forward.

Constructive Feedback

One of the most important aspects of the mentor-student relationship is the ability to provide and receive constructive feedback. Faculty may feel limited in their ability to provide feedback due to concerns of retaliation and/or oversensitivity. Studies demonstrate that although student satisfaction is correlated with compliments, performance is correlated with constructive feedback.⁶⁹ Importantly, formal feedback sessions and Socratic teaching methods can be beneficial without decreasing clerkship enjoyment.^{70,71} Medical students should be mindful that this is a learning opportunity, use this as motivation to improve, show appreciation, and be proactive to change behavior.^{2,72,73}

Honest feedback is essential when discussing a student's candidacy for residency. To determine the student's likelihood of matching, the mentor should know the student's curriculum vitae, including standardized board scores, clinical grades, research, leadership, and awards. The mentor should highlight strengths and weaknesses of the student's profile, including potentially not being competitive for the specialty. This will set realistic expectations and provide time to strategize back-up plans. Conversely, if the mentors cannot discern the students' competitiveness, they may provide overly cautious advice to hedge a negative outcome. This includes taking a research year when it may not benefit the applicant or applying to more programs than necessary, both of which carry a significant financial burden. Given that the cost of application fees is based on the number of applications submitted, applications during the 2022-2023 academic year to 30 residency programs costed \$519, 75 programs \$1,689, and 100 programs \$2,339. Additionally, cautiously advising students to apply to many programs is fueled by game theory rather than success.⁷⁴⁻⁷⁶

Letter of Recommendation

The duration and quality of the mentor-student relationship is important to provide contextual legitimacy to the letter of

recommendation (LOR).^{77,78} Students who have spent an extended duration in multiple settings (eg, clinic, operating room, research) with their mentor may be perceived with more credibility than those who have spent limited time in a single setting. Additionally, mentors can provide a personalized narrative that speaks to the unique qualities of the student. Ideally, JABSOM students should seek letters from mentors within the specialty of interest. For example, neurosurgery recommends students seek letters from neurosurgery mentors, as non-neurosurgery mentors (ie, surgeons in other specialties) may not understand the unique challenges pertaining to neurosurgery residency.⁷⁹ Although receiving an outstanding letter from a well-known surgeon is ideal, this is not always feasible. An outstanding letter from a lesser-known mentor will be more favorable than a mediocre letter from a well-known chair/program director.

Surgical specialties have recently transitioned to a standardized LOR template to avoid the subjectivity with just a narrative LOR. However, concerns for grade inflation still exist.⁸⁰⁻⁸⁶ Despite minor template variations between specialties, the overall goals are to (1) define the duration and quality of the mentor-student relationship, (2) place the student in a percentile within each evaluative domain, and (3) specify where the applicant will be ranked. Thus, engaging with mentors early in multiple settings may maximize favorable evaluations in all domains.

Sponsorship

Sponsorship is a level above mentorship, in which mentors advocate on behalf of the student. This involves contacting programs to help the student receive a research opportunity, sub-internship, interview, or favorable rank list position. Students should update mentors regarding timelines, interviews, and their top choice residency program, as most sub-internships are offered on a rolling basis and rank lists are often made immediately after the last round of interviews.

Conclusion

Quality, long-term mentorship is invaluable for JABSOM medical students pursuing surgical specialties. Establishing mentorship early can provide a reciprocal relationship for both the mentor and student. Various barriers exist that make acquiring quality mentorship challenging. However, there are various resources for students to find mentors both in Hawai'i and in the continental United States. Ultimately, mentorship can evolve into sponsorship, which students can leverage to gain advantage when matching into a surgical specialty.

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