INTERSECTIONS
THE EDUCATION JOURNAL OF THE WOODRUFF HEALTH SCIENCES CENTER

What Are My Options? Introducing Health Professional Students to Subspecialities

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DOI: 10.59450/QNFF9860

TAKE HOME POINT – Some medical subspecialties face challenges attracting trainees due to lack of exposure in medical school. We describe ways to increase trainee exposure to these subspecialties to address this shortage.

ABSTRACT

Training programs for health professionals provide students with the general skills of their field, but only some exposure to the career paths that they might pursue after graduation. Students are often unaware of all specialty choices, and educators from less represented fields must look for ways to become more visible. This dilemma is faced by radiation oncologists, who often lack face time with medical students. In this piece, we present some recommendations for radiation oncology educators, based on our experiences, that can be adapted for use by other health professional educators to increase the visibility of their areas of practice for students.

INTRODUCTION

Many physicians outside of oncology lack a comprehensive understanding of radiation oncology, despite over 50% of oncologic patients requiring radiotherapy as part of their cancer care (Mattes et al., 2022; Jafrray & Gospodarowicz, 2015). The lack of familiarity with radiation oncology concepts is likely related to inadequate exposure to radiation oncology in the medical school curriculum (Arbab et al., 2021; Dennis & Duncan, 2010). Furthermore, in recent years training spots for the field of radiation oncology have gone unfilled, suggesting a waning interest in the field (National Resident Matching Program, 2023). The 2022-2023 National Resident Matching Program (NRMP) data reported 26 of the 87 residency programs did not fill all their training position (2023). This difficulty in recruiting trainees is also seen in some other subspecialties, such as geriatrics and genetics (Holveck & Wick, 2018; Jenkins et al., 2021).

One explanation for the difficulty of attracting trainees is a lack of exposure to certain subspecialties. For example, most medical school curricula have few, if any, lectures dedicated to radiation oncology.

Incorporating radiation oncology into undergraduate medical education is essential in establishing the foundation for understanding cancer care, particularly with the treatment of solid malignancies. We discuss strategies to improve medical student exposure to radiation oncology with three main categories of opportunities for involvement: preclinical years, clinical years, and mentorship (Table 1). These tactics may provide insights for educational leaders in other medical subspecialties and health professions programs with an interest in enhancing subspecialty exposure.

Table 1: Opportunities to enrich undergraduate medical education with radiation oncology

Category	*Opportunity*
Preclinical	Expanding Oncologic Curriculum Assessments, lectures, problem-based learning, histology, anatomy Student Interest Group Tour of Facilities Hands-on Contouring Session Specialty Fair
Clinical	In-Person Clinical Rotations Host institution, "Away" institution Pre-clinical electives Virtual Rotations Multidisciplinary Oncology Rotation Multidisciplinary Clinic Involvement Tumor Board Involvement
Mentorship	Clinical Mentorship Career advice, SWRO, ASTRO, diversity and inclusion Research Mentorship Programs, funding, awards

ISSN 2836-9130

Initial Steps

Before initiating opportunities for medical students, department and program leaders (typically the program director or the department chair) should engage faculty and residents in medical students' education. To best organize efforts, additional leaders may be recruited, such as the Medical Student Elective Director and/or interested residents serving as Medical Student liaisons. Having resident liaisons as departmental point persons may be valuable to medical students because residents are temporally closest to medical students in their training and are perceived as approachable. Students may be referred to liaisons if they express an interest in the field. Additionally, liaisons may take the lead on departmental student interest and educational events. Encouraging departmental engagement with student education among faculty and residents enhances the development of student activities and boosts enthusiasm for the field.

Involved faculty, residents, and other educators must work to develop a positive and collaborative relationship within their school or program. Finding space for topics such as radiation oncology education can be challenging given the many competing interests in most health professions' curricula. Identifying areas where a new topic could be intertwined with other topics may provide increased success. A needs assessment of current activities and student perspectives on the relevant topic might provide important insights. This assessment could take the form of a survey distributed to students or an assessment of the current curriculum. Results would indicate which initiatives to prioritize. We outline some ideas specific to radiation oncology below.

Preclinical Years

Exposure to radiation oncology can be especially useful in the preclinical years, a formative time for students to begin considering specialties. The preclinical curriculum may vary amongst programs across the country. Curricula may be primarily lecture-based or involve more active learning strategies, such as problem-based learning (PBL), an educational approach that engages students with course material through discussions and problem-solving in small groups (Dubin, 2016). Understanding how a program's curriculum is organized is critical to the optimal incorporation of radiation oncology into the syllabus. The most obvious point of entry is through direct involvement in the didactic or problem-based preclinical curriculum. Topics in radiation oncology can be combined into an intensive oncology-focused block or oncologic topics could be distributed through various organ system blocks i.e., lung cancer discussion during pulmonology block (Neeley et al.,

ISSN 2836-9130

2018). Radiation oncology residents and faculty could participate in preclinical assessments, lectures, cases, or anatomy didactics. Radiation oncology faculty involvement on curriculum development committees can help encourage the incorporation of radiation oncology topics while also advancing faculty professional development.

One example of a mutually beneficial opportunity for medical students and radiation oncology faculty is to integrate a cancer case into the PBL curriculum. At Emory, our Medical Student Liaison (N.A.) and Medical Student Elective Director (J.L.) worked with the Gastroenterology Course Director (T.D.) on a PBL case focused on the multidisciplinary treatment of pancreatic cancer. The case provided students and radiation oncology facilitators an opportunity for an in-depth discussion regarding the workup, diagnosis, and treatment of pancreatic cancer. This interactive one-hour session improved the visibility and approachability of our radiation oncology department among preclinical medical students and undergraduate medical educators.

Another opportunity to enhance awareness of radiation oncology is through the development of a student interest group (Agarwal et al., 2017). Such a group could be radiation oncology-specific or in combination with other oncology-focused specialties, such as medical oncology, surgical oncology, and pediatric oncology. Student leaders of the oncology interest group could aid radiation oncology faculty and residents in coordinating events for the general medical school population including specialty panels, career day, tours of radiation treatment facilities, radiation treatment planning sessions, and shadowing opportunities. These events can provide preclinical students with a glimpse of the inner workings of the field.

Clinical Years

Medical school curricula usually provide clinical opportunities to students in their third and fourth years of training. Medical students complete core clerkships during their third year and have additional elective time available in their fourth year. Students apply for residency at the start of their fourth year. Because radiation oncology is not a core clerkship, most students have already committed to a specific specialty by the time they have the opportunity to explore the field. This approach results in missed opportunities to attract students to the field of radiation oncology through clinical electives.

Introducing radiation oncology as an elective earlier in the curriculum requires tailored efforts at individual institutions. At Emory, we developed a radiation oncology elective for second-year medical students, who are required to

ISSN 2836-9130

participate in one three-month elective alongside their didactics. Up to four students can chose the elective in radiation oncology and spend approximately one day per week working with attendings and residents in clinic. These students are also introduced to radiation treatment planning, simulation procedures, radiation treatment setups, tumor boards, peer review, brachytherapy procedures, and multidisciplinary clinics. They are also required to complete a scholarly project, such as a case report or a clinical research project. Programs that cannot offer such an elective could make shorter and/or virtual clinical experiences available. These experiences increase accessibility, can help reduce financial and logistical barriers for students, and provide access to students who do not have home radiation oncology programs (Janopaul-Naylor et al., 2021).

Programs can also consider expanding beyond very specific clinical experiences. For example, a multidisciplinary oncology rotation can be offered as an organized effort between radiation oncology, medical oncology, and relevant surgical subspecialties to allow students to experience the full spectrum of oncologic care. At Emory, we created a multidisciplinary outpatient oncology elective with the aim to introduce students to the work-up, diagnosis, and treatment of head and neck and breast cancers, through an integrative approach. The rotation is split into two-week blocks, with one block focused on head and neck cancers and the second focused on breast cancer. During the head and neck cancer block, students rotate with an otolaryngologist, radiation oncologist, medical oncologist, neuroradiologist, and pathologist. Similarly, for the breast cancer portion of the elective, students rotate with a breast cancer-specialized surgical oncologist, radiation oncologist, medical oncologist, plastic surgeon, breast radiologist, and pathologist. Students also attend multidisciplinary clinics, tumor boards, and specialty-specific clinics. The diversity of settings emphasizes the team dynamics of cancer care. Similar rotations focusing on the multidisciplinary nature of the treatment of other malignancy sites could also be considered.

Mentorship

Mentorship is one of the most effective techniques for student education (Arifin et al., 2021). One accessible avenue for mentorship in radiation oncology and other subspecialties is through research. Many institutions and several extramural funding sources have grants to support student research, which can serve as an entry point for students interested in a specialized field. At Emory, the department of radiation oncology provides scholarship funding to two

ISSN 2836-9130

medical students from any accredited medical school in the country for summer research. Students are paired with a faculty member for research mentorship.

Similarly, formal mentorship programs can pair trainees with residents and faculty to provide insights regarding research and career goals. At Boston University, a formal mentorship program in radiation oncology with both clinical and research tracks was created for medical students. The majority of students felt the mentorship program was effective in solidifying their career choices and improving their research skills (Boyd et al., 2020).

Outside of an individual institution, there are often national organizations that support mentorship. In radiation oncology, virtual mentorship programs and grant funding are available at a national level through organizations such as the American Society of Radiation Oncology (ASTRO) and the Society for Women in Radiation Oncology (SWRO). In 2018, SWRO created a formal mentorship program to fill an unmet need for female mentors with pairings between students, residents, and attendings. Many participants in this program felt the virtual pairing was a positive experience (Seldon et al., 2021). Additionally, ASTRO provides grant funding for medical students who are underrepresented in medicine to complete a radiation oncology training program and travel to the ASTRO Annual Meeting (ASTRO). These and similar mentorship and funding opportunities may serve as important pathways for improving diversity, equity, and inclusion in the field (Seldon et al., 2021; ASTRO).

CONCLUSION

In this Perspective piece, we describe multiple ways that the radiation oncology department is engaging with medical students at Emory. These experiences may serve as a model for faculty in other subspecialties and health professional programs to attract students to their fields.

ISSN 2836-9130

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ACKNOWLEDGMENTS

The authors received no grant support for this work and declare they have no conflicts of interest in regard to this work.

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ISSN 2836-9130

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ISSN 2836-9130