

Brief Opinion

Pathways for Recruiting and Retaining Women and Underrepresented Minority Clinicians and Physician Scientists Into the Radiation Oncology Workforce: A Summary of the 2019 ASTRO/NCI Diversity Symposium Session at the ASTRO Annual Meeting



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Abstract

Diversifying the radiation oncology workforce is an urgent and unmet need. During the American Society of Radiation Oncology (ASTRO) 2019 Annual Meeting, ASTRO's Committee on Health Equity, Diversity, and Inclusion (CHEDI) and the National Cancer Institute (NCI) collaborated on the ASTRO-NCI Diversity Symposium, entitled "Pathways for Recruiting and Retaining Women and Underrepresented Minority Clinicians and Physician Scientists Into the Radiation Oncology Workforce." Herein, we summarize the presented data and personal anecdotes with the goal of raising awareness of ongoing and future initiatives to improve recruitment and

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retention of underrepresented groups to radiation oncology. Common themes include the pivotal role of mentorship and standardized institutional practices — such as protected time and pay parity — as critical to achieving a more diverse and inclusive workplace.

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Introduction

There is a significant lack of African American, Latino, and female representation in the field of radiation oncology compared with the US population, medical school graduates, and other related medical specialties. Diversifying the radiation oncology workforce is an important step toward improving cancer care for underserved populations and minimizing existing racial and ethnic disparities in cancer outcomes. During the American Society of Radiation Oncology (ASTRO) 2019 Annual Meeting, a joint session between ASTRO's Committee on Health Equity, Diversity, and Inclusion (CHEDI) and the National Cancer Institute (ASTRO-NCI Diversity Symposium) was held to describe the existing data on the extent of diversity of the radiation oncology workforce from a variety of stakeholders including medical educators, learners, physician-scientists, and administrative leaders. Four speakers were invited to share a unique combination of current evidence and personal testimonial on these topics: early exposure to radiation oncology (M.D.M.), the medical student experience (R.B.M.V.), recruitment/retention of physician scientists (F.E.E.), and recruitment/retention of female faculty (C.L.). Given the value of this session to the radiation oncology community at large, each talk has been summarized with careful attention to preserving the structure of the session and each speaker's perspective and voice (Figure 1). Our goal is to bring awareness to ongoing national and local initiatives to attract and retain underrepresented minority and female medical students, residents, and faculty in radiation oncology.

The Effect of Early Exposure on Radiation Oncology Workforce Diversity

For many students, including the women, African American, and Latino students who are underrepresented in radiation oncology,¹ the ultimate pursuit of a radiation oncology residency position begins with a student's initial exposure to the specialty during medical school, after which interest can be cultivated through effective mentorship, along with clinical and research opportunities.^{2,3} Unfortunately, at many medical schools the probability of any student being exposed to radiation oncology is relatively low.⁴⁻⁷ There are a variety of barriers to integrating a small, highly specialized field of

medicine like radiation oncology into a general medical curriculum. However, select radiation oncologists have described creative ways in which they achieve this goal, going beyond the more standard offerings of research mentorship and the fourth year elective clerkship to reach an appreciable percentage of a medical school class.⁸ This may include clinically oriented approaches like developing a multidisciplinary oncology clerkship, summer seminar series, or tumor board shadowing experience; research-oriented pathways like proactively advertising research opportunities or providing departmental funding incentives; or mentorship-oriented pathways like developing a radiation oncology interest group or organizing an event where interested students can get an in-depth department tour and get to know residents and faculty.⁸ There is a discordance between the schools that have the largest radiation oncology departments and produce the most radiation oncology residents and the schools that are the most diverse.⁹ For instance, 21% of medical schools lack an on-site affiliated radiation oncology department, and this is particularly common at schools with a larger percentage of underrepresented minority students.⁹ As such, educational outreach initiatives to schools and students who may otherwise get very limited exposure to radiation oncology is likely to help diversify the workforce. Furthermore, several studies have demonstrated that racial/ethnic or gender concordance of student-mentor relationships leads to greater productivity and more effective recruitment.¹⁰⁻¹² As such, promoting more female and underrepresented minority academic faculty members, especially those with an interest in medical student education, is likely to help diversify the radiation oncology workforce as well.^{13,14}

Medical Student Experiences, Barriers, and Opportunities: A Personal Testimonial

During medical school, I did not come upon radiation oncology until my third year. By then, I was determined to pursue residency either in obstetrics or pediatrics, and I completed my subinternship in pediatric hematology-oncology. It was during a random elective assignment to radiation oncology that I came to appreciate the time that the profession would allow me to spend with my patients and that I could care for patients both young and old. But, I was intimidated by the competitive nature of the field — the expectation to pursue research and the particularly high Step scores of the other applicants.¹⁵ It

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| <ul style="list-style-type: none"> • Early exposure to radiation oncology is critical to foster interest among diverse medical students. Successful approaches for early engagement include developing a multidisciplinary oncology clerkship, summer seminar series, or tumor board shadowing experience; proactively advertising research opportunities or providing departmental funding incentives; developing a radiation oncology interest group or organizing an event where interested students can get an in-depth department tour and get to know residents and faculty. |
| <ul style="list-style-type: none"> • Mentorship is a key component to cultivating a more diverse workforce. Several initiatives within ASTRO and CHEDI aim to promote mentor/mentee relationships, including the ASTRO's Minority Summer Fellowship Award, geared towards medical students interested in radiation oncology. The ASTRO Pipeline Protégé Program is a faculty-directed program with the goal of providing ASTRO members greater exposure to leadership activities, committees, and councils. |
| <ul style="list-style-type: none"> • The number of physician-scientists in radiation oncology is declining. Women and underrepresented minorities face unique challenges and bias in funding and publication. Efforts to better define and characterize the radiation oncology physician-scientist workforce are underway with the goal of devising systematic, targeted interventions to improve recruitment and retention of diverse physician-scientists. |
| <ul style="list-style-type: none"> • Women in radiation oncology are underrepresented and encounter several challenges including pay inequity, lack of promotion, and inadequate representation within national leadership. Solutions include building supportive departments for family friendly career paths, diverse background friendliness, equal pay and equal promotion opportunities. |

Figure 1 Key Points from 2019 ASTRO-NCI Diversity Symposium.

was during a gap year between my third and fourth year of medical school, while pursuing a master in public health degree, that I met the radiation oncologist who would become my research and career mentor. Our relationship helped me build the confidence to pursue a new and challenging goal.

The term “mentor” incorporates a broad range of meanings and applications, but the role of a mentor can be further categorized when contrasted against the idea of a sponsor or preceptor. A mentor is a listener and guide who also provides practical insight and constructive criticism. A sponsor is a coach or advocate in the workplace with leadership power who can lean in with a mentee. A preceptor typically reflects medical and residency education and is considered to be a teacher in the fellowship model of training.¹⁶

Beyond that, there are 2 overarching types of mentorship: traditional, which is a senior colleague advising a mentee, versus transformational, which is a relationship whereby both the mentor and mentee learn and grow. Beyond advice, the benefits of mentorship have been quantified and published, and include goal-setting, career development, achieving long-term plans, stress reduction, and increasing self-confidence.¹⁷ Although a

traditional mentorship relationship may assume the mentor as steward, the mentee also has responsibilities to shoulder for success. Pitfalls to mentee success may include conflict aversion and low confidence that can hinder open communication; similarly, self-motivation (or lack thereof) may open or close doors for mentees.

Scholars have published on the vital components of successful mentorship relationships, and these ingredients all reflect one commonality: trust between mentor and mentee. Indeed, these vital components—open communication system, permission for mistakes, willing participation, flexibility, being open, and setting standards and expectations—represent varying shades of trust.¹⁸ In the field of radiation oncology, there is still substantial ground to gain in terms of lessening mentor and mentee disparities to retain underrepresented minorities in the workplace. To intentionally address these disparities, various organizations have provided opportunities for underrepresented medical students including ASTRO, American Society of Clinical Oncology, American Society of Hematology, and the National Institutes of Health. Apart from medical student opportunities, obstacles can be greater for women and underrepresented minorities; to address this imbalance, ASTRO's board in conjunction

with CHEDI debuted the ASTRO Pipeline Protégé Program, with the goal of providing members within ASTRO exposure to leadership activities that aim to improve diversity within ASTRO's committees and councils and diversify its future leadership.

After meeting my mentor, I applied for and received ASTRO's Minority Summer Fellowship Award, which supported my research and clinical activities and legitimized my interest in the field. As junior faculty at the University of Florida, I know her mentorship combined with the open door provided by ASTRO have contributed to my present successes.

Recruitment and Retention of Physician-Scientists

Compared with prior eras, the proportion of physician-scientists in all fields of medicine has decreased from about 5% in the 1980s to just 1.5%. Jain et al¹⁹ make the provocative case that physician-scientists are an endangered species. By extension, because physician-scientists are a minority within radiation oncology, and underrepresented minorities and women are minorities within radiation oncology, female and underrepresented minority physician-scientists in radiation oncology could be considered "critically endangered," suggesting that a call to action to support members of this community is warranted.

The Association of American Medical Colleges published an MD-PhD Program Outcomes Study in 2018.²⁰ About 25% of alumni were practicing internal medicine, whereas 3% were practicing radiation oncology. Interestingly, MD/PhDs account for almost 17% of radiation oncology residents, compared with 4.2% of all internal medicine residents. However, current MD/PhD students expressed a decreased interest in pursuing radiation oncology compared with a decade-overdecade increase since the 1970s.²⁰ Wallner et al²¹ published a 10-year outcomes study on the American Board of Radiology Holman Research Pathway (HRP), which aims to provide additional research time to residents interested in physician-scientist careers, and reported that 75% of all graduates were full-time faculty—the study-defined measure of a successful outcome. Notably, although HRP does offer protected time and potential for mentorship, it does not include funding, which may partly explain a recent national downward trend in radiation oncology HRP applicants.²²

When considering the pipeline of predoctoral students, there are notable biases against women and underrepresented minority candidates, despite having identical credentials as their white male counterparts.^{23,24} Furthermore, these groups face other challenges, including poorer funding and first authorship publication opportunities at the postdoctoral levels.²⁵⁻²⁸ These biases

permeate beyond the early career phase and continue into securing R-level National Institutes of Health funding, which is not only highly competitive, but also has demonstrated bias in the evaluation process.²⁹

To improve diversity in our physician-scientist workforce, we must first accurately define and identify current physician-scientists. Physician-scientists have diverse educational backgrounds including MD/DO, MD/DO-PhD, and MD/DO combined with other advanced degrees. Physician-scientists may also study a wide variety of disciplines, from basic science, laboratory-based work to clinical outcomes and health services research. Collaboration between a diversity of physician-scientists will allow us to leverage clinical practice and outcomes data into relevant research questions, enhancing our basic, translational, and clinical science portfolios in radiation oncology. To identify currently practicing physician-scientists, the ASTRO Community of Radiation Oncology Physician-Scientists, Promoting Science Through Training and Research Committee, and CHEDI have partnered to have ASTRO members self-identify as physician-scientists on their member profiles (<https://www.astro.org>). This small but significant tool will help not only to define this cohort, but could simultaneously serve as a support network for aspiring physician-scientists in radiation oncology. Opportunities for mentorship and collaboration between physician-scientists may result from the creation of such a network. Only then can we devise systematic, targeted interventions to build the foundations for the future of radiation oncology, with an eye toward supporting mentorship, protected time, and funding for physician-scientists.

Recruitment and Retention of Female Faculty

The median number of female faculty in U.S. academic radiation oncology departments is 2. Four issues need to be addressed to solve the lack of female faculty: (1) we must have female faculty available to hire, (2) we must compensate women commensurate with men, (3) we must promote women commensurate with men, and (4) women must be available to be mentors.

To address these issues, the challenges must be noted. First, data show a decline in female residents over the past several years.³⁰ Second, data show that both compensation and faculty rank for women are lagging men.^{31,32} This lag exists not only in the academic departments but even within ASTRO leadership, as seen in the designation of Fellow of ASTRO, where women lag men significantly. Finally, anecdotally, many senior female faculty have had few if any female mentors of their own, and therefore mentorship of junior female faculty may be more challenging than expected.

With regard to our practice design at Medical College of Wisconsin (MCW), we have high standards of practice that are consistently followed with policies and procedures. Our formal mentoring program has support for the promotion process and a track record of successful promotions. We have compassionate counseling when needed for career and/or personal problems. We have continuing medical education funding, defined academic time, and equality in call requirements, time off for vacations, conference time, and sick leave that is equitable across rank. We also have monthly faculty meetings to stay connected.

I took the opportunity to ask our female faculty members why they came and why they stay at MCW. The responses uniformly mention things like unique collegiality, the mentorship program, that the program is family friendly, that “people at MCW are easy to talk to about almost anything,” and “everyone has my back.” It was even noted that men are supportive of women at MCW.

Developing a female family friendly department is possible, but it has to be desired and actively created. We must encourage women to go into our field and support the ones who are already with us. We need to build supportive departments for family friendly career paths, diverse background friendliness, equal pay, and equal promotion opportunities. In the end these improvements will help both our female faculty as well as our male faculty, so that all faculty have the best careers possible.

Conclusions

The 2019 ASTRO-NCI Diversity Symposium aimed to share published data, as well as unique anecdotal experience, on select issues affecting workforce diversity from a range of voices including educators, medical trainees, physician-scientists, and administrative leaders. Common themes included the pivotal role of mentorship and standardized institutional practices – protected time and pay parity, for example – as key to achieving a more diverse and inclusive workplace. Although this session did not comprehensively cover all topics affecting diversity in radiation oncology, it served as a starting point for a broader discussion within and among the ASTRO membership on further diversifying our workforce and engaging underrepresented minorities and women in our field. Future goals for CHEDI and CHEDI educational sessions at ASTRO are to increase dialogue and enable further action on national, regional, and local levels to improve representation of underrepresented groups in our field.

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