Advances in Radiation Oncology (2024) 9, 101504

advances in radiation oncology

www.advancesradonc.org

Scientific Article

The Assistant Clinical Research Coordinator Program: A Pathway for Recruitment in Radiation Oncology

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Received 27 November 2023; accepted 16 March 2024

Purpose: Recruiting prospective physicians to radiation oncology can be challenging, because of limited familiarity with the field. The Assistant Clinical Research Coordinator (ACRC) program can help provide trainees early exposure to radiation oncology.

Methods and Materials: The ACRC program involves hiring a college graduate to provide administrative and research support for faculty members. The program was developed with our institution's clinical trials office, which provided guidance on regulatory compliance and training. A structured selection process identifies top candidates, and a rigorous onboarding process ensures smooth transitions between ACRCs. We report characteristics and outcomes of ACRC employees and surveyed them to assess their program experience using a Likert scale.

Results: From 2005 to 2023, the ACRC program paired 73 ACRCs with faculty. Most faculty (68%) are currently supported by ACRCs. In 2023, 113 applications were received for 4 positions. ACRCs have contributed to research publications (293 as coauthors and 43 as first authors) and taken on leadership roles in the department. Most program alumni have attended medical school (34 of 64 program graduates; 53%). Eight have chosen to specialize in radiation oncology (13%; 2 applying into radiation oncology, 1 in residency, and 5 attendings). Of the 25% of alumni who responded to our survey, 77% responded that the mentorship provided by the ACRC program was very or extremely effective in guiding their academic development. All respondents rated the research opportunities as good or excellent, and 77% rated the clinical experience opportunities as good or excellent. Most (77%) reported that the ACRC program had substantial or significant influence on their choice of career path.

Conclusions: The ACRC program provides an opportunity to address recruitment challenges in radiation oncology by offering early exposure to the field, clinical research skills, and mentorship. With the strong interest in our job posting this year, there is potential to expand this program to other institutions.

Introduction

Recruiting prospective physicians to a career in radiation oncology can be challenging, due in part to a lack of exposure to the field before and throughout one's medical

Sources of support: This work had no specific funding.
Research data are available upon request.

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https://doi.org/10.1016/j.adro.2024.101504

education.[1] Yet, radiation oncology remains an essential modality in the multidisciplinary approach to cancer treatment.

We created the Assistant Clinical Research Coordinator (ACRC) program in 2005 to support both the administrative and research needs of radiation oncology faculty at our institution. Over time, this program has grown in popularity because of the opportunities it offers for exposure to clinical medicine, research, and mentorship. Importantly, the program provides future physicians with an early introduction to the field of radiation oncology, before they even enter medical school. Herein, we describe the development and outcomes of our ACRC program and highlight its potential role in recruiting talented individuals to radiation oncology.

Methods and Materials

ACRC program development

Before the ACRC program, administrative associates (AAs) handled our faculty's administrative needs, while faculty research efforts were supported mostly by trainees interested in radiation oncology. The ACRC program aimed to combine administrative and research support by enlisting recent college graduates interested in health care careers. This opportunity was designed to help these graduates gain valuable experience during the transition between their undergraduate and graduate studies, with the understanding that the position was temporary. Faculty were given the choice to opt for support from either an AA or an ACRC, using the previously allocated AA funds.

In developing the ACRC program, we collaborated with our institution's clinical trials office (CTO), which provides resources for regulatory compliance, administration, research, training, and education in clinical trials. This partnership led to a robust research training program for ACRCs, who work alongside CTO clinical research coordinators (CRCs) to enhance their clinical research skillset.

Overview of the ACRC position

We designed the ACRC position to support 1 to 3 faculty members, with an equal division of administrative and research responsibilities.

Administrative duties for ACRCs involve tasks like scheduling meetings, serving as a point of contact, and managing conference travel and reimbursements. Given our program's setting in an academic medical institution, ACRCs often navigate complex departmental and institutional resources and policies.

ACRCs also participate in all stages of research, from study conception to reporting of results. They assist primarily with low-risk noninterventional research (eg, retrospective studies, patient-reported outcome studies, and tissue or blood sample collections). In contrast, CRCs more commonly support interventional and prospective clinical trials (Table 1). Thus, a CRC's work may involve reporting serious adverse events to regulatory bodies, whereas this is not relevant to an ACRC supporting noninterventional studies. Further, CRCs work with external study sponsors, whereas ACRCs tend to focus on single-institution, investigator-initiated projects.

Nonetheless, research responsibilities can overlap, leading to frequent collaboration between ACRCs and CRCs. For example, ACRCs can assist CRCs in tasks like sample collection and processing for their faculty's interventional trial. Both roles can be actively involved in patient recruitment, screening, enrollment, and organizing study-related activities, with opportunities for manuscript preparation and conference presentations.

ACRC recruitment, selection, and training

The typical term for ACRCs is 1 to 2 years, as many use this position as a stepping stone to graduate programs (or "gap year"). To mitigate this high turnover rate, we open applications for prospective vacancies every January. We post this position on our institutional job search webpage and various platforms like LinkedIn, Indeed, Glassdoor, InsideHigherEd, NorCalHERC, and DirectEmployers Job Alliance. Current ACRCs are encouraged to share this job opportunity with their alma maters and personal networks.

Our search committee, consisting of the direct supervisor, current ACRCs, and faculty members, employs a 3-round process to identify top candidates. The direct supervisor screens applicants in round 1, the ACRC panel conducts scenario-based interviews in round 2, and faculty members conduct interviews in the final round. Positions are filled by early summer. ACRC-faculty assignments are determined in the later stages of the application process, with mutual agreement based on prior experiences and research interests.

For smooth transitions that ensure consistent faculty support, we implement a rigorous onboarding process. First, we require a minimum 2-week transition period during which outgoing ACRCs train incoming ACRCs (Fig. 1). Outgoing ACRCs create detailed job manuals outlining common administrative and research protocols specific to their supported faculty. During this period, the incoming ACRCs also become acquainted with our

Table 1 Though there are similar and overlapping responsibilities between an assistant clinical research coordinator and a clinical research coordinator, the 2 roles are distinct

	ACRC	CRC
Required training	• HIPAA/Protecting Patient Privacy • CITI • CTO Orientations ○ Overview of Clinical Research ○ A Day in the Life of a CRC ○ Study Start Up & Regulatory Documentation ○ OnCore Basic Training ○ Safety Documentation & Reporting ○ Introduction to Informed Consent • EPIC for Research Staff • Biospecimen Laboratory Trainings • Biospecimen Processing • Biosafety • Bloodborne Pathogens • Physician Scheduling Training: Qgenda, ARIA & Outlook • Finance Training ○ Financial Stewardship Expectation ○ Supply Purchasing ○ Travel and Reimbursement Expense Request • Mailroom/Fax Organization	• HIPAA/Protecting Patient Privacy • CITI • CTO Orientations ○ Overview of Clinical Research ○ A Day in the Life of a CRC ○ Study Start Up & Regulatory Documentation ○ OnCore Basic Training ○ Safety Documentation & Reporting ○ Introduction to Informed Consent ○ EPIC (Adult and Pediatric Research) • Biospecimen Trainings • Biosafety • Bloodborne Pathogens • Protocol introduction 101: Knowing and Navigating a Protocol • Chemical Safety • Hazardous Communications
Research responsibilities	• Noninterventional • Single-institutional • Investigator-initiated • Retrospective Studies • Study Audits • Processing Bio-Specimens • Faculty-specific studies • Obtaining patient consents	• Interventional • Externally sponsored • Investigator-initiated • Study Audits • Disease-site specific studies • Obtaining patient consents
Administrative responsibilities	• Renewing faculty licenses and memberships • Processing reimbursements from executive and research accounts • Coordinating physician scheduling	• Liaise between research team, sponsors, and patients • Scheduling of clinical trial activities

Abbreviations: ACRC = assistant clinical research coordinator; CRC = clinical research coordinator; CITI = collaborative institutional training initiative; CTO = clinical trials office.

department's standard operating procedures. We recently introduced a training bootcamp as part of the onboarding process, led by experienced ACRCs. This bootcamp includes workshops on high-yield topics, such as consenting patients for research, navigating hospital workflows, using the RedCap database management system, and managing faculty reimbursements and travel arrangements. In addition to this training, ACRCs are required to take their Collaborative Institutional Training Initiative Program Training and CTO mandatory trainings that review good clinical practices, patient consent procedures, and good documentation. To minimize gaps in research support during transitions, each research study has a minimum of 2 ACRCs as back-ups, who are trained on the study protocols and can provide coverage as needed. Finally, we have a standard on-boarding checklist to maintain consistency.

Data collection

We obtained a list of all prior ACRC employees from our institution's human resources department. This record included details about their employment history and if available, current contact information. A Qualtrics survey (Supplementary Material) was distributed via e-mail to all ACRC graduates for whom we had contact information. The survey aimed to evaluate their program experience, with responses measured using a Likert scale. One e-mail reminder was sent 5 days later to those who had not completed the survey. The survey was closed a week after it was initially sent. Responses were anonymized and aggregated for analysis. We also obtained additional information on graduate subsequent training and employment from program exit surveys and LinkedIn profiles. This study was deemed IRB exempt.

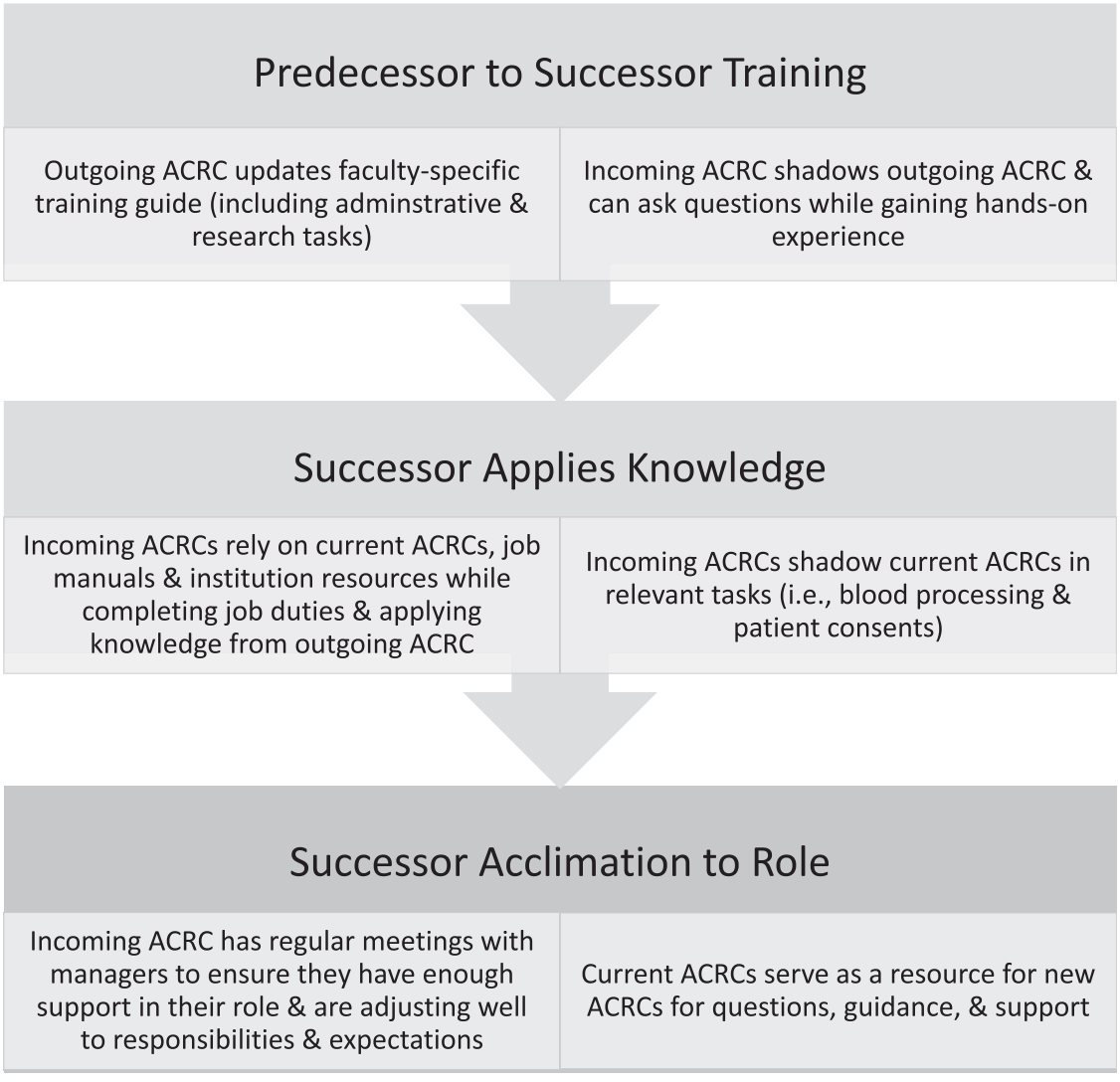

Figure 1 Breakdown of transitional period between outgoing and incoming ACRCs, from initial training to acclimation to role. *Abbreviations:* ACRCs = assistant clinical research coordinators.

Results

Baseline characteristics of ACRCs

From 2005 to 2023, we paired 73 ACRCs with our faculty, which includes 9 current ACRC employees (Table 2). Currently, 19 (68%) faculty members share an ACRC, whereas 9 (32%) have an AA. In the 2023 application season, our job posting remained open for 3 months, during which time we received a total of 113 applications for 4 available positions.

Productivity during program

Our ACRCs have access to funds for conference attendance and have used this opportunity to present their work, contributing a total of 44 poster presentations and 2 oral presentations. Additionally, our ACRCs have participated as coauthors on 293 publications and have taken the lead as first authors on 43 publications.

Outside of research and administrative duties, some ACRCs have taken on leadership roles in the department. ACRCs help run the Culture Club, which was created to address employee wellness and promote department unity,[2] and plan department events, such as the annual summer barbeque. Several of our ACRCs have won institutional awards for their efforts to advance diversity, equity, and inclusion and to support wellness and a culture of care in our department.

Outcomes following ACRC program

Most alumni of the program have attended medical school (34 of 64 alumni, 53%; Table 3). Eight alumni have

Table 2 Demographics of hired ACRCs from 2005 (start of program) through 2023

	Number (%)
Total	73 (100%)
Sex	
Female	48 (66%)
Male	25 (34%)
Highest education	
Bachelor's degree	73 (100%)
ACRC term length	
1-year	31 (43%)
2-year	18 (25%)
>2-year	6 (8%)
Unknown	9 (12%)
Currently in program	9 (12%)
Prior experience	
Wet laboratory	24 (33%)
Clinical trial	13 (18%)
Volunteer	25 (34%)
Publications	9 (12%)
Leadership	23 (32%)
Award	16 (22%)
Poster presentation	6 (8%)
Unknown	36 (49%)

Abbreviations: ACRC = assistant clinical research coordinator.

Table 3 Outcomes of departed ACRCs following the program of ACRCs from 2005 (start of program) through 2023

	Number (%)
Total	73 (100%)
Departure reason	
Medical school	34 (47%)
Higher education	2 (3%)
Other	4 (5%)
Unknown	24 (33%)
Currently in program	9 (12%)
Current milestone	
Medical school	16 (22%)
Residency	10 (14%)
Attending	8 (11%)
Unknown	30 (41%)
Currently in program	9 (12%)
Returned to department	
Part-time employee	5 (7%)
Research intern	2 (3%)
Known specialty	**(% of those in residency or attendings)**
Total in residency/attendings	18 (100%)
Family medicine	1 (6%)
General surgery	1 (6%)
Internal medicine	4 (22%)
Ophthalmology	3 (17%)
Orthopedic surgery	1 (6%)
Radiation oncology	6 (33%)
Radiology	1 (6%)
Allergy immunology	1 (6%)

Abbreviations: ACRC = assistant clinical research coordinator.

chosen to specialize in radiation oncology (13% of alumni, 24% of those who have attended medical school): 2 are applying into radiation oncology, 1 is in radiation oncology residency, and 5 are radiation oncology attendings.

Of 53 ACRC graduates for whom we had current contact information and surveyed, 13 (25% response rate) responded (Table 4). Most respondents reported positively regarding the mentorship (77% reported very or extremely effective), research (100% reported good or excellent), and clinical opportunities (77% reported good or excellent) provided by the ACRC program. Most respondents (77%) also reported that the ACRC program had substantial or significant influence on their choice of career path. Of those in the medical field, 58% (7 of 12) reported that exposure to radiation oncology through the program had substantial or significant influence on their choice of field.

Respondents reported that their role as an ACRC influenced their professional development by providing exposure to a variety of research projects (100%), cultivating communication and teamwork proficiencies (100%), expanding understanding of regulatory and ethical aspects of clinical research (92%), expanding professional network (92%), developing project management and organizational skills (92%), enhancing problem-solving and critical thinking capabilities (85%), strengthening motivation to pursue a career in the medical field (77%), increasing ability in handling complex medical data (77%), enriching perspective on patient care and empathy (77%), facilitating mentorship from health care professionals (69%), providing access to specialized training and educational programs (46%), and offering insights into clinical practice (31%).

Additional write-in comments included: "The program broadened my understanding of the future of cancer care and the evolving role of radiation therapy for better patient outcomes," and "The program provided insight into the IRB process and opened my eyes to how to

Table 4 Survey responses of ACRC graduates

	Median, Range
Effectiveness of mentorship provided by the ACRC program in guiding academic and career development *(1 = not effective at all, 5 = extremely effective)*	4, 2-5
Research opportunities and resources provided by the ACRC program *(1 = very poor, 5 = excellent)*	5, 4-5
Clinical experience opportunities provided by the ACRC program *(1 = very poor, 5 = excellent)*	5, 3-5
Overall influence of the ACRC program on choice of career path *(1 = no influence, 5 = significant influence)*	4, 3-5
Exposure to radiation oncology through the ACRC program influenced medical field of choice (*1 = no influence, 5 = significant influence, 6 = N/A (not in medical field)*	4, 2-6
If given the choice, would participate in ACRC program or another option *(1 = definitely choose ACRC program, 5 = definitely choose another program)*	1, 1-4

Abbreviations: ACRC = assistant clinical research coordinator.

structure a research project and see it from idea to manuscript."

Finally, in their exit interviews, our ACRCs consistently express their gratitude for the valuable opportunities for personal and professional growth, as well as the strong mentor-mentee relationships they have developed with our faculty through this program. Many maintain these relationships with their faculty members even after completing the program, with several returning for summer research internships within the department.

Discussion

The ACRC program exemplifies 1 of several innovative initiatives[3–7] aimed at tackling the recruitment challenges encountered within the field of radiation oncology. Early exposure to a medical specialty significantly influences students' choices regarding their future specialization. Many students have limited preclinical and clinical exposure to oncology, and very few have exposure to radiation oncology.[8] The ACRC program can bridge this gap by facilitating access for individuals who might otherwise never have the chance to explore this field.[1,9] The strong interest in this program, with a 3.5% acceptance rate this year, indicates the potential for program expansion to other institutions.

Our program showcases the extensive research opportunities in radiation oncology. While many ACRCs enter the program with prior research experience, often through summer internships or undergraduate laboratory work, others had little to no previous exposure to research. Regardless of their backgrounds, they are brought up to speed quickly with comprehensive on-boarding and training. Most ACRCS are involved in multiple research projects at different stages and to different degrees. Their responsibilities may range from simply helping with data collection to shepherding a project from study concept inception to manuscript completion. Many will hone their presentation skills by showcasing their research at our national conferences, such as the American Society for Radiation Oncology and American Radium Society. They also can improve their writing skills by contributing to research manuscripts. The development of these research skills can provide these students with a distinct advantage in radiation oncology, given our field's strong emphasis on research abilities. Numerous residency programs offer up to 1 year of dedicated research time for their residents, highlighting the significance placed on research within radiation oncology.

Our ACRCs also benefit from the direct guidance of their faculty mentors and research collaborators, including biostatisticians, CRCs, residents, and medical students. Mentorship plays a crucial role in addressing the need for increased recruitment in our specialized field, particularly among underrepresented groups. An interesting observation is that two-thirds of our ACRCs are female, which is significant given the sex disparity in radiation oncology.[10–12] Mentorship can counteract the loss of talented female candidates who might otherwise choose alternative specialties because of limited exposure to our field. Most (77%) graduates who responded to our survey reported that the mentorship provided by the ACRC program was very or extremely effective in guiding their academic and career development and that the ACRC program had substantial or significant influence on their choice of career path. Impressively, 13% of alumni (24% of those who have attended medical school) have chosen to specialize in radiation oncology, highlighting the positive influence the program and early exposure to radiation oncology had on their career choices.

Throughout this role, ACRCs sharpen their communication, organization, and leadership skills. They become adept at triaging tasks and responsibilities by managing a multifaceted role that encompasses both administrative and clinical research duties. They must navigate all the regulations and workflows involved in conducting clinical research at an academic medical center. Interactions with physicians, nurse coordinators, medical assistants, and other members of the health care team allow ACRCs to

explore diverse health care careers, broadening their perspectives on the scope of medicine and health care. Finally, given the unpredictability inherent in health care settings, ACRCs frequently rely on their problem-solving and critical thinking skills, allowing them to assess and address challenges as they arise. This capacity to identify issues and work toward viable solutions represents a cornerstone of their role.

The program also offers significant advantages to our faculty members. In addition to the valuable administrative and research support that ACRCs provide, which enhances faculty productivity, it creates a platform for the development of fulfilling mentor-mentee relationships. ACRCs, often highly enthusiastic and motivated to make the most of their time in the department, bring a fresh perspective to their interactions with faculty. Although the program experiences regular turnover due to its limited-term nature, this phenomenon has a positive aspect, injecting new talent and energy into the department. Furthermore, our rigorous onboarding process reduces any potential gaps during the transition between ACRCs.

Our experience thus far has been confined to a single institution, which may limit the generalizability of our findings to other settings. However, we believe that the principles of this ACRC program are broadly applicable and look forward to seeing similar programs emerge nationwide. An additional limitation is the low survey response rate among graduates, possibly due to the brief survey window. This could introduce bias and may not fully characterize every graduate's experience.

In conclusion, our program equips ACRCs with a comprehensive skill set that spans both administrative and research domains, enabling them to collaborate effectively within diverse teams, solve complex problems, and see projects through to successful completion. As ACRCs leave the program, their preparedness for success extends across diverse career options, with a notable inclination toward health care roles. The exposure to our faculty, their research endeavors, and clinical practices will hopefully serve as a compelling invitation for some to explore and contribute to the field of radiation oncology.

Disclosures

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

We thank Hilary Bagshaw, Deepa Basava, Michael Binkley, Alex Chin, Maximilian Diehn, Sarah Donaldson, Rachel Freiberg, Michael Gensheimer, Steven Hancock, Wendy Hara, Susan Hiniker, Kate Horst, Anusha Kalbasi, Bill Loo, Everett Moding, Elham Rahimy, and Lucas Vitzthum.

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.adro.2024.101504.

References

1. Wu TC, McCloskey SA, Wallner PE, Steinberg ML, Raldow AC. The declining residency applicant pool: A multi-institutional medical student survey to identify precipitating factors. *Adv Radiat Oncol*. 2021;6. https://doi.org/10.1016/j.adro.2020.10.010.
2. Lau B, Guo F, Valenton J, Chang D, Le QT, Horst K. Using a Culture Committee to Improve and Maintain a Positive Workplace Environment During a Pandemic. *Pract Radiat Oncol*. 2023;13(4):e332-e335. https://doi.org/10.1016/j.prro.2023.02.003.
3. Sandhu N, Frank J, von Eyben R, et al. Virtual radiation oncology clerkship during the COVID-19 pandemic and beyond. *Int J Radiat Oncol*. 2020;108:444-451.
4. Kahn J. Virtual medical student elective in radiation oncology in the era of Covid-19. Presented at: Radiation Oncology Education Collaborative Study Group Annual Symposium. May 15, 2020.
5. Ye JC, Mohindra P, Spektor A, et al. Medical student perspectives on a multi-institutional clerkship curriculum: A report from the Radiation Oncology Education Collaborative Study Group. *Int J Radiat Oncol*. 2015;92:217-219. https://doi.org/10.1016/j.ijrobp.2015.01.043.
6. Sura K, Lischalk JW, Leckie J, Grills IS, Vapiwala N. Applying for radiation oncology residency: Webinar-based medical student mentorship outreach. *Int J Radiat Oncol*. 2017;97:11-12. https://doi.org/10.1016/j.ijrobp.2016.09.024.
7. Pollom E, Sandhu N, Frank J, et al. Continuing medical student education during the COVID19 pandemic: Development of a virtual radiation oncology clerkship. *Adv Radiat Oncol*. 2020;5:732-736. https://doi.org/10.1016/j.adro.2020.05.006.
8. Zaorsky NG, Shaikh T, Handorf E, et al. What are medical students in the United States learning about radiation oncology? Results of a multi-institutional survey. *Int J Radiat Oncol Biol Phys*. 2016;94:235-242. https://doi.org/10.1016/j.ijrobp.2015.10.008.
9. Bates JE, Amdur RJ, Lee WR. The high number of unfilled positions in the 2019 radiation oncology residency match: Temporary variation or indicator of important change? *Pract Radiat Oncol*. 2019;9:300-302. https://doi.org/10.1016/j.prro.2019.05.001.
10. Ahmed AA, Hwang WT, Holliday EB, et al. Female representation in the academic oncology physician workforce: Radiation oncology losing ground to hematology oncology. *Int J Radiat Oncol*. 2017;98:31-33. https://doi.org/10.1016/j.ijrobp.2017.01.240.
11. Holliday EB, Siker M, Chapman CH, et al. Achieving gender equity in the radiation oncology physician workforce. *Adv Radiat Oncol*. 2018;3:478-483.
12. Osborn VW, Doke K, Griffith KA, et al. A survey study of female radiation oncology residents' experiences to inform change. *Int J Radiat Oncol*. 2019;104:999-1008.