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Research Letter

Networking and Applying to Radiation Oncology During A Pandemic: Cross-Sectional Survey of Medical Student Concerns

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Abstract
Purpose: We assessed the effectiveness of a virtual networking session tailored for third- and fourth-year medical students interested in radiation oncology, and report students' concerns about applying to radiation oncology during the pandemic.
Methods and Materials: A multi-institutional networking session was hosted on Zoom and included medical students, faculty, and residents from across the country. The breakout room feature was used to divide participants into smaller groups. Participants were randomly shuffled into new groups every 10 to 15 minutes. Students completed pre- and post-session surveys.
Results: Among the 134 students who registered, 69 students participated in the session, and 53 students completed a post-session survey. Most students reported the session was valuable or very valuable (79%), and it was easy or very easy to network through the virtual format (66%). After the session, 18 (33.9%) students reported their interest in radiation oncology increased, and 34 (64.2%) reported their interest remained the same. Most students believed COVID-19 (55%) and virtual interviews and platforms (55%) negatively or somewhat negatively affected their ability to select a residency program. Most students (62%) were concerned they will be inaccurately evaluated as an interviewee on a virtual platform. Although 30% agreed or strongly agreed the cost-savings and convenience of virtual interviews outweigh potential downsides, 66% of students were planning to visit cities of interest in person before rank list submission.
Conclusions: Medical students reported significant concerns with their ability to be accurately evaluated and to choose among residency programs on a virtual platform. Students found the networking session to be a valuable resource for most students, and programs could continue similar efforts during the residency application cycle to better represent their program while maintaining certain financial and geographic advantages of a virtual environment.
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Introduction

COVID-19 has disrupted in-person rotations for medical students.[1] "Away" rotations[2,3] allow students to learn about the specialty, audition for residency programs, and assess program culture and fit. These rotations are
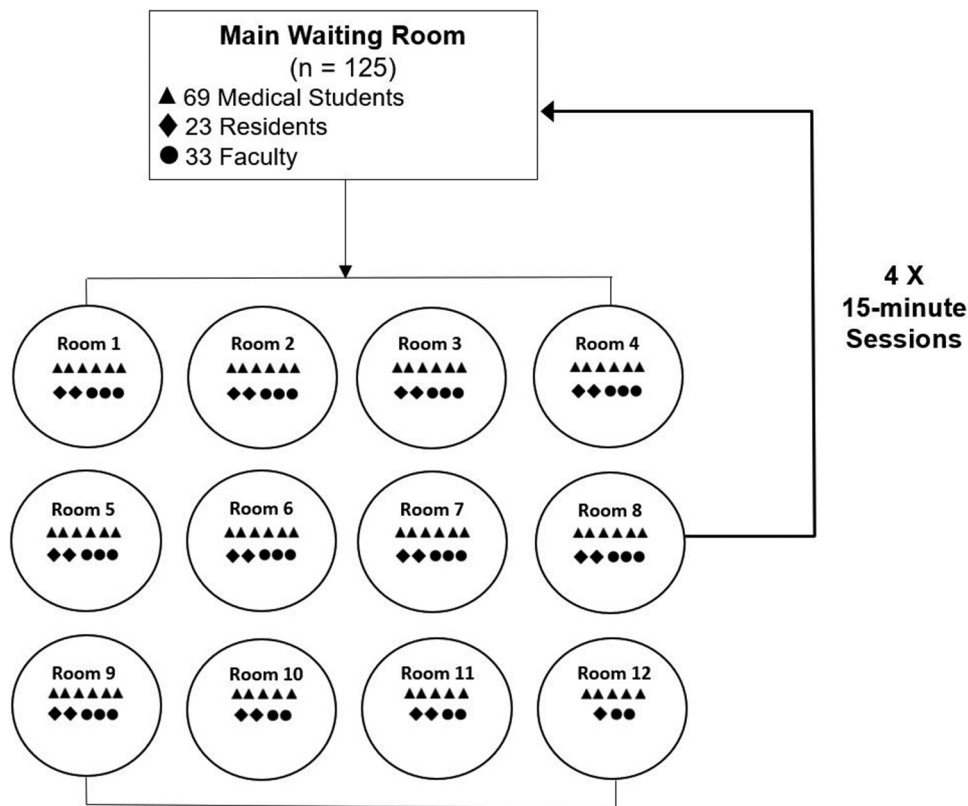
Figure 1   Coordination of break-out rooms during the networking session.

particularly important in radiation oncology, as radiation oncology is not considered a core elective and many institutions do not offer a radiation oncology residency program. Although social media and online resources are alternative ways for students to learn about radiation oncology and various residency programs, virtual tools have not yet been fully leveraged to their full potential for networking and education.[4-6]

To this end, we launched Radiation Oncology Virtual Education Rotation (ROVER), a series of virtual educational sessions targeted to medical students.[7] One of these sessions was a networking session targeted to students applying into radiation oncology. We assessed the effectiveness of this session and report students' top concerns about applying to radiation oncology during the pandemic.

Methods

This study was exempted by the institutional review board. All ROVER sessions, including the "Applying to Radiation Oncology" networking session, were held over Zoom, a cloud-based video conferencing tool. The networking session was promoted to third- and fourth-year medical students on social media and by email to all ROVER participants (Supplemental Material, Figure E1).

The session included medical students, faculty, and residents from institutions across the country. Breakout rooms were used to divide participants into smaller groups of 5 to 6, with a mix of medical students, residents, and faculty in each group. Attendees were randomly shuffled into new groups every 10 to 15 minutes during the session (Fig 1).

Student pre- and post-session surveys were collected using Research Electronic Data Capture, a web-based application for capturing research data (Supplemental Material, Appendices E2 and E3). Students were required to complete the pre-session survey to register for the session. A post-session survey was sent to student participants immediately after the event, with one e-mail reminder to those who did not complete the survey within 3 days. The survey closed 5 days after the session. Students who completed the post-session survey were entered in a raffle to win 1 of 2 $50 gift cards.

Results

Networking session

The session took place on September 10, 2020, from 4 to 5 PM Pacific Standard Time. Twenty-three residents and 33 faculty from 23 institutions participated in this session. Based on pre-session survey responses, suggested

Table 1   Suggested topics for breakout room discussion

What should I look for in a residency program?

What types of interests or activities are programs looking for in my application?

How do I pick out a program during these virtual interviews? Any advice for interviewing?

Where do you see the field of radiation oncology in 10 years?

What do you wish you knew about radiation oncology when you were applying to residency?

Should I worry about the job market?

How do I assess culture and fit during a virtual interview?

topics to guide breakout room discussion (Table 1) were distributed to participants.

Medical student characteristics

Among the 134 medical students who registered, 69 students (51.5%) participated in the session (Table 2). Compared with those who registered but did not attend, attendees were more likely to be fourth year medical students with MD/PhD degrees who had completed a radiation oncology rotation and were applying into radiation oncology residency. Among the participants, 23 students (33.3%) reported having no radiation oncology training program at their institution. Fifty-three students (77%) completed a postsession survey. At the time of the session, 13 (24.5%) of postsurvey respondents had completed a median of 1 (range, 1-3) virtual away rotation, with 9 students having completed a virtual away rotation for credit. Respondents had also attended a median of 5 (range, 0-16) institutional virtual meet-and-greet sessions.

Perceived value of networking session

Most students reported the networking session was valuable or very valuable (79%), and it was easy or very easy (66%) to network through the virtual session format (Table 3). After the session, 18 (33.9%) students reported their interest in radiation oncology increased; 34 (64.2%) students reported their interest remained the same. Comments attributed increased interest to the positive

Table 2   Characteristics of students who registered and participated in the networking session

	Registrants (n, %) (total n = 134)	Attendees (n, %) (total n = 69)	P value*
Sex			
Male	72 (53.7)	39 (56.5)	.60
Female	62 (46.3)	30 (43.5)	
Race			
Asian	30 (22.4)	14 (20.3)	.15
Black or African-American	13 (9.7)	8 (11.6)	
White	58 (43.3)	35 (50.7)	
Latino, or of Spanish origin	8 (6.0)	1 (1.5)	
Other	13 (9.7)	5 (7.2)	
Prefer not to answer	12 (9.0)	6 (8.7)	
Degree			
MD	97 (72.4)	46 (66.7)	.02
DO	8 (6.0)	7 (10.1)	
MD/PhD	23 (17.2)	15 (21.7)	
Other	6 (4.5)	1 (1.5)	
Year in medical school			
Third	21 (15.8)	6 (8.7)	<.001
Fourth	78 (58.7)	54 (78.3)	
Other	35 (26.1)	9 (13.0)	
Home radiation oncology program			
Yes	89 (66.4)	46 (66.7)	1.0
No	45 (33.6)	23 (33.3)	
Completed a radiation oncology rotation			
Yes	85 (63.4)	50 (72.5)	.03
No	49 (36.6)	19 (27.5)	
Applying to radiation oncology residency this year			
Yes	89 (66.4)	58 (84.1)	<.001
No	45 (33.6)	11 (15.9)	

  * Fisher exact test, attendees versus nonattendees.

Table 3   Effectiveness of networking session

	1 (very easy or very valuable, %)	2 (easy or valuable, %)	3 (average or moderately valuable, %)	4 (challenging or somewhat unvaluable, %)	5 (very challenging or unvaluable, %)
Ease of networking through the virtual session format	16 (30.2)	19 (35.8)	10 (18.9)	6 (11.3)	2 (3.8)
Overall value of session	28 (52.8)	14 (26.4)	8 (15.1)	1 (1.9)	2 (3.8)

interactions with faculty and residents during the session: "residents were extremely positive and genuinely seemed to enjoy their programs," "seeing how helpful and nice everyone in the field is…," and "the kindness and openness of the people in the field," One student reported decreased interest, citing concerns of a "bleak job market."

Top concerns of applying

Most students believed that COVID-19 (55%) and virtual interviews and platforms (55%) negatively or somewhat negatively affects their ability to select a residency program (Table 4). Most students (62%) were concerned that they will be inaccurately evaluated virtually as an interviewee. Completion of a virtual away rotation was not significantly associated with level of concern with applying to or selecting a residency program during COVID-19 or selecting a program or being evaluated on a virtual platform. Although 30% of students

strongly agreed or agreed that the cost-savings and convenience of virtual interviews outweigh potential downsides, 64% of students reported planning to visit cities of interest in person before rank list submission.

Discussion

Radiation oncology has implemented multiple novel resources for medical students during COVID-19, including virtual clerkships,[8-11] virtual meet-and-greet sessions,[12] and ROVER. Our ROVER virtual networking session provided another opportunity for medical students to connect with faculty and programs across the country. Most students felt that the session was valuable and that it was easy to network through the virtual format.

Notably, one-third of students who attended the session did not have home radiation oncology programs and therefore may derive the most benefit from these virtual programs. Many of the students were already taking

Table 4   Concerns of medical students about applying to radiation oncology during COVID

	1 (strongly agree or positively, %)	2 (agree or somewhat positively, %)	3 (neither agree or disagree or neutral, %)	4 (disagree or somewhat negatively, %)	5 (strongly disagree or negatively, %)
How has COVID-19 effected your application to residency programs?	2 (3.8)	7 (13.2)	18 (34.0)	22 (41.5)	4 (7.5)
How has COVID-19 effected your ability to select a residency program?	1 (1.9)	6 (11.3)	17 (32.1)	21 (39.6)	8 (15.1)
How will virtual interviews and platforms effect your ability to select residency programs?	4 (7.5)	5 (9.4)	15 (28.3)	23 (43.4)	6 (11.3)
The cost-savings and convenience of virtual interviews outweigh potential downsides.	2 (3.8)	14 (26.4)	18 (34.0)	13 (24.5)	6 (11.3)
I am concerned I will be inaccurately evaluated as an interviewee on a virtual platform.	5 (9.4)	28 (52.8)	17 (32.1)	3 (5.7)	0 (0)
I am concerned about the future of the radiation oncology job market.	8 (15.1)	17 (32.1)	13 (24.5)	12 (22.6)	3 (5.7)

Table 5 Suggestions for improving virtual networking sessions during residency interview season

Recommendations	Student comments
One-on-one time and smaller break-out rooms to facilitate better discussion among faculty, residents, and applicants	"It's hard to know when to speak because sometimes we rely on body language to jump into a conversation. For more shy or introverted individuals, networking sessions like these are not the most ideal." "Enjoyed the small breakout room size."
Break-out rooms with different themes (research, resident life, and culture, etc) for applicants to explore depending on interests	"Themed rooms with students rotating and faculty/residents staying."
Accommodate different time zones and students' competing obligations	"Have another session during the weekend to facilitate scheduling" "Have similar sessions that are broken up regionally (ie, networking day for Midwestern programs, day for Northeast programs, etc)"
Allow more time for networking sessions	"A slightly longer time in each room would have been great just because we spent a chunk of the time in the beginning of each breakout on introductions." "Longer breakout room sessions would be more conducive to asking more questions and getting thorough answers." "An hour felt short with so many people."
Resident participation is crucial	"Residents candidly expressing what they think about their program, city, was the most useful for me."
Continue virtual networking post-COVID and involve more programs to broaden access	"Even in the post-COVID era (maybe 1 day), I hope these sessions are continued for future applicants." "Want more time to meet more program representatives" "These are great sessions. I'm not sure if there were such opportunities to meet residents and faculty from other schools before the interview season in other years. I will be applying next year and hope there are similar sessions even if COVID were over."

advantage of these programs. Although only a quarter of students had completed a virtual away rotation, students reported attending a median of 5 virtual institutional meet-and-greets at the time of the survey. This reflects the vast number of virtual meet-and-greets (>30 institutions) compared with virtual clerkships with limited spots (17 institutions).[7] Additionally, many medical schools are not permitting students to enroll in virtual away rotations, and students may have less time to pursue elective rotations given disruptions to their schedule due to COVID-19.

Students expressed significant concern about the upcoming residency application cycle, echoing recent findings from focus group interviews with third- and fourth-year medical students.[13] During half reported that COVID-19 has negatively or somewhat negatively affected their ability to select a residency program. Most students were concerned that they will be inaccurately evaluated as an interviewee on a virtual platform. Furthermore, virtual interviews preclude applicants' ability to explore prospective cities, with many students planning to visit cities of interest in person before rank list submission to assess this independently. Student feedback from our session may provide guidance for training programs to creatively address these concerns and host

similar sessions to facilitate evaluations of candidates and candidates' evaluations of their program in the virtual environment (Table 5). In addition, we recommend that programs use multimedia tools (virtual tours, informative videos illustrating faculty and resident life within and outside of the department, etc), their department websites and social media accounts to their full potential to disseminate information to potential applicants.[4,6,14] Programs can also distribute resources[15] to students with virtual interview tips and guidelines to ease student concern about the virtual format.

Finally, our findings highlight the important role of faculty and residents in attracting students to our specialty. Perceived resident happiness is considered by many applicants as the most important factor for constructing a rank list.[16] These interpersonal connections between medical students and radiation oncology faculty and residents are vulnerable in exclusively virtual formats but are critical to fostering future trainees in our field.

Supplementary Materials

Supplementary material for this article can be found at https://doi.org/10.1016/j.adro.2021.100643.

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