

Early Introduction of IR to Premedical and Medical Students: Initiatives at a Single U.S. Institution

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Editor:

In 2012, the American Board of Medical Specialties approved the American Board of Radiology's application for a dual primary certificate in interventional radiology (IR) and diagnostic radiology (DR) (1). This approval not only designated IR as the 37th primary certificate in the United States, but it also marked a milestone in recognizing that IR is a unique area of medicine that requires a distinct skill set for future trainees. The new primary certificate will result in many vascular and IR (VIR) fellowship positions being converted to integrated IR/DR residency positions. To facilitate recruitment into IR, it would be desirable if medical students could become familiar with IR earlier in their careers.

Most U.S. medical school curricula provide minimal exposure to IR; only one third of medical schools offer a radiology clerkship, and most of these are offered as electives (2). Over the past several years, there has been great effort on the part of national societies and individual medical schools to promote medical student IR education. The Society of Interventional Radiology (SIR) has a dedicated medical student weekend, and several institutions have initiated local/regional IR symposiums, providing an introductory overview of the field and various interventions (3). At our institution's medical school, similar endeavors have been undertaken; we have a well-established interest group, an elective in VIR offered during the clinical years, and a longitudinal clerkship (an outpatient office experience in which students participate in patient consultation, diagnosis, treatment planning, and longitudinal follow-up), and have recently completed the third iteration of a regional IR symposium. Here we discuss a single institution's

initiatives and efficacy in educating medical students about IR through an annual symposium.

Our institutional review board was consulted and waived submission in view of the nature of this study. Among 73 symposium attendees, 59 students from 11 colleges and medical schools chose to complete a voluntary survey over two consecutive years at our institution's annual IR symposium. The 6-hour symposium included lecture series on subspecialties of IR, resident/fellow panels, and a procedure simulation session. Lecturers included attending physicians, residents, and fellows from our institution's department of diagnostic imaging. The subspecialty lectures covered the following topics: peripheral artery disease, interventional oncology, women's health, and neurointerventional radiology. Additional lectures included a comparison between private and academic practices, suggestions for early medical student involvement in IR, and an overview of the general job description for an interventional radiologist. The simulation session was an interactive opportunity for students to handle and observe medical devices, including vascular stents, biopsy needles, wires and catheters, and ablation electrodes.

Optional presymposium and postsymposium surveys were distributed to all attendees to evaluate their perceptions of IR and to inquire about effective outreach measures. The surveys were written and administered by an interventional radiologist at an academic institution and a medical student; the medical student subsequently collected and compiled all surveys and data. Analyses were performed by using SAS software (version 9.3; SAS Institute, Cary, North Carolina). Generalized estimating equations for binary outcomes were used to test for changes in responses on questions asked before and after the symposium, nesting responses within a person when respondents identified themselves on both questionnaires. The number of respondents to various questions determined the denominator used for various analyses.

Fifty-eight students completed the presymposium survey, and 51 completed the postsymposium survey. Students were polled about their familiarity with IR before and after the symposium; 55 students responded to the presymposium question and 51 to the postsymposium survey (Fig 1). Generalized estimating equations showed that significantly more attendees claimed to be somewhat or very familiar with IR at the end of the symposium than claimed to be unfamiliar ($P = .0046$).

When asked about sources of information regarding VIR before the symposium, 41% of respondents (24 of 58) identified direct interaction with an interventional radiologist, 45% (26 of 58) identified preclinical lectures, 14% (eight of 58) identified clinical electives, 10% (six of 58) identified attendance of the SIR or Radiological Society of North America annual conference, 24% (14 of

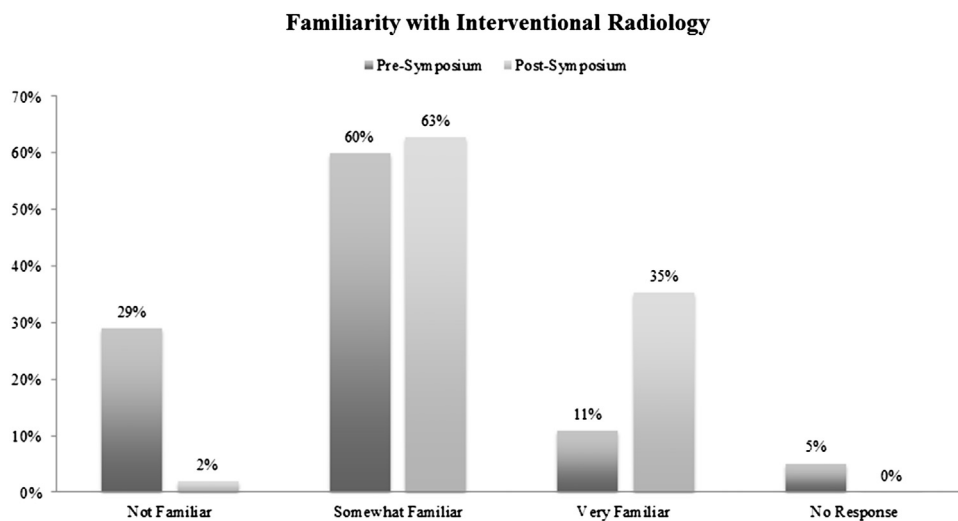


Figure 1. Bar chart shows comparison between students' knowledge of IR before the symposium and after the symposium. Before the symposium, 29% (16 of 55) of students identified themselves as not familiar with IR and only 11% (six of 55) identified themselves as very familiar; these numbers changed after the symposium to 2% (one of 51) and 35% (18 of 51), respectively.

Table. Perceived Job Responsibilities of Interventional Radiologists

Responsibility	Before Symposium*	After Symposium*	P Value
Major/potentially life-saving procedures	47/56 (84%; 95% CI, 71%–92%)	49/51 (96%; 95% CI, 85%–99%)	.0683
Minor procedures	40/56 (71%; 95% CI, 58%–82%)	43/51 (84%; 95% CI, 71%–92%)	.0666
Reading films	37/56 (66%; 95% CI, 52%–78%)	31/51 (61%; 95% CI, 46%–74%)	.4454
Patient history taking and physical exams	30/56 (54%; 95% CI, 40%–67%)	31/51 (61%; 95% CI, 46%–74%)	.3677
Don't know	7/56 (13%; 95% CI, 6%–23%)	0/51	†

CI = confidence interval.

*Values presented as least-squares means.

†Statistics not reported for zero-event counts.

58) identified textbooks or journal articles, 19% (11 of 58) identified a mentor in VIR, 21% (12 of 58) identified friends and/or family in VIR, 19% (11 of 58) identified shadowing a vascular or interventional radiologist in practice, and 9% (five of 58) identified participation in research projects.

Students were also surveyed about educational opportunities available at their institutions students, and replies were as follows: preclinical lectures, 43% (25 of 58); VIR interest group, 59% (34 of 58); clinical electives in VIR in years 3 or 4, 38% (22 of 58); longitudinal clinical experience in year 3 or 4, 29% (17 of 58); clinical elective in DR with dedicated time to VIR, 31% (18 of 58); and mentorship programs, 26% (15 of 58).

Before and after the symposium, students were surveyed on the perceived job responsibilities of interventional radiologists; 56 of the 58 students who completed presymposium surveys answered this question, and all 51 students who answered the postsymposium survey responded (Table). Although the four answers in the Table are correct and students were allowed to choose more than one option, this statistic captures perceptions about the profession.

Attendees were asked to list their top three specialty choices before and after the symposium (Fig 2). Before

the symposium, 58% of attendees (30 of 59; 95% confidence interval, 39%–65%) identified IR as one of their top three specialty choices; after the symposium, this increased to 69% (35 of 52; 95% confidence interval, 54%–80%; Fig 3). The increased interest in IR from the beginning of the symposium to the end marks the only statistically significant change ($P = .0293$).

Attendees were also queried about effective outreach methods to provide medical students with greater exposure to IR. When asked about when medical students should first gain exposure to VIR, 94% (48 of 51) replied “during the preclinical years” and 6% (three of 51) replied “during the clinical years.” Students were also asked to identify which source(s) of information would be beneficial for medical students interested in learning more about VIR (Fig 3).

The creation of a new dual primary certificate in DR and IR was a milestone in the recognition that IR requires a unique combination of imaging, technical, and periprocedural patient care (1). With the new primary certificate, there is an impetus to recruit interested medical students to the field early enough to commit to a career as an interventional radiologist and to further secure the prominence of IR in patient care. Many students are believed to form or change their residency

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