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The Impact of COVID-19 on Interventional Radiology Training Programs: What You Need to Know

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The COVID-19 pandemic has affected medical education in unprecedented ways. Herein, we briefly describe the affects of COVID-19 on Interventional Radiology residency training and summarize up to date guidance by governing bodies and key stakeholders.

Keywords: COVID-19; Interventional Radiology; ESIR.

INTRODUCTION

The current COVID-19 pandemic has impacted residency training programs and trainees in all medical specialties, including interventional radiology (IR) and has already resulted in significant disruptions in graduate medical education. It is necessary for IR departments to balance the mandate for social distancing to slow disease spread, while still maintaining the workforce needed to provide clinical care to patients. Flexibility is paramount in these difficult times, with the burden placed by the COVID-19 pandemic on the healthcare system demanding adjustments in resident and fellow scheduling, re-evaluation of trainee expectations and duties, and an appraisal of the residency graduation requirements.

While the COVID-19 pandemic has affected every level of training, the disruptions pertinent to IR trainees necessitate a discussion on two topics: (1) impact on IR applicants and the NRMP Match process, and (2) impact on IR and ESIR residents (Table 1).

IMPACT ON IR APPLICANTS AND THE NRMP MATCH

The integrated IR/DR residency Match occurred in March 2020. The independent IR residency match is still scheduled to occur in June 2020. However, given the COVID-19 pandemic, the Association of Program Directors in IR, in conjunction with guidance from the Society of Chairs of Academic Radiology Departments, extended the interview timeline for independent IR residency programs through the month of April 2020. The same collaborative guidance strongly recommended programs conduct video-based virtual interviews (1).

IMPACT ON IR AND ESIR RESIDENTS

ABR Core exam postponement

The ABR Core exam has been re-scheduled to November 5–6 and November 9–10, 2020. For current PGY-4 ESIR residents, the postponement of the Radiology Core examination to November 2020 poses a unique scheduling challenge. To maximize studying, many residents desire lighter rotations leading up to their Core exam. However, rotations in IR, the ICU, and IR-related rotations are time-intensive. Residency programs may consider rescheduling these rotations such that the resident has a less time-intensive rotation preceding their Core exam in November 2020. If a program decides to alter an ESIR resident's schedule, the number of IR and IR-related rotations required for ESIR should be unchanged. One option is to reschedule an ICU rotation or an IR-related rotation to May or June 2020, such that a lighter rotation is scheduled in the month preceding the Core exam.

IR Procedural Requirements

As there has been a reduction in elective cases as suggested by the Society of Interventional Radiology (SIR) and leadership in hospitals across the country, the current postgraduate year (PGY)-5 and PGY-6 residents and fellows have already seen a decrease in their case volumes and a shift in the types of

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TABLE 1. Summary of COVID-19 Impact on IR Trainees

COVID-19 Impact	Notes (As Per ACGME or APDIR Statements)
ESIR designation	1) Relaxed case minimum requirements: ESIR residents can still finish PGY-5 year with less than 500 cases but will need to complete 1000 cases before end of their second Independent IR residency year. 2) If the ESIR-mandated ICU rotation cannot be completed before graduation, the resident may still graduate with appropriate documentation in the Verification of ESIR Training form. If unable to complete during PGY-5 year, discuss with program director at recipient independent IR residency program to facilitate completion during PGY-6 year.
Implications on graduation and Regulatory requirements	1) Program director, with assistance from the Clinical Competency Committee, may graduate resident if they are deemed competent even if certain case minimums are not met. 2) This DOES NOT include mammography and nuclear medicine requirements. These have to be met and residents should work with their programs to ensure the minimum hours/days are completed. Reliance on telemedicine to complete these requirements is approved. 3) Low- and high-dose I-131 therapies may be completed postgraduation (in the PGY-6 year).
Impact on NRMP Match	1) Integrated IR/DR residency match completed in March 2020. 2) Independent IR residency match still scheduled to take place in June 2020. 3) APDIR/SCARD extended independent IR residency virtual interview season through April 2020.
Redeployment of IR trainees	1) IR trainees may be redeployed to clinical settings if the institution is deemed to be in Stage 2 (PD/DIO) or Stage 3 by the ACGME. 2) IR fellows may be fast-tracked into attendings by an institution if they have met 80% of the graduation requirements.

pathology being treated. Additionally, the national shortage of personal protective equipment (PPE) is an important consideration and conservation of PPE is of great importance (2). One PPE-conservation strategy many hospitals are adopting is to have only attending physicians scrub into procedures. While this is a logical strategy given the circumstances, this unfortunately also further reduces the trainees' case volume.

The decrease in case volume is of special significance to residents who have the Early Specialization in IR (ESIR) designation. Per the Accreditation Council of Graduate Medical Education (ACGME), ESIR designation requires the trainee to have logged 500 IR or IR-related cases (3). However, given the exceptional circumstances, the ACGME has acknowledged that some residents may finish their PGY-5 year with less than 500 cases and have relaxed this requirement, stipulating that these ESIR residents can enter their second year of their independent IR residency (PGY-6) but must finish their independent IR residency with at least a 1000 logged cases (4).

The reduction in case volumes has the same implications for graduating IR residents and fellows (PGY-6) as it does for ESIR residents. A trainee's competence to graduate is the decision of the program director (PD) and the Clinical Competency Committee and is decided on a case-by-case basis, which is unchanged from before, but may require more attention during this period of reduced case volumes (5).

Regulatory Requirements: Breast Imaging and Nuclear Medicine

The ACGME states that if even if a resident has not met the case minimum due to the reduced volumes, the trainee still "may be deemed by the PD as being clinically competent and be allowed to complete the program, as scheduled" (4,5). PDs and PGY-5 residents also need to consider the mammography and nuclear medicine graduation requirements. The requirements set forth by the Mammography Quality Standards Act (MQSA) and the US Nuclear Regulatory Commission (NRC) cannot be waived by the ACGME or the American Board of Radiology (ABR). At this time, no statement regarding changes to the graduation requirements has been released by the mammography or nuclear medicine governing bodies.

In regards to breast imaging, a graduating resident needs to have completed 12 weeks of clinical rotations, 60 hours of didactic education, and supervised interpretation of 240 screening mammograms within a 6-month block of time (2). Despite the extenuating circumstances placed by the COVID-19 pandemic, all efforts should be made by the resident and program to ensure these time and volume requirements are met. For senior residents who still need to complete their hour/day requirements for mammography but are in hard-hit areas of the country with reduced volumes, telemedicine or remote access may be an option to meet these standards. Some hospitals have ceased to perform screening mammograms until further notice. In order to meet the screening mammogram requirement, residents in such hospitals may interpret, in a blinded fashion, already finalized screening mammograms (4).

In regards to nuclear imaging, a graduating resident needs to have completed at least 700 hours of clinical training and 80 hours of classroom/laboratory training. All efforts should be made by the resident and program to ensure these time requirements are met, utilizing remote access or telemedicine if necessary (4).

The NRC also requires a graduating resident to have participated in three low-dose and three high dose sodium iodide I-131 treatments. As it pertains to I-131 treatments, the ACGME acknowledges that some senior residents may not complete this requirement before the completion of their PGY-5 year due to the decreased volume. In these instances, the ACGME Review Committee for Radiology states that in the "rare event that a senior resident cannot fulfill the sodium iodide I-131 therapy requirement during residency due to COVID-19, the Review Committee would allow postgraduate documentation of supervised sodium iodide I-131 administration cases" (4).

ICU rotation

Per the ACGME, ESIR residents must complete 11 IR or IR-related rotations (such as vascular surgery or oncology) and a rotation in the intensive care unit (ICU) (3). However, some ESIR residents may be unable to complete their ICU rotation given the extenuating circumstances created by the pandemic. ACGME specifically addresses the situation in which an ESIR resident is unable to fulfill their ICU rotation requirement and states "that these residents can still graduate. Upon completion of the ESIR training in the diagnostic radiology program, the PD must note, on the Verification of ESIR Training for the interventional radiology-independent program director, that the ICU rotation was not completed by the resident due to uncontrollable COVID-19-related circumstances. The receiving interventional radiology-independent program must provide a one-month ICU rotation for such residents (4)." It is important to reiterate that "programs may alter their block schedules to accommodate residents participating in ESIR, provided the number of IR and IR-related rotations remain consistent with ESIR guidelines for each resident (4)."

Clinical Reassignment

The ACGME has created three stages to account for the increased clinical demands in each institution. Stage 1 is "Business as Usual", referring to the pre-COVID-19 state of affairs. Stage 2 is "Increased Clinical Demands". When the clinical demands are significant, the ACGME will escalate to Stage 3, or "Pandemic Emergency Status" (6). In hospitals overwhelmed with COVID-19 patients whom the ACGME has deemed to be in either Stage 2 or Stage 3, IR trainees may be redeployed to other clinical settings (6,7). Clinical reassignment in Stage 2 requires approval from the program director as well the Designated Institutional Official. IR residents in these hospitals should be ready to be embedded within the ICU, assisting with critical care of patients and assisting with central lines and other bedside procedures. Appropriate supervision and PPE must be provided to redeployed trainee (2). Work hour restrictions remain unchanged and are emphasized.

The ACGME also states that given these exceptional circumstances, PGY-6 IR trainees, or fellows in any specialties for that matter, may be accelerated to attending-status as long as they have completed 80% of their training, are board-eligible/board-certified, and are able to obtain institutional credentials (6).

Didactic curriculum disruption

Appropriately so, given the need for social distancing, in-person conferences and didactics have been cancelled at most institutions. Many residency programs have, instead, adopted virtual lectures and conferences, which have been well-received.

Several Society-level endeavors should also be highlighted. The SIR Residency Essentials project will become available in mid-2020 (8). This will be an invaluable resource for trainees looking to maintain and bolster their IR education during the COVID-19 pandemic. The Association of University Radiologists-supported Radiology Residency Core Curriculum Lecture Series is a fantastic resource which is being fast-tracked to completion in response to the need for online radiology didactic education (9).

Finally, self-directed learning by the IR trainees has never been of greater importance. Many resources can be found online, and PDs are working to organize those resources for their residents. Helpful IR-relevant resources for trainees can be found on the SIR Resident Fellow Student section website, including the Resident Fellow Student Critical Care Course, IR Procedure Guides, the Landmark Clinical Trials project (10–12).

Psychological Impact on IR Trainees

These are difficult times for IR trainees. Social distancing and isolation in-of-itself may lead to negative psychological impacts. The scheduling disruptions, the impact on graduation requirements, the decreased confidence that may come with a reduced case volume, and the possible redeployment to a non-IR clinical service are all stressors that can lead to burn-out, fatigue, and loss of morale amongst IR trainees. Graduate Medical Education leadership, program directors, and residents should be fully aware of these psychological consequences and act to address them proactively.

Program directors should have confidential discussions with residents to assess whether there are personal, social, or health issues that may impact their or their family's safety. For example, a trainee or their family member may be immunosuppressed. This would factor into leadership decisions on how to deploy residents.

CONCLUSION

The COVID-19 pandemic has impacted every facet of IR training. This is a rapidly evolving situation but cooperation and open lines of communication between all stakeholders are of the

utmost importance in order to maintain the safety of IR trainees while still meeting their clinical and educational needs.

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