

“What Program Directors Think” II:

Results of the 2013 and 2014 Annual Surveys of the Association of Program Directors in Radiology

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Rationale and Objectives: The Association of Program Directors in Radiology (APDR) surveys residents' educational experiences, work responsibilities, and benefits to support radiology residency programs and their directors.

Materials and Methods: This is an observational cross-sectional study using three Web-based surveys posed to the APDR membership in the spring of 2013 (March 7–29, 2013; 44 items), the fall of 2013 (October 24 to November 15, 2013; 36 items), and the spring of 2014 (March 3–21, 2014; 49 items) on the American Board of Radiology (ABR) Core examination, organization of Clinical Competency Committees (CCCs), fellowship match, and interventional radiology (IR)–diagnostic radiology (DR) training programs.

Results: Responses were collected electronically, results were tallied using SurveyMonkey software, and qualitative responses were tabulated or summarized as comments. Findings were reported during the 60th and 61st annual meetings of the Association of University Radiologists, respectively. The maximal response rate was 35% in the spring 2013, 39% in the fall 2013, and 39% in the spring 2014.

Conclusions: With the ABR Core examination, radiology educators increasingly included multiple choice questions in teaching conferences. “Boards frenzy” was alive and well. The number of programs with a CCC was growing, chaired primarily by the Program Director (PD), with the most commonly used tool being the rotation evaluation. In view of “fellowship frenzy” in the third year of residency, only a minority of PDs were against a fellowship match in the National Resident Matching Program (NRMP). The majority of respondents replied that the new IR/DR pathway would negatively affect the DR residency.

Key Words: Survey; residency; radiology; accreditation.

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Since 2000, the Association of Program Directors in Radiology (APDR) has conducted an annual survey of its membership on issues affecting training in accredited residency programs in the United States and Canada. The APDR uses the data generated by the survey to promote improvements in resident education through exchange of ideas, to provide benchmarks guiding local resource allocation, to support the Radiology Residency Program Director (PD) community, and to facilitate communications with the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Radiology (ABR). To make information more generally accessible, the results

of the annual APDR Survey were first published in 2012. (1) In this follow-up article, we analyze the results of the 2013 and 2014 surveys and discuss recent trends in resident education from the PD's perspective.

MATERIALS AND METHODS

We performed an observational cross-sectional study using three Web-based surveys conducted between March 2013 and March 2014. Members of the 2012–2013 APDR Annual Survey Committee selected questions from those proposed by the committee members and the APDR leadership for inclusion in the surveys. The Committee Chair, with the help from other medical educators, selected and edited the highest quality questions. Before distribution, the questions were reviewed and approved by the current APDR president. The 2013 spring survey (March 7–29, 2013) had 44 items, the 2013 fall survey (October 24 to November 15, 2013) had 36 items, and the 2014 spring survey (March 3–21, 2014) had 49 items.

Survey methodology was described in detail previously (1). In brief, all active members of the APDR were invited to participate. Participants were allowed to skip questions at will. Responses were collected electronically without

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personal identifiers, tallied using SurveyMonkey software, and reported in aggregate. The results of the Spring 2013 survey were presented to the membership at the 60th Association of University Radiologists (AUR) meeting (April 9–12, 2013, Los Angeles, CA), and the results of the Fall 2013 and Spring 2014 surveys were presented at the 61st AUR meeting (April 1–4, 2014, Baltimore, MD). After each meeting, respective reports were archived on the “members only” portion of the APDR Web site (2).

RESULTS

Demographics

The Survey Committee began collecting demographic data in the Fall 2013. Response rate and demographic data regarding survey respondents are summarized in Table 1. Response rate ranged from 35% in the Spring 2013 to 39% in the Fall 2013 and 39% in the Spring 2014. Most respondents were associated with a university, with the assistant, associate, and full professors approximately equally represented. The majority (71%–72%) of respondents were from medium- and large-sized programs (13–28 and 29–40 residents). Geographically, more respondents were from the Northeast (35%–38%) than from any other region of the United States.

The 2014 American Board of Radiology Core Examination (Spring 2013 to Spring 2014)

In Spring 2013, 52% respondents made or were planning to make changes to the training curriculum in view of the new ABR Core examination. Forty percent reported encouraging their residents to take the practice examination given in June 2013, and 86% confirmed that their residents were planning to do so.

By Spring 2014, after the results from the first Core examination were released, 70% reported changing or planning to change their curricular strategy in preparation for the ABR Core examination. Regarding these strategies, 82% respondents reported using the Radiological Society of North America (RSNA) online physics modules (3), 79% included multiple choice questions when giving case conferences, and 69% incorporated physics and patient safety questions. Approximately two-thirds (65%) of respondents replied that 10–15 cases per hour was an optimal pace during case conferences.

The 12% failure rate at the new ABR Core examination (4) was thought to be too high by 37% respondents, whereas 37% felt that it was about right and 26% were not sure.

Regarding the “examination frenzy,” on the Fall 2013 survey, 70% of respondents rated the resident stress level either similar to or greater than that surrounding the ABR oral examination. By Spring 2014, 83% of respondents replied that the ABR Core examination was preceded by high resident anxiety and 42% reported allowing residents substantial time off to study in preparation.

TABLE 1. Respondents' Demographics

	Spring 2013*	Fall 2013	Spring 2014
Participation			
Participants	114	132	122
Total membership	326	340	314
Response rate (%)	35	39	39
Affiliation (% respondents)			
University		69	68
University affiliated		22	24
Community		17	17
Military		4	1
Appointment (% respondents)			
Full time		80	82
Tenured		8	3
On tenure track		1	4
Nontenured		21	22
Clinician investigator		2	3
Clinician educator		29	35
Research scientist		0	0
Academic rank (% respondents)			
Professor		32	28
Associate professor		32	28
Assistant professor		38	44
Program size (% respondents)			
≤12		13	16
13–28		42	44
29–40		29	28
>40		16	12
Location (% respondents)			
Northeast		35	37
Southeast		14	22
Central/Midwest		31	24
Western		20	17

*Demographic data not collected, except for the response rate.

Thirty-six percent of respondents were able to provide the fourth-year residents with 3 months of dedicated subspecialty training after the ABR Core examination, 31% six months, 27% nine months, and 5% a full 12 months.

ACGME Competencies (5): Milestone (6) Achievement (Fall 2013)

Table 2 shows relative penetration of the Milestone (ACGME) assessment tools. After the implementation of the Milestones, 85% of respondents reported no additional protected time (for PDs to address these new documentation requirements), whereas 90% felt that PDs should be given more protected time to fulfill their responsibilities. At the same time, 46% of respondents reported reductions in educational funding, and 10% reported reduction in both overall funding and funded residency positions.

Clinical Competency Committee: Size and Composition (Spring 2013 to Spring 2014)

On the Spring 2013 survey, 53% respondents replied that they had insufficient information to start a CCC. At the same time,

TABLE 2. Milestone Assessment Tools

Assessment Tool	%
High penetration (>75% respondents use these)	
360° evaluations	94
Direct observation and feedback	89
End-of-rotation faculty evaluations	95
Case/procedure logs	89
Self-assessment and reflections/portfolio	76
Moderate penetration (40%–70% respondents use these)	
Procedural competency checklists	46
ER preparedness tests	57
Formal review of dictated reports	47
Tracking rate of major discrepancies	47
Timeline on completing institutional and program requirements	48
QI project presentation with feedback	66
Completion of institutional safety modules	67
Completion of professionalism and/or communication modules	42
Low penetration (<40% respondents use these)	
Simulation/OSCE	20
Critical incidents reporting and feedback	31
Completion of knowledge-based modules on health care economics	23
End-of-rotation examinations	28

ER, emergency room; OSCE, objective structured clinical examination; QI, quality improvement.

59% already had a CCC in place; 83% of the remainder planned to establish a CCC in the next 6 months. Fifty-nine percent of respondents' CCCs were composed of 5–10 faculty members, whereas 76% were comprised of 5–15 faculty members. In 65% of respondents' situations, CCC membership was by PD appointment. Ninety-four percent of CCCs included the PD as a member, 39% included the department chair, and 36% included a department vice-chair. The PD chaired the CCC 75% of the time for the respondent residencies. These CCCs met twice a year in 57% of the instances and met more frequently in 39%. An overwhelming majority of respondents felt that the APDR should develop templates for CCC, curricula, and the Milestones for use in individual programs and that the bulk of the documentation and metrics should be devoted away from the ACGME competencies and toward Milestone achievement.

On the fall of 2013 survey, 64% of respondent CCCs were chaired by the PD. Sixty-four percent of respondent CCCs met semiannually and 30% met quarterly. Response data on CCC size are summarized in Figure 1 (2 of the 93 responses were excluded as ambiguous.) Although we did not directly ask how many of our members had a CCC in place in this particular survey, 70%–71% respondents answered this bank of questions, whereas 29%–30% skipped it.

On the spring of 2014 survey, 63% of the respondent CCCs were chaired by the PD, and 23% were chaired by the associate PD. The chair served on these CCCs 23% of the time, and the department vice-chair served 20% of the time.

Clinical Competency Committee: Workload and Tools

The respondent time needed for preparation for a CCC meeting is summarized in Figure 2, and the length of the respondent CCC meeting is provided in Figure 3. Ninety-six percent of respondents reviewed rotation evaluations before the CCC meeting, with the other most commonly used assessment approaches or tools being examination scores (85%), conference attendance (72%), procedure logs (78%), resident scholarly activity (86%), and patient safety and quality improvement (QI) projects (76%). In 85% of respondent programs, this information was reviewed by the PD before each CCC meeting. In 60% of the respondent programs, preliminary Milestone levels were assigned before the CCC meeting. Regarding tracking and documenting resident Milestones, 52% of respondents used both electronic systems and paper, 40% used an electronic system only, and 8% used paper only.

Fellowship Match

Seventy-eight percent of respondents reported that 76%–100% of their residents would pursue fellowship training now that the certifying ABR examination was pushed 15 months after completion of residency training. When asked about granting residents time off for fellowship interviews, 53% of respondents reported up to 5 days, 24% up to 7 days, and 23% up to 10 days. Seventy-six percent reported "fellowships frenzy," defined as a perceived need to interview at more places to feel comfortable about matching. Respondent opinions on the optimal time for fellowship interviews are summarized in Figure 4. Approximately half of respondents (51%) replied that the fellowship recruitment or selection process would continue to unravel, with the interviews pushed earlier and earlier in the residency, whereas 49% replied that the process was unlikely to move into the R2 year. At the same time, 82% of respondents stated that they did not think that resident subspecialty exposure was sufficient to make an educated decision on their specialization by the end of the R2 year. As to the fellowship match, 24% were against NRMP participation, whereas 41% were for the NRMP participation unconditionally, and the rest (35%) felt that the NRMP participation should be up to the individual subspecialty societies.

Figures 5a and 5b show a comparison between the trainee's early career plans and the actual decision to train in IR as seen by respondents. Almost a quarter of respondents (24%) reported the majority of their applicants interested in IR as the specialty of choice, whereas 55% reported between quarter and half their applicants similarly inclined. At the same time, 55% respondents reported 0%–25% of their third-year residents matching into IR fellowships, and 28% reported 26%–50%.

IR–DR Program

When asked to make a prediction about the new IR–DR pathway, 60% of respondents did not endorse that the overall

Number of respondents

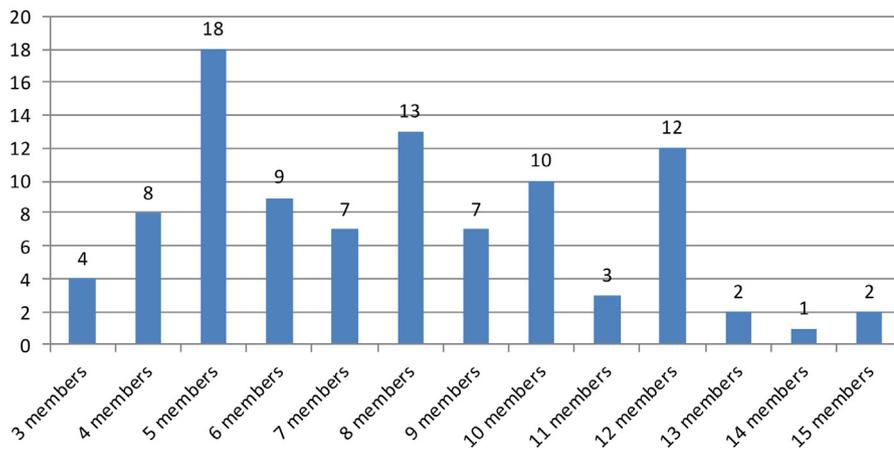


Figure 1. Clinical Competency Committee size.

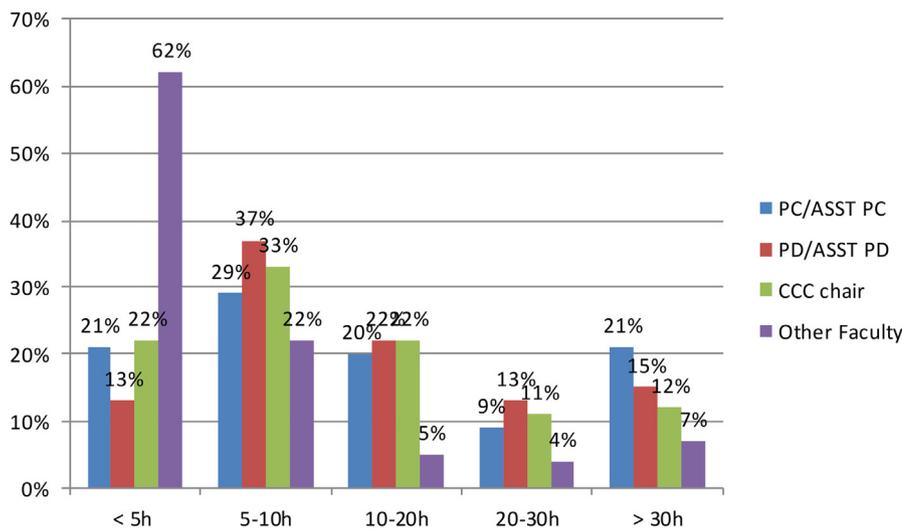


Figure 2. Preparation time for a Clinical Competency Committee meeting by support staff and members. ASST PC, Assistant Program Coordinator; ASST PD, Assistant Program Director; CCC, Clinical Competency Committee; PC, Program Coordinator; PD, Program Director. (Color version of figure is available online.)

impact on the DR program would be positive, 70% predicted that there would be overall loss of training positions in DR, and 72% predicted confusion over DR versus IR-DR administrative and educational leadership. Moreover, 81% of respondents were concerned that there would be crossover between the two training pathways. Of the 81 survey respondents, 42% reported that the IR section at their institution was enthusiastic or very enthusiastic at the prospect of having IR-DR pathway, 27% were neutral, and the rest were hesitant or very hesitant.

New Accreditation System: Core Faculty

Of the 81 respondents, 95% stated that Core Faculty designation is determined on the basis of teaching time and effort, 52% used scholarly activity, and 57% applied curricular responsibilities as a criterion. Seventy-eight percent of respondents reported that their program was offering no additional faculty development such as retreats, educational

opportunities, or academic time allocation after introduction of the New Accreditation System (NAS) by the ACGME.

DISCUSSION

The three surveys conducted between the spring of 2013 and the spring of 2014 focused on topics of interest to the APDR members. As in prior years, the surveys used cross-sectional-design observational study to capture the state of the community at the time of survey administration. The response rates in 2013-2014 ranged from 35% to 39%. Although still in the range of the average response rate for mail surveys (7), this is lower than the 47% response rate in 2011. At least in part, this may be due to the introduction of the additional fall survey with resultant survey fatigue, as has been recently demonstrated by Porter et al. (8).

Our study has several limitations. The survey, designed to address immediate concerns of the membership, is a

Percent respondents

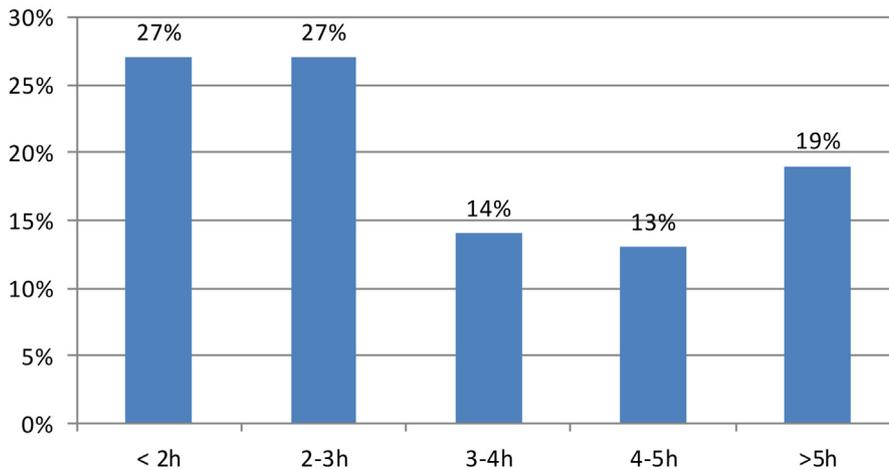


Figure 3. Clinical Competency Committee meeting length.

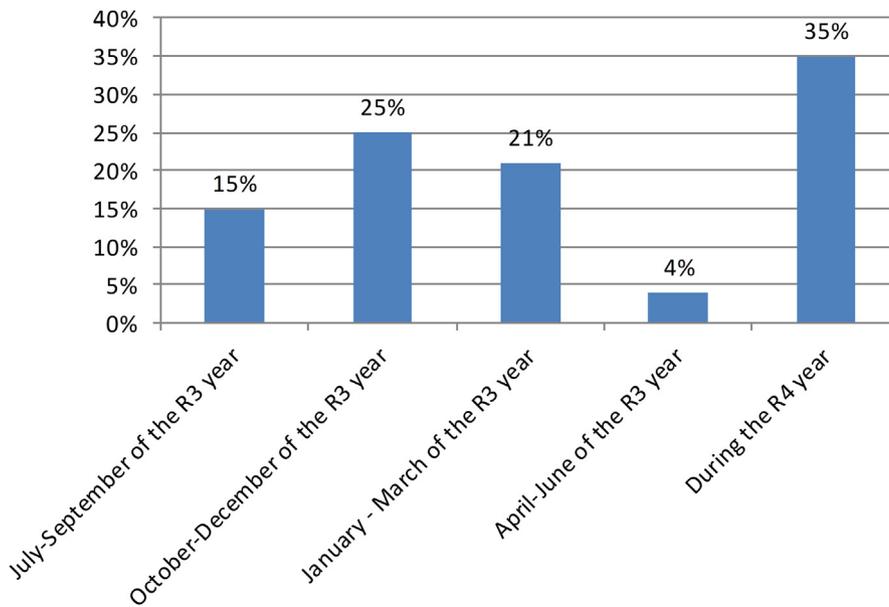


Figure 4. Optimal time for fellowship interviews.

cross-sectional–design observational study with inherent limitations (9). Moreover, the survey was distributed to the APDR members, although not all ACGME-accredited PDs are members of the APDR. At the same time, many APDR members are associate, assistant, and former PDs. This may have introduced a selection bias (10), with some programs possibly overrepresented and others underrepresented. In our question design and data analysis, we took into consideration the inevitable framing bias (11), as well as the voluntary response bias (12), in a survey which is not mandatory, potentially selecting for respondents with stronger opinions than the average PD. In our analysis, we were mindful of the desirability bias which was shown to affect participant response (13) even in anonymous surveys. In our case, this may have translated into less than maximal response rate to many

questions, as participants were allowed to skip items at will, preselecting for respondents with more acceptable views.

One of the major changes facing training programs is the new ABR qualifying examination, first administered in September 2013. Although there was no PD consensus on the 7% failure rate in the clinical portion and 9% failure in physics (4), we felt that “boards frenzy” was alive and well. The slight increase in the reported frenzy (70% in Spring 2013 vs. 83% in Spring 2014) may be due to greater proximity of the survey to the ABR qualifying examination in 2014, as well as the receipt of the first Core examination results by residents and PDs. It is worth mentioning that in Spring 2013, PDs reported resident stress level either similar to or greater than the oral ABR examination. It is, therefore, no surprise that in Spring 2014, 42% of respondents allowed residents

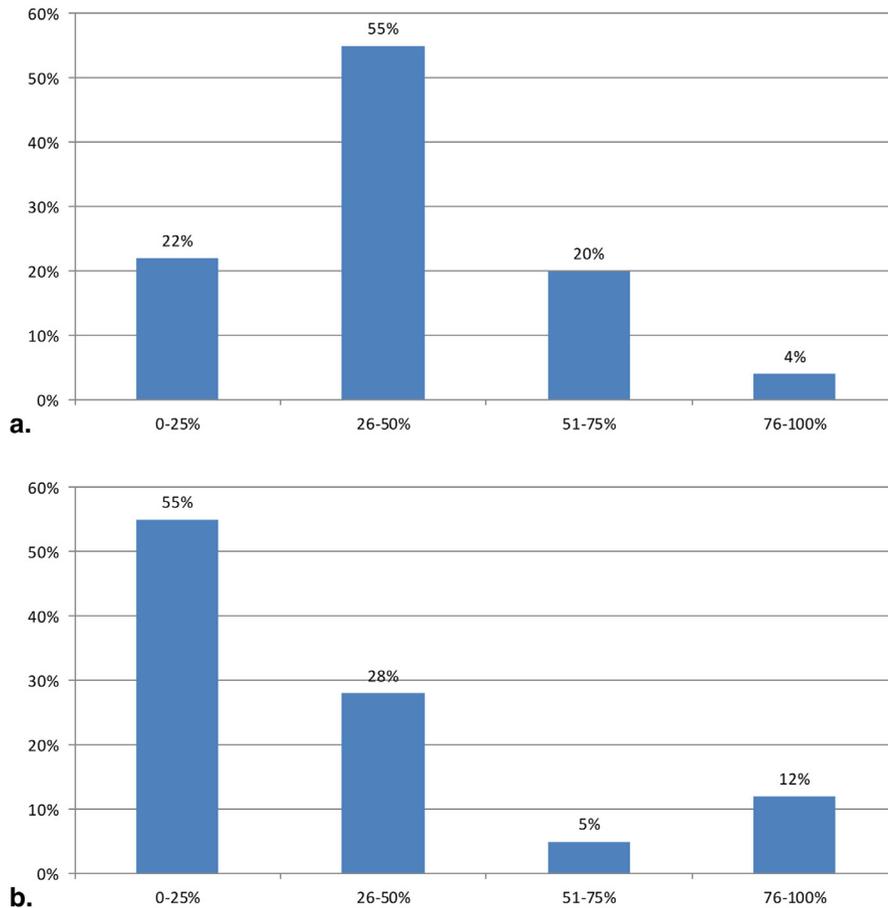


Figure 5. Comparison of resident career plans at the beginning of training versus the match outcome in the R3 year. **(a)** Percentage residents planning further training in interventional radiology (IR) at the start of residency. **(b)** Percentage residents matched to IR in their third year.

substantial time off to study in preparation for the ABR qualifying examination. The true extent of this phenomenon is uncertain because it is in direct contradiction with the APDR position of “no time off from clinical service before the ABR Core examination” (14) and in this context is socially undesirable and, therefore, possibly underreported (13).

Our results suggest that abolition of ABR Oral examination did not eliminate “boards frenzy.” It did, however, change the methods of instruction: a large majority of respondents reported adding multiple choice questions to the standard case conferences. Although it is uncertain whether this format constitutes an improvement, integrating physics and patient safety material into the daily teaching sessions is without a doubt a positive development.

Our survey suggests that the PD community was responding to the new ACGME accreditation framework with increased CCC penetration. In Spring 2013, 55% respondents reported having an active CCC. In Spring 2014, the question was not asked directly; however, the maximal response rate to the questions regarding the CCC was 72%. The response rate of 72% may be a proxy for the percent of programs with an active CCC. This suggests that after the CCC became a program requirement in July 2013, the percent of programs with an active CCC has increased.

Preparation time before the CCC meeting spent by the program administrators, the PDs, and the committee chairs

varied widely in keeping with the diversity of program size among respondents. However, convergence was seen in the number of hours spent by other CCC members. The majority of respondents (62%) felt that faculty members spend <5 hours in preparation for the CCC. We theorize that individual committee members were likely to be assigned in-depth evaluation of a few residents at a time, whereas the CCC chair/PD oversaw the entire output of the CCC, with 85% respondents reporting that the PD reviewed the data before the CCC.

Accordingly, half the PDs spend >10 hours preparing for each CCC, and 28% spend >20 hours, the differences likely related to program size. Given the workload inherent in the Milestone project, it is not surprising that the majority of the CCCs were chaired by PDs. Other faculty members are less likely to have allocated time to devote to this function. It is of interest that participation by chairmen was dropping, from 39% reported in the Spring 2013 to 25% in the spring of 2014. It is possible that as program leadership became more familiar and comfortable with NAS, participation of chairmen in CCC became unnecessary.

Our survey uncovered several areas of convergence in methodology, possibly pointing to the most effective strategies in managing the additional workload of the Milestone Project. The vast majority of respondents (92%) used an electronic management system in resident evaluation. A small majority (60%) reported assignment of competence

level before the CCC, thus likely reducing meeting length. There was convergence toward the tried and true evaluation methods: 96% respondents used rotation evaluations. Other commonly used metrics were examination scores, scholarly activity, patient safety/QI logs, procedure logs, and conference attendance.

Our survey suggests that by Spring 2014, most residents were pursuing fellowship training. This is hardly new. As early as 2000, Goodman et al. (15) reported that 80% of the class of 1999 and 85% of the class of 2000 accepted fellowship positions. However, our respondents reported substantial "fellowship frenzy." It is uncertain how much is due to the tight employment market for the new graduates, and whether additional stress is exerted by the delay in the ABR certification until 15 months after the completion of residency training or another yet unclear factor. Furthermore, we did not separate the ACGME-accredited fellowship programs filled through the NRMP from the non-ACTME-accredited fellowships. Finally, most PDs felt that residents did not have sufficient subspecialty exposure to make an informed decision regarding fellowships by the end of the R2 year. It is well known that in situations where large numbers of new job-seekers enter employment markets at the same time, recruitment tends to gradually move toward the beginning of the training process (matching market unraveling) (16). Therefore, it is not surprising that only 24% respondents were against universal fellowship participation in the NRMP.

The other major issue facing the DR residency director is the newly approved IR/DR residency. It is noteworthy that only a minority of PDs reported enthusiastic support for the IR-DR pathway by the IR faculty at their institutions. The majority of survey respondents predicted that the new pathway would have a negative impact on the DR residency because of overall loss of training positions, confusion over leadership, and crossover between the two training pathways. Our respondents reported large numbers of residency applicants mentioning IR training as the ultimate goal, whereas only a minority match to IR fellowships in the end of residency training. Therefore, there is potential for significant pathway crossover midway through training, which may be disruptive to both the DR and the DR-IR residency programs.

Another area of interest was the Core Faculty designation under the NAS of the ACGME, which determines which faculty members participate in the Core Faculty survey. The vast majority of respondents (95%) reported that the chief consideration for core faculty designation was teaching time and effort. An unaddressed question was how frequently an expectation of a positive response to the ACGME faculty survey was a consideration for designation. Finally, it is of concern to the APDR community that the survey found no additional faculty development or academic time in spite of the additional reporting requirements under the NAS and the Milestones Project.

CONCLUSIONS

- 1) With introduction of the new ABR Core examination, "boards frenzy" seemed to be alive and well, and possibly even increasing. Radiology educators increasingly supplemented case conferences with multiple choice questions.
- 2) Between Spring 2013 and Spring 2014, the number of programs with an active CCC was growing, chaired, and overseen primarily by the PD, with the most commonly used tool being the rotation evaluation.
- 3) In spite of the growing requirements under the NAS and the Milestones Project, PDs did not report commensurate investments in faculty development or resource allocation, such as additional time.
- 4) In view of "fellowship frenzy" in the third year of residency, only a minority of PDs were categorically against a fellowship match in the NRMP.
- 5) The majority of respondents predicted that the new IR/DR pathway would have a negative impact on the DR residency.

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REFERENCES

1. What program directors think: results of the 2011 annual survey of the Association of Program Directors in Radiology. *Acad Radiol* 2012; 9(12): 1582-1588.
2. <http://www.apdr.org/>.
3. https://www.rsna.org/RSNA/AAPM_Online_Physics_Modules_.aspx.
4. <http://www.theabr.org/ic-ro-score>.
5. Swing SR. The ACGME outcomes project: retrospective and perspective. *Med Teach* 2007 Sep; 29(7):648-654.
6. <http://www.acgme.org/acgmeweb/tabid/430/ProgramandInstitutionalAccreditation/NextAccreditationSystem/Milestones.aspx>.
7. Baruch Y, Holtom B. Survey response rate levels and trends in organizational research. *Hum Relat* 2008; 61:1139-1160.
8. Porter RS, Whitcomb ME, Weitzer WH. Multiple surveys of students and survey fatigue. *New Directions for Institutional Research* 2004; 121: 63-73.
9. Mamdani M, Sykora K, Li P, et al. Reader's guide to critical appraisal of cohort studies: 2. Assessing potential for confounding. *BMJ* 2005; 330: 960-962.
10. Berk A. An introduction to sample selection bias in sociological data. *Am Sociol Rev* 1983; 48:386-398.
11. Tversky A, Kahneman D. The framing of decisions and the psychology of choice. *Science* 1981; 211:453-458.
12. Sackett DL. Bias in analytic research. *J Chron Dis* 1979; 32:51-63.
13. Kreuter F, Presser S, Tourangeau R. Social desirability bias in CATI, IVR, and Web surveys: the effects of mode and question sensitivity. *Public Opin Q* 2008; 72:847-865.
14. <http://www.theabr.org/ic-ro-score>.
15. Goodman CJ, Lindsey JI, Whigham CJ, et al. Diagnostic radiology residents in the classes of 1999 and 2000: fellowship and employment. *AJR* 2000; 174(5):1211-1213.
16. Roth AE. New physicians: a natural experiment in market organization. *Science* 1990; 250:1524-1528.