

Role Models in Academic Radiology: Current Status and Pathways to Improvement

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Purpose: The aim of this study was to determine residents' attitudes about the influence and characteristics of academic radiology role models.

Method: A Web-based survey was sent to the 35 residents in the 2007 Siemens AUR Radiology Resident Academic Development (SARRAD) program and to all other residents at their institutions. The survey contained questions regarding experiences with and desirable characteristics of role models, as well as the influence of role models in career decisions. Chi-square, Fisher's exact, and Mann-Whitney tests were used to assess associations between responses and expressed career choice.

Results: Thirty of 35 SARRAD participants (85%) plus 103 non-SARRAD participants responded. Only 46% felt that there were enough role models at their institutions and 56% that there were sufficient role models in academic radiology. More than two-thirds of residents surveyed stated that they would be more likely to stay in academic radiology if there were more role models. The most desired characteristics of role models included availability, enthusiasm, integrity, and a positive attitude toward residents. Residents stating that they would choose academic careers were more likely to be research track ($P = .0001$), have more publications ($P = .01$), be less concerned with salary ($P = .003$), and be less concerned about politics ($P = .047$). Level of debt was not different between residents planning to choose academic careers and those with other career plans ($P = .80$).

Conclusion: Role models in academic radiology play an important role in influencing residents to stay in academic radiology. Increasing the number of role models in academic radiology with characteristics valued by residents will encourage residents to stay in academic medicine.

Key Words: Academic radiology, role models

J Am Coll Radiol 2010;7:50-55. Copyright © 2010 American College of Radiology

INTRODUCTION

Academic radiology is the training ground for future generations of radiologists, as well as the source for both the development and practice of advanced technologies and innovations in clinical care. In recent years, a greater proportion of radiology residents and fellows have elected to pursue careers in private practice rather than in academic radiology. This has resulted in a shortfall of academic radiologists. If this trend continues, the future of both professional development and clinical care in radiology will be at risk. Prior work has shown that sev-

eral factors influence radiologists' choices of academic vs private practice careers. These include medical school and residency experiences with research and the presence of research advisors and mentors [1,2].

Recently, a new program, Siemens AUR Radiology Resident Academic Development (SARRAD), was started. This program is intended to provide focused mentorship, leadership, and academic development activities to a group of high-potential second-year (post-graduate year 3) radiology residents who have expressed interest in an academic career. The program, now in its third year, was developed to better prepare participants for their transitions into successful careers as leaders in academic radiology. The SARRAD program accepts 35 radiology residents each year, selected on the basis of merit from nominations submitted by radiology department chairs or residency program coordinators. At the

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inaugural session in 2007, many of the participants stated that the presence of role models influenced their career choices. Moreover, the majority felt that there are insufficient role models in academic radiology.

The impact of role models on career choices in business is well documented [3-6]. Prior research has pointed to the role of career-influencing role models in medicine [7-9], identified some of their attributes [10], and explicitly addressed role models in academic medicine [11]. Some research, although very limited, has even been published on the impact of role models in academic radiology [12], the extent of their influence [13], and some important attributes [14]. However, no current publications fully evaluate the characteristics of role models within academic radiology or suggest ways to improve role models in academic radiology.

This motivated us to conduct a survey assessing factors perceived by residents as the most important characteristics of a role model in academic radiology, to evaluate residents' current feelings toward role models in academic radiology, and to assess the influence of role models and other factors on residents' career decisions.

METHOD

A Web-based survey (SurveyMonkey.com) was sent to all 35 residents who participated in the 2007 SARRAD program. The survey consisted of 72 questions and took approximately 10 to 15 minutes to complete. Acceptance into the SARRAD program is a competitive process. The chairs of each of the 187 radiology residency programs based in the United States may each nominate a second-year radiology resident to apply for the SARRAD program.

Beginning in January 2008, e-mails were sent to all SARRAD participants. The e-mail included information about the rationale for conducting the study and a link to the Web-based survey. The e-mail also requested that the SARRAD participants forward the survey to all of the residents in their home university residency programs with a request that those residents also complete it. Three reminder e-mails were sent to all SARRAD participants to encourage involvement.

The survey was designed to identify factors that residents believe are the most important characteristics of a role model in academic radiology, to evaluate residents' current feelings toward role models in academic radiology, and to assess the influence of role models on residents' career decisions. In the survey that was sent to residents, a role model was defined as "a person considered as a standard of excellence to be imitated."

The survey contained questions regarding respondents' demographics and experiences with role models, characteristics that define a role model in academic radi-

ology, and the influence of role models in career decisions. Questions designed to determine the characteristics that define a role model were divided into the following categories: academic rank or position, administrative and management skills, availability to residents, business or entrepreneurial skills, clinical skills and competence, community service participation, personality, research skills, and teaching skills. Questions determining the role of other factors on the decision whether to remain in academic radiology, such as salary, debt burden, and residency requirements for research, also were included in the survey.

We analyzed the data to describe important characteristics of role models and to compare results between subgroups defined by participation in the SARRAD program, level of educational debt, and prior research experience. We tested for statistically significant differences across subgroups using χ^2 tests for categorical variables (or Fisher's exact tests when appropriate) and Mann-Whitney tests for differences in response to Likert-scale questions. We rejected the null hypothesis for a 2-tailed P value $< .05$.

Full institutional review board approval was sought for this study, and the University of Pennsylvania Internal Review Board issued an exemption for this study on April 2, 2009.

RESULTS

Response Rate and Profile of Respondents

Thirty of 35 SARRAD participants (85%) responded to the survey. In addition, 103 non-SARRAD participants responded to the survey, for a total of 133 responses.

Among all respondents, 44 (33%) had no debt, 39 (29%) had $< \$100,000$ of debt, and 50 (38%) had $> \$100,000$ of debt. There was no statistical difference in debt level between residents who currently stated that they would choose academic careers and those who planned not to pursue academics ($P = .80$).

Thirty-nine respondents (29%) were first-year residents, 26 (14%) were second-year residents, 49 (36%) were third-year residents, and 19 (20%) were fourth-year residents. One hundred nineteen (89%) were in clinical tracks and 15 (11%) were in research tracks in their home residency programs. Ninety-seven percent of all respondents stated that they intended to pursue radiology fellowships. Residents in research tracks were more likely to choose careers in academics than those in clinical tracks ($P = .0001$). In fact, if making the decision at the time of survey response, all residents in research tracks ($n = 15$) would have chosen academic careers.

Prior to residency, 34 (26%) respondents had no research presentations or publications, 55 (33%) had 1 or 2 publications, and 43 had > 3 research presentations or

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