

What Are We Looking For?

The Question of Resident Selection

ON an annual basis between the months of November and February, there is the ritual whereby medical students visit our residency programs and interview for positions. In this issue of ANESTHESIOLOGY, de Oliveira *et al.* have performed a novel analysis of their own residency applicant data and analysis of the national match data to define predictors of success for the medical students who match for an anesthesiology residency position.¹ A key finding of the current study is that neither additional research training nor research publications were predictive of a successful match. Does this mean we are recruiting the wrong applicants if we desire the training of more physician scientists for the future?

First and foremost, all programs seek to recruit and train applicants who will become competent practitioners of anesthesiology, demonstrate a high degree of professionalism, and reflect positively on the specialty. Beyond this goal, different anesthesiology training programs will seek and attract residents with other talents and specific career goals. Most programs are also interested in training future clinical faculty and are seeking candidates interested in teaching and educational endeavors such as simulation. Some programs have developed tracks to train operating room managers and faculty leaders for tomorrow.² Research-intensive programs, for example programs with relatively large amounts of National Institutes of Health or foundation funding, will also seek and attract applicants interested in careers as physician-scientists. It is critical to acknowledge that each program has different missions, expertise, and resources, and it is critical for them to attract medical students coincident with these goals and individual strengths of the program.



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when the quality of the publications (impact factor) and the contribution of the applicant to the publication (first author *vs.* contributing or collaborating author) are also considered. The evaluation of mentors and the motivation and creativity expressed in interviews are equally important metrics of research potential, as is the timing of the research experience in relation to the application to medical school.

De Oliveira and colleagues used a database of individuals who applied to their residency, which represents a subset of the total number of medical students who apply to all anesthesiology programs. Because the extent of research productivity and focus varies between departments, it is reasonable to predict that candidates interested in careers as physician-scientists would selectively apply to programs that emphasize research as judged by the metrics available to medical

Because we believe that recruiting future physician-scientists into the specialty is important, does the current study cause alarm and suggest that we are biasing against this goal? De Oliveira *et al.* present potentially troubling data indicating that peer-reviewed publications are not an important factor in the selection of residents for anesthesiology training programs. It is indeed concerning that the average number of publications by the anesthesiology applicants in this study was zero! However, there are several issues to consider before reaching dire conclusions.

Research potential is assessed by a combination of past training and performance and an analysis of motivation and drive. The number of peer-reviewed papers alone is a weak tool for assessment of research potential that can be significantly enhanced

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◆ This Editorial View accompanies the following article: De Oliveira GS Jr, Akikwala T, Kendall MC, Fitzgerald PC, Sullivan JT, Zell C, McCarthy RJ: Factors affecting admission to anesthesiology residency in the United States: Choosing the future of our specialty. ANESTHESIOLOGY 2012; 117:243–51.

students, such as National Institutes of Health funding. Even among programs, there are differences related to areas of expertise among the faculty, and applicants may choose to apply to programs in which there would be strong mentorship and resources in their specific area of interest.

Thus, it is likely that some of the most qualified research-oriented applicants are underrepresented in the cohort analyzed in the study by de Oliveira *et al.* In addition, medical students are now applying to a large number of programs because of the competitiveness of the specialty, and many domestic and international graduates are applying from both allopathic and osteopathic residencies with little research opportunities for their students. Programs that do not emphasize research logically would not emphasize research potential in their evaluations, thus predicting the finding of this study. It is important to point out that one of the flaws in the analysis by de Oliveira *et al.* is that even if Northwestern selected residents on the basis of research potential, the analysis that was performed might not reveal this because the metric was admission to *any* residency among the applicants who applied to Northwestern.

Master's or doctoral degrees may not indicate further interest in research because some of the degrees may have been obtained before choosing a clinical career and others may have been obtained solely for the purpose of improving the candidate's chance of being accepted into medical school or an anesthesia residency. Brass *et al.* performed a national survey of 5,969 current and former MD/PhD trainees and reported that 16% were in private practice.³ In addition, 18% of those in academic practice were not involved in research. Thus, even an MD/PhD does not guarantee that the person will pursue a research career. The interview can help determine whether a candidate wants to continue in research. Nonetheless, our MD/PhD students are among the group with the greatest potential to become a physician-scientist, and we must continue to encourage these students to enter the field.

The outcome of the current study is a successful match and not eventual appointment to an academic faculty or the development of a research-oriented career. We believe that a passion for research is a very important factor in determining a successful academic career. Many of the top programs funded by the National Institutes of Health have been developing specialized tracts for research-oriented residents, which includes additional time and mentorship in research, and others have called for modifying our fellowship train-

ing.⁴ As these programs mature, it will be important to determine the characteristics of the medical students who matriculate and the success in keeping them in research and obtaining independent funding.

In summary, de Oliveira *et al.* have identified important information regarding the characteristics associated with a successful match in a subset of medical students who apply in the field. The data suggest that both objective and subjective information are used to make match decisions. With regard to previous research productivity, it is also apparent that additional details about these data (*e.g.*, impact factor of the publications and information available in the letters of recommendation) and information from the interview may be incorporated into the decision process regarding recruitment, particularly at programs dedicated to training future investigators. We remain optimistic that we are recruiting the best medical students with the potential to be future physician-scientists but must strive constantly to provide role models and opportunities for students interested in research. Future research should be directed at methods for identifying the best medical students to train to become our clinicians, clinician-educators, and physician-scientists of the future. If there is a flaw in the recruitment of research-oriented residents, it lies in our ability to attract the best applicants, not in our selection process. This is where we should direct our effort.

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