

Ensuring the Future of the Specialty

What Is the Best Strategy to Ensure a Pipeline of Physician-scientists?

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ONE of the jewels of our specialty is the Foundation for Anesthesia Education and Research (FAER), which was founded 30 yr ago with a mission to advance medicine through anesthesia research and education. It is supported by the American Society of Anesthesiologists, corporate donations, private donations from individuals, and a recently inaugurated society of academic departments. In order to accomplish its mission, the foundation has constantly innovated its hallmark programs with respect to developing the next generation of physician-scientists. In this issue of *ANESTHESIOLOGY*, Toledo *et al.*¹ have published their study evaluating one of the new programs, the Medical Student Anesthesia Research Fellowship, and have suggested that this effort has led to an increase in the number of high-quality medical students with research experience who have matched into our specialty.

When developing new programs in medicine or any for-profit or nonprofit business, it is important to establish an evaluation plan to determine success. It is, therefore, important to define the outcomes of interest and evaluate the program with respect to those outcomes. One of the problems in performing such an analysis is the length of follow-up for participants, similar to outcomes research in any aspect of medicine. It is important to define the ability to assess true outcomes *versus* surrogate outcomes or process measures that have a theoretical link to the true outcome but may *only* be the best that can be assessed at the time of analysis.

We believe that the best outcome would be an increase in the number of physician-scientists in our specialty, who publish their findings in high-quality journals and who advance medicine through anesthesia research and education in the



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broadest definition of perioperative care and basic science. Do we expect that participation in the FAER program, a single exposure to research in medical school, to result in a commitment to a career in research? Given the increasing number of National Institutes of Health training grants in anesthesia departments, another outcome to consider is that students who participated in the FAER program would then go onto apply for a T32 program. If nothing else, this outcome would document a more prolonged interest in research and should be investigated by the authors.

Are the surrogate outcomes chosen by the authors appropriate, given the stated goals? We believe that they are the best possible, but should be interpreted with great caution until longer term outcomes are obtained. Importantly, the authors compared the rate of matching into an anesthesiology residency in those accepted into the fellowship with that of those not accepted into the fellowship. They found a significant increase in the rates in which the FAER participants matched into anesthesiology residencies. The authors should be commended for having an appropriate control group because they included only those already expressing interest in anesthesia. Without such a control group, we could make the incorrect assumption that the program itself had value. However, one other interpretation is that anesthesiology residencies rate medical students who participate in the FAER program at a higher percentile because most residencies want students who show enthusiasm toward research. However, peer-reviewed scholarly production among applicants did not appear to influence candidate selection in one study.² Nonetheless, our residencies benefit from having motivated students, and the

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Corresponding article on p. 1168. This article has a video abstract. Piyush M. Patel, M.D., F.R.C.P.C., invited, reviewed, and served as Handling Editor for this manuscript. Dr. Eisenach recused himself from its evaluation, since he has a competing interest as incoming President and CEO of the Foundation for Anesthesia Education and Research.

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Medical Student Anesthesia Research Fellowship may be a unique cohort compared with those students who have published on any medical topic sometime in their career.

The question of producing physician-scientists is a complex one. Clearly, the program facilitated research that led to publications for the medical students. FAER should be congratulated for developing such a program, which was successful in that regard. It is critical that there continue to be opportunities to obtain research training through residency and during early faculty status. This takes both time and money, and it is important that FAER allocates its limited resources in the most thoughtful manner. Performing evaluations such as the one now presented is important to determine if funding fellowships in the first year for those undifferentiated in their choices of a specialty are of more value than funding research during anesthesia residency. Most importantly, we need to continue to develop programs and to fund them to ensure that our specialty evolves and attracts the best and brightest and continues to develop the next generation of physician-scientists. The increase in National Institutes of Health training grants and in grants in general awarded to anesthesiologists suggests that we are making progress (Yan Xu, Ph.D., Professor of Anesthesiology, Department of Anesthesiology, University of

Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, personal communication on January 1, 2016)—we just need to continue to expand our efforts and evaluate our results.

Competing Interests

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