

At the bedside and the bench: Research skills that last a lifetime

by PATRICIA L. TURNER, MD,
Washington, DC

For two years, I served as a senior staff fellow in the National Heart, Lung, and Blood Institute of the National Institutes of Health (NIH) in Bethesda, MD. Among the many other realizations that have come to me as the result of this experience, and others like it, is that research holds an awkward place in graduate surgical education.

For those individuals who train at certain academic institutions, it is often assumed that the length of surgery residency is seven years, including a two-year stint in the research laboratory. Conversely, for many who train at community programs, research could be perceived as a waste of time and an impediment in the already too-long period between medical school and practice. Some programs have chosen a combined approach, in which residents spend only one year in the laboratory, or, in the case of my own institution, only half of the individuals in each resident class are selected to pursue research endeavors. Still other programs include a small amount of elective time built into the schedule, which may be used for short-term projects as designed by individual residents.

As someone who enjoys research and has pursued scientific inquiry both at the bedside and at the bench, I have always recognized the inherent value in the pursuit of scientific questions. The critical learning and thinking skills that are required to design, execute, and complete research projects are in many ways

the same skills prized in the successful surgery resident. Research at any stage of training—in undergraduate education, medical school, or residency—encourages the development of these thought processes and promotes clarity of thought and organization, which, in turn, enhances performance on written tests and oral examinations. The ability to crystallize complex concepts into easily understood “layperson’s language,” while helpful when drafting grant proposals, is also critical in our interactions with patients and their families.

There is real benefit to mastering these skills, and I would not want these opportunities to be lost as we narrow the focus of surgical graduate medical education, reform work hours, and consider implementing the “four-plus” paradigm, which advocates compressing the general surgery residency into four years plus additional fellowship training in an area of specialization. Despite pressure to truncate and streamline the residency training process, let us not lose sight of the value of time spent in the research laboratory. In fact, it is my hope that more residents, not fewer, would be exposed to well-structured research endeavors during their training, and that many of them would experience the sense of accomplishment that accompanies having their work published or presented to an audience of their peers.

Make no mistake. I fully support some of the recently espoused suggestions to revamp the surgical educational process. I am aware of the implications of the abysmal match results of recent years. The 2002 match, while leaving fewer categorical positions unfilled, was still problematic in that only 931 U.S. medical school seniors ranked any of the 1,039 possible categorical surgery positions.

Recent discussions among the American Board of Surgery (ABS), the Surgery Residency Review Committee (RRC), the Association of Program Directors in Surgery (APDS), and every other governing body of general surgery have focused on the falling interest among medical students in pursuing a general surgery career. As a participant in an ABS retreat last winter focusing on this problem, I was encouraged by the genuine interest and thoughtful questions and comments from the ABS leadership with regard to the factors that most heavily influence the choices of residents and

medical students. As we refine our scope of vision and identify some of the nonessential components of the early years of surgery resident training, we should not, without careful consideration, shorten or eliminate protected research time.

Support needed

I am very fortunate to have had ample opportunity to work with supportive mentors over the years who have fostered my ongoing interest in research. In fact, my first research exposure was in high school and continued in college, between college and medical school, during medical school, and as an NIH senior staff fellow in the National Heart, Lung, and Blood Institute. It is nearly impossible to overstate the influence of faculty members’ scholarly activities on residents’ perception. Only by seeing patient care coordinated seamlessly with research responsibilities do residents master both of these important skills.

My time constraints are the same as other residents. It is possible, although challenging, to find time to pursue professional growth outside the clinical arena. Residents should learn to think and write scientifically and begin to participate in organized medicine, while maintaining their clinical responsibilities.

A supportive home institution is the key. Residency programs must genuinely support their residents’ endeavors and not penalize, however unwittingly, the resident who requests time out of the call schedule to present a paper or who requires flexibility in order to attend the sort of collaborative meetings that are often required to bring projects to fruition. These responsibilities should be viewed as part of the training process, not as an extracurricular activity. I would contend that these are not the times to require repayment of missed call days or mandatory vacation use. An invitation to give a research presentation or lecture is clearly an accomplishment for the resident, but also reflects well on his or her department and institution. Moreover, exposing junior residents to their colleagues’ projects will likely foster interest in pursuing their own research activities.

Gateway to opportunity

In addition to the obvious ways that research helps to increase the scientific knowledge base and translates into personally fulfilling papers and

presentations, it has also helped me to take advantage of several interesting opportunities, each of which is an outgrowth of my exposure to and facility with biomedical research. For example, in June 2000, at the annual meeting of the American Medical Association (AMA), I was elected to the organization's Council on Scientific Affairs (CSA). As a member of the College's Candidate and Associate Society, the ACS supported my campaign. Although I had been active as a medical student in local and regional AMA affairs, I was still a relative newcomer to the national AMA. As such, the College's endorsement was invaluable in my viability as a candidate for the position.

The CSA's collaborative focus on academics, organized medicine, and scientific inquiry seemed to constitute an ideal combination of my interests. The CSA advises the AMA on issues of biomedical research and encourages the practice of evidence-based medicine. My interest in this particular council was stimulated because I enjoy the prospect of reviewing the scientific literature, focusing on topics of clinical significance, and making recommendations that influence patient and physician decisions. The CSA provides the scientific foundation for many of the policies and positions the AMA advocates, and therefore exerts significant influence on national health policy.

The work of the council is always timely and relevant, and I was impressed as I reviewed some of the topics presented at the AMA's 2000 interim and annual meetings. These included screening recommendations for prostate cancer, the physician's role in organ donation, an evaluation of the federal abstinence-only educational programs, and a comprehensive report on issues affecting women's health. Their topics seemed both broadly applicable and appropriate.

I was reminded of the timely nature and value of their meticulous reviews when I read the CSA report on medicine's response to terrorism. The report recommended the development of an AMA/Federation plan that identified the specific needs, roles, contributions, and participation of organized medicine and individual physicians in disaster planning, and in response to terrorist attacks in their states or communities. A follow-up report was published the following year, with more specific recommendations for action. These exception-

ally well-timed reports were presented in June 2000 and June 2001 and became an incredible resource for the AMA after the events of September 11.

Critical reading and writing skills also have proven invaluable in my role as the sole resident member of the general surgery RRC. As a voting member of the committee, I review and critique residency programs and monitor their adherence to the Accreditation Council for Graduate Medical Education (ACGME) program requirements. Participating in the work of the committee with many of the most influential individuals in surgery graduate medical education is a heavy responsibility, but it affords me a truly unique perspective into the inner workings of our educational process.

Even here, my research background is relevant. As part of the process for choosing their next resident member, I am sure that RRC members evaluated candidates' ability to critically review documents (in this case, the voluminous program information forms, and extensive site visitor's reports). Furthermore, one of my most challenging tasks has been to distill volumes of program data into a clear and concise set of reviewer's notes that adequately convey my thoughts to other committee members and provide supporting documentation for my recommendations.

In addition to the academic and intellectual benefit of training residents to pursue scientific inquiry, there are also financial benefits associated with pursuing research efforts. As we all have heard in painful detail, reimbursement for

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Dr. Turner is in her sixth postgraduate year and is a fourth-year general surgery resident at Howard University Hospital, Washington, DC. She is a member of the ACS Candidate and Associate Society.



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Chapter anniversaries

Month	Chapter	Years
May	Colorado	45
	Maryland	45
June	Alberta, Canada	12
	Arkansas	27
	Connecticut	35
	Metropolitan Washington (DC)	28

Month	Chapter	Years
June (contd.)	Ecuador	35
	Germany	12
	Greece	16
	Idaho	52
	Ireland	19
	Israel	5
	Maine	51
	Mexico—Northeast	27
	Mexico—Nor-Occidental	31
	Minnesota	31
	New Mexico	17
	Upstate New York	36
	Western New York	47
	North Dakota	46
	Oregon	37
	Philippines	31
	Spain	19
Wisconsin	31	

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surgical procedures is down, malpractice premiums are up, and the ability to care for one's patients without constant interference from managed care organizations has sapped much of the joy out of patient care. The biomedical research arena is one of the few areas that can boast increased funding. The NIH has experienced budget increases from \$17.8 billion in fiscal year (FY) 2000 to \$20.3 billion in FY 2001, with a recommended FY 2002 budget of \$23.7 billion. This represents increases of 14 percent and 16.5 percent. Veterans Affairs research, similarly, has increased from \$321 million in FY 2000 to \$350 million in FY 2001, with a recommended FY 2002 budget of \$395 million. These figures represent increases of 9.1 percent and 12.8 percent respectively. There is financial benefit in the pursuit of scientific questions.

Surgeon involvement necessary

Finally, we do not want to yield control of surgical research to nonsurgically trained investigators. We must continue to develop and support our own

surgical investigators. Who better to answer the pressing questions on the cutting edge of surgical care? If residencies forsake research as a valuable part of training surgeons, then we relinquish another bit of control, and sacrifice the opportunity to shape the careers of specific individuals and the future face of surgery.

All of these goals, including research exposure in a streamlined general surgery residency paradigm, can be accomplished without negatively affecting residency training. It is, in fact, part of our program requirement to encourage residents in their pursuit of scientific inquiry. We must take this charge seriously. It is from our current pool of residents that the future Regents and Directors of the College will be chosen. The goals of surgical training—to produce safe, conscientious, technically superior surgeons with well-developed interpersonal and critical thinking skills—can be accomplished in a timely fashion without sacrificing the pursuit of scientific endeavors. Scientific inquiry should, in fact, must, remain an integral part of surgical training. □