Published in final edited form as:

Ann Surg. 2017 December ; 266(6): 937–938. doi:10.1097/SLA.0000000000002379.

Re-Branding “The Lab Years” as “Professional Development” in Order to Re-Define the Modern Surgeon Scientist

Neel A. Mansukhani, MD¹, Marco G. Patti, MD², and Melina R. Kibbe, MD^{1,2}

¹Department of Surgery, Northwestern University, Chicago, IL, USA

²Department of Surgery, University of North Carolina at Chapel Hill, Chapel Hill, NC

Abstract

Dedicated “lab time” and surgeon scientist training in residency is losing popularity. Junior residents have a strong interest in professional development, and surgeons are diverse in their contributions towards scientific progress. “Lab time” in residency should be re-branded as “professional development time.”

PERSPECTIVE

The uniqueness of surgical training comes from the privilege of providing surgical care to patients combined with the capability to perform innovative research with the potential of improving surgical practice. Surgical residency, in fact, exposes residents to sick and complex patients on a daily basis, and makes the gaps in contemporary treatment painfully obvious, therefore presenting a plethora of opportunities for innovation and progress. Because of their scientific education and clinical background, surgeons are uniquely poised to perform highly influential investigative work. From a reviewer of the scientific literature, to a site investigator for an industry sponsored device trial, to an independently funded basic and translational science researcher, the surgeon’s contributions are highly valuable.¹

Dedicated time in “the lab” during residency is often perceived by outsiders and thought of by surgical trainees as mandatory servitude to the academic faculty, “time off,” or an opportunity to earn supplemental moonlighting income. Pessimism by faculty and staff, which is inadvertently cultivated during surgical training, is often diffused to surgical trainees and weakens the image of the academic surgeon and surgeon scientist. This trend is compounded by steadily decreasing federal funding for surgeon scientists and shifts to productivity-based compensation models which result in increased pressure to produce work relative value units.^{2–4} Furthermore, to expedite training and address a workforce shortage, new surgical training models including integrated vascular surgery, integrated thoracic surgery, integrated plastic surgery, and general surgery with early specialization options

Corresponding Author and Request Reprints from: Melina R. Kibbe, M.D., Department of Surgery, University of North Carolina at Chapel Hill, 4041 Burnett Womack, 101 Manning Drive, Campus Box 7050, Chapel Hill, NC 27599-7050, Office: 919-966-4320 Fax: 919-966-6009, melina_kibbe@med.unc.edu.

DISCLOSURES

None of the authors have any relevant financial conflicts of interest to disclose.

commonly eliminate dedicated and protected time for research. Expedited surgical training adds the temptation of increased income potential in the form of faster time to practice from medical school which is understandably pursued by medical students in the current climate of soaring costs for medical education.⁵ Therefore, developing the skills to perform high impact work needs to be emphasized in surgical training, and dedicated research time should be re-branded as “professional development” time. By doing this, the modern definition of a surgeon scientist can be broadened to include a full spectrum of surgeon investigators.

Dedicated time during surgical training outside of the operating room should be as intense as clinical surgical training and considered an essential contribution to the development of surgical trainees into fully formed contributing surgeons in the workforce. Surgical trainees are masters of delayed gratification, and rebranding of the “lab years” has the potential of increasing its popularity as there is high interest among medical students and junior residents in professional development. Advanced degrees, collaborative multi-disciplinary research, and novel bio-design endeavors are a few of the professional development activities that surgical residents can pursue with dedicated time during residency outside of the operating room. By re-establishing the “identity” of the modern surgeon to include a scientific background, skills as an educator, and a practice of surgical innovation and advancement, trainees can once again aspire to lead careers similar to the heroes of surgery such as Drs. Halsted, Cushing, Blalock, DeBakey, and Starzl, among others.

Highlighting the contributions and careers of the founders and leaders of modern surgery and making available currently practicing academic surgeons and surgeon scientists as mentors, the image of the academic surgeon can be reformed. Change is happening constantly; we cannot hold on to the old view or training paradigm of an academic surgeon as the model of a surgeon with a clinical practice and an NIH funded basic science laboratory, as this represents only a small fraction of academic surgeons today. Surgeons now perform equally important and impactful work in novel technology development, health services and outcomes research, surgical education, ethics research, global surgery research, healthcare administration, and healthcare data science research. With more students with advanced degrees entering surgical training, an additional 2–3 years of dedicated professional development time during residency may not be necessary for everyone, and professional development time can be tailored to individuals’ specific career goals. The advent of the digital age has tremendous potential in ushering in a new generation of surgeon scientists who are all equally important contributors and break the mold of the traditional surgeon scientist.

Cultivating a background of innovation, research, and education is synergistic with developing professional skills such as public speaking, networking, and writing. In emphasizing professional development as a part of surgical training, the current generation of surgical trainees can look forward to immediately tangible rewards such as increased competitiveness for fellowship and employment opportunities, academic advancement, and enhanced confidence in the clinical arena. Additionally, dedicated time in residency to develop these professional skills in a mentored setting allows time for reflection on surgical care which in turn fosters the development of innovative and compassionate physicians. The in-depth background reading required to develop a grant application or write a scientific

manuscript fosters skills in analysis and critical appraisal when reading the published literature, which, when applied to clinical medicine is invaluable in making evidence-based decisions regarding patient care. Ultimately, the skills learned during this professional development time result in a more informed surgeon who is better able to critically evaluate most all situations.

While dedicated professional development time can be viewed as a vital part of surgical education, it comes with several challenges. Above all else, recruiting surgical residents to the surgeon scientist training pathway is necessary. Limited funding or infrastructure to foster scientific training, and lack of available mentors compounds the lack of interest in scientific investigations among surgical trainees. Surgical residency is 5–7 years with additional time for fellowship training; an additional 1–2 years of scientific training and experience comes with a sacrifice of income potential, potential decline in surgical skills during training, and time away from the very activity that attracted surgical trainees to their respective fields – performing surgery. Professional development years, rather than research years, is a more accurate reflection of the dedicated time spent during residency training; this re-branding may make dedicated time more appealing and fruitful for surgical trainees.

Funding for professional development currently is available through federal programs such as NIH T32 training grants, NIH F32 research fellowships, and societal post-doctoral training grants such as those offered by the American College of Surgeons, Association for Academic Surgery, Society of University Surgeons, American Heart Association, and American Medical Association Foundation, among others.^{6–9} While funding is available through these various sources, it is competitive. In addition to federal, society, and foundation funding, trainees interested in biotechnology development can seek support from university technology transfer offices, industry partners, and from philanthropy. Training programs can position their trainees for success by designating mentors who are senior investigators to connect the trainees interested in professional development with these funding opportunities.¹⁰ Current commonly used metrics for measuring success in surgical research programs include degree completion, national presentations, peer-review publications, honors, awards, fellowship positions, and eventual faculty positions.⁶ Additional future metrics can be diverse and must be appropriate to the type of professional development opportunities pursued. Such metrics can include number of successful collaborations established, patents applied for, funding obtained in the form of grants or awards, clinical quality improvement metrics implemented, participation in society committees and leadership, number of students and junior residents as mentees, and educational programs conceived and implemented.

Surgical residency includes training in comprehensive management of diseases, training in technical skills to provide appropriate surgical care, and in managing the morbidity associated with operations. The duty of all physicians is to not only provide excellent care to patients, but also to improve the quality of care delivered. In order to maintain our position as thought leaders and authorities in a particular field, developing the skills to contribute toward progress is necessary. Surgeons must develop a skillset which applies surgical expertise beyond the confines of the operating room. To maintain the surgeons' abilities to provide comprehensive care for patients in their individual specialties, gain competence in a

breadth of traditional and advanced modern operations, direct the future of patient care, and avoid becoming marginalized technicians, dedicated professional development time during residency is necessary. Dedicated professional development time can result in increased enthusiasm amongst surgical trainees, and foster increased participation in the healthcare system, improvement in surgical education, contribution towards technological advances, and in the scientific process of translating innovations from the bench to the bedside.

Acknowledgments

Author NM was supported by the National Heart, Lung, and Blood Institute of the National Institutes of Health under Award Number T32HL094293-06 in the form of partial salary support. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

1. Kibbe MR, Velazquez OC. The Extinction of the Surgeon Scientist. *Ann Surg.* 2017; 265(6):1060–1061. [PubMed: 28486289]
2. Keswani SG, Moles CM, Morowitz M, et al. The Future of Basic Science in Academic Surgery: Identifying Barriers to Success for Surgeon-scientists. *Ann Surg.* 2017; 265(6):1053–1059. [PubMed: 27643928]
3. Cramer JS, Ramalingam S, Rosenthal TC, et al. Implementing a comprehensive relative-value-based incentive plan in an academic family medicine department. *Acad Med.* 2000; 75(12):1159–66. [PubMed: 11112711]
4. Awad N, Caputo FJ, Carpenter JP, et al. Relative value unit-based compensation incentivization in an academic vascular practice improves productivity with no early adverse impact on quality. *J Vasc Surg.* 2017; 65(2):579–582. [PubMed: 27876522]
5. AoAMC. [Accessed May 17, 2017] Tuition and student fees for first-year students. Summary statistics for academic years 2012 through 2016. AAMC Tuition and Student Fees Questionnaire. Nov. 2016 Available at: http://members.aamc.org/eweb/upload/2016_Debt_Fact_Card.pdf.
6. Grants.gov. Department of Health and Human Services [Grants.gov web site]. Available at: <https://www.grants.gov/web/grants/learn-grants/grant-making-agencies/department-of-health-and-human-services.html>
7. AfAS. [Accessed May 17, 2017] AAS/AAS Trainee Research Fellowship Awards [AAS web site]. Available at: http://www.aasurg.org/awards/fellowship_award_research.php.
8. AHA. [Accessed May 17, 2017] Clinical Scientist Training Program [AHA web site]. Available at: https://professional.heart.org/professional/ResearchPrograms/ApplicationInformation/UCM_489792_Clinical-Scientist-Training-Program.jsp.
9. SoUS. [Accessed May 17, 2017] SUS Resident Scholar Awards [SUS web site]. Available at: <https://www.susweb.org/Resident-Scholar-Research-Awards>.
10. Souba WW, Wilmore DW. Judging surgical research: how should we evaluate performance and measure value? *Ann Surg.* 2000; 232(1):32–41. [PubMed: 10862192]