

Dedicated Research Time During Surgery Residency Leads to a Significant Decline In Self-Assessed Clinical Aptitude and Surgical Skills

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OBJECTIVE: The surgical community commonly perceives a decline in surgical and patient care skills among residents who take dedicated time away from clinical activity to engage in research. We hypothesize that residents perceive a decline in their skills because of dedicated research time.

SETTING: UC Davis Medical Center, Sacramento, CA, an institutional tertiary care center.

PARTICIPANTS: General surgery residents and graduates from UC Davis general surgery residency training program, who had completed at least 1 year of research during their training. A total of 35 people were asked to complete the survey, and 19 people submitted a completed survey.

DESIGN: Participants were invited to complete an online survey. Factors associated with the decline in skills following their research years were examined. All statistical analyses were performed with IBM SPSS Statistics software.

RESULTS: A total of 19 current or former general surgery residents responded to the survey (54% response rate). Overall, 42% described their research as “basic science.” Thirteen residents (68%) dedicated 1 year to research, while the remainder spent 2 or more years. Basic science researchers were significantly more likely to report a decrease in clinical judgment (75% vs. 22%, $p = 0.013$) as well as a decrease in patient care skills (63% vs. 0%, $p = 0.002$). Residents who dedicated at least 2 years to research were more likely to perceive a decline in overall aptitude and surgical skills (100% vs. 46%, $p = 0.02$), and a decline in patient care skills (67% vs. 8%, $p = 0.007$).

CONCLUSIONS: Most residents who dedicate time for research perceive a decline in their overall clinical aptitude and surgical skills. This can have a dramatic effect on the confidence of these residents in caring for patients and leading a care team once they re-enter clinical training. Residents who engaged in 2 or more years of research were significantly more likely to perceive these problems. Further research should determine how to keep residents who are interested in academics from losing ground clinically while they are pursuing research training. (J Surg Ed ■■■■-■■■. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: surgery residency, research resident, clinical skills, surgical aptitude, decline in surgical skills, surgical education

COMPETENCIES: Patient Care, Medical Knowledge, Practice-Based Learning and Improvement (PBLI), Interpersonal and Communication Skills, Professionalism, Systems-Based Practice (SBP)

INTRODUCTION

Many general surgery residents dedicate additional time during residency training to pursue research. A 1- to 3-year block of time completed after the second or third year of clinical training is commonly used for research. Upon completion, residents restart their clinical training with no transition period. Upon return, faculty and residents often perceive a significant decline in terms of operative and patient care skills both compared to their skills before taking time off and compared to residents of the same postgraduate year (PGY) level who did not pursue research. It is unknown if the decrement in skills is a true phenomenon

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TABLE 1. The Core Competencies as Determined by the ACGME

ACGME core competencies

1. Patient care
2. Medical knowledge
3. Practice-based learning and improvement (PBLI)
4. Interpersonal and communication skills
5. Professionalism
6. Systems-based practice (SBP)

or merely a perception, and if there are any measureable long-term effects on resident competency.

No studies to date examine the effect of research time on the return to clinical residency years and surgical skills nor have we investigated the long-term effects on surgical competency. Studies have investigated how dedicated time to research affects the quantity and quality of publications,^{1,2} correlations to career choice³ and success with obtaining postgraduate funding.⁴

The goal of this study is to investigate the resident perceptions of clinical competency in comparison to their skills before their dedicated research years. We also explore how they perceive their skills compared to residents of the same clinical year who did not take time off from clinical duties to pursue research. Specifically, correlations between competency and the number of years dedicated to research, the type of research completed, and resident engagement in continued clinical activities throughout the research time are evaluated. We hypothesize that residents perceive a decline in their clinical skills following research years and that this perceived decline is greater for residents who spend more than 1 year dedicated to research time.

MATERIAL AND METHODS

We used a 12-question online survey through a secure service (Survey Monkey; www.surveymonkey.com), accessible to anyone with an Internet connection. The survey was

open for 1 month and participants submitted completed surveys between July 23, 2013 and August 15, 2013.

Approximately 75% of the UC Davis general surgery residents take time off after their third clinical year to participate in research or pursue an additional advanced degree. We solicited volunteers from a list of current UC Davis general surgery residents, alumni of the program and faculty for whom we had contact information. There were 35 people in total asked to complete the online survey. The participants were required to have taken at least 1 year for dedicated research time. We had a 54% response rate with a total of 19 participants.

The questions were designed to determine the length and type of the research and to assess the perceptions of the participants regarding any decrement in surgical and clinical skills because of the time spent for research. Additional questions evaluated the perceived length of time to recovery of these same skills. The skills assessed were based on the Accreditation Council for Graduate Medical Education (ACGME) core competencies (Table 1) and technical skills.

The survey also included questions about resident participation in any clinical activity such as service call, resident-level service coverage, or moonlighting during their research time. The questions in the survey are listed in Appendix 1.

The UC Davis Institutional Review Board approved the study. Univariate models were used to compare the data collected. The chi-square test was used for nominal variables and the Student *t*-test was used for ordinal variables. Multivariate logistic regression models were used to control for all variables in the univariate analysis. Significance was set at $p \leq 0.05$. All data analyses were performed using SPSS, Version 21 (IBM Corp.) with the help of institutional statisticians.

RESULTS

A total of 35 current or former general surgery residents received the survey with 19 respondents. The response rate of 54% represents research years spanning from 2006 to 2013. The types of research included basic science, clinical, outcomes based, or other. Table 2 summarizes the demographics for the subject population. Most, 63%, of respondents survey noted a decline in their overall aptitude and their technical skills during research time (Fig. 1).

TABLE 2. Demographic Data of the Study Participants

Timing of research years	Between years 3 and 4 95%	Between years 4 and 5* 5%		
Number of research years	1 y 68%	≥ 2 y 31%		
Type of research	Basic science 42%	Clinical 37%	Outcomes 10%	Other 10%

*This resident completed a preliminary intern year before starting residency so was a PGY 4 at the time he started research. The research year still occurred between clinical years 3 and 4.

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