Does Intentional Support of Degree Programs in General Surgery Residency Affect Research Productivity or Pursuit of Academic Surgery?

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OBJECTIVE: Many residents supplement general surgery training with years of dedicated research, and an increasing number at our institution pursue additional degrees. We sought to determine whether it was worth the financial cost for residency programs to support degrees.

DESIGN: We reviewed graduating chief residents (n = 69) in general surgery at Vanderbilt University from 2001 to 2010 and collected the data including research time and additional degrees obtained. We then compared this information with the following parameters: (1) total papers, (2) first-author papers, (3) Journal Citation Reports impact factors of journals in which papers were published, and (4) first job after residency or fellowship training.

SETTING: The general surgery resident training program at Vanderbilt University is an academic program, approved to finish training 7 chief residents yearly during the time period studied.

PARTICIPANTS: Chief residents in general surgery at Vanderbilt who finished their training 2001 through 2010.

RESULTS: We found that completion of a degree during residency was significantly associated with more total and first-author publications as compared with those by residents with only dedicated research time ($p = 0.001$ and $p = 0.017$). Residents completing a degree also produced publications of a higher caliber and level of authorship as determined by an adjusted resident impact factor score as compared with those by residents with laboratory research time only ($p = 0.005$). Degree completion also was significantly correlated with a first job in academia if compared to those with dedicated research time only ($p = 0.046$).

CONCLUSIONS: Our data support the utility of degree completion when economically feasible and use of dedicated research time as an effective way to significantly increase research productivity and retain graduates in academic surgery. Aggregating data from other academic surgery programs would allow us to further determine association of funding of additional degrees as a means to encourage academic productivity and retention. (J Surg 71:486-491. © 2014 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: resident education, graduate degree, research fellowship, general surgery/education

COMPETENCIES: Practice-Based Learning and Improvement, Professionalism, Medical Knowledge

INTRODUCTION

As many as 36% of residents at academic institutions across the nation supplement their clinical training for a mean of 1.7 years with research fellowships.[1] During these years, residents are expected to be productive, present nationally, publish papers, write chapters, and prepare for and augment the beginnings of an academic career by increasing their chances of entering competitive fellowships and academic positions. However, these years require funding of salary, benefits, and insurance through grants or direct institutional support. From a survey sent in 2006 to all National Resident Matching Program participating program directors, Robertson et al.[1] estimated that it costs $41.5 million to fund the 634 trainees involved in research fellowships

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  1931-7204/$30.00 http://dx.doi.org/10.1016/j.jsurg.2014.01.018

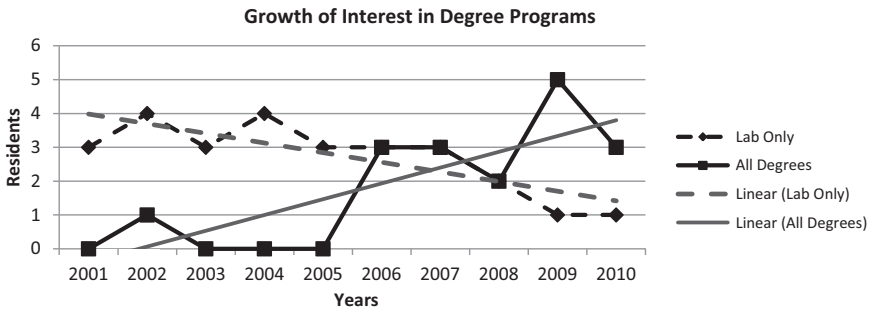

FIGURE. Increasing trend amongst general surgery residents at this institution to pursue a graduate degree during dedicated research time. Positive trend shows the growth of residents pursuing a graduate degree during their dedicated laboratory research time as compared with completing laboratory research without concurrent degree pursuits.

each year, primarily paid through departmental funds and institutional training grants.

At our tertiary care institution, there appears to be a trend toward the pursuit of additional degrees during the resident research years (Fig.). This trend may be influenced by a national interest in and focus on outcomes research.[2] However, when determining whether to support such degree programs, a surgical program must take into account the weighty expense and determine the ultimate outcome desired providing this opportunity. Potential outcomes could be individual, institutional, or global. Individually, by augmenting a resident's publication credentials, chances of obtaining a fellowship or faculty position would be increased. Institutionally, increased productivity and national exposure would reflect well on the respective program and academic medical center. Globally, retention and productivity of the academic surgery community as a whole could be augmented.

At this institution, there are 2 popular pathways for additional degrees that are very feasible during dedicated research time. The Master of Public Health (MPH) is an interdisciplinary program founded in 1996 to train public health scientists and professionals dedicated to improving the public health and preventing disease and disability. The Master of Science in Clinical Investigation (MSCI) Program was approved in 1999 and trains investigators in the techniques and processes used in patient-oriented research. Tuition for Vanderbilt University's MPH and MSCI in 2012 to 2013 was $46,425 and $47,000, respectively.[3,4]

Given this expense, we sought to determine from an administrative perspective whether the end result justified the expenses, using the individual, institutional, and global goals outlined earlier as a guide. We examined graduating chief residents at Vanderbilt for the years 2001 through 2010 comparing those completing degree programs vs those who did not. The outcomes measured included whether residents completed degree programs, whether they completed dedicated research time, their publication record, and their first job after completion of residency and fellowship training (e.g., community, military, academic affiliated, or academic).

METHODS

A request for exemption was approved by the Vanderbilt University's institutional review board for this study. We reviewed all graduating chief residents (n = 69) from general surgery at Vanderbilt University Medical Center from 2001 through 2010, determined whether they had spent any years in dedicated research time, and recorded whether they had pursued an additional degree, including MSCI, MPH, Doctor of Philosophy, and Master of Business Administration (Table 1). One resident who completed only 2 years of residency within the United States was excluded, as he was not afforded the opportunity to complete dedicated research time. Outcome measures were dependent on the following: (1) total papers published; (2) paper contribution level (designated as first author, second author, last author, or collaborative papers); (3) Journal Citation Reports (JCR) impact factors of journals[5]; and (4) classification of first job after residency or fellowship training (community, academic, military, or academic-affiliated) (Table 2).

PubMed was used as a search engine for a time frame of 7 years before the completion of residency through 1 year

TABLE 1. Degree program completion. Laboratory research experience and degree completion for surgical residents under study at Vanderbilt University are depicted (n = 68). No significant difference (p = 0.294) for average laboratory research years existed between residents completing a degree (2.1 y) and those who completed only structured laboratory research time (2.0 y)

Research Years	Residents	Mean Laboratory Years
MPH + laboratory	10	2.1
MBA + laboratory	1	2.0
MS + laboratory	1	3.0
MSCI + laboratory	5	2.0
Laboratory only	27	2.0
No laboratory	24	0.0
Total residents	68	1.3

MBA, Master of Business Administration; MS, Master of Science.