Resident Preparation for Careers in General Surgery: A Survey of Program Directors

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OBJECTIVE: The number of general surgery (GS) residency graduates who choose GS practice has diminished as the popularity of postresidency fellowships has dramatically increased over the past several decades. This study was designed to document current methods of GS preparation during surgery residency and to determine characteristics of programs that produce more graduates who pursue GS practice.

DESIGN: An email survey was sent by the American Board of Surgery General Surgery Advisory Committee to program directors of all GS residencies. Program demographic information was procured from the American Board of Surgery database and linked to survey results. Multiple regression was used to predict postresidency choices of graduates.

SETTING: Totally, 252 US allopathic surgical residencies.

PARTICIPANTS: Totally, 171 residency program directors (68% response rate).

RESULTS: The proportion of programs using an emergency/acute care surgery rotation at the main teaching hospital to teach GS increased from 63% in 2003 to 83% in 2014. An autonomous GS outpatient experience was offered in 38% of programs. Practice management curricula were offered in 28% of programs. Institutions with fewer postresidency fellowships ($p < 0.003$) and fewer surgical specialty residencies ($p < 0.036$) had a greater percentage of graduates who pursued GS practice. The addition of each fellowship at an institution was associated with a 2% decrease in the number of graduates pursuing GS practice. Residency size was not associated with predilection for fellowship selection and there was no difference between university and independent residencies vis-a-vis the proportion selecting fellowship vs GS practice.

CONCLUSIONS: Practice management principles and autonomous GS outpatient clinic experiences are offered in a minority of programs. Graduates of programs in institutions with fewer surgery fellowships and residencies are more likely to pursue GS practice. Increased number of postresidency fellowships and specialty residencies may be associated with fewer GS rotations and fewer GS mentors. Further study of these relationships seems warranted. (J Surg 72:e251-e257. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: surgery residency education, surgical fellowships, general surgery careers, mentorship, practice management, surgical workforce

COMPETENCIES: Professionalism, Systems-Based Practice, Patient Care

INTRODUCTION

The number of surgery residency graduates who choose general surgery (GS) practice has diminished as the popularity of subspecialty fellowships has dramatically increased over the past several decades. Currently, 70% to 80% of surgery residents in the United States pursue a fellowship after graduation.[1] This leaves, at most, 20% to 30% to pursue GS practice each year. This trend is superimposed upon a significant shortage of general surgeons in the United States, most acutely felt in rural and inner city areas.[2-4] Between 1980 and 2005, there was a 26% decrease in the number of surgeons practicing GS in the United States.[3] Due to a growing elderly population and increased use of medical services, the cumulative growth in demand for GS care is projected to exceed 25% by 2025, but the number of surgeons practicing GS is projected to decrease by an additional 18% over the next 20 years.[4,5] A study by

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Decker et al.[5] underscored the disparity between the market for available jobs in surgery and the training of the surgical workforce in Oregon and Wisconsin. Of 71 available positions, only 34% of employers desired a candidate with fellowship training. However, 67% of graduates in Oregon and Wisconsin pursued subspecialty fellowships after residency. These authors concluded that twice as many fellowship-trained surgeons were being produced annually compared with the number needed in these 2 states.

Recognizing the divergence between the worsening GS workforce shortage and the decreased proportion of graduates who pursue GS practice, more attention has recently been focused on the potential causes for a declining interest in GS and potential solutions for this vexing problem.[2,6,7] Although some recommended solutions have centered on lifestyle, reimbursement, and market issues; most authors have explored potential changes in the training paradigm to enhance preparation for GS careers.[2,6-8] The General Surgery Advisory Committee of the American Board of Surgery (ABS) has been engaged in the discussion of GS training issues over the past 3 years and the present study represents a portion of the effort to obtain more information about the current status of residency programs and graduates.

This study was undertaken to document current methods of preparation for GS practice by US surgical residency programs and to determine characteristics of programs that are more likely to produce graduates who pursue GS practice.

MATERIALS AND METHODS

A 5-part questionnaire (Appendix A) was developed by ABS General Surgery Advisory Committee members (Appendix B) with design input from 2 psychometrician coauthors (A.T.J. and T.W.B.). The survey was sent by email to the program directors (PDs) of all 252 allopathic GS residencies in the United States in February 2014. A follow-up e-mail was sent to nonrespondents in March 2014. Any survey that was returned with incomplete data was excluded from analysis. The survey was designed to document the array of surgical fellowships and subspecialty residencies offered at each sponsoring institution as well as to delineate specific training opportunities and types of rotations used by each program to provide GS experience. Vascular surgery integrated (0-5) programs and plastic surgery training were included with residencies as completion of surgical residency is not a prerequisite. Postresidency vascular surgery training programs were classified as fellowships. The e-mail link to each survey was then used to merge survey responses with demographic information about each program using the ABS database. The proportion of residency graduates choosing fellowships vs GS practice at the conclusion of residency was calculated for each program using ABS application data from 2007 through 2013. These 2 ABS data sources are current and highly reliable.

Program type and size and geographic location for responding programs were compared for all 252 residency programs by chi-square analysis and *t*-tests to determine whether the responding sample was representative. The level of confidence was defined as $p < 0.05$. Multiple regression was used to determine the associations between residency program characteristics and the rates of graduates pursuing fellowships vs GS practice at the completion of residency; the level of significance was set to $p < 0.05$.

RESULTS

The survey was completed by 171 PDs for a 68% response rate. Programs with completed surveys were not significantly different for any demographic variable when compared to all 252 US allopathic surgery residencies (Table). Survey responses were, therefore, interpreted to be representative of all US allopathic GS residency programs.

The percentage of programs sponsored by institutions that offer surgical subspecialty residencies is illustrated in

TABLE. Demographic Characteristics of Responding Programs vs All US Allopathic Programs

	Respondents	All US	
Demographic Variable	**N**		**p Value**
Program type			0.72
University	78	118	
Independent	89	125	
Military	4	9	
Geography			0.98
Northeast	60	86	
Southeast	31	51	
Midwest	41	56	
Southwest	16	25	
West	23	34	
Mean residents per program (SD)	4.15 (1.70)	4.23 (1.72)	0.64
Percent fellowship graduates (SD)	72.2 (20.6)	73.1 (20.2)	0.66