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Specialty Choices of Medical Graduates Taking Anesthesiology Preceptorships:

A Follow-up Study

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AN EVALUATION of the first five years of the national preceptorship program in anesthesiology (1966–1970), sponsored by the American Society of Anesthesiologists, indicated that both preceptors and students considered the program a valuable teaching–learning experience.[1] Subsequently, a survey of the knowledge of and attitudes toward anesthesiology of senior medical students who had taken anesthesiology preceptorships, as well as those who had not, was conducted in ten U.S. medical schools.[2] This survey showed that, although the two groups did not differ significantly in six knowledge areas of anesthesiology, their source of knowledge, self-assessment of skills in these areas, and attitudes toward the field did differ. Although the types of exposure to anesthesiology varied among the ten medical schools, a preceptorship appeared to be a more positive influence on student attitudes toward the field than other methods of exposure.

Another way in which to evaluate the effect of the preceptorship program is to ascertain the number of medical graduates who have taken preceptorships and who subsequently entered anesthesiology. The purpose of the present paper is 1) to compare graduates who did and did not take an anesthesiology preceptorship as students by the area of medicine they eventually entered, and 2) to compare those medical schools participating in the preceptorship program by the number of graduates entering anesthesiology and by whether or not the graduates took preceptorships in anesthesiology.

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Methods

One thousand four hundred and eighty (1,480) medical students took anesthesiology preceptorships from 1966 to 1970. Nineteen of these students took a preceptorship twice, six withdrew from school, and five students' medical school affiliations were unknown, leaving a total of 1,450. Since the preceptorship was offered between the second and third years of medical school, the majority of students taking preceptorships were second-year students. Nonetheless, some first- and third-year medical students participated in the program. The first group of preceptorship students graduated from medical school in 1967. The 868 students who graduated from medical school between 1967 and 1970 and have entered residency programs or medical practice form the basis of the present report. The areas of medicine entered by these graduates were obtained by searching the AMA Directory of Medical Specialists and by information provided by the American Medical Association.

Students from 90 medical schools (88 in the United States and two Canadian) participated in the preceptorship program from 1966 to 1970. Complete data on graduates from 14 of these schools could not be obtained, so the present study includes 76 U.S. medical schools.

Results

Table 1 shows the distribution of graduates from 76 U.S. medical schools from 1967 to 1970 by whether they took an anesthesiology preceptorship and by the area of medicine they

TABLE 1. Graduates of 76 U.S. Medical Schools from 1967 to 1970 by Area of Medicine Entered

Area of Medicine	Graduates Who Did Not Take Anesthesiology Preceptorship		Graduates Who Took Anesthesiology Preceptorship		Total Graduates	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Aerospace	316	1.2	10	1.2	326	1.2
Allergy	17	0.1	—	—	17	0.1
Anesthesiology	619	2.3	100	11.5	719	2.6
Cardiovascular	59	0.2	—	—	59	0.2
Dermatology	404	1.5	8	0.9	412	1.5
Endocrinology	26	0.1	—	—	26	0.1
Family Practice	404	1.5	18	2.1	422	1.5
Gastroenterology	25	0.1	—	—	25	0.1
General Practice	2,448	9.2	72	8.3	2,520	9.1
General Preventive Med.	75	0.3	1	0.1	76	0.3
Hematology	36	0.1	—	—	36	0.1
Infectious Diseases	35	0.1	—	—	35	0.1
Internal Medicine	5,390	20.2	152	17.5	5,542	20.1
Neurology	451	1.7	17	2.0	468	1.7
Obstetrics-Gynecology	1,235	4.6	35	4.0	1,270	4.6
Occupational Medicine	26	0.1	—	—	26	0.1
Opthalmology	895	3.4	24	2.8	919	3.3
Otorhinolaryngology	396	1.5	13	1.5	409	1.5
Pathology	775	2.9	15	1.7	790	2.9
Pediatrics	2,238	8.4	75	8.6	2,313	8.4
Physical Med. and Rehab.	57	0.2	—	—	57	0.2
Psychiatry	1,944	7.2	31	3.6	1,975	7.1
Public Health	172	0.6	5	0.6	177	0.6
Pulmonary Diseases	27	0.1	—	—	27	0.1
Radiology	1,463	5.5	46	5.3	1,509	5.5
Roentgenology	246	0.9	—	—	246	0.9
General Surgery	2,738	0.3	102	11.8	2,840	10.3
Orthopedic Surgery	1,080	4.1	39	4.5	1,119	4.1
Urological Surgery	420	1.6	19	2.2	439	1.6
Neurological Surgery	201	0.8	8	0.9	209	0.8
Plastic Surgery	61	0.2	2	0.2	63	0.2
Surgery, other	42	0.2	—	—	42	0.2
Other Specialties	1,280	4.8	36	4.1	1,316	4.8
Unspecified	1,061	4.0	40	4.6	1,101	4.0
TOTAL	26,662	100	868	100	27,530	100

eventually entered. Of the 26,662 graduates who did not take an anesthesiology preceptorship, 2.3 per cent entered anesthesiology. In contrast, of the 868 graduates who took an anesthesiology preceptorship, 11.5 per cent entered anesthesiology. It might be argued that the higher percentage of preceptees who eventually entered anesthesiology is due to their greater interest in the field, as evidenced by their application to and selection for the preceptorship program. Indeed, some non-preceptorship students also had an interest in, and eventually entered, anesthesiology. Nonetheless, significantly fewer non-preceptorship students entered anesthesiology compared with preceptorship students. The percentage differences between former preceptorship and non-preceptorship students for the other specialties is negligible. Considering the total number of medical graduates during this time interval, irrespective of the preceptorship, 2.6 per cent entered anesthesiology, which is slightly less than the total percentage of interns and residents in anesthesiology (3 per cent) reported by the AMA in 1971.[3] This slight difference

TABLE 2. Distribution of 76 U.S. Medical Schools by Percentage of Graduates Entering Anesthesiology from 1967 to 1970 and Percentage Who Took Anesthesiology Preceptorships

Medical School	Total Number of Graduates 1967–1970	Per Cent of Total Graduates Entering Anesthesiology	Number of Graduates Entering Anesthesiology Who Took Anesthesiology Preceptorships	Per Cent of Graduates Entering Anesthesiology Who Took Anesthesiology Preceptorships
Vermont	156	8	2	15
Calif.—San Francisco	463	6	2	7
Oregon	311	6	5	26
Southwestern	387	5	5	28
Missouri	301	5	1	7
Creighton	264	5	1	8
Oklahoma	366	4	1	7
Iowa	466	4	2	11
Georgia	362	4	1	7
Washington	326	4	5	42
Jefferson	642	4	5	20
Indiana	780	4	0	0
Emory	279	4	2	18
Nebraska	338	4	1	8
Kentucky	202	4	1	13
Miami	300	4	0	0
Louisville	334	4	1	8
Wisconsin	369	4	0	0
West Virginia	225	4	0	0
Cincinnati	327	4	0	0
Wayne State	466	3	2	17
New Mexico	54	3	1	33
New Jersey	278	3	0	0
St. Louis	398	3	2	17
Pennsylvania	587	3	2	13
Louisiana	479	3	3	23
Michigan	705	3	3	14
Kansas	446	3	2	13
Med. Coll. Wisc.	361	3	2	17
Loma Linda	322	3	0	0
Rochester	272	3	1	14
Pittsburg	357	3	2	18
Colorado	315	3	2	25
Puerto Rico	102	3	2	67
Arkansas	346	3	1	9
Tulane	481	3	2	15
Howard	322	3	0	0
Med. Coll. Pa.	179	3	2	33
Alabama	286	2	2	29
Northwestern	540	2	3	25
Calif.—L.A.	285	2	4	80
Meharry	201	2	1	25
Yale	311	2	2	33
Temple	535	2	1	11
Albany	260	2	0	0
Baylor	329	2	0	0
South Carolina	298	2	2	40
Utah	213	2	2	50
Syracuse	375	2	0	0
Minnesota	645	2	1	9
Tufts	430	2	1	14
Univ. S. Calif.	263	2	2	33

TABLE 2. (*Continued*)

Medical School	Total Number of Graduates 1967–1970	Per Cent of Total Graduates Entering Anesthesiology	Number of Graduates Entering Anesthesiology Who Took Anesthesiology Preceptorships	Per Cent of Graduates Entering Anesthesiology Who Took Anesthesiology Preceptorships
N.Y.—Buffalo	376	2	1	14
Hahnemann	403	2	0	0
Illinois	743	2	1	8
Chicago	269	2	0	0
Western Reserve	321	2	1	17
Washington Univ.	326	2	1	20
Johns Hopkins	357	2	1	14
N. Carolina	208	2	1	25
Bowman Gray	209	2	0	0
Med. Coll. Va.	352	2	0	0
Vanderbilt	211	2	0	0
Cornell	330	1	1	25
Maryland	461	1	0	0
Va.—Charlottesville	293	1	1	33
George Washington	371	1	2	40
Stanford	237	1	0	0
Harvard	596	1	3	38
N.Y.—Downstate	718	1	0	0
Loyola	316	1	0	0
Albert Einstein	371	1	2	40
Duke	311	0.6	0	0
N.Y. Med. Coll.	465	0.6	0	0
Boston	211	0.5	0	0
Georgetown	436	0.2	0	0
TOTALS	27,530		100	

is undoubtedly due to the fact that not all medical schools in the United States are included in the present study.

Table 2 lists the 76 medical schools in the United States according to the percentage of graduates from each school who entered anesthesiology and the percentage of graduates entering anesthesiology who took anesthesiology preceptorships. Twenty medical schools had 4 per cent or more of their graduates entering anesthesiology from 1967 to 1970. It was thought that medical schools having a high percentage of graduates entering anesthesiology might have more effective teaching programs or offer electives and preceptorships on their own, so that students at these schools might be less inclined to take a summer preceptorship elsewhere. On the other hand, it was thought that medical schools with a low percentage of graduates entering anesthesiology might have less effective teaching programs or offer fewer opportunities for electives or preceptorships on their own, so that students at these schools might be more inclined to take a summer preceptorship. However, there was no significant statistical correlation between the total number of graduates entering anesthesiology and the number of graduates entering anesthesiology who had taken preceptorships.

The American Society of Anesthesiologists had established 14 geographic regions in the United States to facilitate the participation of liaison groups of anesthesiologists to participate in the selection and placement of preceptorship students. It was thought to be of interest to see whether these regional clusterings of medical schools differed with respect to the numbers of graduates entering anesthesiology and the percentages of graduates who took anesthesiology preceptorships. The medical schools in Region 14 (Oregon and Washington) and Region 13 (California) had the highest percentages of graduates who

entered anesthesiology from 1967 to 1970, ranking first and second, respectively. The medical schools in Region 12 (Colorado, Utah, and New Mexico) and Region 1 (Vermont, Massachusetts, and Connecticut) had the highest percentages of graduates who took an anesthesiology preceptorship, ranking first and second, respectively. There is some evidence, although not uniform or in the same direction, that the percentages of graduates entering anesthesiology from some regions are associated with the percentages of graduates who took anesthesiology preceptorships. Region 14, for example, ranks high on both of these variables, whereas Regions 4 (Virginia, Maryland, and Washington, D.C.) and 7 (Illinois and Wisconsin) rank low on both. The regions which rank highest in both percentage of graduates entering anesthesiology and percentage of graduates taking anesthesiology preceptorships include those states Ament[4] reports as having the greater numbers of anesthesiologists and total physicians. Thus, the availability of preceptors and of teaching facilities is undoubtedly a factor in influencing medical students to enter anesthesiology.

In view of this, data collected from questionnaires given to the medical students at the time of application to the preceptorship program for the 100 students who took a preceptorship and entered anesthesiology after graduation from medical school were studied. Only 15 of the 100 students were considering anesthesiology as a specialty at the time they applied for the preceptorship. Seventy-one of the 100 students took the preceptorship at the end of their second year in medical school. Sixty-six of the students said that they had more positive ideas about anesthesiology at the end of the preceptorship. About half (51 per cent) of the students had preceptorships in university or university-affiliated hospitals, and about a third (33 per cent) had preceptorships in voluntary or proprietary hospitals. Other factors did not distinguish between preceptorship students who did and did not enter anesthesiology.

Discussion

Previously we found that both the majority of preceptors and students who have participated in the national preceptorship program in anesthesiology reported it to be a valuable teaching–learning experience. In addition, we previously found that although senior medical students who had taken preceptorships did not differ significantly from those who had not in six knowledge areas over which they were questioned, how they obtained their knowledge, their self-assessment of skills in these areas, and their attitudes toward anesthesiology did differ. More preceptorship students had positive attitudes toward the field than those students who had only routine exposure to the field.

The present study showed that the percentage of students who took an anesthesiology preceptorship and eventually entered anesthesiology was significantly higher than the percentage of students who did not take a preceptorship and eventually entered anesthesiology. The degree of success among medical schools in producing graduates who eventually entered anesthesiology did not appear to be significantly related to the number of students who took preceptorships from these schools. However, medical schools in regions where there were greater numbers of anesthesiologists and total physicians tended to have both a greater number of graduates taking anesthesiology preceptorships and a greater number of graduates entering anesthesiology. Although the availability of learning facilities and preceptors and the opportunity for a preceptorship experience are all important factors in influencing specialty choice, perhaps the ultimate factors in the decision, as Coe and Wesson[5] point out, are the academic interests of anesthesiology and its relationship to the physician's personal interests.

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