Trends in Career Choice by US Medical School Graduates

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METHODS

Data sources used include the Association of American Medical Colleges Graduation Questionnaire (AAMC GQ), the National Resident Matching Program (NRMP), and the national Graduate Medical Education (GME) census. These databases were used to review temporal trends in the number of USMDs entering residencies in primary care, general or subspecialty surgical, and non-primary care and nonsurgical specialties from 1987 to 2002. The AAMC GQ is an online questionnaire given to fourth-year students at US medical schools. The NRMP, better known as the match, reports the numbers of medical school graduates matching into each specialty’s residency programs. The American Medical Association has surveyed residency programs annually to solicit information about numbers and characteristics of all residents in training. This recently became an online survey (GME census) sponsored jointly by the American Medical Association and AAMC.

RESULTS

Primary Care Careers

Since the late 1980s, there have been dramatic shifts in the number of USMDs entering residencies in primary care. In 1987, 49.2% of all medical school graduates matched a generalist residency in internal medicine, family medicine, or pediatrics (FIGURE). This percentage decreased steadily to a low of 43.1% by 1991. The decline for internal medicine continued for 2 more years, resulting in the largest absolute decline of the primary care specialties from 26.5% (1987) to 20.8% (1993). There was a similar steady decline in interest in family medicine during this period as well from 12.7% (1987) to 10.6% (1991). During this time, the trend toward decreasing numbers of USMDs matching to primary care residencies did not affect the pediatric match, with the percentage remaining steady at about 10% each year.
As a result of this decline in the early 1990s and with the increased numbers of USMDs choosing to subspecialize, there was growing concern about an undersupply of primary care physicians and an overabundance of subspecialists. Consequently, efforts to expose students to generalist practice and foster interest in primary care were supported by several foundations and federal grant programs. In addition, general perceptions about the improved market for primary care physicians, perhaps because of the increased role for primary care physicians in the managed care environment, may have also fostered an increased interest in these fields among medical students. As a result of these and other factors, the downward trend in student primary care specialty interest reversed in 1993. By 1998, the percentage of students matching to residencies in internal medicine, pediatrics, and family practice had reached a peak of 53.2%, surpassing the percentage of a decade earlier.

After peaking in 1998, primary care career choice began to decline (44.2% in 2002). For the past 5 years, there has been a decrease in students matching to residencies in internal medicine (24.3% in 1998 to 21.8% in 2002) and family medicine (16.0% to 10.4%), with a smaller decrease for pediatrics (12.9% to 12.0%). Although a smaller contributor to the overall number of primary care physicians, combined internal medicine/pediatric residencies also had a decrease during this same period (2.7% to 2.2%).

The numbers of students matching to these residencies overestimates the numbers that will enter primary care practice. Many residents in internal medicine, pediatrics, and a smaller number in family practice will opt to pursue fellowship training and subspecialization. Compared with 1999, students in 2002 were 1.4 times more likely on the AAMC GQ to indicate an interest in pursuing internal medicine subspecialty fellowships and 1.5 times more likely to pursue pediatrics subspecialty training. The AAMC GQ data also confirm the decreased medical student interest in primary care careers from 35.6% (1999) to 21.5% (2002), predicting an even greater decline than indicated by the NRMP numbers.

Several reasons have been suggested to explain this recent decrease in student primary care interest. The future market for primary care physicians may be decreasing because of an increase in the provision of primary care by nurse practitioners and physician assistants in the office setting and by hospitalists in the inpatient setting. Conversely, the job market for subspecialists may be improving, largely because of the increased prevalence of conditions requiring specialty care and the increased use of medical technology. Decreased career satisfaction of primary care physicians, declining income, and the widening gap in reimbursement between subspecialists and primary care physicians may all be influencing career choice.

More stability in medical student career choice has been evident in obstetrics and gynecology, which is an alternate career choice for students interested in surgical practice and primary care. The numbers of students matching to obstetrics and gynecology residencies have remained relatively stable during the last 15 years with roughly 6% to 8% of students matching to these residencies each year. However, AAMC GQ data from 1999 to 2002 show a 20% decrease in student interest in primary care obstetrics and gynecology compared with subspeciality obstetrics or gynecology. During that brief period, the percentage of students interested in the subspecialties of obstetrics and gynecology doubled (0.9% to 1.7%).

General Surgery and Surgical Subspecialties

Using the most recent 16 years of NRMP data, the total percentage of USMDs matching to general or subspecialty surgical residencies has remained stable at 11% to 12%. However, fewer medical students chose general surgery as a career with a slow decline from 7.8% (1987) to 5.8% (2002) (Figure). With approximately 14,500 graduating students from US allopathic medical schools each year, that decrease represents almost 300 fewer future general surgeons entering training each year, raising concerns about an inadequate general surgery workforce.
The GME data show relative stability in the number of trainees in several surgical subspecialties (neurosurgery, otolaryngology, plastic surgery, urology) (Table). The numbers of students matching to orthopedic surgery residency programs increased from 2.5% to almost 4%. Conversely, the small recent decrease in numbers of residents in cardiothoracic surgery has raised concerns about an inadequate future workforce in this vital subspecialty.14

Non–Primary Care and Nonsurgical Specialties

During the last 16 years, emergency medicine has shown the most consistent increase in matches of USMDs. In 1987, less than 2% of students matched this career.7,8 By 2002, this percentage had increased to 6.4% of USMDs. In contrast, psychiatry declined from more than 5% in the late 1980s to 3.1% in 1998, followed by a gradual increase to 4.2% in 2002.2 The numbers of students with pathology career plans also gradually increased in the early- to mid-1990s. This reversed during the late 1990s as the number of trainees matching in pathology decreased by half to only 1% of USMDs. The most recent match data show a rebound to 1.5% (Figure).

Anesthesiology has undergone a cycle of increase followed by a sharp decline as a career choice during the period considered. During the early 1990s, almost 2% of USMDs matched to anesthesiology residencies.2 This percentage decreased to only 0.3% in the match of 1996 but has since increased to 2.3% in 2002.2 Physical medicine and rehabilitation match data also show a remarkable decrease in numbers through the late 1990s and into the early 2000s followed by an appreciable rebound in 2002.2 As expected, the lowest point of many of these other specialties coincided with the peak interest in primary care careers.

The numbers of USMDs matching in radiology peaked in 1993, decreased during the late 1990s, and recently have rebounded somewhat. The latter was fueled in part by a significant increase in medical student interest (AAMC GQ) in radiology careers, increasing from 3.9% in 1996 to 6.6% in 2002.1 According to the GME survey, the number of USMDs training in diagnostic radiology is still 19% below the peak of a decade earlier.1,6,15 The numbers of trainees in neurology decreased almost by half between 1987 and 2001.3,6 Albeit with much smaller numbers, this downward trend has been duplicated by radiation oncology (Table).3,6

The number of USMDs training in dermatology increased modestly during the 1980s but has been relatively stable during the past decade.3,6 This belies the increase in interest in dermatology by fourth-year medical students with AAMC GQ career choice increasing from 1.6% in 1996 to 2.5% in 2002.1 This suggests that these residency positions are highly competitive and many students with a dermatology career goal do not attain it.

A similar cycle occurred in both transitional and preliminary internal medicine residency positions (restricted to postgraduate year 1). Although the content of these 2 residencies is somewhat different, they are both routes to further training in a number of other specialties or subspecialties. United States medical doctors matching transitional positions decreased from more than 7% in the late 1980s to 4.1% in 1996, followed by an increase to 6.6% in 2002.2 Preliminary internal medicine residency positions filled in the match peaked at 10.8% in 1991 and decreased to 6.2% in 1997 with a rebound to 10.4% in 2002.2 Determining the ultimate career choice of these physicians is especially difficult because transitional and preliminary intern medicine residents can use their training as a springboard for further training in a variety of fields such as radiology, ophthalmology, dermatology.
Many of these fields are now experiencing a resurgence in popularity as interest in primary care wanes. Although the total percentage of students matching to surgical subspecialty residencies has remained stable during this period, there has been a gradual decline in students matching to general surgery as a career. Since 1987, emergency medicine and plastic surgery have shown consistent growth.

Our intent was to track the career choice trends of graduates from allopathic medical schools within the United States. In addition, between 40% and 50% of the 2500 osteopathic medical students enter allopathic residencies each year and are included in the GME data.\textsuperscript{3,6} Although contributing greatly to the US medical workforce, it was beyond the scope of this report to track osteopathic graduates who entered allopathic residencies or graduates from international medical schools who train in US residency programs. It is important to recognize that international medical graduates fill more than 25% of all US residency positions\textsuperscript{3,6} and provide a significant proportion of US health care.

The databases included in this review have some inherent limitations. The AAMC GG reports student career preference\textsuperscript{1}; however, a senior student may not match to his or her desired specialty. Although the data from the NRMP show the number of students matching to a given residency at a point,\textsuperscript{2} residents may switch specialty training programs, fail to complete a residency, or use preliminary or transitional training programs as the route to further training.

The final database, the GME census, is an attempt to enumerate the numbers of residents training in each residency and fellowship program in the United States.\textsuperscript{3,6} Although comprehensive in scope, some residency programs do not respond to this survey or provide complete data, thereby somewhat limiting accuracy. All of these databases have made changes in item questions and data format during the past 15 years, making comparisons over time more difficult.

With the continuing evolution of health care delivery in the United States along with advances in medical technology, the debate will continue about the appropriate specialty mix within the physician workforce. Although none of the available databases capture all physicians or all career choices, reviewing career choice trends provides important information needed to plan educational programs, set funding priorities, and plan for the provision of adequate health care.

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REFERENCES


COMMENT

During the last decade and a half, the distribution of medical student career choices among specialties has varied greatly. The trends in primary care have fluctuated, decreasing steeply from 1987 until 1993, followed by record increases until 1998, and then declining again during the last 5 years. Interest in anesthesiology, radiology, pathology, physical medicine and rehabilitation, and similar fields has been inversely related to student interest in primary care. Many of these fields are now experiencing a resurgence in popularity as interest in primary care wanes. Although the total percentage of students matching to surgical subspecialty residencies has remained stable during this period, there has been a gradual decline in students matching to general surgery as a career. Since 1987, emergency medicine and plastic surgery have shown consistent growth.