Controversy continues over how physicians should be employed in the United States. Some workforce experts believe there is a physician oversupply, arguing that allopathic, osteopathic, and international medical graduates are all competing for limited practice opportunities in the managed care setting. Other experts have advocated the expansion of US medical school positions, claiming that physician demand has not lessened despite a perceived oversupply. Yet others continue to hold that a “maldistribution” of physicians into urban and suburban areas, rather than rural and inner-city regions, is the root of the problem. Recent data suggest that this practice disparity, the target of primary care initiatives in many medical schools, has not closed, and may even have widened.

Whatever the outcome of the physician workforce debate, physicians will face a changing landscape of clinical practice roles as well as increased availability of alternate career options. Some medical graduates are choosing to reject traditional clinical roles altogether. In this issue, we explore the continuing evolution of physicians’ clinical and nonclinical roles, including additional career possibilities.

The Association of American Medical Colleges has monitored medical students’ future practice patterns since 1978, polling medical students each year prior to graduation to ask them about their career plans. In this issue, Dr Richard and colleagues examine 10 years of data from the questionnaire relevant to medical student career decisions, especially those outside traditional clinical medicine. Physicians seeking an alternative path have frequently sought additional graduate or professional degrees to expand their career options. Many medical schools have responded to the demand by offering combined degree programs, traditionally in public health and health policy, and, more recently, in business and law. The juris doctor degree is one possibility that has grown in popularity in the past decade: in this issue, Matthew Howard, MD, JD, outlines the development of legal medicine and the roles that physicians with legal training can play.

In this era of managed care, training in business may be an asset. Not only are some physicians seeking business knowledge to increase their proficiency in the financial affairs of medicine, but businesses are also seeking persons with MD and combined MD/PhD degrees to bring new knowledge to the workplace. Michael Ennen examines why firms are hiring physicians as consultants.

What possible choices exist for medical students who decide to contribute, outside of traditional research, to the advancement of medical science? For those with patience, medical editing is a possibility. The effort that brings you JAMA and MSJAMA—long hours of editing, reediting, and copyediting—is explored by Jerome Kassirer, MD, a former editor-in-chief of the New England Journal of Medicine.
Medical Career Choices: Traditional and New Possibilities

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Many factors affect the career choices of graduating medical school students. Influences such as strong mentors, formative academic and nonacademic experiences, and career counseling can all help aspiring physicians select their particular careers. Similarly, market trends, self-perception of strengths and weaknesses, and anticipated lifestyle can also affect career choice.

The Association of American Medical Colleges (AAMC) and its member schools follow students’ career intentions with the data obtained from the annual Medical School Graduation Questionnaire (GQ). These analyses may include review of current data, special topic evaluation, and trend analysis. Review of recent data informs the faculty and administration of current issues in medical education and facilitates appropriate action. Special topic evaluation can be employed for areas of GQ focus, such as student specialty choice. Trend analysis of multiple years of data can identify positive and negative trends at their medical school and nationwide. Trends in career preferences, for example, have been tracked for many years on the GQ.

This article investigates some of the trends in student career preferences that have emerged during the last decade based on responses to a question on the GQ that asks students to indicate their career intentions (academic teaching and research, clinical practice, or “other”). Patterns of responses in 1990, 1995, and 2000 were examined. Students’ responses to the “other” option were also studied for a more detailed understanding of student plans in the area of nontraditional careers.

Methods

The GQ is a national questionnaire that has been administered in the spring of each year to graduating US medical students since 1978.1 The 2000 version of the GQ was Web-based and included more than 250 items covering a wide variety of topics, including educational experiences, student debt, and career plans. The data can be aggregated for each school as well as nationally.

The GQ data used for this report come from a question in which respondents were asked to indicate their career intentions and were given choices among various career types within academic medicine, clinical practice, and other careers. This study focuses on the data collected for the years 1990, 1995, and 2000. During the 10-year period slight changes were made to the options in this question, including the addition of an “undecided” option in 1997. The data for 2000 were adjusted for changes in data collection and reporting to make 2000 data more closely match the data from 1990 and 1995. Specifically, an adjusted n = 12423 was used in the 2000 calculations. This adjusted n was obtained by extracting the “undecided” responses (“undecided” was not an option in 1990 or 1995) and adding the 479 nonresponses for this particular question.

The 2000 GQ had 14416 responses or a 90% response rate. There were 13336 responses to the 1995 GQ (a response rate of 83.9%), and 11617 responses on the 1990 GQ, for a response rate of 75.4%.

Results

Career Intentions. Figure 1 presents self-reported career intentions in 1990, 1995, and 2000. The 2000 GQ data indicate that more than half of graduating medical students (56.9%) intend to pursue full-time nonacademic clinical practice, 31.0% plan to become full-time university faculty, and 8.4% of medical students are intending other career options.

In examining trends in career intentions during the past 10 years, the percentage of students who indicated their intention to become full-time university faculty has remained relatively constant; 30.1% indicated academic career intentions in 1990, 29.1% in 1995, and 31.0% did so in 2000. However, the percentage of those who planned to go into clinical practice decreased from 64.6% in 1990, to 62.7% in 1995, to 56.9% in 2000, while the number of students who selected the “other” option nearly doubled during the decade, rising from 4.4% in 1990, to 5.7% in 1995, and to 8.4% in 2000.

Alternative Careers. In 2000 there were 1045 students who indicated “other” career plans on the GQ. Of these, 585 (4.7% of total respondents) intend to work for a state or federal agency, such as the Department of Veterans Affairs, the armed forces, or a public health service. Seventy (0.6% of total) intended to pursue careers in medical/health care administration (without practice), and 42 (0.3% of total) planned to be...
non-university research scientists. Yet another 348 (2.8% of total) indicated that they would prefer to pursue other, unspecified career tracks (FIGURE 2). The number in the unspecified group increased slightly between 1990 and 2000, rising from 129 (1.1%) in 1990, to 169 (1.3%) in 1995, to 348 (2.8%) in 2000. The number of those who identified an intention to work at a state or federal agency also increased during the 10 year period, rising from 307 (2.6%) in 1990, to 474 (3.6%) in 1995, to 585 (4.7%) in 2000.

Additional data from the GQ also indicate that other students intend to pursue additional academic degrees, with a trend for students to choose a combined field of study in addition to their MD degree. In 1990, 2.7% of the students indicated that they had pursued a combined degree (master’s/MD, MD/PhD, or MD/JD), while in 1995, 2.8% of graduating medical students indicated that they had pursued combined degrees. Since 1996, however, there has been a slow but steady increase in the percentage of students choosing combined degrees: 3.4% in both 1997 and 1998, 3.7% in 1999, and 4.5% in 2000. While these results are not dramatic, they do show some slight changes in students’ career plans.

Discussion
The GQ data indicate a slight decrease in the percent of students who intend to pursue traditional career tracks and a growing number of students who intend to enter non-traditional fields. While the reasons behind this growth are not directly assessed in the GQ, these trends could be results from, among other influences, the impact of managed care on the practice of medicine, or the overall diversification of the US economy and the resulting interest in other career alternatives. For instance there is an increasing demand for physicians in the pharmaceutical and medical supply industries, bioengineering, health care management, consulting, medical journalism, and public health.2,6 While the GQ assesses major categories of alternative career plans (non-university research, federal/state government, medical/health care administration, and public health), it would be useful to study this subgroup in more detail.

The GQ data regarding career intentions are useful in assessing changes in student preference and perception of the job market. These data, which assess intention, should be analyzed in conjunction with career choice data at the end of residency or after some time in the work force. While the GQ can reveal general trends, more detailed research in the area of alternative career paths is needed. Organized data collection efforts should be conducted so that career counselors can better assist students interested in these opportunities. Future research might include following up with students who intended to pursue alternative career paths to determine their actual career choice, conducting a more thorough investigation of the alternative career paths currently being followed, and examining the reasons for changes in the career paths being selected by some of our graduating physicians. Clearly many possibilities for research exist, and the data indicate a trend in the direction of more nontraditional medical career paths. Further examination is needed to determine how this trend will affect the available workforce, the educational process, and the future of health care provision.

REFERENCES
“Legal medicine” and “medical jurisprudence” are terms used to describe a professional discipline that has been evolving for more than 200 years in the United States. Early works about medical-legal affairs such as Samuel Farr’s *Elements of Medical Jurisprudence* (1788) and Thomas Cooper’s *Tracts on Medical Jurisprudence* (1819) testify to the intellectual interest surrounding this field in the post-Revolutionary United States. As early as 1804, legal medicine was taught at Columbia College of Physicians and Surgeons in New York, where James Stringham, MD, was the first to integrate legal medicine into medical education. By 1877, Harvard University had established a professorship in legal medicine, thereby consolidating the field’s position in the medical academic community.

In spite of this, few individuals attempted to combine the 2 professions of medicine and jurisprudence until the middle of the 20th century. The American College of Legal Medicine (ACLM), for example, created to provide continuing legal education to attorneys and physicians, was not founded until 1955. Changes in medical practice during the second half of the 20th century eventually led to a new demand for persons with medicolegal knowledge. Increasing malpractice litigation created a new awareness of medicolegal affairs, for example, as did changes in the law such as the Federal Emergency Medical Treatment and Labor Act, which regulates interhospital transfers of patients, an area fraught with legal and financial consequences. The increasing interest in legal medicine has resulted in several thousand persons currently holding both degrees and the availability of dual-degree programs in several medical schools.

A review of directories of attorneys suggests that most dual-degree holders choose to practice one profession or the other, rather than both. As an example, 5 of the 6 physicians who attended law school with the author of this article returned to the practice of medicine. Physicians with law degrees presumably return to medical practice with an enhanced understanding of the relationship between medicine, law, and society. Physicians with legal training may also provide consultative services for practicing attorneys, especially in the medical malpractice arena. Several companies exist that act as brokers, matching clients who may have valid claims with physician-attorneys who practice the same area of medicine, to impartially evaluate the claim’s validity.

Those who choose to practice law may engage in medical malpractice law, either as plaintiffs’ attorneys or as members of the defense bar. Others are engaged in assisting physicians and other health care professionals with credentialing and licensing issues. Physician-attorneys can be found as medical directors of insurance companies and managed care organizations, as well as staff people in policy thinktanks and political organizations. I practice Social Security disability law, using medical knowledge to advance the claims of persons seeking disability benefits pursuant to the Social Security Act. Workers compensation law is another fruitful field for the medically trained attorney, who is able by virtue of his or her training to judge the validity of medical evaluations prepared by employers or employee-hired medical consultants.

Individuals interested in the medical-legal professional’s world can view the ACLM Web site or the Web site of the American Society of Law, Medicine, and Ethics or review *Legal Medicine*, a textbook produced by the ACLM that provides an excellent grounding in legal medicine. Medical students should understand that law school requires 3 additional years of education, a significant commitment for people already facing protracted training. Those who enter law after medicine may find the transition unsettling. From a world focused on the scientific method, the physician enters a world focused on construction of logical linear arguments that are “good” if they support the client, sometimes with scant regard for whether they are “right.” In the end, it is not difficult to reconcile these 2 views, but it can be an adjustment.

What is the future of the medical-legal profession? In my view, the future of legal medicine is inextricably tied to the evolution of US health care as a whole. From a cottage industry practiced by independent small-business people through the 1950’s, medicine may be on the verge of becoming a government-regulated utility, with both practice guidelines and pricing established by government fiat. Such an environment can only fuel the need for people with the combination of medical and legal knowledge.

As I facetiously tell my patients, I went to law school more than 10 years ago so I could have more flexibility when making mistakes—I could choose whether to sue myself or to defend myself. In the future, there will be a need for professionals who are able to provide medically grounded advice, counsel, and defense for health professionals, as well as expert knowledge and guidance to policy making and regulating bodies.

**REFERENCES**

1. 42 CFR 489.24.
Corporate America has been engaged for years in a battle to recruit and retain creative thinkers and dynamic leaders. The trenches of this “war for talent” are now being dug into the worlds of clinical medicine and biomedical research. During the past decade, medical students, house staff, and practicing physicians have departed in increasing numbers to management positions. The search for a position in the corporate world—once a haphazard process—has been replaced in many instances by an organized, efficient recruiting effort targeted specifically at people with MD and PhD degrees.

Perhaps no industry has been as successful at attracting and integrating people with alternative professional degrees (APDs) as management consulting. At McKinsey and Company, more than half of its 6000 consultants hold graduate degrees other than an MBA (A. Mini Harris, verbal communication, February 2001). A company representative summarized the approach to recruiting APD holders: “To hire the world’s best talent wherever that talent resides” (A. Giangola, verbal communication, February 2001).

Frogs in a Wheelbarrow
A McKinsey and Company report states: “Today’s high performers are like frogs in a wheelbarrow: they can jump out at any time.” Medical students and physicians are among these “high performers” who are becoming aware that there are career opportunities outside traditional clinical medicine.

Fear of reaching a professional plateau is a reason often cited by physicians who have chosen to enter management consulting. They cite the challenge of continually working on new problems and shaping new industries as a source of professional satisfaction. Medical students and resident physicians are also given to understand that there is widespread dissatisfaction among practicing physicians. Add to that a life that will try the limits of a person’s physical and emotional endurance and many students are left asking “Why would I do this to myself?” The result is a reevaluation of goals and consideration of alternative careers.

Another reason for entering consulting comes from the genuine desire to have an impact on the processes of curing disease and promoting health. Some people with APDs, including myself, find an excellent outlet for this desire in working for consulting firms, which combines addressing the key strategic issues for industry in generating new knowledge, and in working pro bono for the environmental, educational, and public health organizations in their communities.

Doctors for Companies
Medical students, residents, and people with biomedical PhD degrees have become attractive to industry as potential consultants. At McKinsey, approximately 200 people with APDs will be hired this year from campuses in the United States and Canada. Consulting firms are hiring people with APDs who have expertise in their respective fields, but who may have little or no formal business background or education. The need to rapidly educate a diverse group of individuals, most of whom have science backgrounds, in the basics of management principles is of particular concern to consulting firms. At McKinsey, a high intensity, 3-week “mini MBA” and numerous other structured learning experiences in the first year of employment allow new consultants to integrate quickly into their consulting positions.

Since hiring of people with APDs has become more common, the cultural adjustment that physicians face has become easier but is still not insignificant. The learning experience at consulting firms involves training in communication, organizational, and interpersonal subtleties. Most firms use a team-based model that may resemble but is in fact quite distinct from working groups in hospitals. To be successful, physicians must modify their expectations about their role in a hierarchy, their individual input, and the service being provided to clients.

However, these obstacles are usually overcome. “APDs perform at least as well as MBAs by the end of the first year,” said a manager of recruiting at McKinsey (A. Mini Harris, verbal communication, February 2001). The successful consultant’s tool kit includes strong analytic and integrative skills, a dedication to teamwork, and an aptitude for leadership—abilities that are also necessary for success in medical school and residency. In fact, the experience at the top consulting firms has been that people with APDs are promoted and make partner at least as fast as their MBA counterparts. As Rajat Gupta, a McKinsey partner said, “We can pick up people who have not studied business and can teach them, if they have the intellectual firepower.”

Disclosure: The author is an MD degree candidate who has accepted a position with McKinsey and Company as an associate.

REFERENCES

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THOUSANDS OF MEDICAL JOURNALS EXIST, AND NEW ONES are published each year. Curiously, despite a vast “market” for medical editors, the field has no career track, no training programs, no faculty, no schools, and no classes. Few medical students set out to become medical editors. Instead, editors spring from physicians of all stripes: those who like to write and have shown a propensity to do so; specialists and subspecialists skilled in their own domain; and physicians who have served as associate editors or as members of a journal’s editorial board. With the exception of a few dozen journal editors who do their jobs full time, most medical editors work part time, sharing their editorial work with other research, education, and patient care duties.

I write about editing from some experience. During my recent tenure as editor-in-chief of the New England Journal of Medicine I presided over 425 weekly issues of the Journal. I made countless decisions about which manuscripts to accept, which to reject, and which to revise. I edited manuscripts, sometimes extensively. With a staff of outstanding dedication and excellence, I introduced multiple new clinical features and initiated series of articles on many topics, including quality of care, delivery of health care, and the techniques of molecular medicine. I added enriching graphics, redesigned the Journal’s format, introduced one of the first medical journal Web sites, and wrote more than 60 editorials. I shortened the time for handling manuscripts by a third and set a friendly tone between our editors and authors who sent us their work.

Even though a career path to medical editing is rather nebulous, I would encourage medical students who aspire to spend part of their career as a medical editor. A medical journal is a special part of the world of medicine. The reports of original research are a fundamental underpinning of most journals. Research projects are simply not complete unless the work has been subjected to evaluation by a researcher’s peers, published in a journal, and exposed to criticism by the medical community.

This process of peer review selects out papers that are authoritative, usually novel, and often important to the advancement of medicine. In turn, these papers become the foundation for further research and the basis of day-to-day medical practices. Often the process of successful editorial peer review and publishing is a critical determinant of an author’s academic advancement. Another special purpose of a medical journal is to publish material that informs a variety of medical, social, economic, and political subjects such as abortion, assisted suicide, fatalities from handguns, and the medical use of marijuana.

Because medical editors bear some of the responsibility for the reliability of published research and, in turn, for the care of patients, the health of the public, allocation of resources, and standards of medical ethics and professional behavior, editors must be trustworthy. Readers must believe that editors will make sound and even-handed decisions, that they will be open to many points of view, and that they will select or reject material only on the basis of merit, and certainly not for business or political reasons. To preserve this trust, an editor must avoid giving favors, must not be beholden to any special-interest group, and must be willing to publish articles on controversial subjects, even if they involve the organization that owns and publishes the journal.

In order for editors to preserve freedom of action and expression, they must have no conflicts of interest that might bias them in choosing reviewers, making editorial decisions, or issuing public statements. Editors cannot be influenced by whether individual decisions will affect their journal’s profitability, for example. Complete separation of editorial decisions from financial issues, therefore, is essential to ensuring the editor’s independence. If it becomes known that an editor’s judgment can be influenced by extraneous factors such as income from specific advertisements, the journal will lose the respect of its readers.

Editors are often visualized sitting at a desk struggling over one manuscript after another. They do that, but they do far more. They think about how electronic publishing and emerging sources of information will affect their journal. They develop and adhere to certain principles of publishing that authors and journalists sometimes find irritating. They deal with endless calls from journalists about papers they are publishing. They must be creative in envisioning the future of their discipline; they must try to discern not only what their readers might want, but, more importantly, what their readers need. They watch the medical, social, and economic events that are shaping medicine. Like editors of newspapers, magazines, and other media, they have a bully pulpit that they can exploit to benefit medicine. By commenting on contentious issues and conflicts, a skilled editor can contribute to the important debates of the times.

Few people will make their entire careers in medical editing, but many will spend years at it. If you have a creative spark and a love of language, if you derive pleasure from helping others improve their work, if you think that you can help inform the discussions about the future of medicine, and if you have thick skin, an editor’s job is worth contemplating.