Revitalization of Internal Medicine: Overview of the Problem and Recommendations on Reducing Medical Student Debt

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A Position Paper of the
American College of Physicians

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Executive Summary

The American College of Physicians (ACP), representing over 115,000 internal medicine physicians and medical students, including 20,000 residents and fellows and 15,000 medical students, is concerned about the apparent declining interest in careers in general internal medicine by medical students and career dissatisfaction of internists in practice. Recent data have shown a decreasing interest in internal medicine and other primary care specialties among medical school graduates. At the same time, many internists are changing careers, retiring, or restricting their practices in response to declining incomes, increasing administrative and regulatory burdens, and rising malpractice costs. These trends pose a threat to general health status, because internists, as primary care physicians, provide care for both acute and chronic diseases and serve as the first point of contact for patients to the health care system. The impact of declining numbers of new physicians entering internal medicine will become even more severe as the nation's population ages and the need for all types of medical care increases, but particularly for chronic illnesses.

Many factors affect physician career choices. These include medical education and role models, earnings potential, career satisfaction, practice environment, liability premiums, lifestyle issues, student indebtedness, and many others. ACP is undertaking a College-wide effort to revitalize internal medicine, in which we will be addressing many of these factors. This paper provides an overview of the problem and focuses on student debt relief, because that is one of the issues young physicians are most concerned about and legislative remedies can provide relief. The College will also issue position papers on other factors that affect student choice of specialty and the vitality of internal medicine practice, including recommendations on improving payments for internists' services, reducing regulatory hassles, and making the educational experience a more positive one for students considering internal medicine.

Steadily mounting levels of student debt for medical education highlight the need for programs to provide scholarship assistance, loans, and other debt relief for students seeking careers in internal medicine. Accordingly, ACP urges expansion of federal and state programs that provide financial assistance for medical students and physicians-in-training. The College supports programs such as those provided through the National Health Services Corps, Indian Health Service, and United States armed forces. Each program requires service in return for educational assistance provided to the medical student or resident in the form of loan repayments, scholarships, or grants. ACP recognizes that the service requirements for these programs have not been popular among medical students and graduates and the application and acceptance processes have been burdensome; therefore, new methods must be found to both attract participants and facilitate their entry into these programs.

ACP also advocates low-interest loan programs that explicitly support medical education, particularly ones such as those provided through Title VII of the Public Health Services Act that enable physicians to pursue careers in primary care. The College proposes changes to allow deferment of loan repayments to ease the financial burden on medical school graduates until the completion of postgraduate residency training. Finally, ACP calls for counseling on debt management and other financial alternatives, as well as budget management for all medical students and residents throughout their education.

ACP Policy Positions on Student Debt

1. ***ACP advocates both increased financing and measures to improve both the effectiveness of primary care service obligation components and the ease of the application process for scholarships, loan-forgiveness programs, and low-interest loan programs that require primary care service in return for financial aid.***

2. ***ACP calls for expanded funding and eligibility for federal loan programs targeted to support primary care, such as Title VII's Primary Care Loan Program, allowing the deferment of interest and principal payments on medical student loans until after completion of postgraduate training and the tax-deductibility of interest and principal payments for such loans, if repayment occurs during residency training.***

3. ***Financial aid and debt counseling, as well as counseling in budget management, should be available for all medical students, beginning before admission and available throughout attendance at medical school and residency. Opportunities for military and other scholarships and information about loan-forgiveness programs need to be better publicized.***

The Problem

America Needs Internal Medicine To Be Revitalized

The population of the United States is aging. Within the next decade, the population surge of post-World War II "baby boomers" will begin to be eligible for Medicare. By the year 2030, one fifth of Americans will be above the age of 65, with an increasing proportion above age 85. This population shift will reach its peak midcentury, when the last of the "baby boomers" enter old age.

Will the United States respond to this population shift and be prepared to address the nation's future health care needs? Are the students entering the medical education pipeline (4 years of college, 4 years of medical school, 3 to 8 years of residency training) prepared to meet the health care needs of an aging society? Recent trends suggest young physicians today are making career choices that could lead to a physician workforce insufficient in numbers and badly distributed among medical specialties to serve the nation's future health care needs (1). Changes must be made now to improve the attractiveness of careers in primary care, particularly in general internal medicine (GIM), to assure the availability of high-quality health care in the future.

As the largest medical specialty society and the second-largest medical society in the United States, the American College of Physicians is concerned about the adequacy and appropriateness of the nation's future physician workforce. ACP is particularly concerned about the future supply of general internists. ACP membership encompasses more than 115,000 internal medicine physicians and medical students. Internists provide comprehensive care to adults. They are specialists in the prevention, detection, and treatment of illnesses that primarily affect adults. More Medicare patients obtain care from internists than from any other type of physician. More than half the nation's adults consider an internist as their primary care physician.

There Has Been a Downward Trend in Applications to Medical Schools

The number of applicants to medical schools has been declining steadily during the past 6 years, from 46,591 in 1996 to 1997 to 33,501 in 2002 to 2003 (2). However, mean undergraduate grade point averages and Medical College Admission Test scores have not decreased from 1999 (3). Preliminary data for 2003 indicate that this trend of decreasing medical school applicants soon may be coming to an end. Based on the number of students taking the Medical College Admission Test in 2002, the number of medical school applicants is projected to increase by 4% to 6% in 2003 (2).

Interest in Careers in General Internal Medicine and Other Primary Care Specialties Has Been Declining

More troublesome is the apparent decline in student interest in careers in GIM, as well as in other primary care specialties. A physician who successfully completes an internal medicine residency program lasting a minimum of 3 years is an *internist*. A primary care internist, who provides comprehensive care to adult patients, is regarded as a *general internist*. The general internist is an expert in the general care of the adult but also may have special areas of expertise. General internists are trained to analyze and solve difficult, complex patient care problems often involving multiple organ systems. As primary care physicians, they provide first-contact, comprehensive, and continuing care for the health needs of adults. A *subspecialty internist* is an internist whose practice is limited entirely or in large part to care of patients with selected diseases (e.g., cardiology, endocrinology). The general internist and the subspecialty internist share common training in a discipline characterized by a time-intensive, painstaking, and detailed approach to complex problems (4).

The Association of American Medical Colleges exit survey of graduating seniors found that the number of students choosing GIM as a career has dropped precipitously in the past 4 years (12.2% in 1999, 10.2% in 2000, 6.7% in 2001, and 5.9% in 2002) (5). These last figures represent a disturbing echo of the declining interest in GIM that medical students have historically had. For example, between 1982 and 1992, the number of medical school graduates interested in GIM declined from 14.4% to 3.2% (a decrease of nearly 78%) (6).

Correspondingly, the percentage of students planning careers in other primary care specialties has also been dropping. Family medicine declined from 13.3% in 1999 to 9.1% in 2002; pediatrics dropped from 10.1% to 6.5%; and obstetrics/gynecology decreased from 6.1% to 4.9%. The number of students entering general surgery also dropped from 5.4% in 1999 to 4.7% in 2002 (7). However, in 1992, student plans for careers in each of these generalist specialties were even lower than they are today (8). This suggests that any progress that may have been made during the past decade in encouraging students to go into GIM and other primary care fields is at risk of being reversed.

Meanwhile, medical student interest in internal medicine subspecialty careers has increased from 8.7% to 12.1% during the past 4 years. Specialties like anesthesiology, emergency medicine, and radiology have also gained progressively in popularity during each of the last 4 years (7).

At the postgraduate level, the number and percentage of positions offered in the National Residency Matching Program for categorical internal medicine (programs that begin in the first postgraduate year and lead to board certification in internal medicine) has remained relatively constant for the past 7 years, averaging about 4,700 positions or 22.9% of the total offered through the

National Residency Matching Program. However, beginning in 1997, the number and percentage of positions offered in preliminary programs (1-year programs beginning in the PGY-1 year that provide prerequisite training for advanced programs leading to specialization) has steadily increased from 1,362 (6.7%) to 1,839 (8.8%) in 2003. Meanwhile, the number of positions offered for primary care internal medicine has trended steadily downward from 608 in 1997 (3.0%) to 321 in 2003 (1.5%); this last figure represents a 5.8% decline in primary internal medicine residencies from last year (9).

The total number of positions filled in categorical internal medicine programs has remained relatively constant at about 4,700 (94%) per year for the past 5 years. But a decreasing percentage of these positions (55.2% in 2003 compared to 60.2% in 1999) is being filled by U.S. medical school graduates. Instead, U.S. medical school graduates are increasingly opting for preliminary programs that will prepare them for other specialties. The percentage of positions filled by U.S. medical school graduates in preliminary internal medicine programs has increased from 67.4% in 1998 to 83.5% in 2002 (10).

There Is No Consensus on Physician Workforce Requirements, but Shortages of Primary Care Physicians Can Be Expected

Whether or not there is currently, or is going to be, an overall surplus or shortage of physicians is subject to debate. There has been much criticism about the accuracy of past projections. An article by Ralph Snyderman (former Chairman of the Association of American Medical Colleges) and others notes:

> There is general agreement that given the failure of previous studies to accurately predict even short-term requirements for physicians, a much better understanding is needed about the dynamics affecting the adequacy of the physician workforce. We believe that a comprehensive review of the various factors that affect the demand for physician services, the productivity of the physician workforce, and the rate of supply of physicians and other health professionals is needed (11).

The noted health policy expert Uwe Reinhardt cautions that no one can claim to know what would be the correct overall physician-to-population ratio, since there are widespread geographic variations in medical practice and no one knows how these differences impact on the quality of patient care (12). Reinhardt contends that it is a hopeless dream of health planners to think that they can plan "the size, composition, and spatial distribution of the nation's physician workforce so that it can meet the projected 'need' in an efficient and equitable manner" (13).

In 1980, the Graduate Medical Education National Advisory Committee (GMENAC) completed its landmark study of physician workforce requirements and projected that the supply would exceed requirements in the aggregate by 70,000 in 1990 and by 145,000 in 2000. GMENAC predicted that there would be imbalances, with shortages for generalist physicians and surpluses of specialists. To avoid these surpluses, GMENAC recommended stabilizing the number of U.S. medical school graduates and restricting the number of international medical graduates entering U.S. residency training programs (14). The findings of GMENAC served as the basis for much health workforce policy in both the public and private sectors during most of the 1980s and 1990s.

Beginning in 1988, the Council on Graduate Medical Education (CoGME) reaffirmed GMENAC's conclusions that the supply of physicians was increasing beyond requirements in the aggregate and that there were growing imbalances

in the mix of physicians among generalists and specialists. CoGME also recommended restricting the number of international medical graduates entering the United States and set a national goal to achieve a 50/50 mix between specialists and generalists.

A study based on staffing patterns of health maintenance organizations during the 1990s also projected surpluses similar to those predicted by GMENAC. This study found that closed-panel health maintenance organizations used far fewer physicians than the population at large. Based on predictions of a growing market share for health maintenance organizations, it projected a national surplus of 150,000 physicians by the year 2000 (15).

In 1999, CoGME found that only limited progress had been made in reducing the number of physicians-in-training and that the number of specialists being trained exceeded the target established by CoGME by 41%. CoGME also reported that the numbers of physicians-in-training appeared to be leveling off and might decrease for the next few years. CoGME found that the nation continued to produce too many specialists. The council noted that the percent of graduating medical students planning a generalist specialty had steadily increased since 1992 and had more than doubled in the 4 years between 1994 and 1997. CoGME was encouraged that "substantial progress had been made in increasing the number of physicians entering or planning to enter generalist specialties." CoGME predicted that its "generalist goal appears to be within reach and is likely to be achieved in the next few years" (16).

The American Medical Association Masterfile (17) indicates that there were 813,710 nonfederal physicians in 2000 (170,770 more than projected by GMENAC) and that 274,653 of these physicians were engaged in general primary care specialties (GIM, family practice/general practice, pediatrics, and obstetrics/gynecology).

However, recent studies indicate that there is currently no physician surplus and that the nation now may be facing shortages. One study by Salsberg and Forte (18) reviewed trends in physician supply and found that the projections of surpluses by GMENAC, as well as those of CoGME, "appear to have been unfounded." It noted that the numbers of U.S. medical school graduates have not kept pace with population growth and that past projections have not adequately accounted for changes in the numbers of international medical graduates entering the United States, increasing numbers of women physicians, and the continuing problem of unequal geographical distribution of physicians. It also found that the job market appears strong for nonprimary care physicians and exceeds the demand for primary care physicians. The authors conclude that the numbers of primary care physicians may have reached a plateau. They advise that there is a need to regularly reassess workforce needs in light of changing demographics. They caution "not to get locked into fixed ratios and goals for the physician workforce."

A study by Cooper and others (19) also estimates an impending physician shortage, including a serious shortage of specialists. Cooper and colleagues developed a model that measured the adequacy of physician supply, based on economic and demographic trends and changes in factors such as physician productivity. This trend model indicates a deficit of 50,000 physicians in 2010 and a shortage exceeding 200,000 by 2020.

The Nation Will Continue To Require an Adequate Supply of Well-Trained Physicians, Especially Primary Care Physicians

Regardless of lack of consensus on physician workforce projections, the nation will always need a sustained supply of new, well-qualified physicians for the future. The long pipeline of medical education and training and the retirement and career changes of older physicians necessitate that the nation have a constant influx of new students embarking on medical careers. As the population ages and larger numbers of patients encounter chronic and more complex illnesses, the need for general internists and specialists in internal medicine should increase. The need for primary care physicians, who can provide first-contact and comprehensive continuing care for adults, will continue to increase as the population ages and its health care needs increase and as the demand for acute, chronic, and long-term care increases.

Currently, large numbers of Americans do not have good access to the physician services that they require. A total of 45.5 million Americans do not have health insurance (20) and consequently do not receive the same level of services as those who are insured (21). Disparities continue to exist in access and quality of care available to racial and ethnic minority populations and for those in rural and inner city medically underserved areas. Until these disparities in the receipt of physician services are resolved, federal and state programs will continue to be needed to support the financing of medical education and to help improve the diversity of the physician workforce. As access to health care services increases, the need for primary care physicians will also increase.

Consequences on American Health Care

As primary care doctors for adults, internists act as diagnosticians and consultants for complex problems, providing patient-focused, comprehensive, coordinated, accessible care, with continuity over time, in the context of team and community, independent of patient characteristics, diagnosis, disease acuity, and site of care (22). Disease prevention and health promotion are integral aspects of primary care delivery, and providing first-contact, continuous, and comprehensive care makes primary care an excellent entry point to and organizer of medical services (23). It is important to note that even though internal medicine covers a broad range of disease, difficult diagnostic challenges and the management of multiple complex diseases in the same individual are central to the internist's training and practice. It is not surprising that the elderly turn to internists for the majority of their care. If internal medicine careers are not revitalized and trends continue as the data above indicate, then the following valuable services that internists provide may be severely curtailed or eliminated.

Prevention

As the U.S. population ages, the health care system will need more primary care physicians to address the challenges for care of the elderly, particularly for chronic disease and management of health care services for long-term care. Primary care physicians play a crucial and effective role in encouraging smoking cessation and reducing smoking rates (smoking is responsible for over 440,000 deaths annually) (24, 25). Also, the high and increasing prevalence of obesity in American children (currently 15% of children ages 6 to 19 years and rising) demands that primary care physicians screen and communicate better health behaviors to intervene in adolescence and prevent a serious future health threat to society (26).

Chronic Care

Complications encountered in chronic disease often involve multiple body systems and require physicians with the ability to diagnose and manage the patient comprehensively, a whole-patient approach that is a focus of primary care (27, 28). All internists are prepared with the education, training, and skills to provide these services, and the continual, coordinated, and comprehensive care that primary care provides is well-suited to the care of chronic illness (29). Early detection and treatment of diseases like diabetes, which afflicts over 17 million Americans and is responsible for over 200,000 deaths per year, could prevent many costly and often fatal complications (30). These complications can include heart disease, stroke, blindness, kidney failure, leg and foot amputations, pregnancy complications, and deaths related to flu and pneumonia (30). Cancer also represents a challenge suited to the multisystem primary care provided by internists. For example, one study of over 15,000 cases found comorbidities present in 68.7% of the population (32.6% of these cases had two or more comorbid conditions) (31). This year, over 1.2 million new cases of cancer will be diagnosed (32). Primary care screening services will enable effective treatment to begin at an early stage, reducing the burden from cancer, the second-leading cause of death in the United States after heart disease (32).

Infectious Disease

Primary care physicians combat infectious disease, as well. For example, hepatitis C has infected 3.5 million individuals, leading to between 8,000 and 10,000 deaths annually from liver-related complications (33). By evaluating, diagnosing, teaching, and caring for patients at the primary point of service, primary care physicians can exert control over hepatitis C's spread at an early stage. Tuberculosis, another infectious disease, is returning, and primary care physicians also serve as the frontline in screening for tuberculosis infections, particularly in long-term care settings and among high-risk populations (34). Likewise, early identification and treatment of HIV can limit viral replication for infected patients (35). The ongoing relationship between an internist and a patient also facilitates the provision of HIV risk assessment, testing, education, and needed health care (35). Inappropriate antibiotic prescription that has led to increased antibiotic resistance (a tremendous threat to the public's health) is also a very important concern for internists. Communicating with patients to stress appropriate antibiotic use, a skill well-suited to the primary care internist, is vital, because nonclinical aspects of patients have been found to influence inappropriate antibiotic use (36). Primary care physicians also face new infectious disease challenges from the increasing threat of bioterrorism, which will require a vigilant surveillance force of primary care physicians to recognize and communicate information to halt the spread of epidemics from such agents as anthrax, plague, and smallpox (37).

For the nation to have a sufficient supply of primary care physicians to meet future needs for preventive care, cognitive nonprocedural services, and multisystem familiarity, strong public financial support will be needed for primary care training and for innovative programs to increase the appeal of careers in primary care, especially for GIM. And, since all subspecialty internists begin their training as generalists, support for GIM is support for all of internal medicine.

Factors that Influence Internal Medicine's Appeal

Education

To assemble the factors related to specialty choice and education, a MEDLINE search that yielded 40 articles on that relationship was conducted and used to form the basis of the following background. Medical education plays an integral role in shaping the interests of young physicians-to-be as they prepare to choose a medical specialty. Hence, the composition of the future physician workforce and the future of internal medicine hangs largely upon successfully introducing the positive aspects of providing primary care as an internist during undergraduate medical education. ACP encourages policies that are more conducive to helping medical students choose primary care specialties, particularly internal medicine. For example, role models in medical school function as the guiding lights for physicians-in-training, providing advice, experience, and a window into the future of a medical career (38-40). These role models can help accentuate the positive aspects of internal medicine careers, such as the intellectual challenge of medical care (41). Conversely, teaching faculty, residents, and attending physicians who are dissatisfied with their careers can send negative messages that discourage other residents and students from pursuing careers in internal medicine (42). There is evidence that demeaning comments, also known as the "hidden curriculum," in medical school against primary care have harmed primary care entry (43-45). Development of positive primary care preceptor programs (including fellowships and other role-modeling programs) in internal medicine during the later years of medical school might encourage entry into primary care internal medicine. Changes in medical school curricula could also encourage entry into primary care specialties. Such changes could include early primary care requirements, ambulatory experiences in the later years of medical school, and ameliorating discouraging exposure to chronically ill patients (while still instilling the capacity to provide quality chronic care) (46-50). Finally, support for state medical schools needs to be increased, because the quality and viability of state medical schools is being seriously threatened by continuing budget shortfalls. These shortfalls, nearing the $80 billion mark, threaten the funding of state-sponsored higher education (approximately 13% of state budgets—on par with Medicaid allocations), including medical schools (51). State medical schools have consequently had to raise tuition for both in-state (13.3% to $12,399 per year) and nonresident (12.6% to $27,297 per year) medical students (3). These deficit-driven tuition increases will serve to limit the medical student population to those with substantial wealth, harming the diversity of undergraduate medical education. And, without increased funding for state medical schools, those lacking substantial wealth will have to pay more in loans, further compounding the medical student debt problem. Addressing the issues facing general internal medicine in medical school deserves a high priority, because a learning environment that provides the opportunity to appreciate the positive aspects of general internal medicine will be necessary to safeguard the future supply of American internists. With more positive internist role models, better preceptor programs for general internal medicine, increased funding, and curriculums more conducive to primary care, medical students will be more likely to choose internist careers, as they consider residency.

Experiences during graduate medical education (GME) also play a critical role in forming perceptions about the attractiveness of internal medicine as a career choice. Policy relating to GME must both alleviate unnecessary burdens for residents and address GME components critical to ensuring excellent patient

care and high-quality education. It is particularly important that the resident's education include a core curriculum in professionalism and instruction on how to teach. Without this instruction, residents will continue to be a critical part of the hidden curriculum. The College therefore supports current Accreditation Council for Graduate Medical Education and Liaison Committee on Medical Education guidelines demanding that residents be given such guidance on how to teach and evaluate. Also, residents should have training in a supervised environment where they can learn while providing patient care in a manner that assures quality and safety for both the patient and the resident. The College supports both increased financial support for residents and establishing guidelines for moonlighting hours. For more College policy on GME, please see the ACP position paper "Resident Work Hours" (52). The College's recommendations on improving the educational experience for medical students and residents considering a GIM practice are discussed in detail in the College's position paper "Revitalizing Internal Medicine: Improving the Educational Experience for Medical Students and Residents" (still under development).

Practice

To help identify relevant factors in medical practice that could influence internal medicine's appeal, a MEDLINE search that yielded 19 articles was conducted. The current practice environment contains many barriers hindering internal medicine's appeal. These barriers include inadequate payments by Medicare and other payers, as well as mounting administrative and regulatory burdens (53-38). ACP continues to fight for restoration of scheduled cuts in Medicare physician fee schedule payment rates and for development of a new methodology for determining future annual updates in the Medicare physician fee schedule. The College continues to seek ways to reduce disparities in payments between nonprocedural and procedural services. For example, primary care practice now uses more e-mail and telephone contact for managing and coordinating care and payers have resisted paying for these services (59). Efforts so far have provided only partial relief from recent draconian cuts in Medicare physician payment rates. ACP also continues to advocate for further review of the values of evaluation/management services and the methodology used by Centers for Medicare & Medicaid Services in determining these values (60).

Administrative hassles are unnecessarily limiting physicians' ability to provide patient care and are also harming the attractiveness of internal medicine. Internists may be disproportionately impacted by hassles compared to other specialties, because their role in coordinating care and making needed referrals to specialists typically involves frequent interaction with managed care organizations and other third-party payers to obtain required approvals, services, and payment. This increased amount of interactions per day requires much more administrative work. Internal medicine doctors who cannot afford administrative assistance must do this work themselves—further increasing the hassle factor. Claims-payment issues top the list of unnecessary physician hassles, including delayed payments, "black box" coding edits, submission of superfluous materials with claims, improper criteria for repayment, and lack of detail on compensation arrangements. The College calls for alleviation of all these claims-payment problems. For more information, please see the ACP policy paper "Revitalizing Internal Medicine: Recommendations for Resolving Payment and Practice Hassle Issues."

Another cause of physician dissatisfaction is the use of contract "all-products clauses" that compel physicians to participate with health insurance plans against their will and hinder their ability to provide high-quality care.

Complying with cumbersome paperwork requirements is another burden that prompts physician complaints. This burden could be reduced with a policy of administrative uniformity, including establishing standards for credentialing and approval of forms. There are also many ways the insurance industry could simplify and standardize administrative forms.

Regulatory requirements concerning confidentiality are yet another source of physician dissatisfaction. The requirements for physician compliance could be made less burdensome. Physicians are often frustrated by their inability to access relevant information concerning their patients' medical conditions and other treatments they may be receiving. Confidentiality requirements could be revised so that information could be made more readily accessible to physicians. Managed behavioral health organizations could also share their disease management protocols to ease the flow of needed information to physicians. Physician credentialing requirements, facility and medical records reviews, and performance evaluations are other sources of disgruntlement. For more information, please see the ACP policy paper "Reinventing Managed Care: Reducing the Managed Care Hassle Factor."

Another administrative hassle for physicians is drug formularies that are not consistent from plan to plan and that are often changed without notice. Development of better technological access to drug formulary information would also be helpful. For more ACP policy on formularies, please see the 2001 policy paper "Ambulatory Care Formularies and Pharmacy Benefit Management by Managed Care Organizations." ACP's recommendations on improving the economics of internal medicine practice are discussed in detail in "Revitalizing Internal Medicine: Recommendations for Resolving Payment and Practice Hassle Issues."

Professional Liability Insurance

Steeply rising malpractice insurance premiums are forcing many internists to decide whether to pay the larger bill, switch carriers (if possible), move to a more liability-friendly state, or leave medicine (61). Inconsistencies in state medical liability laws demand standardized federal legislation to bring a halt to these skyrocketing premiums. Public opinion has demonstrated that Americans are concerned about unnecessarily high awards and medical liability costs.[1] The College advocates reforms similar to those contained in the very successful California Medical Injury Compensation Reform Act, especially for caps on noneconomic damages (62, 63).[2] In addition, ACP advocates that Congress examine the liability insurance industry to identify issues that may complicate predicting loss and setting actuarially appropriate rates (64). ACP also calls upon the medical community to take measures that reduce the incidence of malpractice. The College has recommended funding demonstration projects to test the feasibility of proposed reforms, such as no-fault systems, enterprise liability, bifurcation of jury trials, and raising the burden of proof. For more information on specific components of the California Medical Injury Compensation Reform Act that the College advocates and the benefits of other liability reforms the College supports (no-fault systems, etc.), please refer to the ACP policy paper "Reforming the Medical Professional Liability Insurance System."

1. Wirthlin Worldwide conducted this poll in April 2002 for the Health Care Liability Alliance. The margin of error is +/-3.1 percentage points at a 95% confidence level.
2. In 1965, there were only 13.5 malpractice claims for every 100 physicians. By 1974, the number of claims rose 40% to 18 per 100. Jury awards in medical malpractice suits also increased during the period preceding the enactment of the Medical Injury Compensation Reform Act. In 1968, only one medical malpractice claimant received a jury verdict in excess of $250,000. In 1974, however, 14 malpractice damage awards in California were in excess of $250,000, totaling $3,643,000.

Student Debt

To identify those aspects of student debt relief where action can be taken to revitalize internal medicine, a MEDLINE search yielding 15 articles was conducted and used to support the following arguments. Over the last 10 years, 65% to 70% of students going into medical school carried no debt from their undergraduate education (65, 66). In contrast, at the end of medical school, 81.7% of the graduating class had outstanding loans for their medical education (65, 66). The average debt of indebted medical school graduates from the class of 2002 was $103,000 (65, 66). This figure represents a $4,000 increase from 2001, a $9,000 increase over 2000, and a nearly $50,000 increase over medical educational debt in 1992 (65, 66). The level of educational debt has been shown to be relevant to specialty choice and practice plans (especially with debt over $100,000) (67). For example, data from the American Association of Medical Colleges Medical School Graduation Questionnaire show that more than one in three medical students are influenced in their specialty choice by their level of educational debt (67). This figure may very well increase in the later years of residency, as interest on medical student loans begins to capitalize and the reality of debt burden hits home (6). The remainder of this position paper focuses on this last factor, student debt, and ways to provide debt relief for America's future internists.

Summary of Existing Federal Loan and Scholarship Programs Available to Medical Students and Residents

Loan-Repayment Options and Service Requirements

Several federal loan-repayment programs exist for indebted medical graduates, but many of these programs carry a service requirement that entails working in a health professional shortage area (HPSA). Such programs include the National Health Services Corps (NHSC) Loan Repayment Program and the Indian Health Service (IHS) Loan Repayment Program. These programs exist in addition to the many state initiatives (36 in cooperation with the NHSC) that also require service in a HPSA (68).

The NHSC, which explicitly recruits primary care physicians, will pay up to $50,000 for a 2-year commitment with possible extensions beyond the 2-year commitment (up to $35,000 per year). Additionally, the NHSC is willing to grant a 39% assistance payment to address taxable income that the loan repayment provides. The NHSC's Loan Repayment Program is based on availability of funds (65% of eligible applicants received NHSC Loan Repayment Program 2-year contract awards in fiscal year 2001—48% of total applicants). The IHS Loan Repayment Program, which lists internal medicine as a high-priority specialty, provides residents or physicians up to $20,000 per year to repay medical education loans while working for the IHS (in addition to salary and benefits) for a 2-year minimum (69). Also, like the NHSC, IHS pays up to 20% of the increased federal tax directly to the Internal Revenue Service (69). In 2002, 480 people participated in the IHS program for a total of over $17 million in loan repayment. Finally, the Disadvantaged Health Professions Faculty Loan Repayment Program exists for physicians from a background with a poor learning environment or with low economic status. In fiscal year 2002, 14 awards were given for medical faculty in the Disadvantaged Health Professions Faculty Loan Repayment Program (33 awards in total were granted in fiscal year 2002 from a $1 million budget) (Evans L. Personal communication). Through the DHPF Loan Repayment

Program, the Department of Health & Human Services pays up to $20,000, which is taxable (in addition to salary or other payments by the school) per year of eligible service, with a minimum 2-year commitment. The commitment is spent as a full-time or part-time faculty member at a health profession school. Upon request, the Department of Health & Human Services also pays 39% of the loan repayment to cover increased federal, state, and local income tax liability (70).

Military Loan-Repayment Programs

In addition to the loan-repayment programs offered by the NHSC and the IHS, the military offers the United States Armed Forces Health Professions Loan Repayment Program. The Army, Navy, and Air Force each administer this program through the surgeon general of each branch. Current or former United States Armed Forces Health Professions Scholarship recipients are ineligible for these awards. The Secretary of Defense determines the health professions needed to meet wartime shortages (i.e., the specialties that are eligible for the program). Though the U.S. armed forces are not explicitly recruiting primary care physicians, internal medicine was listed as an approved specialty for fiscal year 2002 and 2003 (71). Recipients of Health Professions Loan Repayment Program awards receive repayment of loans used to finance health education and reasonable education and living expenses. The maximum taxable repayment is approximately $23,500, depending on the branch (approximately $18,000 after taxes), for each year of active duty service up to a maximum of 4 years or $50,000 (72-74). In return, participants must serve on active duty for a minimum of 2 years or 1 year of active duty service for each annual repayment, whichever is greater.

Military Scholarship Programs

The military (through the Air Force, Army, and Navy) also offers scholarship and grant opportunities through its United States Armed Forces Health Professions Scholarship and Financial Assistance programs. Through the scholarship program, a participant can receive tax-free payment of tuition and fees, books, supplies, and equipment for up to 4 years of education, in addition to a taxable monthly stipend (approximately $1,050 per month, depending on the branch) for the 10.5 months that the student is not on active duty (75). Once more, there is a service requirement of 45 days' active duty training for each year of education (often spent at the student's medical school). Also, award recipients must agree to practice medicine in a specific branch of the military for an equal length of time that support was granted (active duty status can be delayed for residency). The Air Force, Army, and Navy also offer Financial Assistance Programs to residents training for the specialties for which the armed forces will have a need. Recipients are awarded a grant of over $19,800 (amount depending on the branch) and a taxable monthly stipend of over $930 (76).

NHSC and IHS Scholarship Programs

In addition to the military grant and scholarship programs, the NHSC offers a scholarship program, as well. The NHSC scholarship will pay the entirety of tuition and fees, books, supplies, and equipment for up to 4 years of education (tax-exempt) and a taxable monthly stipend ($1,028). As with the loan-repayment program, for each year of support, recipients are required to serve 1 year in an approved practice site, located in a federally designated HPSA of greatest need. There is a minimum service commitment of 2 years, which must begin upon completion of primary care residency. The IHS has a scholarship program, as well, but it is limited only to Native Americans.

Student Debt Relief

Position 1: ACP advocates both increased financing and measures to improve both the effectiveness of primary care service obligation components and the ease of the application process for scholarships, loan-forgiveness programs, and low-interest loan programs that require primary care service in return for financial aid.

Rationale:

The increasing costs of medical education and mounting student debt necessitate a corresponding increase in funding for federal programs providing financial aid. Without such support, medical school graduates will have difficulty meeting their educational financial obligations, possibly deterring them from pursuing careers in internal medicine and other primary care specialties with less earnings potential than other specialties. Scholarship and loan programs are essential to assure that opportunities for careers in medicine continue to be available to the best-qualified candidates and are not restricted only to those with substantial financial wealth.

National scholarship and loan-forgiveness programs have been effective methods of influencing medical students to enter and remain in primary care. Precedent for such programs can be found as early as the Berry Plan of the 1950s—a national program to coordinate military service and medical education (6). Also, physicians in the NHSC scholarship program have demonstrated the success of these programs through excellent retention rates—53% in 1995 rising to 70% in recent years (77). ACP recognizes that current federal scholarship and loan programs with service commitments are not very appealing to many medical students. For example, only 21.6% of graduating medical students plan to practice in a HPSA (65, 66). Additionally, one recent study found that less than one half of surveyed students would be willing to return to their home states, if expanded loan-repayment programs were available for service in areas of need (78). Much like requiring service in a HPSA, many medical students are not interested in programs that involve military active duty service obligations. Such unwillingness to serve has consistently been present over recent years (79, 80).

ACP believes that action must be taken to make loan-forgiveness and scholarship programs involving service requirements more attractive. The availability of these programs also needs to be better publicized to prospective applicants. NHSC physicians have echoed this sentiment, citing problems with poor treatment of NHSC physicians by communities and sites, as well as the program's lack of response to problems identified by NHSC physicians. The site-matching process has also had extensive problems. For example, one study found that only 38% of NHSC physicians worked in states where they had trained or lived before placement (81). Action should include making the sites of practice more desirable and more conducive to professional development. For example, steps can be taken to assure access to professional seminars, medical conferences, continuing medical education courses, and research initiatives designed for publication and presentation at national conferences.

Service in remote underserved areas might also be made more attractive by taking steps to reduce problems of professional isolation. Such steps should include assuring frequent contacts among physician colleagues and facilitating on-call coverage and substitution arrangements that allow physicians periodic relief from practice responsibilities. If such periodic relief is not feasible, then part-time service should qualify for practicing doctors in HPSAs. Enhanced informational and promotional communications about the availability of scholarships, low-interest loans, and loan-forgiveness programs will also be required to inform potential applicants about these programs and their improvements.

And when medical school graduates do choose to take advantage of these programs, it is important that they not encounter resistance from bureaucratic application processes and other administrative barriers. Such resistance will delay and often discourage those interested in participating in these programs (Wheby MS. Personal communication). These consequences not only pose a threat to debt repayment but also delay care to those who need it in HPSAs. Hence, the application processes to programs that offer medical student debt relief for health services in HPSAs should be simplified.

Position 2: ACP calls for expanded funding and eligibility for federal loan programs targeted to support primary care, such as Title VII's Primary Care Loan Program, allowing the deferment of interest and principal payments on medical student loans until after completion of postgraduate training and the tax-deductibility of interest and principal payments for such loans, if repayment occurs during residency training.

Rationale:

Title VII and Title VIII of the Public Health Service Act authorize a variety of funding for students, programs, and institutions. These programs are designed to meet the nation's needs by increasing the supply of primary medical and dental care providers and public health and allied health professionals, training more health professionals in fields experiencing shortages, improving the geographic distribution of health professionals, expanding access to health care in underserved areas, and enhancing minority representation in the pool of practicing health professionals.

Although recent proposals threaten to eliminate or at least significantly decrease funding for almost all Title VII grant and loan-repayment programs, low-interest Title VII loan programs are still available. This availability stems from the revolving funds that form the basis for Title VII loans—all the money borrowed is eventually returned with interest (although at a substantially lower rate).[3] Among the low-interest loans still available, the Health Professions Student Loan Program can carry a loan-repayment period of up to 10 years at a low interest rate of 5%. The Health Professions Student Loan Program's maximum allowable funds stem from the medical school's proportion of total medical students. The Loans for Disadvantaged Students Program also carries the same maximum determination criteria and low interest rate of 5%. To participate in the Loans for Disadvantaged Students Program, medical schools must, among other requirements, agree to offer services to health clinics that treat individuals from disadvantaged backgrounds.

3. According to the American Medical Student Association, as of July 1, 2002, medical students had the opportunity to combine their debt with a Federal Consolidation Loan with the lowest fixed rates in history: approximately between 3.5% and 4.875%. Accessed at http://easnetwork.com/eas/associations/amsa.asp on 15 October 2002.

Finally, the Primary Care Loan Program (with no maximum limit and a rate of 5%) grants physicians 10 to 25 years to repay the loan. Students who accept the loan must complete a residency program within 4 years of graduating from medical school (82). Also, the service requirement stipulates that the student must practice primary care until the loan is paid in full (or else forfeit any grace period and pay a financial penalty) (82). Primary care loans cannot be consolidated; to do so would eliminate the loan and the service requirement (the main purpose behind the loan's creation). However, students can use the primary care loan to consolidate other federal loans with higher interest rates. Last year, 985 students (787 allopathic and 198 osteopathic) used the Primary Care Loan Program for a total of $32 million (down from the previous year's total of $36 million for 1653 students—1439 allopathic and 214 osteopathic) (Farrington M. Personal communication).

ACP supports the use of low-interest loans with service obligations to encourage medical graduates to pursue careers in primary care. These programs are needed to assure a supply of future physicians to provide primary care services for populations living in HPSAs. Nationwide, there are over 34,700 designated HPSAs where primary care doctors are needed (83). However, there are only 2,600 scholarship and loan-repayment positions currently available for NHSC physicians (84). Debt-service programs, such as the NHSC programs, are not able to fully address this primary care gap; therefore, loan-based alternatives that subsidize debt to medical students, encouraging primary care practice, must be available. Making these loan-based alternatives available means that they must be attractive to medical students. Hence, loan programs that support primary care medical education must have interest rates that are at least as low as those available from other competing sources, including other federal loan programs.

ACP favors allowing the deferment, or tax-deductibility, of interest and principal payments on medical student loans until after completion of residency training in internal medicine. During residency training, physicians receive a stipend in acknowledgment of the patient care services they provide. However, medical residents receive far less income and typically work many more hours per week (up to 80 hours) than their counterparts with postgraduate degrees in other professions. The average stipend for a postgraduate resident in 2000 to 2001 was $35,728 per year before taxes (85). Although residents are primarily students rather than employees, the Internal Revenue Service considers all income earned in residency training as taxable income.

A medical resident beginning to pay off the average medical debt of over $103,000 on a 10-year plan with a low annual interest rate of 5% would have to pay over $16,000 per year in principal and interest (65, 66). This amount would consume nearly half of a typical resident's annual stipend. When nearly half of a resident's income is consumed by staggering debt repayment, it increases pressure for other sources of income through moonlighting. Residents, who already are committed to working on average up to 80 hours per week as part of their training, then must work additional hours that can lead to fatigue and/or sleep deprivation, raising the potential for mistakes and poorer quality of care.[4]

4. However, it is important to note that a recent study failed to find a significant difference in debt levels between residents who moonlighted and those who did not. This study also found that residents who worked at least the average number of hours per week in residency and did not moonlight reported less overall satisfaction than those who also moonlighted. (Baldwin DC Jr, Daugherty SR. Moonlighting and indebtedness reported by PGY2 residents: it's not just about money! Acad Med. 2002;77:S36-8.)

Loan repayment in residency makes it even more difficult for physicians-in-training to start or support a family and leaves little discretionary income for products that will advance physicians' professional development (conferences, journal subscriptions, etc.). By deferring payment of interest and principal on medical student loans until after completion of postgraduate training, residents will have increased funds necessary for professional development and more of an opportunity for a reasonable lifestyle. This will reduce financial pressure for residents to moonlight to supplement their income. This policy will allow repayment to begin when incomes are higher, and repayment will not be financially crippling. It will also better enable young physicians who want to enter primary care careers to do so with less pressure to enter a more lucrative specialty in order to pay off their student debts. However, if medical student loans are not deferred during residency, then payment of interest and principal for these loans during residency training should be tax-deductible.

The Economic Growth and Tax Relief Reconciliation Act of 2001 provides new tax benefits relevant to educational loans, employer-provided assistance for education, and qualified tuition programs (educational savings accounts). Although these provisions were improvements, they still do not fully address needs of medical school graduates. For example, the maximum amount of interest that can be deducted from an educational loan is now $3,000 (86). However, if a physician with an average debt of over $103,000 takes out a primary care loan and starts making payments over 10 years (at an interest rate of 5%), the interest from those payments will approximate $6,700 (more than 2.5 times the maximum deduction). Hence, ACP supports increased tax relief for those physicians who pay their medical student loans during residency.

Finally, ACP urges medical schools to refrain from the practice of midyear retroactive tuition increases. Such increases not only place the student into even greater financial debt but also make the planning and managing of that debt an even more daunting task. Eliminating such increases would serve as an effective adjunct to loan-forgiveness and scholarship programs.

Position 3: Financial aid and debt counseling, as well as counseling in budget management, should be available for all medical students, beginning before admission and available throughout attendance at medical school and residency. Opportunities for military and other scholarships and information about loan-forgiveness programs need to be better publicized.

Rationale:

According to the 2001 to 2002 LCME Annual Medical School Questionnaire, 90% of medical schools provide students with formal counseling on debt management (3). The AAMC 2002 Medical School Graduation Questionnaire also reported that 72.8% of students are either satisfied or very satisfied with financial aid administrative services, and 68.8% are satisfied or very satisfied with overall debt management counseling (65, 66). Despite this reported degree of satisfaction, it is unclear as to what degree debt counseling has been useful in eliminating or avoiding medical student debt (3). In addition to providing information to medical students on scholarship and loan programs, counseling should advise students on how to avoid, reduce, and manage debt. The counseling on debt management and reduction should not only focus on medical education sources of debt but also extend to other problems that medical students may encounter with managing finances and limiting expenditures that lead to greater debt. By providing medical students with knowledge on how to

budget more efficiently, counselors can help lay a solid financial base that makes it easier for medical students to eliminate their debt burdens.

The lack of knowledge about military scholarship programs that eliminate debt would suggest a deficiency in certain debt-counseling programs. For example, a survey to determine awareness of military financial aid programs to pay for education in return for military service found that only 33% to 50% of medical students were aware of any military program to address this matter (87). As discussed earlier, the military service requirement holds small appeal for most medical students. Debt counselors should attempt to educate medical students concerning the fact that physician service in the military is not only acceptable but can be attractive, as well. Military medical programs are of high quality and have produced excellent physicians. For example, one study found that a cohort of internal medicine graduates from an Air Force residency program achieved outstanding residency performance, as measured by research experience and board certification rates (88). Counseling about these programs should be offered not only at the beginning and end of a medical student's education but also throughout medical school, as well. In addition, the application process can be burdensome, and counselors should make efforts to relieve these difficulties by simplifying the procedures necessary for applying to needed federal medical student debt-relief programs. By consistently providing medical students with information on financial opportunities, debt counselors can better address medical students' monetary concerns and help ensure the needed supply of internal medicine primary care physicians.

Conclusion

In conclusion, ACP recognizes that internal medicine career interest is declining and that this trend threatens the state of medicine in America, because the needed services that primary care internists provide will not be as available to a more chronically ill future population. Multiple factors are responsible for this trend.

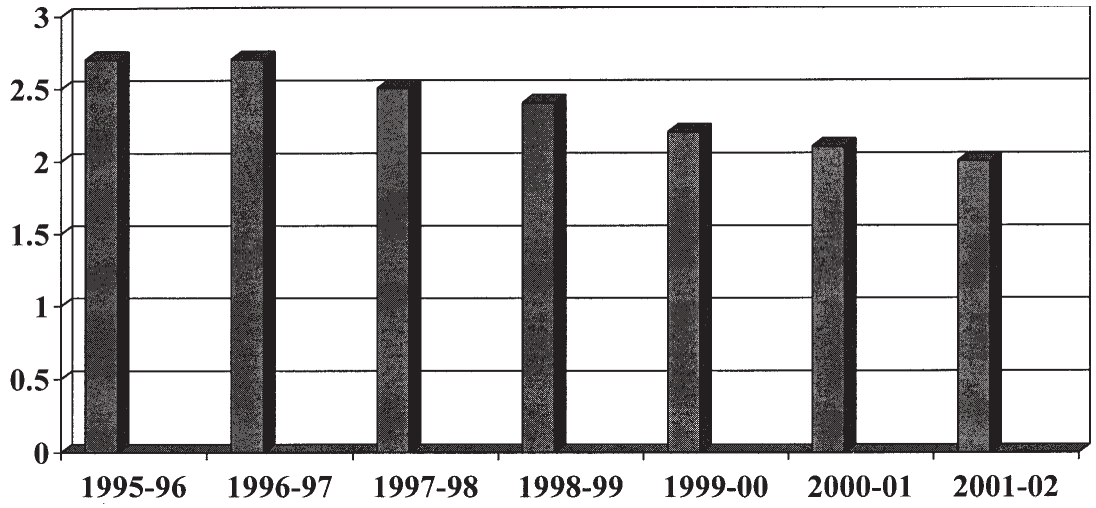
The educational environment poses pitfalls that discourage careers in primary care; the practice environment is beset by payment and administrative issues that drive physicians from the careers they once loved and worked so hard to attain; and the legal and regulatory environment creates financial pressures that make it difficult or near impossible for physicians to stay in practice. Difficulties in reimbursement and practice hassles form the next attack to internal medicine's appeal, making the provision of care more difficult for those doctors wishing to practice good medicine. Also, medical liability premiums have risen to heights where many internists can no longer afford to stay in practice. Finally, student indebtedness has risen to such levels as to affect career choice, forcing students into more lucrative specialties and out of internal medicine.

This paper has focused on medical student debt relief, because of the concern that young physicians have expressed over steadily mounting student debt and the legislative action that can be taken through certain federal programs. Steadily mounting levels of student debt for medical education highlight the need for programs to provide scholarship assistance, loans, and other debt relief for students seeking careers in internal medicine. Accordingly, ACP urges expansion and improvement of federal and state programs that provide financial assistance for medical students and physicians-in-training. The College supports programs, such as those provided through the NHSC, IHS, and the United States armed forces, that require service in return for educational assistance provided to the medical student (or resident) in the form of loan repayments, scholarships, or grants. The service requirements for these programs have not been popular among medical students and graduates; therefore, the College has suggested a number of improvements that can be made to make these programs more attractive to potential participants.

ACP also favors low-interest loan programs that explicitly support medical education, particularly ones such as those provided through Title VII of the Public Health Services Act, and that enable physicians to pursue careers in primary care. The College urges legislative changes to allow deferment or at least the tax-deductibility of loan repayments until after residency to ease the financial burden on medical school graduates until the completion of postgraduate residency training. Finally, ACP calls for counseling on debt management and other financial alternatives for all medical students and residents throughout their education.

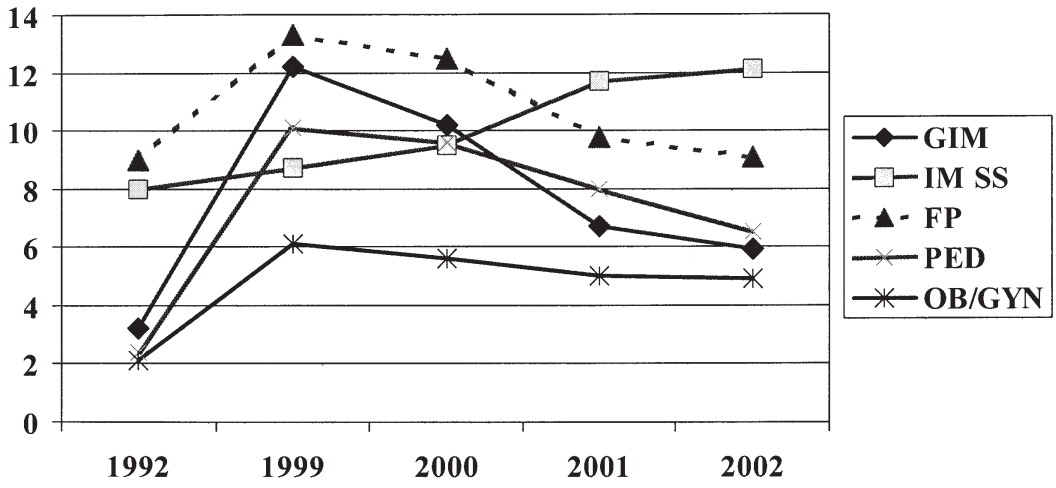
ACP proposes positions that provide for the needed financial assistance and guidance to medical students, primary care internal medicine residents, and primary care internists seeking student debt relief. In doing so, the College seeks to encourage entry into internal medicine, a source of care vital to the American public both now and in the time to come.

Chart A
Medical School Applicant Acceptance Ratios
1995–1996 to 2001–2002



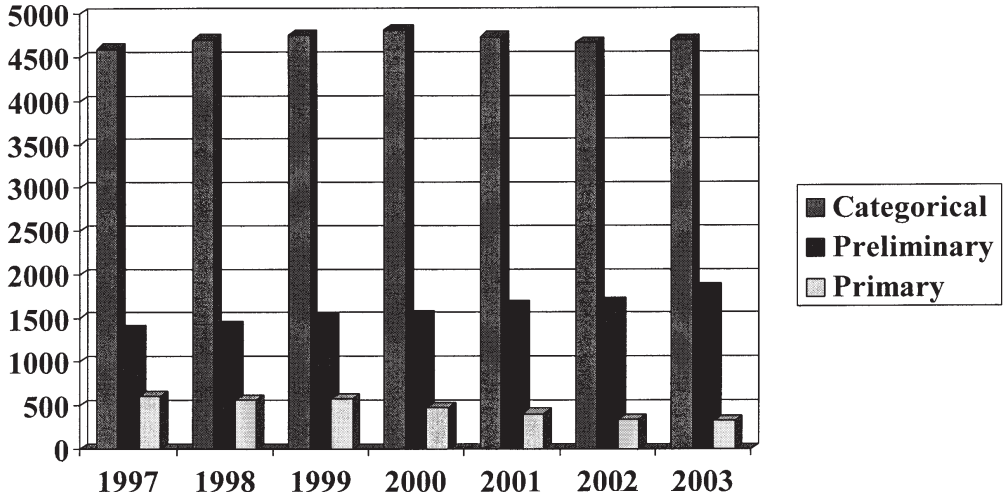
Source: Barzansky B, Etzel SI. Educational programs in U.S. medical schools, 2001-2002. Table 3. Application activity during 20-Year Period. JAMA. 2002;288:1069.

Chart B
Graduating Medical Students' Specialty Plans
1992 and 1999 to 2002 (Percentages)



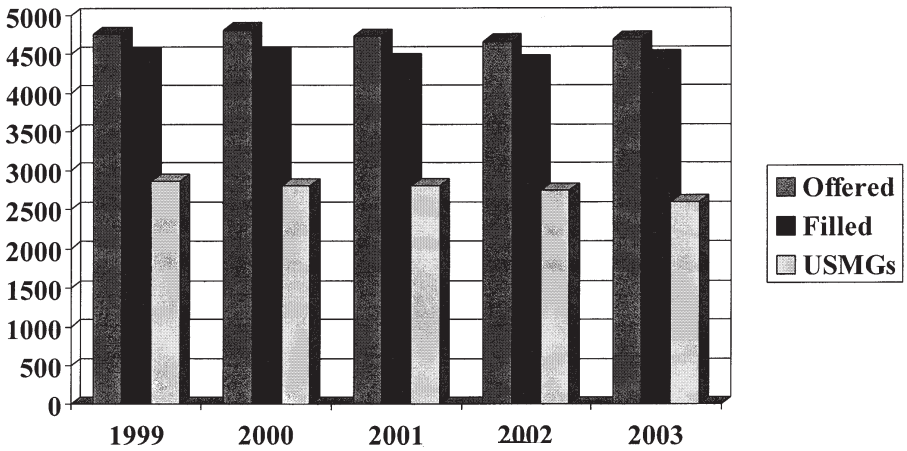
Source: American Association of Medical Colleges. AAMC 2002 and 2000 Medical School Graduation Questionnaires: All School Reports. Accessed at www.aamc.org/data/gq/allschoolsreports/2002.pdf on 26 August 2003.

Chart C
Internal Medicine Positions Offered in the NRMP
1997–2003



Source: National Residency Matching Program 2003 Match Data. Table 1. Positions Offered in the Matching Program 1997-2003. Accessed at www.nrmp.org/res_match/tables/table1_2003.pdf on 25 August 2003.

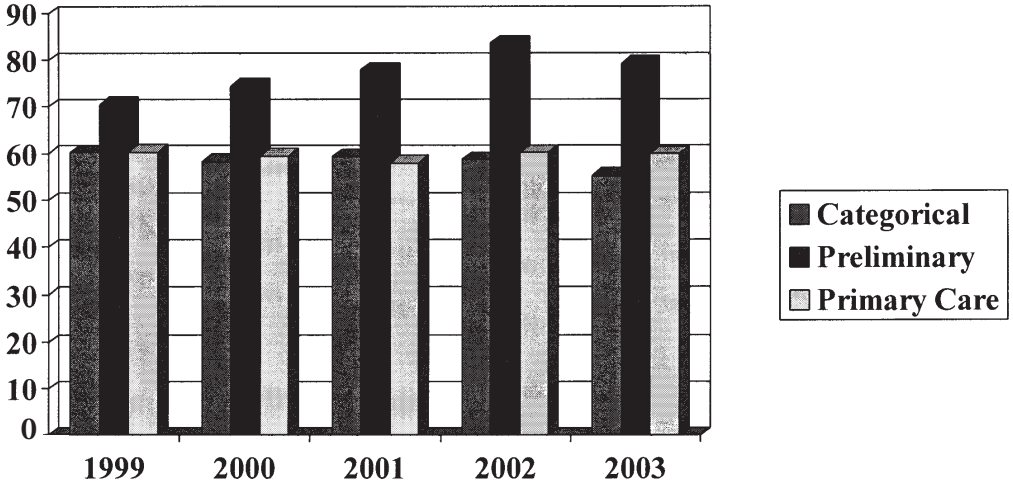
Chart D
Categorical Internal Medicine Positions
Offered and Filled in the NRMP



Source: National Residency Matching Program 2003 Match Data. Table 6. Positions Offered and Percent Filled by U.S. Seniors and All Applicants 1999-2003. Accessed at www.nrmp.org/res_match/tables/table6_2003.pdf on 25 August 2003.

Chart E

Internal Medicine Positions Filled by U.S. Medical Graduates
Percentages 1999–2003



Source: National Residency Matching Program 2003 Match Data. Table 6. Positions Offered and Percent Filled by U.S. Seniors and All Applicants 1999-2003. Accessed at www.nrmp.org/res_match/tables/table6_2003.pdf on 25 August 2003.

References

1. Sox HC. The future of primary care. Ann Intern Med. 2003;138:230-2.
2. American Association of Medical Colleges. Decline of Medical School Applicants Continues in 2002. Press Release. Accessed at www.aamc.org/newsroom/pressrel/2002/021030.htm on 25 August 2003.
3. Barzansky SE, Simon FA, Etzel S. Educational programs in U.S. medical schools, 2001-02. JAMA. 2002;288:1067-72.
4. American College of Physicians. The Role of the Future General Internist Defined. Ann Intern Med. 1994;121:616-22.
5. American Association of Medical Colleges. AAMC 2002 Medical School Graduation Questionnaire: All School Report. Accessed at www.aamc.org/data/gq/allschoolsreports/2002.pdf on 25 August 2003.
6. Petersdorf RG. Financing medical education—a universal "Berry Plan" for medical students. N Engl J Med. 1993;328:651-4.
7. American Association of Medical Colleges. AAMC 2002 and 2000 Medical School Graduation Questionnaires: All School Reports. Accessed at www.aamc.org/data/gq/allschoolsreports/2002.pdf and www.aamc.org/data/gq/allschoolsreports/2000.pdf on 25 August 2003.
8. American Association of Medical Colleges. AAMC 1992 Graduating Student Survey Results: All Schools Summary. Accessed at www.aamc.org/data/gp/allschoolsreports/1992.pdf on 25 August 2003.
9. National Residency Matching Program 2003 Match Data. Table 1. Positions Offered in the Matching Program 1997-2003. Accessed at www.nrmp.org/res_match/tables/table1_2003.pdf on 25 August 2003.
10. National Residency Matching Program 2003 Match Data. Table 6. Positions Offered and Percent Filled by U.S. Seniors and All Applicants 1999-2003. Accessed at www.nrmp.org/res_match/tables/table6_2003.pdf on 25 August 2003.
11. Snyderman R, Sheldon GF, Bischoff TA. Gauging supply and demand: the challenging quest to predict the future physician workforce. Health Aff. 2002;21:167-8.
12. Reinhardt U. Analyzing cause and effect in the U.S. physician workforce. Health Aff. 2002;21:165-6.
13. Reinhardt U. Dreaming the American dream: once more around on physician workforce policy. Health Aff. 2002;21:28-32.
14. Graduate Medical Education National Advisory Committee. Summary Report. 1980. Department of Health & Human Services (HRA 81-651). Washington, DC; U.S. Government Printing Office:1980.
15. Weiner JP. Forecasting the effects of health reform on U.S. physician workforce requirements. Evidence from HMO staffing patterns. JAMA. 1994;272:222-30.
16. Council on Graduate Medical Education. Fourteenth Report: COGME Workforce Policies: Recent Developments and Remaining Challenges in Meeting National Goals. United States Department of Health & Human Services (HRSA-98-11). March 1999.
17. American Medical Association. Physician Statistics Now. Table: Physicians in the United States and Possessions by Selected Characteristics. Accessed at www.ama-assn.org/ama/pub/printcat/2688.html on 25 August 2003.
18. Salsberg ES, Forte GJ. Trends in the physician workforce 1980-2000. Health Aff. 2002;21:165-73.
19. Cooper RA, Getzen TE, McKee HJ, Laud P. Economic and demographic trends signal an impending physician shortage. Health Aff. 2002;21:140-54.
20. U.S. Census Bureau. Health Insurance Coverage: 2001. Current Population Reports. U.S. Department of Commerce (P60-220). Sept. 2002.
21. American College of Physicians–American Society of Internal Medicine. No Health Insurance: It's Enough to Make You Sick. 1999.
22. Department of Veterans Affairs. Primary and Ambulatory Care Programs and Services. Accessed at www.va.gov/primary/ on 25 August 2003.
23. Showstack J, Rothman AA, Hassmiller S. Primary care at a crossroads. Ann Intern Med. 2003; 138:242-3.
24. Centers for Disease Control. Tobacco Information and Prevention Source. Accessed at www.cdc.gov/tobacco/issue.htm on 25 August 2003.
25. Ockene JK. Primary care-based smoking interventions. Nicotine Tob Res. 1999;1 Suppl 2:S189-93; discussion S207-10.

26. Centers for Disease Control. Prevalence of Overweight among Children and Adolescents: United States, 1999-2000. Accessed at www.cdc.gov/nchs/products/pubs/pubd/hestats/overwght99.htm on 25 August 2003.
27. DeBusk RF, West JA, Miller NH, Taylor CB. Chronic disease management: treating the patient with disease(s) vs. treating disease(s) in the patient. Arch Intern Med. 1999 27;159:2739-42.
28. Safran GD. Defining the future of primary care: what can we learn from patients? Ann Intern Med. 2003;138:248-55.
29. Rothman AA, Wagner EH. Chronic illness management: what is the role of primary care? Ann Intern Med. 2003;138:256-62.
30. Centers for Disease Control. Accessed at www.cdc.gov/nccdphp/aag_ddt.htm on 25 August 2003.
31. Ogle KS, Swanson GM, Woods N, Azzouz F. Cancer and comorbidity: redefining chronic diseases. Cancer. 2000;88:653-63.
32. Centers for Disease Control. Comprehensive Cancer Control. Accessed at www.cdc.gov/cancer/ncccp/about.htm on 25 August 2003.
33. Neiblum DR, Boynton RF. Evaluation and treatment of chronic hepatitis C infection. Prim Care. 1996;23:535-49.
34. Means-Markwell M, O'Neil KM. Prevention of tuberculosis. Vigilance and infection control strategies are mainstays of efforts. Postgrad Med. 2000;108:87-90, 93-6.
35. Vergeront JM, Reiser WJ, Krchnavek KA, Druckenmiller JK, Davis JP. Meeting the challenge of early identification of HIV infection in primary care. WMJ. 1998;97:52-61.
36. Metlay JP, Stafford RS, Singer DE. National trends in the use of antibiotics by primary care physicians for adult patients with cough. Arch Intern Med. 1998;158:1813-8.
37. Blazes DL, Lawler JV, Lazarus AA. When biotoxins are tools of terror. Early recognition of intentional poisoning can attenuate effects. Postgrad Med. 2002;112:89-92, 95-6, 98.
38. Henderson MC, Hunt DK, Williams JW Jr. General internists influence students to choose primary care careers: the power of role modeling. Am J Med. 1996;101:648-53.
39. Mutha S, Takayama JI, O'Neil EH. Insights into medical students' career choices based on third-and fourth-year students' focus-group discussions. Acad Med. 1997;72:635-40.
40. Bright CM, Duefield CA, Stone VE. Perceived barriers and biases in the medical education experience by gender and race. J Natl Med Assoc. 1998;90:681-8.
41. Kassebaum DG, Szenas PL, Schuchert MK. Determinants of the generalist career intentions of 1995 graduating medical students. Acad Med. 1996;71:198-209.
42. Showstack J, Lurie N, Larson EB, Rothman AA, Hassmiller S. Primary care: The next renaissance. Ann Intern Med. 2003;138:268-273.
43. Hunt DD, Scott C, Zhong S, Goldstein E. Frequency and effect of negative comments ("badmouthing") on medical students' career choices. Acad Med. 1996;71:665-9.
44. Block SD, Clark-Chiarelli N, Peters AS, Singer JD. Academia's chilly climate for primary care. JAMA. 1996;276:677-82.
45. Sandy LG. Primary care in a new era: disillusion and dissolution? Ann Intern Med. 2003;138:262-8.
46. Meurer LN. Influence of medical school curriculum on primary care specialty choice: analysis and synthesis of the literature. Acad Med. 1995;70:388-97.
47. Xu G, Hojat M, Brigham TP, Veloski JJ. Factors associated with changing levels of interest in primary care during medical school. Acad Med. 1999;74:1011-5.
48. Grayson MS, Klein M, Franke KB. Impact of a first-year primary care experience on residency choice. J Gen Intern Med. 2001;16:860-3.
49. Davis BE, Nelson DB, Sahler OJ, McCurdy FA, Goldberg R, Greenberg LW. Do clerkship experiences affect medical students' attitudes toward chronically ill patients? Acad Med. 2001;76:815-20.
50. Zinn WM, Sullivan AM, Zotov N, Peters AS, Connelly MT, Singer JD, Block SD. The effect of medical education on primary care orientation: results of two national surveys of students' and residents' perspectives. Acad Med. 2001;76:355-65.
51. National Association of State Budget Officers. 2001 State Expenditure Report. Summer 2002.
52. American College of Physicians. Resident Work Hours. Position Paper. Philadelphia: American College of Physicians; 2003. (Available from American College of Physicians, 190 N. Independence Mall West, Philadelphia, PA 19106.)

53. MedPAC. Recent Changes in the Medicare Program. March 2000 Report to Congress: Medicare Payment Policy. Chapter 1. Washington, DC: 6.
54. Pardes H. The perilous state of academic medicine. JAMA. 2000;283:,2427-9.
55. How Tough is Life? One State Has the Facts and Figures. AM News. 13 August 2001.
56. U.S. Bureau of Labor Statistics. Consumer Price Index (CPI). Washington, DC.
57. Centers for Studying Health System Change. Growing Physician Access Problems Complicate Medicare Payment Debate. Issue Brief No. 55. Washington, DC; September 2002.
58. Moore G, Showstack J. Primary care medicine in crisis: toward reconstruction and renewal. Ann Intern Med. 2003;138:244-8.
59. Ginsburg, PB. Payment and the future of primary care. Ann Intern Med. 2003;138:233-4.
60. Federal Register. 1998;63:58818.
61. Medical Liability Monitor. 2002:27(1).
62. Medical Injury Compensation Reform Act. Ch. 1 & 2. 1975 Cal. Stat: 3949-4007.
63. Medical Liability Monitor. Trends in 2001 rates for physicians' medical professional liability insurance. 2001;25.
64. Center for Justice and Democracy. Statement to the Subcommittee on Commercial and Administrative Law. House Judiciary Committee. 12 June 2002.
65. American Association of Medical Colleges. AAMC 1992 Graduating Student Survey Results: All Schools Summary. Accessed at www.aamc.org/data/gp/allschoolsreports/1992.pdf on 25 August 2003.
66. American Association of Medical Colleges. AAMC 1993, 1994, 1995, 1996, 1997, 2000, and 2002 Medical School Graduation Questionnaire: Summary Report for All Schools. Accessed at www.aamc.org/data/gq/allschoolsreports/1993.pdf, www.aamc.org/data/gq/allschoolsreports/1994.pdf, www.aamc.org/data/gq/allschoolsreports/1995.pdf, www.aamc.org/data/gq/allschoolsreports/1996.pdf, www.aamc.org/data/gq/allschoolsreports/1997.pdf, www.aamc.org/data/gq/allschoolsreports/1999.pdf, and www.aamc.org/data/gq/allschoolsreports/2002.pdf on 25 August 2003.
67. Woodworth PA, Chang FC, Helmer SD. Debt and other influences on career choices among surgical and primary care residents in a community-based hospital system. Am J Surg. 2000; 180:570-5.
68. Health Resources and Services Administration. National Health Services Corps-Get Involved. Accessed at http://nhsc.bhpr.hrsa.gov/get_involved/slrp_contacts.html on 25 August 2003.
69. The Indian Health Service. Office of Management Services Loan Repayment Program Benefits. Accessed at www.ihs.gov/jobscareerdevelop/DHPS/LRP/Benifts.asp.
70. Association of American Medical Colleges. Monetary Decisions for Medical Doctors—AAMC 2002. Accessed at www.aamc.org/students/financing/md2/phase3/pdf/md2-phase3.pdf on 25 August 2003.
71. Department of Defense Memorandum. Reserve Component Wartime Healthcare Specialties with Critical Shortages. Accessed at http://arpc.afrc.af.mil/sgx/critical_skills.pdf on 25 August 2003.
72. United States Air Force Health Professions Loan Repayment Program. Accessed at http://ci.afit.edu/CIM/hplrp.htm on 25 September 2002.
73. United States Navy Health Professions Loan Repayment Program. Accessed at www.navres.navy.mil/navresfor/n1/pdf/lrp_agree.PDF on 25 September 2002.
74. United States Army Health Professions Loan Repayment Program. Accessed at http://meded.amedd.army.mil/pages/health.htm on 26 August 2003.
75. Case Western Reserve University School of Medicine. Financial Aid. Accessed at http://mediswww.meds.cwru.edu/financial_aid/scholarships.htm on 24 September 2002.
76. UCLA School of Medicine. Student Financial Services. Accessed at www.medstudent.ucla.edu/fao/residents/repaymentservicepgms.html on 26 August 2003.
77. Politzer RM, Trible LQ, Robinson TD, Heard D, Weaver DL, Reig SML, Gaston M. The National Health Service Corps for the 21st century. J Ambul Care Manage. 2000;23:70-85.
78. Miller JB, Crittenden RA. The effects of payback and loan repayment programs on medical student career plans. J Rural Health. 2001;17:160-4.
79. Lajewski WM, Liman JP, Swan DG, Staton SM. Don't know, don't care: medical students' knowledge of and attitudes toward military medical career opportunities and medical educational cost reimbursement. Mil Med. 1997;162:812-6.

80. Anderson ER Jr, Fowler J, Swan DG, Liman JP, Lajewski WM. Don't know, don't care III. Mil Med. 1999;11:758-63.
81. Pathman DE, Konrad TR, Ricketts TC III. The National Health Services Corps experience for rural physicians in the late 1980's. JAMA. 1994;274:1341-8.
82. Division of Health Careers Diversity and Development. Health Resources and Services Administration. Accessed at http://bhpr.hrsa.gov/dsa/sfag/Health_Professions/4pcl5com-02.htm on 26 August 2003.
83. Health Professions Shortage Areas. Health Resources and Services Administration. Bureau of Primacy Health Care. Accessed at http://bphc.hrsa.gov/databases/newhpsa/newhpsa.cfm on 26 August 2003.
84. National Health Services Corps—Opportunities List. Health Resources and Services Administration. Bureau of Primacy Health Care. Accessed at http://nhsc.bhpr.hrsa.gov/jobs/search_results.cfm?Disc=&Spec=&Regi=&Stat=&Cate=&weeks=&StartRow=1&PageNum=1 on 26 August 2003.
85. American Association of Medical Colleges. AAMC Survey of Housestaff Stipends, Benefits, and Funding. Accessed at www.aamc.org/hlthcare/coth-hss/2000hss/hss2000_1.htm on on 26 August 2003.
86. Publication 970. Tax Benefits for Higher Education. Internal Revenue Service. Accessed at www.irs.gov/pub/irs-pdf/p970.pdf on 26 August 2003.
87. Liman JP, Swan KG. Medical students' attitudes toward military medicine. Acad Med. 2000;75:404.
88. Cation LJ, Lenihan DJ, Gutierrez-Nunez JJ. Military graduate medical education in Internal Medicine: an outcomes study. Mil Med. 2001;166:314-7.