

Health Care Financing: Graduate Medical Education in the Context of Health Care Spending in the United States

The US spends more on health care than any other country in the world—over \$1.4 trillion in 2003 alone.¹ Despite the absence of national health insurance, public dollars account for almost half of spending while direct, out of pocket patient payments represent 16% of total, their lowest share in fifty years. (Figure 1)

Relative to the size of the US economy, spending on personal health care represents about 13% of gross domestic product (GDP). Per capita expenditures have surpassed \$5,000, about \$3,000 more than the average OECD country.² (Figures 2 & 3)

The inception of Medicare (the nation's hospital insurance program) and Medicaid (health insurance for the poor) in the 1960's spurred rapid growth in spending as medical care became more accessible and individuals less responsible for their own health care expenditures. Employer-sponsored health care benefits also became standard and 86% of Americans have some type of health insurance at the present time.

Despite the apparent skyrocketing growth in expenditures, real health spending in the US has grown more slowly than in the median OECD country.³ Recurrent efforts (both public and private) to reduce the growth in health care expenditures in the last 40 years have resulted in stabilization of spending for brief periods. National health planning efforts in the US followed the initial surge in spending in the 1970's, as did a major revision of the inpatient payment system for Medicare (Prospective Payment System, PPS) in 1984, which soon spread to other sectors. In the 1990's, private managed care plans imposed new spending limitations on patients and providers. Like the rest of the health care industry, the financing of GME has evolved over the last four decades.

¹ CMS Office of the Actuary

² Anderson GF et al. Health spending in the United States and the rest of the industrialized world. *Health Aff* 2005; 24(4):903—914.

³ Anderson GF, Hussey PS, Frogner BK, Waters HR. Health spending in the united states and the rest of the industrialized world. *Health Aff (Millwood)*. 2005;24:903-914.

Figure 1. US Personal Health Care Expenditures, 1960-2003

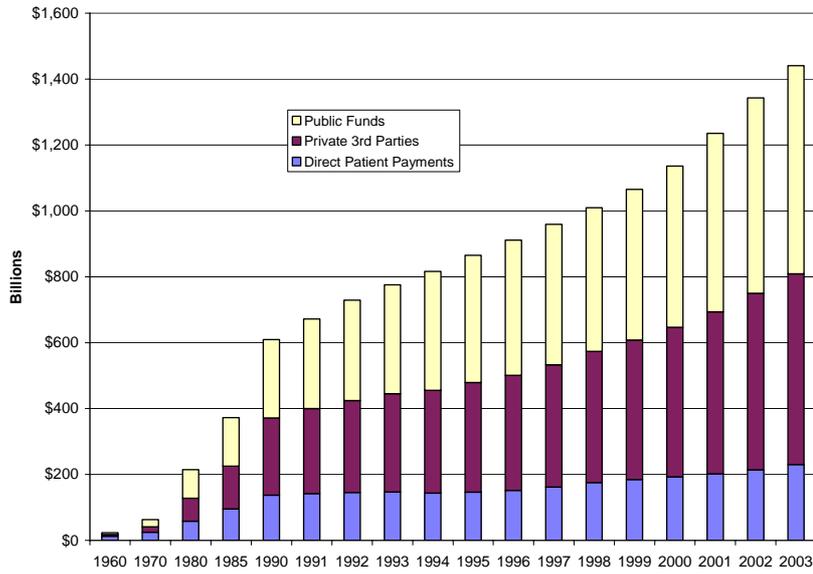


Figure 2. US Per Capita Health Expenditures

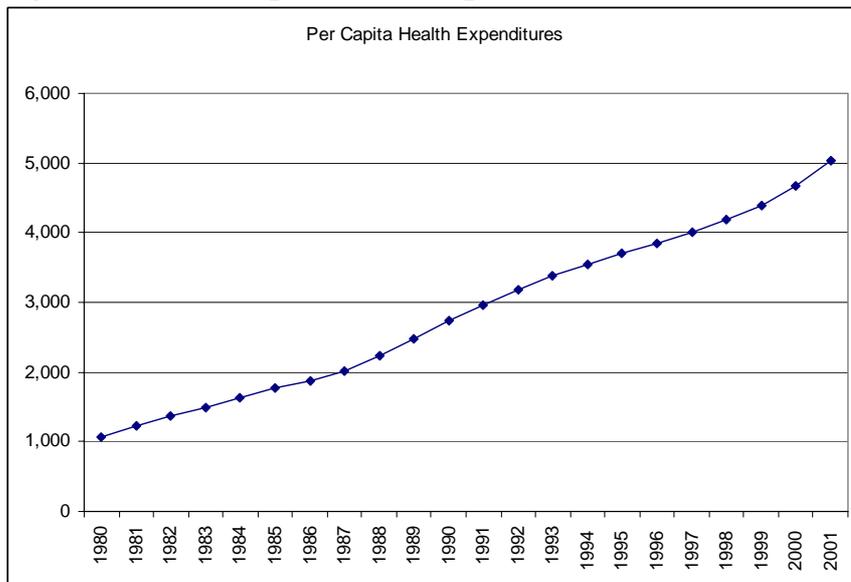
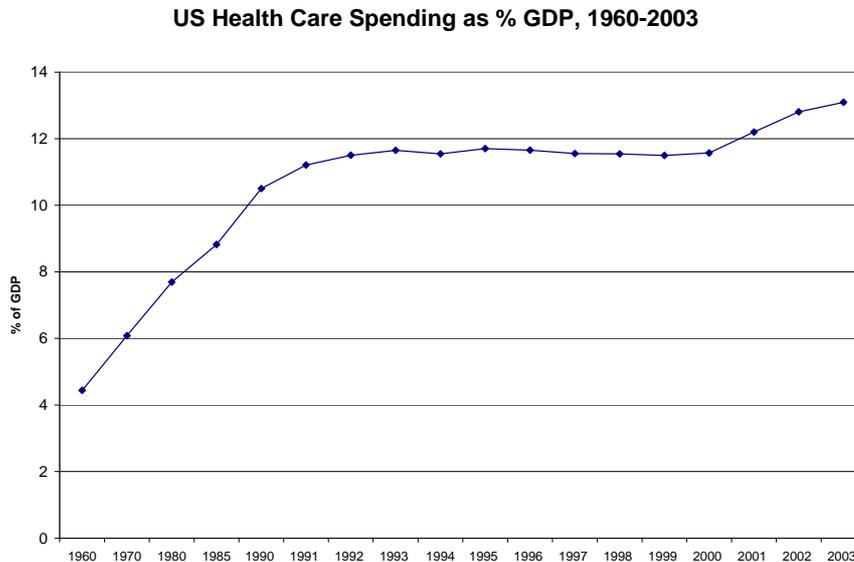


Figure 3.

US Physician Training

Most physicians in the US become licensed only after completing training in graduate medical education (GME) programs where they become eligible to practice within a given specialty. Entrance to accredited programs occurs only after completion of four years of undergraduate medical education (UME) to satisfy the requirements of an allopathic (MD) or osteopathic (DO) degree. Residency training for primary specialization can range from three years (general internal medicine, general pediatrics, family medicine) to eight years (neurosurgery). Many physicians also choose to subspecialize through fellowship training which may require several additional years before completion.

Allopathic UME is concentrated in 126 institutions in the US, many of which are affiliated with larger public and private universities. Median tuition for in-state residents at public universities is approximately \$19,000 and at private schools \$36,000. However, tuition covers only about one-half of the cost of attendance at public universities and two-thirds of those at private institutions.⁴ In 2004, students with educational debt owed an average of \$115,000 after graduating from medical school.

There are over 1,000 teaching hospitals (those that train residents and fellows) in the US, many of which are associated with schools of medicine. Hospitals pay physicians in training stipends which average about \$40,000 annually. These stipends, along with other benefits typical of employment in the US, are commonly agreed upon to be “direct” costs of training programs. Other accounting for the costs of training is less well defined.

Measuring the costs of training physicians

⁴ AAMC data.

The Medicare legislation provides the following rationale for supporting graduate medical education: *Educational activities enhance the quality of care in an institution, and it is intended, until the community undertakes to bear such education costs in some other way, that a part of the net cost of such activities should be borne to an appropriate extent by the hospital insurance program.*⁵

The training of residents and fellows has been associated with increased costs of care.⁶ Throughout the 1960's and 1970's, the Medicare hospital insurance program paid for "reasonable costs" of services which were often higher in teaching hospitals when compared with their non-teaching counterparts. Payers did not separate the costs of training from patient care activities—research and "other" activities of teaching hospitals were also included. Instead, GME expenses were explicitly included in the additional costs of care provided by teaching hospitals.⁷ During this time period, all payers (public and private) paid some component of the higher costs of care in teaching hospitals.

Throughout the 1970's, increased attention to cost containment threatened the ability of teaching hospitals to recoup their higher costs of patient care. As early as 1974, Medicare placed limits on the amounts which hospitals could charge for room, board, and nursing services; by 1978, it was apparent that teaching hospitals were adversely affected by such limits. Teaching hospitals were initially instructed to account for the costs of GME and separate them from inpatient care; however, this soon gave way to more theoretical approaches to estimating the costs of training and associated activities. Both approaches are currently used to estimate GME costs.

Making GME payments explicit

With the adoption of the prospective payment system, teaching hospitals found themselves faced with the prospect of being paid the same as non-teaching hospitals for any given diagnosis despite their history of higher costs for care. In keeping with Medicare's original support for these institutions, the program allowed for explicit payments to teaching hospitals for both "direct" and "indirect" costs, as are detailed below.

Direct Medical Education (DME)

DME costs were calculated from hospital cost reports and accounting data in order to explicitly determine the increased costs of training programs for a hospital. Typically they include trainee salaries, stipends, and benefits; faculty salaries and benefits to the extent that they are attributable to the training program; and administrative costs and overhead. It includes the time-intensive activity of teaching—attending (supervising) physicians are responsible for the care of their own patients while having to supervise residents, fellows, and medical students. Teaching may increase the time required for

⁵ House Report, Number 213, 89th Congress, 1st session 32(1965).

⁶ Mechanic, R, Coleman, K, Dobson, A. "Teaching Hospital Costs: Implications for Academic Missions in a Competitive Market." *JAMA*. 1998;280:1015-19.

⁷ Rich EC et al. "Medicare financing of graduate medical education." *JGIM* 2002; 17:283-292.

patient care when residents are present or if they directly deliver care under the supervision of an attending physician.

Despite the narrow categories into which these costs fall, consistent estimates of the direct costs of training residents and fellows across hospitals are difficult to determine. Original cost estimates were established by individual hospitals at the start of the prospective payment system in the mid 1980's; total direct costs ranged from \$7,500 to \$200,000 per resident.⁸ Individual hospital accounting was overseen by Medicare's fiscal intermediaries that differed by region of the country; these intermediaries often interpreted the same Medicare regulations very differently. Much of the final cost estimate variation is due to accounting artifact and disparities between teaching hospitals and what they were allowed to count in categories of overhead, faculty practice expenses, and other areas.⁹

Since 1984, Medicare has reimbursed teaching hospitals for the Direct costs of medical education based upon these individual hospital accounting methods (updated for inflation) and an institution's proportion of Medicare days. For example, if a hospital's accounting determined the Direct costs to be \$100,000 per resident and Medicare beneficiaries accounted for half of the bed days in the hospital, it would receive \$50,000 a year, per-resident for DME.

Empiric evidence does not justify the variation; survey data suggests that the total DME costs are close to \$130,000 per resident or fellow per year, on average.¹⁰ Moreover, the costs of education remain elusive because they are difficult to completely separate from patient care; residents and fellows routine provide some level of clinical service, the revenue from which provides offsets to the cost of training.

Indirect Medical Education (IME)

While DME covers the costs incurred by hospitals training physicians, it failed to account for the costs of other activities in major teaching hospitals which were typically passed on to payers under the fee-for-service system. These activities, while never explicitly defined in legislation, have generally been thought to include endeavors such as research; education of medical students and other health professionals; care for more complex or severely ill patients; and charity care.

Officials in the Medicare program found, through regression analysis, that higher costs were highly correlated with the "intensity" of teaching in a hospital, where intensity was defined as the ratio of interns and residents to patient beds (IRB). This ratio was then used to determine the percent add-on to a DRG payment which would be made to a teaching hospital to cover these associated activities.

⁸ Sullivan, LS. A Recommendation for a National Per Resident Amount for Medicare Direct Graduate Medical Education Payments. Report to Congress. Washington, D.C. Department of Health and Human Services 1990.

⁹ Oliver TR, Grover A, Lee PR. Variations in Medicare Payments for Graduate Medical Education in California and Other States. California Health Care Foundation, June 2001.

¹⁰ Blewett LA, Smith MA, Caldis TG. Measuring the direct costs of graduate medical education training in minnesota. *Acad Med.* 2001;76:446-452.

Congress specified, “*This adjustment is provided in light of doubts...about the ability of the DRG case classification system to account fully for factors such as severity of illness of patients requiring the specialized services and treatment programs provided by teaching institutions and the additional costs associated with the teaching of residents...the adjustment for indirect medical education costs is only a proxy to account for a number of factors which may legitimately increase costs in teaching hospitals.*”¹¹

Teaching hospitals currently receive about twice as much in IME reimbursement as they do in DME payments. As one observer explained, “considerable effort has gone into analyzing what IME payments should be, but no clear conclusions have emerged. In the end, the size of payments has always been a fiscal and policy decision.”¹² The size of these payments is substantial; since 1985, US teaching hospitals have received over \$100 billion in payments for GME. (See Table 1)

Table 1.
Medicare GME Payments to Teaching Hospitals, 1985-2001 (Millions, unadjusted)

Fiscal Yr	IME	DME
1985	\$1,249	\$1,138
1986	\$1,150	\$960
1987	\$1,617	\$1,023
1988	\$2,257	\$1,163
1989	\$2,531	\$1,416
1990	\$2,853	\$1,463
1991	\$3,176	\$1,569
1992	\$3,546	\$1,795
1993	\$3,930	\$1,956
1994	\$4,344	\$2,016
1995	\$4,575	\$1,997
1996	\$4,877	\$1,740
1997	\$4,523	\$1,760
1998	\$4,372	\$1,775
1999	\$4,306	\$1,822
2000	\$4,632	\$1,866
2001	\$4,814	\$1,850

TOTAL \$58,749 \$27,310

Source: CMS Office of the Actuary.

However, as a share of Medicare’s inpatient spending, GME payments have decreased over time and now account for less than 3% of inpatient expenditures.

¹¹ House Ways and Means and Senate Finance Committee Reports, March 1983.

¹² Lewin LS. Public policies to help academic centers. In: Aaron HJ, ed. *The future of academic medical centers*. Washington, D.C.: The Brookings Institution; 2001.

This approach to GME payments has raised repeated concerns among US policymakers over the last decade. One reason is that there exists an economic argument against the subsidies because trainees theoretically already absorb the costs of training by agreeing to salaries about \$60,000 below their potential market values. That is, as trainees approach the level of productivity and expertise of physicians that have just completed training, they might earn \$100,000 a year or more. By paying trainees less than their potential market value, trainees may bear the economic costs of their inefficiency through their decreased wages.¹³ However, the same economists that suggest much of the cost of training is absorbed by residents themselves acknowledge that there are higher costs associated with teaching hospitals which cannot be attributed to inefficiencies in the delivery of care.

State-federal contributions through the Medicaid program occur in addition to the federal payments distributed through Medicare. All but five states make GME payments through Medicaid, which totaled over \$2.4 billion a year as of 1998.¹⁴ Medicare and Medicaid are the only explicit payers of GME nationwide; private contributions are unknown, though it is likely that they have decreased in the last several decades through more competitive contracting. However, several other sources of public reimbursement for GME training costs exist, including:

- The Veteran's Health Administration (VHA, formerly Department of Veterans Affairs) supported approximately 12% of all residency positions throughout the 1980's.¹⁵ By 1995, over thirty-four thousand residents and fellows trained within the VA, more than one-third of total slots.¹⁶ However, the percent of positions funded by the VA has fallen to 9%. The Department of Defense also sponsors another \$200 million of training in military hospitals.
- The Health Resources and Services Administration (HRSA), through its Bureau of Health Professions (BHP), also supports the training of physicians and other health professionals through grants totaling about \$300 million a year. Grants are each generally under \$300,000 a year and authorized by Title VII of the Public Health Service Act. They are given to training programs in primary care medicine, pediatrics, family practice, and public health dentistry as well as medical school primary care departments to support the production of health professionals from diverse and disadvantaged backgrounds in primary care. They are subject to an annual appropriations process.
- The Children's Hospital Graduate Medical Education (CHGME) Payment Program, also run by HRSA, was authorized in 1999. The authorization extends through 2005 (through the Children's Health Act of 2000) and distributes approximately \$300 million a year to freestanding children's hospitals that train pediatric residents and fellows. The legislation was intended to provide explicit support for pediatric GME

¹³ Newhouse JP, Wilensky GR. Paying for graduate medical education: The debate goes on. *Health Aff (Millwood)*. 2001;20:136-147.

¹⁴ T M Henderson. Medicaid's role in financing graduate medical education. *Health Affairs*, January/February 2000; 19(1): 221-229.

¹⁵ Gronvall JA. The Veterans Administration And Graduate Medical Education. *Health Aff*. 1988;7:163-167.

¹⁶ Stevens DP, Holland GJ, Kizer KW. Results of a Nationwide Veterans Affairs Initiative to Align Graduate Medical Education and Patient Care. *JAMA*. 2001;286:1061-1066.

at a level closer to that enjoyed by adult teaching hospitals with significant Medicare discharges. However, while Medicare is an entitlement, the CHGME payment program is limited to a fixed appropriation and must be prorated among eligible hospitals by formula.

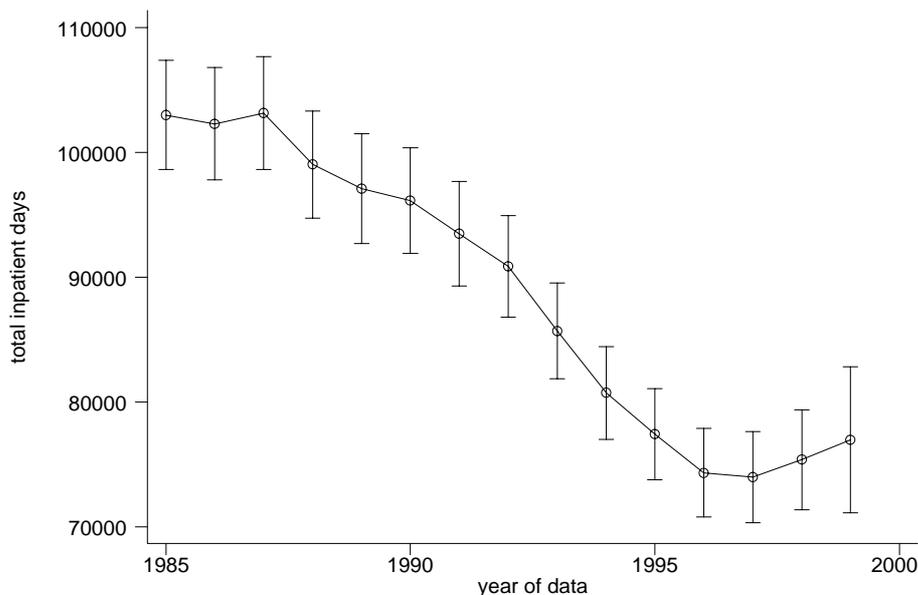
Impact on the US Physician Workforce

US undergraduate medical education expanded throughout the 1960's and 1970's (funded in part by state and federal grants) but has remained largely stable since 1980 (about 16,000 allopathic students graduate annually). The subsequent growth in GME that occurred from 1985 onward occurred despite this stable pool of medical students, largely through the contributions of IMGs and the increasing tendency of medical school graduates to subspecialize. Doctors of osteopathy (DO) have also grown to almost 3,000 graduates a year and more than half enter ACGME accredited residency programs after completing UME.

GME Financing and Workforce Policy

Even before GME funding was explicitly made by Medicare, teaching hospitals may have been influenced by the public perception of shortage or surplus. The most significant workforce impact came with the DME/IME funding streams created in 1985. The next 10 years saw major growth in GME positions, from less than 70,000 in 1984 to almost 100,000 positions in 1995, concurrent with the increases in GME funding made through Medicare. However, the number of GME positions appeared to plateau well before restrictions on GME financing came about in 1997. This may be due to the service related functions of residents and fellows and the decrease in inpatient volume experienced in the US throughout the early and mid 1990's (Figure 4). Similarly, the recent slow but clear growth in US GME slots may be related to continued increases in subspecialization as well as an increase in inpatient volume while constrained by a cap on the number subsidized GME positions.

Figure 4. Average inpatient days per hospital, 1985-1999



About one-third of the growth in GME positions has been attributed to GME payment policies, particularly IME payments. That is, it is likely that one-third more physicians were trained between 1985 and 1997 than would have been without explicit GME payment policies through the Medicare system.^{17,18} Despite these explicit payment mechanisms, the discrete costs of training remain difficult to calculate. Public subsidies for Medicare's share are almost \$8 billion annually, but two-thirds of these payments are intended to cover the costs of other teaching hospital costs such as research and unmeasurable severity of illness in their patient population. However, if one assumes an average of \$100,000 a year in direct costs alone, yearly training costs at US teaching hospitals would be close to \$10 billion.

Trade-offs in considering physician workforce expansion

Health care spending, though higher in the US than in any other OECD country, has been a less important issue to US voters than national defense/security and general economic viability. Among health care issues, out of pocket payments seem to be of greater concern than any potential workforce shortages, limiting the likely desire for public investment in the growth of the medical workforce. However, this may change if more individuals are forced to wait for access to services or providers.

National attention in health care has recently centered more upon issues related to quality of care and the potential efficiencies produced by electronic medical records (EMR) and other aspects of health information technology (HIT). While widespread adoption of such technology would likely cost over \$150 billion, the current administration has predicted that adoption of HIT will help decrease the national health care bill by as much as 20 percent, though this is highly debated.^{19,20}

Public spending priorities generally are debated within the context of the Medicare trust fund, which has relevance for the rest of the health care system in that its policies are often adopted by private payers. In some years, Medicare spending on physician services grew at an average annual rate of 13.4 percent. This was largely driven by increases in the number of services provided to each beneficiary (volume) and an increase in the complexity and costliness of those services.²¹ Medicare has played a role in limiting expenditures on physician services through legislation enacted in 1989 which required the establishment of a physician fee schedule and a system of spending growth targets that became effective in 1992. In 1998, the sustainable growth rate (SGR) system of

¹⁷ Grover A. What did \$100 billion in Medicare subsidies to teaching hospitals buy? Doctoral dissertation. Johns Hopkins University 2004.

¹⁸ Nicholson S, Song D. The incentive effects of the medicare indirect medical education policy. *J Health Econ.* 2001;20:909-933.

¹⁹ Kaushal R, Blumenthal D, Poon EG, et al. The costs of a national health information network. *Ann Intern Med.* 2005;143:165-173.

²⁰ <http://www.whitehouse.gov/news/releases/2004/10/20041021-15.html>

²¹ GAO

spending targets was enacted to “moderate growth in the volume and intensity of services provided to beneficiaries...The establishment of a fee schedule was an attempt to break the link between physicians’ charges and Medicare payments. The fee schedule was not designed to reduce spending levels overall but to redistribute payments for services based on the relative resources used by physicians to provide different types of care.”²²

The SGR did successfully limit the growth in volume and intensity of services from 1992 until 1999; the average annual increase in Medicare spending due to changes in volume and intensity of services per beneficiary was about 1 percent. In contrast, the growth rate between 1985 and 1991 was 7 percent annually.

However, the SGR is likely unsustainable in the long term. The 2004 Medicare Trustees Report announced that, under SGR, the projected physician update would be about *negative* 5 percent for 7 consecutive years beginning in 2006; that is, a cumulative reduction in physician fees of more than 31 percent from 2005 to 2012. Physicians’ costs of providing services during this time are projected to *rise* by 19 percent.

While inpatient costs are covered under Part A of the Medicare program and are separate from physician costs, they are largely under the control of physicians who direct care in the US health system. In the final analysis, Medicare spending for outpatient physician services will be limited by the amount of money that seniors are willing to spend on outpatient premiums, which must be balanced with the following year’s expected outlays for services. These costs essentially represent the capacity of the system, and any increase in physical or human resource (i.e., physician) capacity will be budgeted accordingly. Under the present system, any increase in physician payments will be at least partially shouldered by Medicare beneficiaries.

Medicare beneficiaries are unlikely to want to bear the full costs of increasing physician payments and may even be able to pass them on to other taxpayers, raising continued questions about how and what amounts to pay physicians for services—through Medicare and elsewhere. However, a balanced dialogue may be difficult to achieve when one considers that, in the US, 70% of Americans age 65 and older vote compared with only 36% of 18 to 24 year olds. As Joseph Newhouse points out, we may “assume that an increasingly graying society will want to spend a greater share of its money on pensions and health care for the elderly. But Medicare and Social Security both rely on a substantial component of payroll-tax financing, the burden of which falls primarily on nonelderly workers...It is unclear whether there would be political support for such a large transfer of resources from the nonelderly to the elderly.”²³

A secondary but equally important set of questions has been raised in recent research by Fisher and colleagues at Dartmouth University: Do more services (and more spending) equate to better care? An analysis of spending and health outcomes in high- and low-utilization cohorts of Medicare beneficiaries found that discretionary visits, tests and hospital stays were responsible for unnecessary regional variations in Medicare spending;

²² <http://energycommerce.house.gov/108/Hearings/05052004hearing1263/Steinwald1962.htm>

²³ Newhouse NEJM 2004.

the authors concluded that “neither greater local availability of physicians and hospital beds nor the more inpatient-based and specialist-oriented pattern of practice that result are associated with improved access to care, better-quality care, or . . . better health outcomes or satisfaction.”²⁴

Much of the future discussion will be whether to expand physician services to meet ever-increasing demands of the elderly; what impact that increase in intensity and delivery of services actually has on outcomes; and how much the young are willing to fund the care of the old—and when this will it become politically infeasible.

As of 2005, the issues of public health (except as related to emergency preparedness), caring for the uninsured, and the maldistribution of physicians in the US are not likely to be considered in the next 5 to 10 years. Instead, the increasing health care demands of a growing and aging baby boom population—and the manpower necessary to meet them—are likely to face the looming reality of the costs of providing such care.

²⁴ Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, Pinder EL. The implications of regional variations in medicare spending. part 1: The content, quality, and accessibility of care. *Ann Intern Med.* 2003;138:273-287.