

e2 Economic Considerations in the Practice of Medicine

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The enormous and continuing growth of health care spending in the United States and many other countries over recent decades has focused attention on the causes, consequences, and possible responses to rising expenditures on health care. A variety of strategies to control costs have been developed that have made it increasingly important that physicians and other health care professionals understand a wide range of economic considerations in the practice of medicine.

HEALTH CARE COSTS

Between 1960 and 2005, health care spending in the United States increased from about \$27 billion to \$2.1 trillion. This growth in spending was about 2–3% higher per year than growth in the overall economy, causing health care spending to rise from 6% of gross domestic product to >16%. This increase in spending has produced enormous challenges for everyone who pays for health care. For government, these challenges include rising federal, state, and local government health care budgets, which have required increases in taxes. For firms and their workers, the biggest challenge is the high cost of insuring workers, which causes employers to drop (or reduce) health insurance coverage, to move jobs overseas, or to reduce wages. The rising cost of insurance coverage that is passed on to workers also increases rates of uninsurance, because some workers choose to forego insurance even when it is available or take jobs that do not offer insurance coverage. The increasing cost of medical care also raises the cost of any attempts through public policy to provide insurance coverage to the >45 million Americans who now lack health insurance. Increased out-of-pocket costs for patients are also a common outgrowth of rising health care expenditures. Overall, about 15–20% of health care costs are now paid out of pocket by consumers. Because some persons consume no health care, the fraction of health care costs paid out of pocket by persons who actually use health care is even higher, ~35% of their total health care costs.

The combination of rising costs and high rates of uninsurance, along with the knowledge that many other developed countries spend only about half as much on health care yet are able to provide universal coverage and have health outcomes that are as good as or better than those in the United States, has understandably created widespread concern that the U.S. health care system is neither as efficient nor as effective as it could be. This, in turn, has produced many efforts to understand the causes of increased costs and to improve the delivery and financing of health care in the United States.

Causes of Rising Costs Many causes of the rise in health care costs have been suggested. An aging population is commonly cited but has actually contributed rather little to recent increases in per capita spending. One reason for this is that, unlike the large cohort of baby boomers who will reach old age in the coming years, the cohort of persons born during the Depression Era of the 1930s who have reached retirement age in recent years is relatively small, because birth rates were low during that depression. Another reason that aging has not contributed so greatly to increasing expenditures is that improving health during old age has tended to delay the onset of serious illness and high health care expenditures. Another commonly suggested cause of rising expenditures has been medical malpractice and resulting defensive medicine, but evidence suggests that this is not a large contributor to health care costs in the United States. Administrative costs have also been suggested to play an important role and are probably at least 10–15% of total costs for private insurance.

Despite the significant and rising number of persons who lack insurance in the United States, one possible cause of rising health care costs since 1960 for which there is strong evidence is the increasing in-

surance coverage of health care and resulting increases in demand for health care. Some scholars date the growth in health insurance coverage to the beginning of World War II when an Internal Revenue Service ruling established that employer-provided health insurance would be exempt from personal income tax. Today, employer-sponsored health insurance provides insurance coverage for ~60% of Americans. The growth of Blue Cross and Blue Shield insurance plans dates from this period of the establishment of employer-sponsored health insurance, and these plans formed a model for private health insurance in the United States. This was followed in the 1960s by the creation of Medicare and then Medicaid and a series of subsequent expansion of these programs. Nevertheless, based on data from the effects of health insurance coverage on the demand for health care, experts have estimated that these increases in insurance coverage account for only about one-quarter of the increase in health care spending since 1960.

Instead, most health economists now believe that the primary cause of increasing spending on health care is the development of new technologies that, on average, offer improvements in health that are of substantial value to patients. An illustrative example of this is the cost of treating an acute myocardial infarction, which grew at ~5% annually in real terms over the mid-1980s and -1990s. This occurred at the same time that the cost of the individual major treatments for acute myocardial infarction—medical management, fibrinolysis, percutaneous coronary intervention, and coronary bypass surgery—either fell or increased minimally. The change in the overall cost occurred because the more expensive treatment options (e.g., revascularization) were increasingly used over the less expensive ones (e.g., medical management). Most economists have concluded that similar increases in the use of new technologies explain most of the increase in health care spending over this period. Estimates of the value of these increases in spending in terms of health indicate that on average they have yielded benefits far in excess of their costs, suggesting that these changes are the result of expanding opportunities to produce increases in health that are valued well above the cost of producing them. However, a broad body of evidence also indicates that many new technologies are not worth their costs, and it has been suggested that the broad expansion of insurance coverage has increased the incentives to develop costly medical technologies, even when they are not worth their cost. These conclusions suggest that efforts to control the cost of health care must consider both immediate and longer-term effects and be acutely aware of the value of health that is produced.

THE DEMAND FOR AND SUPPLY OF HEALTH CARE

Demand and supply are the fundamental tools that economists use to analyze health care markets and the spending within them. The demand for health care derives ultimately from the desire of individuals to be healthy. Health economists think of health as a capital good (“health capital”) in the sense that it tends to be durable, so that health today contributes positively to health tomorrow. A logical consequence of this is that rational decisions about health involve thinking about benefits and costs both in the present and in the future. Although individuals cannot buy health, they can buy health care that they hope will improve their health. Because health care costs can be high and variable, health insurance is desirable to protect against the risk of catastrophic costs that could otherwise lead to bankruptcy and/or to limit access to health care.

Insurance can produce incentives to consume more medical care than individuals would purchase if they faced the true cost of care, but such inefficiencies need to be balanced against the financial and health risks of lacking insurance. Contractual limits on what insurance will cover are a strategy to address this tendency for excessive consumption but are often sources of controversy and patient dissatisfaction. One reason for this is that health care spending tends to be highly concentrated, with ~5% of the population accounting for 50% of total spending. This concentration of spending makes it difficult to use cost-sharing to control health care without having these costs fall heavily on a small fraction of individuals.

Because simple across-the-board cost-sharing can produce unacceptable financial risk, health care insurance is better constructed by

e8 designing a package of benefits that provides variable subsidies for access to different medical technologies that can improve health while leaving an acceptable level of financial risk and an affordable annual premium. These tradeoffs are increasingly being put in the hands of consumers as they choose among health plans. This has the advantage of allowing consumer choice but can also result in adverse selection in which people choose insurance plans based on their personal needs but, in so doing, undermine the ability of insurance to spread costs and risk among patient groups. An example of adverse selection would be if a low-cost plan were chosen only by healthy individuals, leaving sicker persons alone in the high-cost plan, which might then become unaffordable. These types of concerns greatly complicate the creation of successful insurance markets.

Medicare and Medicaid Medicare provides health insurance for almost all Americans age 65 and older. Established in 1965, Medicare covers both hospital care (part A) and physician fees (part B). In 2006 Medicare also began offering a prescription drug benefit (part D). Insurance coverage within Medicare has some idiosyncrasies that, in part, reflect its origins in being modeled based on private health insurance in the 1960s. These include lifetime caps on benefits and copayment rates that are sometimes lower for low-use patients than for higher-use patients. Medicare beneficiaries who can afford them can purchase supplemental Medicare (Medigap) policies that can sometimes fill these gaps in coverage. Medicare also interfaces with the Medicaid program to address the needs of lower income older persons, as discussed below.

The Part D program in Medicare addresses a long-standing need to provide older persons with better access to pharmaceuticals. This program has a complicated benefit structure, with varying copayment rates depending on an individual's prescription drug expenditures within the year. There are also significant variations in the coverage provided by different plans, but online tools are available at www.medicare.gov to help patients and their families to make informed decisions. Medicare Advantage is a program developed by Medicare to provide managed care options for Medicare beneficiaries. Patients in these programs generally give up flexibility in the providers they can see without paying for visits themselves but benefit from lower copayments for covered services or coverage for certain benefits that traditional Medicare may not cover. Medicare also has a special program that provides health insurance coverage for persons with end-stage renal disease.

Medicaid is an important source of insurance coverage for patients who lack private health insurance or Medicare and who cannot afford to purchase insurance on their own. Medicaid currently provides coverage to about 14% of the U.S. population. Like Medicare, Medicaid is managed by the Centers for Medicare and Medicaid services (CMS). However, unlike Medicare, Medicaid is a federal-state partnership with funding that is shared, and there is a great deal of variation across states as to who is eligible and what benefits are provided. In general, Medicaid tends to have lower copayments than other types of health insurance, which is important because of the limited income of the recipients of Medicaid. Older persons whose incomes and assets are low enough to qualify may be eligible for both Medicare and Medicaid ("dual-eligible"). One aspect of Medicaid coverage that is especially important for older persons and their families is that it pays for nursing home coverage for those whose income and assets are sufficiently low. For patients and their families for whom high health care costs and insurance coverage are major concerns, referral to a social worker, patient advocate, or another expert in health care costs is among the most valuable things a physician can do to help protect the family from unnecessary economic hardship.

SUPPLY OF HEALTH CARE

Physicians, nurses and other health professionals, hospitals, manufacturers of pharmaceuticals and devices, and researchers all provide key inputs into the health care system.

Health Professionals The economics of medical practice are shaped by the high level of investment in tuition and time (foregone earnings)

that physicians must make during their training. Typically, longer training periods are associated with higher earnings. Nevertheless, some specialties with the longest training periods still offer exceptionally high returns on investment. In a competitive market with free entry, one might expect the returns on investment to equalize across specialties as high earnings encourage more entrants into a field and lowers average earnings. This tends not to happen because entry into medical specialties is often tightly controlled by a variety of accrediting agencies in collaboration with medical specialty societies. In addition, the large role of government as a payer in health care makes physician reimbursement a political issue in which lobbying and other strategies for specialty influence play a role.

In the past, physicians usually owned their own practices, but this is increasingly less common in the United States as physicians more often work as part of large groups or for health plans. These models sometimes pay doctors fixed salaries, although incentives to see more patients are common. Incentives for physicians to provide services can lead to concerns about "demand inducement," in which physicians provide more care than is desirable because of the financial returns they receive from providing that care, but the evidence for this being common is not compelling. Legal constraints exist to prevent physicians from gaining economically from referring patients for the services of other providers.

Nurses and other health professionals also have complex labor market issues. Often the boundaries of practice between different forms of training (e.g., ophthalmologists and optometrists or nurse practitioners and physician assistants) are not clear, and so there can be intense competition between, as well as within, specialty areas.

Hospitals These are complex organizations that require expensive capital investments, a large and complex staff, and close ties with physicians. Most hospitals are not-for-profit (NFP), meaning that any surplus left at the end of each year must be reinvested in the hospital or the health of the community it serves. This contrasts with a for-profit (FP) hospital, which can return profits to shareholders and is not required to provide benefits to its community in the same way as NFP hospitals are required to. NFP hospitals are exempt from many taxes, but there is active debate about whether NFP hospitals provide as much community benefit as would be expected based on the subsidies that they receive. Hospital management in NFP hospitals is supervised by a board of directors that typically includes community, staff, and physician participation. In contrast, FP hospitals are managed by a corporate structure. However, managers in both NFP and FP hospitals use similar tools to analyze and improve the cost and quality of care they provide. Increasingly, management tools such as process mapping, human factors analysis, and continuous quality improvement approaches (e.g., plan-do-study-act cycles) are becoming essential tools of a modern physician leader.

The Pharmaceutical and Device Industries The pharmaceutical industry and its close cousin, the medical device industry, are among the most important aspects of the modern health care system and supply many of the products most responsible for improvements in public health, such as medications to treat hypertension, immunizations, and devices such as joint replacements and artificial lenses that allow the removal of cataracts. Concerns about the rising cost of pharmaceuticals, safety, direct-to-consumer advertising, and inappropriate marketing strategies have made the pharmaceutical industry and its regulators [e.g., the U.S. Food and Drug Administration (FDA)] the subject of a great deal of recent scrutiny. Another major concern is the rising costs of developing new drugs, which has recently been estimated to be in the vicinity of \$1 billion per new chemical entity brought to market. The rising cost of prescription drugs and concern that prices charged in the United States are above those charged in other countries have led to calls for efforts to control drug pricing in the United States. Attempts to bring down the costs of prescription drugs both in the United States and internationally must balance their short-term effects on the cost of health care with longer-term effects on the incen-

tives to produce innovative new drugs and effects on access to patients within and across countries with varying incomes and ability to pay.

Innovation Medical innovation is also produced by academia and government, often in close collaboration. The National Institutes of Health (NIH) is the source of the vast majority of federal funding for health research, with the Centers for Disease Control and Prevention (CDC) a distant second and the Agency for Healthcare Research Quality (AHRQ) and a variety of other federal agencies further behind. NIH, CDC, and AHRQ support basic, translational, and clinical research as well as a wide range of programs to support the training and ongoing career development of researchers. There are also loan repayment programs to encourage entry into research careers. The federal government also supports academic medicine through extra payments to academic medical centers through Medicare. Teaching hospitals have traditionally made profits on their clinical care that have allowed them to subsidize their educational and research activities, but the increasingly competitive health care market place is making this progressively more difficult. Therefore, it is more important that research activities be supported by government, private foundations, philanthropy, or industry.

Practice Variation Another major concern about health care spending is the large degree of variation in spending across small geographic areas around the United States. These variations in spending are due to variations in the rate at which expensive care is provided and yet do not appear to result in improved outcomes, suggesting that much of the excess utilization in high-cost areas is of little value. The causes of this excess utilization of services does not appear to result primarily from patient level factors or from differences in insurance coverage. Some have hypothesized that increased utilization of services results from increased capacity in some areas (“if you build it, they will come”). However, other experts have argued that variations in use across small areas may reflect differences in physician beliefs about appropriate practice patterns that are shaped by the influence of peers in their local area.

COST-CONTROL STRATEGIES

The rapid rise in health care costs over the past three decades has led to a variety of strategies to control costs. Some early programs focused on direct regulation of health care, such as the requirement that a “certificate of need” be issued by a local health authority before construction of a new medical facility can proceed. Other strategies have included direct regulation of payments through publicly established fee schedules for Medicare or Medicaid that often influence private payment rates. Sometimes fee schedules have been created with multiple policy goals. One example is the resource-based relative value scale (RBRVS), which was developed with the intent to realign incentives to encourage physicians to enter needed medical specialties (such as primary care) and be rewarded based on the effort and complexity of the work they do.

Prospective Payment This is probably the most important cost-control strategy that has been adopted in the United States. Under a prospective payment system, a health care provider is provided a fixed amount of money to provide care for a patient over a specified episode of care. This contrasts with a retrospective reimbursement system, in which a provider is paid based on the amount of care they provide. The most important example of such a system has been the Medicare Prospective Payment system. This was established in 1983 and replaced the prior system, in which Medicare reimbursed hospitals based on the specific services they provided with a system that provided a fixed payment for a hospital stay for any given diagnosis, classified according to one of several hundred diagnosis-related groups, or DRGs. This provided strong incentives to decrease hospital length of stay and costs and had large effects on hospital cost growth for several years. It was also coupled with the creation of Professional Review Organizations (PROs) that, among other things, sought to ensure that hospitals were acting appropriately in admitting patients according to

the criteria for each DRG, and providing quality care within that diagnosis. This linkage of quality improvement and payment policy was an important move in the history of Medicare, from serving merely as a payer to acting as an increasingly active manager of care.

Pay for Performance Today’s interest in pay for performance, in which providers receive higher reimbursement rates for care that meets specified quality indicators is an extension of this. Prospective payment is a key idea underlying the use of managed care organizations to control costs by providing a fixed payment for providing care for a patient over a given period of time. Because managed care organizations are responsible for all of the care of the patient over this time period, they may have more incentives and ability to provide integrated care. Health maintenance organizations (HMOs) and other managed care organizations may emphasize prevention as a key aspect of their strategy for managing care and controlling costs. However, the high rate at which individuals switch health care plans and the long period of time it takes for many preventive therapies (such as control of hypertension or diabetes) to exert their major benefits suggest that economic incentives for at least some forms of prevention are unlikely to be strong, even in HMOs. This is one motivation for the use of report cards for health plans, which often report on the rate at which various preventive care goals are met. As with prospective payment of hospitals, successful implementation of managed care requires the ability to adjust payments to reflect the underlying cost of care so that providers are not systematically penalized for caring for certain classes of patients. Likewise, development of tools to measure and reward the quality of care provided by managed care organization has arisen as a major priority for the field of health outcomes research.

Competition This has been another important strategy used to attempt to control costs. Competitive bidding for contracts in which only the low-price bidders are able to provide services, often called *selective contracting*, is now common in medical care and provides a powerful strategy to encourage providers to lower their prices and, accordingly, costs. Competition does not always lower costs, however. For example, when hospital reimbursement was retrospective, competition between hospitals tended to increase costs as hospitals provided more and more services to attract patients and were well reimbursed for them. In the era of prospective payment, competition has the opposite effect of lowering costs because hospitals can no longer charge insurers for added costs and because, with a fixed reimbursement, hospitals can be more profitable only if they lower their costs. The combination of competition and prospective payment may be particularly powerful in reducing costs but can also create incentives to decrease the amount of care provided to the sickest patients within a given category, the costs of whose care may often exceed reimbursement. For this reason, it is especially important that quality-of-care measures not neglect the special needs of the sickest patients.

Consumer-Driven Care Another cost-containment strategy that has recently received increasing attention is the idea of consumer-driven care, in which patients select an insurance plan tailored to their personal needs, but often with more limited coverage of certain services. Given the evidence on the effect of health insurance on the demand for medical care, consumer-driven health care will likely have only a modest effect on overall health care demand over the short run. Nevertheless, it is possible that there could be much larger effects over time if greater consumer sensitivity to cost leads to changes in the way new technologies are developed and their use diffuses. It is also possible—though still unproven—that the development of novel new insurance mechanisms, such as health savings accounts paired with high-deductible health insurance coverage for catastrophic care, could induce far more price sensitivity and cost control than was possible with traditional insurance arrangements.

Cost-Effectiveness Analyses In making medical decisions, especially in making decisions when costs are a concern, cost-effectiveness analy-

e10 sis and other approaches to technology assessment are an important source of evidence for decisions about when a medical technology is likely to be worthwhile. In cost-effectiveness analysis, the health benefits and costs of a medical intervention are compared to one or more other options by calculating a ratio of costs (C) to effectiveness (E), where the C/E ratio = change in health benefits/change in costs. Often benefits will be measured using a metric of *quality-adjusted life years*, or QALYs, which is a measure of life expectancy in which each year of life is weighted with a number between 0 (death) and 1 (perfect health) reflecting quality of life in that health state. In general, cost-effectiveness theory suggests that interventions that cost less than some threshold value per QALY (often \$50,000/QALY or \$100,000/QALY) would be considered cost-effective, though the appropriate threshold remains highly controversial.

In countries (such as the United Kingdom) where cost-effectiveness analysis is used to inform coverage policy, it is most commonly used as part of a broader process of technology assessment that may incorporate other forms of evidence, including expert judgment and political concerns emanating from patient and providers, and from producers of new technologies. It is generally agreed that cost-effectiveness analysis take a societal perspective, accounting for all costs and benefits of a medical intervention regardless of to whom they accrue. There is also a strong case to be made for considering multiple perspectives in a cost-effectiveness analysis. For example, a cost-effectiveness analysis done from the perspective of an HMO might find that intensive therapy for diabetes, for which most benefits are far in the future, is not cost-effective from a business perspective, even if it is cost-effective from a societal perspective. In such a case, knowing that the business case for this valuable intervention is not strong might help target attention to developing quality indicators to ensure that plans are making good efforts to encourage intensive therapy for the appropriate patients. Cost-effectiveness analysis can also sometimes be used to assess when it would be valuable to do more research on a technology in order to better characterize how it should be used.

Evidence-Based Medicine and Physician Practice Patterns To the extent that variation in practice patterns is an important contributor to higher health care costs, it becomes important to control practice vari-

ations by improving alignment of practice patterns using evidence on the costs and benefits of care. The scientific literature provides important data for such evidence-based practice. Nevertheless, it is well established that there are large gaps between the time evidence becomes available and the time it is incorporated into practice. As a result, a great deal of effort has gone into approaches that may be used to change physician behavior and to create systems-level changes that can support the better use of evidence in clinical care. Health information systems provide a variety of tools, and their increasing use has already begun to show promise in addressing practice variations to improve meaningfully both the cost and effectiveness of care.

Costs and the Clinician Economic concerns arise in clinical care on a daily basis. They range from patient-oriented concerns (such as out-of-pocket costs or insurance purchase decisions) to system-oriented concerns (such as hospital or health plan management) to physician-oriented concerns (practice management and personal earnings). To be fully effective, physicians need to develop and maintain an understanding of these economic considerations in the practice of medicine and to reflect them in their professional behavior.

FURTHER READINGS

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