High and Rising Health Care Costs. Part 1: Seeking an Explanation

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The United States has the most expensive health care system in the world, with per capita health expenditures far above those of any other nation. For many years, U.S. health care expenditures have been growing above the overall rate of inflation in the economy. A few experts have argued that high and rising costs are not such a serious problem. Most observers disagree with this view, pointing to the negative impact of employee health care costs on employers, the government budgetary problems caused by rising health care expenditures, and an association between high health care costs and reduced access for individuals needing health services.

Several explanations have been offered for high and rising health care costs. These include the perspectives that high and rising costs are created by forces external to the health system, by the weakness of a competitive free market within the health system, by the rapid diffusion of new technologies, by excessive costs of administering the health system, by the absence of strong cost-containment measures, and by undue market power of health care providers.

This article, the first in a 4-part series, discusses 3 perspectives on health care: 1) Are high and rising health care costs a serious problem? 2) Are rising costs explained by factors outside the health care system? 3) Does the absence of a free market in health care explain why costs are high and rising? The remaining 3 articles in this series address other perspectives on health care costs.

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"Rising-health-care-costs" has become a household word—and worry—for the general public, governments, and employers who purchase health care for their employees. In 2002, the United States spent $5267 per person for health care. Switzerland, the second most expensive health system, posted a per capita figure of $3445, two thirds of the U.S. amount. The third, fourth, and fifth most costly health systems, those of Norway, Canada, and Germany, reported 2002 health expenditures per capita less than 60% that of the United States. The United Kingdom, a frugal system, spent $2160 per person in 2002, 41% of the U.S. amount (1).

Not only does the United States outspend other nations in health care, but U.S. health care costs are growing rapidly. From 1988 to 1993, U.S. health expenditures rose by 9.7% per year. Following a slowdown from 1993 to 2000, costs jumped by 8.5% in 2001, 9.3% in 2002, and 7.7% in 2003 (2, 3). The health care sectors with the most rapid growth in cost are prescription drugs and administrative costs of private health insurance (each increasing at 11% to 16% over the past 3 years). Hospital and physician expenditures have been growing at annual rates closer to 7% to 8% over the past 3 years (3).

The federal government projected an average annual growth rate of 7.2% through 2013, with health expenditures (**Table**) rising from $1.6 trillion in 2002 (14.9% of gross domestic product, the value of all goods and services produced in a nation) to $3.6 trillion by 2013 (18.4% of gross domestic product) (4). It is undisputed that U.S. health expenditures are high and rising, but the mechanisms behind these phenomena are a topic of debate.

This article begins a 4-part series on health care costs. The series presents a variety of perspectives on costs and cost-control strategies. An overview of a complex topic, written by a noneconomist for noneconomists, the series addresses the following questions:

1. Are high and rising health care expenditures a serious problem, or is the national preoccupation with health care costs excessive?
2. Why are health care expenditures higher in the United States than in other countries?
3. Why are health care expenditures growing so fast?
4. What strategies are available to slow the rate of growth of health expenditures?
5. Do any strategies exist that enable physicians to reduce costs while improving or protecting quality?

Articles 1, 2, and 3 address the first 4 questions through discussions of 7 different perspectives on health care costs. The final article searches for health policy's Holy Grail: cost-containment strategies that protect or improve health care quality.

A Quick Synopsis of the Health Care System

Four major actors occupy the health care stage: purchasers, insurers, providers, and suppliers (8). Purchasers, including employers, governments, and individuals (some of whom are patients), supply the funds. Insurers receive money from purchasers and reimburse providers. The government can be viewed as an insurer or a purchaser in the Medicare and Medicaid programs. The term "payer" refers to both purchasers and insurers.

Providers include physicians and other health professionals, hospitals, nursing homes, home care agencies, and pharmacies. Suppliers—the pharmaceutical, medical sup-

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Table. **How Are Health Care Costs Measured?***

Costs and expenditures are technically not the same.

Expenditures denote how much is spent to purchase a good or service (e.g., Blue Cross spent $1500 for 1 hospital day for 1 patient).

Costs refer to the production process: the value of resources used to produce a good or service, including personnel, equipment, interest on borrowed funds, and a return on investment (5).

In popular usage, however, costs and expenditures have come to mean the same thing. The papers in this series apply this popular usage, referring to "costs" and "expenditures" interchangeably to describe what is spent to purchase a health care product or service.

Nominal expenditure growth is the difference between dollars spent in one year and dollars spent in a previous year. For over 50 years, health expenditure growth has exceeded overall inflation in the economy. *Real* expenditure growth measures health expenditure growth in excess of overall inflation. If health spending is $1 trillion in 1999 and $1.1 trillion in 2000, nominal expenditure growth is 10%. If the overall rate of inflation during that period was 10%, real expenditure growth would be zero. These articles use nominal expenditure growth.

There are different ways to express health expenditures. Articles emphasizing the severity of the cost problem may use private insurance premiums to make their point. For example, two employers "faced premium increases of 13 percent and 25 percent, respectively, in 2002" (6). Private premium increases do not correlate with national health expenditure growth because government expenditures—providing 45% of the health care dollar—have risen more slowly than private health insurance costs (2). Health insurers may increase premiums rapidly to make up for past financial losses (4, 7). Private premium growth is not a reliable measure of health expenditure growth.

A commonly used measure is health expenditures as percentage of GDP. This measure is problematic because GDP growth varies from year to year. During the upbeat 1990s economy, GDP grew rapidly. Thus, health spending as a proportion of GDP remained the same, about 13.3% (4), giving the false impression that health expenditures did not increase. In fact, per capita health spending grew 35% during those years. In the first few years of the 21st century, with the economy stagnant, GDP rose slowly, creating an exaggerated rise in health expenditures as a proportion of GDP.

Another frequently used measure is health expenditures per capita, which reveals how much is spent on the average person's health care in a year. This statistic is often used to compare one country with another, as well as to track expenditures over time.

* GDP = gross domestic product.

ply, and computer industries—manufacture equipment, supplies, and medications used by providers.

Each dollar spent on health services represents an expense to payers and revenue to providers and suppliers. Payers generally wish to reduce the dollars flowing into health care, while providers and suppliers want to increase those dollars. Payers want to contain costs; providers and suppliers resist cost containment. That conflict is the fundamental battle in the health care economy.

Secondary skirmishes complicate this battle. Although insurance companies are payers and try to reduce reimbursements to providers and suppliers, they want more money from purchasers. Providers and suppliers may engage in ferocious conflicts; for example, hospitals purchasing pharmaceuticals negotiate for a low price while pharmaceutical manufacturers demand a high price. Providers may face off against one another. If a physician group receives a capitation payment from an insurer, primary care physicians and specialists may fight over how much of the capitation check goes to each group.

Health care costs represent a battleground among competing interests (**Figures 1** and 2).

Varying Perspectives on Health Care Costs

The literature—scientific, commercial, and popular—on health care costs contains a variety of perspectives on why costs are high and how to control their growth. While few analysts adhere to only 1 of these views, the perspectives can be grouped into 7 categories.

1. High and rising costs are not such a serious problem.

2. High and rising costs are a problem, but they are created by factors external to the health care system.

3. High and rising costs are caused by the absence of a free market; the remedy is to give patients more responsibility for costs of care and to encourage competition among health insurers and providers.

4. High and rising costs result from medical technologies creating innovation in the diagnosis and treatment of illness.

5. High and rising costs are in part the result of excessive costs of administering the health care system.

6. High and rising costs are explained by the absence of strong cost-containment measures.

7. High and rising costs are the result of the market power of health care providers.

I take each of these perspectives in turn and examine some arguments pro and con, linking differing cost-control strategies to some of these perspectives. In this article I cover the first 3 perspectives. In a few cases, agreement

Figure 1. **Where the health care dollar comes from, 2002.**

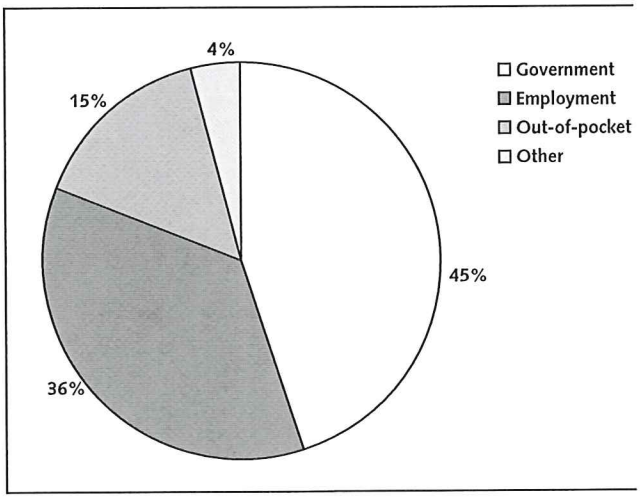

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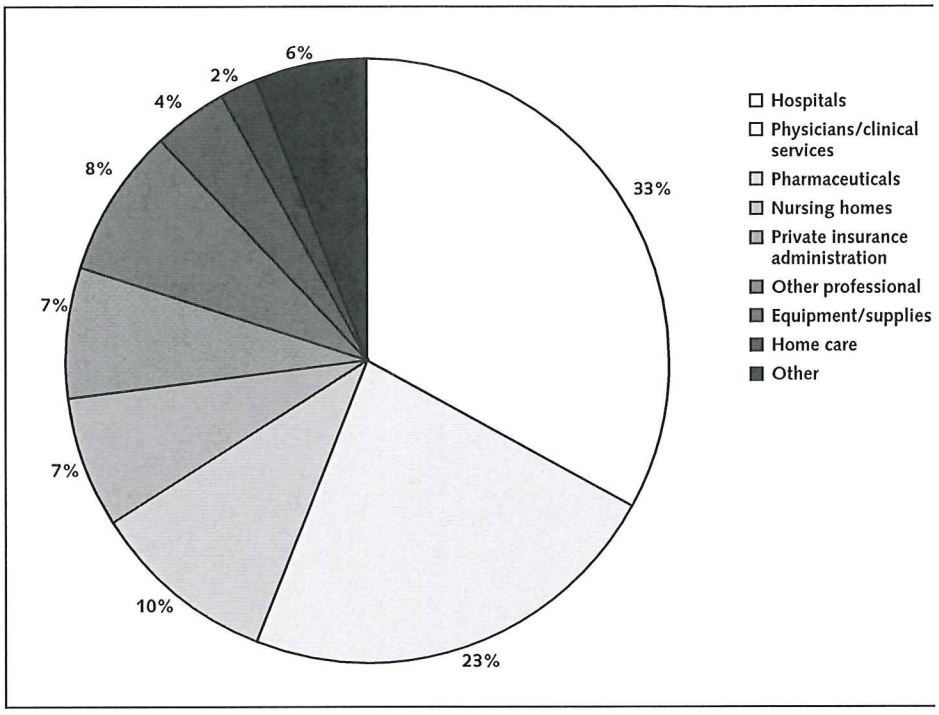
Figure 2. **Where the health care dollar goes, 2002.**



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among analysts is substantial. In other cases, disagreements are profound.

Perspective 1: Costs Are Not a Serious Problem

Some articles have argued that high and rising health expenditures present some difficulties but are not a serious problem. These writings point out that health care improves health outcomes, provides jobs and income, and delivers services that people desire; thus, increased health expenditures may be a good rather than a bad thing. Moreover, if the general economy is expanding, increases in health spending may not reduce spending on sectors outside the health care economy (9–11).

Organizations and individuals touched by the reality of costly health care do not share this opinion. Most employers, for whom the purchase of employee health insurance is an expense rather than a revenue, are anxious to reduce insurance premiums (12–14). If premiums were lower, employers could augment employee wages, reduce consumer prices, or increase profits (15, 16). Expanding government health expenditures create budget deficits and crowd out spending for education, police, fire, and other services (15). Rising costs increase the number of uninsured people through 3 mechanisms: Employers stop offering insurance to their employees (14, 17, 18), employees decline employer-offered health insurance because they cannot afford the employee share of the premium (19), and people are dropped from Medicaid as state governments respond to increased costs with eligibility reductions (20, 21). For the large proportion of the population that is uninsured or underinsured, higher costs make physician visits, preventive services, and prescription drugs less affordable, particularly for poor persons, elderly patients, and those in ill health (22–26). When costs rise and governments reduce reimbursements, institutions serving as the safety net for the uninsured may close their doors (27). These effects of rising costs demonstrate that increased cost often means decreased access.

In summary, while rising costs may not create major problems for the economy as a whole, they do negatively affect employers, employees, governments, and patients.

Perspective 2: High Costs Are Due to Factors External to the Health Care System

High health care costs might derive from factors outside the health sector rather than from characteristics of the health care system itself. One such external cause is the state of the overall economy. International comparisons of health spending consistently show that the level of health expenditures per capita is closely associated with total GDP per capita. In other words, richer nations spend more per capita on health care than poorer nations (28).

Although no one disputes this association, one key fact stands out: The United States is a striking outlier (**Figure 3**). For example, the U.S. GDP per capita is 150% that of Sweden, but U.S. health spending per capita is 240% that of Sweden (28). The same relationship is found between the United States and almost all other developed nations (29). The U.S. outlier status suggests that high and rising

costs in the United States cannot be explained simply by invoking GDP per capita.

Another possible external cause for rising health case costs is the aging of the populations of developed nations. Given that people older than 75 years of age incur per capita health expenditures 5 times higher than those of people age 25 to 34 years (30), it is logical to assume that nations with a higher proportion of elderly people would have higher per capita health expenditures than nations with younger age distributions.

Research, however, consistently shows that this demographic trend explains only 6% to 7% of health expenditure growth (30–32). A cross-national regression analysis of the effects of aging on health spending found no significant relationship between the percentage of elderly persons in a nation's population and national health spending (28, 30, 32).

Several factors explain this finding. The fraction of the population age 65 years and older is rising relatively slowly (30), and per capita health spending for the elderly is increasing more slowly than per capita spending for nonelderly persons (33), diminishing the cost impact of an aging population. While end-of-life costs are high, they are not increasing faster than health expenditures as a whole (31). While life expectancy is increasing, the number of years of disability is lessening, which is a cost-saving trend (34, 35). One caveat is that persons with multiple risk factors for serious illness have twice the rate of disability of those with no risk factors (36); the epidemic of obesity is a cloud on the cost horizon (37). In summary, rising health care costs are not strongly associated with the aging population and are therefore not an inevitable consequence of this demographic reality.

Perspective 3: The Absence of a Free Market Creates High and Rising Costs

Some policy experts argue that costs could be reduced by introducing an unfettered free market in health care (38–40).

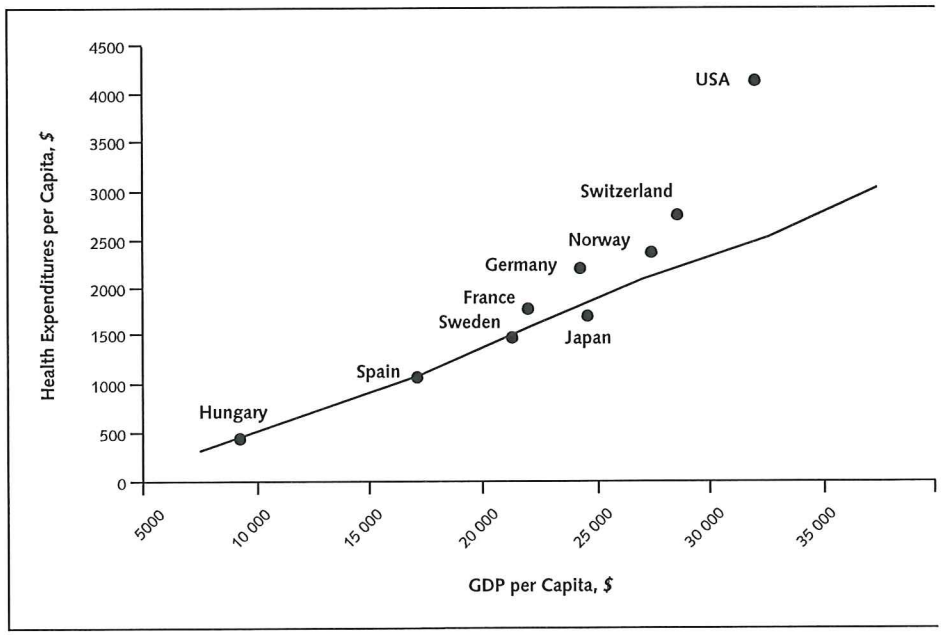
A market is a place where buyers and sellers make transactions. In a free, competitive market, the price of a product or service is determined by the forces of supply and demand; there are many buyers and sellers such that no single buyer or seller is able to set the price of a product or service; and each buyer has sufficient information to make rational purchasing decisions.

The health care sector of the economy consists of multiple markets. These markets include patients obtaining physician and hospital services, health insurance plans making contracts with hospitals, and employers choosing which health plans they will use to insure their employees.

At the level of patients seeking physician and hospital services, a free market means that patients, responsible for some or all of their costs, have sufficient information on the costs of different providers and seek low-priced physicians and hospitals. Physicians and hospitals would lower their fees to attract patients. In reality, patients do not purchase physician and hospital services in a free market, as shown by the following.

1. Patients cannot compare the cost of medical services because different health conditions lead to widely differing costs. A patient with a headache does not know whether

Figure 3. **Health expenditures and gross domestic product (*GDP*) per capita, 1998.**



Values are U.S. dollars (purchasing power parity international dollars). Data obtained from the Organization for Economic Cooperation and Development (1).

the cost of care will be a $50 physician visit plus a bottle of aspirin or $60 000 neurosurgery for a brain neoplasm.

2. Because most health care is a necessity rather than a luxury, private and government insurance has evolved to shield patients from the financial disaster of serious illness, obviating the need for patients to shop for lower-cost services.

3. A free market might lead to patients becoming more cost conscious, but low-income and sick people who are responsible for all or part of their health care costs may incur unaffordable expenditures and be priced out of receiving needed services.

At the level of health insurance plans choosing which hospitals their enrollees could use, a free market requires that a sufficient number of hospitals, competing on the basis of price, exists in each geographic region. At the level of employers choosing health insurance plans, a free market means that each geographic region contains an adequate number of competitive health plans; employers would seek out plans with lower premiums, and insurers would reduce their premiums to compete for employer contracts.

In reality, these transactions do not take place in competitive free markets. Hospitals and insurance plans have consolidated in most geographic regions (41, 42), and entry of new hospitals or health plans into a market is difficult, thereby undermining the price competition that is a necessary component of a free market.

Cost-containment strategies based on the free market perspective include increased patient cost sharing and competition among health care providers and insurers.

Patient Cost Sharing

An influential school of thought advocates that consumers should be responsible for a greater share of their health care costs. Employers are requiring employees to pay more for health insurance premiums, deductibles, and copayments (17). A deductible is the sum of money patients must pay to physicians or hospitals each year before the insurance company begins to pay for those services. A copayment is a small fee (often $5 or $10) that patients must pay for each health service received. Co-insurance is similar to a copayment but is the percentage (rather than a specific amount) of the cost of a service that the patient is responsible to pay. Taking the place of health maintenance organization (HMO) plans with no deductible and minimal copayments are products with $2500 deductibles and 25% co-insurance. Medical savings account plans may have deductibles reaching $10 000 (43, 44).

Advocates of the patient cost-sharing strategy cite as evidence the 1970s RAND Health Insurance Experiment, which compared health expenditures of patients receiving free care with those of similar patients paying for 25%, 50%, or 95% of their care out-of-pocket. Cost-sharing patients had an upper limit on their costs. The study found that patients receiving free care utilized more services and had higher expenditures than cost-sharing patients (45, 46). For example, people responsible for 50% of their costs up to $1000 had total health care expenditures about 10% below those receiving free care. Of note, expenditures for HMO patients receiving free care were 38% lower than those for patients in the free-care, fee-for-service group, suggesting that the replacement of fee-for-service insurance with capitated systems is more effective than patient cost sharing in reducing expenditures (46).

The effectiveness of patient cost sharing as a cost control mechanism has been challenged by other analysts (42, 47) and by the RAND investigators themselves (31, 46). From 1950 to 1984, the spread of health insurance coverage (that is, the reduction in patient responsibility for health care costs) explains only 5% to 10% of spending growth (31, 32, 46). Moreover, the United States has one of the highest levels of patient cost sharing among developed nations yet has the highest expenditures per capita.

Another fact buttresses the argument that patient cost sharing is marginally effective in containing costs: Seventy percent of health care expenditures are incurred by 10% of the population (48). It is likely that patients in the high-cost 10% (that is, those who suffer an acute catastrophe or prolonged chronic illness) are far too sick to impose limits on their care because they must pay for part of that care. Thus, 70% of health expenditures may be unaffected by shifting costs to patients. The RAND experiment did not study high-cost patients because the study excluded elderly persons, and study participants were not responsible for costs above $1000 per year (46). The RAND study found that patient cost sharing reduced the likelihood of seeing a physician but had little effect on the costliness of an illness once care was sought (49). Compared to the micro-world of one not-very-sick patient deciding whether to spend some money on a physician visit, patient cost sharing in the macro-world may remove only a thin slice from a large, expanding pie.

Competition

Controlling costs through free-market competition is an idea gaining currency in the United States. The barriers to a free market (discussed earlier in this section) make competition almost impossible at the level of patients paying out-of-pocket for medical services. However, competition is a realistic option for health insurance plans contracting with hospitals and purchasers choosing health plans.

Health Plans Contracting with Providers. Before the 1980s, hospitals competed for patients by competing for admitting physicians. To attract physicians, many hospitals constructed state-of-the-art radiology and surgical facilities. As a result of this "medical arms race," an oversupply of facilities existed in many metropolitan areas. This form of competition caused costs to rise rather than fall (50–52).

This situation reversed as health insurance plans—

which formerly paid any hospital that cared for its enrollees—began to contract selectively with hospitals agreeing to lower prices. Hospitals became less concerned with competing for physicians and more concerned with competing for patients by contracting with insurance plans. From 1980 to 1990, especially in California (where selective contracting was well developed), competitive markets were associated with lower hospital costs (50, 53, 54). In a competitive market, many firms (in this case, hospitals) exist and no firm has a major share of the market (55).

In response to insurers' success in cutting payments to hospitals that were competing for insurance contracts, the hospital industry consolidated, reducing the number of hospital entities and thereby reducing the amount of competition. From 1995 to 2000, the proportion of private hospitals in multihospital systems increased markedly; in some areas, 60% to 80% of acute private admissions went to hospitals in multihospital systems (56). Insurers could no longer force hospitals to accept low reimbursement rates because insurers needed contracts with the 2 or 3 hospital systems in each geographic market to guarantee accessible medical services to their enrollees (57).

Market power is the ability of a seller to raise prices without losing customers (58). Hospitals have market power if they can raise rates without losing insurance contracts. As hospitals consolidated and competition waned, hospitals gained market power and prices of hospital care shot back up (59–61). In 1 study, the merger of 2 competing hospitals led to price increases of 20% to 40% (62).

To summarize, there is a fundamental difference between the pre- and postselective contracting eras. In the former era, hospital competition led to higher costs; in the latter, competition has been associated with lower costs and lower hospital revenues, leading hospitals to respond in an anticompetitive manner through consolidation.

Purchasers Choosing Health Plans. Competition can also take place in the market of purchasers—employers or government—buying health insurance. An example is provided by the experience of Medicare HMOs, which are insurance plans that accept a fixed payment from Medicare for enrolled Medicare beneficiaries. Medicare hoped that a system in which HMOs competed to enroll Medicare beneficiaries would reduce costs. The result was the opposite: Costs went up for the Medicare program. To reduce their own costs, Medicare HMOs attracted healthier beneficiaries; HMOs had only half of fee-for-service Medicare's proportion of people in poor health (63). Medicare was paying several thousand dollars a year per patient for the 58% of HMO patients in good health (63), patients who would cost few dollars under traditional Medicare. As a result, Medicare paid HMOs between 13% and 21% more per beneficiary than traditional Medicare (64, 65). This particular form of competition was not successful as a cost reduction measure.

Another variety of competition in the purchaser–insurer market is "managed competition." Employers would provide employees a set amount of money for health insurance, perhaps $400 per month for a family. If the employee elected a health plan costing $600 per month, the employee would pay the extra $200 per month. To attract employees, health plans would compete to provide the lowest premiums, thereby reducing health expenditure growth (39). The competition was supposed to be "managed" (government-regulated) to prevent health plans from selectively enrolling healthy people, as in the Medicare HMO program.

Managed competition was never implemented because the consolidation of health insurance plans and hospitals undermined the potential for competition. In all but 14 states, 3 insurers control over 65% of the market; their market clout enables them to negotiate high premiums from employers with scant risk for losing customers (42). Higher concentrations of market share among a few HMOs are associated with higher HMO profits (55). Because managed competition has never been implemented, it is not known whether it can control costs (66, 67).

In summary, competition can reduce health care costs under favorable conditions. These conditions existed for a brief period in the 1990s. With many competing health insurance plans, employers were able to reduce insurance premium growth; as long as there were a multiplicity of competing hospitals, health plans could control payments to hospitals. The consolidation of health plans and hospitals may have put an end to that brief competitive era.

CONCLUSION

In seeking an explanation for high and rising health expenditures, the economics and health policy literature offers several perspectives. The aging of the population is not an adequate explanation, nor is the post-1950s' spread of health insurance, which reduced patients' responsibility for the costs of care. The lack of well-developed competitive markets in health care may be partially responsible for high health expenditures. The next article in this series will explore a more plausible explanation for high and rising health expenditures: technological innovation.

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High and Rising Health Care Costs. Part 2: Technologic Innovation

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Technologic innovation, in combination with weak cost-containment measures, is a major factor in high and rising health care costs. Evidence suggests that improved health care technologies generally increase rather than reduce health care expenditures. Greater availability of such technologies as magnetic resonance imaging, computed tomography, coronary artery bypass graft, angioplasty, cardiac and neonatal intensive care units, positron emission tomography, and radiation oncology facilities is associated with greater per capita use and higher spending on these services. Because the spread of new technologies is relatively unrestrained in the United States, many of these technologies are used to a greater extent than in other nations, and the United States thereby incurs higher health care costs. Nations with a greater degree of health system integration have relied on expenditure controls and global budgets to control costs. Although diffusion of technology takes place more slowly in more tightly budgeted systems, the use of innovative technologies in those systems tends to catch up over time.

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Article 1 in this series reviewed 3 perspectives on high and rising costs, presenting arguments on whether the cost of health care is a serious problem, citing evidence showing that demographic factors do not explain the trajectory of health care costs, and exploring the debate over whether a more competitive health care market with increased cost sharing by patients would result in cost containment (1). This article looks at 3 further perspectives on health care costs—the role of technologic innovation, the costs of administering the health care system, and the absence of strong cost-containment measures. Looking ahead, article 3 will examine the impact of health care provider behavior on high and rising costs (Table).

Perspective 4: Innovation Is the Driver of Health Expenditure Growth

Most, if not all, economists and policy analysts believe that technologic advance is a key driver of health expenditure growth (2–7). The example of acute myocardial infarction illustrates how medical innovation is associated with increased costs. Treatment has been transformed from 1 week of bed rest in the coronary care unit—with pharmacologic interventions to control cardiogenic shock, pulmonary edema, and arrhythmias—to thrombolytic therapy, angiography, angioplasty, or coronary bypass surgery. The innovations require more capital (cardiac catheterization laboratories), more labor (the time of physicians, nurses, and other caregivers), and more expenses associated with spread of knowledge (fellowships in interventional cardiology)—all of which cost money that was not spent 30 years ago (2).

Technologic advances are generally associated with increased rather than reduced costs. As the economist Henry Aaron points out, "Rapid scientific advance always raises expenditures, even as it lowers prices. Those who think otherwise need only turn their historical eyes to automobiles, airplanes, television, and computers. In each case, massive technological advance drove down the price of services, but total outlays soared" (8).

Laparoscopic cholecystectomy provides a medical example of this phenomenon. Whereas the price of a laparoscopic procedure may be 25% less than the price of open cholecystectomy, the rate of both types of cholecystectomy has increased by 60% (6, 9). The growth in quantity of services dwarfs the impact of per unit reductions in price.

Baker and colleagues (10) studied the availability, use, and costs of magnetic resonance imaging, computed tomography, coronary artery bypass graft, angioplasty, cardiac intensive care units, neonatal intensive care units, positron emission tomography, and radiation oncology facilities from 1998 to 2001. Greater availability is associated with greater per capita use and higher spending on these services. Increases in the number of cardiac facilities corresponds with an increase in the rate of use and the costs of coronary angiography, angioplasty, and cardiac intensive care. Although one might think that increased use of angioplasty would reduce the number of coronary bypass surgeries, greater availability of angioplasty is in fact associated with more bypass surgeries per population among people older than 65 years of age—a surprising finding that Baker and colleagues did not explain. Similarly, the availability of more magnetic resonance imaging units does not reduce the number of computed tomography scans performed (10).

Innovation has spread more widely and has commanded higher prices per unit of service in the United States compared with most other developed nations (2, 11). For example, the United States has about twice the number of magnetic resonance imaging scanners per capita compared with most developed nations. According to data collected during the second half of the 1990s, the United States had almost 3 times more cardiac surgery units and

See also:

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catheterization laboratories than Canada, Germany, and most other developed nations. In 1997, the number of coronary artery bypass surgeries per capita was about twice as high in the United States as in 15 other developed nations. For angioplasties, other nations have been gradually catching up with U.S. rates. In 1998. the rate of total revascularizations was more than twice as high in the United States as in most developed nations (2, 11).

Acceptance of new technologies by the medical profession is a major determinant of their rate of diffusion. Physicians in the United States expand the number of patients deemed eligible for new procedures more rapidly than do physicians in other nations, in part because the fee-for-service payments made to physicians and hospitals that use new diagnostic and therapeutic procedures are relatively generous (6, 12). Moreover, the rate of technology spread is related to the number of specialists in an area or in a nation, in part because specialists receive income from new technologies and insist that hospitals invest in facilities to support these technologies (6). Conversely, a hospital that is constructing innovative facilities may attract specialists to the community.

Is the rapid spread of medical innovation fueled by physicians, hospitals, and technology manufacturers or by patient demand? A recent survey found that people in the United States and Canada had greater knowledge and expectations of new medical discoveries than did people in Western European nations (13). It is likely that public attitudes are influenced by medical providers and suppliers that advertise new technologies through the mass media; the success of direct-to-consumer pharmaceutical advertising is an example (14). Given that public thirst for new technologies is similar in the United States and Canada (13), the far greater technology diffusion in the United States compared with Canada (2) suggests that the lack of regulatory constraints in the United States may be more significant than public demand as a key factor in rapid diffusion of innovation.

Are the Increased Costs of New Technology Justified?

Cutler and McClellan (15) argue that even though "technological change has accounted for the bulk of medical care cost increases over time," the medical advances have proved to be worth far more than their costs. These investigators compare the change in treatment costs resulting from medical innovations with the human benefits (measured in added quality-adjusted life-years) for 5 conditions: myocardial infarction, low birth weight, depression, cataracts, and breast cancer. They conclude that the benefits outweigh the costs for the first 4 conditions and are roughly equal for breast cancer.

An alternative viewpoint holds that although new technologies represent medical advances, they are prone to overuse and thereby excess cost. The work of Wennberg (16) and other researchers (17, 18) has shown persuasively that variation exists in care delivered by different physicians and in different regions of the country. Wennberg has said, "Lurking behind the variation in patterns of care are often huge hospital investments in expensive technologies that are directly tied to their economic stability" (19). This viewpoint does not deny that the benefits of new technologies may outweigh the costs but rather shifts the emphasis to the problem of inappropriate overuse of medical innovation. The cost problem, according to this perspective, is not a matter of technology but of technology diffusion.

Table. **Synopsis of This 4-Part Series on Health Care Costs**

Questions addressed
Are high and rising expenditures a serious problem?
Why are expenditures higher in the United States than in other countries?
Why are expenditures growing so fast?
What strategies are available to slow their rate of growth?
Do strategies exist that enable physicians to reduce costs while improving or protecting quality?
7 perspectives concerning health care costs
High and rising costs are not such a serious problem (Part 1)
High and rising costs are a problem, but they are created by factors external to the health care system (Part 1)
High and rising costs are caused by the absence of a free market; the remedy is to give patients more responsibility for costs of care and to encourage competition among health insurers and providers (Part 1)
High and rising costs are the result of medical technologies creating innovation in the diagnosis and treatment of illness (Part 2)
High and rising costs result in part from excessive costs of administering the health care system (Part 2)
High and rising costs are explained by the absence of strong cost-containment measures (Part 2)
High and rising costs are the result of the market power of health care providers (Part 3)

Limiting the Spread of New Technologies

A corollary to the theory that technologic innovation is the primary driver of health expenditure growth is that cost containment requires some limits on diffusion of technology (20). The ideal criteria for promoting diffusion of technology are based on scientific evidence: Do the health benefits of the new technology outweigh its potential harms, and do they improve on existing technologies? Another set of criteria are related to cost: Is the new technology cost-effective when compared with existing technologies? Health technology assessment is the process of evaluating the benefits, harms, and cost-effectiveness of a new technology (21). Health technology assessment can influence whether a technologic innovation for diagnosis or treatment will spread widely or wither away, because payers, whether Medicare, Medicaid, or private health plans, may deny payment for innovations that are deemed to be ineffective or minimally effective.

Many developed nations have agencies to conduct health technology assessment. Their work is shared internationally through the International Network of Agencies for Health Technology Assessment (22). The United States has no nationally coordinated policy on health technology assessment (21), a situation that reflects the diversity of

public and private organizations with an interest in controlling costs. Assessments are conducted by several entities, including the Veterans Affairs hospital system, the Technology Evaluation Center of the Blue Cross/Blue Shield Association, and the Medicare Coverage Advisory Committee (23). In addition, professional organizations perform technology assessment as part of their efforts to create clinical practice guidelines; examples include the Clinical Efficacy Assessment Project of the American College of Physicians, the Joint Guidelines of the American College of Cardiology and American Heart Association, and the Committees on Gynecologic and Obstetric Practice of the American College of Obstetrics and Gynecology.

Although technology assessment agencies have produced many high-quality scientific reports, their influence depends on the extent to which payers apply the findings to make decisions about coverage. In the United Kingdom, appraisals conducted by the National Institute for Clinical Excellence are expected to be followed at all levels of the National Health Service (24, 25). In the United States, pressure from specialists and manufacturers of technology competes with evidence-based technology assessment in determining the extent of technology diffusion (21). A study involving interviews with large insurers concluded that physicians who were early adopters of new technologies had considerable clout in influencing the coverage decisions of insurance companies. Manufacturers of innovative devices and equipment were also influential, whereas health care consumers played a minor role (20).

Health maintenance organizations (HMOs), which often require insurer approval of costly procedures, have the potential to reduce the spread of new technologies. Areas of the United States in which HMOs have greater market penetration experienced slower diffusion of magnetic resonance imaging into hospitals between 1983 and 1993, markedly lower rates of use of magnetic resonance imaging (12), and lower rates of coronary angioplasty among Medicare patients in 1984 and 1991 (7). Although the number of coronary revascularization procedures per capita was lower in HMOs than in fee-for-service plans, the rate of growth was equal in the 2 systems (26). These studies suggest that at a given point in time, HMOs have lower rates of use of new technology but that over time, these rates increase as rapidly as those in fee-for-service settings (7).

In summary, technologic advance is a major driver of health care costs. Overall, these advances improve quality but create major increases in expenditures. A technology can be overused if it is offered to patients for whom the innovations provide no benefit.

Perspective 5: High Costs Result In Part from Excessive Administrative Expenditures

In 1999, the cost of administration of U.S. health care was 24% of total national expenditures on health care (27). Administrative costs in the United States exceeded those of Germany by $360 per capita (11) in 1990 and were $489 to $752 (depending on method of analysis) per capita higher than those in Canada (27, 28) in 1999.

In 2002, the administrative costs of the federal Medicare program were 3% of the program's total budget, whereas those of the federal and state Medicaid program were 6.7%. These figures compare with 12.8% of total revenues for private health insurance plans (29). Not only do private health insurance companies spend more on administration than do public insurers, but the multiplicity of insurers, public and private, places a large administrative burden (especially for billing) on hospitals and physicians (27).

One reason for the low administrative costs of Medicare is a lack of advertising and marketing expenses. Moreover, the administrative apparatus of Medicare pays roughly 1 employee per 10 000 beneficiaries, whereas most large private insurers hire 15 or more employees per 10 000 enrollees (27, 30) An organization that is an exception in terms of the relatively high administrative costs of private insurers is the Kaiser Foundation Health Plan. This group-model HMO has self-reported administrative costs of about 4%. The low administrative overhead is related to the plan's financing of its own hospitals and physician groups through global budgets, which avoids expensive fee-for-service billing functions. It appears that more integrated and planned financing and delivery institutions—whether public (Medicare) or private (the Kaiser Foundation Health Plan)—can more successfully reduce administrative costs.

If U.S. administrative costs were suddenly reduced through a major simplification of the insurance system, tens of billions of dollars could be saved. If this simplification contains other cost-control measures, the rate of growth of total health expenditures could be reduced.

Perspective 6: Costs Are Rising Rapidly Because the U.S. Health Care System Lacks Strong Cost-Containment Measures

Many analysts perceive that spending on health care in the United States is high and rising because the entire system lacks structures to contain costs (31–35). This viewpoint does not negate the importance of technology innovation (see perspective 4) but argues that the lack of control over expenditures means that new technology has a larger impact on cost growth.

Effective cost containment requires that payers of health services adopt expenditure controls: that is, a limitation on the total amount of money available for health care services. Expenditure controls, while highly controversial, are effective. Two mechanisms of expenditure controls are expenditure caps and global budgets.

Expenditure Caps

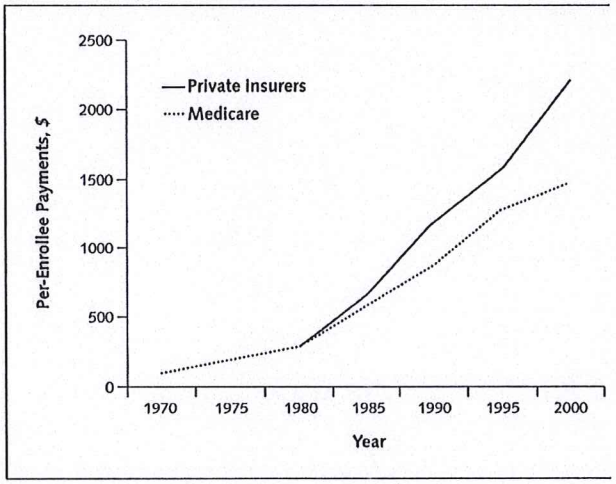
In health care systems that pay physicians on a fee-for-service basis, controls on physician fees may cause physi-

cians to increase the volume of services provided, presumably to protect their incomes (36–38). To prevent "volume creep," Canada and Germany have tied increases in physician fees to the quantity of physician services. Canadian provinces may set expenditure caps for physician services; if physicians increase the number of visits and procedures, the physician fee per visit or procedure is reduced later in the year to prevent physician payments from exceeding the yearly cap (39). In Germany, regional consortia of insurance funds, governments, hospitals, and physician organizations negotiate caps on physician expenditures by using similar formulas (40).

The U.S. Medicare program legislated a similar program in 1989, first called volume performance standards and now called the sustainable growth rate mechanism. This program is not a strict expenditure cap but rather a loose expenditure target. Under this program, if actual growth in physician spending exceeds a target amount, future updates to physician fees are reduced by that amount. An oversimplified example is as follows: Suppose that last year's spending target was a 10% increase, but the actual increase was 15%. If this year's target were set at a 5% increase, physician fees would not increase this year (41). According to Medicare data, this expenditure target mechanism was associated with a reduced average annual rate of growth of Medicare physician expenditures from 13.9% during the 1980s to 6.7% from 1990 to 1998 (42).

The implementation of Medicare expenditure targets has perpetuated inequities in payment between physicians in different specialties and geographic regions (43). Moreover, physician expenditure targets have little impact on overall national health expenditures because they apply only to Medicare rather than to all physician care and they do not affect hospital, pharmaceutical, and other services (41). These limitations notwithstanding, the ability of the public Medicare program to control costs more successfully than the private insurance sector is demonstrated by the lower cumulative rate of growth of Medicare spending between 1970 and 2000 (**Figure**) (44).

Figure. **Cumulative growth in per enrollee payments for personal health care, Medicare, and private insurers, 1970 to 2000.***



*Reference 44.

Global Budgets

In a globally budgeted system, expenditures for all services within the budget are set in advance. The budgets may set an overall figure or may specify expenditure limits on different components of a health institution or health system. The National Health Service of the United Kingdom is a globally budgeted system. Canada pays hospitals, but not physician services or pharmaceutical products, by global budgets. In the United States, the Veterans Affairs hospitals are paid through global budgets. Although the amount of a global budget could be unilaterally set by payers, most global budgets in Canada and Europe are negotiated between payers and providers (45).

Global budgeting of hospitals in Canada has been associated with slower growth of hospital spending in Canada compared with the United States (41). The National Health Service of the United Kingdom has held per capita expenditures very low. Global budgets can control expenditures because unless payers relent and allow a supplemental budget later in the annual cycle, the cost of services may not exceed the budgeted amount. Nations with global budgets may have difficulty controlling expenditure growth because of pressure from health providers and patients. To prevent global budgets from growing inexorably, nations may place limits on hospital bed supply, diffusion of new technologies, capital improvements, and the number of new physicians entering the workforce (45).

Effective global budgets require a single payer of health services or close cooperation among multiple payers, conditions that give payers strong bargaining power vis-à-vis providers. Advantages of globally budgeted systems are that they keep administrative costs low, do not require micromanagement by payers, and may delegate to providers the authority to determine how the budget will be allocated. Disadvantages are that the budget may be too small to allow high-quality accessible care, decisions on which hospitals or physician groupings should receive how much money are complex, and budgets can be politicized by special interests (40, 45). International comparisons demonstrate that new technologies are introduced more slowly in globally budgeted systems but often catch up over time (46).

CONCLUSION

The first half of this article focused on a potent driver of health care costs—innovative technologies—whereas the second half examined a similarly potent mechanism for controlling costs: limiting the amount of funds available for health care services through expenditure controls or

global budgets. In nations (such as Canada) and systems (such as HMOs) with tight budgetary controls, technologic advance is slower to develop but eventually drives costs upward. The imperative to innovate overcomes the effort to economize.

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High and Rising Health Care Costs. Part 3: The Role of Health Care Providers

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One commonly held explanation for high and rising health care costs in the United States points to the market power of health care providers. This third article of a 4-part series examines how the prices and quantities of health care services interact to influence health care expenditures. The article also reviews cost-containment strategies that are designed to reduce prices and quantities of services.

One major difference between the costs of care in the United States and those in other developed nations is the price per unit of care—physician fees, payments per hospital day, and pharmaceutical prices. Greater quantities of high-priced innovative technologies in the United States also contribute to higher expenditures in the United States compared with other nations. During the 1990s, payers were partially successful in slowing cost growth by reducing the prices of physician and hospital payments, but more recently, hospitals increased their market power by consolidation and could demand higher prices. Quantities and costs of services for Medicare beneficiaries vary markedly among geographic regions, with research showing an association between health care costs and the supply of hospital beds and specialist physicians. These findings suggest that limiting the supply of resources may reduce the quantity, and thereby the costs, of health services. Shifting the financial risk of health care costs from insurers to providers, as has been done with the Medicare diagnosis-related-group payment and capitation reimbursement, can also be effective in containing costs.

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The first article in this series discussed whether the cost of health care is a serious problem, presented evidence that demographic factors do not explain rising costs, and summarized the debate over whether free-market principles would contain costs (1). The second article focused on technology as a cost driver and discussed whether costs could be contained through expenditure controls or global budgets (2). This third article explores whether health expenditures are high because of the market power of health care providers and reviews the mechanisms that might control the prices and quantities of health care.

Perspective 7: Provider Market Power Explains High and Rising Costs

Market power is the degree of influence that an organization has over another organization (3). In economic terms, it is the ability of a seller to raise prices without losing business (4). Take the common example of health insurance plans buying hospital services: If the hospital (the seller) can negotiate a contract with the insurer that gives the hospital the reimbursement (price) it wants, the hospital has market power. If the insurer can prevent the hospital from raising its price by refusing to sign a contract with the hospital (causing the hospital to lose the patients enrolled in that insurance plan), the insurer has market power.

Some observers believe that provider market power explains much of the outlier status of U.S. health expenditures compared with those of other nations (5–7). According to this view, when payers have market power, costs rise more slowly; when providers or suppliers wield market clout, costs increase more rapidly. When health insurance developed in Canada, the market power of the sole payers of health services—provincial governments—enabled those payers to restrict prices paid to hospitals and physicians. In contrast, the U.S. health insurance industry was initially dominated by Blue Cross and Blue Shield, institutions that were controlled by hospitals and physicians. This uncontested provider market power allowed lucrative reimbursement formulas for hospitals and physicians. These formulas were replicated in Medicare as a result of the influence of Blue Cross, Blue Shield, the American Hospital Association, and the American Medical Association over the writing of Medicare regulations (5, 7). In addition, the pharmaceutical industry has deterred most governmental regulation of drug prices by using its influence over legislators (8). The result of the historical domination of providers and suppliers over payers has been a price structure far different from that of health care in most developed nations.

Provider market power can be curbed in 2 ways: by the countervailing power of purchasers and payers (governmental and private) and by governmental regulation. Regulation of hospital and physician prices began to appear in the 1980s; the countervailing power of purchasers and payers grew in the late 1980s and early to mid-1990s, but then waned. However, the prices of health services preceding those developments were already high relative to prices in other nations, and this historical gap has persisted.

The following sections explore whether high health care expenditures are primarily a result of high provider prices or large quantities of services, what cost-containment

See also:

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mechanisms are available to control prices and quantities of services, and how effective these mechanisms are. The price control and quantity control measures explained here are closely related to the expenditure control measures described in the second article in this series (2) (Table 1).

Prices of Services

One important difference between costs of care in the United States and those in other developed nations is the price per unit of care—physician fees, payments per hospital day, and pharmaceutical prices (10, 11). Even though the United States does not provide a greater quantity of physician visits per capita than other nations, physician income is 3 times higher in the United States than in the average nation that belongs to the Organisation for Economic Co-operation and Development. The ratio of average physician income to average employee compensation is 5.5 in the United States compared to 1.5 in the United Kingdom and Sweden (11). Physicians in the United States receive higher fees (prices) for similar services than do physicians in other nations (11, 12).

Each acute inpatient hospital day in the United States costs more than double that in Canada and almost 3 times the median of that in nations in the Organisation for Economic Co-operation and Development (11). Inpatients in the United States also receive more intensive treatment (quantity) per bed-day than do inpatients in other nations. What appears to be a price differential is in fact a mix of price and quantity differences.

To help tease out the influence of price and quantity, economists have calculated comparative prices of care for particular diseases and procedures. The average price of care for an acute myocardial infarction with angioplasty is 3 to 4 times greater in the United States than in 6 other developed nations. In 9 other nations, the prices of coronary artery bypass surgery were one fifth to one half that in the United States (10).

Many pharmaceutical products improve quality and prevent costly complications of chronic illness. However, the costs of these products has been increasing at a rapid pace—more than 15% each year from 1998 to 2002 (13). Comparing a similar "market basket" of medications, Canadian and French prices are about 60% and German and United Kingdom prices are about 85% of those in the United States. Differences are wider for brand-name than for generic products. Nations whose governments control pharmaceutical prices have reduced prices compared with the United States (14).

Price Controls

Controlling prices has been an effective mechanism of cost containment, particularly in nations other than the United States. Two experiments with governmental price controls have taken place in the United States. In the 1970s, President Nixon responded to inflation in the economy by instituting general price controls. Hospitals were not allowed to raise prices, and hospital costs slowed markedly. When the program ended, hospital costs shot back up. In the 1970s, 4 states (Maryland, Massachusetts, New Jersey, and New York) legislated mandatory hospital rate setting, thereby limiting growth in hospital charges. The programs applied to all payers, so that hospitals could not shift costs from 1 payer to another. These states created savings of 10% to 15%, with hospital cost growth 3% less than that in states without such programs (5, 15). Over time, as political forces weakened the legislation, the power of the regulators gradually eroded and hospital prices again increased.

In the 1990s, price controls on physician fees and hospital payments were administered by private insurers and by the government through Medicare. These controls were a major factor in slowing health expenditure growth. When the market power of insurance plans eroded because of hospital consolidation, hospital prices increased again (16, 17). Physicians, particularly in primary care, have not achieved economic clout because they have seldom consolidated into strong organizations; they therefore continue to feel the impact of reduced prices for their services.

For physician services, the effect of price reductions are partially offset by increases in the quantity of services provided (18). For every 1% reduction in Medicare physician fees, the volume of physician services increases by 0.56% (19). If Medicare cuts the fee for coronary artery bypass surgery, thoracic surgeons recoup about 70% of their revenue loss by increasing the volume of surgeries for both Medicare and private patients (18).

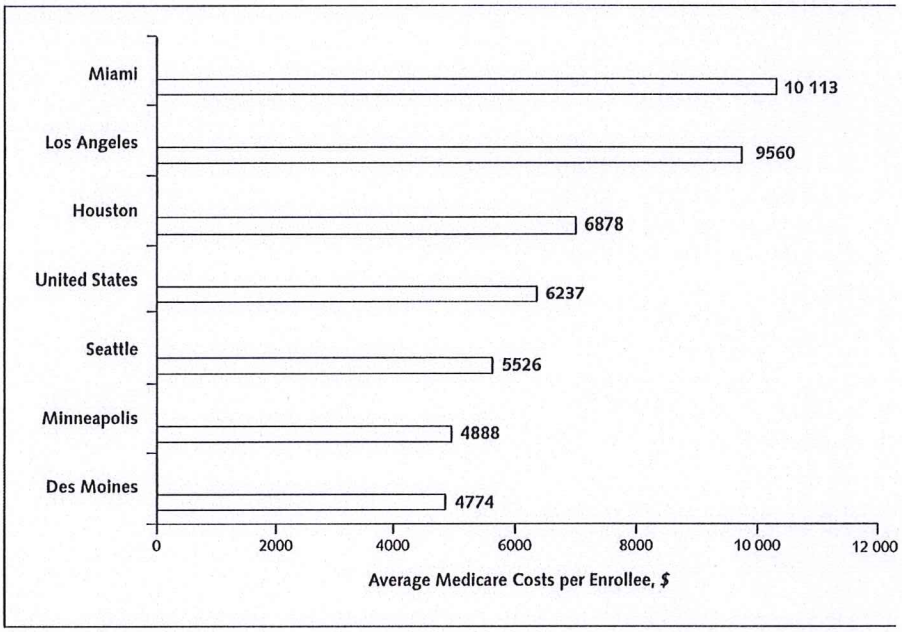
Quantity of Services

Nations that have more physicians and hospital beds or deliver higher quantities of physician visits and hospital days per capita might be expected to have higher health expenditures. The United States has fewer physicians, hospital beds, and acute care hospital bed days per capita than the median country in the Organisation for Economic Co-

Table 1. **Minding the Ps and Qs of Health Care Costs**

Because this article repeatedly refers to prices and quantities, it is worthwhile to review their meaning in the health care arena.
Health expenditures (*E*) are made up of 2 components: price (*P*) and quantity (Q) (9). The relationship can be expressed as $E = P \times Q$. More accurately, E = the sum of the Ps × Qs for each service or product utilized.
For example, a patient might visit Dr. Primary 10 times (quantity), paying a fee of $50 for each visit (price), for a total expenditure of $500. The same patient might see Dr. Specialty 5 times, paying a fee of $100 per visit, at the same $500 expense.
Ps and Qs are not quite that simple. Assume that a hospital day in the United States costs $1500 compared with a Canadian hospital day at $800—an apparent price difference for the same quantity of service. However, if the U.S. hospital day includes a higher intensity of care than the Canadian day, the apparent price difference is actually a combination of a price and quantity difference.
It is not always possible to separate Ps from Qs.

Figure. **Average Medicare costs per enrollee by hospital referral region, 2001.**



operation and Development (11). But the United States has a higher ratio of specialist to primary care physicians (20), and it is specialists who perform high-cost innovative procedures (21).

Why does the United States have a lower supply of providers but higher costs? There are at least 3 reasons. First, nations in which a greater proportion of physicians practice primary care medicine tend to have lower per capita health expenditures than does the United States, in which a greater proportion of physicians practice specialty care (20). Second, the price of hospital care is far higher in the United States than in other nations. Finally, even though the United States has fewer physician visits and hospital beds than do other nations, it has a greater supply of expensive new technologies and uses them more intensively (2).

Another influence on the quantity of services is the method of physician payment, which is predominantly fee-for-service in the United States. Economists debate whether fee-for-service physicians generate more visits, diagnostic procedures, or surgeries to increase their incomes, known as supplier-induced demand (22). Regardless of whether one calls it supplier-induced demand or physician beliefs about how intensively to treat patients (23), the groundbreaking research of Wennberg and Cooper (24) and Fisher and colleagues (25, 26) uncovered large variations in the quantity of care delivered to Medicare patients between 1 geographic area and another (**Figure**). (See also part 2 of this series [2].)

Age-, sex-, and race-adjusted spending for fee-for-service Medicare in 1996 was $8414 per enrollee in Miami compared with $3341 in Minneapolis. This remarkable difference is not explained by differences in prices, socioeconomic status, or degree of illness but is related to the quantity of services provided, which in turn is associated with the predominance of specialists in the higher-cost region (25). After controlling for socioeconomic characteristics and disease burden, residents of areas with a greater per capita supply of hospital beds are up to 30% more likely to be hospitalized than those in areas with fewer beds (27). Physicians appear to adapt their clinical decisions to the availability of resources: They admit more patients with less severe illnesses and extend their length of stay when hospital beds are available, seek more subspecialist consultation when more subspecialists are present, and order more computed tomographic and magnetic resonance imaging (MRI) scans when more of these facilities are at hand (25). Other researchers have confirmed these observations, finding that the number of surgical and orthopedic procedures performed per capita is associated with the supply of surgeons and orthopedists, respectively (22, 28) (**Figure**).

Differences in quantity of care do not necessarily directly correlate with differences in quality of care. A marked reduction in Veterans Health Administration hospital use was not associated with observed problems in quality among chronically ill beneficiaries (29, 30). Medicare enrollees in high-cost, high-quantity regions of the United States did not receive better quality of care for several conditions compared with a demographically similar population in low-quantity regions (25, 26, 30). States with high per capita Medicare spending—signifying increased quantity—had reduced quality according to several preventive and treatment indicators (30, 31).

If increased quantities of services result in increased

health expenditures, do strategies exist that can reduce the amount of services delivered, ideally reducing inappropriate rather than appropriate services?

Quantity Controls

Strategies to reduce the quantity of care include utilization management, limitation of the supply of resources, and shifting of financial risk to providers so that providers will benefit by delivering fewer rather than more services.

Utilization Management

In contrast to strategies to increase patient responsibility for costs, which try to reduce the quantity of services by influencing patient behavior, utilization management seeks to influence physician behavior. In the 1980s and 1990s, insurance plans denied payment for what they considered to be inappropriate services. These utilization management programs showed some cost savings (32) but angered physicians, who bristled at having to play "Mother, may I?" with insurers. Studies found that reviewers for the same case differed in their care decisions (33, 34) (**Table 2**).

Supply Limits

Supply limits are controls on the number of physicians or the quantity of health facilities, such as hospital beds or MRI scanners. The research showing that the quantity of services is associated with the supply of resources suggests that supply limits could be effective in reducing quantities of health care. In the 1970s, Certificate of Need programs required hospitals to ask permission to invest in more beds and expensive equipment (5). The program failed, perhaps because the boards making the decisions were not at risk for increased costs and had strong hospital representation. In contrast, Canadian governments are at risk for increased spending, and they have controlled medical facility spread (15). Supply limits are an alternative to utilization management as a quantity-limiting strategy. Metaphorically speaking, utilization management puts reins on physicians, whereas supply limits are akin to building a fence around the entire medical commons (39). If an excess of MRI scanners exist, utilization management would reduce the quantity of MRI scans by requiring preauthorization of scans. A constrained supply of MRI scanners keeps the quantity of scans in check through a limited number of MRI appointments.

Shifting of Risk to Providers

Under the fee-for-service system, the predominant method of provider payment in the United States, payers are at financial risk (that is, they pay out more money when more services are provided), and providers earn more money by providing more services. Changing the method of provider payment can shift the risk from payers to providers. Capitation payment shifts the risk from payers to providers: Payers spend a fixed amount of money regardless of how many services are delivered, whereas providers do not receive additional money, but spend additional time, when they deliver more services. Capitation payment is a quantity control. Diagnosis-related-group payment to hospitals also shifts risk to providers and discourages them from providing a greater quantity of services. Shifting risk to providers, therefore, is a strategy used by payers to recruit providers to their cost-control agenda. Because money flowing into the health sector through fee-for-service reimbursement produces more medical care and higher provider incomes, providers paid by fee-for-service are generally opposed to cost control. Payment that places the provider at risk for increased costs may turn cost-increasing providers into cost-controlling providers.

Diagnosis-Related Groups

Medicare's hospital reimbursement method, the diagnosis-related group, encourages hospitals to control their own costs. Hospitals that receive fixed diagnosis-related-group payments earn more money by increasing the number of admissions but lose money by increasing the length of stay of each admission (5). When the diagnosis-related-group system began in 1983, the acute length of stay for Medicare patients immediately decreased. Diagnosis-related groups reduced the level and the growth of Medicare inpatient hospital expenditures (40).

However, this system failed to slow the growth of total (as distinct from Medicare alone) national health care expenditures. According to the commission created by the U.S. Congress to study Medicare hospital payment, hospitals engineered shifts in costs to private payers—who did not adopt the diagnosis-related-group system—to make up for lower Medicare revenues. In 1990, private insurers were paying hospitals about 28% more for their patients' care than the care actually cost (15). The failure of the diagnosis-related group system to affect total national health care expenditures indicates the weakness of cost-control measures implemented by only 1 payer (15). During the 1990s, when private insurers joined Medicare in placing controls on hospital payments, hospital cost increases leveled off (13).

Table 2. **Malpractice and Costs**

One proposed driver of health care spending growth is the medical malpractice system, which encourages physicians to practice "defensive medicine" by ordering unnecessary diagnostic tests or treatments to avoid malpractice suits (35).
Kessler and McClellan compared costs between states with and those without effective tort reform legislation and estimated that defensive medicine may account for 5% to 9% of health expenditures (36), an estimate echoed by the U.S. Office of Technology Assessment (37).
These percentages would have to increase over time to affect health spending growth.
Defensive medicine is difficult to define because some "defensive" decisions confer benefits to patients (35, 38).

Capitation

By instituting capitation payment, payers try to involve physician organizations (medical groups and independent practice associations) in the payers' cost-control campaign. Because capitation payments are the same regardless of whether more or fewer services are provided, physician organizations seek to control the quantity of physician visits, specialty referrals, ancillary services, and pharmaceuticals. Studies show that the use of costly tests and procedures decreases in capitated environments (41, 42). Nations that use capitation payment tend to have lower health care expenditures per capita than do countries that rely on a fee-for-service system (10).

Studies in the 1970s came to the startling conclusion that capitated group- and staff-model health maintenance organizations, receiving capitation payments from purchasers and paying physicians by salary, achieved cost savings of 30% to 40% (43) relative to fee-for-service payment systems. A 1995 literature review found that these health maintenance organizations reduce services by 22% (44). In contrast, independent practice associations, which receive capitation payment from insurers but often pay physicians on a fee-for-service basis, had significantly more hospital days between 1985 and 1995 than did group- or staff-model health maintenance organizations and have not controlled costs (15, 45). Group- and staff-model health maintenance organizations institute supply limits to contain costs. In addition, their salaried physicians—in contrast with fee-for-service physicians—have no monetary incentive to increase services.

Summary

The strong historical influence of provider interests on the structure of public and private health insurance in the United States created lucrative reimbursement formulas for hospitals and physicians. As a result, hospitals and physicians in the United States were able to obtain considerably higher prices for their services than did providers of similar services in other nations (10, 11). Moreover, even though the quantities of physician visits and hospital days per capita have been lower in the United States than the average developed nation (11), the use of expensive technologies—which is also influenced by provider market power—is higher in the United States (10, 11). Thus, according to this perspective on health care costs, the gap between health expenditures in the United States and those in other nations is explained by the higher prices of all services and the greater quantities of high-technology services in the United States. Measures to control both the prices and quantities of services have been only partially and temporarily effective.

INTEGRATING THE 7 PERSPECTIVES ON HEALTH CARE COSTS

The first article of this series (1) posed 5 questions concerning health care expenditures: 1) Are high and rising expenditures a serious problem? 2) Why are expenditures higher in the United States than in other countries? 3) Why are expenditures growing so fast? 4) What strategies are available to slow their rate of growth? and 5) Do strategies exist that enable physicians to reduce costs while improving or protecting quality?

The first article also listed 7 perspectives concerning health care costs: 1) High and rising costs are not such a serious problem. 2) High and rising costs are a problem, but they are created by factors external to the health care system. 3) High and rising costs are caused by the absence of a free market; the remedy is to give patients more responsibility for costs of care and to encourage competition among health insurers and providers. 4) High and rising costs are the result of medical technologies creating innovation in the diagnosis and treatment of illness. 5) High and rising costs are in part the result of excessive costs of administering the health care system. 6) High and rising costs are explained by the absence of strong cost-containment measures. 7) High and rising costs are the result of the market power of health care providers.

Drawing on the discussions of these 7 perspectives, we will address the first 4 questions; the fifth question is the subject of the fourth article in the series.

Are High and Rising Expenditures a Serious Problem?

High and rising health care expenditures may not threaten the vitality of the U.S. economy, but they are a serious concern for groups within the economy: employers, employees, governments, taxpayers, and patients. For individuals and organizations who earn their income by providing or supplying health services—hospitals, pharmaceutical companies, and physicians—high costs may be beneficial.

Why Are Expenditures Higher in the United States Than in Other Countries?

Per capita health expenditures are far higher in the United States than in any other nation. The explanation for this fact varies with different historical periods. The gap between health care expenditures in the United States and those of other nations began more than 40 years ago (46) and was associated with hegemonic market power of hospitals and physicians, who were able to garner high prices for their services. While this price gap persists, a more recent development contributing to the widening difference between costs in the United States and those of other nations (47) is the more rapid diffusion of innovative technologies in the United States. The cost of administering the health care system is another reason why the United States is an outlier in its health care expenditures.

Why Are Health Care Expenditures in the United States Growing So Fast?

It is one thing to explain why costs of health care are high in the United States compared with the rest of the world. Understanding the growth of costs within the United States is a different matter. Provider prices and

administrative costs do not explain why costs increase so fast. An aging population has only a small influence on cost growth. Two interrelated factors appear to explain much of the rapid rise in health care expenditures: the spread of innovative technologies and a health system in which providers dominate the market. When payers curbed prices and quantities of medical services in the early 1990s, hospitals consolidated into systems that could command higher prices and fewer restrictions on quantities of services. Because most facilities for new technologies were located at hospitals, hospital market power enabled these technologies to proliferate. These technologies, if used appropriately for patients who would benefit the most, promise improved quality of care, but the increasing quantities of these high-priced services fuel health expenditure growth.

What Strategies Are Available To Control the Growth of Health Expenditures?

Making patients responsible for the costs of their care can reduce expenditures for patients with low levels of expenditures; however, there is no convincing evidence that patient cost-sharing reduces expenditures for the 10% of the population that incurs 70% of health care costs. During the early 1990s, competition showed some promise of reducing costs for purchasers seeking health insurance and for health insurers contracting with hospitals. However, consolidation of health plans and hospitals thwarted efforts to develop markets in which competition could occur. The absence of a competitive free market for health care services reflects the market power of providers.

Because technologic innovation in the environment of strong provider market power is associated with increasing expenditures, cost-containment efforts directed at these 2 factors may hold promise for slowing health expenditure growth. An example would be technology assessment programs that set standards of appropriate care, which are in turn linked to a system of provider payment that reimburses diagnostic testing and medical procedures only if they have been used appropriately.

Global budgeting and strict expenditures caps—a strategy to limit the total amount of money that flows into the health care economy—are potentially the strongest cost-control measures. Whether such a strategy can (or should) withstand the imperative for technologic innovation is doubtful. Although most medical advances diffuse more rapidly in the United States than in nations with expenditure limits, per capita use of new technologies in other nations is catching up to U.S. rates.

High and rising health care costs require a multifactorial explanation. How should physicians, who are major participants in the rising cost drama, think about this topic? Is expenditure growth a reasonable price to pay for improved quality? Or will costs rise so high that employers and individuals become unable to afford health care, thereby reducing access and—because quality requires access—also reducing quality? The final article of this series examines some cost-control strategies related to medical practice that may reduce costs while protecting or improving quality.

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High and Rising Health Care Costs. Part 4: Can Costs Be Controlled While Preserving Quality?

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Several interrelated strategies involving physician leadership and participation have been proposed to contain health care costs while preserving or improving quality. These include programs targeting the 10% of the population that incurs 70% of health care expenditures, disease management programs to prevent costly complications of chronic conditions, efforts to reduce medical errors, the strengthening of primary care practice, decision support tools to avoid inappropriate services, and improved diffusion of technology assessment.

An example of a cost-reducing, quality-enhancing program is post-hospital nurse monitoring and intervention for patients at high risk for repeated hospitalization for congestive heart failure. Disease management programs that target groups with a chronic condition rather than focusing efforts on high-utilizing individuals may be effective in improving quality but may not reduce costs. Error reduction has great potential to improve quality while reducing costs, although the probable cost reduction is a small portion of national health care expenditures. Access to primary care has been shown to correlate with reduced hospital use while preserving quality. Inappropriate care and overuse of new technologies can be reduced through shared decision-making between well-informed physicians and patients. Physicians have a central role to play in fostering these quality-enhancing strategies that can help to slow the growth of health care expenditures.

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In the first 3 articles, this series on health care costs offered a variety of explanations and remedies for high and rising health care expenditures in the United States (1–3). This final article addresses the question posed at the beginning of the series: Do strategies exist that enable physicians to reduce costs while improving or protecting health care quality?

The first 3 articles discussed various cost-containment methods: making patients more responsible for the costs of their care, encouraging price competition in health care markets, slowing the rate of diffusion of costly new technologies through effective technology assessment programs, reducing the administrative cost burden of the health care system, and counterbalancing the market power of health care providers and suppliers with expenditure caps or global budgets that limit the total amount of money flowing into the health care economy. Most of these approaches are policy initiatives that require the actions of governments or large health insurance plans. Except through political advocacy, physicians cannot readily affect these approaches. Other cost-containment strategies do fall within the purview of physicians' professional work. This article presents quality-preserving cost-control activities that involve physician leadership and cooperation. The strategies discussed overlap with one another; the common theme is the substitution of lower-cost ambulatory care for higher-cost emergency or in-hospital services (**Table**).

Reducing Use of Hospital and Emergency Departments by High-Cost Patients

Physicians are the first to appreciate a fundamental reality: Ten percent of the population accounts for 70% of health care expenditures. Fifty percent of the population—healthy persons—are responsible for only 3% of health care expenditures. These relationships have held steady from 1970 to 1996. In 1996, the healthy 50% incurred an average cost of $122 per person whereas the highest-cost 1% spent $56 000 per person (4). Serious cost control should focus on the high-cost members of the population.

Common diagnoses among the highest-cost 10% are ischemic heart disease (including congestive heart failure), cancer, diabetes, hypertension, pulmonary conditions, mental disorders, and trauma. Moreover, the highest-cost patients have 3 or more comorbid conditions. Particularly for heart disease and cancer, the bulk of expenditures are for inpatient care. Kidney disease and stroke incur the highest average cost per person, but fewer people have these conditions than heart disease, cancer, trauma, mental disorders, and hypertension (5, 6). Almost all high-cost patients utilize inpatient hospital services (7).

High costs result from prolonged hospitalization, brief hospitalization with intensive use of resources, or repeated hospitalization for the same condition. In a study of high-cost patients, repeated hospitalization was considerably more frequent than single prolonged or cost-intensive hospitalization. About 20% of high-cost patients died during the year of the study. Very sick patients, who were kept alive for long periods through multiple clinical interventions, accounted for fewer than 10% of the high-cost patients. Unexpected complications were important factors that elevated patients from low-cost to high-cost status. The study concluded that repeated hospitalizations for the

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same illness are an important cause of very high costs (8). A study of hospitalizations for diabetes reached a similar conclusion (9).

Because Medicare data are easy to access and because many high-cost patients are Medicare beneficiaries, analyses of high-cost patients tend to focus on Medicare. Ninety-five percent of Medicare costs are incurred by people with 2 or more chronic conditions; by far, the most expensive Medicare patients in 1999 were elderly persons with 4 or more chronic conditions (10).

If most high-cost patients were near death, the opportunity to reduce spending on those individuals would be limited. However, only one fifth of people in the top 5% of Medicare spending in a given year died by the end of that year. Among Medicare beneficiaries who were consistently high spenders over 5 years (1995 to 1999), 60% were alive at the end of that period (7). Opportunities exist for cost reduction among persistently high-cost patients who are not near death, particularly because a substantial proportion of their costs are inpatient related. To take full advantage of this opportunity, high-cost patients must be identified and interventions made before these patients become high spenders (7). One successful cost-reduction program for high-cost patients is the improved management of congestive heart failure.

Post-Hospital Management of Congestive Heart Failure

Congestive heart failure is the most common indication for hospitalization among older adults (11). In 1995, Rich and colleagues (12) studied a nurse-directed program of patient education with post-hospital telephone calls and home visit follow-up for patients with congestive heart failure. Within 90 days, hospital readmissions decreased markedly and quality of life improved, resulting in a cost reduction of $460 per patient in the intervention group compared with controls (12). Eleven randomized, controlled trials of similar nurse-led post-hospital interventions for congestive heart failure have been published; 7 of 8 trials that reported cost data saved money. Eight of the 11 trials found that readmission rates decreased from 22% to 45% in the intervention group. For the 9 trials in which multidisciplinary follow-up teams were used, the summary risk ratio for readmission for heart failure was 0.77 (95% CI, 0.68 to 0.86), indicating a reduction in readmissions of 23%. Quality outcomes improved or remained the same (11, 13).

Recent publications suggest that these programs are not cost-effective for all patients with congestive heart failure (14, 15). The programs that successfully reduce costs are targeted to high-risk patients, are initiated in the hospital or shortly after discharge, and include postdischarge face-to-face encounters with nurse care managers rather than telephone-only contact (16). Because these programs reduce hospital revenues, hospitals are unlikely to sponsor them. The Medicare program, which realizes the savings, is the logical entity to require or reimburse such programs.

Table. **Thinking about Specific Cost-Reduction Programs**

It is helpful to ask 5 questions about concrete cost-reduction programs in specific institutions.

1. Who benefits from a cost reduction effort: purchaser, insurer, provider, patient, or society?
2. Are financial incentives aligned to promote cost reduction? An organization that earns more money by providing more services is unlikely to engage in cost reduction. Cost-containment programs in globally budgeted institutions, such as Kaiser Permanente or the Veterans Affairs systems, may not generalize to other settings because these institutions have aligned their financial incentives in favor of cost reduction.
3. Is it possible to identify the patients whose health expenditures might be lowered? Ideally, efforts would be made to identify and case-manage patients whose costs are likely to be high in the future.
4. Is the timeline for cost reduction short or long? How does the timeline affect the "business case" for cost-reduction programs? Few health plans will invest in cost-control efforts whose savings will be delayed for 10 or 20 years.
5. Will the cost reduction effort truly protect quality of care?

Other Post-Hospital Programs

The concept of nurse-run post-hospital programs can be extended from patients with congestive heart failure to elderly people with multiple diagnoses. In 1 study, such a program markedly reduced the readmission rate, causing mean total charges to be 63% less for the intervention group than the control group (17).

Forty percent to 50% of patients with chronic obstructive pulmonary disease—another high-cost diagnosis—who are discharged from hospitals are readmitted during the following year. A patient education program with regular follow-up was associated with a 40% reduction in admissions for chronic obstructive pulmonary disease and improved quality of life compared with controls (18).

Fewer hospitalizations could not only reduce costs but also avoid serious illnesses in elderly persons. Many functionally independent elderly persons are no longer independent after hospital discharge. Bed rest rapidly reduces muscle strength and aerobic ventilatory capacity, thereby increasing the risk for falls, confusion, and future dependency. The vertebral bone loss caused by 10 days of bed rest requires 4 months to restore, thereby increasing risk for fracture. The cascade of physiologic decline initiated by a hospitalization may prove irreversible (19).

Physicians are ideally suited to encourage post-hospital interventions for high-utilizing patients with congestive heart failure and other chronic conditions, thereby contributing to cost reduction and quality enhancement.

DISEASE MANAGEMENT PROGRAMS

"Disease management" is a general term for programs that focus on 1 or more chronic illnesses and attempt to improve quality and reduce costs incurred by people with chronic conditions. Post-hospital heart failure interventions are an example. The success of programs such as those targeting high-risk patients with heart failure has helped drive enthusiasm for disease management. Disease

management programs may or may not be high-user interventions, depending on whether they target entire groups with chronic conditions or restrict their focus to high-risk patients.

Because care of chronic illness consumes 78% of national health care expenditures (20), the disease management movement has become a growth industry in the United States (21). The premise is that consistent intervention in chronic disease, guided by evidence-based medicine and coordinated care, results in better care, less illness, and lower costs.

Do disease management programs truly cut costs? Some do and some do not. The programs for management of congestive heart failure described earlier reduce expenditures because they target individuals, most of whom are in the top 10% of health care spenders. Programs for children with moderate or severe persistent asthma who have been hospitalized have been shown to save money, whereas similar programs for children with less severe asthma do not reduce costs (22). The cost-saving congestive heart failure and asthma interventions are programs only for high users of health care resources. Disease management vendors who proclaim cost savings often restrict their efforts to high users rather than large groups (23, 24).

Savings are difficult to demonstrate for programs aimed at all patients with chronic conditions of high prevalence (most of whom are not yet high users), particularly conditions whose complications manifest themselves far in the future. A review of diabetes programs involving components of Edward Wagner's Chronic Care Model—planned visit clinics, case management, reminder prompts, and performance feedback reports—found that 7 of 9 studies reported reduced health care use or reduced costs. However, most of these programs were experimental and of short duration, and in some cases costs increased again when the research protocol ended (22). A study of 4 disease management programs (for coronary artery disease, heart failure, diabetes, and asthma) at Kaiser Permanente from 1996 to 2002 found that the programs were associated with substantial quality improvement but not cost savings (25, 26). A recent report from the U.S. Congressional Budget Office also raises questions about the cost-saving promise of disease management (15).

Under most fee-for-service arrangements, the costs of disease management programs may be borne by the provider organization, whereas savings (if they exist) accrue to the insurer. Integrated systems with global budgets (for example, Kaiser Permanente and Veterans Affairs hospitals) both bear the program costs and reap the benefits of reduced use of hospitals and emergency departments. Analyses of "costs to whom" and the related alignment of incentives are an essential part of constructing the elusive business case for chronic disease management (27). In the case of diabetes, effective cost reduction requires identifying which patients will be the high-cost patients of the future and effectively intervening with those patients (7). Although some prediction models for future high-cost patients exist (28), they have not always proven to be reliable (7).

The time frame for return on investment poses challenges to the cost-control potential of disease management programs. If a person with diabetes receives excellent care, thereby delaying the onset of end-organ complications, are costs saved through reductions in myocardial infarctions and end-stage renal disease, or are costs increased because the patient lives longer and incurs more expenditures by virtue of needing medical care for more years? Lubitz and associates (29) compared noninstitutionalized patients in good health at 70 years of age with those in poor health at 70 years of age. People in good health lived longer, thereby incurring more years of medical expenditures; those in poor health had more expenditures per year for fewer years. The data showed that total health expenditures from 70 years of age to death were equal for the 2 groups, suggesting that improved chronic care before 70 years of age neither increases nor reduces health expenditures over the lifetime of the patient (29). A business-case "home run" in diabetes management would be hit by a program that lasts at least 20 years within the organization reaping the cost reductions; is utilized by patients who remain in that organization for at least 20 years; and markedly reduces the rate of myocardial infarctions, strokes, leg amputations, and end-stage renal disease among its participants. Such home runs are rare.

Even though the cost-containment potential of disease management programs is uncertain, these programs aspire to the dual goals of quality improvement and cost containment. Disease management programs initiated by health insurance plans and managed by vendor companies often fail to involve physicians in a central role. In contrast, programs that develop within provider organizations—hospitals; physician groups; and group-model health maintenance organizations, such as Kaiser Permanente, Group Health in Seattle, and HealthPartners in Minnesota—offer important innovations in which physicians can lead and participate.

Reducing Medical Errors

Quality problems are generally categorized as underuse, overuse, and misuse (30). High-user and chronic disease management programs attempt to correct underuse of ambulatory and home-care programs in order to reduce overuse of hospitals and emergency departments. Error reduction is aimed at misuse.

Unexpected complications, often resulting from medical errors, may catapult hospitalized patients from the low-cost to the high-cost category (8). One study estimated savings from eliminating preventable errors during hospitalization as being in the range of $5 billion to $10 billion per year (31). Another estimate placed savings at $17 billion per year (32). These amounts may be small in relation to total health expenditures, but they are substantial.

Solutions to the problem of medical errors involve physician-driven activities that combine cost reduction with quality improvement. One example of an error-reduction intervention is computerized physician order entry for inpatients (33). Physicians have resisted this intervention when it was poorly implemented (34). An alternative would be for all physicians to participate in planning in-hospital computerization so that the innovation is implemented in an effective and physician-friendly manner.

Strengthening Primary Care

Primary care has the potential to reduce costs while preserving quality. Studies of ambulatory care–sensitive conditions (conditions, such as diabetes or congestive heart failure, for which timely, appropriate diagnosis and treatment may result in reduced hospitalization) have shown that hospitalization rates and expenditures for those conditions are higher in areas with fewer primary care physicians (35) and limited access to primary care (36). Systems that link patients with primary care physicians are associated with reduced hospitalizations for ambulatory care–sensitive conditions (37, 38). Adults 18 to 64 years of age in urban California communities with poorer access to primary care had higher hospitalization rates for 5 ambulatory care–sensitive chronic conditions than did similar patients with better access to primary care (39).

Strengthening primary care may also result in more appropriate use of specialists (40). Schroeder and Sandy (41) have labeled specialty care as "the invisible driver of health care costs." Costs are higher in regions with higher ratios of specialist to generalist physicians (42, 43). Baicker and Chandra (44) showed that states with more specialists have higher per capita Medicare spending, suggesting that this relationship may be driven by the use of more intensive, costly interventions. Although specialists provide higher-quality care for some conditions, the large Medical Outcomes Study showed that primary care physicians, using fewer resources, deliver care similar in quality to that of specialists for such conditions as diabetes and hypertension (45, 46).

Both specialists and primary care physicians can encourage efforts to strengthen primary care structures that may reduce unnecessary hospitalizations while maintaining quality. These efforts may or may not involve an increased number of primary care physicians per capita (depending on the geographic region); more important, they include modes of primary care reimbursement that are adequate and that promote better quality, and redesign of primary care practices to improve the basic management of ambulatory care–sensitive conditions.

Reducing Inappropriate Care

Eliminating inappropriate care is a well-recognized strategy to reduce costs while improving quality. Although appropriateness is difficult to measure (47), well-recognized criteria, which were clinically tested in several cases, have been developed for the appropriateness of various procedures (48).

Examples of inappropriate or possibly inappropriate care abound in the literature (49). Some studies have examined variation in rates of procedures; others may have applied appropriateness criteria to specific cases by using chart audits. More than 20% of patients with cancer receive chemotherapy in the last 3 months of life, and this percentage is similar for patients whose cancer is responsive to chemotherapy and those whose disease is unresponsive (50). Estimates of unnecessary inpatient hospital days have ranged from 25% to 50% (51, 52). A recent analysis of Medicare beneficiaries 65 to 75 years of age found that 15% of coronary artery bypass surgeries were performed for an uncertain indication and 10% were inappropriate; 54% of angioplasties had an uncertain indication and 14% were inappropriate (53). Increasing rates of spinal fusion surgery for conditions for which no evidence of benefit exists—with high rates of reoperation and complications—suggest substantial inappropriate care (54, 55).

Elimination of inappropriate prescriptions could also generate cost savings. In 1 study, 40% of prescriptions written for hypertension did not conform to evidence-based guidelines (56). For elderly patients with hypertension in the United States in 2001, physician noncompliance with guidelines cost about $1.2 billion (56).

As noted in article 3 of this series (3), states and regions featuring high-intensity medical practice with high per capita Medicare costs do not provide better quality of care, as measured by use of various preventive or treatment processes associated with improved outcomes, than do states and regions with more conservative practice patterns (57–59). A major difference between conservative and high-intensity regions is the number of physicians involved in the care of a given patient. High-intensity practice is likely to involve inappropriate and harmful care (60).

Achievement of quality-enhancing cost reduction by reduction of inappropriate care is difficult. It is easier to judge appropriateness after, rather than before, an intervention has been performed. Shared decision making, in which educated and active patients are involved in treatment decisions, may be the best remedy for costly, inappropriate care. In 6 of 7 studies, shared decision making was associated with 21% to 44% reductions in more invasive surgical options—including coronary revascularization, hysterectomy, mastectomy, back surgery, and prostatectomy—without adverse outcomes (61).

High-quality shared decision making requires patients who can engage in discussions as informed partners, which in turn requires use of patient decision aids. These are evidence-based tools that allow physicians to accurately inform patients of available options and their consequences. These tools are not widely utilized at present (61). For chronic illnesses, such as diabetes, shared decision making is associated with better health-related behaviors and im-

proved clinical outcomes (62, 63). Physicians can seek to minimize inappropriate care by using decision aids that bring evidence-based knowledge to the point of care and by engaging patients in shared decision making.

DIFFUSION OF TECHNOLOGY ASSESSMENT

Article 2 in this series reviewed the evidence that new technologies are adopted more rapidly in the United States compared with other developed nations, thereby increasing their use and cost (2). Although novel technologies may benefit patient care, high rates of use of these technologies could represent inappropriate care. Technology assessment—the process of determining which technologies are clinically indicated for which patients (64)—is an important tool to assist physicians in limiting inappropriate use of medical advances. The results of technology assessment can be incorporated into patient decision aids and used when engaging patients in shared decision making.

CONCLUSION

The 4-part series that concludes with this article explains that the high and rising health care expenditures in the United States are caused by a variety of factors. The most important of these are the market power of physicians, hospitals, and pharmaceutical companies, which has enabled these providers and suppliers to garner high prices for their services and products, and the rapid diffusion of high-cost innovative technologies.

Several measures may contain rising health care costs. Among these are encouragement of competition among providers and health insurance plans, linking of provider payment to health technology assessment so that new technologies are not utilized inappropriately, placing of controls on prices of services and products or on the quantities of services provided, and institution of expenditure caps or global budgets that limit the total amount of money flowing into the health system.

Most of these cost-containment measures do not connect closely with physician practice. They are instituted, strengthened, weakened, or discontinued by governments or large health insurance plans. However, several approaches to high and rising health care costs are directly tied to daily medical practice. It is these physician-connected strategies—which may help to control health care expenditures while protecting quality—that have been the topic of this final article.

We believe that high and rising costs are a serious menace to the future of our health care system. As expenditures rise, Medicare, Medicaid, and private insurers reduce coverage; costs are shifted to individuals, thereby reducing access to needed care for some. Most of us, as physicians, have experienced how rising costs can create difficulties in caring for our patients: For example, the growing cost of prescription drugs, which are frequently not covered by insurance, has often restricted our therapeutic choices for elderly patients. Escalating patient responsibility for payment in an environment of rising prices will further restrict physicians' diagnostic and treatment options for the sizable proportion of patients with limited financial means. If cost increases are not moderated, our satisfaction at being able to offer patients beneficial clinical innovations may give way to frustration, as our patients become unable to afford those same innovations.

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