Is Health Spending Excessive? If So, What Can We Do About It?

The delicate task of reining in spending without harming our welfare.

by Henry J. Aaron and Paul B. Ginsburg

ABSTRACT: The case that the United States spends more than is optimal on health care is overwhelming. But identifying reasons for excessive spending is not the same as showing how to wring it out in ways that increase welfare. To lower spending without lowering net welfare, it is necessary to identify what procedures are effective at reasonable cost, to develop protocols that enable providers to identify in advance patients in whom expected benefits of treatment are lower than costs, to design incentives that encourage providers to act on those protocols, and to provide research support to maintain the flow of beneficial innovations. [Health Aff (Millwood). 2009;28(5):1260–75; 10.1377/hlthaff.28.5.1260]

A child trained to say "cost, quality, access" might pass as a health policy analyst. Sustaining the deception would become more difficult if the innocent were asked to define those terms. "Access" would not pose much problem: being able to obtain care when you believe you need it. Defining "quality" would be more challenging. In concept, it means that patients are getting the outcomes expected from the application of current medical knowledge. Often, however, the practical difficulties in measuring outcomes and adjusting risk variation among patient populations means that "good" quality is instead defined in terms of whether certain processes have been followed.

The problem of rising cost—or, more accurately, spending—once again, seems clear enough. But is it? To begin with, spending is simply price times quantity. Is the problem excessive price, excessive quantity, or both? Those troubled by rising spending seem to have a range of concepts in mind (see Exhibit 1). If spending is rising and if that seems problematic, the practical questions are as follows: what exactly is wrong with spending more on some good than one spent in the past? And what tools are available to control spending on something that is beneficial on average but not for each patient?

Level Of Health Spending

■ **U.S. per capita spending.** The United States spends more per person on

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EXHIBIT 1
Commonly Asked Questions About Health Care Spending

Question	Answer
Level	
Does the U.S. spend more per capita than other countries?	Yes, a lot more
Does the U.S. spend more per capita than other countries after adjusting for income and other factors?	Yes, a lot more
Growth	
Has per capita U.S. health care spending risen faster than that of other countries in recent years?	More than some, less than others
Has the excess of health spending growth over income growth been higher in the U.S. than elsewhere in recent years?	In general, yes, but by varying amounts and not uniformly
Waste	
Does the U.S. spend a lot on low- or no-benefit care?	Yes, but evidence on how much is poor
Does the U.S. spend more on low- or no-benefit care than other countries?	We don't know, but our larger outlays mean that we could waste more
Price	
Does the U.S. pay higher prices for health care services than other countries?	Definitely
Does the U.S. pay more for health care services, adjusting for quality, than other countries?	Almost certainly, although measuring—and even defining—quality is difficult; in some dimensions, we seem to be doing very well (length-of-stay, cutting-edge procedures); in others, poorly (delivering recommended care, control of diabetes); we have few data from other countries
Welfare	
Would cutting (growth of) health care spending raise welfare?	Static: if one could target cuts, yes; if not, no Dynamic: if cost limits improve targeting of research, yes; if not, could be harmful
Fiscal issues	
Will increases in health care spending impose stress on public budgets?	Yes; were it not for projected increases in health care spending, no material long-term gap between revenues and expenditures under current policy would exist

SOURCE: Authors' synthesis.

health care than does any other nation—roughly twice the average of the ten richest countries other than the United States.[1] Spending more than others do on health means spending less than others do on other private or public services—education, housing, income security, or national defense, for example. Several factors contribute to this high level of spending. First, health care spending rises with income, and U.S. per capita income is higher than that of most other nations.[2] However, neither the level nor the growth of per capita income can explain why U.S. spending is so much higher than that of other nations or why it has grown so fast. Even after one controls for national differences in per capita income (and for the range of other fac-

tors that are thought to influence health spending, such as the average age of the population), U.S. per capita health spending is about 30–40 percent above what income and other factors can explain.[3, 4] Furthermore, the gap between per capita health spending in the United States and that in other developed countries bears little relation to the relative growth of per capita income (Exhibit 2).

■ **Health spending and outcomes.** Per capita health spending varies widely among countries and among the various U.S. states. In general, simple correlations indicate that there is little or no connection between health spending and both life expectancy and infant mortality, whether one is comparing developed nations or U.S. states (Exhibits 3 and 4). Multivariate analyses that include such additional determinants of health as incomes, environmental quality, and personal habits do not change this conclusion.[5, 6] The connection between spending and health outcomes could be loose for several reasons. One could be that health care is not an important determinant of health outcomes; however, several studies suggest that this conclusion is false.[7–12] Another might be that areas that deliver technologically sophisticated—and costly—care are inefficient in delivering less-sophisticated care.[13] A third reason might be that much health spending goes to relieve conditions, such as joint deterioration, cataracts, and some forms of angina, that cause disability, not death. Whatever the reason, it is hard to avoid the conclusion that the United States is buying less health than other nations do with its high outlays.

■ **Reasons for high U.S. health spending.** Much of the excess of U.S. spending is attributable to the fact that the unit prices of various services are higher in the United States than elsewhere. Some part of the high prices goes to incomes of highly trained personnel. But in some cases, such as outpatient services, much of the price

EXHIBIT 2
Growth Of Per Capita Income And Health Spending, United States And Twenty Organization For Economic Cooperation And Development (OECD) Countries, 1970-2006

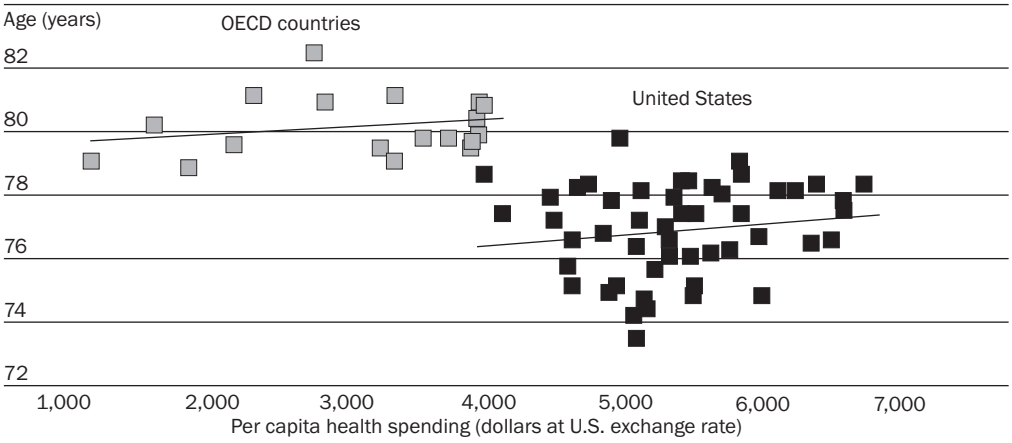
	United States		Twenty OECD countries	
Period	Income growth (percent per year)	Excess growth of health care spending over income (percent per year)	Income growth (percent)	Excess growth of health care spending over income (percent per year)
1970–1980	2.20	2.22	2.54	3.10
1980–1990	2.28	3.11	2.20	0.80
1990–2000	2.04	1.07	2.04	1.21
2000–2006	1.41	2.49	1.60	1.89
1970–2006	2.05	2.09	2.11	1.66

SOURCE: OECD Health Data 2008. Version 12/10/2008. Available from http://fiordiliji.sourceoecd.org/v1=6937783/c1=34/nw=1/rpsv/statistic/s37_about.htm?jnlissn=99991012

NOTES: The countries (and the periods covered) included are Australia (1971–2006), Austria, Belgium, Canada, Denmark (1971–2006), Finland, France, Germany, Ireland, Italy (1988–2006), Japan, the Netherlands (1972–2004), New Zealand (1970–2003), Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

EXHIBIT 3

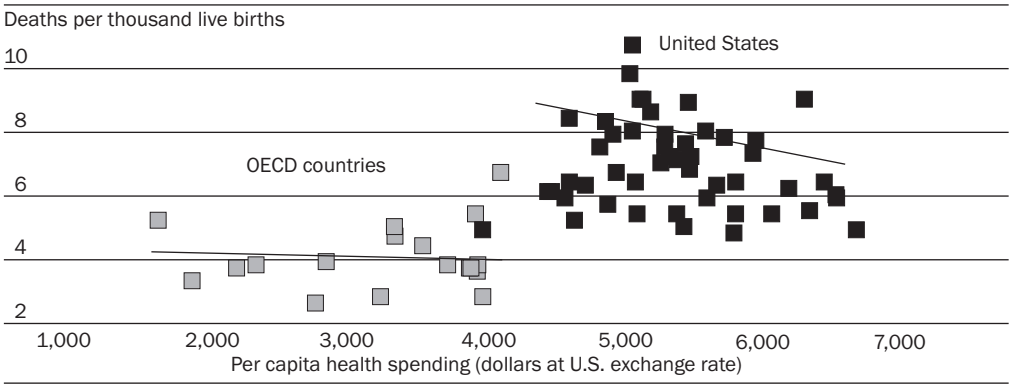
Total Health Spending Per Capita Compared To Life Expectancy At Birth, United States (By State) And Nineteen Organization For Economic Cooperation And Development (OECD) Countries, Various Years



SOURCES: OECD countries: OECD health data 2008. Paris: OECD; 2008 Dec. [cited 2009 Mar 25]; via SourceOECD. U.S. health spending: Henry J. Kaiser Family Foundation. Health care expenditures per capita by state of residence, 2004 [Internet]. Menlo Park (CA): Kaiser Family Foundation; 2004 [cited 2009 Mar 25]. Available from: http://www.statehealthfacts.org/comparetable.jsp?ind=596&cat=5&sub=143&yr=14&typ=4&sort=a. U.S. life expectancy: U.S. Census Bureau. U.S. projections methodology table no. 2: average life expectancy at birth by state for 2000 and ratio of estimates and projections of deaths: 2001 to 2003. Washington (DC): U.S. Census Bureau, Population Division, Interim State Population Projections; 2005 Apr 21 [cited 2009 Mar 25]. Available from: http://www.census.gov/population/www/projections/methodology.html

EXHIBIT 4

Total Health Spending Per Capita Compared To Infant Mortality (Deaths Per 1,000 Live Births), United States (By State) And Eighteen Organization For Economic Cooperation And Development (OECD) Countries, Various Years



SOURCES: OECD countries: OECD health data 2008. Paris: OECD; 2008 Dec. [cited 2009 Mar 25]; via SourceOECD. U.S. health spending: Henry J. Kaiser Family Foundation. Health care expenditures per capita by state of residence, 2004 [Internet]. Menlo Park (CA): Kaiser Family Foundation; 2004 [cited 2009 Mar 25]. Available from: http://www.statehealthfacts.org/comparetable.jsp?ind=596&cat=5&sub=143&yr=14&typ=4&sort=a. U.S. infant mortality: Kaiser Family Foundation. Infant mortality rate (deaths per 1,000 live births), linked files, 2003–2005 [Internet]. Menlo Park (CA): Kaiser Family Foundation; [cited 2009 Mar 25]. Available from: http://www.statehealthfacts.org/comparetable.jsp?ind=47&cat=2&sub=13&st=3&yr=79&typ=3&sort=a

difference goes to support inefficient production made possible by a lack of competition or effective regulation.[4] High prices sometimes serve as a proxy for high quality—more or better equipment or better-trained personnel. We know of no hard evidence showing that the quality of high-price U.S. services is better than that of corresponding services elsewhere or whether and to what degree it accounts for higher U.S. prices. In some cases, however, price differences are so large (for example, magnetic resonance imaging studies in the United States and Japan)[14] that no plausible quality difference can explain the gap.

Growth Of Spending

For decades, health spending has claimed a growing share of national income in the United States and in most other nations. Tautologically, that increase occurred because health spending grew faster than income. But the excess, which—also tautologically—depends on the difference between the growth rates of health spending and of income, also varies widely. The gap has tended to be larger in the United States than in most other nations, but not at all times (Exhibit 2). Most studies attribute one-half to two-thirds of the gap to the advance of medical technology, which lengthens the menu of beneficial interventions or improves their quality.[2] It is doubtful whether similar studies based on data from other nations would yield exactly the same results, given the large differences among countries in the growth of health spending and per capita income.

Furthermore, projections indicate that health spending will continue to claim a growing share of U.S. income.[15–17] In the past, population aging accounted for little of that growth. In the future, it will contribute a larger but still modest amount—about 0.4 percentage points per year. But that is less than one-fifth of the projected gap between health spending and income trends.[2] Although population aging explains little of the projected increase in total health spending, increased spending on care for the elderly and disabled is expected to become a severe fiscal burden for the U.S. federal and state governments. The Congressional Budget Office (CBO) projects that the share of gross domestic product (GDP) devoted to Medicare and Medicaid will approximately quintuple between 2009 and 2050.[16,18] Were the gap between growth in health care spending and income to persist, nonhealth consumption for the working-age population would eventually decline.[17] Although it is difficult to speculate about reactions to the stresses of a situation in which health care spending growth crowds out spending for other goods and services to such an extent that it reduces them, it is already apparent that the strains of health spending growth exceeding income growth in recent years are falling more heavily on lower-income people through erosion of private health insurance coverage and the financial burdens of care for those with less comprehensive insurance or who no longer can afford insurance.

What Does Higher U.S. Health Spending Buy?

Exactly why Americans spend so much on health care is not well understood. Some unknown proportion of higher U.S. spending supports economic rents—payments larger than necessary to keep health care resources in their current use. Some goes for superior quality. Some goes for low- or no-benefit services. Some results from inefficient production methods, including wasteful spending. Administrative complexity has been much studied, but how much administrative spending is wasteful and how much it may contribute to the growth of overall health care spending remain controversial.[19, 20]

More generally, some commentators have alleged that as much as one-third of all health spending is wasteful.[21] These studies extrapolate to all health spending findings from research based on treatment of individual diseases. Some studies indicating waste have been modified or reversed by subsequent research.[22] Furthermore, the very definition of *waste* is rarely specified.[23] A key assumption lies behind assertions of waste—that information exists on how, ex ante, to distinguish care that is worth what it costs from care that is not. This assumption is often untrue.

Much evidence indicates the misallocation of health spending. For example, the expected cost of adding a quality-adjusted life-year (QALY) varies enormously among widely used medical interventions.[24] That finding, which is consistent with any of the explanations for higher U.S. spending, suggests that reallocation of spending could improve outcomes. So does evidence from the *Dartmouth Atlas of Health Care*[25] documenting that variations in the use of many procedures are out of all proportion to any conceivable differences in the incidence of illness or "tastes" of patients for different methods of treatment.

Various studies have reported estimates of the aggregate value of health spending in terms of increased longevity and reduced sickness that are traceable to increases in health spending. These studies indicate that measured over long periods, the value of better health outcomes for selected conditions that seem traceable to improved treatments exceeds increases in total health spending.[7–12] But these studies are for selected improvements. Also, the authors all acknowledge that their findings are fully consistent with other research indicating waste or inefficiency on the margin, that the margin can be wide, and that spending within that margin is large. For example, interventional cardiology procedures have been shown to have very high value in some patients, such as those who have had a heart attack, but recent research raises doubts about the value of such procedures for asymptomatic patients who have worrisome results from diagnostic testing.[26, 27] Furthermore, there is some reason to think that the ratio of the total added value of medical spending to total added cost has diminished in recent years.[10, 12]

Causes And Cures

The coexistence of high average returns and low marginal returns per dollar spent on health care raises a key question: how can the level of or growth in spending be lowered in ways that will enhance welfare?

Exhibit 5 summarizes various influences on the level of and growth in health care spending, whether these influences lead to excessive spending levels or growth, and whether policy changes to curtail spending would increase welfare.

EXHIBIT 5
Factors Contributing To Excessive Level Of Or Growth In Health Spending

Factor/ influence	Does this factor raise spending?	Does this factor cause excessive spending?	Does this factor raise spending growth?	Does this factor make spending grow excessively?	Can or should policy changes affecting this variable reduce growth of health care spending?
Demand					
Insurance	Yes—as indicated by theory (moral hazard) and empirical research (RAND)	Not clear; insurance increases both low- and high-value services (such as prevention and adherence to drug regimens)	Yes; when coverage is deep, likely stimulates more investment in development of technology	Yes (unless curbed by other means); overpayment for services based on newer technology leads to excessive spending growth	Yes, through tax system (see below)
Tax system	Yes, by encouraging insurance	Probably, although impact on net benefit unclear	No direct impact unless coverage increases; insurance may promote cost-increasing technological change	Unclear; hinges on whether induced technological change, on balance, is worth more than it costs	Yes; cap exclusion or replace with refundable, capped credit
Income	Yes	No reason to think so	Yes, if income elasticity is >1	No reason to think so	No
Supply					
Fee-for-service payment system	Yes, whether or not physicians act as perfect agents; added costs for administration	Yes, whether or not physicians act as perfect agents	Unclear; yes, if payment system distorts research incentives	Probably	Yes; somewhere between episode-based reimbursement and capitation; either can be blended with fee-for-service
No. of providers	Unclear: MD-induced demand versus competition over price	Yes, to the extent of MD-induced demand	No	No	No; possible shortages emerging
Provider mix (MDs vs. other health professionals; specialists vs. GPs)	Specialty mix probably pushes up spending; limited delegation to non-MDs probably leads to higher spending, except for induced-demand offsets	Probably, unless specialist quality offsets added cost	Unclear, too fast if professional mix induces development of low-benefit, specialty-intensive procedures and devices	Perhaps, if it intensifies technological arms race	Probably; increase primary care and use of non-MDs

EXHIBIT 5
Factors Contributing To Excessive Level Of Or Growth In Health Spending (cont.)

Factor/ influence	Does this factor raise spending?	Does this factor cause excessive spending?	Does this factor raise spending growth?	Does this factor make spending grow excessively?	Can or should policy changes affecting this variable reduce growth of health care spending?
Organization of hospitals and physicians offices	Fragmentation likely leads to higher spending	Yes, through inefficiencies from fragmentation and from suboptimal scale of smaller practices and hospitals	Yes, "medical arms race"	Fragmentation limits potential for productivity gains over time and may slow development and application of new cost-saving techniques	Payment reforms that reward organizations for lower costs per episode or per capita and that reward higher quality
Managed care	Managed care at least lowers prices; HMOs (prepaid groups) lower spending level	No	May slow take-up of costly new technology	No	
Institutional factors					
Litigation	Small impact: premiums negligible, defensive medicine hard to measure but not likely to be large	Adversarial legal system generates dead-weight costs	No	No	Move to non-adversarial compensation system
Pay levels, drug and device prices	Large effect; fragmentation of U.S. payers (except Medicare, which cannot use its powers)	Yes, excess prices (rents)	Unclear; data do not support firm judgment	Yes; costs of some products and services are excessive	Antitrust policy, rate setting
Patent system	Encourages research, the key driver of increasing health spending	Not clear; question is whether the design of the system could be improved and how one would know	Encourages research, the key driver of increasing health spending	Not clear; question is whether the design of the system could be improved and how one would know	Prevent current patent holders from blocking innovation when patents expire
Research					
Equipment and procedures	Highly cost increasing	In some cases; but benefits of medical advances exceed cost, on the average	Yes	Selectively, but most is worth the added cost on the average	
Drugs	Short-term reductions in costs; long-term, generally cost increasing, although that may change	No, except that some drugs enable low-benefit terminal (cancer) treatment	Currently negative, because of empty pipeline	Large outlays to produce slight tweaks on existing drugs are wasteful; overall, drug innovation produces benefits far in excess of cost	Target spending should depend on research opportunities
Comparative effectiveness, cost-effectiveness	Little effect; there is so little of it, large potential not realized	To the extent that it is done, no	To the extent that it is done, no	No effect at present; could lower growth or improve targeting	Essential for rational decisions on curtailing coverage or services

SOURCE: Authors' analysis.

We grouped them in four categories: demand, supply, institutions, and research. The unsurprising verdict is that several factors contribute to excessive spending and to unduly rapid growth, but that devising ways to correct both problems in ways that promote welfare is politically challenging and technically difficult.

■ **Demand.** Insurance is intended to boost demand for health care services, preventing the direct cost from discouraging its use by people who need it. At least since the 1960s, it has been well recognized that in performing its intended function, insurance risks encouraging excessive demand for care.[28, 29] The RAND Health Insurance Experiment (HIE) provided estimates of the size of the increase; although the data are more than three decades old, the results continue to be used today.[30] Whether the increase in demand for health care increases or lowers welfare depends, in a narrow sense, on the balance between the tendency of insurance to encourage people to seek some care that is worth less than its total societal costs and the fact that insurance enables people to afford high-value care that would otherwise be beyond their means. Insurance also spreads risk, an important benefit, because most people are thought to be risk-averse. But insurance does more than spread the risk of unpredictable variations in health care spending. It also spreads the costs of expected (predictable) variations in use of health services based on genetic endowments, individual histories, and personal behavior. The social value of spreading the misfortune of an unlucky "draw" from the genetic pool seems clear. But spreading the risks associated with unhealthful or dangerous behavior is more difficult to defend. As noted below, insurance also shapes the way in which providers organize to supply health care services.

Tax provisions—the exclusion of employer-financed health insurance from personal income and payroll taxes—shield people from the full costs of health insurance and, hence, of the health care that insurance supports. For example, taxpayers subject to the full payroll tax who are in the 25 percent personal income tax bracket pay 37.4 percent less for health insurance (in terms of the amount of other consumption goods forgone) if their employers buy the insurance for them than if they buy it for themselves. (This difference excludes state income tax benefits and any additional advantage because selling and administrative costs are lower for group than for individual insurance.) Thus, the tax exclusions encourage people to buy more health insurance and, indirectly, more health care than they would purchase if they faced the full, before-tax cost of care that is financed with insurance. Standard economic analysis suggests that these tax policies cause people to buy more insurance than is optimal, but recent work from behavioral economics raises the possibility that tax policy may offset common cognitive errors—such as overweighting near-term costs of preventive care and underweighting the value of the deferred benefits such care generates—and thereby improves welfare.[31, 32]

If people do buy excess insurance because of tax provisions, the static loss can be considerable, but the dynamic effects could be much larger. Excess insurance is likely to bias incentives governing medical research. If insurance blinds people to

the cost of care they use, they will be insensitive to the relative price of different services, tending to use excessively costly care and too much of it. That behavior, in turn, will encourage research entrepreneurs to invest in innovations that are needlessly expensive in relation to their potential for improving outcomes. Furthermore, research responds to economic incentives.[33] Distortion of the character of new products and services could impose much larger losses over time than does any static resource misallocation. Unfortunately, there is no quantitative evidence on the size of such distortions.

The effects need not be all negative, however. Excessive use resulting from insurance encourages investments in the development of new products. Although many might not be worth what they cost, the added benefits from even some of those innovations could exceed the cost of the whole enterprise.[5]

■ **Supply.** Particular aspects of the way health care is supplied in the United States result in a higher level of spending and may spur excessive growth. The aspect most commonly cited is fee-for-service reimbursement for health care services. That method of payment rewards providers for supplying particular services rather than for producing favorable outcomes or efficiently treating an episode of illness. Furthermore, it encourages physicians to provide services beyond those they would offer as well-informed and unbiased agents for their patients.

■ **Inefficient organization.** Many observers believe that inefficient organization of health care delivery needlessly boosts U.S. health spending. These alleged inefficiencies include the continuation of the single-practitioner physician office; the survival of low-occupancy and inefficiently small hospitals; and the slow adoption of modern information technology (IT) in physicians' offices and hospitals, which precludes the use of electronic medical records and e-prescribing, hampers data collection for research on comparative effectiveness, and results in needless duplication of tests. Many of these inefficiencies are likely fostered by a fee-for-service payment system that induces providers to provide more billable services, especially those with more generous reimbursement, as opposed to rewarding efficient solutions to patients' health problems. Advocates of integrated delivery systems, still relatively uncommon among U.S. health care providers, argue that they are capable of delivering more health care less expensively than is possible when providers are separately managed.[34] But with the notable exception of Kaiser Permanente, which has completely integrated financing and delivery, the existing payment system has posed serious barriers to realizing the promise of integrated delivery.[35]

■ **Physician supply.** An important question for public policy concerns how a change in the number of providers would affect health care prices, total health care spending, and public welfare. The standard—and overly simplistic—response is that boosting the number of providers will lower prices and total spending. Even if the assumption about prices is true, an increased supply of physicians will lower total spending only if physicians cannot materially increase demand for their own services and if the increased supply does not release bottlenecks in care provision. A

huge body of research has been produced to show that physician-induced demand does or does not exist.[36] If it does exist, there is little evidence about how much physician-induced demand does not confer medical benefit.

The impact of an increased number of providers on outlays and welfare depends not just on numbers but also on mix. For example, the proportion of U.S. physicians with specialty and subspecialty training has grown rapidly as the complexity of diagnoses and treatments has increased. In part, the growing supply of highly trained specialists is a response to advancing technology. In part, however, it results from inadvertent payment incentives. Adjustment of payment rates, initially set when procedures are new and costly, tends to lag falling supply costs, leading to excessive payment rates. Overly generous payment then fosters overuse of sophisticated interventions and attracts excessive numbers of young physicians into those specialties in which such interventions are most important.

■ **Institutional factors.** *Malpractice litigation.* The view that malpractice litigation raises the level and growth of health care spending is widespread. Large awards are alleged to drive up insurance premiums and practice costs. The threat of litigation is alleged to generate "defensive" medicine: the provision of low- or no-benefit care by physicians solely to minimize the likelihood that they can be successfully sued or sued at all. To reduce these costs, several states have enacted, and Congress and other states are considering, caps on compensation for noneconomic losses from medical negligence.

Evidence that malpractice litigation and its threat have much impact on the level of health spending is weak and confined to a few specialties. Evidence that it perceptibly raises the growth of health spending is almost nonexistent.[37] The chief shortcoming of the malpractice dispute resolution system is not that some settlements are excessive, but that transaction costs are enormous. Litigation expenses and administrative overhead absorb roughly 60 percent of premiums. Fewer than 10 percent of victims of medical negligence ever receive compensation or, indeed, even make it to court.[38, 39] Reforms of the dispute-resolution system that encourage providers to reveal medical errors, emphasize mediation, and establish simplified methods of determining compensation hold the promise of increasing the share of malpractice premiums that go to injured patients rather than lawyers and expert witnesses.[40] It is less clear what their impact would be on the overall cost of the dispute resolution system and hence on health spending.

Physician payment. Physicians are paid more in the United States relative to average income than in any other country.[4] The proportion of U.S. physicians with specialty and subspecialty training is also higher than elsewhere; and the fee-for-service payment system may encourage U.S. physicians to work longer hours than physicians elsewhere, who are often salaried or paid by capitation. Thus, part (or conceivably all) of the additional pay of U.S. physicians may be explained as compensation for additional training and may be associated with higher quality-adjusted productivity or longer working hours. Even if one concluded that U.S.

physicians are paid too much and their compensation should be reduced, the impact of even massive cuts on health care spending would be modest. A 25 percent cut in payments for physician services over the next decade (which would imply a far larger drop in physician income, because practice expenses would not fall commensurately) would lower the projected annual growth of U.S. health care spending only from 6.2 percent to 5.7 percent.[41] The key to reduced spending by physicians is not adjusting their salaries but encouraging them to use and order fewer and less complicated services—including laboratory and radiological services.

Drug prices. Prices of drugs in the United States are higher than in other countries, although the exact margin is hard to pin down.[4, 42] Countries tend to consume relatively more of drugs that are priced comparatively low in that country; differences in pill sizes also make comparisons tricky. Medical device prices are higher in the United States because hospitals often must purchase whatever model each physician on the staff prefers to use (so that they continue to admit patients) and are prohibited from offering physicians a share of the savings from standardizing devices to be used. Different problems afflict the pricing of durable medical equipment (DME), such as wheelchairs or walkers, which in many cases can easily be purchased for less than Medicare's official price schedule. Despite such rigidities, efforts to institute competitive bidding under Medicare for DME foundered because of opposition from adversely affected suppliers.

Patent system. The patent system is one of the most important and complex institutions affecting health care spending. A patent is a government-sanctioned monopoly that enables the developer of a new product to charge higher-than-competitive prices for a fixed period of time. Whether patents raise spending or lower it at a point in time depends on the facts and circumstances. They raise spending if newly developed products fostered by patents replace less costly, but presumably less effective, products or if they increase the number of treatable conditions. Examples of such expenditure-increasing advances include antibiotics, which reduced treatment costs for infectious diseases but, by sparing people inexpensive deaths from infectious diseases, enabled them to die later from more costly conditions. Other cost-increasing advances include antinausea medications that enabled costly chemotherapy previously contraindicated because of side effects. Of course, some patented treatments lower spending when they simply replace other, more costly treatments.[43] Various newly patented drugs may produce all of these effects. Thus, the net impact of patents on total spending at each point in time remains unclear. Over time, however, there can be no doubt that patent-induced development of drugs and devices increases spending by expanding the range of feasible treatments and their effectiveness. Thus, the stakes in designing patent policy are huge. The progress of medical science and the growth of health spending depend in large measure on new products. How fast they are developed and how their benefits are distributed is profoundly influenced by the patent system.

■ **Research.** A simple line of reasoning has led some to maintain that public support of basic biomedical research should be curtailed. The argument goes as follows: (1) technology has been the principal driver behind growing health care spending; (2) research indicates that some forms of high-technology medical care are overused; (3) growth of health care spending has become problematic in both private and public budgets. We believe that the correct conclusion from this line of reasoning is that the way Americans pay for health care should be changed but that if it is, the case for public support of biomedical research would be strengthened.

The advance of medical technology is, indeed, the principal driver behind the admittedly problematic growth of health spending. It is, as we have noted, also the largest source of an even larger increase in benefits.[7–12] At the same time, some medical services, including high-technology care, are overused or produced inefficiently. In recognition of these problems, Congress recently appropriated funds to renew and expand efforts to evaluate the comparative effectiveness of various medical interventions and to promote the use of IT. In addition, policymakers are now devoting considerable attention to the design of payment reforms to promote efficient and coordinated delivery of health care.[44] Under the new payment systems, providers would no longer be paid for whatever services they rendered but instead would be paid for an episode of care, patients' outcomes, or adherence to established protocols. The new payment systems would encourage cooperation among teams of caregivers instead of paying each provider without regard for cooperation and coordination. Such reforms are of particular importance in the handling of complex cases, which account for most health spending.

With the curtailment of services that cost more than they are worth and improvements in the efficiency of care delivery, growth in total health spending would be reduced, but the net benefits of spending would increase. So would the expected net benefits from innovations. But incentives to invest in developing new drugs, devices, and procedures would diminish because returns to investments in innovation depend on the size of the anticipated market. Sales add to profits whether or not the sales are socially beneficial. Research is always a gamble that may or may not pay out, and reducing pay-offs makes gambles less attractive.

Based on recent history, the average returns to medical innovations have been large despite a less-than-ideal payment system and a delivery system that is far from efficient. There is no reason to think that funders of basic research will be able in the future to predict reliably which investments will produce large benefits and which will not. There is, however, good reason to believe that those investing in development activities will be able to identify those advances from basic research that can be commercialized profitably. Consequently, there is a serious risk that payment reforms that improve the near-term efficiency of health care delivery would lower the longer-term rate of advance in medical knowledge. To offset this possibility, successful control of spending on low-benefit care should, in our view, be accompanied by increased public support of biomedical research to offset the

reduced incentives for privately financed research.

To be sure, returns to biomedical research, like those to all activities, must eventually diminish. Current scientific opportunities appear to be large as a result of major advances in molecular biology, materials sciences, and other fields relevant to medical advance. Nevertheless, inflation-adjusted public support for basic research has declined for about a decade. The proportion of all grant applications to the National Institutes of Health (NIH) that is funded has declined from just under one-third in 1999 to just over one-fifth in 2008.[45] The economic stimulus bill (the American Recovery and Reinvestment Act) abruptly increased NIH funding by adding $10 billion, to be spent over fiscal years 2009 and 2010.[46]

Discussion And Implications For Reform

The case that the United States spends more than is optimal on health care is overwhelming. Insurance can lead to excessive demand for care. Tax incentives encourage people to buy more insurance than they would if they paid full price for it. The fee-for-service reimbursement system creates economic incentives for oversupply and encourages fragmentation in the delivery of care. Evidence that too much of particular services is provided in some regions is persuasive. Opportunities to improve quality and lower costs remain unexploited.

To lower spending without lowering net welfare, it is necessary to organize the delivery of care to promote efficient cooperation among the many providers and practitioners involved in delivering modern treatment, to conduct costly research over many years to identify which procedures are effective at reasonable cost, to develop protocols that enable providers to identify in advance patients in whom expected benefits of treatment are lower than costs, to design incentives that encourage providers to act on those protocols, and to educate patients on why such protocols should be sustained. Furthermore, if spending reductions are to prove beneficial over time, it is also necessary to provide research support to maintain the flow of beneficial innovations.

Provider payment reform has a critical role to play in promoting efficient and coordinated delivery. Fee-for-service payment, especially when relative values are distorted, works against efficiency. Changes in the Medicare program have the potential for broad impact, since Medicaid programs and private insurers tend to follow Medicare methods. Reform would involve increasing both the degree to which current relative payments reflect relative costs of efficient production of services and the use of broader units of payments, such as per episode and per person, in either case likely blended with fee-for-service.

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NOTES

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