

# MEDICAL CARE RESEARCH AND REVIEW

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*Special Supplemental Issue:*      **The Consequences of Being Uninsured**  
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*Guest Editor:*      **Thomas Rice**

Sicker and Poorer—The Consequences of Being  
Uninsured: A Review of the Research on the  
Relationship between Health Insurance, Medical  
Care Use, Health, Work, and Income

*Jack Hadley* 3S

Commentary

*John Z. Ayanian* 76S

Commentary

*Stuart Butler* 82S

Commentary

*Karen Davis* 89S

Commentary

*Richard Kronick* 100S

**Instructions for Authors** 113S

## Commentary

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Lacking health insurance is hazardous to one's health. This simple conclusion is supported by dozens of research studies conducted in the United States over the past 30 years. In this issue of *Medical Care Research and Review*, Hadley provides a careful assessment of the research literature on the benefits of health insurance, dissecting the strengths and weaknesses of various studies, interpreting potential mechanisms of measured effects, and quantifying the impact of being uninsured on morbidity and mortality. His findings regarding the adverse effects of lacking health insurance on health are consistent with the conclusions of other comprehensive reviews by the Institute of Medicine's Committee on the Consequences of Uninsurance (Institute of Medicine 2002a, 2002b) and the American College of Physicians (American College of Physicians–American Society of Internal Medicine 2000).

Insurance coverage alone does not directly improve health. Neither insurance coverage nor access to care is sufficient to improve health outcomes unless effective care is delivered in a timely and appropriate manner. The health care system of the United States remains plagued by a very uneven distribution of resources and wide variability in quality of care (Institute of Medicine 2001b). Many people receive unnecessary or inappropriate care that has a low likelihood of improving their health, while many others fail to receive services that would clearly be beneficial (Schuster, McGlynn, and Brook 1998). Unfortunately, uninsured people are concentrated in the latter group, as depicted in Hadley's conceptual model of the health production function, and barriers persist when uninsured patients gain entry to the health care system.

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The lack of health insurance, therefore, is the first and foremost “voltage drop” contributing to unmet needs, insufficient treatment, and suboptimal outcomes in the U.S. health care system (Eisenberg and Power 2000).

The mechanisms by which health insurance has a positive impact on health are important to consider. Insurance is a crucial determinant of access to care, helping people to obtain a provider of care for the prevention, early detection, and treatment of acute and chronic medical conditions. Some uninsured people can obtain good care for free or for reduced fees from community health centers, hospital-based clinics, or private physicians. They can also seek emergency care when they need it because the federal Emergency Medical Treatment and Active Labor Act requires hospital emergency departments to evaluate and stabilize patients with acute medical problems (Kellerman and Haley 2003). But this patchwork safety net leaves many uninsured children and adults with inadequate treatment.

Lacking a regular provider of care and facing substantial out-of-pocket costs, people without health insurance forgo effective screening services, chronic disease care, and treatment for potentially serious symptoms (Ayanian et al. 2000; Baker, Shapiro, and Schur 2000). When individuals lack health insurance, their plight also may have negative spillover effects for their families and communities, whereby the health and well-being of people with insurance are adversely affected by the problems of those without insurance. If insured children have uninsured parents with untreated depression or other chronic health problems, the children’s health and development may be impaired as a result (Institute of Medicine 2002b). Similarly, in communities with large numbers of uninsured people, physicians and hospitals may be less financially stable and less able to provide specialized services, such as trauma care, to the whole community (Institute of Medicine 2003).

Hadley builds on prior reviews of the connection between health insurance and health by emphasizing studies that have used instrumental variables to control for unmeasured selection effects. A distinct advantage of this analytic technique is that it can control for endogenous effects of “reverse” causality, whereby improved health may cause individuals to have insurance coverage, presumably because better health enables people to attain more advanced education, better employment, and higher incomes. These socioeconomic factors are strongly associated with both better health and higher rates of insurance coverage in the United States (Institute of Medicine 2001a). From a policy perspective, it is important to distinguish such endogenous effects from exogenous or directly causal effects of health insurance on health, whereby health insurance improves access to effective medical care that improves health outcomes. Based on his own recent instrumental variable analysis of the nationally representative Health and Retirement Survey, Hadley offers the

provocative conclusion that prior observational studies using simple regression methods (without instrumental variables) may have *underestimated* the positive impact of health insurance in improving health outcomes, particularly to reduce morbidity and mortality among near-elderly adults (Hadley and Waidmann 2003).

Hadley also underscores the dynamic nature of health insurance and access to care, which can be masked in cross-sectional studies that have assessed insurance status, use of medical services, and health outcomes at a single point in time or episode of care. Even a short period without health insurance may have adverse consequences if it coincides with severe illness or injury (Burstin et al. 1998; Schoen and DesRoches 2000). Among hospitalized patients with coronary heart disease, for example, those who are uninsured are more likely to receive inadequate care. In an instrumental-variable analysis, the marginal benefit of coronary angiography on survival after myocardial infarction was significantly larger for uninsured patients than insured patients in Washington State, suggesting that uninsured patients had greater unmet needs for this procedure (Brooks, McClellan, and Wong 2000). Similarly, in a study using clinically detailed appropriateness criteria to assess patients who underwent coronary angiography in New York City, uninsured patients were less likely to receive necessary therapeutic procedures (coronary bypass graft surgery or angioplasty) if they required transfer to another hospital to receive them (Leape et al. 1999).

Beyond these effects of insurance coverage on the management of serious acute illnesses, prolonged periods without insurance substantially increase the risk that insidious conditions, such as hypertension, human immunodeficiency virus (HIV) infection, or breast cancer, will go undetected until they are more advanced and potentially fatal (Ayanian et al. 1993, 2000, in press). Uninsured people who have these or other major chronic conditions or are at high risk to develop them are less likely to be counseled about their risk, screened for their condition, aware of their diagnosis, or treated with effective medications and procedures. Small to moderate differences between insured and uninsured patients at each of these steps can create a cascade effect, resulting in moderate to large differences in health outcomes over the whole continuum of care. In therapeutic terms, a "dose-response" relationship almost certainly exists between insurance coverage and health outcomes, whereby consistent insurance coverage and access to care over longer periods of time is most likely to improve health outcomes. Conversely, lengthier gaps in coverage and access lead to greater adverse effects on health.

What is the overall impact on mortality for the millions of Americans who lack health insurance? Hadley estimates that extending health insurance to everyone in the United States could result in about 17,000 fewer deaths

annually in the nonelderly population. Similarly, the Institute of Medicine (2002a) recently calculated that approximately 18,000 excess deaths occur each year among uninsured adults age 25 to 64 in the United States, including 1,300 to 1,400 deaths related to hypertension, 1,200 to 1,500 deaths resulting from HIV infection, and 360 to 600 deaths due to breast cancer.

If so many Americans are dying prematurely because they lack health insurance, why does the nation accept this ongoing death toll without outrage or action? One likely reason is that people who suffer or die because they lack insurance typically do so in private with little or no public notice. Furthermore, the lack of insurance is rarely perceived as a clinical risk factor by physicians and nurses when uninsured patients experience a myocardial infarction or stroke that could have been prevented, or uninsured patients are diagnosed with metastatic breast cancer or colon cancer that could have been diagnosed and effectively treated much earlier.

Health services research has played an important role in informing health care providers, policy makers, and the public about the scope of this problem, defining both the magnitude of adverse consequences of lacking health insurance and the chain of events by which these consequences occur. To address lingering doubts about selection effects and reverse causality in prior observational studies, longitudinal studies would still be valuable (Brown, Bindman, and Lurie 1998), using more refined statistical methods, such as propensity scores, difference-in-differences methods, and instrumental variables. An experiment with individuals and families randomly assigned to insurance or no insurance—one option posed by Hadley—is unlikely to be conducted in the foreseeable future, but natural experiments can certainly be evaluated when health insurance is purposely expanded or contracted in some states. More rigorous observational studies can help to draw public attention back to the plight of uninsured Americans, whose needs have been debated for decades but too easily dismissed as insoluble or unimportant. Research alone, however, will be insufficient to generate the political will to achieve universal coverage.

A new narrative is needed to transform public and political debates about the uninsured from their current focus on statistics and costs to a fresh emphasis on values that resonate with a majority of American voters and their elected representatives. Expansions in coverage for pregnant women and children through Medicaid and the State Children's Health Insurance Program, for example, were promoted by emphasizing the social value of investing in the health of children. Similarly, when four fifths of uninsured Americans live in a family with at least one worker while most nonelderly Americans obtain their health insurance coverage through employment (Institute of Medicine 2001a), basic values of fairness and equitable rewards for diligent work can be

invoked to motivate political action. The research literature indicates that the expansion of affordable insurance coverage to uninsured individuals and families would have substantial health benefits by increasing their use of basic health care, including appropriate preventive and screening services, evidence-based treatment of chronic diseases, prompt attention to serious symptoms, and cost-effective prescription drugs. Bipartisan political leadership is required now to articulate the vision, values, and solutions through which these needs can be met.

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## Commentary

*Stuart Butler*  
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Jack Hadley makes a convincing case in his review of the research that there is a clear connection between having health insurance and better health. It might be argued that there are biases in every study he reviews, but one would have to make the implausible claim that those biases are all in the same direction to avoid his conclusion: insurance is good for your health.

A policy maker pondering Hadley's conclusion is still left with at least two vexing questions, however. One is: what constitutes "good" insurance? Many studies, and some advocates in the debate on the uninsured, seem to suggest that health insurance is something you either have or you do not—as though it is a standardized product. But as Hadley notes in his review, the nature and level of insurance coverage differs from plan to plan, and so whether a person is "insured" has a complicated relationship with future health. Thus, to design initiatives aimed at improving the health of groups of Americans, policy makers need guidance on what kind of coverage should be encouraged.

The second question flows from the first. Given that the ideal level and type of insurance may not be clear, what policy arrangement would result in subsidized coverage such that the services received have the greatest health impact for a given public cost?

Hadley's review of the available research is helpful on both of these questions, but it also indicates that as yet there are no definitive answers. For instance, for a range of illnesses, the studies in Hadley's review indicate strong correlations between insurance coverage and health outcomes. Less clear, however, is what constitutes the optimal level or type of insurance to secure these health improvements for a given public cost. If we are to help uninsured

people obtain coverage by subsidizing it in a cost-effective way, we need a better understanding of that relationship.

The level of access to health care actually made possible by insurance is influenced by the degree to which the premium is subsidized as well as the out-of-pocket costs facing the enrollee. However, subsidizing easy access to care does not always make sense. Hadley notes that the RAND Health Insurance Experiment is the only randomized trial to look at the connection between *type* of insurance and health (and even that study focused on the effect of different levels of cost sharing). The RAND study, and others, suggests that after a certain level of medical care becomes available thanks to insurance, additional amounts of care lead to little additional health benefit. This does not contradict the findings of the overwhelming majority of studies that having insurance is better than not having insurance. But it does suggest that it would be wise to investigate more carefully what forms of coverage produce the best medical results for particular categories of people. It also suggests that subsidies for health care should be concentrated on those who need help most to obtain basic insurance, since additional subsidies to improve the insurance of those who already have adequate coverage lead to a marginal or negligible improvement in health and thus is an inefficient use of public funds.

We certainly do not focus subsidies for insurance very efficiently today. In fact, the current form of subsidy encourages an inefficient overuse of medical care by most nonpoor Americans while providing little or no help to the lower paid uninsured, and it actually exacerbates the problem of uninsurance for many Americans. This happens because by far the largest subsidy for insurance for working Americans is the tax exclusion for employer-sponsored insurance. The exclusion means that the portion of a worker's compensation devoted to employer-paid health insurance is not subject to federal or state income taxes or payroll taxes. In aggregate, this subsidy dwarfs the value of the mortgage interest deduction. John Sheils and Paul Hogan (1999) valued the subsidy in 1998 at more than \$111 billion at the federal level and nearly another \$14 billion in exemptions from state taxes. But in contrast to a subsidy aimed at those who need help the most, a tax exclusion provides most help to upper-income workers (who are in the highest tax bracket) with the most generous coverage. Sheils and Hogan have estimated the average annual federal tax benefits in 1998 as ranging from \$2,357 for families with incomes of \$100,000 or more to just \$71 for families with incomes of less than \$15,000. Moreover, since the exclusion is unlimited but is not available for employees' out-of-pocket health spending (though there are tax breaks available for some such employee payments), it fosters overinsurance and an overdemand for medical services of often very marginal benefit.

The other side of the tax-exclusion subsidy coin is that the tax break provides little help to lower paid workers, who often face hardship in paying for family coverage or out-of-pocket costs, and it is not available to workers lacking an employer-sponsored plan. These latter workers typically work for small firms, and it is they and their families who constitute most of the uninsured. It is hard to imagine a less efficient system of subsidies for helping people to obtain coverage. Furthermore, because the exclusion subsidizes employer-sponsored insurance, even those who do have coverage experience different levels and opportunities for coverage for the same amount of earmarked compensation simply because of the size, sophistication, and business decisions of their employer. Small firms typically do not offer a choice of plan, and hence the available coverage is less likely to match the needs or preferences of the employee compared with that available to workers in large companies. And small firms typically face far higher administrative costs for their small-group plans compared with large firms, meaning that less coverage and care is available to the worker and his or her family for the same dollar expenditure on insurance.

So the way in which insurance is subsidized means that not all insurance is alike in the level of care it provides and the likely health outcomes of enrollees. Moreover, the way we currently provide subsidies does not lead to an optimal distribution of health services. Other features of health insurance plans also affect the level of specific medical services available to insured families, and those features may have an effect on the health prospects of health enrollees. For instance, the ability to have a choice of plan at the place of work is a significant factor in the degree of satisfaction workers have with the health insurance available to them from their employer (Schone and Cooper 2001), and a lack of choice limits the degree to which families have access to services recommended by their family physician. The current political and consumer reaction to the idea of managed care is related to this issue of the availability of services within insurance plans and has triggered a number of studies and counter studies on the relationship between limiting access to services and health outcomes.

In thinking about the nature of "good" insurance, we also need to look at comparisons between private coverage and public coverage (which in the case of the lower income uninsured means looking closely at Medicaid). Hadley notes that many of the studies he reviews indicate worse outcomes for people covered by Medicaid when compared with people who are covered by private insurance. But he suggests that there are a number of factors that may account for this difference, which may render it more apparent than real. For instance, Medicaid enrollment is voluntary and thus enrollees are more likely to be sicker on average than people of similar backgrounds automatically

covered in an employer plan. There are also variations between states regarding who is eligible and what specific services are included. Nevertheless, we still need to know more to understand whether Medicaid coverage is better or worse than some forms of private insurance.

The raging debate about managed care, and comparisons between the health impact of private and public coverage, underscores the point that the issue is not just between being insured or not being insured. It is also about the *level* and *type* of private insurance and the relationship of different forms of coverage to health. We require a better understanding of these relationships than we have today if we are to design cost-effective policies to address the health needs of the uninsured.

While not overlooking the limitations of the research, policy makers responding to Hadley's "insurance is good for you" conclusion should try to do two things. They should seek to rectify the maldistribution of subsidies in the current system, and they should pursue reforms that will make it more likely that people are not only insured but also are more likely to have access to an appropriate and cost-effective level of services they need to improve their health. That suggests a number of steps. Among them are the following.

*Overhaul the tax treatment of health insurance.* Reforming the tax treatment of health insurance would permit the current federal tax expenditures of about \$130 billion per year to be allocated in ways that would help many uninsured families to improve their health by becoming insured. Shifting subsidies from overinsured and overconsuming families would not lead to a significant—if any—reduction in services that materially improve health.

Reform would consist of three elements. First, current restrictions that limit the bulk of tax relief to the exclusion of employer-sponsored insurance should be replaced by tax relief that would apply to coverage obtained directly from insurers or through other institutions (perhaps unions, churches, or other groups separate from the place of work). Most of the uninsured work for small employers that do not even offer insurance, and equalizing tax relief in this way and the reform would make a tax subsidy available to these workers. The ability to use the tax benefit for purchases of insurance through nonemployment buying groups would also be important since it would make it more feasible for currently uninsured people to obtain more affordable coverage through large institutions with lower administrative costs.

Second, the open-ended tax exclusion for employer-sponsored coverage should be limited. The RAND study and others raise questions about the efficiency of subsidies for unlimited amounts of health care services. Certainly, the marginal health benefit of subsidizing basic coverage for an average, lower income, uninsured individual is significantly greater than subsidizing

more health care consumption by an average, middle-, or upper-income individual with already generous insurance. Thus, limiting the tax benefits available for health insurance, in order to free up funds to subsidize coverage for the uninsured, would be a wise objective. Despite the political opposition that would be mounted against this change, it should be pursued.

Third, the structure of the subsidy should be changed to focus a greater amount of subsidy on lower income people. Current proposals to do this generally center on a refundable tax credit—essentially a recasting of the tax break to make it function as a voucher. Such credits can be designed in a number of ways, but they all have the feature that they provide a far greater subsidy for lower income individuals, in contrast to the current tax exclusion. Refundability means that the full subsidy is available even to those with little or no tax liability.

*Take steps to widen choice of health insurance.* While opening up access to some form of coverage through subsidies or other measures is clearly the urgent first step, it is also very important to increase the probability that newly insured or existing insured individuals will be able to find the coverage that is most likely to improve their health. Choice of health insurance can be supported both to spur efficiency through competition and to accommodate enrollee preferences. But it also makes choice more probable that the type of insurance and covered services will be in line with the needs of the consumer. Unfortunately, a real choice of insurance is limited or nonexistent today unless one works for large firms or for the federal government or some states. For many families, the tax reform discussed above would reduce the artificial tax barrier to a choice of plans since subsidies would be available for plans beyond those offered through the place of work.

While a choice of insurance is important for matching the benefits to the needs and circumstances of the enrollee, it could also help introduce new intermediaries into the health system that would help individuals to receive services that would improve their long-term health. Some proposals to change subsidies and regulations to open up more nonemployment-based options for coverage envision a role for community institutions, such as unions, farm bureaus, churches, or ethnic organizations, so that they could sponsor coverage or at least function as facilitators or negotiators of coverage. This recognizes that for many low-income families, especially those who are also minority, issues with language, information, or trust can be a major impediment to obtaining needed services even for those with insurance or access to public programs. A recent survey by the Commonwealth Fund, for instance, indicated that language problems can present a severe impediment to Hispanics seeking health services, even if they are insured (Doty 2003). Making it feasible

for lower income families to obtain coverage through non-workplace intermediaries, such as Hispanic organizations or consortia of African American churches, could make it more likely that they will actually receive services they are entitled to that will improve their health.

To be sure, there are many policy and technical issues associated with wider choice in health care coverage, most notably worries about adverse selection. So these issues need to be investigated further and lessons learned from the experience of health systems incorporating a wide range of plan choices and benefits, such as the Federal Employees Health Benefits Program. But it is important for policy makers to seek ways of encouraging wide choices of coverage so that the insured services in a plan can be matched to an individual's needs.

*Encourage policy innovation at the state level.* It is one thing to agree that increasing insurance coverage is sound public policy. It is quite another to agree on how best to do so. While some policy steps could almost be said to be self-evident goals, such as focusing subsidies more precisely on those who need them to obtain coverage, other actions to widen coverage are hotly debated or raise practical questions. For that reason, it has been difficult to achieve agreement at the federal level in recent years on initiatives to tackle uninsurance.

A possible solution to this impasse would be to foster greater experimentation by states by making it easier for states to launch demonstration projects or statewide reforms. Doing so would allow an approach to be tried and compared with others when there was insufficient support for taking that approach throughout the entire nation. The Bush administration has stepped up the pace and extent of waivers for state initiatives under current law. Meanwhile, the Institute of Medicine has recommended a larger and more structured experiment in a number of states to test the effectiveness of certain approaches to reducing uninsurance (Corrigan, Greiner, and Erickson 2002). It might be possible to go even further than that. For instance, the federal government might authorize a "menu" of major initiatives designed to reduce uninsurance, such as opening up the Federal Employees Health Benefits Program to certain categories of nonfederal workers or permitting expansions of Medicaid or the State Children's Health Insurance Program. A state could then propose a federal-state experiment to reduce uninsurance, combining elements of the federal menu with actions at the state level. The agreement would be within a federal budget allocation, and the experiment would be subject to a comprehensive third-party evaluation. In this way, we could create more opportunities to discover better ways of reducing uninsurance in ways that also improve health in a cost-effective manner.

In summary, the Hadley review of the research literature makes a convincing case that insurance coverage is an essential step toward better health. That said, a policy maker must consider how to turn that conclusion into a strategy for reducing uninsurance that achieves the biggest health improvement bang for the buck. To do that, we need to learn more about what constitutes good insurance for different categories of the population. We must make it easier for individuals to get access not just to any insurance but to insurance that is matched as closely as is feasible to their needs. We must use whatever public dollars we commit to fostering insurance coverage in the ways that are most efficient in improving health and reducing access barriers for low-income households. And we must ease the political logjam by finding ways to trigger more experimentation with new strategies to increase coverage. If we do these things, we can perhaps move from nodding in agreement with Hadley's findings to taking real action based on his conclusion.

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## Commentary

*Karen Davis*

The Commonwealth Fund

Hadley's masterful synthesis of the literature on the health and economic consequences of being uninsured helps to reveal the hidden costs to individuals and society of this national disgrace. From his careful analysis, a powerful story emerges of individuals whose health is put at risk on a daily basis—hypertension that is not controlled, cancer not detected at an early stage, or life-saving procedures not received.

Hadley concludes that being uninsured causes 4,300 to 17,000 deaths each year. The upper end of the range is close to the Institute of Medicine (2002a) estimate of 18,000 annual deaths of uninsured 25- to 64-year-old adults. This would make lack of health insurance the sixth-leading cause of death among people ages 25 to 64—after cancer, heart disease, injuries, suicide, and cerebrovascular disease but before HIV/AIDS or diabetes. Such numbers make a compelling case for action—whether through federal funding to states implementing strategies to cover all of their residents, as called for in a recent Institute of Medicine (2002b) report, or through a combination of public and private coverage expansions (Davis and Schoen 2003). Failure to move quickly to eliminate this preventable cause of death is inexcusable.

Action has been stymied in large part because of the budgetary investment needed to make coverage affordable to more Americans. No one has systematically analyzed the costs of not expanding health insurance coverage, however. Hadley's article begins to tally the expenses on the other side of the ledger.

Failure to act will result in costs to all sectors of society—to the uninsured, who pay in lost years of life; to employers, whose employees miss work or retire early for health reasons; to the health system, which is encumbered by bad debts and inefficient care resulting from inadequate insurance; and to

society at large, which forgoes the economic benefits and taxes of a healthier, more productive labor force. We all pay when we fail to invest in health care that would make us a stronger and healthier nation.

### **COSTS BORNE BY THE UNINSURED**

Hadley's study is most compelling in its tally of the mortality consequences of being uninsured. Lowering the mortality rate by expanding health insurance can have substantial economic value. Nordhaus (2002) estimated that the 12 percent gain in life expectancy that occurred over the second half of the 20th century had an economic value equal to the growth of real gross domestic product over the same period. If an individual life is valued at \$2 million in terms of productivity, the economic benefit of reduced mortality would be on the order of \$30 billion a year (Cutler and Richardson 1999). Viewed another way, a 0.6 reduction in the mortality rate could add to the gross domestic product an additional 0.6 percent in goods and services—or \$66 billion a year. Although these are far from precise estimates, they demonstrate the magnitude of the potential economic benefits of reducing mortality by covering the uninsured.

Of course, being uninsured exposes individuals to risks other than a greater probability of death. Lack of health insurance often results in poor-quality care, which can have a multitude of health consequences. The Commonwealth Fund 2001 Health Insurance Survey found that the uninsured are less likely than the insured to see a physician when needed or to get needed specialist care; they are also less likely to fill prescriptions ordered by physicians when they do seek care and are less likely to get recommended tests or follow-up treatments (Table 1). More than half (54 percent) of those uninsured all or part of the year reported one of these problems in terms of access to care, compared with one fifth (21 percent) of those who are continuously insured.

The uninsured who do obtain care are more likely to experience financial burdens from medical bills. Those without insurance are twice as likely as those continuously insured to be required to pay cash in advance to get care (Table 1). Nearly half of the uninsured reported that they were not able to pay medical bills, and more than a third said that they had been contacted by a collection agency about unpaid medical bills. Overall, twice as many uninsured as insured said that they experienced cost-related problems in accessing care or paying for medical bills (70 percent vs. 34 percent).

The uninsured are also less likely to have a regular source of care and are thus less likely to receive preventive care or benefit from early detection of medical problems. For example, among adults ages 50 to 64, the uninsured are less likely than the insured to have had colon screening in the past 5 years

TABLE 1 Access Barriers and Financial Insecurity from Medical Bills by Insurance Status

<i>Access and Cost Indicators</i>	<i>Adults Age 19 to 64</i>	<i>Uninsured Full Year or Part Year</i>	<i>Insured All Year</i>
Adults (in millions, estimated)	161.3	38.4	122.9
Went without needed care in past year due to costs:			
Did not fill prescription	18	32*	13
Did not get needed specialist care	11	25*	7
Skipped recommended test or follow-up	14	31*	9
Had a medical problem, did not visit doctor or clinic	17	39*	10
At least one of four access problems due to inability to pay	29	54*	21
Had to pay cash in advance to get care	17	28*	14
Medical bill problems in past year			
Not able to pay medical bills	24	47*	17
Contacted by a collection agency for medical bills	20	36*	15
Had to change way of life to pay bills	13	28*	9
Either medical bill problem or change way of life due to pay medical bills	32	56*	24
Either access or medical bill problems in past year due to costs <sup>a</sup>	42	70*	34

Source: The Commonwealth Fund 2001 Health Insurance Survey.

Note: Adults 19 to 64.

a. Adult said he or she did not go to the doctor when needed, did not fill a prescription, did not follow up on recommended tests or treatment due to costs, or had problems paying medical bills or with bill collectors or had to change way of life to pay medical bills.

\* $p < .001$ .

(Table 2). Ready access to medical care can ensure proper management of chronic conditions, yet among those surveyed with a chronic disease, disability, or in fair or poor health, 13 percent of the uninsured compared with 5 percent of the insured had not received any medical care in the past 2 years. Moreover, the uninsured say they are less satisfied with the quality of care they receive and are less likely to follow their physician's advice. In terms of the quality framework set forth by the Institute of Medicine, the uninsured are systematically less likely than the insured to receive effective, safe, and timely care.

TABLE 2 Quality of Medical Care by Insurance Status

	<i>Adults Ages 18 to 64</i>	<i>Uninsured Full Year or Part Year</i>	<i>Insured All Year</i>
Adults (in millions, estimated)	152.1	38.1	114.0
Had colon screening more than 5 years ago or never (age 50-64)	40	58*	36
No medical care in past 2 years (among those in fair/poor health, with a chronic disease or disability)	7	13*	5
Very satisfied with quality of health care received (among those with health care visit in past 2 years)	61	46*	65
Did not follow physician's advice (among those with health care visit in past 2 years)	27	34*	25

Source: The Commonwealth Fund 2001 Health Care Quality Survey.

Note: Adults 18 to 64 unless otherwise noted.

\* $p < .001$ .

### COSTS BORNE BY EMPLOYERS

Hadley does not address the cost to employers of having uninsured workers, presumably because the literature on this dimension of hidden costs is relatively underdeveloped. But he notes that an individual's earnings are 15 to 20 percent lower as a result of being uninsured, largely because of reduced workforce participation and productivity. Employers may incur costs when employees miss work, leave jobs, or retire early for health reasons.

Hoffman, Rice, and Sung (1996) estimated the indirect costs of lost earnings of chronic disease at \$234 billion per year, with 4.5 million years of productivity lost because of sick days and another 24 million years lost from premature death. In this analysis, just the sick days alone "cost" \$27 billion a year. Better health insurance and better access to care as a result could help to reduce these economic costs to society.

Of course, employees miss work for reasons other than chronic disease. The Commonwealth Fund's 2001 Health Insurance Survey found that 16 percent of the uninsured were absent from work during the year because of a dental problem, compared with 8 percent of those with health insurance (Table 3). Almost half (45 percent) of the uninsured said that they went without needed dental care over the course of a year.

Caregiving responsibilities for a sick or disabled child, spouse, or parent may also keep employees from the workplace. Women in particular may miss

TABLE 3 Quality of Dental Care by Insurance Status

	<i>Total Adults Ages 19 to 64</i>	<i>Uninsured Full Year or Part Year</i>	<i>Continuously Insured Including Dental Care</i>
Adults (in millions, estimated)	161.3	38.4	87.5
Needed dental care and did not get it	24	45*	12
Missed work because of dental problem	10	16*	8

Source: The Commonwealth Fund 2001 Health Insurance Survey.

Note: Adults 19 to 64.

\* $p < .001$ .

work to care for sick family members, especially children, and uninsured children are more likely than insured children to miss school days (Wolfe and Hill 1995). In an analysis of women previously on welfare, Earle and Heymann (2002) found that having a health limitation (odds ratio = 1.53) and having a child with a health limitation (odds ratio = 1.36) were associated with significantly increased risk of job loss, even after accounting for differences in social and demographic characteristics. In a 1999 study, about 37 percent of women on welfare were caring for a child with a chronic condition (Heymann and Earle 1999).

These examples illustrate some of the costs to employers resulting from their shortsighted failure to insure workers. Further research is needed to take the toll on businesses of squandered productivity, employee turnover, and absenteeism.

In addition, employers who fail to offer insurance to their workers effectively shift some of the costs of health insurance to employers who provide it. Among the nation's 120 million workers, only some 70 million receive health insurance from their own employer (Collins et al. 2003). About 20 million of those not covered by their own employer are covered by another employer's insurance, typically that of their spouse. This raises a basic question about the fairness of financing among employers.

Many economists would argue that, over the long run, employers shift these extra costs onto their workers. Alternatively, costs may be shifted to consumers, who may pay higher prices for goods and services produced by those firms, or to stockholders, who may reap lower profits, dividends, and returns on equity. Much more extensive research to sort out the ultimate distributional

impact of employer health insurance costs, perhaps taking advantage of natural experiments that occur when employers add or drop dependent coverage, might shed greater light on this issue.

### **COSTS BORNE BY THE HEALTH SYSTEM**

The costs to the health system of treating uninsured patients have not been systematically documented. A recent analysis by Hadley and Holahan (2003) concluded that the cost of uncompensated care to the uninsured totaled approximately \$34.5 billion in 2001.

Those without insurance often make inefficient use of the health care system. A recent study found that community health centers provide good primary care for their patients but are often unable to obtain specialized services for their uninsured patients (Gusmano, Fairbrother, and Park 2002). When a patient sees a primary care physician but is unable to follow through by getting the colonoscopy that would remove the polyps or purchasing the prescription to cure the illness, the initial investment in the medical consultation is squandered.

The uninsured frequently use costly emergency rooms when care could have been provided in lower-cost primary care settings. A recent study found that 33 percent of the 2 million emergency department visits in Maryland in 2001 involved health conditions that did not require immediate care or could have been treated during a physician visit (Schur, Mohr, and Zhao 2003). The study also found that for every 100 uninsured patients, there are on average 81 emergency department visits per year, compared with an average of 22 visits for privately insured patients. Among uninsured children younger than 6, about 50 percent of emergency visits were for problems that did not need emergency care; among uninsured adults ages 18 to 34, 40 percent of visits did not require emergency care.

Researchers have begun to pay attention to patterns of change in insurance coverage. While about 15 percent of the adult population is uninsured at a given point in time, another 9 percent are uninsured at some point during the year (Duchon et al. 2001). The instability of the coverage system—in which about half of the 41 million uninsured have lost their insurance during a given year—generates both administrative and health care costs. Administrative costs are incurred as individuals move on and off public program coverage and on and off private coverage. Health care providers and insurers also incur costs when they have to update administrative records, verify insurance eligibility, and transfer medical records to a new source of care.

This instability of health insurance coverage has troubling implications for the quality of the patient-provider relationship. As shown in Figure 1, only 20

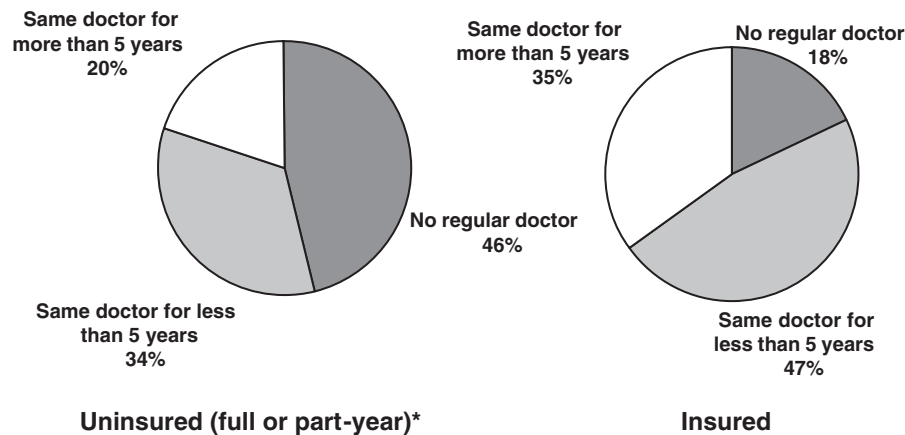


FIGURE 1 Regular Doctor by Insurance Status, Adults Ages 18 to 64

Source: The Commonwealth Fund 2000 Health Care Quality Survey.

\* $p < .001$ . Differs significantly from insured population.

percent of the uninsured have had the same doctor for 5 or more years, compared with 35 percent of the insured. When patients do not have a regular doctor or have a limited choice of where to go for care, they are likely to be less satisfied with their care and have less confidence in their physicians (Collins et al. 2002). In addition, discontinuity in care may contribute to higher costs. One study found that Medicare patients who had been with the same physician for 10 years or longer had fewer hospitalizations and incurred lower Medicare payments (Blustein and Weiss 1996).

### COSTS BORNE BY TAXPAYERS

Taxpayers also pay some of the hidden costs of the uninsured. Hadley and Holahan (2003) estimated that state and local governments spent \$7.4 billion in 2001 on hospital care of the uninsured. Medicare contributes \$6.6 billion through its disproportionate share payments to hospitals that subsidize the uncompensated care provided to the uninsured and through its share of payments for medical education. Medicaid pays \$9.6 billion through disproportionate share hospital payments and supplemental provider payments. In all, the government pays about \$23.6 billion a year for the hospital care of the uninsured.

Federal, state, and local governments also support care of the uninsured through public clinics—community health centers, National Health Service

Corps, maternal and child health clinics, centers caring for persons with HIV / AIDS, the Indian Health Service, and the Veterans Administration. Together with support for hospital care, the annual governmental expenditure for care of the uninsured totals \$30.6 billion (Hadley and Holahan 2003).

The government incurs other, less visible costs in caring for the uninsured. Medicaid and the Children's Health Insurance Program (CHIP) experience high rates of turnover of covered persons. Each time a family enrolls, re-enrolls, and disenrolls from Medicaid or CHIP, administrative costs are incurred by these public programs as well as by the health care system. Yet, eligibility for public programs changes frequently as low-income workers gain or lose jobs or experience other shifts in their economic and personal circumstances (e.g., marriage, divorce, employment status, or residence).

In addition to funding care of the uninsured through public programs, taxpayers pay when the uninsured have reduced earnings and workforce participation. When the uninsured suffer a 15 to 20 percent loss of earnings, they also pay fewer taxes. As the disabled leave the workforce, they no longer contribute payroll taxes or income taxes on earnings. As a result, those who are paying taxes shoulder a greater share of the load of supporting public programs. These concerns have been raised primarily with regard to long-term support of Social Security and Medicare, where the declining ratio of the active workforce to those receiving Social Security and Medicare will require higher payroll taxes in the future. To the extent that people are able to earn more and work longer, this burden will be reduced. It is thus in the interest of all taxpayers to expand health insurance to more working Americans. Attracting and ensuring a younger and healthier immigrant workforce can also increase the number of active workers relative to retirees. Yet, a particularly high proportion of Hispanic workers—a significant source of new labor now and in the future—lack health insurance.

### **COSTS BORNE BY THE GENERAL PUBLIC**

Inadequate health care for the uninsured generates hidden costs borne by the general public, traditionally called externalities. Contagious diseases are the classic example. Uninsured workers abound in the agriculture, goods, service, and retail sectors of the economy and often go to work while ill or forgo needed care. If a food service worker has hepatitis, he may contaminate the food he handles. Uninsured workers in dry cleaners, grocery stores, nursing homes, or pharmacies could easily spread diseases such as flu or tuberculosis to others. Every day, the insured have contact with the uninsured when they ride the bus or train or attend school.

But there is another, subtler way in which the general public is affected by large numbers of people without insurance. The nation's teaching hospitals and major medical centers are a major source of care for those without health insurance coverage (Commonwealth Fund Task Force on Academic Health Centers 2001). The absence of a universal health insurance system takes a financial toll on these institutions and stretches their resources. Teaching hospitals and major medical centers are the major source of care of specialized services, providing the most advanced trauma care, burn centers, transplant centers, and cancer care. If a disaster or terrorist attack occurs, the general public will have to turn to these centers for emergency care. Yet, the financial strains on these institutions from caring for the uninsured and not receiving adequate compensation undermine their ability to maintain the staff and equipment needed for standby capacity. As emergency rooms fill with uninsured patients, hospitals routinely divert incoming emergency cases to other institutions, turning away the insured and uninsured alike (Institute of Medicine 2003).

## CONCLUSION

The hidden costs of not providing health insurance to 41 million Americans are manifold. They are borne most immediately by those who are uninsured through their increased risk of death, disability, and lost earnings. But employers also bear costs through employee turnover, absenteeism, and early retirement. Employers who insure their workers pay more than their fair share of health care costs, often shouldering not only the cost of their own workers but also coverage of dependents and paying the higher premiums that result from charges by hospitals and other providers to subsidize care of the uninsured. The health system pays for the uninsured in terms of the inefficiencies generated by unstable coverage and the uncompensated bad debts incurred. Taxpayers shoulder heavier burdens when disabled adults or family caregivers are not able to hold jobs and pay taxes on earnings. Finally, any American can be affected by the untreated illnesses of the uninsured or the reduced capacity of leading health centers to provide care in the event of an emergency or specialized need.

Research to better identify these hidden costs and estimate their magnitude is needed. But the compilation of evidence to date already points to the need for action. Simply put, the United States cannot be a strong nation without a strong and healthy people. The drop in fertility rates in the 1960s and 1970s portends a serious labor shortage in the coming years—not just in nurses but in all kinds of workers (Davis 2001). We will need every able-bodied adult to

produce the goods and services required for an aging population, and we will need an immigrant population to fuel our economic growth. Preparing for this challenge as the baby-boom population retires requires that we act now to provide a system of health insurance coverage for all—to ensure that every child has an opportunity to grow up healthy and productive and that every adult has the opportunity to contribute to the workforce and society. The fragmented and inadequate system of financing health care that we have inherited from the 20th century will not serve us well in the 21st century.

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## Commentary

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Jack Hadley provides an encyclopedic and incisive review of the literature on the effects of insurance on health. Synthesizing the results of over 130 separate studies, Hadley concludes that there is strong evidence that health insurance leads to improvements in health status and reductions in mortality. Furthermore, since improved health has been demonstrated to lead to increases in productivity and earnings, if health insurance improves health, it should also lead to increases in productivity and earnings.

These conclusions will be welcomed by advocates for expanded insurance coverage. Unfortunately, these findings are unlikely to have much effect on the outcomes of health care financing reform debates. In large part, my pessimism reflects the loose connection between policy and research—it is hard to point to any single research finding that is likely to have much effect on the outcome of a debate over an issue as contentious as health care financing. But in part, the difficulty reflects, as Hadley observes, serious gaps in the existing research.

Health care financing reform debates are awash in a sea of estimates on the effects of proposed financing changes on health care utilization and expenditures and on the distributional consequences for employers, employees, and taxpayers. But although we have “precise” estimates of the costs of coverage expansions, we do not have credible estimates of benefits using a metric that might sway politicians or the public. Hadley’s article supports the argument that health insurance expansions will lower mortality, improve health, and

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lead to increased earnings and productivity, but it leaves us wondering, “By how much?”

There are three major problems with the existing work. First, studies of the effect of insurance on mortality rates provide an extremely wide range of estimated effects, and closer examination of the only two population-based, longitudinal studies heightens our uncertainty. Second, although there is a substantial body of evidence that suggests that health insurance improves health, none of the research estimates the effects using a metric—such as quality adjusted life years (QALY)—that is useful in comparing the costs of insurance expansions with the benefits. Third, there is no evidence that directly connects health insurance with increased productivity, and the indirect connection demonstrated by Hadley—that health insurance improves health, and health improves productivity—cannot be used to credibly estimate the magnitude of the effect of insurance on productivity or earnings.

In this commentary, I discuss each of these three problems and then suggest directions for further research.

### INSURANCE AND MORTALITY

As Hadley notes, there are two types of studies estimating the effects of being uninsured on mortality. One type, by far the more numerous, analyzes the difference in mortality rates between insured and uninsured persons with specific medical problems, for example, cancer or heart disease. These studies find that the mortality rate for the uninsured is substantially higher than mortality for the insured—averaging 37 percent higher across the 13 studies reviewed. These studies are strongly supportive of the proposition that being uninsured is bad for one’s health but leave a number of major uncertainties. First, few of the studies control directly for income, which is known to be a major risk factor for mortality. Second, although some of the studies also demonstrate that the uninsured received less (or different) care post-diagnosis than did the insured, it is not clear whether the elevated mortality rates are due to differential care post-diagnosis or due to the fact that the uninsured are in worse health at the time they are diagnosed. And if it is the latter, then it is not clear whether the worse health is a result of being uninsured, a result of some other factor that is related both to poor health and lack of insurance, or a result of differential case finding, in which insured persons are diagnosed at a lower threshold of symptoms, leading to higher survival rates as a result of a selection effect. Third, results from these disease-specific studies cannot be directly extrapolated to the results we should expect if insurance coverage were expanded to the heterogeneous population of currently uninsured.

To directly estimate the effects of expanding insurance coverage on mortality rates, we need evidence on the effects of insurance on mortality for a general population. There are only two published studies using a longitudinal design and a representative sample of the population to estimate the relationship between lack of insurance and mortality, and these two studies leave substantial uncertainty about the magnitude of the relationship. Franks, Clancy, and Gold (1993) analyzed data from the National Health Nutrition and Examination Survey (NHANES1). They followed through 1987 a cohort of approximately 4,700 adults, age 25 to 74, who were either uninsured or privately insured when they were first interviewed between 1971 and 1975. They used Cox proportional hazards analysis to compare the mortality of persons who were uninsured at baseline with those who were privately insured at baseline, controlling for a wide range of demographic, employment, and health status characteristics.<sup>1</sup> Franks and colleagues estimated that the hazards ratio for being uninsured was 1.25—indicating a 25 percent higher mortality rate for the uninsured than the insured, with a 95 percent confidence interval stretching from 1.0 to 1.55. The estimated effect of being uninsured on mortality is similar to the estimated risk from being unemployed, from having less than \$7,000 in annual income at baseline (compared to having more than \$15,000), from being in good or very good (as compared to excellent) health, and equivalent to an extra 3.5 years of age. The mortality risk from being uninsured is more than the excess risk of getting little or no exercise but less than the risk from smoking, being obese, or consuming more than five drinks per week.

Sorlie et al. (1994) analyzed a much larger sample of approximately 150,000 respondents, age 25 to 64, from the 1982 to 1985 Current Population Surveys over a 5-year follow-up period. Using Cox proportional hazards analysis, they estimated that employed uninsured men have a hazard rate of 1.3 (relative to employed privately insured men). At first glance, this finding seems quite consistent with the Franks et al.'s (1993) finding and might give confidence that the results are similar. But the Franks results control for a wide variety of demographic and health status characteristics, while the Sorlie results control only for age, gender, income, and race. Since the uninsured are in poorer health, at any point in time, than the insured, we would expect that results that control for health status would show a much smaller relative hazard rate for the effects of insurance than results that do not. The apparent similarity of the two results is thus puzzling.

I update the Franks et al. (1993) and Sorlie et al. (1994) findings with a brief report on analysis of data from the 1989 National Health Interview Survey (NHIS) that have been linked to the 1997 National Death Index. The NHIS is designed to assemble data on a national probability sample of noninstitu-

tionalized civilians. The 1989 NHIS contains 116,929 observations from approximately 42,000 households. Following the protocol in Franks et al., I restricted the analysis to the 60,087 adults age 19 to 64 who were either covered by private insurance or who were uninsured. Of these 60,087 adult respondents in the 1989 NHIS, 58,575 were successfully linked to the 1997 National Death Index by staff at the National Center for Health Statistics.

As shown in Figure 1, the proportion of 1989 NHIS respondents who had died by 1997 increased sharply with age, but within each age group, mortality rates among the uninsured were substantially higher than mortality among those who were privately insured in 1989.

I estimated a set of logistic regressions, in which the dependent variable is an indicator of whether the respondent survived to 1997, with increasingly comprehensive sets of independent variables.

As shown in Table 1, in a model controlling only for age, gender, and insurance status, the hazard ratio for being uninsured is 1.92 (95% confidence interval = 1.72-2.15). Including variables indicating Hispanic ethnicity, veteran status, and education, the estimated hazard ratio declines to 1.68. Including additional variables measuring income and employment status reduces the estimated hazard ratio for being uninsured to 1.38. Including variables measuring self-reported health status and a variable indicating whether the respondent is receiving personal care services, the hazard ratio for being uninsured is further reduced to 1.25.<sup>2</sup>

This result appears consistent with Franks et al. (1993), and suggests that the relationship between insurance and mortality has not changed much in the past decade. However, there are two substantial causes of concern. First, it is clear that much of the bivariate relationship between insurance and mortality is a result of lack of insurance being related to other factors. When we control directly for these other factors, the estimated "effect" of insurance on mortality is substantially reduced—from 1.92 to 1.25. It seems likely that if we were able to control for additional factors, such as health-related behaviors (smoking, alcohol consumption, obesity, and risk-taking behaviors more generally), wealth, or value placed on health or health care, the estimated effect of being uninsured would be reduced further. What is uncertain is whether the reduction would bring the estimated hazard ratio all the way down to 1.0 or whether an independent effect of being uninsured would remain.

Second, I am given pause in interpreting these results by noting what happens when we include additional variables in the model measuring marital status. I included a variable for "never married," a variable for "widowed," and one for "divorced" and find that the hazard rate for being never married is 1.92, much higher than the hazard for being uninsured, which is reduced further to 1.18. It seems unlikely that having never married is causally related to a

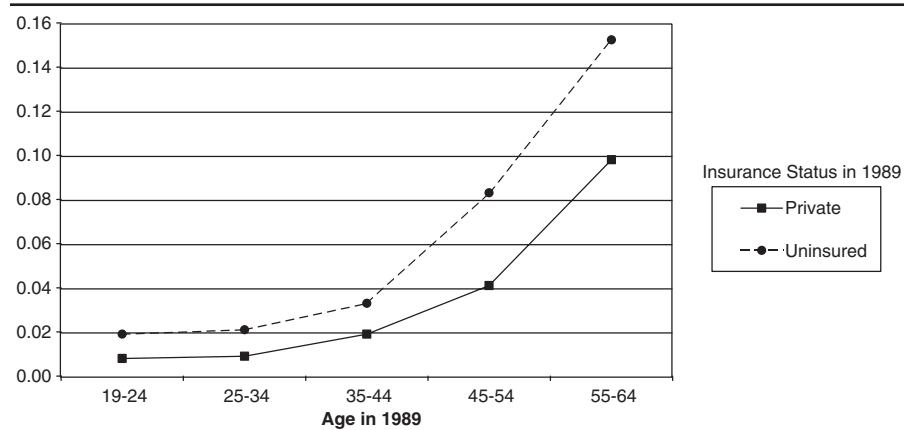


FIGURE 1 1997 Mortality Rate among 1989 National Health Insurance Survey Respondents, by 1989 Age Group and Insurance Status

Source: 1989 National Health Insurance Survey, merged with the 1997 National Death Index.  
Note:  $N = 58,575$ .

higher risk of death but rather is a proxy for mortality-related factors, such as sexual preference (unmarried men have a much higher death rate from AIDS than married men), health-seeking behaviors, risk-taking behavior, and, perhaps, depression and stress. Regardless of the specific explanation for the empirical link between marital status and mortality, it seems clear that marital status is a proxy for something else. Although it is more plausible that lack of insurance is causally related to mortality than is marital status, the very high hazard ratio for having never married indicates that important causal variables are omitted from the model, and it highlights the possibility that the estimated hazard ratio for being uninsured is biased upward from its true value.

### INSURANCE AND MORBIDITY

Although existing research leaves some gaps in our understanding of the relationship between insurance and mortality, it leaves a chasm in our understanding of the relationship between insurance and morbidity. In part, the same methodological limitations that plague studies of the effects of insurance on mortality also create troubles in studies on the effects on morbidity—the difficulties in making causal inferences from observational studies due to reverse causality and omitted variables and the paucity of quasi-experimental studies. However, an additional difficulty in the study of morbidity is that researchers have not used a metric that supports policy-relevant conclusions. Existing research tends primarily to analyze the effects of insurance on self-

TABLE 1 Proportional Hazards Estimates of Being Uninsured, Adjusting for Varying Sets of Baseline Characteristics

<i>Control Variables</i>	<i>Hazard Ratio for Being Uninsured</i>	<i>95% Confidence Interval</i>
Age, gender	1.92	1.72-2.15
Both of the above, plus Hispanic ethnicity, veteran status, education	1.68	1.49-1.88
All of the above, plus income, employment status	1.38	1.22-1.57
All of the above, plus self-reported health status, receipt of personal care	1.25	1.10-1.43
All of the above, plus marital status	1.18	1.03-1.34

Source: 1989 National Health Insurance Survey, merged with the 1997 National Death Index.  
Note:  $N = 58,575$ .

reported health status (excellent, very good, good, fair, or poor), restricted-activity days or other health-related activity limitations, or specific health outcomes such as the frequency of ruptured appendix.

We do not have a good estimate of the effects of insurance on the proportion of the population that will report excellent health, but even if we did, it is hard to imagine that this estimate would have much traction in policy debates on coverage expansions. Suppose, for example, we knew that health insurance would increase the proportion of the persons reporting excellent health by 4 percent or reduce the number of restricted-activity days by 3 percent. Would this help politicians balance the costs of insurance expansions with the benefits? I think not—it is difficult to figure out how much we should value an increase in the proportion of persons reporting excellent health or a decrease in restricted-activity days.

The difficulty in valuing outcomes other than mortality is not unique to studies of the effects of insurance on health. Researchers studying the cost effectiveness of medical interventions have faced similar problems, as have researchers attempting to measure cross-sectional differences and changes over time in the health of defined populations. In response to the need for a metric that can be used to integrate the effects of interventions on mortality and on morbidity, a variety of researchers have developed tools to measure QALYs (see, for example, Kaplan, Bush, and Berry 1976 and Furlong et al. 2001). The concept of measuring health outcomes using the QALY metric has found broad acceptance within the public health and health services research communities. One of the primary health goals articulated in Healthy People 2000 was to add 3 QALYs to the average life span (Department of Health and

Human Services [DHHS] 1991). Both the DHHS and the American Medical Association agree that expressing health outcomes in terms of QALYs should be a national priority (DHHS 1991; Russell et al. 1996).

To take a prominent example, the Quality of Well Being (QWB) scale uses information on social and physical mobility limitations and on the presence of a variety of symptoms and problems to assign a QWB score to an individual (Kaplan, Bush, and Berry 1976). A QWB score of 1.0 indicates asymptomatic optimal functioning; death is assigned a score of 0.0, and scores in between 0 and 1 are on an interval scale. In theory, a person would be indifferent between 5 years of life at a QWB score of 0.8 and four years of life at a QWB of 1.0.

Hundreds of cost-effectiveness studies have been performed using the QWB and similar methods of measuring QALYs (Kaplan 2002). These studies allow for the integration of estimated effects on morbidity and mortality and allow for comparison of the cost of interventions with the benefits. We have not, as a society, agreed on a single standard for how much a QALY is worth. But it seems evident that if an additional QALY could be produced for an investment of as little as \$10,000, virtually everybody would think that was worth it. And, conversely, if it cost an additional \$1,000,000 to produce a single QALY, most would probably think that was not worth it. Many studies of cost effectiveness consider an intervention to be cost effective if it produces a QALY at a cost of less than \$100,000, and a range of \$50,000 to \$100,000 per QALY would likely be acceptable to many (Cutler and McClellan 2001).

How much will insurance increase QALYs? The answer is unknown, both because existing research leaves uncertainties about the effects of insurance on mortality and because we have not even attempted to measure the effect of insurance on quality of well-being for survivors.

It seems quite plausible that the effect of insurance on quality of well-being for survivors may contribute substantially more to an aggregate increase in QALYs than does the effect of insurance on mortality. Suppose, for example, that the average QWB for an uninsured population is 0.78, and imagine that health insurance might increase the average QWB to 0.80. Then insuring 40 million uninsured persons would lead to an increase of 800,000 QALYs annually. As discussed by Hadley, if the risk of death for the uninsured is 20 percent higher than the risk for the insured, then insuring the uninsured would result in 17,200 fewer deaths. If the risk is "only" 5 percent higher, then insuring the uninsured would result in 4,300 fewer deaths. Assuming, somewhat arbitrarily, that each avoided death results in 25 years of additional life and that each year of additional life has an average QWB of 0.8, then the reduction in mortality from insuring the uninsured would lead to an increase of between 86,000 and 344,000 QALYs.

Although there are many uncertainties in these calculations (e.g., insurance might increase QWB among survivors by only 0.005 rather than the 0.02 assumed above, and the effects of insurance on mortality are uncertain), it seems reasonable to expect that the major effects of insurance on health will come not from a reduction in mortality rates but rather from an increase in the quality of life for people who survive. This suggests that we should put more emphasis in future work on measuring the effects of insurance on quality of well-being for survivors and perhaps less emphasis on measuring the effects of insurance on mortality.

It is important to note that the potential increases in QALYs from insuring the uninsured are substantial. If insuring the uninsured were to lead to an increase of 1,000,000 QALYs, and if QALYs are valued at \$50,000 each, then insuring the uninsured would be “worth” \$50 billion. This is an annual number—each year that the uninsured have insurance, their quality of well-being would be higher than if they were uninsured, and each year they would have a lower mortality rate. Assuming that the uninsured currently use approximately \$1,250 worth of health care and that their health care utilization would double if they were to become insured, these calculations suggest that the value of the increased QALYs generated by universal coverage is approximately equal to the amount of additional resources that would flow into the health care system to achieve it.

### **INSURANCE, LABOR FORCE PARTICIPATION, AND WAGE RATES**

Although politicians and the public may be swayed by an argument that expanded insurance coverage will increase the number of healthy years of life for the currently uninsured, it would likely be even more persuasive if we could credibly estimate the effects of insurance on labor force participation, productivity, and wages. In this area, the dimensions of our ignorance are vast. We have evidence (and common sense) to think that good health will lead to greater labor force participation and increases in productivity and earnings. We think that insurance improves health, but we have no way of connecting the magnitudes of the estimates of the effects of insurance on health with the estimates of the effects of health on wages and labor force participation.

Hadley reports that increasing health from “fair or poor” to “good or excellent” could increase annual earnings by 15 percent to 20 percent. Of course, this estimate has tremendous uncertainty associated with it, but if we accept it at face value, then we would also need an estimate of the effect of insurance on the distribution of folks between fair-to-poor and good-to-excellent health. If, for example, we knew that insurance would decrease the percentage in fair-to-

poor health by 3 percentage points and increase the percentage in good-to-excellent health by 3 percent, then we could conclude that insurance would increase earnings by 0.45 percent to 0.6 percent among the currently uninsured. This is a relatively small number—if average earnings among the uninsured are \$25,000 annually, then an increase of 0.5 percent is an increase of \$125 in annual earnings. But there are so many uncertainties here that we have little sense even of the order of magnitude of the effect of insurance on productivity. More work is clearly needed.

### MOVING FORWARD

To summarize the discussion presented above, we face three difficulties in estimating the effects of being uninsured in ways that would help politicians and the public to make informed judgments weighing the costs of insurance expansions with their benefits:

1. Our estimates of the effects of insurance on mortality leave substantial uncertainty about the magnitude of the effect.
2. No existing research attempts to estimate the effects of insurance on quality of life using a metric, such as the QWB scale, that can be translated into quality adjusted life years.
3. We have no direct evidence about the effects of insurance on productivity or earnings, and even the indirect evidence—that insurance improves health and that good health increases earnings and labor force participation—is not presented in a fashion that allows even very crude estimates of the magnitude of the effect of insurance on productivity.

How can we move forward on each of these questions? Given the much larger sample sizes that are needed to estimate the effects of insurance on mortality in a general population, I focus below on the morbidity and productivity questions. Although this approach is expedient, it is also sensible since as I argued above, the effects of insurance on morbidity are likely to be substantially larger, in terms of aggregate QALYs, than are the effects on mortality.

Hadley (2003 [this issue]) suggests conducting a randomized trial in which participation is solicited from people who are currently uninsured and in which “families would be randomly assigned to a treatment group that receives insurance coverage or to a control group that remains uninsured (at least initially) but is compensated for continued participation in the study” (p. 64S). Such a study, if properly designed and powered, could no doubt provide valuable estimates of the effects of health insurance on quality of life, labor force participation, productivity, and earnings, although it is hard to imagine that it could have a sample size large enough to detect a significant

effect on mortality rates.<sup>3</sup> But the costs are likely to be prohibitive—if the study had 5,000 persons each in the control and experimental groups, the cost of insurance was \$2,500 per person per year, and the experiment ran for 4 years, then the direct costs of insurance (and compensation for the control group) might be on the order of \$100 million, not counting the costs of managing the experiment and collecting and analyzing the data. Although it is possible that some foundation or government agency will make this kind of investment, the short-run prospects would appear slim.

Short of a randomized experiment, substantial progress could be made in estimating the effects of insurance on QALYs and productivity by taking advantage of a variety of natural experiments that are occurring throughout the country in public and private coverage. On the private side, there are valuable opportunities to measure the effects of insurance expansions when organized labor gains health benefits for newly insured groups of workers. For example, janitors have been successful in gaining health benefits in Los Angeles, Boston, and some other large cities, while they have not yet been successful in cities that are, in other ways, quite similar. If we had been ready to conduct research at the time of the collective-bargaining victories, we could have conducted a baseline survey of health status, labor force participation, health care utilization, and unmet health care needs among a sample of janitors in cities where benefits have been obtained, as well as among a sample of janitors in comparison cities. We could then conduct follow-up interviews over the next several years to track changes in health status, labor force participation, and other outcomes of interest in the two groups.

If we found that the change in health status from baseline to follow-up was more positive among the janitors in cities in which health benefits were obtained than among janitors in cities without health benefits, then we would have strong evidence that insurance improves health status and good estimates of the magnitude of the effect, at least among janitors and their families.

Similar sorts of opportunities are presented by the expansion of insurance benefits to in-home supportive services (IHSS) workers in California. IHSS workers provide personal care services to Medi-Cal beneficiaries who are in need of long-term care services. At the county level, labor unions representing IHSS workers are winning health benefits. There is variation across the state in the timing of these victories and in the minimum number of hours required to be eligible for benefits. These variations in the timing and scope of benefits provide an opportunity for a pre-post analysis of the effects of insurance on IHSS workers in California. To the extent that some states have been moving to extend benefits to personal care workers while other states have not, interstate comparisons might also be fruitful.

On the public-coverage side, a set of natural experiments in which some states have extended eligibility for public coverage for the parents of State Children's Health Insurance Program (SCHIP)-eligible children to 200 percent of federal poverty level (FPL) and above, at the same time that neighboring states have much more restricted eligibility criteria for adults provide fertile grounds for analysis. This sort of variation creates the opportunity to analyze the effects of insurance on quality of well-being and on labor force participation and earnings.

Evaluations of these sorts of natural experiments have both substantive and procedural difficulties. Substantively, in the absence of randomized assignment, the analyst can never be sure that the treatment and control groups are similar enough that if outcomes change differently for the group newly offered insurance coverage than for the group not offered coverage, the difference in outcomes are due to the availability of insurance as opposed to other factors. There will be substantial numbers of insurance status transitions in both the treatment and control groups, complicating interpretation of the results. It is difficult to keep track of low-income, highly mobile populations over an extended follow-up period. And generalizing the results from the population being studied to the broader population of uninsured will be difficult. Procedurally, there are difficult timing problems in fielding evaluations of these sorts of natural experiments. For the research to be successful, it is important to obtain baseline measurements of health status and labor force participation soon after an intervention occurs and people obtain insurance coverage. Typically, the insurance expansions occur without much warning, and getting the research design and funding in place in a timely fashion is a serious challenge.

Notwithstanding the substantive and procedural difficulties in performing research to study the effects of natural experiments in which insurance benefits are obtained for a well-defined group of people, this sort of research would provide valuable estimates of the effects of insurance on QALYs and on labor force participation.

## CONCLUSION

It is always difficult to know what sorts of research findings will move the policy debate forward. I can imagine a situation in which we had ironclad research results demonstrating that insuring the uninsured would almost certainly result in a reduction of 20,000 deaths annually and almost certainly result in an increase of 1,000,000 QALYs annually and that these results had no effect at all on politicians or public policy, at least in the short run. Nevertheless, one need not be a Pollyanna to think that good estimates of the magnitude

of the effect of insurance on morbidity, mortality, and productivity would lead to better informed and, perhaps, better decisions.

Some politicians and, I suspect, some health service researchers think that health insurance will have almost no effect on health. They reason that most uninsured people either do not have medical problems, have problems that health care cannot make better, or, through public providers or other means, manage to get most of the care that will ameliorate their problems. Jack Hadley's excellent review will make it more difficult for reasonable people to maintain this belief. The challenge remains for health service researchers to do a better job of estimating the magnitude of the effect of being uninsured and of communicating these results effectively to politicians and the public.

Finally, we should remember that there are likely to be many beneficial effects of universal coverage other than reductions in mortality, improvements in health, and increases in labor force participation and productivity. Universal coverage should increase the cohesiveness of the polity and society. Universal coverage, depending on how it is accomplished, may also increase our ability to match the rate of growth of health care expenditures with the rate of growth of value created by the health care system and may lead to improvements in the quality and efficiency of health care delivery. The increase in financial security that health insurance provides will improve people's lives and reduce the rate of personal bankruptcy even if their health does not improve. However, although there may be many benefits from expansion of insurance coverage other than the benefit to people's health, the health benefit alone is certainly an important expected outcome. Producing better estimates of the magnitude of this benefit should be a high priority. I would like to think that the results of our research will be useless because we will manage to change public policy and enact universal health insurance before the research is finished, but it is probably desirable to initiate the research just in case academics can act more quickly than politicians.

## NOTES

1. Control variables are age, gender, race, education, income, employment status, self-rated health, leisure exercise status, smoking status, alcohol consumption, obesity, and morbidity (a 0-1 variable defined as the presence or absence of evidence of morbidity on examination and laboratory testing).
2. Assuming that health status is affected by insurance (as Hadley's review so eloquently argues), then controlling for health underestimates the total effect of insurance on mortality—that is, lack of insurance affects mortality directly, as well as affecting health and through that affecting mortality.

3. Even if the effect of insurance is to reduce mortality rates by 20 percent (and that is probably an upper-end estimate), then the reduction in mortality from insurance will be approximately 40 fewer deaths per 100,000 persons per year. If the experiment were to run for 5 years, and if one-half of the initially uninsured control group were to obtain insurance during the course of the experiment, then the expected difference in death rates between groups might be 20 per 100,000 per year. If the control and experimental groups each had 10,000 persons, then we would expect 2 more deaths in the control group than in the experimental group each year. Even over a 5-year experimental period, this would not be a large enough difference to observe significant effects. And if the effect of insurance were less than a 20 percent reduction in mortality rates (as seems likely), power would be even smaller.

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