

**ON THE “EFFICIENCY” OF MANAGED  
CARE PLANS**

Kip Sullivan

The claim that managed care plans are more efficient than fee-for-service plans has been made so often that it has reached the status of folklore, but the evidence is inconclusive. The claim is usually based on one or both of the following errors: (1) lower medical care costs mean lower total costs (medical plus administrative costs) and (2) lower HMO premiums mean HMOs are more efficient than fee-for-service plans. The first assertion ignores evidence indicating that managed care has driven up administrative costs for both insurers and providers. The second ignores evidence that managed care plans have numerous methods of shifting costs that are unavailable or less available to fee-for-service plans. The lull in health care inflation during the mid-1990s is often cited as evidence that managed care is efficient. But the lull may have been caused not by the spread of managed care but by the near-simultaneous occurrence of four events: a downturn in the insurance underwriting cycle, the 1990–1991 recession, endorsement of managed competition by numerous politicians, and the merger fever triggered by those endorsements.

From the earliest days of the health maintenance organization (HMO) movement, many have asserted that HMOs or managed care plans save money and are more “efficient” than fee-for-service (FFS) plans. As a result, that notion has reached the status of folklore within a substantial portion of the health policy community.

This folklore is also widely accepted among politicians. President Bill Clinton announced during his 1998 State of the Union address that “managed care plans . . . save money” (1). Republican members of the National Bipartisan Commission on the Future of Medicare and other proponents of the premium-support approach to “modernizing” Medicare assert that managed care plans are more efficient than the FFS Medicare program (e.g., 2).

In this paper I argue that the evidence in support of the claim that managed care saves money is inconclusive. I begin with a description of two types of errors frequently made in descriptions of the empirical evidence. I then review what little evidence there is on the efficiency of managed care plans compared with FFS plans. I close by presenting a hypothesis that explains why health care inflation fell during the mid-1990s that does not rely on the as yet undocumented assumption that managed care plans of any sort are more efficient than FFS plans.

Throughout the paper I use “efficient” in the narrow and misleading sense in which it is often used in the health policy literature, that is, to mean “lower-priced” or “using fewer resources” as opposed to “providing higher value.” In other words, I ignore the question of whether managed care plans, if in fact they are priced lower, achieve that status by offering lower quality.

## TWO COMMON ERRORS

The claim that managed care plans are more efficient than FFS plans typically rests on one or both of the following errors.

### *Error Number One*

The first error is this: lower MCP medical care costs in managed care plans necessarily mean that managed care plans’ total costs are lower. Since at least 1970, when the campaign to pass the HMO Act of 1973 began, managed care advocates have cited evidence that managed care plans reduce plan-level medical costs, either by reducing use of medical services, especially hospital services, or by extracting discounts from providers, especially hospitals. The issue here is not whether HMOs reduce utilization rates below FFS levels, nor whether HMOs and preferred provider organizations (PPOs) extract discounts from providers and drug companies that FFS plans cannot get. It is well established that HMOs reduce utilization rates and that managed care plans can compel their suppliers to offer large discounts. The issue is, rather, whether medical costs equal total costs. They clearly do not. Total costs are the sum of medical costs plus administrative costs plus profit or surplus. As I show below, evidence indicates that managed care has driven up administrative costs. Throughout the remainder of this article I use the phrase “expenditures on medical services” to refer to expenditures that do not include plan-level administrative costs or plan profits, and the phrase “total expenditures” to refer to the sum of expenditures on medical services plus expenditures on plan-level administrative functions plus plan profits. Total and medical expenditures can be measured either at the plan level or at a systemwide level (at the level of the market, state, region, or nation).

Examples of this type of error are legion. Paul Ellwood and colleagues (3), for example, used this argument in their seminal 1971 article calling on the Nixon Administration to endorse HMOs.<sup>1</sup> They claimed that HMOs were more efficient than FFS providers based on studies (which they did not cite) showing that HMOs provide fewer services. Nearly three decades later, Sheila Smith and colleagues (4) committed the same error. They asserted that the “sustained plateau in health spending . . . since 1993 reflects changes in financing and delivery” and a shift away from the “fee-for-service system [to] managed care.” Unlike Ellwood and colleagues, Smith and colleagues offered a reference (and only one) for their claim: a 1994 literature review by Robert Miller and Harold Luft. But as I indicate in my discussion below, this review found only that HMOs (not “managed care”) reduce utilization rates (not total expenditures).

#### *Error Number Two*

The second common error is this: lower HMO premiums necessarily mean that HMOs are more efficient. The claim that “managed care plans are more efficient” has often been “documented” with evidence that HMO premiums are often lower than FFS premiums. The problem with this claim is, of course, that factors that have nothing to do with “efficiency,” such as HMO cherry-picking (selecting lower-risk persons as members) and cost shifting, may explain why HMO premiums tend to be slightly lower than FFS premiums. No studies of total spending controlling for these variables have been done, at least not in the past 15 years.

An example of the second type of error is Alain Enthoven’s flattering description of HMOs in his 1978 Shattuck Lecture (5).<sup>2</sup> Contrary to Enthoven’s claim, the literature review he cited (6) did not report that HMO premiums were lower because HMOs were more efficient.

<sup>1</sup>In this paper, devoid of footnotes, Ellwood and colleagues assert that capitation “assures that [HMOs] deliver services more efficiently . . . than conventional providers” (3, p. 295). But the only evidence offered for this assertion is this sentence: “Rates of hospital utilization and surgery are . . . lower for health maintenance organizations, and HMO subscribers require fewer physicians per capita and fewer hospital beds than is true for the United States as a whole” (3, p. 296). Since these claims are not documented by source citations, it is impossible to know whether the studies upon which these claims were based examined HMO and FFS patients with similar health status. In any case, Ellwood and colleagues do not argue, nor could they, that medical costs are an excellent proxy for total costs.

<sup>2</sup>In this paper, Enthoven states that Luft had conducted a review of “many comparison studies done since 1950” and that Luft had “concluded that [HMOs cut total expenditures] on the order of 10 to 40 percent,” that these “savings . . . are mainly attributable to much lower hospitalization rates and greater economy and efficiency of [HMOs, not] out-of-plan utilization, differences in age and sex composition, previous health status, or government subsidies” (5, p. 1230). In fact, Luft’s review examined five studies, not “many”; all these studies involved Kaiser Permanente; and in fact Luft concluded that factors other than HMO efficiency—including “self-selection” into, and “undertreat[ment]” by, HMOs—could have accounted for the HMOs’ lower premiums (6). Enthoven repeated this mistake in his 1989 article with Richard Kronick (7).

## REVIEW OF THE SPENDING LITERATURE AS OF 1994

In their 1994 review of studies comparing the performance of managed care plans with FFS plans, Miller and Luft found two dozen reliable studies indicating that HMOs (not PPO plans, point-of-service plans, “managed care,” or “changes in financing and delivery”) reduce use of medical services below levels provided by FFS plans (8, p. 1515). These were almost entirely services offered by or in hospitals. But Miller and Luft could find no reliable studies showing that managed care plans reduce total spending. They could find “no peer-reviewed literature [that] determined differences among plans in premium levels,” adjusted for differences in enrollee health and other factors that could have affected premium levels. They could find no “peer-reviewed studies [that] estimated the impact of managed care plans on national or regional area health care expenditures.” They described a few studies that showed that California HMOs and PPOs reduced hospital expenditures for all patients (managed care and FFS patients), but, it should go without saying, hospital expenditures do not equal total medical spending, much less total plan-level spending.

It is worth noting that Miller and Luft could find very little reliable evidence on PPOs (now, according to some surveys, the dominant form of managed care (9)). It also is worth noting that the sole PPO observation they did report “showed significantly higher total [medical] expenditures for PPO enrollees compared with indemnity plan enrollees” (8, p. 1515).<sup>3</sup>

Miller and Luft did offer this speculation: if HMOs provide fewer expensive services and “more comprehensive coverage” than FFS plans, “the findings suggest that HMOs provide care at lower cost than do indemnity plans” (8, p. 1515). Even if this speculation about HMOs is accurate, it does not warrant the conclusion that the entire managed care industry deserves the same praise. But this hypothesis has two serious defects. First, it ignores the myriad methods HMOs have invented to shift costs from themselves to other payers, methods that are less available or completely unavailable to traditional FFS plans. Second, this hypothesis assumes that increased administrative costs, for both HMOs and the providers HMOs deal with, have not offset savings achieved in the medical expenditures portion of HMO budgets. I review each of these defects below.

*Cost Shifting*

The evidence bearing on the cost-shifting methods available to HMOs and, to a lesser extent, PPOs varies in quality, and I will not attempt to evaluate that evidence here. I merely observe that these cost-shifting methods are numerous and lucrative. They include using financial incentives that encourage HMO doctors to shift costs to other payers (11), including workers’ compensation programs (12)

<sup>3</sup>The PPO study Miller and Luft were referring to was by Zwanziger and Auerbach (10).

and unpaid family caregivers; indirectly inducing drug companies (13, 14) and hospitals (15) to shift costs to weaker payers, including FFS plans, by extracting large discounts from them; avoiding their share of research expenses (16, 17), charity care (18), and graduate medical education (GME) expenses, even while being subsidized by Medicare for GME costs; provoking enrollees to pay for care outside HMO networks (19, 20);<sup>4</sup> enrolling populations that are healthier than average (21) (excessive payments to Medicare HMOs because of favorable selection may equal 15 to 20 percent of total Medicare payments to HMOs) (22, 23); billing Medicare for billions of dollars (equal to approximately 5 to 10 percent of total Medicare payments to HMOs) in administrative costs that should have been billed to private payers (24); and failing to reimburse Veterans Affairs (VA) Hospitals for services rendered by these hospitals to Medicare HMO enrollees (25). Until these externalized costs are measured and placed back in the expenditures column of the HMO ledger, it is unwise to assume that HMOs are more efficient than FFS plans.

#### *Rising Administrative Costs*

Managed care plans' ability to cut their own medical costs and the absence of conclusive evidence that they reduce total plan costs seem paradoxical. However, a logical explanation is at hand: the cost-control tactics known collectively as “managed care” may require additional employees at both the plan and provider levels. Because the literature on administrative costs of managed care plans and providers is so sparse, it is fair to say that the issue has never been on the health policy research agenda. What evidence we have indicates that administrative costs have soared as managed care methods have spread.

The State of Minnesota reported that Minnesota HMOs increased their administrative spending per member by 403 percent between 1980 and 1991, while their spending per member on medical care rose only 255 percent.<sup>5</sup> This rapid increase in administrative costs occurred at a time when HMO enrollment more than doubled, from 415,105 to 1,193,800 (26). In most industries a doubling of production leads to a fall, not a large rise, in per unit administrative costs.

A similar pattern prevailed at the national level. During the period 1987 to 1993, a period in which managed care enrollment soared, private health insurance

<sup>4</sup>The study by Davis and colleagues found that “17 percent of managed care enrollees reported using services outside of their plan in the past twelve months” and that the out-of-plan users “reported an average of four out-of-plan visits within the past year for services not covered by their plan” (19, p. 106). Out-of-plan use was clearly related to dissatisfaction with the plan. A *Consumer Reports* survey (20) found that 18 percent of enrollees in managed care plans sought medical services outside their plan networks.

<sup>5</sup>The percentages are my calculations based on the HMO expenditures per member per month, as reported by McKasy and Marschall (26).

administrative expenditures per person covered rose by 236 percent while FFS premiums rose 70 percent and HMO premiums rose 71 percent (27, 28).<sup>6</sup>

Other evidence indicates that the arrival of managed care has driven up providers' administrative costs as well (29–32). David Himmelstein and colleagues demonstrated that employment of administrators, in both the insurer and provider sectors, rose from 18.1 percent of total employment in the U.S. health care system in 1968 to 27.1 percent in 1993. Administrative personnel grew by 288 percent during this period, while the number of physicians, the great engine of medical inflation according to managed care advocates, grew by just 77 percent (33).<sup>7</sup>

It is not clear to what extent the additional expenditures on administrators generated by managed care methods offset the savings HMOs and PPOs have extracted from providers and patients, but it is obvious that this has occurred to some degree. United Health Group's late 1999 announcement that it will abandon prospective utilization review because this form of "cost control" was costing three times what it was saving (34) and other reports of the high cost of utilization review (35) suggest that this form of managed care generates costs that exceed savings.

#### A SUMMARY OF THE LITERATURE AFTER 1994

No new, reliable studies have been published since 1994 that warrant altering Miller and Luft's 1994 conclusion that existing "literature on managed care plan performance does not provide policymakers with adequate bottom-line estimates of expenditure differences per enrollee compared with indemnity plans" (8). A few more studies suggesting that managed care's expansion in a given market can lead to marketwide reductions in expenditures on the medical care component of total spending have appeared (36–39). However, as I have noted already, it is not appropriate to conclude from such studies that managed care plans reduce total spending.

Two studies on HMOs' impact on total spending, and one study on the impact of HMOs and PPOs, have appeared since 1994. One study found virtually no effect (28), while the other two reported modest HMO (not PPO) effects (40, 41). None of these three studies attempted to measure the impact of HMO cost shifting.

<sup>6</sup>The percentage increase in private health insurance administrative costs per person is my calculation based on "health insurance administrative costs per person" figures presented by the Henry J. Kaiser Family Foundation (27). The percentage increases in FFS and HMO premiums are my calculations from data on premiums presented by Krueger and Levy (28).

<sup>7</sup>The percentage increase in the number of administrative workers is my calculation from data reported by Himmelstein and colleagues (33) on three categories of administrative workers.

### AN ALTERNATIVE EXPLANATION FOR THE RECENT INFLATION LULL

Prior to 1995, health policy researchers refrained from claiming that managed care plans were having an impact on national health care spending. Enthoven, for example, published a paper in 1993 entitled “Why Managed Care Has Failed to Contain Health Costs” (42). However, all that changed around 1995, when it became clear that the lull in premium and national expenditure inflation was real (not nominal). By 1997 Enthoven and his colleague Sara Singer were asserting, “Since the early 1990s cost pressures have moderated significantly, and there is no explanation except competitive markets and managed care” (43, p. 27). It is my impression that the number of unqualified and poorly documented assertions that managed care plans cut costs rose exponentially in the peer-reviewed and lay literature after 1995.

Is it possible that the rapid spread of managed care methods had little to do with the lull in health care inflation? I offer an alternative hypothesis: that the mid-1990s’ lull was caused primarily by the short-term reactions of the industry to the near-simultaneous occurrence of four events: (a) a downturn in the three-years-up-three-years-down health insurance pricing cycle; (b) the delayed effect of the 1990–1991 recession; (c) the endorsement of managed competition models of health reform by the White House and numerous state and federal politicians; and (d) the merger fever triggered by these political endorsements. The latter three phenomena deepened and lengthened what would otherwise have been a shallower and shorter downturn in the usual insurance-pricing cycle.

Health care inflation was torrid during the late 1980s primarily because the nation’s insurers were making up for losses suffered during the years 1986 through 1988 (44). Under the usual cycle, premium inflation should have begun to drop around 1992. This it did. In fact, aided by a historic 50 percent drop in the underlying (economywide) inflation rate that began in 1991, premium inflation plummeted, from 10.9 percent in 1992 to 0.5 percent in 1996 (45). The drop in premium and systemwide inflation was deepened by the delayed effects of the recession of 1990–1991. Evidence indicates that for several decades, changes in national income have been a powerful determinant of changes in national spending on health care three to five years later (46, 47).

The unusual depth and length of the inflation lull was caused primarily by the endorsement of the theory of managed competition, en masse, by a substantial swath of the nation’s political and economic elite just as the lull was beginning, and by the merger fever these endorsements triggered. Between October 1992 and May 1993, managed competition was endorsed by presidential candidate Bill Clinton, the legislatures of Washington and Minnesota, numerous other state and federal politicians, numerous large employers, and many newspapers.

It is possible that these political events, especially President Clinton’s endorsement of “managed competition within a budget” and his threats of price controls

on prescription drugs, had a direct impact on inflation. As Henry Aaron noted (48), the last time the nation enjoyed a similar respite from health care inflation was the late 1970s, which just happens to be the last time an American president, in this case Jimmy Carter, threatened to use price controls to contain health care spending. But the establishment's embrace of managed competition worked its most significant effect on health care inflation by triggering consolidation fever throughout the industry. The overnight transformation of managed competition from untried theory to de facto national policy set off, or at least contributed greatly to, a wild scramble by insurers and providers to position themselves as high on the future food chain as possible or, in the case of small fry, to remain within nibbling distance of the "reformed" food chain. This meant, in short, getting big quickly.

Several tactics for getting bigger were available. One was low-balling one's prices and premiums in order to seize market share rapidly or, in the case of smaller fry, to survive and remain attractive to the larger fry who were getting bigger not only by low-balling but by merging or otherwise consolidating. Everyone knew that low-balling could not go on forever, but everyone also knew that their first priority was to be alive and as integrated as possible into the food chain when the merger/low-balling panic was over. Recouping losses would have to wait until these first priorities were met. The losses, predictably enough, began to materialize in 1996, and became intolerable by 1997. The lull was over.

"Managed care" has come to stand for a wide variety of cost-containment tactics. But, to my knowledge, no one believes that "managed care" includes political endorsements of managed competition, merger sprees, and reactions to the underwriting cycle and to changes in national income. If that is the case, then it is fair to say the jury has yet to return a verdict on whether "managed care" is more efficient than the old FFS system. And the jury will remain out until empirical evidence appears demonstrating that managed care plans have figured out how to reduce spending on medical services without cost shifting and without driving up administrative costs. Until such empirical evidence is published, analysts should not assert that managed care plans are more efficient than FFS plans, and they should refrain from attributing the 1990s' inflation lull to the spread of managed care.

*Note* — This article is adapted from a paper published in *Health Affairs*, Vol. 19, No. 4, pp. 139–148, 2000.

This study was funded by grants from the Public Welfare Foundation and the Jay and Rose Phillips Family Foundation.

#### REFERENCES

1. Clinton, W. J. 1998 State of the Union Address, January 27, 1998. Available from [www.pub.whitehouse.gov/uri-res/12R?urn:pdi://oma.eop.gov.us/1998/1/27/11.text.1](http://www.pub.whitehouse.gov/uri-res/12R?urn:pdi://oma.eop.gov.us/1998/1/27/11.text.1)



2. Transcripts of meetings of the National Bipartisan Commission on the Future of Medicare, 1998 and 1999. Available from [rs9.loc.gov/medicare/trans.html](http://rs9.loc.gov/medicare/trans.html)
3. Ellwood, P. M., et al. Health maintenance strategy. *Med. Care* 9: 291–298, 1971.
4. Smith, S., et al. The next decade of health spending: A new outlook. *Health Aff.* 18(4): 86–95, 1999.
5. Enthoven, A. C. Cutting cost without cutting the quality of care. *N. Engl. J. Med.* 298: 1229–1238, 1978.
6. Luft, H. S. How do health-maintenance organizations achieve their “savings”? *N. Engl. J. Med.* 298: 1336–1343, 1978.
7. Enthoven, A., and Kronick, R. A consumer-choice health plan for the 1990s: Universal health insurance in a system designed to promote quality and economy (first of two parts). *N. Engl. J. Med.* 320: 29–37, 1989.
8. Miller, R., and Luft, H. Managed care performance since 1980: A literature analysis. *JAMA* 271: 1512–1519, 1994.
9. Long, S. H., and Marquis, M. S. Comparing employee health benefits in the public and private sectors, 1997. *Health Aff.* 18(6): 183–193, 1999.
10. Zwanziger, J., and Auerbach, R. R. Evaluating PPO performance using prior expenditure data. *Med. Care* 29: 142–151, 1991.
11. Van Horn, R. L., Burns, L. R., and Wholey, D. R. The impact of physician involvement in managed care on efficient use of hospital resources. *Med. Care* 35: 873–889, 1997.
12. Butler, R. J., Hartwig, R. P., and Gardner, H. HMOs, moral hazard and cost shifting in workers’ compensation. *J. Health Econ.* 16: 191–206, 1997.
13. Drug-pricing suit settlement gets preliminary approval. *New York Times*, May 9, 1996, p. C8.
14. Minnesota Department of Health. *Prescription Drug Study: A Report to the Minnesota Legislature on the Prescription Drug Market*. St. Paul, Minn., April 1994.
15. Hiduchenko, K. Do health maintenance organizations control costs or shift costs? *N. Engl. J. Med.* 328: 971, 1993.
16. Moy, E., et al. Relationship between National Institutes of Health research awards to U.S. medical schools and managed care market penetration. *JAMA* 278: 217–221, 1997.
17. Weissman, J. S., et al. Market forces and unsponsored research in academic health centers. *JAMA* 281: 1093–1098, 1999.
18. Cunningham, P. J., et al. Managed care and physicians’ provision of charity care. *JAMA* 281: 1087–1092, 1999.
19. Davis, K., et al. Choice matters: Enrollees’ views of their health plans. *Health Aff.* 14(2): 99–112, 1995.
20. How good is your health plan? *Consumer Reports*, August 1996, pp. 28–41.
21. Hellinger, F. J. Selection bias in HMOs and PPOs: A review of the evidence. *Inquiry* 32: 135–142, 1995.
22. Physician Payment Review Commission. *Annual Report to Congress*, pp. 255–279. Washington, D.C., 1996.
23. Morgan, R. O., et al. The Medicare-HMO revolving door—The healthy go in and the sick go out. *N. Engl. J. Med.* 337: 169–175, 1997.
24. Pear, R. HMO study finds U.S. overpayment: Medicare is spending billions on ‘highly inflated’ fees. *New York Times*, August 11, 1998, p. A1.

25. Passman, L. J., et al. Elderly veterans receiving care at a Veterans Affairs medical center while enrolled in Medicare-financed HMOs: Is the taxpayer paying twice? *J. Gen. Intern. Med.* 12: 247–249, 1997.
26. McKasy, B., and Marschall, M. E. *Study of Health Care Management Companies*. Minnesota Departments of Commerce and Health, St. Paul, March 1993.
27. Henry J. Kaiser Family Foundation. *Trends and Indicators in the Changing Marketplace: Chartbook*, Exhibit 6.8. Menlo Park, Calif., August 1998.
28. Krueger, A. B., and Levy, H. *Accounting for the Slowdown in Employer Health Care Costs*. National Bureau of Economic Research, Cambridge, Mass., January 1997.
29. Woolhandler, S., and Himmelstein, D. The deteriorating administrative efficiency of the U.S. health care system. *N. Engl. J. Med.* 324: 1253–1258, 1991.
30. Woolhandler, S., Himmelstein, D., and Lewontin, J. Administrative costs in U.S. hospitals. *N. Engl. J. Med.* 329: 400–403, 1993.
31. Alexander, J., and Lemak, C. The effects of managed care on administrative burden in outpatient substance abuse treatment facilities. *Med. Care* 35: 1060–1068, 1997.
32. Kaiser Family Foundation and Harvard University School of Public Health. *Survey of Physicians and Nurses*. Menlo Park, Calif., July 1999.
33. Himmelstein, D., Lewontin, J., and Woolhandler, S. Who administers? Who cares? Medical administrative and clinical employment in the United States and Canada. *Am. J. Public Health* 86: 172–178, 1996.
34. Bonfield, T. HMO change may set trend doctors want. *Cincinnati Enquirer*, November 6, 1999.
35. Burton, T. Firms that promise lower medical bills may increase them: Cost police pile paper work on physicians, hospitals, which pass on expense. *Wall Street Journal*, July 28, 1992, p. A1.
36. Melnick, G. A., and Zwanziger, J. State health care expenditures under competition and regulation, 1980 through 1991. *Am. J. Public Health* 85: 1391–1396, 1995.
37. Baker, L. C., and Wheeler, S. K. Managed care and technology diffusion: The case of MRI. *Health Aff.* 17(5): 195–207, 1998.
38. Baker, L. C. The effect of HMOs on fee-for-service health care expenditures: Evidence from Medicare. *J. Health Econ.* 16: 453–481, 1997.
39. Baker, L. C. Association of managed care market share and health expenditures for fee-for-service Medicare patients. *JAMA* 281: 432–437, 1999.
40. Feldstein, P. J., and Wickizer, T. M. Analysis of private health insurance premium growth rates: 1985–1992. *Med. Care* 33: 1035–1050, 1995.
41. Hill, S. C., and Wolfe, B. L. Testing the HMO competitive strategy: An analysis of its impact on medical care resources. *J. Health Econ.* 16: 261–286, 1997.
42. Enthoven, A. C. Why managed care has failed to contain health costs. *Health Aff.* 12(3): 27–43, 1993.
43. Enthoven, A. C., and Singer, S. J. Markets and collective action in regulating managed care. *Health Aff.* 16(6): 26–32, 1997.
44. Cunningham, R., III, and Cunningham, R. M., Jr. *The Blues: A History of the Blue Cross and Blue Shield System*, p. 226. Northern Illinois University Press, DeKalb, Ill., 1997.
45. Ginsburg, P. B., and Gabel, J. R. Tracking health care costs: What's new in 1998? *Health Aff.* 17(5): 141–146, 1998.

46. Getzen, T. E. Macro forecasting of national health expenditures. *Adv. Health Econ. Health Serv. Res.* 11: 27–48, 1990.
47. Cookson, J. P., and Reilly, P. *Modeling and Forecasting Health Care Consumption*. Milliman and Robertson, Radnor, Penn., May 19, 1994.
48. Aaron, H. J. Thinking straight about medical costs. *Health Aff.* 13(5): 8–13, 1994.

Direct reprint requests to:

Kip Sullivan  
5600 11th Avenue S.  
Minneapolis, MN 55417