CBO STAFF MEMORANDUM

THE POTENTIAL IMPACT OF CERTAIN FORMS OF MANAGED CARE ON HEALTH CARE EXPENDITURES

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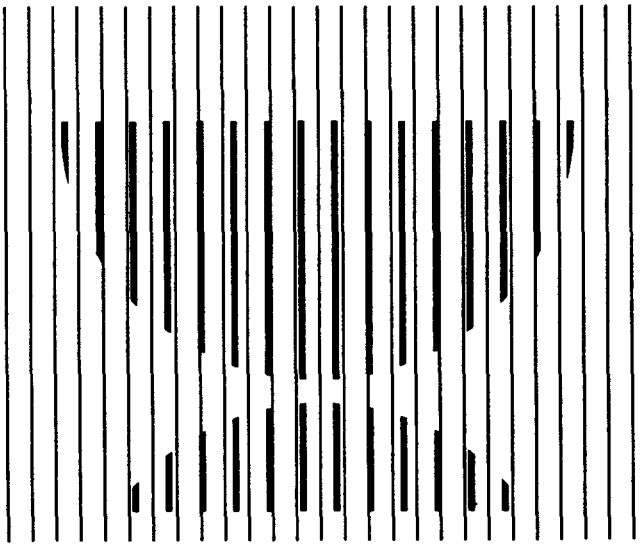
(Revised)



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This Congressional Budget Office (CBO) Staff Memorandum was prepared in response to a request by Representative Nancy Johnson of the Committee on Ways and Means of the U.S. House of Representatives. It presents a range of illustrative estimates of the potential effects on national health expenditures and on expenditures under Medicare, Medicaid, and private health insurance if all acute health care services that are now funded through insurance arrangements were provided through delivery systems incorporating two specific forms of managed care. One is staff-model and group-model health maintenance organizations. The other is "effective" forms of utilization review, which CBO interprets to mean utilization review that incorporates precertification and concurrent review of inpatient care. Against the background of rapidly rising health care costs and diverse forms of managed care that vary in their apparent effectiveness, the memorandum outlines the assumptions underlying the analysis, presents the illustrative estimates obtained, and discusses the caveats that should be kept in mind when interpreting them.

The analysis draws on CBO's June 1992 Staff Memorandum "The Effects of Managed Care on Use and Costs of Health Services," which assesses the evidence on the effectiveness of managed care organizations and processes and their impact on the use and cost of acute health care services. In keeping with CBO's mandate to provide objective and impartial analysis, this memorandum contains no recommendations.

The memorandum was prepared by Verdon S. Staines, of CBO's Human Resources and Community Development Division, under the direction of Nancy Gordon and Kathryn Langwell. Julia Jacobsen provided research assistance. Chuck Seagrave, Jean Hearne, and Carla Pedone offered valuable comments. Roger M. Williams edited the manuscript. Ronald Moore provided administrative assistance and arranged the final version of the manuscript.

CONTENTS

INTRODUCTION

Managed care has attracted considerable interest as a possible way to curb rapidly rising health care expenditures without encountering some of the difficulties that more radical changes in the health care system could entail. Managed care seeks to modify the delivery and financing of health care in an attempt to eliminate unnecessary and inappropriate care, thereby improving quality and reducing costs. The current health care system already uses it extensively. Among employees who in 1990 were covered by private insurance based on employment, fully 95 percent were in plans that incorporated some form of managed care.[1] These diverse forms include several kinds of health maintenance organizations (HMOs), numerous forms of utilization review (UR), and various arrangements--sometimes optional for consumers--that are based on specified networks of providers. There is evidence that some forms reduce costs, but there is no such evidence for others.[2]

Advocates of managed care hope that channelling a greater share of health care services through the more effective forms of managed care might significantly reduce expenditures on health care. Advocates note that various forms of managed care have been incorporated into both indemnity and prepaid insurance arrangements and that they are compatible with a predominantly private health care system. Further, strong evidence exists that some reduce the costs of care.

People who counsel against expecting too much from managed care observe that its existing forms vary widely in their apparent effectiveness at reducing costs. Moreover, to be effective, policies to expand managed care would need to include enough constraints or incentives to induce consumers and providers who would not otherwise have done so both to participate and to change their behavior in ways that reduce costs. In addition, expanding managed care would not, on its own, address other concerns--such as access to health care services--that are a focus of more radical proposals for change.

This memorandum is an illustrative exercise designed to provide a sense of the order of magnitude of the reductions in national health expenditures (NHEs) that might result from universal adoption of two specific forms of managed care. One is staff- and group-model HMOs--the forms of managed care for which demonstrated cost savings are greatest. The other is "effective" forms of UR, which the Congressional Budget Office (CBO) interprets to mean utilization review that incorporates precertification and concurrent review of

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1. See Elizabeth W. Hoy, Richard E. Curtis, and Thomas Rice, "Change and Growth in Managed Care," *Health Affairs*, vol. 10, no. 4 (Winter 1991), pp. 18-36.

2. See Congressional Budget Office, "The Effects of Managed Care on Use and Costs of Health Services," CBO Staff Memorandum (June 1992). The memorandum reviews available evidence about the effectiveness of managed care and contains a glossary.

inpatient care. CBO does not present similar estimates for HMOs modelled on independent practice associations (IPAs) because there is no reliable evidence about their effects.

The illustrative analysis in this memorandum suggests that, if all health care services for people who are insured were delivered through staff- or group-model HMOs, NHEs might be lower by almost 10 percent. Alternatively, if all such health care services were instead delivered through arrangements that embodied relatively effective forms of UR, the resulting reduction in NHEs might be no more than about 1 percent.

For several reasons, these illustrative estimates should be interpreted with considerable caution. The results presented are CBO's best estimates of the potential that staff- and group-model HMOs, and effective forms of UR, have to reduce NHEs; they should not be generalized to other forms of managed care for which there is no evidence. By necessity, the analysis incorporates a large number of assumptions, but the data or evidence supporting many of them have significant limitations.

Another important qualification is that managed care might have quite different effects if it were applied to all consumers, providers, and services--rather than just to part of the health care system. One possibility is that the effects of universal managed care arrangements could be larger than those reported here. As Alain Enthoven has noted, if the change to universal managed care were part of a comprehensive restructuring of the health care system that included incentives to choose efficient arrangements, the managed care component of the package might have a larger impact than if it were adopted on its own.[3] That is because, under the present structure of competition among insurers, managed care arrangements may not be delivering all of the cost savings that they could potentially yield.

Currently, managed care organizations compete with traditional insurers for enrollments. Enrollments in these managed care organizations would have declined under this system if effective managed care had resulted in consumers perceiving either that they received fewer services that they wanted--whether beneficial or not--or that they waited longer for services because of prior authorization requirements. Declining enrollments among consumers insured through their work place would have been especially likely where employees who opted for unmanaged, traditional insurance plans were not required to pay

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3. Alain Enthoven, "Multiple Choice Health Insurance: The Lessons and Challenge to Employers," *Inquiry*, vol. 27, no. 4 (Winter 1990), pp. 368-375; and Alain Enthoven and Richard Kronick, "Universal Health Insurance Through Incentives Reform," *Journal of the American Medical Association*, vol. 265, no. 19 (May 15, 1991), pp. 2532-2536.

the excess of these plans' higher premiums over those of less costly plans incorporating effective managed care. Because of the nature of competition in this market, HMOs could have been less aggressive in attempting to limit unnecessary care than they would have been in a market where consumers faced strong financial incentives to choose more efficient insurance arrangements. HMOs may also have used savings they achieved by managing care to broaden the range of services that their plans cover.

It is at least as likely, however, that mandating universal adoption of managed care might have smaller effects than estimates based on past experience would suggest. That could result because, if all consumers and providers were required to adopt managed care arrangements, the new participants' levels of commitment to the processes and values implicit in managed care approaches might be less than those of the current participants, who have voluntarily chosen these arrangements. Furthermore, extending managed care arrangements could increase administrative costs, offsetting some of the savings in the costs of health care services. (Because of data limitations, any increases in administrative costs are not included in the analysis.)

An additional reason for caution when interpreting the estimates presented here is that they relate to the level of--rather than the rate of increase in--health care costs. The limited available evidence suggests that managed care does not affect the underlying rate of growth in those costs; we assume that mandating managed care would not affect the rate.[4] It might slow that growth, however, if it were introduced as part of a comprehensive restructuring of the health care system that incorporated strong incentives to choose efficient arrangements. In such a setting, universal managed care could facilitate greater control over the adoption of new technology--for example, if it led to better ways to identify new technologies and to develop guidelines for their use. However, under the present system, with its recent high rates of costs increase, even a reduction of about 10 percent in NHEs would be offset by approximately one year's increase in health care spending. Thus, universal adoption of some forms of managed care could yield substantial one-time savings; but in the absence of substantial restructuring of the health care system, that would not address the longer-term issue of the underlying rate of growth in health care costs.

Against this background of rapidly rising costs and of diverse forms of managed care that vary widely in their apparent effectiveness, the memorandum outlines the assumptions that underlie the analysis and presents

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4. See, for example, Joseph Newhouse and others, "Are Fee-for-Service Costs Increasing Faster than HMOs' Costs?" *Medical Care*, vol. 23 (August 1985), pp. 960-966.

the estimates obtained. An appendix describes the data and provides additional technical information.

BACKGROUND

Managed care represents one approach to reining in health care costs that continue to climb rapidly in both the federal budget and the nation as a whole. Real spending per person for health care grew at an average rate of about 4 ½ percent a year between 1980 and 1990, substantially outstripping the 1 ½ percent annual growth in real gross domestic product per person over the same period.

Partly because of that rapid growth, the share of federal spending devoted to health care grew from 10.5 percent in 1980 to 13.4 percent in 1990. CBO has projected that, under current policies, spending on health care would climb to nearly 22 percent of the federal budget by 1997 and to 28 percent by 2002.

Forms of Managed Care

Managed care is one of numerous strategies that have been advocated to contain rising costs, although its supporters also see it as a way to assure the appropriateness--and thus the quality--of care. Managed care comprises any type of intervention in the delivery and financing of health care that is intended to eliminate unnecessary and inappropriate care and thereby to reduce costs. The best known form of managed care involves HMOs, which combine insurance coverage with defined delivery systems and which ordinarily pay benefits only when the insured population uses the organization's delivery system. Another common form of managed care is utilization review. Various other forms that have been developed--for example, preferred provider organizations and hybrid plans that offer managed care choices to patients at the "point of service"--are not discussed in this section.

Health Maintenance Organizations. HMOs can be structured in various ways. A staff-model HMO owns the clinical facilities that the insured population must use and employs salaried physicians to serve the HMO's members exclusively. Staff-model HMOs, along with group-model HMOs, have integrated their systems for financing and delivering care. In this way, they differ from the majority of today's managed care organizations.

A group-model HMO contracts with a multispecialty physician group to provide care to the HMO's membership. The group manages the provision of care independently of the HMO and the HMO usually pays for the services on a capitation basis. (Capitation is a form of payment that provides a predetermined amount per enrollee served by the provider, regardless of the type or frequency of services actually rendered.) The medical group practice, not the HMO, contracts with the physicians who belong and pays them on a fee-for-service, salaried, or other basis. Some medical groups serve only members of the HMO; others also maintain a separate, fee-for-service practice.

An HMO modelled on an independent practice association contracts with individual fee-for-service physicians to provide services to HMO members in the private offices of the physicians. Originally, IPA physicians were generally paid on a discounted fee-for-service basis and were required to bear some financial risk for excess utilization of services; part of their fee-for-service payment was withheld unless use and costs met target rates set by the HMO. Now, however, HMOs often negotiate capitation payments that cover routine, office-based care--and some specialty services--that IPA physicians provide. The IPA contracts directly with individual physicians or with an association of physicians that negotiates on their behalf.

Utilization Review. UR organizations contract with employers and insurers to determine that patients receive medically necessary care of good quality in a cost-effective manner. The organizations review the quality of services, analyze the patterns of use in facilities, identify practice problems, and propose remedies. Review protocols traditionally have included precertification, concurrent review, and retrospective review, although some UR organizations now also offer management support, network development, and contract administration. In addition, many insurers have their own internal UR systems.

Effectiveness of Managed Care

A central question in this analysis is how staff- and group-model HMOs, IPAs, and forms of UR affect personal health expenditures (PHEs) per person. Reliable research evidence is limited, however, because crucial data are often unavailable and populations that different health insurance arrangements cover tend to differ in their average health status and need for health care services. Available evidence for the insured population not covered by Medicaid, summarized below, suggests that staff- and group-model HMOs have achieved sizeable reductions in PHEs per person and that certain forms of UR have demonstrated smaller savings; but there is no reliable evidence that IPAs have significantly reduced PHEs per person. Evidence about the impact of managed care on costs under the Medicaid program is discussed separately.

Staff- and Group-Model HMOs. Among numerous studies examining how HMOs affect the use and cost of health services, three appear least affected by limitations of method and data. One, the RAND health insurance experiment, found that HMOs with integrated financing and delivery systems reduced hospital use by 40 percent and total spending by about 25 percent.[5] A second, which examined Medicare enrollees in HMOs, found that staff- and group-model HMOs reduced hospital use significantly.[6] A more recent study compared service use among patients treated for specific medical conditions by physicians in four specialties and in five predominant systems of care. The systems varied in both practice structure and type of payment. That study found, after adjusting for patient mix, that fee-for-service patients of physicians in solo practice and single-specialty settings had hospitalization rates 41 percent greater than those of HMO patients and were taking 12 percent more prescription drugs, although they had 7 percent fewer visits with their physicians.[7]

HMOs Modelled on Independent Practice Associations. Insufficient evidence exists to assess the impact of IPAs on PHEs per person. Savings that IPAs may yield are generally believed to be appreciably smaller than those from staff- and group-model HMOs. In the evaluation of Medicare HMOs, for example, savings in payments to hospitals were found for staff-, group-, and mixed-model HMOs but not for IPAs.

Utilization Review. Recent studies indicate that UR programs that manage fee-for-service care under traditional insurance plans can reduce costs. One studied the impact of a UR program that combined preadmission certification and concurrent review of inpatient care. It found that UR reduced inpatient costs by about 8 percent and overall medical expenditures by 4 percent to 5 percent without increasing the costs of outpatient care significantly.[8]

Another study found that a UR program of a large private-insurance carrier reduced hospital costs by nearly 12 percent and total medical expenditures by 8.3 percent compared with the experience of groups not

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5. Willard G. Manning and others, "A Controlled Trial of the Effect of a Prepaid Group Practice on Use of Services," *New England Journal of Medicine*, vol. 310, no. 3 (June 7, 1984), pp. 1505-1510.

6. Randall Brown, *Biased Selection in the Medicare Competition Demonstrations* (Washington D.C.: Mathematica Policy Research, April 1987).

7. Sheldon Greenfield and others, "Variations in Resource Utilization Among Medical Specialties and Systems of Care: Results from the Medical Outcomes Study," *Journal of the American Medical Association*, vol. 267, no. 12 (March 25, 1992), pp. 1624-1630.

8. Rezaul K. Khandker and Willard G. Manning, "The Impact of Utilization Review on Costs and Utilization," in P. Zweifel and H.E. Frech III, eds., *Health Economics Worldwide* (The Netherlands: Kluwer Academic Publishers, 1992), pp. 47-62.

subject to UR. The effects were concentrated among those with high initial levels of hospital admissions. Compared with the previous study, however, this one was less able to adjust for possible differences in rates of service use between employees of firms that chose UR programs and employees of firms that did not.[9]

An additional study, which examined the effects of particular types of UR controls, concluded that preadmission certification combined with concurrent review of hospital episodes reduced hospital admissions and days of inpatient care, lowering the overall costs of hospital inpatients by about 4 percent. Whether that induced offsetting increases in outpatient costs was not ascertained.[10]

Managed Care Under Medicaid. In 1991, about 10 percent of all Medicaid beneficiaries received care from managed care plans of various types. Of those beneficiaries, about half were enrolled in HMOs and the rest were in other, less restrictive forms of managed care (including prepaid health plans and primary care case management systems, which were not financially liable for a comprehensive range of services).

Direct evidence does not yet answer clearly the questions of when and by how much managed care programs affect Medicaid costs. It does appear, however, that managed care programs have reduced those costs in some settings or during some periods.

The existing evidence comes from two sources. One is the Medicaid competition demonstrations, which tested the feasibility and impact of applying managed care to Medicaid programs in several areas. In these demonstrations, the individual's managed care typically involved a contract with a primary care provider who managed care, acted as gatekeeper to other services, and was paid under partial capitation arrangements that covered both primary and specialist care. Usually, the primary care provider was not financially liable for hospital care. An evaluation of these demonstrations found that capitation encouraged providers to change the patterns of service and typically reduced the demand on emergency rooms and specialists. Although patients rather than providers usually make decisions to visit emergency rooms, patients may

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9. See P.J. Feldstein and others, "Private Cost Containment: The Effects of Utilization Review Programs on Health Care Use and Expenditures," *New England Journal of Medicine*, vol. 318 (May 19, 1988), pp. 1310-1314; Thomas M. Wickizer and others, "Does Utilization Review Reduce Unnecessary Care and Contain Costs?" *Medical Care*, vol. 27, no. 6 (June 1989), pp. 632-646; and Thomas M. Wickizer, "The Effect of Utilization Review on Hospital Use and Expenditures: A Review of the Literature and an Update on Recent Findings," *Medical Care Review*, vol. 47, no. 3 (Fall 1990), pp. 327-363.

10. Richard Scheffler and others, "The Impact of Blue Cross and Blue Shield Plan Utilization Management Programs, 1980-1988," *Inquiry*, vol. 28 (Fall 1991), pp. 263-275.

make fewer visits if their access to primary care services improves. Given the particular methods used to set capitation rates in the demonstrations, large savings did not accrue to federal or state governments.[11]

The other source of evidence is the Arizona Health Care Cost Containment System (AHCCCS)--Arizona's alternative approach to structuring Medicaid--which uses prepaid health plans to serve the indigent population. Plans are chosen by means of a competitive bidding process and are paid a capitated amount equal to their bid rate. AHCCCS beneficiaries select, or are assigned to, a particular gatekeeper who manages their care; they make small copayments for many services. About 30 percent of beneficiaries were in staff-model or group-model plans at the end of 1987; the rest were in IPAs. Since December 1988, a long-term care component has been included in the overall program.

Evaluations of the AHCCCS conclude that it has achieved savings relative to the expected costs of a traditional Medicaid program and that its costs have increased less rapidly.[12] Compared with those for traditional programs, total program costs for acute medical services were estimated to be 5.8 percent lower during fiscal years 1983-1987, 8.4 percent lower in fiscal year 1988, and 14.6 percent lower in fiscal year 1989. AHCCCS, however, had higher administrative costs. After allowing for those, there appear to have been little or no overall savings in fiscal years 1983-1987, but the savings represented 2.2 percent of total program costs (medical and administrative) in fiscal year 1988 and 9.0 percent in fiscal year 1989. For the seven-year period from fiscal year 1983 to fiscal year 1989, the average annual increase in the per capita medical service cost of AHCCCS was 5.0 percent, compared with an estimated 8.2 percent for a traditional Medicaid program in Arizona.

Those estimates should be interpreted cautiously, however. Substantial problems in establishing the program affected the data for fiscal years 1983-1987. Evidence of more substantial savings, compared with traditional Medicaid programs, therefore comes primarily from two years of experience. In any case, estimating the costs of a traditional Medicaid program for a state that has never had one is problematic because Medicaid programs in other states, on which the estimates are based, vary in their rules about eligibility, coverage, and reimbursement of providers. The states used for comparison

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11. Deborah A. Freund and others, "Evaluation of the Medicaid Competition Demonstrations," *Health Care Financing Review*, vol. 11, no. 2 (Winter 1989), pp. 81-97.

12. SRI International, "Evaluation of the Arizona Health Care Cost Containment System: Final Report," (report prepared for the Health Care Financing Administration, January 1989); Laguna Research Associates, "Evaluation of the Arizona Health Care Cost Containment System Demonstration: First Outcome Report" (report prepared for HCFA, July 1991).

also differ in their demography, policy history, and health care systems. Estimated differences between actual rates of growth in costs under AHCCCS and the rates projected for a traditional Medicaid program should be interpreted with similar caution.

METHODS

This section first outlines the methods used to estimate the possible impact of managed care on health expenditures and then discusses assumptions that underlie the analysis.

Estimation Strategy

How might total health care spending and its principal components differ if all health care services were delivered under selected systems of managed care? The methods used to answer that question take account of three realities:

- The current health care delivery system already incorporates managed care arrangements of various kinds and varying effectiveness.

- Managing care funded by different third-party sources--such as Medicare, Medicaid, and private insurers--could reduce costs by differing degrees. For example, these systems might differ in the mix of clients and conditions they treat, average rates of reimbursement to providers, quality of care, or current methods for assuring the effectiveness of care. In addition, those funding sources have permitted or encouraged different forms of managed care to develop.

- Managing care would not affect all health care expenditures. For example, it is unlikely to affect significantly expenditures on public health activities, research, and construction, or those personal health expenditures not channelled through insurance arrangements (including care for people without insurance).

Using data for 1990, the estimation process first divides the total U.S. population among four categories based on primary insurance coverage: Medicare, Medicaid, private or other public coverage, and no coverage. Each category is then subdivided among kinds of managed care arrangements, which are grouped according to their assumed levels of effectiveness in reducing costs (see Table 1). The process distinguishes four levels of assumed effectiveness and groups them accordingly:

- o Group- and staff-model HMOs;
- o Effective forms of utilization review that incorporate precertification and concurrent review for hospitalization;
- o Other forms of managed care that might possibly have some effect (including IPAs, network-model HMOs, point-of-service plans, preferred provider organizations, normal Medicare care, and non-HMO forms of Medicaid managed care); and
- o Arrangements that involve no managed care.

TABLE 1. ALLOCATION OF POTENTIAL RECIPIENTS OF PERSONAL HEALTH SERVICES, BY PRIMARY SOURCE OF INSURANCE FUNDING AND LEVEL OF EFFECTIVENESS OF MANAGED CARE ARRANGEMENTS, 1990 (In millions)

Primary Source of Insurance Funding	Total	Level of Effectiveness of Managed Care Arrangement[a]			
		I	II	III	IV
All Sources	259.6	16.7	65.5	119.4	57.9
Medicare	32.1	1.3	0	30.8	0
Medicaid	15.4	0.3	0	1.3	13.9
Private or other public	176.9	15.2	65.5	87.3	8.8
No insurance	35.2	0	0	0	35.2

SOURCE: Congressional Budget Office calculations based on data from the Social Security Administration's Office of the Actuary, the March 1990 supplement to the Census Bureau's Current Population Survey, and the Health Care Financing Administration.

a. Managed care categories are defined as follows:
I. Staff- and group-model HMOs;
II. Effective utilization review incorporating precertification and concurrent review of hospital care;
III. Other forms of managed care;
IV. No managed care.

Based on the evidence reviewed above, two alternative sets of specific assumptions are made about the cost reductions associated with each category of managed care (see Appendix Table A-1). Each set makes the same assumptions about the reduction in costs that staff- and group-model HMOs would achieve because they comprise the category of managed care for which the relevant evidence is most reliable. For the two other categories of managed care, one set of assumptions ("Alternative 1") assumes larger impacts on costs than does the other set ("Alternative 2"). The two sets therefore imply a range of estimates of the potential impact that managed care could have on total health care costs.

The next step is to estimate the level of health care spending that managed care arrangements might potentially affect. Data on NHEs and their components, drawn from the national health accounts, are combined with specific assumptions to differentiate the spending managed care could affect ("potentially manageable" expenditures) from spending it could not affect. This step identifies a subset of personal health expenditures--approximately 71 percent of the total--as potentially manageable (see Table 2).

The potentially manageable personal health expenditures in 1990 are then allocated in a two-stage process: according to the primary source of insurance coverage of the individuals who benefitted from them; and according to the level of effectiveness of the managed care arrangements associated with the services for which the spending occurred (see Table 3). In stage one, actual Medicare and Medicaid expenditures on potentially manageable care are first deducted from total personal health expenditures on such care. The remaining expenditures are divided between "private or other public insurance" and "no insurance" in proportion to the number of individuals with each insurance status, after adjusting for differences in average expenditure per person that are related either to being age 65 or older or to having no health insurance.

In stage two, expenditures for each source of primary insurance coverage are allocated among the four levels of effectiveness of managed care in approximately the same proportions as the numbers of individuals classified at each level. The estimated distribution varies, however, with the choice of assumptions about the effects of managed care categories. In other words, the stage two allocation presumes that the average expenditure per person would have been the same for people in each managed care category if no managed care arrangements had been in effect. That assumption implies that observed expenditures per person in 1990 were lowest for the managed care categories most effective in reducing costs and that relative expenditures track the assumed effectiveness of the categories.

As discussed more fully in the Appendix, each set of assumptions about the effectiveness of managed care arrangements also implies a hypothetical level of expenditures that would have been observed in 1990 had no managed care arrangements been in place. That level includes the estimated amounts by which managed care arrangements that were in effect in 1990 reduced potentially manageable PHEs. For both staff- and group-model HMOs and effective forms of utilization review, the implied hypothetical expenditure levels are used to simulate the degree to which general use of the selected forms of managed care would have reduced manageable expenditures in 1990. That is done for each primary source of insurance coverage. Under CBO's assumptions, the reductions in total PHEs and NHEs would be identical to the overall reduction in manageable PHEs.

TABLE 2. NATIONAL HEALTH EXPENDITURES, BY TYPE OF SERVICE AND BY PROPORTIONS POTENTIALLY SUBJECT TO MANAGED CARE ARRANGEMENTS, 1990

Type of Health Service	All Expenditures (Billions of dollars)	Share of Expenditures Potentially Subject to Managed Care	
		In Billions of Dollars	As a Percentage of Total
National Health Expenditures	666.2	475.0	71
Personal health care expenditures	585.3	475.0	81
Hospitals	256.0	256.0	100
Physicians	125.7	125.7	100
Dentists	34.0	20.4	60
Other professionals	31.6	31.6	100
Home health	6.9	6.9	100
Drugs and medical nondurables	54.6	16.4	30
Vision products and durables	12.1	4.2	35
Nursing home care	53.1	2.5	5
Other personal health care	11.3	11.3	100
Administration and net cost of private health insurance	38.7	0	0
Public health activity	19.3	0	0
Research	12.4	0	0
Construction	10.4	0	0

SOURCE: Congressional Budget Office calculations based on Katharine R. Levitt and others, "National Health Expenditures, 1990," *Health Care Financing Review*, vol. 13, no. 1 (Fall 1991), pp. 29-54.

TABLE 3. ESTIMATED DISTRIBUTION OF 1990 EXPENDITURES ON PERSONAL HEALTH SERVICES THAT COULD POTENTIALLY BE MANAGED, BY PRIMARY SOURCE OF INSURANCE COVERAGE, LEVEL OF EFFECTIVENESS OF MANAGED CARE ARRANGEMENTS, AND ASSUMPTIONS ABOUT EFFECTS OF MANAGED CARE ARRANGEMENTS
(In billions of dollars)

Primary Source of Insurance Funding	Total	Level of Effectiveness of Managed Care Arrangement[a]			
		I	II	III	IV
	Alternative 1[b]				
All Sources	475.0	26.5	106.8	254.3	87.4
Medicare	108.9	3.9	0	105.0	0
Medicaid	47.2	0.7	0	3.9	42.6
Private or other public	289.1	21.9	106.8	145.4	15.0
No insurance	29.8	0	0	0	29.8
	Alternative 2[b]				
All Sources	475.0	26.0	108.0	254.5	86.5
Medicare	108.9	3.8	0	105.1	0
Medicaid	47.2	0.7	0	3.9	42.6
Private or other public	289.7	21.5	108.0	145.4	14.7
No insurance	29.2	0	0	0	29.2

SOURCE: Congressional Budget Office calculations based on Tables 1 and 2; and Katharine R. Levitt and others, "National Health Expenditures, 1990," *Health Care Financing Review*, vol. 13, no. 1 (Fall 1991), pp. 29-54.

a. Managed care categories are defined as follows:
   I. Staff- and group-model HMOs;
   II. Effective utilization review incorporating precertification and concurrent review of hospital care;
   III. Other forms of managed care;
   IV. No managed care.

b. Managed care categories II and III, under Alternative 1, are assumed to achieve larger reductions in costs than under Alternative 2.

The simulations assume that effective UR would not displace existing staff- and group-model HMOs that reduce costs by a larger proportion. The simulations therefore generate a range of estimates for each type of insurance separately, and thus for all types of insurance combined, of the reductions from 1990 levels of spending that universal (or almost universal) adoption of the simulated forms of managed care would have implied.

Assumptions Underlying the Analysis

The estimation methods outlined above incorporate a number of simplifying assumptions.

Possible Effects of Managed Care on Components of NHEs. By definition, NHEs represent the sum of expenditures on personal health services and expenditures on administration, public health activities, research, and construction (see Table 2). CBO assumes that managed care arrangements can affect PHEs and administrative expenditures but not expenditures on public health activities, research, or construction. CBO further assumes that, if managed care arrangements affect PHEs, they will do so on a per-purchaser basis and not by affecting the number of purchasers of personal health services.

Range of Services Assumed to be Affected. Some personal health spending goes for services that health insurance does not normally cover. Universal adoption of managed care arrangements would be unlikely to affect such spending significantly. Consequently, CBO assumes that adoption of managed care would reduce certain components of PHEs but not others. Whether components should be included or excluded is not always clear-cut, however, for reasons discussed below. This memorandum includes all expenditures for hospital care, physicians' services, other professional services, home health care, and other personal health care. It excludes part of the expenditures classified to other components of PHEs. Specifically, it includes only some nursing home care, 30 percent of expenditures for "drugs and medical nondurables," 35 per cent of expenditures for "vision products and other medical durables," and 60 percent of expenditures on "dentists' services." Excluded expenditures are assumed to be concentrated among people with "private or other public" insurance or without insurance.

Managed care arrangements for acute health care do not normally cover long-term care services. Accordingly, CBO excludes all expenditures on nursing home care except Medicare payments to skilled nursing facilities, which are best regarded as spending for acute health care.

Nevertheless, CBO includes expenditures on home health care services for several reasons. As defined for NHEs purposes, home health care services exclude as nonmedical many services commonly associated with long-term care, such as meals-on-wheels, chore services, and social or "custodial" services. Moreover, Medicare--which only covers care for acute conditions--is the largest single funding source for home health care included in NHEs. In addition, the remaining funds for home health care come mostly from Medicaid and private health insurance; care that those sources fund would presumably be subject to any generally applicable managed care arrangements.

Drugs and medical nondurables include purchases from retail outlets of prescription drugs, nonprescription drugs, and other medical nondurables (such as bandages and heating pads). Drugs that patients receive from hospitals and nursing homes or from physicians under a provider contract are included elsewhere in NHEs as spending for those providers' services. In 1990, 74 percent of all expenditures for drugs and medical nondurables were paid out of pocket; private insurance paid 15 percent, and public sources paid 11 percent. If products covered by private insurance were subject to 25 percent coinsurance overall, privately insured or publicly funded products would have represented about 30 percent of the total. This analysis therefore makes the simplifying assumption that an expansion of managed care arrangements would affect only 30 percent of expenditures on drugs and medical nondurables.

The category of vision products and other medical durables includes such items as eyeglasses, hearing aids, surgical appliances and supplies, bulk and cylinder oxygen, and the rental of equipment. In 1990, 67 percent of all such expenditures were paid out of pocket, 10 percent came from private insurance, and 22 percent were publicly financed. If, once again, privately insured expenditures were subject to 25 percent coinsurance overall, about 35 percent of all such expenditures would have been privately insured or publicly funded. Accordingly, CBO makes the simplifying assumption that an expansion of managed care arrangements would affect 35 percent of expenditures on vision products and other medical durables.

Similarly, private health insurance paid 45 percent of expenditures for dentists' services in 1990, with almost all of the rest paid out of pocket. If dental services covered by insurance were subject to no more than 25 percent coinsurance overall, privately insured or publicly funded products would have represented more than 60 percent of the total. CBO therefore assumes that an expansion of managed care arrangements would affect 60 percent of expenditures on dentists' services.

Assumed Behavioral Effects of Managed Care on PHEs. The various categories of managed care arrangements are simulated to have the following effects on PHEs (see Appendix Table A-1). CBO's assumptions partly reflect differences among categories of managed care in the extent of evidence about their true effects; negligible evidence of effectiveness leads CBO to assume no effect. Two other patterns are incorporated in the assumptions:

- Under Medicaid, each category of managed care would have half of the proportional impact it would have when applied to people whose primary insurance coverage comes through Medicare or the private or other public category. That assumption conforms with the evidence suggesting that managed care has smaller effects under Medicaid than under other insurance arrangements--a pattern that could reflect Medicaid's comparatively low rates of reimbursement to providers or the possibility that some individuals would receive additional services under managed care arrangements.

- Care for people who lack insurance coverage would not be subject to, or affected by, managed care arrangements. This simplifying assumption abstracts from reports that managed care organizations continue to provide care to some enrollees who have become uninsured.

CBO's analysis assumes that staff- and group-model HMOs would reduce PHEs by 15 percent from their levels under traditional private health insurance and Medicare and by 7.5 percent from their level under traditional Medicaid programs. The reduction assumed for these HMOs is somewhat smaller than the effect estimated from the RAND health insurance experiment--partly because that evidence came from a single, well-established HMO and partly because hospital admissions and lengths of stay have declined in the intervening years.[13]

The analysis also assumes that effective forms of utilization review would reduce PHEs by 1 percent to 4 percent from their levels under traditional health insurance and Medicare and by 0.5 percent to 2 percent from their level under Medicaid. CBO also assumes that other forms of managed care might possibly reduce health care costs--specifically, that they would reduce PHEs by zero to 2 percent from their levels under traditional health insurance and Medicare and by zero to 1 percent from their level under Medicaid.

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13. As noted earlier, the RAND health insurance experiment found that HMOs with integrated financing and delivery systems reduced hospital use by 40 percent and total spending by about 25 percent.

Assumed Effects of Managed Care on Administrative Costs. The national health accounts separate administrative expenditures from PHEs but do not subdivide administrative costs in ways that show those incurred by group- and staff-model HMOs, other forms of managed care, and traditional providers. Nevertheless, administrative costs depend partly on the managed care arrangements being used. Thus, the ratio of administrative costs to the total cost of health care services (namely, PHEs plus administrative costs) appears to vary widely with the type of managed care arrangement employed.

For example, it is widely believed that more intensive forms of managed care, such as staff- and group-model HMOs, generate higher administrative costs. The administrative costs of Medicare HMOs--including marketing--may represent 20 percent of their total costs, whereas the Medicare program pays approximately 2.4 percent in administrative costs for the handling of fee-for-service claims.[14] The impact of the administrative costs of HMOs is also evident from evaluations of Arizona's approach to Medicaid. They found that, as noted above, the reduction in total costs was about 6 percentage points lower than the reduction in medical costs in each year because higher administrative costs partly offset lower medical costs.

Nevertheless, no reliable data have been consistently compiled to show the proportion of total costs that administrative costs absorb under each managed care arrangement.[15] Lacking satisfactory evidence that quantifies how administrative costs vary among different forms of managed care, CBO has not attempted to simulate how mandating specific forms of managed care would change administrative costs. CBO would, however, expect these changes to offset to some degree the reductions in expenditures on health care services.

RESULTS

Under one set of assumptions about the effectiveness of managed care, delivering all health care services through staff- or group-model HMOs could have reduced total health care costs in 1990 by about $64 billion (see Table 4). That potential saving can be expressed as a proportion of various aggregate spending figures. For example, it represented 13.5 percent of all PHEs that could potentially be managed, 11.0 percent of all PHEs overall, and 9.6 percent

14. See Congressional Budget Office, "Managed Care and the Medicare Program: Background and Evidence," CBO Staff Memorandum (May 1990).

15. The Group Health Association of America, Inc., has estimated administrative costs for HMOs. See statement of James F. Doherty, president and chief executive officer of GHAA, on health care administrative costs and the Canadian health care system before the Subcommittee on Education and Health of the Joint Economic Committee, October 16, 1991.

TABLE 4. ESTIMATED SAVINGS IN 1990 EXPENDITURES ON PERSONAL HEALTH SERVICES THAT COULD POTENTIALLY BE MANAGED UNDER VARIOUS FORMS OF MANAGED CARE, BY PRIMARY SOURCE OF INSURANCE COVERAGE AND EFFECTIVENESS OF MANAGED CARE ARRANGEMENTS (In billions of dollars)

Primary Source of Insurance Funding	Form of Managed Care: Staff- or Group-Model HMO	Form of Managed Care: Effective Utilization Review[a]
Alternative 1[b]		
All Sources	51.2	6.6
Medicare	13.9	2.1
Medicaid	3.4	0.9
Private or other public	33.8	3.6
No insurance	0	0
Alternative 2[b]		
All Sources	64.2	2.9
Medicare	16.4	1.1
Medicaid	3.5	0.2
Private or other public	44.2	1.6
No insurance	0	0

SOURCE: Congressional Budget Office calculations.

NOTE: HMO = health maintenance organization.

a. This category refers to utilization review that incorporates precertification and concurrent review of inpatient care. This form of managed care is assumed to replace all less cost-effective forms of health care delivery.

b. The managed care categories for effective utilization review and other forms of managed care are assumed to achieve larger reductions in costs under Alternative 1 than under Alternative 2.

of NHEs--the most comprehensive measure of health care spending (see Table 5 and Appendix Tables A-3 and A-4). Given the growth in NHEs since 1990, the same proportional saving in 1992 would amount to approximately $78 billion, based on CBO's projections for NHEs.

More than two-thirds of those savings would arise from care for people whose primary insurance coverage is either private or through public programs other than Medicare and Medicaid. Care for Medicare enrollees would contribute another one-quarter of the total savings, with care for Medicaid beneficiaries contributing the remainder.

Under the alternative set of assumptions used, savings from the universal adoption of staff- and group-model HMOs would be smaller--about $51 billion in 1990. That represents 10.8 percent of all expenditures on personal health services that could potentially be managed, 8.7 percent of all expenditures on personal health services, and 7.7 percent of national health expenditures.

Using managed care arrangements that incorporated effective forms of utilization review to deliver all health care (except services currently provided through more cost-effective staff- and group-model HMOs) would yield substantially smaller potential savings. Under both sets of assumptions, the savings are estimated at no more than 1 percent of NHEs.

For effective utilization review, estimated total savings are larger under Alternative 1 than Alternative 2, which assumes they have smaller effects. For staff- and group-model HMOs, however, larger estimated savings are obtained under Alternative 2. That is because the two alternatives make the same assumptions about the effects of staff- and group-model HMOs, but Alternative 1 assumes not only larger effects for managed care categories II and III but also larger differentials between the effects of category II and those of categories III and IV.

In CBO's analysis, the requirement that all health care services be delivered through specific forms of managed care is satisfied by shifting people from one managed care category to another. Shifting someone between managed care categories implies progressively larger savings in total health care expenditures as the difference between the proportional savings assumed for the original and new categories increases.

Mandating the use of staff- and group-model HMOs is equivalent to shifting people to category I from the other categories. Because the proportional savings for category I are assumed to be the same under both Alternative 1 and Alternative 2, shifting people from other categories to

TABLE 5. ESTIMATED SAVINGS IN 1990 EXPENDITURES ON PERSONAL HEALTH SERVICES THAT COULD POTENTIALLY BE MANAGED, AS A PROPORTION OF ALTERNATIVE HEALTH EXPENDITURE TOTALS UNDER VARIOUS FORMS OF MANAGED CARE, BY THE ASSUMED EFFECTIVENESS OF MANAGED CARE ARRANGEMENTS (In percent)

Form of Health Expenditure	Form of Managed Care: Staff- or Group-Model HMO	Form of Managed Care: Effective Utilization Review[a]
Alternative 1[b]		
Potentially Manageable Personal Health Care Expenditures	10.8	1.4
All Personal Health Care Expenditures	8.7	1.1
National Health Expenditures	7.7	1.0
Alternative 2[b]		
Potentially Manageable Personal Health Care Expenditures	13.5	0.6
All Personal Health Care Expenditures	11.0	0.5
National Health Expenditures	9.6	0.4

SOURCE: Congressional Budget Office calculations.

NOTE: HMO = health maintenance organization.

a. This category refers to utilization that incorporates precertification and concurrent review of inpatient care. This form of managed care is assumed to replace all less cost-effective forms of health care delivery.

b. The managed care categories for effective utilization review and other forms of managed care are assumed to achieve larger reductions in costs under Alternative 1 than under Alternative 2.

category I would imply smaller savings if the assumed proportional savings for categories II-IV are increased relative to those for category I. Under Alternative 1, as compared with Alternative 2, the assumed proportional savings for categories II-IV are increased relative to those for category I in precisely that way. Consequently, the estimated savings from delivering all care through staff- or group-model HMOs are greater under the assumptions of Alternative 2 than under those of Alternative 1.

Similarly, mandating the use of effective forms of utilization review in place of delivery systems that are less cost-effective is equivalent to shifting people to category II (effective UR) from category III (less effective forms of managed care) and category IV (no managed care). Doing so would achieve progressively larger savings in total health care spending as the proportional savings assumed for UR rise relative to those for the two less cost-effective managed care categories. Compared to the Alternative 2 assumptions, those for Alternative 1 are not only larger for categories II and III but also entail larger differentials in effectiveness between category II and categories III and IV. Consequently, the Alternative 1 assumptions yield larger estimates of the savings from adopting effective forms of UR.

DISCUSSION

CBO's analysis illustrates the possible scale of the reductions in total health expenditures that might result if all health care services were delivered through staff- or group-model HMOs or under utilization review arrangements that incorporate precertification and concurrent review of inpatient care. Potential savings as large as almost 10 percent of NHEs--$78 billion in 1992--might result if people with health insurance received all of their health care services through staff- or group-model HMOs. Much smaller savings--no greater than about 1 percent of NHEs and possibly considerably less--might result if effective forms of utilization review governed the delivery of all health care for insured people that is not provided by staff- or group-model HMOs. Most of the spending reductions from universal adoption of staff- and group-model HMOs would relate to care for people currently insured through the private sector, with the majority of the remaining savings accruing to Medicare.

Those estimates are only illustrative, and several qualifications must be made when interpreting the results. One relates to CBO's method of estimating the effects of requiring that all health care services be delivered through staff- or group-model HMOs or through effective forms of UR. This method presupposes that these forms of managed care would prove as cost-effective when mandated to cover all health care services as they appear to have been when adopted voluntarily. That presumption might not hold. If

consumers and providers were required to adopt managed care arrangements, they might be less committed to the processes and values implicit in voluntary forms of managed care than are current participants in managed care.

Other qualifications arise because the results are no more reliable than the data and assumptions on which they are based. As noted earlier, the evidence for the assumptions concerning the effectiveness of various forms of managed care is often quite limited. Similarly, because available data do not provide a sound basis for simulating how more widespread use of managed care arrangements would affect administrative costs, the results do not reflect any such effects and therefore tend to overstate the potential savings from expanding managed care. In addition, classifying individuals by the primary source of their insurance coverage and then allocating total expenditures among sources of insurance on that basis oversimplifies the true flows of health care financing by ignoring the multiple sources of insurance funding available to many individuals. Furthermore, available data about the distribution of individuals among the various forms of managed care are also relatively limited and not always fully consistent. CBO's methods also assume that care for people without insurance coverage is not managed. That assumption would introduce errors to the extent that managed care providers render uncompensated care or that uninsured individuals pay for managed care from their own resources.

The methods used to estimate how mandating universal managed care might affect health expenditures presuppose that managed care would be expanded within a health care system that was otherwise unchanged from the present one. They therefore assume that, once the expansion of managed care had produced one-time reductions in health care costs, the underlying rate of increase in those costs would be unaffected. If, instead, the expansion of managed care were introduced as part of a more comprehensive restructuring of the present system--incorporating strong incentives for consumers and providers to make efficient choices--universal managed care might slow that growth rate. For example, it could do so if it led to greater control over the adoption of new technology or to guidelines that resulted in technology's more selective use.

Note, too, that mandating managed care of any type for the entire population would imply a significant change in the health care system as it currently operates in this country. Although savings could be achieved, some trade-offs would be required. Limitations could be placed on people's existing choice of providers, health insurance coverage, and treatment alternatives. Access to new technologies might be restricted or permitted only after a longer waiting time. In other words, managed care, when effective, does impose constraints on patients and providers, and some people may view those constraints as undesirable.

APPENDIX: DATA SOURCES AND TECHNICAL INFORMATION

This section documents data sources for the research reported above. It also provides additional technical information about the estimation methods used.

Data Sources

Data for the research come from various sources. In general, the data are for 1990, the most recent year for which detailed information on health expenditures is available.

Information on health care expenditures by type of service and source of funding is drawn from estimates of national health expenditures by the Health Care Financing Administration (HCFA).[16] Because HCFA's estimates of NHEs are based on the definitions and estimates of total population of the Social Security Administration (SSA), the memorandum also uses the SSA's estimates of total population.

CBO's estimates of the distribution of the population by primary source of health insurance coverage are based on the March 1991 Supplement to the Current Population Survey (CPS); the estimates are weighted to reflect the composition of the population in 1990. In the absence of better information, CBO has assumed that people included in the SSA's definition of total population but excluded from the narrower definition used for the CPS have the same distribution of health insurance categories as those in the CPS.

When converting the distribution of the population by primary source of insurance coverage into a similar distribution of potentially manageable health care expenditures, expenditures not financed by Medicare or Medicaid are allocated between the two insurance categories--"private or other public insurance" and "no insurance." The allocation is based primarily on the relative numbers of people in those categories, but it incorporates adjustments for the impacts that age and lack of health insurance have on average health expenditures. The adjustment for age reflects 1987 data showing that per capita spending for personal health care for people 65 or older was 4.17 times as great as that for people younger than 65.[17] The adjustment for health insurance status assumes that average health care spending for people without health insurance is one-half that for insured people.[18]

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16. See Katharine R. Levitt and others, "National Health Expenditures, 1990," *Health Care Financing Review*, vol. 13, no. 1 (Fall 1991), pp. 29-54.

17. See Daniel R. Waldo and others, "Health Expenditures by Age Group, 1977 and 1987," *Health Care Financing Review*, vol. 10, no. 4 (Summer 1989), pp. 111-120.

18. See Congressional Budget Office, *Selected Options for Expanding Health Insurance Coverage* (July 1991).

Data from several sources contribute to the estimate of how people with each source of primary health insurance coverage are distributed among health care delivery arrangements that incorporate different forms of managed care. For Medicare, the information comes from monthly reports prepared by HCFA's Office of Prepaid Health Care. For Medicaid, the primary source of similar information--for 1991 rather than 1990--is HCFA's Medicaid Bureau.[19] Additional information on how Medicaid-financed participants in HMOs were distributed among types of HMOs was provided by the Group Health Association of America.[20] For those with private or other public coverage as their primary insurance source, data on the distribution of managed care arrangements is derived from a 1990 survey of employers conducted by the Health Insurance Association of America.[21] Based on data from the same source, CBO assumed that 65 percent of people who had conventional insurance incorporating some form of managed care were covered by policies requiring both preadmission certification and concurrent review for episodes of hospitalization--the presumed criterion for whether utilization review is "effective."

Additional Technical Information

Technically oriented readers may find additional information and results helpful.

Table A-1 shows in more detail the estimated distribution of potential recipients of personal health care services that results from combining the numerous data sources and assumptions discussed above. The table shows those recipients by primary source of insurance coverage, type of managed care arrangement, and level of effectiveness of each managed care arrangement.

Table A-2 shows how managed care is assumed to affect potentially manageable health care expenditures. It summarizes the range of proportional reductions in spending that each category of managed care arrangements is assumed to imply for each primary source of insurance funding.

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19. See Medicaid Bureau, Health Care Financing Administration, *Medicaid Coordinated Care Enrollment Report: Summary Statistics as of June 30, 1991* (no date); and analysis of additional data from the same source in Physician Payment Review Commission, *Annual Report to Congress 1992*.

20. Irma E. Arispe, "GHAA Survey of Member Plans with Medicaid Contracts: Findings," *Research Briefs*, no. 11 (Group Health Association of America, Inc., August 1990); and CBO communications with GHAA.

21. Cynthia B. Sullivan and Thomas Rice, "DataWatch: The Health Insurance Picture in 1990," *Health Affairs*, vol. 10, no. 2 (Summer 1991), pp. 104-115.

TABLE A-1. POTENTIAL RECIPIENTS OF PERSONAL HEALTH SERVICES, BY PRIMARY SOURCE OF INSURANCE COVERAGE, TYPE OF MANAGED CARE ARRANGEMENT, AND EFFECTIVENESS OF MANAGED CARE ARRANGEMENT, 1990 (In millions)

Primary Source of Insurance Coverage and Type of Managed Care Arrangement	Total	Level of Effectiveness of Managed Care Arrangement[a]			
		I	II	III	IV
Total: All Insurance Types	259.6	16.7	65.5	119.4	57.9
Medicare	32.1	1.3	0	30.8	0
Managed care	32.1	1.3	0	30.8	0
Risk-contract HMOs	1.2	0.7	0	0.5	0
Staff model	0.4	0.4	0	0	0
Group model	0.3	0.3	0	0	0
IPAs	0.5	0	0	0.5	0
Cost-contract HMOs	1.3	0.6	0	0.8	0
Staff model	0.3	0.3	0	0	0
Group model	0.3	0.3	0	0	0
IPAs	0.8	0	0	0.8	0
Other managed care	29.6	0	0	29.6	0
No managed care	0	0	0	0	0
Medicaid	15.4	0.3	0	1.3	13.9
Managed care	1.5	0.3	0	1.3	0
HMOs, federally qualified	0.4	0.1	0	0.3	0
HMOs, state-plan defined	0.3	0.1	0	0.2	0
Health insuring organization	0.1	0	0	0.1	0
Prepaid health plans	0.2	0	0	0.2	0
Primary care case management	0.5	0	0	0.5	0
Community health centers	0	0	0	0	0
No managed care	13.9	0	0	0	13.9
Private or Other Public	176.9	15.2	65.5	87.3	8.8
Managed care	168.0	15.2	65.5	87.3	0
HMOs	36.5	15.2	0	21.3	0
Staff model	4.7	4.7	0	0	0
Group model	10.4	10.4	0	0	0
IPAs	15.7	0	0	15.7	0
Network model	5.6	0	0	5.6	0
Point-of-service plans	8.8	0	0	8.8	0
Effective utilization review	65.5	0	65.5	0	0
PPOs	23.0	0	0	23.0	0
Other managed care	34.2	0	0	34.2	0
No managed care	8.8	0	0	0	8.8
No Insurance	35.2	0	0	0	35.2
Managed care	0	0	0	0	0
No managed care	35.2	0	0	0	35.2

SOURCE: Congressional Budget Office calculations.

NOTE: HMOs = health maintenance organizations; IPAs = HMOs modelled on independent practice associations; PPOs = preferred provider organizations.

a. Managed care categories are defined as follows:
I. Staff- and group-model HMOs;
II. Effective utilization review incorporating precertification and concurrent review of hospital care;
III. Other forms of managed care;
IV. No managed care.

TABLE A-2. REDUCTIONS IN POTENTIALLY MANAGEABLE PERSONAL HEALTH EXPENDITURES THAT ARE ASSUMED TO RESULT FROM ALTERNATIVE MANAGED CARE ARRANGEMENTS, BY PRIMARY SOURCE OF INSURANCE COVERAGE, 1990 (In percent)

Primary Source of Insurance Coverage	Level of Effectiveness of Managed Care Arrangement[a]			
	I	II	III	IV
Alternative 1[b]				
Medicare	15.0	4.0	2.0	0
Medicaid	7.5	2.0	1.0	0
Private or Other Public	15.0	4.0	2.0	0
No Insurance	0	0	0	0
Alternative 2[b]				
Medicare	15.0	1.0	0	0
Medicaid	7.5	0.5	0	0
Private or Other Public	15.0	1.0	0	0
No Insurance	0	0	0	0

SOURCE: Congressional Budget Office.

a. Managed care categories are defined as follows:
   I. Staff- and group-model HMOs;
   II. Effective utilization review incorporating precertification and concurrent review of hospital care;
   III. Other forms of managed care;
   IV. No managed care.

b. Managed care categories II and III, under Alternative 1, are assumed to achieve larger reductions in costs than under Alternative 2.

Tables A-3 and A-4 amplify the information provided in Table 5. They show, for Medicare, Medicaid, and private or other public insurers, the estimated savings expressed as proportions of their expenditures on all personal health expenditures that are potentially manageable (Table A-3) and total personal health expenditures (Table A-4).

Further knowledge of how these estimates are calculated facilitates understanding of the patterns they contain. CBO's estimates of actual 1990 expenditure patterns by type of managed care arrangement assume that average expenditure per person would have been the same for all people (of a given age and health insurance status) if no managed care had been in effect. Consequently, alternative assumptions about the effectiveness of managed care arrangements imply different estimates of actual expenditure patterns for 1990. Moreover, each of those sets of assumptions implies a hypothetical level of expenditures that would have been observed in 1990 had no managed care arrangements been in effect.

From that hypothetical level of expenditures, one can calculate the gross savings that would have resulted in 1990 if all care had been delivered through specified managed care arrangements whose effectiveness is known or assumed. To the extent that managed care arrangements actually in place in 1990 had already achieved some of the gross savings, however, the net savings from actual 1990 expenditures would be less than the gross. The estimates presented here are of net savings from actual or estimated 1990 expenditure levels.

The estimates of total savings, and their distribution by primary insurance source, thus vary considerably depending on which set of assumptions is used about the effects of managed care categories on costs. Under Alternative 1, larger effects are assumed for effective utilization review and the category of "other managed care" than under Alternative 2.

That assumption has several effects. It raises the hypothetical level of total expenditures in the absence of managed care; gross savings due to managed care are calculated from these expenditures. Simultaneously, it shifts the estimated composition of actual 1990 expenditures towards those managed care categories assumed to have the smallest effects. It also raises the size of the estimated gross savings from the hypothetical level of expenditures that are attributed to those forms of managed care. In addition, however, it increases the implied savings that existing forms of managed care have already achieved, which partially offset the gross savings when savings from actual 1990 expenditure levels are calculated. Consequently, the distribution of individuals among the various categories of managed care affects the relationship between

TABLE A-3. ESTIMATED SAVINGS IN 1990 EXPENDITURES ON PERSONAL HEALTH SERVICES THAT COULD POTENTIALLY BE MANAGED, AS A PROPORTION OF ALL SUCH POTENTIALLY MANAGEABLE EXPENDITURES, UNDER VARIOUS FORMS OF MANAGED CARE, BY PRIMARY SOURCE OF INSURANCE COVERAGE AND THE ASSUMED EFFECTIVENESS OF MANAGED CARE ARRANGEMENTS (In percent)

Primary Source of Insurance Funding	Form of Managed Care: Staff- or Group-Model HMO	Form of Managed Care: Effective Utilization Review[a]
Alternative 1[b]		
All Sources	10.8	1.4
Medicare	12.8	2.0
Medicaid	7.3	1.9
Private or other public	11.7	1.2
No insurance	0	0
Alternative 2[b]		
All Sources	13.5	0.6
Medicare	15.1	1.0
Medicaid	7.5	0.5
Private or other public	15.3	0.6
No insurance	0	0

SOURCE: Congressional Budget Office calculations.

NOTE: HMO = health maintenance organization.

a. This form of managed care is assumed to replace all less cost-effective forms of health care delivery.

b. The managed care categories for effective utilization review and other forms of managed care are assumed to achieve larger reductions in costs under Alternative 1 than under Alternative 2.

TABLE A-4. ESTIMATED SAVINGS IN 1990 EXPENDITURES ON PERSONAL HEALTH SERVICES THAT COULD POTENTIALLY BE MANAGED, AS A PROPORTION OF EXPENDITURES ON ALL PERSONAL HEALTH SERVICES, UNDER VARIOUS FORMS OF MANAGED CARE, BY PRIMARY SOURCE OF INSURANCE COVERAGE AND THE ASSUMED EFFECTIVENESS OF MANAGED CARE ARRANGEMENTS (In percent)

Primary Source of Insurance Funding	Form of Managed Care: Staff- or Group-Model HMO	Form of Managed Care: Effective Utilization Review[a]
Alternative 1[b]		
All Sources	8.7	1.1
Medicare	12.8	2.0
Medicaid	4.8	1.2
Private, other public, or no insurance	8.3	0.9
Alternative 2[b]		
All Sources	11.0	0.5
Medicare	15.1	1.0
Medicaid	5.0	0.3
Private, other public, or no insurance	10.9	0.4

SOURCE: Congressional Budget Office calculations.

NOTE: HMO = health maintenance organization.

a. This form of managed care is assumed to replace all less cost-effective forms of health care delivery.

b. The managed care categories for effective utilization review and other forms of managed care are assumed to achieve larger reductions in costs under Alternative 1 than under Alternative 2.

the impact on costs assumed for any managed care category and the resulting savings from actual 1990 expenditures.

For effective utilization review, estimated total savings are larger under Alternative 1 than under Alternative 2, which assumes that they have smaller effects. For staff- and group-model HMOs, however, larger estimated savings are obtained under 2 than 1. As discussed in the main memorandum, that is because the two alternatives make the same assumptions about the effects of staff- and group-model HMOs, whereas Alternative 1 assumes not only larger effects for managed care categories II and III but also larger differentials between the proportional savings for category II and for categories III and IV.