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The Concentration Of Health Care Expenditures, Revisited

Managed care has had little impact on how resources are spent in treating high-cost illnesses.

by Marc L. Berk and Alan C. Monheit

ABSTRACT: In two previous publications, we described the distribution of health care expenditures among the civilian, noninstitutionalized U.S. population, specifically in terms of the share of aggregate expenditures accounted for by the top spenders in the distribution. Our focus revealed considerably skewed distribution, with a relatively small proportion of the population accounting for a large share of expenditures. In this paper we update our previous tabulations (last computed using data more than a decade old) with new data from the 1996 Medical Expenditure Panel Survey (MEPS). Our findings show that the skewed concentration of health care expenditures has remained very stable; 5 percent of the population accounts for the majority of health expenditures.

IN TWO EARLIER INVESTIGATIONS we examined trends in the concentration of health care expenditures and their implications for policy.[1] Our original study, published twelve years ago, compared the concentration of health spending between 1929 and 1980. Our motivation for conducting such analyses was to evaluate two predominant (but not necessarily mutually exclusive) perspectives that had emerged in the health policy debate on cost containment. We noted that

> the most popular paradigm generally assumes that the medical care system is overused because extensive health insurance coverage gives neither patients nor providers incentives to use the system efficiently. Proponents of this view believe that the "nervous well" receive a great deal of care that is of little benefit. Hospitals and physicians are seen as being overly cautious, ordering tests that may not be necessary and encouraging lengths-of-stay that are excessive. Accordingly, additional financial incentives must be introduced that discourage overutilization. These include higher deductibles and copayments to alter consumers' behavior as well as new reimbursement methods (such as diagnosis-related groups, or DRGs, in the Medicare prospective payment system, or PPS), prepaid health plans, and systems of managed care, which are designed to change providers' behavior (p. 47).

Marc Berk is director, Project HOPE Center for Health Affairs (Bethesda, Maryland), and vice-president, health policy research. Alan Monheit is director, Division of Social and Economic Research, Center for Cost and Financing Studies, Agency for Healthcare Research and Quality (AHRQ), in Rockville, Maryland.

The other perspective was proposed by persons such as Gov. Richard Lamm of Colorado and bioethicist Daniel Callahan. They argued that new medical technologies were resulting in high expenditures among the very sick and especially among the elderly. Any effort to control costs must therefore focus on those who are receiving large amounts of care. At the time of our paper, the most prominent proposal incorporating this perspective was Oregon's Medicaid initiative, which would no longer pay for heart, liver, pancreas, or bone marrow transplants.

The results of our study clearly suggested that cost containment efforts were more likely to be effective to the extent that they focused on the very ill. Over the past decade, however, policymakers have clearly focused on strategies that would affect the care received by a larger percentage of the population. These include incentives to reduce the number of tests ordered by physicians and the length of hospital stays, to increase the use of generic drugs, and to encourage large numbers of people to use services more prudently. Relatively little focus has centered on those with high-cost illnesses; the Oregon initiative was not copied elsewhere, and technology continues to play a prominent role in the growth of health care spending. Health plans are under increasing pressure to cover experimental treatments, and denial of such treatments is often the subject of litigation. Although we have seen enormous efforts over the past decade to control rising health care costs, relatively little effort has been targeted toward those who account for the majority of service use.

At a basic level, therefore, our focus on the concentration of health spending reflects a concern over the equity and efficiency with which resources are used. From this perspective, a highly concentrated spending distribution may indicate that some population groups are obtaining excessive care with benefits not commensurate with costs, that other groups may be underusing medical care, and that overall social welfare might be enhanced through a reallocation of resources from the former group to the latter. From a policy perspective, the concentration of health care spending draws our attention to potential behavioral responses to financial incentives within the health care financing and delivery system that systematically contribute to high-cost medical events. Finally, a highly skewed distribution also creates strong incentives for insurers to practice favorable risk selection to avoid drawing enrollees from the small proportion of high-cost cases within the population.

■ **Managed care and new technologies.** Our new findings reveal a remarkable stability in the spending distribution over the past decade, despite dramatic changes in health care delivery and continuing technological change. During this period, managed care

plans experienced a rapid increase in enrollment. For example, among the general population, health maintenance organization (HMO) enrollment more than doubled between 1985 and 1996, increasing from 22.7 million persons in 1985 to 52.5 million persons in 1996. Among employees, in 1988, 73 percent of employees were enrolled in conventional fee-for-service (FFS) health plans, with only 16 percent in HMOs and 11 percent in preferred provider organizations (PPOs). By 1996 only 27 percent of employees were enrolled in conventional health plans, while HMO enrollment increased to 44 percent of employees (considering both traditional HMO and point-of-service plans), and PPO enrollment had increased to 28 percent of employees.[2] Diffusion of new technologies in the health care sector continued over the past decade. For example, in 1990 alone nearly 5,000 new medical devices were introduced in the United States.[3]

■ **Providers' incentives.** This shift to managed care has been accompanied by a change in providers' incentives, as fewer of them operate under open-ended FFS arrangements and an increasing number are now subject to managed care constraints (such as capitated payments, which place the provider at risk for inappropriate use of services, utilization review, and limits on physician and specialty choice). Such changes may have created incentives for providers to reduce excessive resource use, which, in turn, could lead to a more uniform and less skewed health spending distribution. However, the evidence remains unclear as to whether such incentives have been effective in controlling resource use in light of continuing technological diffusion, and several studies indicate that HMOs' rate of adoption and use of new technologies may not differ from that in the FFS sector.[4] As in our earlier analysis, the availability of new medical technologies and the tendency to overuse them may prove irresistible even in a delivery system dominated by managed care.

New Estimates Of The Spending Concentration

Exhibit 1 updates the estimates in our earlier tabulations.[5] These new estimates differ in two respects. First, our most recent (1996) estimate uses data from the 1996 Medical Expenditure Panel Survey (MEPS).[6] To compare the 1987 and 1996 spending distributions using a consistent metric, column 7 provides a revised estimate of the spending distribution from the 1987 National Medical Expenditure Survey (NMES). In this tabulation, NMES data are valued on the same basis as data from the 1996 MEPS: as actual payments received by providers (that is, the sum of actual payments made by individuals and third-party payers). In contrast, the distribution reported in our original 1987 estimate (column 6) was valued on the basis of charges billed to patients and third-party payers as reported in the

EXHIBIT 1
Distribution Of Health Expenditures For The U.S. Population, By Magnitude Of Expenditures, Selected Years 1928–1996

Percent of U.S. population ranked by expenditures	1928	1963	1970	1977	1980	1987 charges	1987 payments	1996 payments
Top 1 percent	–	17%	26%	27%	29%	30%	28%	27%
Top 2 percent	–	–	35	38	39	41	39	38
Top 5 percent	52%	43	50	55	55	58	56	55
Top 10 percent	–	59	66	70	70	72	70	69
Top 30 percent	93	–	88	90	90	91	90	90
Top 50 percent	–	95	96	97	96	97	97	97

SOURCES: Data for 1928 are from I.S. Falk, M.C. Klem, and N. Sinai, *The Incidence of Illness and Receipt of Medical Care among Representative Families* (Chicago: University of Chicago Press, 1933); data for 1963 are from R. Andersen, J. Lion, and O.W. Anderson, *Two Decades of Health Services: Social Survey Trends in Use and Expenditures* (Cambridge, Mass.: Ballinger, 1976). Data for 1970 are from the National Center for Health Services Research tabulations of the 1970 Center for Health Administration Studies (CHAS)/NORC survey; for 1977, from the 1977 National Medical Care Expenditure Survey (NMCES); for 1980, from the National Medical Care Utilization and Expenditure Survey (NMCUES); for 1987, from the 1987 National Medical Expenditure Survey (NMES); and for 1996, from the 1996 Medical Expenditure Panel Survey (MEPS).

NMES data. The change in estimation methodology from the 1987 NMES to the 1996 MEPS was implemented to account for the increasingly widespread practice over this period of discounts obtained by health care purchasers in their negotiations with providers.[7] In both the 1987 NMES and 1996 MEPS, sampled persons who died during the survey year are included in the spending estimates. These persons are assigned survey weights that reflect their representation in the population at the time the survey was drawn.

■ **Remarkable stability.** A comparison of the payment-based spending estimates in 1987 and 1996 (columns 7 and 8) reveals a remarkable stability in the concentration of expenditures over the past decade. In 1996 we find that the top 1 percent of the population accounted for 27 percent of aggregate expenditures, while our adjusted 1987 estimate is 28 percent. We also find that the top 5 percent of spenders accounted for more than half of health spending in both years, while the top 10 percent accounted for more than two-thirds. These tabulations also are generally quite similar to those derived from data for 1970, 1977, and 1980. While the latter tabulations were estimated on the basis of charges, capitated payments and provider discounts were far less pervasive, so that the charge-based spending estimates are likely to compare quite favorably with actual payments received by providers. These comparisons suggest that spending concentration has remained relatively stable over an extended period of observation. Finally, a comparison of the 1996 payment-based spending distribution (column 8) and 1987 charge-based distribution (column 6) reveals the importance of adjusting on the basis of payments. Since inpatient hospital services account for a large proportion of care provided to the top spenders,

"The majority of Americans are responsible for only a small proportion of what is spent on health care."

and since the charges associated with such care have been heavily discounted in recent years, the 1987 charge-based distribution overstates the proportion of aggregate spending allocated to the top spenders.

■ **Use of resources.** While most of our discussion focuses at the high-expenditure tail of the distribution, it is worth noting the extreme stability over time in the amount of resources used by the bottom half of the population. The 1977, 1987, and 1996 surveys all show that the lower 50 percent of the population collectively used about 3 percent of total health care resources. Ideally, one should expect a somewhat skewed distribution; it is certainly not efficient policy for healthy people to be using equivalent services as those who are seriously ill. However, the degree of concentration raises interesting issues: It is clear that the majority of Americans collectively are responsible for only a very small proportion of what is spent (or paid for) on health care.

Since managed care covers more preventive services and more people are now in managed care plans, we had expected to see some increase in the number of services being used by those in the bottom 50 percent. The data clearly show, however, that fully half of the U.S. population consumes only 3 percent of all health care resources and that this was remarkably stable over the last quarter of the century. Those in the bottom 50 percent incurred an average annual expenditure of $122 in medical costs. Conversely, those in the top 1 percent spent $56,459 per person per year.

Impact Of Managed Care

Research on the effect of managed care on the use of technology has sometimes yielded contradictory results. For example, Laurence Baker and Susan Wheeler show that HMOs have restricted access to certain services such as magnetic resonance imaging (MRI), while Michael Chernew and colleagues show that there is no systematic difference between HMO patients and others in the use of laparoscopic cholecystectomy.[8] It should be noted, however, that much of the growth in recent technology, including new diagnostic testing, is not necessarily geared for the type of patient likely to be in the top 1 percent of health care spenders.

The increasing prominence of managed care and associated incentives to constrain resource use might be expected to yield some-

what greater uniformity in the spending distribution, with high health care users receiving less resource-intensive care and low users receiving more preventive and primary care services. Exhibit 2 compares the concentration of health care spending for a sample of household respondents to the 1996 MEPS who reported being enrolled in an HMO or other managed care plan that requires enrollees to sign up with a gatekeeper for routine care (characteristic of HMOs and some preferred provider plans) with other respondents who were enrolled in other health plans (such as conventional plans and some PPOs). Our comparisons are for persons under age sixty-five who obtained their coverage through their employment.[9]

The distributions presented in Exhibit 2 reveal no statistically significant differences among the tabulated percentiles or average expenditures for persons enrolled in HMOs, those enrolled in HMO and/or gatekeeper plans (other managed care plans), and those in traditional indemnity health plans (and some PPOs). Perhaps even more striking, the 1996 HMO and managed care distributions for our nonelderly population are also quite comparable to the distribution for the entire population in 1996 and for that derived from 1987 NMES data (expenditures are expressed as payments), as well as for tabulations based on the 1977 NMCES. Thus, given the growth in managed care enrollment over the past decade, our findings reveal little difference in the distribution of aggregate resource use among the top spenders and provide some indirect corroboration of findings by Chernew and colleagues that managed care plans may not differ from FFS plans in their adoption of new and cost-enhancing technologies.[10] More critically, these findings also suggest that managed care plans may be no different from other health plans in the degree to which decisionmakers allocate resources between high- and lower-cost patients.

EXHIBIT 2
Concentration Of Health Expenditures And Average Expenditures, By Plan Type, For Persons Under Age Sixty-Five With Employment-Related Health Insurance, 1996

Percentile	HMO		Any managed care (HMO or gatekeeper)		Other plans (Indemnity/PPO)	
	Percent of spending	Average spent	Percent of spending	Average spent	Percent of spending	Average spent
Top 5 percent	51%	$17,474	50%	$17,025	53%	$18,986
Top 10 percent	64	11,002	63	10,829	66	11,991
Top 30 percent	86	4,960	86	4,920	88	5,335
Top 50 percent	95	3,268	95	3,248	96	3,473
Bottom 50 percent	5	174	5	177	4	145

SOURCE: 1996 Medical Expenditure Panel Survey, Agency for Healthcare Research and Quality.
NOTES: See Note 9 in text for a description of the health plan types used in each column. HMO is health maintenance organization. PPO is preferred provider organization.

■ **Characteristics of the high-cost population.** There is an ongoing debate about our health care priorities and the amount of resources that society should be willing to pay to take care of those who are very ill. Our data support the contention that efforts to reduce health care costs must address issues related to how much care should be made available to those who require intense service use. Our study, however, should not be equated with discussions about expenses incurred during the last year of life and how many resources should be spent on people who are unlikely to achieve a high quality of life even with access to high technology. The high-expenditure population may be younger and in better health than some might expect.

We also examined differences in the age and self-reported health status of those who are in the top 1 percent of spenders, using the 1996 MEPS data. Age and health status are certainly associated with the probability of being in this group. Of those with high expenditures, 46.3 percent are elderly; the elderly comprise only 12.7 percent of the total noninstitutionalized population (in 1987 these figures were 48.2 percent and 14.9 percent, respectively). Similarly, those in fair or poor health comprise 48.6 percent of the high users but only 11 percent of the U.S. population. Thus, the majority of persons in the highest 1 percent of spenders are not elderly. Furthermore, most of the highest 1 percent of spenders do not consider themselves to be in fair or poor health. Additional research should focus on understanding the exact health care needs and prognosis of this group.

■ **Health insurance status.** Finally, we examined the concentration of health care spending by health insurance status, comparing the nonelderly population with all-year private insurance with those who are uninsured. Exhibit 3 shows the percentages of the privately insured and uninsured that account for various levels of health care spending. Within each cohort we also show the level of per capita expenditure. The top 5 percent of those with private

EXHIBIT 3
Concentration Of Health Expenditures, By Health Insurance Status, For Persons Under Age Sixty-Five, 1996

Percentile	Private insurance all year[a]		Uninsured all year	
	Percent of spending	Average spent	Percent of spending	Average spent
Top 5 percent	51%	$17,871	60%	$6,651
Top 10 percent	65	11,319	75	4,134
Top 30 percent	87	5,090	94	1,732
Top 50 percent	95	3,340	99	1,098

SOURCE: 1996 Medical Expenditure Panel Survey, Agency for Healthcare Research and Quality.
[a] Tabulations for persons covered by employment-related health insurance throughout 1996.

> *"Some may argue that the safety net ultimately provides appropriate care for everyone; this is not supported by the data."*

insurance account for 51 percent of health care expenditures, while the bottom 50 percent account for only 5 percent. The distribution among the uninsured is even more skewed, with 5 percent accounting for 60 percent of expenditures. The bottom 50 percent of the uninsured collectively account for only 1 percent of the expenses incurred by the uninsured.

That the bottom 1 percent of the uninsured would be almost entirely excluded from the medical care system is no real surprise, but the top end of the distribution is of interest. Some may argue that the safety net ultimately provides appropriate care for everyone, including the uninsured. This is not supported by the data: While the distribution of expenditures is similar between the privately insured and the uninsured, the actual amount spent on caring for the uninsured is consistently lower for those without coverage. Those in the top 5 percent of spenders among the privately insured average annual expenses of $17,871; among the uninsured, $6,651. Thus, even the very sickest of the uninsured receive only a small fraction of the care that can be obtained by those with private insurance.

O UR EARLIER WORK SHOWED that use of health care services was highly concentrated, with 1 percent of the population using 27 percent of health care resources. Although federal efforts to implement widespread health care reform were not successful, this has been a decade of dramatic change within the health care delivery system. Providers and patients face increasingly strong financial incentives to use health care services prudently. Our findings suggest, however, that such measures have had little impact on how resources in the aggregate are expended in treating high-cost illness. We find that privately insured persons, whether in different types of managed care arrangements or in largely traditional FFS settings, continue to use resources intensely. The uninsured, however, are not insulated from the burdens of a high-cost illness and spend much less than the privately insured do, even among the top 5 percent of resource users.

Although managed care has had an enormous impact on the health care delivery system, we see relatively little change in the way it has affected the aggregate distribution of resources among those who use the most services. There are serious limitations to the effectiveness of any cost containment strategies that focus on the 90 percent of the population that collectively accounts for only one-

third of total U.S. health care spending. Accordingly, further efforts to reduce costs will require difficult choices about the level of care provided to those with the greatest need.

NOTES

1. M.L. Berk, A.C. Monheit, and M.M. Hagan, "How the U.S. Spent Its Health Care Dollar: 1929–1980," *Health Affairs* (Fall 1988): 46–60; and M.L. Berk and A.C. Monheit, "The Concentration of Health Expenditures: An Update," *Health Affairs* (Winter 1992): 145–149.

2. Data on HMO enrollment were obtained from U.S. Census Bureau, *Statistical Abstract of the United States: 1999*, 119th ed. (Washington: Census Bureau, 1999), table 191. Data on health plan enrollment by employees are from the Henry J. Kaiser Family Foundation and Health Research and Educational Trust, *Employer Health Benefits, 1999* (Menlo Park, Calif., and Chicago: Kaiser/HRET, 1999).

3. A. Gelijns and N. Rosenberg, "The Dynamics of Technological Change in Medicine," *Health Affairs* (Summer 1994): 28–46. The authors argue that the development of less costly alternatives to widely used expensive technologies (for example, coronary artery bypass, transurethral prostatectomies, and cholecystectomies) have become preferred targets for research and development by drug and medical device manufacturers. Lower-cost alternatives include, respectively, coronary angioplasty, use of drugs and radioactive seeds for the treatment of prostate cancer, and laparoscopic cholecystectomy for the treatment of gall bladder disease. However, they also caution that while such new procedures may reduce the unit costs of specific medical interventions, aggregate costs may continue to rise as diffusion of the technologies leads to wider use, to the treatment of high-risk persons who prior to the change in technology were ineligible for treatment, and to other applications for the technologies.

4. See M. Chernew et al., "Managed Care, Medical Technology, and Health Care Cost Growth: A Review of the Evidence," *Medical Care Research and Review* 55, no. 3 (1998): 259–288. The authors conclude that "the evidence that managed care will control technology diffusion is mixed at best" (p. 282).

5. Our earlier work used data from a variety of household surveys (see Exhibit 1 sources). A description of these data is provided in Berk et al., "How the U.S. Spent Its Health Care Dollar."

6. The 1996 MEPS, sponsored by the Agency for Healthcare Research and Quality (AHRQ), is a two-year panel survey of approximately 10,000 households consisting of nearly 23,000 individuals. MEPS provides a variety of detailed information on the population's access to health care, use of health services, expenditures and sources of payment for care, health insurance coverage, health status, demographic characteristics, and employment and economic status. See J. Cohen, *Design and Methods of the Medical Expenditure Panel Survey Household Component*, MEPS Methodology Report no. 1, AHCPR Pub. no. 97-0026 (Rockville, Md.: Agency for Health Care Policy and Research, 1997).

7. See J. Cohen and A. Taylor, "The Provider System and the Changing Locus of Expenditure Data: Survey Strategies from Fee-for-Service to Managed Care,"

in *Informing American Health Care Policy: The Dynamics of Medical Expenditure and Insurance Surveys, 1977–1996,* ed. A. Monheit, R. Wilson, and R. Arnett (San Francisco: Jossey-Bass, 1999), 43–66. We use discount factors developed by Sam Zuvekas and Joel Cohen of AHRQ for the following services—physician visits, nonphysician visits, outpatient department physician and nonphysician visits, emergency room visits, and hospital stays—to transform the 1987 MEPS charge-based expenditure distribution into a distribution based on discounted charges or payments received by providers. The discount factors are based on a comparison of provider-reported payment data to expenditures as reported in the 1987 NMES. In the aggregate, the adjustment reduced overall charge-based expenditures by 12 percent, and the change was heavily concentrated in inpatient care. See S. Zuvekas and J. Cohen, "A Guide to Comparing Expenditure Estimates from the 1987 NMES and 1996 MEPS" (Rockville, Md.: Agency for Healthcare Research and Quality, forthcoming).

8. L.C. Baker and S.K. Wheeler, "Managed Care and Technology Diffusion: The Case of MRI," *Health Affairs* (Sep/Oct 1998): 195–207; and M. Chernew, A.M. Fendrick, and R.A. Hirth, "Managed Care and Medical Technology: Implications for Cost Growth," *Health Affairs* (Mar/Apr 1997): 196–206.

9. MEPS household respondents are classified as enrolled in an HMO if they explicitly report purchasing private coverage directly from an HMO, or if the person reporting private coverage identified his or her health plan as an HMO or HMO coverage was obtained through the workplace. The HMO column in Exhibit 2 includes the spending distribution for such respondents. Persons who do not report HMO coverage are also asked whether their health plan requires enrollees to sign up with a gatekeeper. Persons responding no to the HMO question and yes to the gatekeeper question were classified as being enrolled in a managed care plan. The "any managed care" column in Exhibit 2 thus consists of HMO enrollees as well as those who responded affirmatively to the gatekeeper question. The last column contains the residual population, consisting of those in traditional indemnity health plans and some PPO plans. While we cannot definitively rule out inclusion of some managed care enrollees, respondents in this column are likely to be enrolled in traditional indemnity plans and some PPO plans that reimburse providers on an FFS basis. As noted in Cohen and Taylor, "The Provider System," expenditures for care provided to persons enrolled in an HMO were estimated in two ways. First, for those persons enrolled in HMOs that paid providers on a discounted FFS basis, spending estimates were based on providers' reports of these payments. Next, for persons enrolled in plans such as classic staff-model HMOs that receive an annual capitated payment to provide care for enrollees, expenditures for specific medical events were imputed from data on discounted FFS payments reported by providers.

10. Chernew et al., "Managed Care, Medical Technology, and Health Care Cost Growth."