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Does Managed Care Lead To Better Or Worse Quality Of Care?

A survey of recent studies shows mixed results on managed care plan performance.

by Robert H. Miller and Harold S. Luft

PROLOGUE: One of the current realities of health policy making is that anecdotes far outweigh solid evidence when it comes to shaping the attitudes of people in relation to the performance of managed care. This phenomenon has been driven by legislators looking for political expedients that respond to a growing but still small number of consumer complaints and by media coverage that focuses on individual events rather than a broader picture of the impact of managed care. This paper aims to go beyond the anecdote to survey the evidence. One of the time-honored methods that health services researchers use to determine patterns of behavior is a rigorous review of the peer-reviewed literature, which authors Robert Miller and Harold Luft employ in this paper to compare the performance of health maintenance organizations (HMOs) to that of fee-for-service plans. While the information gleaned from these searches is not as current as one would like—given the rapidly changing nature of the system—Miller and Luft deliver a new perspective on the quality of care rendered by HMOs compared with the traditional system. This paper builds on the earlier evidence of managed care plan performance that Miller and Luft published in the Journal of the American Medical Association in 1994. Miller is an associate professor of health economics at the University of California, San Francisco. Luft is the Caldwell B. Esselstyn Professor of Health Policy and Economics at the same university and director of its Institute for Health Policy Studies. Both researchers have outstanding reputations as persons who are in the forefront of helping us to better understand the transformation of American health care.
**ABSTRACT:** We analyzed evidence on managed care plan (mostly health maintenance organization, or HMO) performance from thirty-seven recently published peer-reviewed studies. Quality-of-care evidence from fifteen studies showed an equal number of significantly better and worse HMO results, compared with non-HMO plans. However, in several instances, Medicare HMO enrollees with chronic conditions showed worse quality of care. Evidence comparing hospital and physician resource use showed no clear pattern, whereas evidence on enrollee satisfaction varied by measure and enrollee type. Although recent research provides useful findings, interpreting and generalizing from these relatively few studies is difficult. Fears that HMOs uniformly lead to worse quality of care are not supported by the evidence, although all quality data were collected prior to the recent round of cost cutting that started in 1992. Hopes that HMOs would improve overall quality also are not supported, in part because of slow clinical practice change, lack of risk-adjusted capitation rates, and inadequate quality measurement and reporting.

As health maintenance organizations (HMOs) continue to penetrate the market in most areas, public policy interest in HMO plan performance also has increased, driven by Medicare and Medicaid policy needs and public concerns about quality of care. The rate of publication of studies on HMO plan performance has kept pace. Here we analyze evidence on HMO performance from recently published studies in peer-reviewed journals, updating our 1994 literature analysis of managed care plan performance. We evaluate what the results tell us, focus on problems in interpreting and generalizing from the results, and recommend ways to make more research results useful to policymakers.

**Methods**

**Criteria for including studies.** We adopted the following criteria for including studies in this analysis. The studies (1) were published in a peer-reviewed journal in the last quarter of 1993 through the last half of 1996/early 1997 (we used Medline and references in articles to identify relevant publications); (2) were not included in our previous literature analysis; (3) incorporated at least some data from 1986 to the present; (4) included a reasonable comparison group and made a reasonable attempt to adjust statistically for differences between managed care and non–managed care groups; (5) included some results for Medicaid enrollees, unlike our previous literature analysis (most of these were evaluations of demonstrations); and (6) focused on managed care plans whose providers were responsible for much of the premium dollar. For example, we did not include studies that only evaluated the effects of capitated case management or primary care services, with no linked managed care reward for remaining care. Nor did we include studies on utilization...
review of physicians that were not part of a network or organization that contracted with the health plan. We included one study of enrollees in HMOs that were capitated for only the Medicaid portion (about half) of the premium dollar, because overall HMO incentives were similar to those of plans with full capitation.¹

■ Studies included and excluded. As of February 1997 we assessed sixty-eight studies on managed care plan performance published in journals since October 1993 that were not included in our previous review. Of those, thirty-five studies met our criteria. We also included two satisfaction studies that did not statistically adjust for differences among groups. Thirty-one other studies on managed care plan performance did not meet at least one of our criteria. Many of those studies had useful information and analysis, but some required substantial subjective judgment to determine the usefulness of the results. Almost all of the studies compared HMO plan performance to that of fee-for-service plans, making no distinction between conventional insurance plans (with or without utilization review) and preferred provider organization (PPO) plans. We continued to use the term fee-for-service for the comparison groups, although non-HMO would be more accurate in some cases. Four studies focused on managed care (HMO and PPO combined) plan performance, and only one study compared PPO performance (satisfaction) with that of HMO and fee-for-service plans. Only three studies (from two research projects) compared performance of types of HMO plans with that of fee-for-service plans. Four studies evaluated the effects of HMO market penetration on marketwide hospital expenditure and use or premium performance. The remaining studies compared HMO or managed care with fee-for-service plans. Only a handful of studies randomized enrollees to HMO and fee-for-service status. Two research projects, with a total of seven studies, had exceptionally strong methodologies: a study of Medicare home health care and the Medical Outcomes Study.² We highlight those studies in the discussion.

For each study, we created an “observation” for each dimension of performance, type of HMO plan, and (for some studies) specific clinical, age, or income subgroups within those studies. As a result, some studies contributed multiple observations. It was unclear whether a few studies had defined subgroups a priori, which created the problem of interpreting results from multiple ex post comparisons. In one case, we created one observation from two studies that addressed the same performance dimension.

Note that because most comparisons are between HMO and fee-for-service enrollees, the statement that “HMO enrollees had similar quality-of-care results” is equivalent to the statement that “HMO
enrollees had similar quality-of-care results, compared with fee-for-service enrollees.” We used the abbreviations “sig.” to designate statistically significant results and “n.s.” to designate statistically nonsignificant results. We used the term “no test” to indicate a result for which there was no test of statistical significance.

Compared with the past, relatively fewer studies focused on overall hospital use (admissions, days, length-of-stay) and more focused on specific components of use. Relatively more studies focused on the effects managed care plans had on quality, especially for persons with specific conditions or diseases, and on satisfaction with care. We devoted more attention to the latter measures because of extensive interest in HMO performance in those areas.

**Resource Use In Managed Care Plans**

**Hospitals.** No clear pattern of results emerged from the ten studies with hospital-related performance results. Relatively few studies of managed care plans’ performance focused on hospital admissions, days, lengths-of-stay, or expenditures.

Of five studies that examined hospital admission rates, three found lower hospital admission rates for HMO enrollees, and two found higher rates. Of these, one study found significantly fewer admissions for elderly Medicaid HMO enrollees. Another found significantly more admissions for HMO enrollees who had acute chest pain and a low risk of dying. Of three studies that examined hospital days, one market-level study found that a 10 percent greater market share for group/staff-model HMOs led to 6.5 percent lower (sig.) hospital days per capita. Two studies on mental health and rheumatoid arthritis patients found fewer days (−28 percent [sig.]) and −3 percent [n.s.], respectively) for HMO compared with non-HMO enrollees. In three observations from two studies, HMO enrollees had shorter hospital stays, but differences were small and nonsignificant. Of two studies on hospital spending, a market-level study showed 44 percent less rapid hospital spending growth in areas with high (compared to low) HMO penetration (sig.).

**Use of more costly tests and procedures.** In four of four studies, HMOs had lower use of more costly procedures than non-HMOs did. One study that included a market-level observation showed that the cesarean-section delivery rate was lower in areas with higher HMO market share (sig.), even though HMOs had only a slightly lower rate of c-sections compared with fee-for-service plans (no test). Another study showed that vaginal birth after a previous c-section delivery was more frequent in HMOs (sig.). A study of acute myocardial infarction (AMI) patients showed that HMO enrollees had lower angiography and revascularization rates
(0.67 odds ratio [OR] [sig.] and 0.50 OR [sig.], respectively). Another study of ischemic heart disease patients also showed that HMO enrollees had lower revascularization rates (0.66 OR [sig.]).

- **Physician visits and outpatient spending.** There was no overall pattern to physician use or expenditure results from ten studies (eighteen observations in all). In the Medical Outcomes Study, diabetic (non-insulin dependent) enrollees had 9.1 percent higher physician visits in group/staff-model HMOs (n.s.) than in fee-for-service plans, whereas hypertensive HMO enrollees had 2 percent higher visits in group/staff-model HMOs (n.s.) but 2 percent lower visits (n.s.) in independent practice association (IPA) HMOs.

- **Home health care spending and use.** Three studies showed lower HMO spending on Medicare home care compared with fee-for-service home care. A Medicare home health study found 30 percent lower spending (sig.) for Medicare HMO enrollees receiving home care, and the study on Medicare frail elderly patients receiving home care found 44 percent lower HMO spending. A third study on Medicare patients’ use of posthospital home care found significantly lower use for patients with one of five conditions.

- **Total spending.** Of five studies with results comparing plan spending, three showed substantially lower total expenditures on HMO enrollees (–16 percent to –34 percent) compared with fee-for-service enrollees. Two other studies showed little difference or mixed results.

- **Premiums.** Only one study found 6.5 percent less rapid indemnity insurance growth in areas with 10 percent higher HMO market share (for example, from 10 percent to 11 percent) (sig.). The authors estimated that during the period of that study, a 25 percent increase in HMO market share would have reduced the 7 percent real rate of premium growth to 5.9 percent.

### Enrollee Satisfaction

Seven studies (with twenty-one observations) on enrollee satisfaction provided mixed results, which varied by satisfaction measure and enrollee population.

- **Overall satisfaction.** Of five observations (from four studies) on overall satisfaction, four showed that satisfaction was lower among managed care enrollees. Yet only one study (of insured persons ages eighteen to sixty-four) had statistically significant re-
Moreover, one study showed significantly improved satisfaction for an Aid to Families with Dependent Children (AFDC) Medicaid population. The latter results stand in contrast to those of Karen Davis and colleagues, which showed even greater dissatisfaction among low-income managed care enrollees compared with low-income fee-for-service enrollees than for all managed care enrollees compared with fee-for-service enrollees.

**Financial aspects.** Five of five observations (from four studies) found that HMO/managed care enrollees had higher levels of satisfaction with financial aspects of their plans than did fee-for-service enrollees.  

**Nonfinancial aspects—all enrollees.** Of the seven observations from five studies on satisfaction with nonfinancial aspects of HMO or managed care plans, results for all enrollees combined tended to show less satisfaction with HMOs or managed care plans than with fee-for-service plans (Exhibit 1).  

**Nonfinancial aspects—low-income enrollees.** In contrast to the results for all enrollees, three of four studies showed that lower-income HMO enrollees had the same or greater satisfaction with their plan than their fee-for-service counterparts had (Exhibit 2). One study of Medicaid AFDC recipients showed a strong pattern of higher HMO enrollee satisfaction, and another study of a Medicare/Medicaid population showed better or the same satisfaction

### EXHIBIT 1  
**Satisfaction With Nonfinancial Aspects Of Health Plans, HMO/Managed Care Versus Fee-For-Service Plans**

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Plan, Type</th>
<th>Patient, Enrollee Type</th>
<th>Data Dates</th>
<th>Measure</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark (1996)</td>
<td>HMO</td>
<td>Insured enrollees</td>
<td>9/1993</td>
<td>Nonfinancial access to care</td>
<td>Worse: 7 of 8 (1 sig.); better: 1 of 8 (1 sig.) (versus fee-for-service, PPO separately)</td>
</tr>
<tr>
<td>Davis (1995)</td>
<td>MC</td>
<td>Insured enrollees, nonelderly</td>
<td>12/1993</td>
<td>Nonfinancial access to care</td>
<td>Worse: 5 of 5 (4 sig.)</td>
</tr>
<tr>
<td>Katz (1997)</td>
<td>MC</td>
<td>HIV-infected patients</td>
<td>7/91–10/93</td>
<td>Nonfinancial access to care</td>
<td>Worse: 5 of 6 (1 sig.); small differences</td>
</tr>
<tr>
<td>Adler (1995)</td>
<td>HMO</td>
<td>Medicare enrollees (aged)</td>
<td>9/93–12/93</td>
<td>Nonfinancial—technical and interpersonal</td>
<td>Worse: 2 of 2 (1 sig.)</td>
</tr>
<tr>
<td>Adler (1995)</td>
<td>MC</td>
<td>Medicare enrollees (nonelderly disabled)</td>
<td>12/93</td>
<td>Nonfinancial—technical and interpersonal</td>
<td>Worse: 2 of 2</td>
</tr>
<tr>
<td>Safran (1994)</td>
<td>Staff/group IPA</td>
<td>Chronic disease or condition</td>
<td>86–88</td>
<td>Nonfinancial</td>
<td>Worse: 5 of 6 (2 sig.); better: 1 of 6 (1 sig.)</td>
</tr>
<tr>
<td>Safran (1994)</td>
<td>HMO</td>
<td>Chronic disease or condition</td>
<td>86–88</td>
<td>Nonfinancial</td>
<td>Worse: 5 of 6 (1 sig.); better: 1 of 6</td>
</tr>
</tbody>
</table>

**SOURCE:** Authors’ tabulations of published studies. See Notes for complete cites of studies.  
**NOTES:** HMO is health maintenance organization. PPO is preferred provider organization. MC is managed care. HIV is human immunodeficiency virus. IPA is independent practice association.  
*a* Number of statistically significant (sig.) results is in brackets.
results. Only the study by Davis and colleagues showed lower satisfaction for managed care (HMO and PPO) enrollees.

Quality Of Care

Quality of care is the primary battleground between HMO proponents and opponents, who disagree on the quality of care provided in HMO plans. Here we indicate what the data show. Later we outline problems in interpreting these and other data.

Fifteen of thirty-seven studies contributed results on quality of care—the largest group of studies on any one performance dimension. However, interpreting these results is difficult. For example, many observations included multiple measures of quality. As a result, for each observation we categorized studies on a scale ranging from “better HMO results” to “worse HMO results,” based on the consistency and significance of the findings (Exhibit 3).

Given the importance of these findings on quality, and the inherent arbitrariness of categorization, it is worth presenting these in greater depth. Exhibits 4, 5, and 6 list the studies, the specific observations, and comparisons, and the most significant findings.

There were equal numbers of statistically significant positive and negative results for HMO performance, compared with non-HMO plans. Five observations from four studies showed significantly better HMO results, whereas five observations from four studies showed significantly worse HMO results. One important Medical Outcomes Study observation on chronically ill elderly enrollees showed significantly worse quality of care for physical health and significantly better quality of care for mental health. Other observations contained nonsignificant results. Seven observations from five studies showed better and worse HMO quality-of-care results, and five observations from four studies showed a pattern of favorable HMO results, compared with one observation with a pattern of

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EXHIBIT 2
Satisfaction With Plans Among Low-Income Populations, HMO/Managed Care Versus Fee-For-Service Plans

<table>
<thead>
<tr>
<th>Author</th>
<th>Plan</th>
<th>Patient, enrollee type</th>
<th>Data dates</th>
<th>Measure</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis (1995)</td>
<td>MC</td>
<td>Insured enrollees</td>
<td>94</td>
<td>Nonfinancial</td>
<td>Worse: 2 of 2</td>
</tr>
<tr>
<td>Mark (1996)</td>
<td>HMO</td>
<td>Insured enrollees</td>
<td>94</td>
<td>Nonfinancial access to care</td>
<td>Better: 5 of 8; worse: 3 of 8 (no tests)</td>
</tr>
<tr>
<td>Sisk (1996)</td>
<td>HMO</td>
<td>Medicaid AFDC</td>
<td>94</td>
<td>Nonfinancial (excellent)</td>
<td>Better: 16 of 17 (13 sig.); worse: 1 of 17</td>
</tr>
<tr>
<td>Lurie (1994)</td>
<td>HMO</td>
<td>Medicaid elderly</td>
<td>80s</td>
<td>Nonfinancial</td>
<td>Better: 1 of 1; same: 1 of 1</td>
</tr>
</tbody>
</table>

SOURCE: Authors’ tabulations of published studies. See Notes for complete cites of studies.

NOTES: MC is managed care. HMO is health maintenance organization. AFDC is Aid to Families with Dependent Children.

a Number of statistically significant (sig.) results is in brackets.
Because the evidence is mixed, HMO proponents and opponents alike can find support for their positions on quality of care. On the one hand, the evidence shows no pattern of worse HMO quality of care, as HMO proponents claim. Evidence for significantly better quality covers a wide spectrum of enrollees, including acute appendicitis, intensive care unit, and cancer patients, as well as Medicaid elderly. Evidence showing a nonsignificant pattern of better, or better and worse, quality covers an even wider spectrum of patient and enrollee types. The results show something that is simple, obvious, and yet sometimes underemphasized: HMOs produce better, the same, and worse quality of care, depending on the particular organization and particular disease.

On the other hand, three of the five observations with significant negative HMO results focus on patients with chronic conditions or diseases who need care the most: chronically ill, low-income enrollees in worse health, impaired or frail social health maintenance organization (SHMO) demonstration enrollees (who influenced the overall negative mortality results), and Medicare home health patients, many of whom have chronic conditions and diseases. It is true that some quality-of-care results that show better or mixed HMO quality also are at least partly based on data for patients with chronic conditions and diseases. It also is true that there are many valid cautions against overinterpreting the results—for example, the data are six or more years old and often are derived from relatively few health care organizations. We discuss these and other cautions below. Yet the three significantly negative HMO quality-of-care results for Medicare HMO enrollees with chronic conditions and diseases warrant attention, especially since the studies that

<table>
<thead>
<tr>
<th>HMO results</th>
<th>Observations</th>
<th>Studies*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better (statistically significant)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Preponderance of better (some results statistically significant)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pattern of better results (not significant)</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Similar, or mixed (better and worse) results</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Pattern of worse results (not significant)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Preponderance of worse results (some results statistically significant)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Worse results (statistically significant)</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

SOURCE: Authors’ tabulations of published materials.

NOTE: HMO is health maintenance organization.

*a Studies are counted more than once if they had observations in two or more categories of results.
provided the data tended to collect substantial information on enrollee characteristics.

**Interpreting And Generalizing From The Results**

Here we outline reasons why caution needs to be used in interpreting these and other results. Recently published research on managed care plan performance provides useful results for health policymakers, analysts, and consumers. For decisionmakers, some evidence is better than no evidence, but the policy debate is taking place with evidence that is quite limited, given the importance of the debate.

Interpreting and generalizing from the available studies is very difficult, for several reasons. Studies are few in number, vary greatly in scope and methods used, and often depend on data that are years old. Studies also vary in the numbers of plans examined. It matters which HMOs are studied, because performance can vary greatly. As a result, having data from one HMO with relatively better quality of care, rather than another with relatively worse quality of care, will affect overall assessments because of the small number of studies. The studies also tend to focus on comparing health plan perform-

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**EXHIBIT 4**  
Quality-Of-Care Results Favorable To HMO Plans, Compared With Non-HMO Plans

<table>
<thead>
<tr>
<th>Author</th>
<th>Plan</th>
<th>Patient, enrollee type</th>
<th>Data dates</th>
<th>Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Braveman (1994)</td>
<td>HMO</td>
<td>Acute appendicitis</td>
<td>84–89</td>
<td>Risk of ruptured appendix</td>
<td>Better: 1 of 1 (sig.)</td>
</tr>
<tr>
<td>Angus (1996)</td>
<td>MC</td>
<td>ICU, nonelderly</td>
<td>92</td>
<td>ICU risk of dying</td>
<td>Better: 1 of 1 (sig.)</td>
</tr>
<tr>
<td>Angus (1996)</td>
<td>HMO</td>
<td>ICU, elderly</td>
<td>92</td>
<td>ICU risk of dying</td>
<td>Better: 1 of 1 (sig.)</td>
</tr>
</tbody>
</table>

**Preponderance of better HMO quality of care**

<table>
<thead>
<tr>
<th>Author</th>
<th>Plan</th>
<th>Patient, enrollee type</th>
<th>Data dates</th>
<th>Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riley (1994)</td>
<td>HMO</td>
<td>Cancer</td>
<td>85–89</td>
<td>Stage of diagnosis—12 cancers, 26 comparisons</td>
<td>Better: 15 of 26 (6 sig.); worse: 11 of 26 (1 sig.); better detection: 4 of 5 cancers with strong to moderate evidence for benefits of screening</td>
</tr>
<tr>
<td>Lurie (1994)</td>
<td>HMO</td>
<td>Medicaid elderly</td>
<td>80s</td>
<td>Vision, general health, mental health, physical functioning, IADL, ADL</td>
<td>Better: 7 of 10 (2 sig.); same: 3 of 10</td>
</tr>
</tbody>
</table>

**Pattern of better HMO quality of care**

<table>
<thead>
<tr>
<th>Author</th>
<th>Plan</th>
<th>Patient, enrollee type</th>
<th>Data dates</th>
<th>Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lurie (1994)</td>
<td>HMO</td>
<td>Medicaid elderly, diabetics</td>
<td>80s</td>
<td>Glycosylated hemoglobin level</td>
<td>Better: 1 of 1</td>
</tr>
<tr>
<td>Ware (1996)</td>
<td>HMO</td>
<td>Chronically ill, nonelderly</td>
<td>86–90</td>
<td>Physical and mental health</td>
<td>Better: 2 of 2</td>
</tr>
<tr>
<td>Ware (1996)</td>
<td>HMO</td>
<td>Chronically ill, not low-income</td>
<td>86–90</td>
<td>Physical and mental health</td>
<td>Better: 2 of 2</td>
</tr>
<tr>
<td>Cole (1994)</td>
<td>HMO</td>
<td>Mental health</td>
<td>–</td>
<td>Symptoms, functioning</td>
<td>Better: 3 of 3</td>
</tr>
</tbody>
</table>

**SOURCE:** Authors’ tabulations of published studies. See Notes for complete cites of studies.  
**NOTES:** HMO is health maintenance organization. MC is managed care. ICU is intensive care unit. IADL/ADL is (instrumental) activities of daily living.  
\(a\) Number of statistically significant (sig.) results is in brackets.  
\(b\) Actual dates are unclear.
ance, rather than determining the effect of HMOs on overall market performance, although this is beginning to change.

**Variety in scope and methods.** We looked at studies from only twenty-nine different research projects. These studies varied greatly in what they examined, including performance dimensions, enrollees, market areas, and number of plans and providers. They also varied greatly in the methods that they used, including sample sizes, sophistication of measures used for each dimension of performance, thoroughness in adjustment for differences in characteristics between HMO and fee-for-service groups, currency of the data, duration of time that people were followed (when the studies were longitudinal), and thoroughness in reporting of results.

**Old data.** One can plausibly argue that the health care system began a new period of change in 1992–1993, with the emergence of more demanding large employer purchasers and more competitive health plans that sought market share. Health plans exploited excess hospital and specialist physician capacity, which resulted in intensified provider competition for health plan contracts and for enrollees, combined with substantial cost-cutting efforts. The effects of these changes, most visible from 1993 forward, included

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**EXHIBIT 5**

Quality-Of-Care Results With Similar Or Mixed HMO Plan Findings, Compared With Non-HMO Plans

<table>
<thead>
<tr>
<th>Author</th>
<th>Plan</th>
<th>Patient, enrollee type</th>
<th>Data dates</th>
<th>Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lurie (1994)</td>
<td>HMO</td>
<td>Medicaid elderly—hypertensives</td>
<td>80s</td>
<td>Systolic/diastolic blood pressure</td>
<td>Better: 1 of 2; worse: 1 of 2</td>
</tr>
<tr>
<td>Yelin (1996)</td>
<td>HMO</td>
<td>Rheumatoid arthritis</td>
<td>1982–1994</td>
<td>Pain, swelling, health assessment, stiffness, improvement, mortality</td>
<td>1-year change—better: 3 of 7; same: 1 of 7; worse: 3 of 7; 11-year change: better: 5 of 8; same: 1 of 8; worse: 2 of 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Better and worse results (both statistically significant)</th>
</tr>
</thead>
</table>

**SOURCE:** Authors’ tabulations of published studies. See Notes for complete cites of studies.

**NOTES:** HMO is health maintenance organization. IPA is independent practice association.
much lower rates of premium and spending growth across the United States, as well as major organizational and clinical practice changes that likely would have had some affect on quality of care as well. Yet of the thirty-seven studies, only seven used data that ended as late as 1993. Only four studies analyzed data solely from 1993 forward, and all four were satisfaction studies. Differences among plans, organizations, and markets. HMOs differ in important characteristics and performance, as do provider organizations, including in how HMOs pay physician organizations, how physician organizations pay physicians, and how well the clinical care is organized (that is, the extent to which clinical care is evidence-based, organized and integrated across sites of care and time, and focused on persons with chronic conditions and diseases). Averages of HMO plan performance will obscure the fact that some plans are leaders in HMO performance, whereas others trail far behind. HMO versus non-HMO performance differences also can depend on which markets were selected for analysis, as market characteristics or environments vary. Moreover, HMO versus non-HMO performance comparison results can depend on which provider organizations (that contract with HMOs) were selected for study. In some markets where HMO plans capitate and delegate clinical management responsibilities to provider organizations, even comparing a single HMO’s plan per-

### EXHIBIT 6
Quality-Of-Care Results That Were Unfavorable To HMO Plans, Compared With Non-HMO Plans

<table>
<thead>
<tr>
<th>Author</th>
<th>Plan</th>
<th>Patient, enrollee type</th>
<th>Data dates</th>
<th>Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ware (1996)</td>
<td>HMO</td>
<td>Chronically ill, low-income</td>
<td>86–90</td>
<td>Physical and mental health</td>
<td>Worse: 2 of 2</td>
</tr>
<tr>
<td>Lee/Feldstein</td>
<td>HMO</td>
<td>Breast cancer</td>
<td>84–90</td>
<td>Risk of dying (2 sets of comparisons)</td>
<td>Worse: 5 of 6 (1 sig., 4 no tests); better: 1 of 6</td>
</tr>
<tr>
<td>Shaughnessy</td>
<td>HMO</td>
<td>Medicare home care elderly</td>
<td>11/89–9/91</td>
<td>Improved, stabilized, discharged to independent living, risk of dying</td>
<td>Worse: 48 of 56 (10 sig.); better: 8 of 56</td>
</tr>
<tr>
<td>Ware (1996)</td>
<td>HMO</td>
<td>Chronically ill, worse health, low-income</td>
<td>86–90</td>
<td>Physical and mental health</td>
<td>Worse: 2 of 2 (1 sig.)</td>
</tr>
<tr>
<td>Manton (1993)</td>
<td>HMO</td>
<td>Medicare elderly–6 types</td>
<td>85–88</td>
<td>Life expectancy</td>
<td>Worse: all 6 patient types, males and females separately (no tests)</td>
</tr>
<tr>
<td>Phibbs (1996)</td>
<td>HMO</td>
<td>Newborns</td>
<td>90</td>
<td>Neonatal risk of dying</td>
<td>Worse: 1 of 1 (sig.)</td>
</tr>
</tbody>
</table>

**SOURCE:** Authors’ tabulations of published studies. See Notes for complete cites of studies.

**NOTES:** HMO is health maintenance organization.

* Number of statistically significant (sig.) results is in brackets.
formance with non-HMO plans can mask the fact that physician organization performance can vary substantially. Policymakers need to know how well the “best” plans and physician organizations perform, to understand the potential for future performance, just as they need to know about “worse” plans and providers, to be sure that adequate safeguards are in place for enrollees.

- **Effect on the overall market.** Market-area studies demonstrate favorable HMO “spillover” effects to the entire market. Even though comparisons of hospital use for HMO versus non-HMO enrollees showed mixed results, three market-level studies showed that higher HMO market penetration reduced hospital resource use in the market as a whole. Another study showed that higher HMO market penetration reduced indemnity insurance premiums.38

  Clearly, higher HMO penetration has forced conventional insurance and PPO plans and providers to change their operations (and coverage) to remain price-competitive. As a result, HMOs may be beneficial in lowering resource use for the market as a whole, even if they appear to be no different from their local competitors.

  This HMO market-level effect is a far more important potential factor now than it was in the past. As HMOs begin to dominate regional market areas, or even when there is anticipation that they could or will dominate those areas, HMOs can drive market pricing, forcing the non-HMO plans to try to compete on price (and underlying resource use) if they are to survive.

**Recommendations For Research**

- **Focus on multiple dimensions of performance.** Much research focus still is on inpatient utilization (in part because inpatient data tend to be more readily available than outpatient data) or on outcomes of inpatient procedures, but not on both. As procedures shift to outpatient settings, many increasingly important and interesting questions about care outside of the hospital remain unanswered. The key policy question is, “Can HMOs lower total resource consumption (not just hospital consumption) while improving quality?”

- **Focus on subgroups.** Studies increasingly are focusing on specific components of care for selected patient subpopulations with selected conditions or diseases. This is an important shift because it is necessary to allocate research resources to cases where differences are expected to occur and where it is possible to adjust for clinical differences between HMO and non-HMO enrollees.

  Although a narrower focus on components for selected patient subpopulations makes quality-of-care comparisons more possible, quality results will remain controversial. Developing useful quality outcomes and process measures is difficult, and determining “real”
differences between groups depends crucially on proper risk adjustment and use of comparable data. Selection issues may become even more important as the focus on quality of care increases.

Recent research has begun to focus on utilization, satisfaction, and quality of care for particularly vulnerable groups. Two studies with the most carefully designed prospective methodologies—the Medical Outcomes Study and the Medicare home health study—provided evidence that at least some ill, elderly HMO enrollees had worse quality-of-care outcomes than did their fee-for-service counterparts (see Exhibit 6). The Medical Outcomes Study provided similar evidence for chronically ill persons in relatively worse health and with relatively low incomes. On the other hand, other studies found similar or better quality outcomes for vulnerable populations (see Exhibits 4 and 5).

Much more research and reporting are needed on quality-of-care process and outcome measures for vulnerable groups. Current evidence often is based on data that are somewhat dated and sample sizes that are insufficient. The significance of some of the results also is open to question because a large number of comparisons inevitably raises issues about data mining—that is, if one makes enough comparisons, some will be significant, if only by chance.

■ **Determine why performance results differ.** We are beyond the point of wondering if any HMO plans can “work” in reducing resource use and providing similar or better quality of care, relative to non-HMO plans. Rather, we need to know why some HMO plans “work” better than others. It is essential to do the following.

First, we must develop meaningful characteristics of each plan that can affect performance. Currently, terms for HMO models (group, staff, IPA, network) are meaningless for analysis purposes. “Pure” group, IPA, and network HMO models are less and less common, as HMOs engage in multiple types of contracting arrangements. Moreover, even within a “pure” HMO model, financial and clinical management arrangements and performance can vary so greatly that results that show an average of highly variable arrangements and performance may have little value.

Second, we must develop meaningful characteristics of each market that can affect overall market performance. Given the importance of HMO market penetration on performance results, it is essential to understand the effects of the local market environment on plan performance. As indicated above, “head-to-head” HMO versus non-HMO plan comparisons may tell us little about the “true” effect of HMOs on the use of market resources and quality of care.

Third, we must focus on physician organization performance (and why that performance varies) in areas where HMOs capitrate
large physician organizations and transfer financial risk and clinical management responsibilities to those organizations for that care. If several HMOs each contract with the same physician organizations, health plan performance may look very similar, even as physician organization performance may vary greatly.

- **Generate more policy-related research by improving access to timely data.** For the studies that met our criteria, most data came from specially collected data, hospital discharge data sets (especially California’s), or tumor registries. Over time, both plans and providers have improved both their information systems and their research capabilities. Increasingly, more timely and detailed clinical and organizational data can be more readily available for public policy–related analysis. However, it is uncertain how quickly change in access to data can occur. All stakeholders will benefit from concerted and coordinated efforts to hasten that process.

**Are Expectations About HMOs’ Quality Too High?**

Although most quality-of-care results were favorable to HMOs or showed similar quality of care (compared with fee-for-service plans), some quality results were unfavorable to HMOs. Three factors make at least some such results inevitable.

- **Perverse payment incentives.** Given financial incentives that do little to reward quality on the part of plans and providers, at least some unfavorable quality-of-care results are inevitable. Under the simple capitation payment arrangements that now exist, plans and providers face strong financial disincentives to excel in care for the sickest and most expensive patients. Plans that develop a strong reputation for excellence in quality of care for the sickest will attract new higher-cost enrollees that bring with them only average (flat) premium payments, which is a recipe for bankruptcy or at least a financially weakened organization. Just as one would not expect competitive pressures under insured fee-for-service to result in cost containment, why would one expect competitive pressures under simple capitation to result in visible quality improvements?

- **Inadequate information.** Consumers and purchasers (employers and government) lack information on health plans’ or provider organizations’ access to care and quality-of-care performance. Often very little information is available that is comparable across organizations, despite recent progress in this area. As a result, consumers and purchasers cannot “vote with their feet” and stimulate competition among plans and providers on the basis of quality-of-care performance, rather than simply on the basis of price.

- **Slow change in clinical processes.** Improved quality of care requires new clinical processes, which are changing only slowly.
During the period for which data were collected for the quality-of-care studies (prior to 1992), much cost cutting under capitation involved “picking low-hanging fruit”—undertaking many of the same activities and clinical processes as in the past, but with fewer resources, including less utilization and lower prices. The research results summarized here and in our previous literature analysis suggest that HMO plans and providers cut hospitalization and use of more costly tests and procedures, often with little visible effect on quality of care, given the overutilization and high prices of the indemnity insurance/fee-for-service system. However, simply carrying out the same clinical processes but with fewer resources can negatively affect quality of care in some cases, despite the best intentions of managers and practitioners. For example, the studies on Medicare home health care showed that substantial cuts in home health care utilization and expenditures apparently led to lower HMO quality-of-care results. If cutting costs was all there was to managed care, we would expect a pattern of similar and negative quality-of-care results for HMOs, rather than the more mixed pattern that we saw. In fact, managed care and HMO capitation create incentives to reengineer clinical processes, including integrating patient care across services, locations, and time. Conducting new clinical activities with fewer resources (“picking higher-hanging fruit”) could improve quality of care, as well as lower costs. For example, the favorable HMO quality-of-care results on stage of cancer detection show that capitation-driven preventive care can create a “win-win” situation for plans and consumers—earlier cancer detection can mean better health outcomes for consumers and lower treatment costs for HMOs. For organizations that had already made easier cost-cutting gains, pressure to cut costs by reengineering and integrating clinical processes also increased after 1991.

However, in many areas managed care is still very much affected by how medical practice was conducted in the fee-for-service system. The new clinical practice changes that could improve quality of care require physician leadership, physician organization, management expertise, and (to some extent) capital that are beyond the present capability of many (although not all) health plans and provider organizations. As a result, quality of care is likely to continue to change slowly. This means that HMO quality studies likely will continue to show mixed results for some time to come.

An obsolete payment system, an embryonic and inadequate quality-reporting system, and fragmented clinical processes hamper the many clinicians and managers who want to “do the right thing”
in caring for sicker HMO enrollees. Clearly, appropriate risk adjustment of capitation rates is crucial to enhance quality, as are appropriate measures of quality and new ways of providing integrated, evidence-based care, especially for persons with potentially expensive conditions. Without those changes, substantially higher expectations about HMO performance would not be warranted.

Conclusions

Assessments of research results from the rapidly growing body of research on HMOs are becoming more complicated, as research focuses more on specific populations and specific components of care, rather than on general populations and simple measures of care. Moreover, placing findings in context is becoming more difficult and important, as categorizations of plans are less meaningful, enrollee choices are more complex, and findings are more politically sensitive than in the past. Rapid health system change, especially from 1992 forward, further complicates analysis of findings, as research results can lag substantially behind market developments.

Despite the usefulness of the studies that we analyzed, not all of this research is policy relevant. Generalizability is often quite limited for several reasons, including data that are old, a dearth of analyses about why performance differences occurred, and research designs that often were not developed with policy issues in mind.

Nonetheless, in the absence of better information, the policy debate will use available research results. When research is limited or absent, anecdote prevails. The reliance in policy debate on anecdotes more than research results biases this debate against managed care, because not all studies will produce results favorable to HMOs, but nearly all anecdotes will be unfavorable to HMOs. This bias can affect health policy and therefore ultimately affect competition among plans and providers.

By demonstrating a range of findings from many more studies of HMO performance, researchers can foster carefully titrated managed care–related policy, so that policy instruments can be precise and sharp, rather than general and blunt. Better data and tools for measuring performance will enhance the usefulness of research results. The ultimate goal should be policies that encourage health plans and providers to delivery high-quality, cost-effective care that meets patients’ and enrollees’ expectations.

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NOTES


24. Davis et al., “Choice Matters.”

25. Davis et al., “Evaluation of Medicaid Managed Care.”


30. Davis et al., “Choice Matters.”
32. Ware et al., “Differences in Four-Year Health Outcomes.”
34. Ware et al., “Differences in Four-Year Health Outcomes”; Manton et al., “Social/Health Maintenance Organization and Fee-for-Service Health Outcomes”; and Shaughnessy et al., “Home Health Care Outcomes.”
38. Wickizer and Feldstein, “The Impact of HMO Competition.”
41. Riley et al., “Stage of Cancer at Diagnosis.”