



CLINICAL RESEARCH STUDY

Quality of care in for-profit and not-for-profit health plans enrolling Medicare beneficiaries

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ABSTRACT

BACKGROUND: For-profit health plans now enroll the majority of Medicare beneficiaries who select managed care. Prior research has produced conflicting results about whether for-profit health plans provide lower quality of care.

OBJECTIVE: The objective was to compare the quality of care delivered by for-profit and not-for-profit health plans using Medicare Health Plan Employer Data and Information Set (HEDIS) clinical measures.

RESEARCH DESIGN: This was an observational study comparing HEDIS scores in for-profit and not-for-profit health plans that enrolled Medicare beneficiaries in the United States during 1997.

OUTCOME MEASURES: Outcome measures included health plan quality scores on each of 4 clinical services assessed by HEDIS: breast cancer screening, diabetic eye examination, beta-blocker medication after myocardial infarction, and follow-up after hospitalization for mental illness.

RESULTS: The quality of care was lower in for-profit health plans than not-for-profit health plans on all 4 of the HEDIS measures we studied (67.5% vs 74.8% for breast cancer screening, 43.7% vs 57.7% for diabetic eye examination, 63.1% vs 75.2% for beta-blocker medication after myocardial infarction, and 42.1% vs 60.4% for follow-up after hospitalization for mental illness). Adjustment for sociodemographic case-mix and health plan characteristics reduced but did not eliminate the differences, which remained statistically significant for 3 of the 4 measures (not beta-blocker medication after myocardial infarction). Different geographic locations of for-profit and not-for-profit health plans did not explain these differences.

CONCLUSION: By using standardized performance measures applied in a mandatory measurement program, we found that for-profit health plans provide lower quality of care than not-for-profit health plans. Special efforts to monitor and improve the quality of for-profit health plans may be warranted. © 2005 Elsevier Inc. All rights reserved.

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Federal policy continues to encourage enrollment of Medicare beneficiaries in private health plans.¹⁻³ Proponents contend that managed care can improve quality of care and control cost growth.^{4,5} During the 1990s, large numbers of Medicare beneficiaries enrolled in health plans. By 1998 for-profit plans enrolled the majority of approximately 4.5 million Medicare health plan enrollees.⁶ Despite a reduction in the number of health plans after 2000, recent federal legislation included payment provisions designed to increase enrollment of Medicare beneficiaries in managed

care. Some prior research suggests that the quality of care provided by for-profit health plans may be worse than that in not-for-profit health plans.⁷⁻¹⁰ However, these studies, based on regional plans, surveys, or data voluntarily reported by health plans, may have been affected by biased selection, and none of them fully accounted for known geographic variations in the delivery of care.¹¹⁻¹⁴

Since 1994, many health plans have voluntarily reported data to the National Committee for Quality Assurance (NCQA) using the Health Plan Employer Data and Information Set (HEDIS). HEDIS has become the most widely used method for assessing health plan quality.¹⁵ The Balanced Budget Act of 1997 required all health plans that enroll Medicare beneficiaries to report Medicare HEDIS data annually.¹⁶ The standardization of HEDIS quality measure specifications, the mandatory nature of the Medicare reporting in this program, and the special audit of the national 1998 data create an ideal opportunity to compare the quality of care provided in for-profit and not-for-profit health plans serving Medicare beneficiaries nationwide.

Methods and data

Beginning in 1997, all health plans that care for Medicare beneficiaries participating in the Medicare +Choice program (recently renamed "Medicare Advantage") have been required to report HEDIS data to the Centers for Medicare and Medicaid Services (CMS) through NCQA using a format that permits anonymous linkage to individual sociodemographic characteristics. In 1998, the Medicare HEDIS data set summarizing performance in calendar year 1997 included 4 measures of the quality of clinical care (NCQA's "clinical effectiveness" measures). Every health plan submitted an electronic file indicating which enrolled beneficiaries were eligible and selected for each HEDIS measure denominator and whether each selected individual received the measured clinical service. We included all 4 available clinical effectiveness measures in our analyses.

For each measure, NCQA specifications define precise clinical criteria for using health plan administrative files to select a random sample of enrollees eligible for each measure from the continuously enrolled population (having no break in enrollment that exceeds 45 days). The specifications also define protocols that use administrative data and/or medical record review to assess whether the measured services were provided. For example, to calculate the measure of eye examinations for diabetes, the specifications identify patients with diabetes using precisely specified outpatient and inpatient claims codes (UB-92, *International Classification of Diseases, Ninth Revision*, and Current Procedural Terminology codes) or pharmacy data (dispensing of insulin or oral hypoglycemics). Among this eligible population of patients with diabetes, the performance standard is met if a patient has at least one claim that matches a specified list of Current Procedural Terminology codes for a

visit to an ophthalmologist or optometrist or if the patient has evidence on medical record review that a dilated retinal examination was performed.¹⁷

When health plans prepared their data for reporting to CMS, they underwent on-site audits including review of data systems, interviews with health plan personnel, and centralized review of medical records. Problems or deficiencies in the data were corrected before submission of the results to NCQA and CMS. For the clinical effectiveness measures, between 90.3% and 96.6% of the health plans that reported data were in compliance with the HEDIS technical specifications.¹⁷

From CMS, we obtained the 1998 HEDIS file that included usable data with individual sociodemographic indicators from 294 health plans on 303 718 beneficiaries who had been included in at least 1 of the 4 HEDIS clinical effectiveness measures: breast cancer screening, use of beta blocker after myocardial infarction, diabetic eye examinations, and follow-up after hospitalization for mental illness. These measures are summarized in the appendix. We excluded health plans that reported a HEDIS score based on a denominator of fewer than 5 enrollees (41 health plans accounting for 379 beneficiaries) or that lacked InterStudy data (see "Health Plan Characteristics") on tax status (19 health plans accounting for 13 622 beneficiaries). We excluded individual enrollees who lacked ZIP code data (6468 enrollees, including 3 health plans for which all enrollees lacked ZIP code data). Our study sample therefore consisted of 231 health plans enrolling 283 249 beneficiaries.

Health plan characteristics

We obtained data on health plan characteristics (including tax status (for-profit or not-for-profit), total enrollment, model type, age of health plan, whether the health plan enrolls Medicaid beneficiaries, region, and whether the plan was part of a national managed care firm) from the InterStudy Competitive Edge 8.2 database containing information on health maintenance organizations operating in the United States.⁶ This file was matched to the Medicare health plan file by name, city, and state. Matches were verified by comparing the county service areas provided by CMS for each Medicare plan with the counties listed in InterStudy. Where discrepant information was noted or a match was not obtained, we contacted health plans directly. Only 19 (6%) of the health plans were unmatched to the InterStudy database.

Sociodemographic characteristics of health plan enrollees

To adjust for the sociodemographic mix of the beneficiaries enrolled in each health plan, we matched each health plan enrollee with demographic data maintained by CMS. We classified enrollees according to the following sociodemographic categories for analysis: age (65-70, 71-75, 76-80,

and >80 years), sex, race as reported in Medicare enrollment files (white, African American, Hispanic, other), Medicaid recipient (“dual-eligible”), area-derived income (see below), area-derived educational attainment (see below), and residence in a rural area. Area-derived income and education for each enrollee were based on the enrollee’s ZIP code. We used 2000 Census data to classify all the study ZIP codes on these variables.¹⁸ For descriptive purposes, we ranked all health plan enrollees according to the percentage of residents in the beneficiary’s ZIP code who received public assistance. Enrollees were considered “low income” if they were in the top quintile of this ranking. We used a similar approach to rank all enrollees according to the proportion of residents age 65 years or older in the beneficiary’s ZIP code who had attended college. Enrollees were considered to have “low educational attainment” if they were in the lowest quintile of this ranking. For rural ZIP codes we used the standard census definition based on “proportion urbanized.”

Analysis

The goal of the analysis was to compare the HEDIS performance in for-profit and not-for-profit health plans while adjusting for sociodemographic mix and other characteristics of each health plan, including geographic location. We first tabulated the characteristics of health plans by tax status. For each health plan, we calculated the prevalence of each sociodemographic characteristic. We calculated the mean prevalence and the associated interquartile range of variation of each characteristic among all health plans, for-profit plans, and not-for-profit plans. We compared the mean HEDIS performance scores among for-profit and not-for-profit health plans, the difference in these mean scores, and the 95% confidence interval of the differences.

To control for the sociodemographic mix of enrollees in health plans, we estimated linear regression models, with receipt of the HEDIS-specified service as the dependent variable and sociodemographic characteristics (mean-centered) and dummy variables for plans as independent predictors. Each estimated plan dummy variable coefficient represented the adjusted HEDIS score for the corresponding health plan, interpretable as the health plan’s predicted HEDIS score given a standard population. For each of the HEDIS measures, we calculated *t* tests comparing mean adjusted scores by tax status. We then fitted a model for the sociodemographic-adjusted scores that included tax status and the other InterStudy-derived health plan characteristics.¹⁹ We interpreted the adjusted coefficient of tax status and its 95% confidence interval to assess the statistical significance of differences in performance on each HEDIS measure in for-profit and not-for-profit health plans. This approach controlled for other measured characteristics of the plan that might account for part of the association of HEDIS rates with tax status.

The analytic models described above control for enrollee sociodemographic mix and health plan characteristics but could be confounded by the geographic location of health plans if quality of care varies (as use of services varies) among small geographic areas of the United States.^{13,14} Moreover, under the payment formula used by CMS, health plans receive a higher average premium payment if they enroll beneficiaries from selected geographic areas. Some of those areas might, for historical reasons, have different rates of use of the services assessed by HEDIS quality measures. For example, if for-profit health plans chose to operate in areas with historically higher-than-average quality this could create a spurious association between health plan tax status and performance on the quality of care measures.

To address confounding by geographic location, we used a second analytic approach that compared the quality of care for enrollees in for-profit and not-for-profit plans operating within the same county. We defined the group of beneficiaries in all plans with a given tax status in each county as the unit of analysis (ie, the group of beneficiaries enrolled in for-profit plans in a particular county is one such unit and the group enrolled in not-for-profit plans in that county is another unit). We first adjusted for differences in the sociodemographic case-mix of these “county/tax status” units by using individual characteristics in a regression similar to the first step of the previous analysis. To adjust for plan characteristics other than tax status, we assigned to each beneficiary the characteristics of that beneficiary’s health plan other than region (controlled for by county weighting described below) and entered those characteristics into the models.

After calculating adjusted HEDIS scores for each county’s for-profit and not-for-profit enrollees, we assigned a weight to each county observation using the formula $W_c = (n_{cF} + n_{cN}) \cdot [n_{cF}/(n_{cF} + n_{cN})] \cdot [n_{cN}/(n_{cF} + n_{cN})]$, where n_{cF} and n_{cN} are sample counts from for-profit and not-for-profit plans in county *c*. In this formula, the first factor represents the total sample size in the county and the other factors depict the fractions of enrollment in for-profit (second factor) or not-for-profit (third factor) plans. This formula gives the greatest relative weight to highly populated counties where health plan enrollment is relatively equally distributed in for-profit and not-for-profit health plans. Mean differences in HEDIS scores (weighted average across counties) between the two groups of plans were assessed using a weighted paired *t* test and the corresponding confidence interval. The use of these weights is essentially a “propensity score” adjustment for the differing distribution of members in the 2 groups of plans across counties.¹⁹ All analyses were performed using SAS statistical software.²⁰ For weighted analyses, we used PROC SURVEYMEANS to obtain appropriate standard error estimates.²¹

Study results

Sixty-four percent of the study health plans were for-profit (Table 1). Compared with not-for-profit health plans, for-profit

Table 1 Characteristics of health plans enrolling Medicare beneficiaries*

	All health plans	For-profit health plans	Not-for-profit health plans	<i>P</i> value
	N (%)			
Number of health plans	231 (100)	148 (64)	83 (36)	
Total enrollment				.006
<100 000	66 (29)	51 (34)	15 (18)	
100 000-400 000	98 (42)	63 (43)	35 (42)	
>400 000	67 (29)	34 (23)	33 (40)	
Medicaid enrollment				.003
Yes	120 (52)	66 (45)	54 (65)	
No	111 (48)	82 (55)	29 (35)	
Model type n (%)				<.001
IPA	95 (41)	69 (47)	26 (31)	
Network/other	16 (7)	11 (7)	5 (6)	
Mixed	102 (44)	64 (43)	38 (46)	
Group or staff	18 (8)	4 (3)	14 (17)	
Average age health plan				<.001
<5 y	16 (7)	14 (9)	2 (2)	
5-20 y	158 (68)	113 (76)	45 (54)	
>20 y	57 (25)	21 (14)	36 (43)	
Region				<.001
New England	19 (8)	8 (5)	11 (13)	
Mid-Atlantic	30 (13)	19 (13)	11 (13)	
South Atlantic	47 (20)	32 (22)	15 (18)	
East North Central	26 (11)	19 (13)	7 (8)	
West North Central	11 (5)	7 (5)	4 (5)	
South Central	25 (11)	24 (16)	1 (1)	
Mountain	24 (10)	17 (11)	7 (8)	
Pacific	49 (21)	22 (15)	27 (33)	

IPA = Independent Practice Association.

*Health plans reported data for at least one of the four Health Plan Employer Data and Information Set (HEDIS) measures during 1998.

health plans had lower total enrollment, were less likely to enroll Medicaid beneficiaries, were more likely to be Independent Practice Association (IPA) or network model types, had been in operation for a shorter period of time, and were less prevalent in the New England and Pacific regions. The socio-demographic characteristics of enrollees in for-profit and not-for-profit health plans differed in many ways (Table 2). Compared with not-for-profit health plans, for-profit health plans enrolled, on average, smaller proportions of beneficiaries aged 65 to 69 years, women, whites, and rural residents. For-profit health plans also enrolled larger percentages of African Americans and beneficiaries with lower educational attainment.

On average, rates of plan performance (and 95% confidence intervals) were 70.4% (68.3%-72.4%) for breast cancer screening, 48.7% (46.1%-51.4%) for diabetic eye examination, 67.7% (63.9%-71.5%) for beta-blocker medication after myocardial infarction, and 48.2% (43.3%-53.2%) for follow-up after hospitalization for mental illness. For-profit health plans had significantly lower HEDIS scores than not-for-profit health plans (Table 3). Compared with not-for-profit health plans, the performance of for-profit health plans ranged from 7.3 percentage points lower for the breast cancer screening measure to 18.3 percentage points lower for the measure of follow-up after hospitalization for mental illness. All of these differences were statistically significant.

Health plan performance varied within the 2 groups of health plans. Across the 4 measures, between 16% and 20% of for-profit plans had scores above the median performance scores of not-for-profit plans (data not shown). Likewise, between 21% and 34% of not-for-profit plans had scores below the median performance scores of for-profit plans.

The adjusted results were similar to the unadjusted findings (Table 4). Controlling for the sociodemographic case-mix of health plans had a small effect on the differences in performance of for-profit and not-for-profit health plans. Additional adjustment for the other characteristics of health plans further reduced the differences, but did not eliminate them. The measures of diabetic eye examination and follow-up after hospitalization for mental illness remained statistically significant. The differences in performance on breast cancer screening and beta-blocker medication after myocardial infarction were no longer statistically significant. Across the 4 regression models, no single health plan characteristic was consistently an important mediator of tax status-related differences in performance, although health plan total enrollment, plan age, model type, and region seemed to mediate a portion of the tax status difference. Whether the plan was part of a national managed care firm had little impact on the primary results (data not shown).

Table 2 Sociodemographic characteristics of study sample (n = 283 249) and sociodemographic case-mix at for-profit and not-for-profit health plans

	Study sample (n = 283 249) % of individuals	Health plan case-mix		Interquartile range (all plans) n = 231	P value*
		For-profit n = 148	Not-for-profit n = 83		
		% (mean of plan means)			
Age					
65-69 y	62	54	60	43-66	.004
70-80 y	31	38	31	27-46	<.001
>80 y	8	9	8	5-11	.838
Female	72	66	72	60-76	<.001
Race					
White	83	82	88	78-94	<.001
African American	9	13	6	2-14	<.001
Hispanic	4	3	2	0-3	.025
Other	3	2	2	1-2	.324
Medicaid	5	5	4	2-5	.271
Low income†	20	21	19	8-26	.587
Low education‡	19	27	17	7-36	<.001
Rural	3	3	6	0-5	.039

*7 test comparing mean of for-profit and not-for-profit health plans.

†Low income is defined as living in a zip code area with a high proportion of individuals receiving public assistance according to the year 2000 Census. Individuals included in the study sample are considered to have "low income" if they are in the top quintile of all managed care enrollees for the proportion of zip code residents receiving public assistance.

‡Low education is defined as living in a zip code area with a low proportion of residents ≥ 65 years of age having at least some college education according to the year 2000 Census. Individuals included in the study sample are considered to have "low education" if they are in the lowest quintile of all managed care enrollees for the proportion with at least some college education.

Controlling for differences in the geographic location of for-profit and not-for-profit health plans

Health plans included in this study sample operated in 1311 counties. Approximately 37% (479) of these counties had enrollees in both for-profit and not-for-profit plans; however, these latter counties included 92% (261 537) of the study's health plan enrollees. Table 5 shows that after matching enrollees by county and weighting for the distribution of enroll-

ment among counties (column 1), the "within county" HEDIS scores (except for beta-blocker medication after myocardial infarction) were statistically significantly lower among enrollees in for-profit health plans than among enrollees in not-for-profit plans. Adjustment for individual sociodemographic characteristics had little impact on these differences (column 2). Adjustment for health plan characteristics reduced the differences further, but HEDIS scores remained lower among enrollees in for-profit health plans than enrollees in not-for-profit health plans. These differences remained statistically significant.

Table 3 HEDIS performance among for-profit and not-for-profit health plans

	For-profit	Not-for-profit	For-profit and not-for-profit difference	95% CI (mean of plan means)
			%	
Breast cancer screening (n = 194)	67.5	74.8	-7.3†	-11.4, -3.2
Diabetic eye examination (n = 214)	43.7	57.7	-14.1†	-19.2, -8.9
Beta blockers after myocardial infarction (n = 162)	63.1	75.2	-12.1†	-19.8, -4.5
Follow-up after hospitalization for mental illness (n = 122)	42.1	60.4	-18.3†	-28.2, -8.4

CI = confidence interval; Health Plan Employer Data and Information Set (HEDIS).

†P < .05.

Table 4 Adjusted differences in mean HEDIS performance between for-profit and not-for-profit health plans

	Unadjusted difference	95% CI	Adjusted			
			Adjusted for SES-mix*	95% CI	Adjusted for SES-mix and health plan features†	95% CI
					%	
Breast cancer screening (n = 194)	-7.3‡	-11.4, -3.2	-7.2‡	-11.2, -3.3	-2.6‡	-6.8, 1.7
Diabetic eye examination (n = 214)	-14.1‡	-19.2, -8.9	-14.0‡	-19.0, -8.9	-9.5‡	-15.0, -4.0
Beta blockers after myocardial infarction (n = 162)	-12.1‡	-19.8, -4.5	-12.5‡	-20.0, -4.9	-6.5	-15.0, 2.0
Follow up after hospitalization for mental illness (n = 122)	-18.3‡	-28.2, -8.4	-17.4‡	-27.0, -7.7	-14.3‡	-26.0, -2.6

HEDIS = Health Plan Employer Data and Information Set; CI = confidence interval; SES = socioeconomic status.
 *Adds adjustment for health plan sociodemographic SES-mix (age, sex, race, Medicaid eligibility, area-derived income, area-derived education, and rural residence).
 †Adds adjustment for health plan sociodemographic case-mix and health plan characteristics (total enrollment, model type, years in operation, and region).
 ‡Statistically significant $P < .05$.

Discussion and policy implications

Our results show that on all 4 available standardized HEDIS measures reflecting care delivered during 1997, the quality

of care was significantly lower among the Medicare program's for-profit health plans than among its not-for-profit health plans. These results are particularly important for 2 reasons. First, since the late 1990s, the majority of health

Table 5 Adjusted within-county differences in mean HEDIS performance between enrollees in for-profit and not-for-profit health plans

	County matched and weighted difference	95% CI	Adjusted			
			Adjusted for SES-mix*	95% CI	Adjusted for SES-mix not health plan features†	95% CI
					%	
Breast cancer screening (county n = 196)	-10.7‡	-13.9, -7.5	-10.3‡	-13.4, -7.2	-7.6‡	-10.5, -4.6
Diabetic eye exam (county n = 203)	-17.9‡	-22.5, -13.3	-17.9‡	-22.5, -13.3	-12.8‡	-16.5, -9.1
Beta blockers after myocardial infarction (county n = 88)	-3.0	-10.4, 4.4	-3.1	-10.4, 4.2	-3.8	-11.4, 3.7
Follow up after hospitalization for mental illness (county n = 43)	-15.2‡	-26.0, -4.4	-15.2‡	-25.3, -5.1	-14.9‡	-27.5, -2.4

HEDIS = Health Plan Employer Data and Information Set; CI = confidence interval; SES = socioeconomic status.
 *Adds adjustment for health plan sociodemographic case-mix (age, sex, race, Medicaid eligibility, area-derived income, area-derived education, and rural residence).
 †Adds adjustment for health plan sociodemographic case-mix and health plan characteristics (total enrollment, model type, and years in operation).
 ‡Statistically significant $P < .05$.

plans that have enrolled Medicare beneficiaries have been for profit. Second, the measures we studied are based on widely accepted standards of care for the clinical services they assess. There is a high degree of consensus that these clinical services can reduce morbidity and mortality if beneficiaries receive them.

The few prior studies that have compared the quality of care provided in for-profit and not-for-profit health plans have come to varying conclusions about the relationship between tax status and quality. Two studies suggested that for-profit health plans provide lower quality of care based on technical measures of quality performance and receive less favorable subjective ratings from enrollees with self-reported fair or poor health.^{7,22} National survey data suggest that for-profit status is associated with lower ratings and reports about care and slightly higher rates of disenrollment.^{8,9} However, other analyses suggested that the quality gap between for-profit and not-for-profit health plans is not significant or is explained primarily by other market level factors such as competition among health plans.¹¹ Our findings support the proposition that the quality of care is lower among for-profit health plans and that this result is not related to competing explanations.

Our results extend prior research in 3 ways. First, the Medicare program requires all participating plans to submit HEDIS data so there is limited opportunity for selection bias in our sample. Studies based on commercial HEDIS data may be affected because plans may voluntarily elect to participate and substantial numbers of plans choose not to do so.¹² Second, prior studies have lacked the data to adjust for both individual characteristics and enrollment-related selection effects. There are known racial and socioeconomic disparities in the quality of care for Medicare beneficiaries.²³ In our study, for-profit health plans enrolled greater proportions of racial and socioeconomically disadvantaged minorities suggesting the possibility that sociodemographic mix, rather than ownership, might explain the quality differences. Nevertheless, the adjusted results confirmed that the lower quality of care in for-profit health plans was not an artifact of sociodemographic differences. Other characteristics of health plans such as model type and age also accounted for part of the observed differences in quality, but did not fully explain the lower quality of for-profit health plans. Third, small area variations in the delivery of health care and other historical factors lead to different health plan premium payments among counties (based on the adjusted average per capita cost). If different premium rates caused for-profit health plans to select different sets of counties than their not-for-profit counterparts, any observed association between tax status and quality might be spurious. The results in Table 5 suggest that this association is not attributable to geographic choices or market-level factors.¹¹

What features of for-profit and not-for-profit health plans lead to the differences in clinical quality that we observed? Our statistical models suggest that other characteristics of health plans such as model type of plan may mediate the

relationship between quality and for-profit status. The models treat these as confounding effects, but if for-profit health plans favor some model types, adjusting statistically for these other characteristics tends to underestimate the magnitude of the difference. If these characteristics are considered mediating or "path variables," the differences we found between for-profit and not-for-profit plans are larger than the adjusted models suggest.

We can only speculate about other features that were not available to us but that might conceivably differ between for-profit and not-for-profit health plans, such as differences in the selection of providers that contract with the plan, the priorities of plan leadership, the leaders' capacity to motivate clinical quality improvement, and the use of effective quality management techniques such as educational outreach, performance monitoring and feedback to clinicians, electronic medical records, or use of patient and clinician reminders.²⁴⁻²⁸

In a prior study, we found that rates of high-cost operative procedures were either similar in for-profit and not-for-profit plans or actually higher in for-profit plans.²⁹ How do we reconcile the prior finding of higher (or similar) operative procedure rates in for-profit compared with not-for-profit plans and the present finding of lower quality of care in essentially the same cohort of plans? We speculate that the managerial processes that can control use and those that can improve quality may be related. In this context, the results of our 2 studies may signal that for-profit plans have "weaker" management control over provider practices, making for-profit plans less able than their counterparts to improve quality and control use of high-cost procedures. Future research might examine the relationship between measures of quality and patterns of service use.

Our study has strengths and limitations. The Medicare HEDIS database allowed us to assess the quality of care for a nationally representative sample of elderly managed care enrollees near the peak of Medicare enrollment in the Medicare +Choice program. The analyses are based on a highly standardized quality measurement system that is widely used by health plans. The data reported to NCQA and CMS were centrally audited.³⁰ Sociodemographic characteristics of enrolled populations are known to be associated with the quality of care and therefore could be an important confounder if for-profit and not-for-profit health plans enroll populations who differ on these characteristics.^{18,23} We were able to control for sociodemographic case mix and a potentially wide range of confounding health plan characteristics.

It may be that the magnitude of differences in quality of care between for-profit and not-for-profit health plans has changed since 1998, but it is not obvious whether these differences will have increased or decreased. We know that quality of care has generally improved, which may tend to decrease the difference.³¹ If Medicare legislation that was passed in 2003 (which included premium increases for health plans) had attracted the participation of for-profit

health plans, the differences in quality may have increased.³² Our data include only the small number of measures of quality that were available and may not fully represent the many dimensions of the quality of care in health plans. The sociodemographic adjustments might have been improved if individual data on income or education had been available.

Some might cite our results and conclude that for-profit health plans should be barred from participation in Medicare. We believe this would be problematic. First, the quality of care in for-profit plans, though not as high as that in not-for-profit plans, may nevertheless be higher than the quality of care under fee-for-service insurance.³³ Second, such an action would disrupt benefits available to potentially millions of beneficiaries who lack an alternative not-for-profit plan in their area. Third, a blanket prohibition on for-profit plans would remove some high-performing plans.

In conclusion, we found that the quality of care delivered to Medicare beneficiaries is substantially lower in for-profit health plans compared with not-for-profit health plans. The results seem important because of the prominent role of for-profit health plans in Medicare and the payment changes that are designed to accelerate enrollment in health plans. Our findings are not only consistent with prior research but

also reinforce the concern that the financial incentives of for-profit plans lead to less aggressive efforts to manage the quality of care. The variability of performance within the 2 groups of plans and the limited number of measures we studied suggest that a blanket prohibition of for-profit health plans may be premature. However, monitoring health plan quality is clearly a worthwhile endeavor. Quality monitoring by itself may lead to institutional efforts that may improve the quality of care for Medicare beneficiaries.^{34,35} At a minimum, quality monitoring should be a cornerstone of federal government efforts to optimize the quality of health care for Medicare beneficiaries.

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Appendix. Brief description of HEDIS measures

Measure	Study specification*
Breast cancer screening	Eligible: Enrolled women age 65-70 who had no break in health plan enrollment >45 days during the calendar year Numerator criteria: Had a mammogram during the calendar year
Diabetic eye examinations	Eligible: Enrollees age 65 and older who had no break in health plan enrollment >45 days during the previous calendar year and were dispensed insulin and/or oral hypoglycemics during the reporting year or had 2 ambulatory visits on separate dates with associated diabetes codes or had 1 hospitalization or emergency room visit with an associated diabetes diagnosis code Numerator criteria: Had evidence of a retinal ophthalmoscopic exam by an eye care professional during the previous calendar year
Beta blocker after myocardial infarction	Eligible: Patients age 65 and older who were discharged alive after admission for acute myocardial infarction and have no contraindication to beta blocker use Numerator criteria: Had been dispensed a beta blocker medication at the time of discharge
Follow-up after hospitalization for mental illness	Eligible: Patients age 65 and older discharged after inpatient admission for a mental health diagnosis Numerator criteria: Had a follow-up visit with a mental health professional within 30 days of discharge

*Note: The age criteria for this study sample exclude patients less than 65 years of age (unlike standard HEDIS criteria). For more detailed description of specifications, see NCQA. *HEDIS 3.0/1988 Vol 2: Technical Specifications*. Washington, DC: NCQA, 1998.

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