Does Risk Adjustment for Medicare Patients Reward Caring for Sick Patients or Liberal Admission Practices?

POLICY MATTERS

W. PETE WELCH, PhD

American Association of Health Plans

Washington, DC

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By January 2000, approximately one sixth of all Medicare beneficiaries were enrolled in HMOs. Medicare payments made on their behalf are projected to total $40 billion for 2000.[1] Historically, capitated payments to health plans—currently averaging $5100 per patient—have been based on a percentage of average costs in fee-for-service Medicare. Until now, these payments have been adjusted only for certain demographic characteristics, particularly age and sex. For example, Medicare paid health plans about twice as much for each man in his early eighties as it paid for each woman in her late sixties.

However, there was concern that adjusting for age and sex alone was not sufficient and that Medicare payments were not accurately reflecting expected health care costs of individual enrollees.[2,3] Without using health status measures to adjust capitation payments, health plans were not paid more to care for sicker enrollees. Plans with sicker—and therefore more costly—enrollees were penalized, whereas those with enrollees who were healthier than average were rewarded.

As of January 2000, Medicare has addressed this problem by implementing capitation payments that are risk-adjusted according to an enrollee's clinical diagnosis, as identified from previous hospital admissions records. In this paper, I review this new approach and consider some of the problems with adjusting payments on the basis of previous admissions, particularly those for "discretionary" diagnoses. I also identify issues that policymakers will face in compensating plans for serving sicker patients without rewarding liberal admission practices. (A note about usage: Many authors have referred to the expanded range of health plans that can receive capitated Medicare payments as "M+C plans" [for Medicare+Choice], instead of "HMOs;" however, in this paper I simply use "health plans.")

Medicare's New Approach to Risk Adjustment

To compensate health plans more accurately for care provided to Medicare patients, the Balanced Budget Act of 1997 required that capitation payments be adjusted according to the health status of enrollees. To implement this law, the Health Care Financing Administration (HCFA) decided to determine risk adjustment on the basis of selected diagnostic data from hospital inpatient stays. (Currently, only 10% of payments are based on this new system.) Relative to the previous system, Medicare has increased its payment on behalf of enrollees who have been hospitalized for certain diagnoses within the previous year and decreased its payment on behalf of enrollees who have not recently received inpatient care for the same medical conditions.

The new risk-adjustment system, devised by a research consortium in Boston, is termed *Principal Inpatient Diagnostic Cost Groups*.[4,5] The International Classification of Diseases, 9th revision (ICD-9), codes that were similar in terms of diagnosis and sub-

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sequent cost were grouped into 88 risk-adjustment groups.[6] That is, ICD-9 codes were grouped together if hospital admissions in a given year with principal diagnoses of these codes predicted roughly the same annual cost (across all sites of care) for a beneficiary the following year. To simplify the administration of the payment system, the 88 risk-adjustment groups were collapsed according to subsequent cost, resulting in 15 diagnostic cost groups.

Medicare pays health plans substantially more for enrollees with qualifying admissions than for those without. Consider payment in 2000 for a woman aged 65 to 69 years. If the patient had no qualifying admission, the health plan would receive only $2310 (assuming full implementation and other payment factors—such as Medicaid status and whether the enrollee is working—do not come into play). With a previous admission for stroke, the health plan would be paid almost three times the baseline payment, receiving an additional $4192 for the care of this patient. For a diagnosis of chronic obstructive pulmonary disease (COPD), the health plan would be paid more than six times the baseline payment, thereby receiving an additional $12,435. **Table 1** summarizes additional payments for other risk-adjustment groups.

A Problem with the New Approach

Risk adjustment is intended to modify payments to reflect the underlying "sickness" of the patients cared for by a health plan. Risk adjustment might be viewed as "leveling the playing field" among health plans—although plans that care for sicker patients would be expected to have higher costs, they would now also receive higher payments. The HCFA risk-adjustment strategy, however, hinges on the fundamental assumption that the patient's recent history of previous admissions reflects the sickness of the patient rather than the practice style of the physician.

For some diagnoses, this assumption may be correct. For instance, hip fracture is a nondiscretionary diagnosis—all patients with this condition are admitted to hospitals. Thus, differences in hip fracture admission rates can be considered an appropriate measure of risk (and health status) across communities and health plans. Conversely, hospitalization rates for other diagnoses, such as COPD or congestive heart failure, involve considerably more physician discretion; communities and health plans vary widely in how frequently they hospitalize patients for these conditions. Thus, risk adjustment for such conditions based on previous admissions adjusts for local physician practice styles as much as it does for patient case mix. This system penalizes health plans whose physicians have low-admission styles of practice and rewards those with physicians who have high-admission styles.

In developing its risk-adjustment methods, HCFA recognized the potential problem with discretionary admissions and tried to identify these conditions by surveying clinicians. Two panels with a total of six physicians rated ICD-9 codes in terms of the degree to which discretion of the attending physician determines whether the patient is admitted for treatment.[5, 7] Unfortunately, these efforts may have been hindered by

TABLE 1

Medicare Capitation Payment for Selected Risk-Adjustment Groups in 2000*[12]

RISK-ADJUSTMENT GROUP	ADDITIONAL CAPITATION PAYMENT OVER HAVING NO ADMISSIONS	PROPORTION OF AVERAGE PAYMENT
Classic low-discretionary admissions		
Stroke	$4192	82%
Hip and pelvis fracture	$4666	91%
Acute myocardial infarction	$4666	91%
Other admissions		
Transient ischemic attack	$4666	91%
Kidney infection	$5969	117%
Bacterial pneumonia	$6480	127%
Septicemia/shock	$10,200	200%
Congestive heart failure	$12,435	244%
COPD	$12,435	244%
Chemotherapy	$1910–$26,464	37%–519%

**The lowest additional capitation rate is reported when several risk-adjustment groups have been combined. Additional annual capitation payment divided by the average payment ($5100) on behalf of all HMO enrollees. COPD = chronic obstructive pulmonary disease.*

a lack of diversity among these physicians. All six doctors practiced in the Boston area, a region with historically high admission rates for many categories of discretionary admissions.[8] For this reason, these physicians were probably not in a position to judge which admissions would be considered discretionary from a national perspective.

Developers of the new system alternatively downplayed or claimed to have solved the problem that discretionary admissions poses to the new risk-adjustment system.[4] They wrote, "[We] eliminated conditions. . .that might invite discretionary hospitalization."[5] Ultimately, HCFA decided to retain several diagnoses that the project's final report recognized to be associated with discretionary admissions (e.g., congestive heart failure, transient ischemic attack, and COPD).[9] The rationale for such exclusions was simple: including these conditions enhanced the ability to predict health care cost for individuals.[7]

Using Small-Area Analysis To Identify Discretionary Admissions

Exactly how discretionary are the conditions used in HCFA's risk-adjustment model? One way to address this question is to perform small-area analyses by examining variation in admission rates across geographic regions. In their work published in *The Dartmouth Atlas of Health Care*,[10] Wennberg and colleagues assessed rates of admission for various medical diagnoses in the fee-for-service Medicare population. Using the 1994–1995 CD-ROM version of *The Dartmouth Atlas*, I examined admission rates (per 1000 Medicare beneficiaries) for 10 of the 88 risk-adjustment groups used in the HCFA risk-adjustment system. The 10 were selected because they could be confidently linked to a comparable diagnosis-related group (DRG). (See **Appendix** for details.) Admission rates were adjusted for age, sex, and race by using the indirect method of standardization. The geographic units of analysis were the 306 U.S. hospital referral regions (HRRs). For this analysis, I first ranked these regions according to their admission rates for each of the 10 conditions. The relative degree of variation was then expressed in terms of the relative percentage difference between HRRs in the 10th and the 90th percentiles.

Figure 1 and **Table 2** describe regional variation in admission rates for each of the 10 conditions. Data for three conditions indicate relatively low degrees of geographic variation, which are characteristic of low-discretionary admissions. For example, with stroke, admission rates for HRRs varied from 9.32 per 1000 beneficiaries in Rochester, New York (10th percentile) to 13.65 per 1000 beneficiaries in Scranton, Pennsylvania

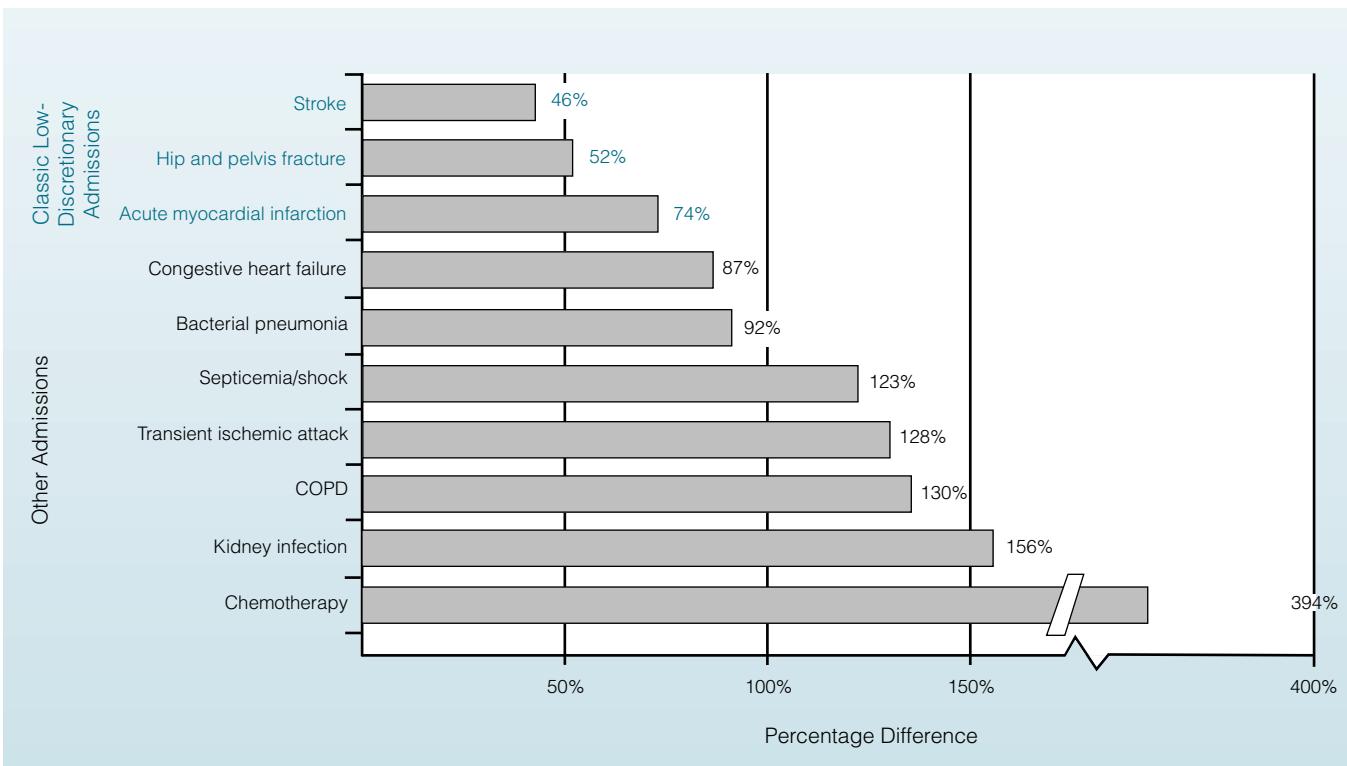

FIGURE 1. 90th vs. 10th Percentile Regions for Age-Sex-Race–Adjusted Admission Rates, Percentage Difference, Selected Risk-Adjustment Groups, 1994–1995. COPD = chronic obstructive pulmonary disease.

TABLE 2

Medicare Capitation Payment and Age-Sex-Race–Adjusted Admission Rates for Selected Risk-Adjustment Groups, 1994–1995

RISK-ADJUSTMENT GROUP	HOSPITAL REFERRAL REGION				
	90TH PERCENTILE		10TH PERCENTILE		
	NAME	ADMISSION RATE* (A)	NAME	ADMISSION RATE* (B)	DIFFERENCE (A–B)/B
Classic low-discretionary admissions					
Stroke	Scranton, PA	13.65	Rochester, NY	9.32	46%
Hip and pelvis fracture	Grand Forks, ND	1.75	Eugene, OR	1.15	52%
Acute myocardial infarction	Toledo, OH	11.52	Colorado Springs, CO	6.62	74%
Other admissions					
Congestive heart failure	Chicago, IL	27.39	Contra Costa, CA	14.62	87%
Bacterial pneumonia	Paducah, KY	20.56	Royal Oak, MN	10.70	92%
Septicemia/shock	Dallas, TX	7.90	Casper, WY	3.55	123%
Transient ischemic attack	Metairie, LA	6.35	San Jose, CA	2.79	128%
COPD	Nashville, TN	14.85	Salinas, CA	6.46	130%
Kidney infection	McAllen, TX	8.96	San Jose, CA	3.50	156%
Chemotherapy	Muncie, IN	5.09	Olympia, WA	1.03	394%

**Admissions per 1000 fee-for-service beneficiaries, adjusted for age, sex, and race. COPD = chronic obstructive pulmonary disease.*

(90th percentile)—a difference of only 46%. Admission rates for hip fracture and acute myocardial infarction had similarly low variation profiles (52% and 74% differences between 10th and 90th percentile hospital referral regions, respectively).

However, the other risk-adjustment groups used by HCFA are more variable. Admission rates for septicemia/shock varied from 3.55 per 1000 beneficiaries in Casper, Wyoming (10th percentile) to 7.90 per 1000 beneficiaries in Dallas, Texas (90th percentile)—a difference of 123%. Admission rates for transient ischemic attack, COPD, and kidney infection varied to similar degrees. Admission rates for chemotherapy varied the most—with almost a four-fold variation (394%) between Olympia, Washington (10th percentile) and Muncie, Indiana (90th percentile).

The observed differences across geographic areas presumably exist between the fee-for-service and managed-care sectors. Substituting outpatient services for inpatient ones has long been a mainstay of U.S. health plans. More recently, they have implemented disease management programs, which proactively manage chronic conditions. As a result, beneficiaries with conditions such as congestive heart failure or COPD are plausibly now much more likely to be treated in an outpatient setting if they are enrolled in a health plan than if they remain in fee-for-service Medicare. It is ironic that the plans that regularly practice cost-effective patient management, such as using disease management programs, will be penalized for their efforts.

Suggestions for Policymakers

The switch from demographic adjustment to health-status adjustment to determine capitation payments has the potential to improve how Medicare compensates health plans for serving sicker patients. However, by adjusting payments on the basis of previous hospital admissions for discretionary conditions, HCFA will inadvertently reward communities or health plans with historically liberal admission practices. Conversely, HCFA may be penalizing plans that utilize hospital-based care more judiciously, including those that have developed more cost-efficient approaches to delivering services (e.g., chemotherapy) on an outpatient basis. It may also penalize plans with successful disease management strategies for reducing the number of acute exacerbations of chronic conditions (e.g., for congestive heart failure) and thus the need for hospitalizations.

In the short term, HCFA should either drop discretionary admissions from its risk-adjustment system or allow plans to certify that beneficiaries have a condition that merits payment above the base level, even if such patients have not recently been hospitalized for

that condition. HCFA and health plans have already begun discussing the possibility of a certification requirement for reimbursement of treatment for congestive heart failure, because of both the prevalence of this condition and the increasing use of care by disease management programs for persons with this condition.

In the long term, HCFA is likely to incorporate diagnostic data from outpatient physician visits as well as hospitalizations. The agency hopes to begin using such information by 2004. At least two cautions are worthy of attention. First, outpatient records will also contain discretionary diagnoses. For example, there may be variation in how physicians diagnose or label "borderline" cases, such as mild asthma or diabetes not requiring treatment. Risk adjustment for such conditions would reward liberal diagnostic practices—the outpatient analogue to the problems with adjusting for discretionary admissions. Second, the reporting burden for health plans will be substantial. Incorporating comprehensive data on outpatient encounters would involve approximately 60 times more information than data generated for inpatient encounters.[11] A much smaller number of data elements may be sufficient for risk-adjustment purposes. In collecting diagnostic data for risk adjustment, some state Medicaid agencies require a limited number of data elements. HCFA should review the experiences of state agencies using this approach.

In implementing the new risk-adjustment system, HCFA needed to overcome many challenges involving diagnostic coding, statistical predictability, and administration. These initial efforts could not realistically have been expected to produce a flawless system. However, HCFA should be able to modify the new risk-adjustment system of Medicare reimbursement so that it accurately compensates health plans that care for sicker patients without also rewarding liberal admission practices.

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Disclaimer

The views expressed here are those of the author and do not necessarily represent the views of the American Association of Health Plans.

Correspondence

W. Pete Welch, PhD, American Association of Health Plans, 1129 20th Street, NW, Suite 600, Washington, DC 20036: telephone: 202-778-8480; fax: 202-861-1448; e-mail: pwelch@aahp.org.

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Appendix. Linking Risk-Adjustment Groups to Diagnosis-Related Groups

To examine regional variation in admission rates, the risk-adjustment groups used by HCFA had to be linked to comparable diagnosis-related groups (DRGs) used in *The Dartmouth Atlas of Healthcare*.[10] To accomplish this linkage, this project identified ICD-9 codes that were appropriate to the risk-adjustment groups and then compared them with the ICD-9 codes used to define Medicare DRGs.[12,13] (See Appendix Table.) There was only one risk-adjustment–DRG pair for which the ICD-9 codes matched perfectly: hip and pelvis fracture.

The other ICD-9 codes were reviewed, and a judgment was made regarding the significance of the difference. Pairs were considered to be comparable if one or more of the following judgments were made about nonmatching codes:

- Pairs were thought to represent clinical situations that would not greatly influence hospital admission, perhaps because they represented diagnoses that were not indications for hospitalization in and of themselves
- The diagnoses were considered nondiscretionary reasons for admission, so that although the rate might be over- or underestimated, the estimations of variation would still be valid
- The diagnostic pair represented only a small fraction of the potential admissions for that DRG.

APPENDIX TABLE

Selected Risk-Adjustment Groups and Comparable DRGs*

RISK-ADJUSTMENT GROUP†			COMPARABLE DRGS	
DESCRIPTION	NUMBER	INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION, CODES	DESCRIPTION	NUMBER
Classic low-discretionary admissions				
Stroke and certain cerebrovascular disorders	91–93	430–434, 436, 437,‡ 438,‡ 784.3	Stroke and certain cerebrovascular disorders	14
Hip and pelvis fracture	146–147	808, 820, 821	Hip and pelvis fracture	235–236
Acute myocardial infarction	82	410,‡ 429.5, 429.6	Acute myocardial infarction	121–123
Other admissions				
Congestive heart failure	89	402,‡ 404,‡ 415.0, 416, 417, 425, 428, 429.0, 429.1	Heart failure/shock	127
Bacterial pneumonia	109	481, 482,‡ 483–486	Adult simple pneumonia	89–90
Septicemia/shock	2	38, 785.59	Septicemia	416
Transient ischemic attack	94	435	Transient ischemic attack	15
COPD	105	491, 492,‡ 496	COPD	88
Kidney infection	116	590	Kidney/urinary tract infection	320–321
Chemotherapy	Many	V581,V672	Chemotherapy	410, 492

**COPD = chronic obstructive pulmonary disease; DRG = diagnosis-related group.*
†The formal term for risk-adjustment group is "DxGroup."
‡Selected digits to the right of the decimal place.