CHAPTER 3

Improving Medicare's payments for inpatient care and for teaching hospitals

RECOMMENDATIONS

3A The Secretary should improve the hospital inpatient prospective payment system by adopting, as soon as practicable, diagnosis related group (DRG) refinements that more fully capture differences in severity of illness among patients. At the same time, she should make the per discharge payment rates more accurate by basing the DRG relative weights on the national average of hospitals' relative values in each DRG.

3B The Congress should amend the law to change the method now used to finance outlier payments under the hospital inpatient prospective payment system. Projected outlier payments in each DRG should be financed through an offsetting adjustment to the relative weight for the category, rather than the current flat adjustment to the national average base payment amounts.

3C To avoid imposing extraordinary financial burdens on individual providers, the Congress should ensure that the case-mix measurement and outlier financing policies recommended earlier are implemented gradually over a period of several years. Further, the Congress should consider including protective policies, such as exemptions or hold-harmless provisions, for providers in circumstances in which vulnerable populations' access to care might be disrupted.

3D The Congress should give the Secretary explicit authority to adjust the hospital inpatient base payment amounts if anticipated coding improvements in response to refinements in case-mix measurement are expected to increase aggregate payments by a substantial amount during the forthcoming year. This adjustment should be separate from the annual update. Further, the Congress should require the Secretary to measure the extent of actual coding improvements based on the bills providers submit for payment and make a timely adjustment to correct any substantial forecast error.

3E The Congress should fold inpatient direct graduate medical education costs into prospective payment system payment rates through a revised teaching hospital adjustment. The new adjustment should be set such that the subsidy provided to teaching hospitals continues as under current long-run policy. This recommendation also should be implemented with a reasonable transition to limit the impact on hospitals of substantial changes in Medicare payments and to ensure that beneficiaries have continued access to the services that teaching hospitals provide.

CHAPTER 3

Improving Medicare's payments for inpatient care and for teaching hospitals

In August 1999, MedPAC recommended combining Medicare's two special payments to teaching hospitals, currently labeled as medical education, into a single teaching hospital payment adjustment that would better account for the higher costs of inpatient care in those facilities. We also recommended refining certain elements of Medicare's case-pricing methods to make inpatient payments per case better match the expected costs of inpatient care in all types of hospitals. We deferred specifying how these recommendations might be implemented, however, pending further study. In this chapter, we make specific recommendations for refining methods for case-mix measurement, financing outlier payments, and combining special payments to teaching hospitals. To avoid imposing large financial burdens on individual providers, we also recommend that these policies be phased in over a period of several years.

In this chapter

The Balanced Budget Act of 1997 required the Medicare Payment Advisory Commission (MedPAC) to examine the need for changes in Medicare's payment policies and other federal policies that affect graduate medical education (GME), payments to teaching hospitals, and other health care workforce training. This request was motivated by a variety of concerns. One was the impending insolvency of the Medicare Part A trust fund. Related issues included whether the federal government should continue to support GME programs and whether Medicare should be the focal point of that effort. Another concern was the wide variation in Medicare's payments to teaching hospitals. Finally, many were concerned that supporting GME programs through Medicare's hospital payment policies was distorting teaching hospitals' choices about the number and specialty mix of residents to train and the appropriate sites for training.

Our August 1999 analysis of teaching hospitals' characteristics and related Medicare payment policies (MedPAC 1999a) led us to a number of conclusions and recommendations. First, we concluded that teaching facilities have systematically higher costs for inpatient care than do other hospitals because teaching facilities offer a broader and more technologically sophisticated array of services, attract patients who are more acutely ill, and furnish care that is more complex and intensive. Second, based on established economic theory, we found the traditional distinction between the direct costs of GME programs and patient care costs to be artificial and misleading.[1] Like other trainees, residents bear the costs of their training by accepting lower compensation than they could earn given their skill level. The direct costs of GME programs represent what teaching hospitals are willing to pay for the patient care services residents provide as they train.

We recognized that teaching hospitals' higher costs reflect a number of factors likely to strengthen the clinical care that beneficiaries and other patients receive. Medicare has traditionally paid for the higher costs of care in these hospitals and we recommended that this continue, as long as the benefits exceed the additional costs. We also noted that to ensure beneficiaries' access to care, Medicare's payments must approximate efficient providers' patient care costs and reflect differences in costs that arise from variations in patient complexity and the intensity of the care provided.

We recommended changing Medicare's payment policies in two ways. First, Medicare's inpatient case-mix measurement methods should be improved to reflect more accurately the relationship between illness severity and the cost of inpatient care. We suggested that policymakers consider making refinements to the diagnosis related groups (DRGs), the methods used to set DRG relative weights, and the financing of outlier payments.

Second, we recommended that Medicare adjust its payments to teaching hospitals to reflect their systematically higher patient care costs. We envisioned a new teaching hospital payment adjustment that would replace Medicare's current inpatient teaching-related payments—the direct GME payments based on hospital-specific per resident amounts and the indirect medical education (IME) payments teaching hospitals receive under the prospective payment system (PPS).

Like the IME adjustment, the new teaching hospital adjustment would be applied to teaching hospitals' base DRG payments. The new adjustment would reflect the effect on inpatient costs per discharge of including inpatient direct GME costs, enabling Medicare's payment rates to account for systematic differences in care costs between teaching facilities and other hospitals. In addition, distributing Medicare's payments for these cost differences through the new teaching hospital payment adjustment would remove much of the variation in Medicare's payments to teaching hospitals, which today reflects historical decisions made by teaching hospitals, medical schools, universities, and others about financing expenses for hospital-operated GME programs.[2]

We also stated in our August report that these policy changes were not intended to produce large increases or decreases in Medicare spending, but to improve the accuracy of overall Medicare payment policy. The current IME adjustment, however, pays teaching hospitals more than would be indicated by the estimated relationship between costs per case and resident intensity.[3] The goal of making payments consistent with efficient providers' costs thus raises the question of whether continued payment of these higher amounts is appropriate.

Finally, we recognized that adopting our recommendations might redistribute Medicare payments among hospitals. We therefore recommended that policymakers provide an appropriate phase-in period to avoid placing too great a financial burden on individual facilities.

Since publication of the August report, MedPAC has evaluated alternative ways to make its recommendations operational. This chapter offers specific policy recommendations based on that evaluation. It also describes the estimated

1 Hospitals' direct costs for operating residency training programs generally comprise compensation for supervisory physicians and residents and allocated overhead expenses.

2 Based on the same reasoning, we noted that a similar teaching facility payment adjustment might be developed for making payments in other settings where training occurs, including training programs for residents and those for other health professions. Because only limited data are available for programs outside the hospital inpatient setting, however, developing appropriate teaching facility payment adjustments for other settings would require substantial additional effort.

3 The IME adjustment for fiscal year 2000 is currently set at approximately 6.5 percent for every 10 percent increment in teaching intensity, as measured by residents per bed. Beginning in fiscal year 2002, the adjustment will be set at approximately 5.5 percent. Analysis of the relationship between costs per case (adjusted for payment factors) and resident intensity, however, shows that teaching hospital costs increase only about 3.2 percent for every 10 percent increment in teaching intensity. The difference between the payment adjustment and the estimated cost relationship reflects a subsidy to teaching hospitals.

effects of these policies, if adopted, on payment accuracy under Medicare's hospital inpatient PPS and on the level and distribution of hospitals' payments, inpatient margins, and total margins.

We conducted our evaluation of policy options following two lines of inquiry. One set of analyses explored options for refining case-mix measurement and outlier financing methods. The other set examined options for combining special payments to teaching hospitals with and without holding total special payments constant. In the latter case, we considered returning the savings to all hospitals by increasing the DRG payment rates proportionately or retaining the savings in the Medicare Part A trust fund.[4]

The chapter begins by describing the criteria and issues that we considered in evaluating alternative policies. The following section outlines the findings and specific recommendations based on our analysis of alternative refinements in Medicare's case-mix measurement and outlier financing policies. Then, we discuss our findings and recommendations on methods for folding inpatient direct GME costs into the PPS payment rates and developing a combined teaching hospital payment adjustment. Finally, we summarize the estimated effects these policies would have if they were adopted simultaneously.

Evaluating potential changes in payment policy

As discussed in previous MedPAC reports (MedPAC 1999a, MedPAC 1999b), Medicare's payment policies should be judged by how well they promote the program's principal goals. Medicare was enacted to improve access to care by reducing the financial burden faced by elderly (and later, disabled) people in obtaining medically necessary services. Accordingly, Medicare's principal goal is to ensure that its beneficiaries have access to high-quality care in the most appropriate clinical setting. At the same time, the program's policies must balance the interests of the providers who furnish care and the beneficiaries and taxpayers who finance that care.

Medicare's payment policy objectives

To ensure access to care in the most appropriate setting, Medicare's payment policies must encourage providers to supply high-quality services to its beneficiaries and to produce those services efficiently. To accomplish these objectives, the program's payment rates must be consistent with efficient providers' costs. Consequently, we believe that Medicare's payment rates should:

- be high enough to enable efficient providers to furnish high-quality services consistent with the trade-offs between cost and quality that exist with current medical technology and local market conditions,
- induce providers to produce services efficiently, neither encouraging nor discouraging use of particular types of resources, and
- account for predictable differences in unit costs that arise from appropriate variations in the complexity and intensity of services furnished to patients with different clinical conditions and severities of illness.

Following these principles helps to ensure that Medicare's limited funds are used effectively and that providers' payments enable them to furnish services of value to beneficiaries.

Criteria for evaluating changes in payment policy

These principles suggest criteria for evaluating the desirability of Medicare's payment policies or proposed changes in those policies. One important criterion is payment accuracy—the extent to which Medicare's payment rates reflect efficient providers' costs of furnishing care to beneficiaries. Systematically paying too much or too little for specific types of inpatient care or for care furnished by particular types of hospitals creates undesirable financial incentives for providers. If providers were to respond to these incentives, they might seek to attract certain kinds of patients while avoiding others, or they might admit patients who could be treated more efficiently—and at no greater risk—in other settings, or furnish fewer services than clinically appropriate. In addition, inaccurate payments weaken the link between provider efficiency and financial performance.

Related criteria include the effects of payment policy changes on beneficiaries' access to services and the quality of care they receive. We have carefully considered how potential refinements in case-mix measurement, outlier financing, and teaching hospital payment adjustment policies might affect providers' financial incentives and how their responses might affect beneficiaries' access to or quality of care. These effects cannot be measured, however, until the policy changes have been made and providers' responses can be observed. Consequently, we cannot predict the access and quality effects that might result from the policy options we are evaluating. Instead we must anticipate the likely directions of any potential access or quality effects.

In addition, we have evaluated a number of other consequences that might be associated with the policy changes under consideration, including:

- increases in administrative burdens borne by the Health Care Financing Administration (HCFA) or providers,

4 The options involve continuing the subsidy to teaching hospitals or setting the amount of special payments to teaching hospitals based on the empirically estimated teaching hospital payment adjustment. Under the second option, the savings—the difference between the amounts of total special payments to teaching hospitals under the two options—could be included in the national base payment amounts, raising all DRG payment rates, or retained in the trust fund, reducing payments to teaching hospitals but leaving payments to other hospitals unchanged.

- inappropriate increases in Medicare spending that might result from improvements in hospitals' clinical coding and reporting,
- changes in the distribution of residents between inpatient and outpatient training sites that might occur in response to financial incentives inherent in alternative resident intensity indicators used to determine the teaching hospital adjustment, and
- increases in the financial burdens borne by those rural providers traditionally considered especially vulnerable.

We have weighed the extent to which each of these consequences might be important; when they appear potentially significant, we have attempted to identify actions that policymakers could take to minimize their effects.

Measuring the effects of policy changes on payment accuracy

In principle, payment accuracy could be evaluated by measuring the extent to which Medicare's payment rates account for the effects of factors expected to influence efficient hospitals' costs, such as differences in the mix of cases treated or in market prices for labor and capital inputs. If we could compare Medicare's payment rates with efficient facilities' costs for individual cases, we could measure the extent to which gains or losses—differences between payments and costs—vary systematically across types of cases, types of hospitals, or market areas.

In practice, however, our ability to develop unambiguous payment accuracy measures is limited in several ways. Efficient hospitals are difficult to identify because facilities' accounting costs may reflect variation in accounting practices rather than differences in real economic costs. Moreover, existing measures and data are inadequate to control for quality differences among providers, compromising our ability to make fair comparisons.

In addition, comparisons of case-level gains or losses under different payment policies may be confounded by errors in one or more of the payment adjustments included in the hospital inpatient PPS. For instance, errors in the system's adjustments for variations in input prices might make PPS payment rates too low for hospitals in some areas and too high for those in other areas. Under these circumstances, improvements in case-mix measurement might compound the effects of input-price adjustment errors and thus appear to worsen payment accuracy rather than improve it. Although this kind of potential compounding would be unlikely to overwhelm the payment accuracy effects of substantial case-mix measurement improvements, it could make them seem less desirable than they would in the absence of other payment errors.

Nevertheless, changes in the distribution of gains and losses among cases provide the only direct information we have on how changes in Medicare's payment policies may affect payment accuracy. In our evaluation of the effects of specific policy options, we have relied primarily on two measures of payment accuracy. One is the standard deviation of the distribution of gains and losses among cases within DRGs, hospitals, or hospital groups. The standard deviation of the distribution measures the extent to which gains or losses on individual cases vary from the average gain. For a payment system with a given level of average gain per case, the standard deviation measures the residual variation in costs among cases that is unexplained after accounting for the factors included in the payment system. Other things being equal, policy changes that narrow the distribution among cases would improve payment accuracy by accounting for more of the systematic variation in costs and thus would be preferred over policies that result in wider variation.

The other measure is variation in the average gain or loss across DRGs, hospitals, or hospital groups. The distribution of average gains or losses across DRGs or hospital groups measures the extent to which the payment adjustments in the PPS capture variation in the major factors affecting providers' costs among types of cases and types of facilities, respectively. Changes in the distribution of average gains and losses across DRGs and hospital groups indicate whether specific policy changes enlarge or reduce systematic inconsistencies between payments and costs. Other things being equal, policies that make the distribution of average gains and losses more uniform across DRGs and hospital groups would improve payment equity among providers.

Other issues

As discussed earlier, we also recognize that the policy options we are considering likely would affect many hospitals in important ways. The preliminary estimates we published earlier on the payment effects of case-mix refinement and outlier financing options, for example, clearly showed that these policies would substantially change PPS payments for many hospitals (MedPAC 2000). Our revised estimates indicate the same outcome. To add perspective to these effects, we have developed estimates indicating how these payment changes would affect hospitals' Medicare inpatient and total margins.

Without developing detailed proposals, we also have considered how the immediate financial impact of our recommendations could be ameliorated by the use of phase-in periods, targeted additional payments, exemptions, or other methods. Because the hospital industry has experienced a variety of major changes in both public and private payments, the Congress and the Secretary should make every effort to ensure that further policy changes do not impose heavy additional burdens on providers. To avoid potential adverse effects on rural beneficiaries' access to inpatient care, we urge policymakers to protect rural providers traditionally considered financially vulnerable, especially those in areas that have few hospitals or in which a substantial proportion of providers would face large reductions in Medicare payments.

Estimating hospitals' payments, gains, and margins

In analyzing options for case-mix refinement and teaching hospital payment adjustments, we focused on several measures of payment accuracy and financial impact under each policy option. Estimates for these measures were based on Medicare hospital inpatient claims for PPS hospitals in fiscal year (FY) 1997 and hospitals' Medicare cost reports for reporting periods beginning during that year. To estimate hospitals' payments under current policies and each policy option, we used our PPS payment model with operating and capital base payment amounts for FY 1999, but with most other parameters set to reflect the policies in effect for FY 2000. Because the Congress reduced the IME adjustment in the Balanced Budget Act of 1997 (BBA) to 5.5 percent beginning in FY 2002, we incorporated that change in our payment models. As a result, our PPS payment estimates for current policies reflect the IME adjustment that will be in effect in FY 2002 under current law (long-run BBA policy).[5]

To estimate how different policy options would affect hospitals' gains and losses on individual cases, we applied the model for each option to a 40 percent sample of 1997 Medicare hospital inpatient claims, estimating payments and costs for each case.[6] We estimated the cost for each case by applying hospitals' operating and capital cost to charge ratios to the total charges for their cases.[7]

Because the teaching hospital adjustment options involve folding inpatient direct GME costs into the PPS payment rates, we added an estimate of these costs to the calculated operating and capital costs for each case. To ensure that estimated gains and losses would be comparable across policy options, we also added an estimate of inpatient GME payments to the estimated PPS payment for each case under current policy and for the case-mix refinement and outlier policy options in which inpatient GME costs are not folded into PPS payments.[8]

To develop hospital-specific Medicare inpatient and total margin estimates under current policy and each policy option, we first estimated hospitals' PPS and inpatient direct GME payments under the policies in effect during FY 1997 and separately under current policies, which reflect the long-run BBA adjustments for IME and disproportionate share (DSH) payments. We then used the estimated hospital-specific percentage differences in payments between these models to estimate what hospitals' FY 1997 Medicare inpatient and total margins would have been under long-run BBA policies. We developed estimates for the various policy options by applying similar estimates of percentage differences in payments—comparing payments under each policy option with those in the long-run BBA model—to adjust the long-run BBA margins. Thus, the estimated Medicare inpatient margins reported later for each policy option reflect providers' PPS revenues and costs, as well as their inpatient direct GME payments and costs.

We estimated hospitals' total margins similarly. We first segregated hospitals' reported total revenues for FY 1997 into Medicare inpatient payments (PPS plus inpatient direct GME) and all other revenues. Then we applied the estimated hospital-specific change in Medicare inpatient payments under current policy and each policy option to the corresponding revenue component and recalculated hospitals' total margins.

These Medicare inpatient and total margin estimates differ in several ways from margin projections reported in other studies, including those in Chapter 5 of this report. In particular:

- Medicare inpatient margins reported here reflect only PPS payments and the inpatient portion of payments for direct GME programs, excluding payments and costs for PPS-exempt inpatient units, such as rehabilitation and psychiatric units or hospital-based skilled nursing facilities.
- The payment models used for all policy options are hybrids based on claims from 1997, base payment amounts from 1999, other policy parameters (such as the wage index) from 2000, and IME and DSH policies from 2002. Consequently, estimated payments for each option do not reflect the payment levels in effect during any specific year.
- Because hospitals' costs per case have shown only modest growth in the last few years, we did not inflate the costs they reported on their 1997 cost reports or the case-level cost estimates we calculated by adjusting total charges by hospitals' operating and capital cost to charge ratios.

Consequently, the payment and margin estimates we report do not represent what would have happened under current or alternative policies in any specific year. However, we believe they do accurately reflect relative differences in payments and margins that might be expected under the alternative policies we modeled.

5 In the absence of reliable estimates, we did not include the separate IME and direct GME payments hospitals receive from HCFA for beneficiaries enrolled in Medicare+Choice plans.

6 The 40 percent sample includes approximately 4 million 1997 hospital inpatient claims.

7 We used hospitals' operating and capital cost to charge ratios from HCFA's FY 2000 Impact file. This method is similar to that used to determine PPS outlier payments based on covered charges.

8 The additional amounts were estimated by calculating hospital-specific average per diem inpatient direct GME costs and payments based on each hospital's FY 1997 Medicare cost report and multiplying these amounts by the number of covered days for each case.

Refining Medicare's case-mix measurement and outlier financing policies

As discussed in our March report (MedPAC 2000), we have been analyzing several potential refinements to Medicare's case-mix measurement and outlier financing policies. These refinements are intended to improve payment accuracy by addressing limitations in the current DRG definitions and in the methods now used to set DRG relative weights. One limitation is that individual DRG categories often combine subgroups of patients with predictably different expected resource costs. Although HCFA has repeatedly improved the DRG definitions since 1984, they still fail to account fully for differences in illness severity associated with substantial disparities in providers' costs.[9]

Limitations in the relative weights stem from their basis and method of calculation and from the statutory scheme for financing outlier payments for extraordinarily costly cases. As presently calculated, the weights understate the relative costliness of typical cases in some DRGs and overstate costliness for cases in other DRGs. These distortions occur for two reasons. First, the weights are based on the total billed service charges hospitals report on their claims for all cases in each DRG. As a result, the measured relative values partly reflect systematic differences among hospitals in the average mark-up of charges over costs and in the average level of costs. Second, the weights are calculated without accounting for differences among DRGs in the prevalence of outlier cases and related payments.

To address these limitations, we considered three potential refinements in Medicare's policies and methods. One refinement would involve changing the DRG definitions to account more completely for severity differences among patients. Another would alter the methods currently used to calculate the DRG relative weights. The third refinement would change the method of financing extra payments for outlier cases.

Refining diagnosis related group definitions and the method of calculating relative weights

To illustrate the potential gains that might be obtained from refining the DRGs, we used the severity class definitions from the all patient refined diagnosis related groups (APR-DRG) patient classification system.[10] The APR-DRG definitions differ from the current DRGs primarily in the way they use information about patients' secondary diagnoses reported on hospital claims. Each patient is initially assigned to 1 of 355 categories (APR-DRGs) that reflects the main illness or condition (indicated by the principal diagnosis) and the medical or surgical nature of the treatment strategy. Patients in each APR-DRG are then assigned to one of four severity classes—minor, moderate, major, or extreme—based on specific combinations of secondary diagnoses, age, procedures, and other factors. This process yields 1,420 groups distinguished by APR-DRG and severity class, compared with about 500 current DRGs.[11]

We also evaluated an alternative method of calculating DRG relative weights that would make them more accurate. Relative weights are intended to measure the costliness of treating a typical case in each DRG, compared with the cost of the average Medicare case. Currently, the weight for each DRG is calculated by dividing the national average standardized total charge per case for all cases in the category by the overall national average standardized charge for all cases.[12] Basing the weights on the national average standardized charge per case in each DRG, however, makes them vulnerable to distortion from systematic differences among hospitals in the mark-up of charges over costs and in the level of costs.

We propose to address this by calculating the DRG relative weights based on hospital-specific relative values. The relative weights would continue to be based on hospitals' billed charges, but the charges for each hospital's cases would be converted to hospital-specific relative values, adjusted for case mix.[13] Then, the national relative weight in each DRG would be calculated as the case-weighted national average of the relative values for all cases in the category.

The relative value method would eliminate distortions in the weights due to systematic differences among hospitals in

9 In 1994, HCFA considered making substantial refinements to the DRG definitions to better capture severity differences among patients (HCFA 1994). In its 1995 March report to the Congress, the Prospective Payment Assessment Commission recommended that the Secretary adopt the proposed refinements and change the methods used to calculate the DRG weights (ProPAC 1995b). HCFA did not adopt the proposed refinements, largely on the grounds that it lacked statutory authority to make prospective adjustments to the PPS payment rates. HCFA policymakers felt that prospective adjustments would be needed to offset unwarranted spending growth that might result from changes in hospitals' case-mix reporting in response to major revisions in the DRG definitions and weights.

10 The APR-DRGs are one of several commercially available sets of refined DRG definitions (Averill et al. 1998). Other refined definitions might have been used to illustrate potential gains from improving severity measurement; evaluating alternative DRG refinements, however, was beyond the scope of this study.

11 Of the 1,420 categories, 134 (primarily pediatric conditions) had no Medicare cases in the full 1997 claims file; 87 had fewer than 25 cases, and 280 had fewer than 500 cases. Many of these categories might be consolidated with other APR-DRG severity classes to avoid instability in the weights without sacrificing important information.

12 The reported total charges for each case are standardized to remove the effects of geographic differences in input prices, the payment adjustments for teaching activity (the IME adjustment), and the extent to which the hospital serves a disproportionate share of low-income patients (the DSH adjustment).

13 The adjustment for case mix is necessary to scale the relative values consistently across hospitals because a hospital's overall average charge, and the level of its relative values, reflects its mix of cases.

the level of charge mark-ups or costs.[14] Other things being equal, the relative weights would thus more accurately reflect the relative costliness of typical cases in each DRG.

Revising Medicare's outlier financing policy

The third potential refinement attempts to address long-standing problems associated with the method of financing outlier payments. Medicare makes extra payments for cases that have unusually high costs compared with the regular payment the hospital otherwise would receive. These outlier payments are intended to limit hospitals' financial risks from extraordinary cases and diminish financial incentives to avoid patients with especially serious illnesses. Under current law, outlier payments are financed by offsets applied to the operating and capital base payment amounts—5.1 percent for the operating payment amount and 6.1 percent for the capital amount in FY 2000. These offsets reduce hospitals' base payment rates for all DRGs proportionately.

Although all hospitals pay for mandatory outlier insurance through a flat proportionate reduction in their base DRG payments, outlier cases and payments are concentrated in certain DRGs. Outlier payments as a proportion of DRG payments vary from zero in some DRGs to more than 20 percent in a few categories. The mismatch between uniform financing of outlier payments and the substantial disparities in their prevalence among DRGs causes two problems. First, the amounts Medicare charges for outlier insurance do not reflect hospitals' risks of encountering outlier cases; low-risk hospitals—small urban or rural hospitals, for instance—are overcharged for outlier coverage, while high-risk providers—large urban and teaching hospitals, for example—are undercharged.

The second problem is that cases in some DRGs are substantially overpaid, while cases in other DRGs are underpaid. This problem occurs because the relative weight in each DRG is based on the total standardized charges for all cases in the category, without accounting for differences in the expected prevalence of outlier cases and payments among DRGs. If outlier payments were expected to account for 20 percent of total DRG payments in a particular category, and the weighted average operating and capital offset was only 5.2 percent, then the payment rates for typical cases in that DRG would be about 14.8 percent too high. Similarly, the payment rates for a DRG in which outlier payments account for 0.1 percent of total DRG payments would be 5.1 percent too low.

The refinement we propose would finance expected outlier payments in each DRG through an offsetting reduction in the relative weight for the category, rather than by the current flat reduction in the base payment amounts. The relative weight for each DRG would thus approximate more accurately the relative costliness of typical (non-outlier) cases in the category, largely eliminating this source of distortion in the payment rates among DRGs with different outlier prevalence rates. In addition, hospitals would face premiums for outlier insurance that reflect their expected relative risks, given the mixes of cases they treat.

Findings and recommendations for case-mix refinement and outlier financing options

In analyzing these policy changes, we focused on the effects of each policy option, compared with current policies, with the refinements evaluated as incremental policy combinations (Table 3-1). The first option consists of using refined DRGs—as illustrated by the severity class distinctions of the APR-DRGs—with weights based on hospitals' relative values (relative value weights). The second option uses refined DRGs with relative value weights individually reduced to finance expected outlier payments for the cases in each category.

Effects on payment accuracy

We previously reported preliminary results from our analyses of using refined DRGs and weights based on hospitals' relative values (MedPAC 2000). Those results strongly suggested that these refinements would improve payment

TABLE 3-1 **Current policies and incremental case-mix refinement policy options**

Policy components	Current policies	Option A	Option B
Patient classification system			
DRGs	✔		
Refined DRGs (APR-DRG/severity classes)		✔	✔
Relative weight calculation method			
Conventional method	✔		
Relative value method		✔	✔
Outlier financing method			
Offsets to the base payment amounts	✔	✔	
Offsets to the weights for refined DRGs			✔

Note: DRG (diagnosis related group), APR-DRG (all patient refined diagnosis related group). Conventional method: weights are based on average standardized charges in each DRG or refined DRG. Relative value method: weights are based on the average of hospitals' relative values in each refined DRG.

14 Dividing the charges for each case by the hospital's average charge per case removes the effect of systematic differences in markups or costs that apply to all of its cases. Some distortion in the weights might remain to the extent that patterns of charge mark-ups among services vary systematically across hospitals. These distortions would be reflected in the weights because the mix of services furnished differs across DRGs.

TABLE 3-2

Changes in payment accuracy within DRGs under alternative policies

Policy option	Standard deviation of gains and losses at percentiles of DRG distribution				
	10th	25th	50th	75th	90th
Current policy	1,751	2,386	3,286	4,895	7,794
Option A	1,672	2,216	2,986	4,390	7,102
Option B	1,696	2,241	3,057	4,367	6,852
	Percent change in standard deviation compared with current policy				
Option A	−4.5%	−7.1%	−9.1%	−10.3%	−8.9%
Option B	−3.1	−6.1	−7.0	−10.8	−12.1

Note: DRG (diagnosis related group). Standard deviation measures the variability of gains and losses around the average gain in each DRG. Gain or loss for each case equals payment minus cost; payments and costs include amounts for inpatient care under PPS plus hospital-specific amounts for inpatient direct graduate medical education programs. Current policy: DRGs and weights calculated by conventional methods. Option A: refined DRGs and relative value weights. Option B: option A plus DRG-specific outlier offsets.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare hospital inpatient claims.

accuracy at the case level and make Medicare's payments to hospitals more accurately reflect their expected costs of furnishing care, given the mix of cases they treat.

Payment accuracy within DRGs

Several measures of case-level payment accuracy and hospital-level payment equity confirm our tentative conclusions based on those earlier findings. The standard deviations of case-level gains within DRGs decline when payments are based on the combination of refined DRGs and hospital relative value weights (option A), compared with their values under current policies (Table 3-2). The refined DRGs and relative value weights thus reduce discrepancies between payments and costs, thereby improving payment accuracy, on average, compared with current DRGs and weights.

Adding DRG-specific outlier offsets (option B) would sacrifice some of the improvement in payment accuracy for cases in low-cost DRGs, but further improve accuracy for those in the highest-cost categories. Replacing the uniform outlier offsets in current policy with DRG-specific offsets would raise the payment rates for cases in DRGs that have few outlier cases—primarily low-cost DRGs—thereby reducing payment accuracy in those categories, compared with option A.[15] In those DRGs with a high prevalence of outlier cases—primarily high-cost categories—adding DRG-specific outlier offsets would reduce the payment rates for typical (non-outlier) cases, thereby further improving payment accuracy.

Payment accuracy within hospital groups

Payment accuracy measured over all sample cases in hospital groups shows a strong and consistent pattern of incremental improvements for options A and B, compared with current policy (Table 3-3). The standard deviation of

TABLE 3-3

Payment accuracy under alternative policies

Hospital type	Number of hospitals	Standard deviation of gains and losses among cases		
		Current policy	Option A	Option B
All hospitals	4,720	5,103	4,649	4,370
Geographic location:				
Large urban	1,481	6,004	5,538	5,135
Other urban	1,133	4,701	4,171	4,000
Rural	2,106	3,240	2,901	2,835
Rural referral	222	3,756	3,347	3,238
Sole community	619	3,127	2,790	2,761
Other rural	1,203	2,861	2,583	2,537
Teaching status:				
Academic medical center	113	8,234	7,478	6,834
Other teaching >100 residents	127	7,173	6,712	6,120
Other teaching 51-100 residents	120	5,589	5,134	4,813
Other teaching 10-50 residents	366	5,039	4,518	4,309
Other teaching <10 residents	380	4,764	4,286	4,082
Nonteaching	3,614	4,085	3,681	3,535

Note: Standard deviation measures variation in gains and losses around the average gain for all cases in each hospital group. Gain or loss for each case equals payment minus cost; payments and costs include amounts for inpatient care under PPS plus hospital-specific amounts for inpatient direct GME programs. Current policy: DRGs and weights calculated by conventional methods. Option A: refined DRGs and relative value weights. Option B: option A plus DRG-specific outlier offsets.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare hospital inpatient claims.

15 Removing the current uniform offsets to the operating and capital base payment amounts would raise those amounts by approximately 5.5 percent. The net increase in the payment rates for each DRG generally would be somewhat less, however, according to the size of the DRG-specific outlier offset for the category.

TABLE 3-4

Improvement in payment accuracy compared with that under current policy

Hospital type	Number of hospitals	Standard deviation relative to that under current policy*	
		Option A	Option B
All hospitals	4,720	91	86
Geographic location:			
Large urban	1,481	92	86
Other urban	1,133	89	85
Rural	2,106	90	87
Rural referral	222	89	86
Sole community	619	89	88
Other rural	1,203	90	89
Teaching status:			
Academic medical center	113	91	83
Other teaching >100 residents	127	94	85
Other teaching 51-100 residents	120	92	86
Other teaching 10-50 residents	366	90	86
Other teaching <10 residents	380	90	86
Nonteaching	3,614	90	87

Note: *Current policy = 100. Standard deviation measures variation in gains and losses around the average gain for all cases in each hospital group. Gain or loss for each case equals payment minus cost; payments and costs include amounts for inpatient care under PPS plus hospital-specific amounts for inpatient direct graduate medical education programs. Current policy: DRGs and weights calculated by conventional methods. Option A: refined DRGs and relative value weights. Option B: option A plus DRG-specific outlier offsets.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare hospital inpatient claims.

case-level gains declines substantially for every hospital group under both options, suggesting that using refined DRGs and relative value weights would improve payment accuracy compared with current policy and that adding DRG-specific outlier offsets would further improve accuracy.

The pattern of improvement across hospital groups and policy options is more easily seen when the case-level standard deviations under options A and B are recast as relative values compared with those under current policy (Table 3-4). Compared with gain variation under current policy, the overall average improvement in payment accuracy would be 9 percent for option A and 14 percent for option B. The near-uniformity of these gains across hospital groups is also consistent with our earlier findings, which suggested that using refined DRGs and refined weights would better capture differences in severity of illness and costs among both low-cost and high-cost DRGs.

Payment equity among hospital groups

The case-mix refinement and outlier financing options would change payment equity among hospital groups only slightly compared with that under current policies (Table 3-5).[16] Payment equity, as measured by differences in per case average gains among hospital groups, would be mildly worse under option A because average gains would rise for large urban and teaching hospitals and fall for other urban, rural and nonteaching facilities. This result is consistent with our earlier findings; the refined DRGs and weights would raise payments for the high-severity cases more commonly treated in large urban and teaching hospitals, and reduce payments for the low-severity cases common in other urban, rural, and nonteaching hospitals. These changes in payments would tend to compound existing disparities in average per case gains under current policies.

Payment equity under option B, however, would be comparable to that of current policy. The decline in payment equity under option A would be reversed because replacing the uniform outlier offsets used in both current policy and option A with DRG-specific offsets would tend to reduce payments for high-severity DRGs and raise them for low-severity categories. Payments would be reduced in high-severity DRGs because the prevalence of outlier cases and payments is usually disproportionately high in these groups. Conversely, using DRG-specific offsets would tend to raise payments in low-severity DRGs because these categories rarely have outlier payments. Consequently, per case average gains for most hospital groups under option B would be roughly similar to those under current policies.

Based on this finding, policymakers might be tempted to conclude that the policies reflected in option B would have little overall effect and thus would not be worth adopting. That conclusion, however, is not supported by our findings. Although average per case gains over all cases would be similar under current policies and option B for most hospital groups, the distribution of per case gains among hospitals within each group generally would be quite different. These changes in average gains among hospitals reflect improved accuracy under option B in measuring expected costs, given the illness severity of the mix of Medicare

16 Estimated aggregate Medicare inpatient payments and overall average gains under options A and B are virtually identical to those under current policies. The discrepancies in overall per case average gains in the first line of Table 3–5 are extremely small relative to the overall national average cost per case, which is $7,008 for cases in the 40 percent sample.

TABLE 3-5

Payment equity under alternative policies

Hospital type	Number of hospitals	Average per case gain or loss		
		Current policy	Option A	Option B
All hospitals	4,720	$481	$483	$492
Geographic location:				
Large urban	1,481	739	804	779
Other urban	1,133	319	297	318
Rural	2,106	185	88	152
Rural referral	222	229	176	222
Sole community	619	11	−73	−3
Other rural	1,203	235	97	171
Teaching status:				
Academic medical center	113	1,924	1,996	1,853
Other teaching >100 residents	127	1,278	1,391	1,327
Other teaching 51-100 residents	120	1,016	1,053	1,046
Other teaching 10-50 residents	366	386	425	434
Other teaching <10 residents	380	237	233	248
Nonteaching	3,614	191	153	193

Note: Gain or loss for each case equals payment minus cost; payments and costs include amounts for inpatient care under PPS plus hospital-specific amounts for inpatient direct graduate medical education programs. Current policy: DRGs and weights calculated by conventional methods. Option A: refined DRGs and relative value weights. Option B: option A plus DRG-specific outlier offsets.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare hospital inpatient claims.

patients they treat.[17] The refined case-mix measurement and outlier financing policies under option B thus result in improved equity of payment among individual hospitals, even though they do not enhance payment equity among hospital groups.

Changes in the distribution of outlier payments

Outlier cases and payments are disproportionately prevalent in large urban and teaching hospitals under current policy, and they would remain so under both options (Table 3-6). Compared with current policies, however, options A and B would identify substantially different sets of outlier cases.

Under current policies, approximately 311,000 cases in the 1997 claim file would have qualified for outlier payments because their costs exceeded the outlier threshold for the DRG based on a national fixed loss amount of $11,900. Under option A, about 384,000 cases would have qualified for outlier payments based on an estimated national fixed loss amount of $7,750; only 69 percent of these cases also would have been outliers under current policy. Based on an estimated national fixed loss amount of $9,300, about 336,000 cases would have qualified for outlier payments under option B; 97 percent of these cases also would have been outliers under option A, but only 79 percent would have qualified under current policies.

Although the case-mix refinement and outlier financing options would not substantially change the distribution of outlier payments among hospital groups, analysis suggests that they would improve the effectiveness of the outlier policy. Because the refined DRGs and weights would more accurately capture severity differences among cases, outlier cases would be more appropriately identified and outlier payments would be targeted more accurately to the cases that pose the greatest financial risks for providers. Using DRG-specific outlier offsets would further improve the outlier policy by increasing the concentration of outlier payments in DRGs and hospitals that have the highest shares of disproportionately high-cost cases.

Effects on hospitals' Medicare inpatient payments

Consistent with our earlier findings, our estimates show that adopting refined DRGs and weights would change Medicare inpatient payments substantially for many hospitals. Compared with Medicare inpatient payments under current policies, payments to large urban and teaching hospitals would rise, on average, while payments to other urban, rural, and nonteaching facilities would fall (Table 3-7).

Adding DRG-specific outlier offsets under option B would result in smaller payment changes than most hospital groups would experience under option A. This reflects two factors. The nationally uniform outlier offsets in current policy and option A would be returned to the base payment amounts under option B, thereby raising payments to hospitals that primarily treat cases in low-cost DRGs. Also, adding DRG-specific offsets would reduce the DRG weights and payment rates for primarily high-severity, high-cost categories because outlier cases and payments tend to be disproportionately prevalent in those DRGs. This effect would tend to offset, at least partially, payment increases under option A for large urban and teaching hospitals, in which high-severity cases are more common.

Our hospital-specific payment estimates also confirm the earlier finding that both options would result in a substantial redistribution of Medicare inpatient payments among hospitals within each

17 Changes in average gains among hospitals reflect often substantial changes in their PPS payments, which we previously illustrated graphically (Chapter 3, MedPAC 2000).

TABLE 3-6

Prevalence of outlier payments among hospital groups

Hospital type	Number of hospitals	Outlier payments as a percent of total DRG payments		
		Current policy	Option A	Option B
All hospitals	4,720	5.1%	5.1%	5.1%
Geographic location:				
Large urban	1,481	5.7	5.6	5.7
Other urban	1,133	5.3	5.3	5.4
Rural	2,106	2.5	2.9	2.7
Rural referral	222	3.2	3.4	3.3
Sole community	619	2.6	3.2	2.9
Other rural	1,203	1.7	2.2	2.0
Teaching status:				
Academic medical center	113	10.0	9.0	9.9
Other teaching >100 residents	127	6.7	6.3	6.7
Other teaching 51-100 residents	120	5.3	5.0	5.3
Other teaching 10-50 residents	366	5.4	5.4	5.5
Other teaching <10 residents	380	4.7	4.9	4.8
Nonteaching	3,614	3.7	4.0	3.8
Outlier prevalence:				
High outlier (top decile)	474	12.1	12.3	12.5
Other (lower nine deciles)	4,246	3.8	3.5	3.6

Note: Outlier payments for a case are equal to 80 percent of the difference between its estimated cost and a DRG-specific threshold amount, which equals the normal PPS payment for the case plus a fixed loss amount. Total DRG payments equal the sum of DRG payments (exclusive of teaching and disproportionate share payments) plus outlier payments. Current policy: DRGs and weights calculated by conventional methods. Option A: refined DRGs and relative value weights. Option B: option A plus DRG-specific outlier offsets.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare hospital inpatient claims.

provider group, compared with payments under current policies (see Appendix B, Table B-1). Under these options, most hospitals in every provider group would experience some change in Medicare inpatient payments, reflecting more accurate measurement of the illness severity of their cases. Although a small number of hospitals could face payment changes of 10 percent or more, such instances almost always involve facilities with fewer than 30 Medicare cases in 1997.

Effects on hospitals' Medicare inpatient margins

Estimated changes in hospitals' Medicare inpatient margins mirror the anticipated changes in their inpatient payments (Table 3-8). Compared with their Medicare inpatient margins under current policy, large urban and teaching hospitals would have somewhat improved financial performance under option A, but performance would decline for other urban, rural, and nonteaching facilities. Adding DRG-specific outlier financing would partially reverse many of these changes, although inpatient margins would not recover fully for rural hospitals.

Financial outcomes for hospitals with unusually high prevalences of outlier payments (the high outlier category) would remain remarkably stable under both options. Medicare inpatient margins would rise slightly for these hospitals under option A and then fall back under option B. This suggests that, on average, these options would neither harm nor help hospitals willing to treat patients with unusually serious illnesses. Many hospitals in this group may be more vulnerable than facilities in other groups (see Appendix B, Table B-2), but that would not change under either option.

Recommendations on case-mix refinement and outlier financing policies

In view of our findings, we believe that the Secretary and the Congress should adopt the refinements included in option B.

RECOMMENDATION 3A

The Secretary should improve the hospital inpatient prospective payment system by adopting, as soon as practicable, diagnosis related group (DRG) refinements that more fully capture differences in severity of illness among patients. At the same time, she should make the per discharge payment rates more accurate by basing the DRG relative weights on the national average of hospitals' relative values in each DRG.

Our analyses of potential refinements in the DRG definitions, as illustrated by the APR-DRGs, and in the methods used to calculate the DRG relative weights demonstrate that these policies would yield substantial improvements in payment accuracy. They would better align hospitals' financial incentives with Medicare's policy goal of ensuring beneficiaries' access to medically necessary inpatient care of high quality.

Historically, researchers and policymakers generally have not been able to find much evidence to suggest that hospitals have responded to Medicare's payment policies under the PPS by denying beneficiaries access to medically necessary inpatient care. In the past, however, providers generally could choose to ignore the effects of payment inaccuracies because they could use excess revenues from some payers to offset revenue shortfalls from others. Throughout the late 1980s and most of the 1990s, for instance, hospitals used substantial gains on care furnished to privately insured patients to offset losses on care furnished to patients covered by Medicare and Medicaid, and to finance their expenses for uncompensated care (see Chapter 5 and Appendix C).

TABLE 3-7

Change in Medicare inpatient payments compared with current policy

Hospital type	Number of hospitals	Percentage change in inpatient payments: Option A	Option B
All hospitals	4,762	0.0%	0.0%
Geographic location:			
Large urban	1,499	0.7	0.5
Other urban	1,142	−0.3	−0.1
Rural	2,121	−2.1	−1.6
Rural referral	222	−1.1	−0.8
Sole community	627	−2.2	−2.9
Other rural	1,208	−3.1	−1.6
Teaching status:			
Academic medical center	113	0.7	−0.3
Other teaching >100 residents	127	1.0	0.5
Other teaching 51-100 residents	120	0.3	0.3
Other teaching 10-50 residents	367	0.5	0.5
Other teaching <10 residents	382	−0.1	0.0
Nonteaching	3,653	−0.7	−0.2
Outlier prevalence:			
High outlier (top decile)	474	0.8	0.2
Other (lower nine deciles)	4,246	−0.2	0.0

Note: Inpatient payments equal the sum of PPS payments plus inpatient direct graduate medical education payments for all cases in each hospital group. Current policy: DRGs and weights calculated by conventional methods. Option A: refined DRGs and relative value weights. Option B: option A plus DRG-specific outlier offsets.

Source: MedPAC analysis of 1997 data from Medicare hospital inpatient claims and hospitals' cost reports.

Recently, however, providers have been facing increased financial pressure, as private insurers and employers have become less willing to make payments that greatly exceed the costs of furnishing care to their covered patients. In addition, the Congress adopted policies in the BBA that reduced Medicare's payments for inpatient care and other hospital services, such as skilled nursing and home health care.

As hospitals face pressure from public and private payers, they are less able to subsidize losses on some patients or services with gains from others. Consequently, the accuracy of Medicare's payments for care may become increasingly important in ensuring that all beneficiaries have access to medically necessary inpatient care of high quality.

The improvements in payment accuracy that we have demonstrated based on the APR-DRGs are illustrative of the gains the Secretary could achieve by adopting refinements that make more effective use of available information about patients' complications and comorbidities. However, the APR-DRGs were designed to classify patients of all ages and include many categories that generally would have few or no patients in the Medicare population. To avoid creating refined DRGs that might have unstable relative weights, the Secretary should be selective in adopting clinical distinctions similar to those reflected in the APR-DRGs. This will require carefully weighing the benefits of more accurate clinical and economic distinctions against the potential for instability in relative weights based on small numbers of cases.

RECOMMENDATION 3B

The Congress should amend the law to change the method now used to finance outlier payments under the hospital inpatient prospective payment system. Projected outlier payments in each DRG should be financed through an offsetting adjustment to the relative weight for the category, rather than the current flat adjustment to the national average base payment amounts.

As discussed earlier, adopting DRG-specific outlier offsets to finance outlier payments in each category would have two benefits. First, this policy would further improve payment accuracy for ordinary (non-outlier) cases, especially those in categories with disproportionately high proportions of outlier cases. Second, it would improve payment equity among hospitals by replacing outlier premiums based on community rating over all cases in all DRGs with premiums based on community rating within each DRG. DRG-specific offsets thus would make the premiums that Medicare charges all hospitals for mandatory outlier insurance match the expected outlier risk.

If the Congress adopts this policy, the Secretary should exercise careful judgement in resolving two potential implementation issues. One issue is whether estimated DRG-specific outlier offset factors based on a single year's cases would be sufficiently stable in refined DRG categories that have few cases. This potential problem might be resolved by using data for several years to develop offset factors for refined DRGs with relatively few cases.

The other potential issue is how DRG-specific financing of outlier payments might affect providers' decisions about transferring patients or accepting those transferred from other PPS hospitals. By definition, hospitals always take a financial loss on outlier cases.[18] As a

18 Hospitals only qualify for outlier payments after their costs for a case exceed an outlier threshold equal to the regular DRG payment for the case plus a fixed loss amount. The national fixed loss amount for FY 2000 is $14,050; each hospital's fixed loss amount is determined by adjusting the national amount to reflect the level of input prices in its location. Consequently, depending on where it is located, a hospital must take a loss ranging from about $11,000 to about $19,000 before it receives any additional payments, and those payments cover only 80 percent of the loss above the outlier threshold.

TABLE 3-8

Hospitals' average Medicare inpatient margins under alternative policies

Hospital type	Number of hospitals	Average inpatient margin		
		Current policy	Option A	Option B
All hospitals	4,173	13.3%	13.3%	13.3%
Geographic location:				
Large urban	1,272	15.8	16.4	16.2
Other urban	988	10.8	10.6	10.8
Rural	1,913	10.1	8.2	8.7
Rural referral	198	10.9	10.0	10.2
Sole community	568	10.6	8.7	8.1
Other rural	1,093	9.2	6.3	7.7
Teaching status:				
Academic medical center	98	20.8	21.2	20.5
Other teaching >100 residents	105	18.9	19.6	19.2
Other teaching 51-100 residents	101	14.3	14.5	14.5
Other teaching 10-50 residents	317	12.2	12.5	12.6
Other teaching <10 residents	331	10.5	10.4	10.6
Nonteaching	3,221	10.7	10.1	10.5
Outlier prevalence:				
High outlier (top decile)	406	12.9	13.5	13.0
Other (lower nine deciles)	3,749	13.5	13.3	13.4

Note: Medicare inpatient margins equal Medicare inpatient revenues minus inpatient costs as a percentage of Medicare inpatient revenues. Margins reflect payments and costs for both PPS and inpatient direct GME programs. Current policy: DRGs and weights calculated by conventional methods. Option A: refined DRGs and relative value weights. Option B: option A plus DRG-specific outlier offsets.

Source: MedPAC analysis of 1997 data from Medicare hospital inpatient claims and hospitals' cost reports.

result, they have a financial incentive to transfer patients who are likely to become outliers. Patient transfers, however, do not often appear motivated by providers' financial incentives; in most instances, they appear clinically desirable because the patient is sent to a hospital better equipped and staffed to treat serious conditions.[19]

Replacing national uniform outlier offsets with DRG-specific ones probably would have little effect on providers' incentives to transfer seriously ill patients. This policy change, however, might affect a hospital's willingness to accept transfer patients if it increased the likelihood that the receiving facility would take substantial losses. Previous studies of Medicare's transfer policy have shown that transfer patients are twice as likely as other patients to become outliers (ProPAC 1995a, Buczko 1993). However, MedPAC has not established whether the same finding would hold if PPS payments were based on refined DRGs, relative value weights, and DRG-specific outlier offsets. Moreover, because this issue involves hospitals' behavioral responses to small potential changes in financial incentives, it is not certain that a valid answer could be obtained by further analyzing data from the period before the adoption of these policies.

In the absence of better information about potential changes in transfer-receiving hospitals' behavior under our recommended policy changes, the Secretary should carefully monitor transfer patterns during and after the implementation phase to discover whether these policies may reduce transfers of critically ill beneficiaries to more clinically appropriate settings.

RECOMMENDATION 3C

To avoid imposing extraordinary financial burdens on individual providers, the Congress should ensure that the case-mix measurement and outlier financing policies recommended earlier are implemented gradually over a period of several years. Further, the Congress should consider including protective policies, such as exemptions or hold-harmless provisions, for providers in circumstances in which vulnerable populations' access to care might be disrupted.

Our analyses show that the recommended refinements in Medicare's case-mix measurement and outlier financing policies would substantially change PPS payments for many hospitals. Recently, the hospital industry has been experiencing a period of extraordinary change in financial conditions, driven by major shifts in public and private payers' policies. Consequently, the Congress and the Secretary should make a concerted effort to ensure that further policy changes, such as those recommended here, do not impose heavy additional burdens on individual providers.

Many hospitals facing payment changes under our recommended policies could accommodate those changes in an orderly way in a relatively short period. Traditional phase-in mechanisms likely would prevent substantial or lasting harm to these providers.

For some hospitals, however, the Congress and the Secretary may need to consider providing longer-term relief from the financial impact of these policy changes. In particular, the estimated payment effects associated with our recommendations are greater, on average,

19 Many patients are transferred to receive specialized surgical procedures that the transferring hospital is unable to provide.

for some groups of rural hospitals than for other providers. To avoid potential adverse effects on rural beneficiaries' access to inpatient care, we urge policymakers to protect rural providers traditionally considered financially vulnerable: sole community hospitals, those with fewer than 50 beds, and those dependent on Medicare because the program's beneficiaries comprise a high proportion of their patients. Special protective policies are likely to be especially important for providers located in areas with few other hospitals or in which a substantial proportion of providers would face large reductions in Medicare payments. Potential approaches to counteract anticipated payment changes might include targeted additional payments, hold-harmless provisions, and temporary or permanent exemptions.

The Secretary also should implement these policies in a way that avoids substantial increases in administrative burdens. Because the refined DRGs use existing diagnosis and procedure codes, we believe providers' incremental costs for adopting these refinements would be limited to upgrading the coding and classification software they now use for DRGs and providing a small amount of additional staff training. Sometimes, however, unforeseen costs arise when new systems are implemented.

RECOMMENDATION 3D

The Congress should give the Secretary explicit authority to adjust the hospital inpatient base payment amounts if anticipated coding improvements in response to refinements in case-mix measurement are expected to increase aggregate payments by a substantial amount during the forthcoming year. This adjustment should be separate from the annual update. Further, the Congress should require the Secretary to measure the extent of actual coding improvements based on the bills providers submit for payment and make a timely adjustment to correct any substantial forecast error.

Adopting our recommended refinements in the DRG definitions and weights would substantially change Medicare's payment rates for many types of cases. It also would strengthen providers' incentives to accurately report patients' comorbidities and complications. Although improvements in providers' reporting practices are otherwise desirable, they are likely to inappropriately raise Medicare's total payments, thereby imposing an unnecessary financial burden on taxpayers and beneficiaries. To avoid this result, the Secretary could project the likely effect of reporting improvements on total payments and make an offsetting adjustment to the national average base payment amounts.

Under current law, the Secretary is required to update the DRG definitions and weights annually to account for changes in practice patterns, medical science, and technology that alter the relative use of hospital resources among types of patients. In most years, the Secretary has made minor changes in the DRG definitions to address issues raised by the public and the hospital industry regarding the appropriate classification of patients. HCFA also recalculates the DRG relative weights each year to reflect changes in the relative costliness of each type of case, as indicated by the most recent billing data.

In making these changes, the Secretary is required to hold constant the projected total PPS payments for the forthcoming year. This requirement is met by recalibrating the weights and by making a small budget-neutrality adjustment to the national average base payment amounts. The annual weight recalibration adjusts the new weights to equalize the national average weight using the new DRG definitions and weights, with the national average weight based on the current year's definitions and weights applied to the same case records. This removes most of the potential effect on total payments of changes in DRG definitions and weights. A small budget-neutrality adjustment is usually necessary to ensure that projected total payments remain unchanged.

Actual payments in the forthcoming year, however, may differ from the projected amount for several reasons. The mix of cases among DRGs may have shifted because of changes in practice patterns or the incidence of illness. These real changes in case mix are expected to affect the cost of inpatient care; thus, the accompanying changes in payment are appropriate.

Hospitals also may have improved the accuracy and completeness of the clinical information they report on their claims, shifting cases among DRGs. This kind of case-mix change usually increases total payments and redistributes them among hospitals. The redistribution is appropriate because assigning cases more accurately to DRGs better reflects the incidence of hospitals' costs. But shifts in reporting should not affect the total cost of treating Medicare patients, because cases are merely reclassified. Consequently, any resulting changes in total payments are not appropriate (see Chapter 5 for a discussion of the components of case-mix change).

Although both MedPAC's and the Secretary's update recommendations exclude the estimated historical change in case mix associated with reporting improvements, neither attempts to exclude prospectively the effects of reporting improvements expected in the forthcoming year. Providers thus get the benefit of reporting changes during the year in which they occur. Estimates of these effects are then removed from the base payment amounts in the following year. However, because the Congress sets the annual update factors in law, it is difficult to know whether changes in case-mix reporting are fully or partially offset each year.

The Secretary previously raised concerns about the effects on total PPS payments of reporting improvements that might accompany major changes in the DRG definitions and weights. Refining the DRGs would create a number of new categories with very high weights, and hospitals would receive a much higher payment rate if one of a set of major complications were reported on the claim. Consequently, adopting our recommended refinements would change the relative

importance of many secondary diagnoses and encourage efforts by hospital coders to ensure that these diagnoses are reported on claims when they appear in patients' medical records. Although this is appropriate behavior, it leaves unresolved the question of how to ensure that providers are fairly compensated for changes in costs that result from real changes in case mix while protecting the Medicare program from increases in payments that reflect only better reporting.

To address this problem, the Congress should give the Secretary explicit authority to adjust the base payment amounts, separate from the annual update, to offset the projected effect of reporting changes that are expected during the coming year in response to DRG refinements. The Congress also should take into account the Secretary's use of this authority when it sets annual updates. In addition, the Congress should require the Secretary to measure the extent of any actual changes in reporting following substantial DRG refinements and, after the actual change is known, to make a further adjustment to correct for any projection errors.

This solution would require a change in current law. In addition, an ongoing database of reabstracted medical records would be needed to make projections of the likely extent of reporting improvements and to estimate actual reporting changes.

HCFA has developed a reabstract database in its quality assurance program that could be used for these purposes. Given a projection of the case-mix change that might occur if hospital coders began to report as accurately as expert coders do, the Secretary then would have to use her judgment about how much of the potential change likely would occur during the forthcoming year. If the projection were accurate, the hospital industry as a whole would no longer gain the short-term benefit of substantial reporting improvements. Medicare also would avoid large, inappropriate increases in payments. Because it may be difficult to predict accurately how much reporting change would occur in response to DRG refinements, the Secretary should be required to make forecast corrections once the actual change is known. This requirement would protect both providers and the program from the effects of large projection errors.

Folding inpatient direct graduate medical education costs into prospective payment system payment rates and adopting a new teaching hospital adjustment

In August 1999, the Commission recommended that the Congress revise Medicare's payments for inpatient hospital care to recognize the higher value of patient care services provided in teaching hospitals (MedPAC 1999a). We envisioned combining Medicare's current additional payments to teaching hospitals into a single adjustment to PPS payments for patient care. The teaching hospital adjustment would be created by first folding inpatient direct GME costs into patient care costs to recognize that expenses for training represent patient care costs. The relationship between this revised measure of inpatient costs and some measure of the enhanced patient care that teaching hospitals provide, such as a resident-to-bed ratio, would then be calculated to derive a new teaching hospital adjustment. This new adjustment would replace the current IME adjustment and direct GME payments for residents providing inpatient care. Hospitals would continue to receive direct GME payments for care provided by residents in outpatient and other settings until similar adjustments were developed.[20]

Our proposal would improve payment equity among teaching hospitals by eliminating the wide variation in current hospital-specific GME payment amounts, which are based on reported costs from more than 15 years ago. Eliminating this variation would make payments more consistent with Medicare's chief payment goal, which is to set payment rates that approximate efficient providers' costs after accounting for predictable differences in costs arising from clinically appropriate variations in service complexity and intensity. Folding direct GME costs into the payment rates would also firmly establish that these expenses are a part of patient care costs that Medicare should recognize in its payment rates.

Issues to consider in creating a new teaching hospital adjustment

Combining direct GME payments and the IME adjustment into a single teaching hospital adjustment raises several issues, including which costs should be folded into the payment rates, how the adjustment should be calculated, and whether the teaching hospital subsidy currently embedded in PPS payment rates through the IME adjustment should be maintained.[21]

Which costs should be folded into the payment rates?

Either inpatient direct GME costs or payments could be folded into the Medicare inpatient cost base for estimating the empirical level of the teaching hospital adjustment. If costs were included, the estimated teaching hospital adjustment would reflect the actual relationship between resident intensity and cost per case. However, the Congress has limited the growth in direct GME

20 The Commission believes that these concepts should also be extended to the outpatient setting and to other types of training programs. However, due to a lack of appropriate data, we are unable to develop adjustments for these settings and programs at this time.

21 The IME adjustment historically has been set higher than what would be indicated by the relationship between per case costs and resident intensity (as measured by the ratio of residents to hospital beds). This results in a subsidy being provided to teaching hospitals. The estimated subsidy is defined as the amount of IME payments in excess of payments based on the measured relationship between resident intensity and costs per case.

payments, and these payments are now 16 percent less than reported costs. If payments were included, the adjustment would reflect what Medicare might consider reasonable costs. Because the teaching hospital adjustment in our proposal is limited to PPS inpatient payments, only costs or payments associated with inpatient activity should be added to the cost base. Direct GME costs related to outpatient training would be treated separately.

How should the adjustment be calculated?

A second set of issues involves the methods used to calculate the level of the teaching hospital adjustment. Two technical issues need to be considered: the measure of teaching intensity used to capture the systematically higher costs of patient care in teaching hospitals, and how to calculate an appropriate adjustment percentage.

Under current law, Medicare adjusts payments to teaching hospitals using a formula that depends on the resident-to-bed ratio. In the August report, we noted that to avoid distorting hospitals' demand for residents, the teaching hospital adjustment should be based on a measure that does not involve counting residents (MedPAC 1999a). However, we were unable to find a readily available substitute. Because the focus of our analysis was inpatient costs, we used a measure of inpatient resident intensity. An inpatient resident intensity measure should be more closely associated with inpatient costs than an intensity measure based on total hospital residents. However, an inpatient measure might encourage hospitals to shift residents from outpatient training sites to inpatient sites. Using an intensity measure based on the full hospital resident count, as currently used for the IME adjustment, might create an opposite incentive, especially if hospitals were paid separately for residents in outpatient settings based on a per resident amount.

The teaching hospital adjustment should capture the extent to which teaching hospitals' costs are systematically higher, after accounting for all other adjustments in the payment system. The empirical level of this adjustment can be estimated in different ways, and the statistical methods used will affect the level of the adjustment. We used a regression analysis that adjusts per case costs for cost-related payment factors such as case mix, wages, and outlier payments. This approach allows the teaching hospital adjustment to reflect part of the effect of cost factors that the payment system does not recognize, such as hospital size and regional practice patterns, to the extent that these factors are correlated with teaching status. Other researchers have used different approaches and their analyses have produced different estimates of the relationship between resident intensity and costs per case (Anderson and Lave 1986, Mechanic et al. 1998, Rogowski and Newhouse 1992, Thorpe 1988, Welch 1987). We believe our approach is appropriate given Medicare's current payment policies, but differing views on the methods for calculating the adjustment leave some uncertainty about the most appropriate value for the adjustment and the estimated size of the resulting subsidy.

Should the current subsidy to teaching hospitals be maintained?

In MedPAC's August 1999 report, we stated that the policies we were recommending were not intended to produce budget savings. At the same time, we noted that the new adjustment should reflect as closely as possible the efficient cost of providing care in teaching hospitals. These two objectives are partially at odds because even after the BBA is fully implemented, the IME adjustment will still be much higher than can be empirically justified.[22] If Medicare were to set payments to represent the efficient cost of providing care, the teaching hospital adjustment would be much lower than at present, raising the issue of whether to maintain the subsidy embedded in the current law adjustment.

We analyzed three options for folding direct GME costs into PPS payment rates (Table 3-9). Under the first option, teaching-related payments and total Medicare inpatient payments are held constant. Special payments to teaching hospitals would be redistributed among teaching facilities. This is because direct GME costs would be folded into patient care payment rates and paid on a national average basis (through the teaching hospital adjustment) rather than on a hospital-specific basis. Payment rates would not change for nonteaching hospitals.

Under the second option, aggregate Medicare inpatient payments would be held constant, but the teaching hospital adjustment would reflect the measured relationship between per case costs and

TABLE 3-9 **Payment policy options for teaching hospitals**

	Fold inpatient direct GME costs into PPS rates	Use inpatient resident count	Hold total inpatient payments constant	Hold total teaching-related payments constant
Option 1	✔	✔	✔	✔
Option 2	✔	✔	✔	
Option 3	✔	✔		

Note: GME (graduate medical education), PPS (prospective payment system).

22 We estimate that the IME adjustment for operating payments would be 3.2 percent if it were based on the empirical relationship between costs and the ratio of residents to hospital beds. When the BBA provisions are fully phased in, the adjustment will be 5.5 percent.

resident intensity. The teaching hospital subsidy would thus be returned to the base payment rates for all hospitals. Returning these payments to the base would be consistent with how the initial IME level was financed; base payments were reduced to fund the subsidy when the IME adjustment was doubled in 1983.

Under the third option, the teaching hospital adjustment would be based on the measured relationship between per case costs and resident intensity as in the second option, but the resulting savings from eliminating the subsidy would be returned to the trust fund. Base payments under this option would increase slightly, however, reflecting the effect of folding inpatient direct GME costs into the per case payment rates. Aggregate payments, though, would fall, because the current teaching hospital subsidy would no longer be provided. Although some budget savings would result from this third option, if these savings were used for other purposes within the Medicare program, that would affect this option's total redistributive impact.

We compared the impact of each option with a current policy that includes inpatient direct GME payments and reflects long-run BBA and Balanced Budget Refinement Act (BBRA) payment policies for DSH and IME payments.[23]

Our models examine the impact of these policies on Medicare inpatient payments. The sizes of the potential impacts can be used to gauge the length and type of transition that might be needed if these policies were adopted.

Effect on payments to hospitals

The payment impacts of these options can be examined in several ways. In this section we first discuss the aggregate impact on Medicare spending. Then we consider the impact on payment accuracy, followed by an examination of the distributional impact of these policies.

Finally, we discuss the impact on Medicare inpatient and total hospital margins.

Aggregate impacts

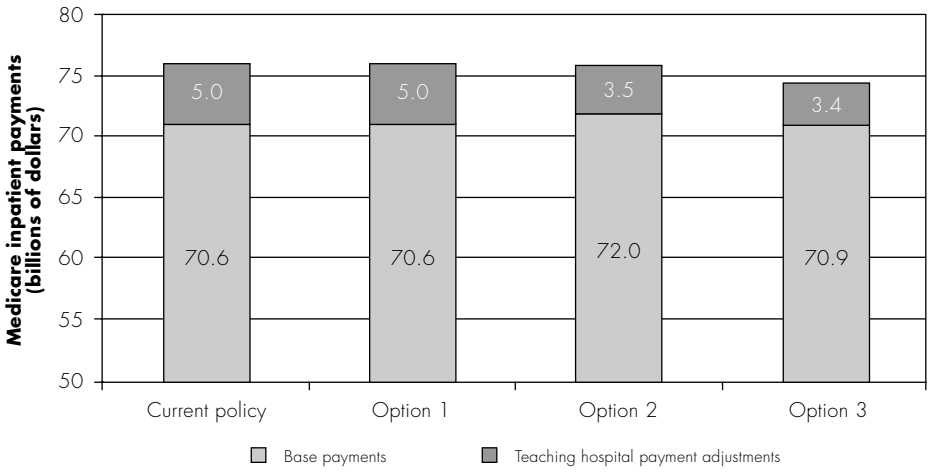
Under our long-run BBA baseline, Medicare inpatient payments (including direct GME payments) total about $75.6 billion (Figure 3-1). Of this amount, special payments to teaching hospitals total about $5.0 billion. These special payments include more than $3.5 billion in IME payments and $1.4 billion in direct GME payments for residents providing inpatient care. About $1.5 billion of the IME payments constitutes a subsidy to teaching hospitals (Figure 3-2).

Under the first option, total inpatient spending would remain the same as under current policy. Special payments to teaching hospitals would also be held constant, as teaching hospitals would retain the overall subsidy currently embedded in the IME adjustment. Base payments would also remain unchanged in the aggregate.

Under the second option, Medicare inpatient spending would remain unchanged, but the teaching hospital subsidy would be taken away from teaching hospitals and added back into base payments. Special payments to teaching hospitals, therefore, would drop by $1.5 billion, but base payments for all hospitals would climb by an equal amount. Teaching hospitals, though, would retain a portion of the $1.5 billion because of the increase in base payment amounts.

FIGURE 3-1

Effect on Medicare inpatient payments of options for folding direct graduate medical education costs into Medicare inpatient payment rates



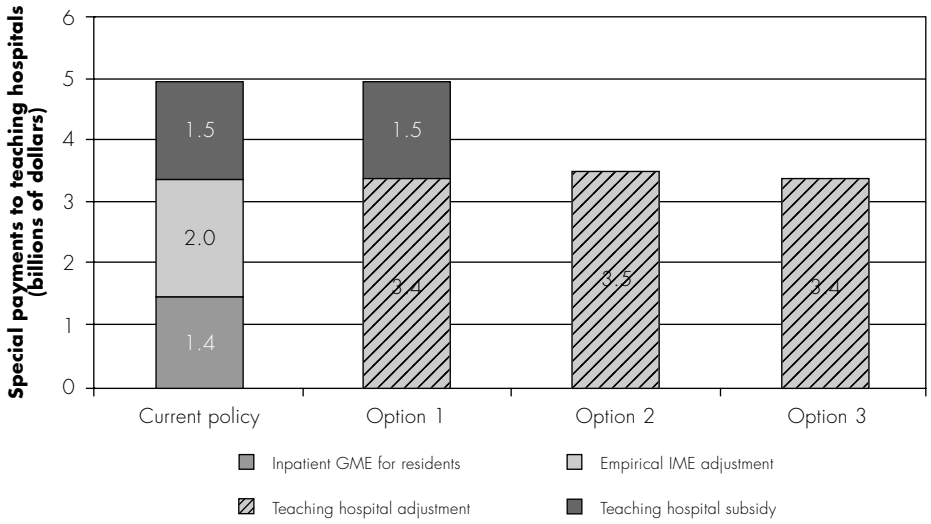
Note: Medicare inpatient payments include direct GME payments for inpatient residents. Base payments reflect base operating, capital, outlier, and disproportionate share hospital payments. Teaching hospital payment adjustments reflect the indirect medical education adjustment and inpatient direct GME payments for residents under current policy and the teaching hospital adjustment under each of the policy options. Current policy reflects long-run BBA policies for Medicare DSH and IME payments. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option 2: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments constant and with the teaching hospital subsidy distributed across all hospitals. Option 3: Inpatient direct GME costs folded into PPS payments rates with no constraint on aggregate payments and no teaching hospital subsidy.

Source: MedPAC analysis of 1997 Medicare claims data and cost reports.

23 We did not model BBRA policies that affect direct GME payments; the BBRA increased the per resident payment amounts for hospitals with low amounts and limited annual updates for hospitals with high amounts.

FIGURE 3-2

Effect on special payments to teaching hospitals of options for folding direct graduate medical education costs into Medicare inpatient payment rates



Note: GME (graduate medical education), IME (indirect medical education). Current policy reflects long-run BBA policies for Medicare DSH and IME payments. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option 2: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments constant and with the teaching hospital subsidy distributed across all hospitals. Option 3: Inpatient direct GME costs folded into PPS payment rates with no constraint on aggregate payments and no teaching hospital subsidy.

Source: MedPAC analysis of 1997 Medicare claims data and cost reports.

The third option would eliminate the teaching hospital subsidy, dropping special payments to teaching hospitals by $1.5 billion. However, total payments would fall by only $1.1 billion because inpatient direct GME costs, which are about $400 million more than inpatient direct GME payments, would be folded into the PPS payment rates. Special payments to teaching hospitals would total about $3.4 billion under this option.[24] Payments made through the teaching hospital adjustment would be lower in this option than in the second option, because the base to which the teaching adjustment is applied would be smaller. Base payments also increase under this option compared with current policy. This increase represents the portion of direct GME costs added to the base that are not paid out through the teaching hospital adjustment.

As modeled, none of these options affects direct GME payments related to resident training in outpatient settings, PPS-exempt hospitals or units, or direct GME payments for nursing and allied health professions training programs. We estimate that approximately $900 million in direct GME payments would continue to be paid under current policies until similar adjustments could be developed for these other settings and programs.[25]

Payment accuracy

One indicator of payment accuracy is the extent to which the difference between payments and costs—per case gains or losses—varies among hospital groups. Average per case gains and losses vary widely under current policy across different hospital groups. Teaching hospitals have much larger average gains than do nonteaching hospitals, and the size of the gain is strongly related to the number of residents (Table 3-10). The average per case gain for academic medical centers, for instance, is $1,924, compared with $191 for nonteaching hospitals. Among teaching hospitals, the size of the gain is also related to the level of hospitals' direct GME per resident payment amounts. Hospitals with low per resident amounts tend to have smaller gains than do those with high per resident amounts.

Folding inpatient direct GME costs into PPS payment rates tends to reduce the disparity in per case gains between hospitals with low and high per resident payment amounts. This would be expected, because folding direct GME costs into PPS payment rates in effect substitutes one payment based on a national average formula for highly varied, hospital-specific payments.

The first option does nothing to reduce the disparity in gains and losses between teaching and nonteaching hospitals, because the teaching hospital subsidy is retained. The disparity would be greatly reduced, however, if the teaching hospital subsidy were eliminated. Even then, the average per case gain would continue to be much higher for academic medical centers (AMCs) and other large teaching hospitals, relative to nonteaching providers. Under the second option, which returns the teaching subsidy to base PPS payments, nonteaching hospitals' average gains would increase from $191 to $307 per case. Payments to nonteaching hospitals would increase by a much smaller amount if the subsidy were returned to the trust fund (option 3) because the standardized amounts would

24 The teaching adjustment does not return all of the GME costs included in the payment base to teaching hospitals because teaching intensity and the increase in costs per case (due to including direct GME costs in the cost base) are not perfectly correlated.

25 Our estimates assume that hospitals would continue to be paid for resident training in outpatient settings using per resident payment amounts and that nursing and allied health professions training programs would continue to be paid on a reasonable cost basis for Medicare's share of these programs' costs.

TABLE 3-10

Payment accuracy among hospital groups under current policy and alternative payments to teaching hospitals

Hospital type	Number of hospitals	Average gain or loss per case			
		Current policy	Option 1	Option 2	Option 3
All hospitals	4,720	$481	$484	$484	$366
Geographic location:					
Large urban	1,481	739	736	734	547
Other urban	1,133	319	330	304	235
Rural	2,106	185	189	235	188
Rural referral	222	229	233	274	216
Sole community	619	11	16	65	22
Other rural	1,203	235	237	287	245
Teaching status:					
Academic medical center	113	1,924	2,097	1,420	1,193
Other teaching >100 residents	127	1,278	1,201	937	738
Other teaching 51-100 residents	120	1,016	986	873	723
Other teaching 10-50 residents	366	386	367	384	264
Other teaching <10 residents	380	237	239	350	239
Nonteaching	3,614	191	198	307	219
Direct GME per resident payment quintiles:					
0 to 20	210	393	486	460	350
20 to 40	211	825	919	803	648
40 to 60	211	792	842	704	559
60 to 80	212	915	875	700	533
80 to 100	210	1,108	927	745	567
Nonteaching	3,614	191	198	307	219

Note: GME (graduate medical education). Gain or loss refers to the difference between payments and costs. Costs include inpatient direct GME costs for residents. Current policy reflects long-run BBA policies for Medicare DSH and IME payments and includes payments for inpatient direct GME expenses for residents. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option 2: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments constant and with the teaching hospital subsidy redistributed across all hospitals. Option 3: Inpatient direct GME costs folded into PPS payment rates with no constraint on aggregate payments and no teaching hospital subsidy.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare claims data.

rise slightly if inpatient direct GME payments were folded into base payment rates.

Another measure of payment accuracy is the standard deviation of gains and losses among cases within hospital groups under each option. Folding direct GME costs into PPS payment rates increases the variability of gains and losses, compared with current policy (Table 3-11).[26] This occurs because we are folding highly variable GME costs into PPS payment rates but making payments based on a national formula. In contrast, under current policy, direct GME payments are likely to reflect much of this variation in costs because the payments are based on hospital-specific per resident costs from 1984 trended forward. Removing the teaching hospital subsidy would reduce the standard deviation of case-level gains relative to simply folding direct GME costs into PPS payment rates.

Distributional impact

The impacts of these three options vary across teaching and nonteaching hospitals. In general, the first option redistributes payments among teaching hospitals, while payments to nonteaching hospitals remain essentially unchanged (Table 3-12).[27] Under the second option, payments are redistributed from teaching hospitals to nonteaching hospitals, although payments are redistributed among teaching hospitals as well. In the third option, aggregate payments fall by 1.6 percent or $1.1

26 The pattern of changes in payment accuracy across hospital groups and policy options is more easily seen when the case-level standard deviations under the different options are recast as relative values compared with those under current policy.

27 Some nonteaching hospitals see a slight increase in outlier payments because the outlier threshold is reduced slightly. Base payment rates do not change for nonteaching hospitals.

TABLE 3-11

Payment accuracy among cases under alternative payments to teaching hospitals

Hospital type	Number of hospitals	Standard deviation of gain or loss relative to current policy*		
		Option 1	Option 2	Option 3
All hospitals	4,720	104	102	102
Geographic location:				
Large urban	1,481	105	103	103
Other urban	1,133	102	101	101
Rural	2,106	100	100	100
Rural referral	222	100	100	100
Sole community	619	100	99	100
Other rural	1,203	100	100	100
Teaching status:				
Academic medical center	113	112	107	107
Other teaching >100 residents	127	108	105	104
Other teaching 51-100 residents	120	105	104	103
Other teaching 10-50 residents	366	102	102	102
Other teaching <10 residents	380	100	101	100
Nonteaching	3,614	99	100	100
Direct GME per resident payment quintiles:				
0 to 20	210	103	101	101
20 to 40	211	105	103	103
40 to 60	211	106	103	103
60 to 80	212	107	104	104
80 to 100	210	109	106	105
Nonteaching	3,614	99	100	100

Note: *Current policy =100. GME (graduate medical education). Gain or loss refers to the difference between payments and costs. Costs include inpatient direct GME costs for residents. Current policy reflects long-run BBA policies for Medicare DSH and IME payments and includes payments for inpatient direct GME expenses for residents. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option 2: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments constant and with the teaching hospital subsidy redistributed across all hospitals. Option 3: Inpatient direct GME costs folded into PPS payment rates with no constraint on aggregate payments and no teaching hospital subsidy.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare claims data.

billion, shifting payments away from teaching hospitals and into the Medicare trust fund, with only a small redistribution of payments from teaching to nonteaching hospitals. As in the first two options, folding direct GME costs into PPS payment rates also redistributes payments among teaching hospitals.

The redistributive effects in the second and third options are strongly related to the size of the teaching program; hospitals with more residents generally see larger declines in payments. For example, AMCs would see Medicare inpatient payments fall 3.9 percent under the second option, compared with a drop of 0.1 percent for teaching hospitals with 10 to 50 residents. Similarly, in the third option, AMCs see payments fall 5.5 percent; hospitals with 10 to 50 residents see payments drop 1.6 percent. The redistributive effects of the first option, however, do not appear to be related to the number of residents that hospitals train. For example, AMCs would see payments rise 1.1 percent while other large teaching hospitals—those with more than 100 residents—would see payments fall 0.8 percent.

The redistribution effect is also related to the level of a hospital's direct GME per resident payment amount. Under the first option, hospitals with low per resident payment amounts tend to see an increase in payments, whereas hospitals with high amounts tend to see a decrease. Payments increase 1.2 percent in aggregate for teaching hospitals in the lowest quintile (0 to 20th percentile) and 0.9 percent for hospitals in the second-lowest quintile (20th to 40th percentile). In contrast, hospitals in the highest per resident payment quintile (80th to 100th percentile) see Medicare inpatient payments fall 1.9 percent. If the teaching hospital subsidy were removed, most teaching hospitals would see a decline in payments, with the size of the reduction strongly related to the level of per resident payment.

The payment impacts differ substantially among providers within teaching hospital groups. (See Appendix B tables B-4, B-5, and B-6, which show the distributional impact of these options on hospital payments, Medicare inpatient revenue, and total hospital revenue.) Under the first option, 10 percent of AMCs would have Medicare inpatient payments fall more than 4 percent, but an equal number would have payments rise almost 8 percent. A similar pattern holds across other teaching hospital groups, although the relative sizes of the changes are generally smaller in hospitals with fewer residents.

When the teaching hospital subsidy is removed, Medicare inpatient payments fall for most teaching hospitals, and the size of the decline in payments is related to the number of residents that a hospital trains. The greatest impact, therefore, is

TABLE 3-12

Percentage change in Medicare inpatient payments under alternative payments to teaching hospitals

Hospital type	Number of hospitals	Percentage change		
		Option 1	Option 2	Option 3
All hospitals	4,762	0.0%	0.0%	−1.6%
Geographic location:				
Large urban	1,499	−0.1	−0.1	−2.2
Other urban	1,142	0.1	−0.2	−1.2
Rural	2,121	0.0	0.8	0.0
Rural referral	222	0.0	0.7	−0.2
Sole community	627	0.0	0.5	0.0
Other rural	1,208	0.0	1.1	0.2
Teaching status:				
Academic medical center	113	1.1	−3.9	−5.5
Other teaching >100 residents	127	−0.8	−3.2	−5.0
Other teaching 51-100 residents	120	−0.4	−1.6	−3.3
Other teaching 10-50 residents	367	−0.3	−0.1	−1.6
Other teaching <10 residents	382	0.0	1.6	0.0
Nonteaching	3,653	0.1	1.9	0.4
Direct GME per resident payment quintiles:				
0 to 20	211	1.2	0.8	−0.6
20 to 40	212	0.9	−0.3	−2.0
40 to 60	211	0.5	−1.0	−2.6
60 to 80	212	−0.5	−2.3	−4.0
80 to 100	211	−1.9	−3.7	−5.4
Nonteaching	3,653	0.1	1.9	0.4

Note: GME (graduate medical education). Payment changes made relative to current policy which reflects long-run BBA policies for Medicare DSH and IME payments and includes payments for inpatient direct GME expenses for residents. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option 2: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments constant and with the teaching hospital subsidy redistributed across all hospitals. Option 3: Inpatient direct GME costs folded into PPS payment rates with no constraint on aggregate payments and no teaching hospital subsidy.

Source: MedPAC analysis of 1997 Medicare claims data.

on AMCs and other teaching hospitals with more than 100 residents. For example, one-quarter of AMCs would have Medicare inpatient payments fall 6.2 percent or more under the second option and 7.7 percent or more under the third option. This compares with at least 1.9 percent and 3.6 percent declines in payments under the second and third options, respectively, for one-quarter of hospitals with 10 to 50 residents.

The payment changes can also have a fairly substantial impact on total hospital revenues. Again, the size of the impact is related to the number of residents a hospital trains and whether the teaching hospital subsidy is taken away. Under the first option the impact is relatively small; for example, only 10 percent of AMCs and other teaching hospitals with more than 100 residents would have total revenues fall more than 1 percent. Many would have modest increases in total revenues.

The impact on total revenues is much greater when the subsidy is removed from teaching hospital payments, however. Under the third option, more than one-half of AMCs and teaching hospitals with 100 or more residents see total revenues fall more than 1 percent, and 10 percent see total revenues drop more than 2 percent. In general, total revenues fall for most teaching hospitals under the second and third options, and increase by a small amount for most nonteaching hospitals.

Medicare inpatient margins

Medicare inpatient margins can be a useful tool for gauging payment adequacy and equity. The PPS inpatient margin that MedPAC usually calculates compares PPS operating and capital payments with Medicare-allowable inpatient operating and capital costs. It does not include direct GME costs or payments or reflect future payment policy changes. In this analysis, we created a hybrid current policy margin for Medicare inpatient services that includes inpatient GME costs and payments for residents and selected BBA/BBRA payment policy changes that have taken place or will take place.[28] This hybrid margin provides a guide for judging potential impacts on hospital financial performance.

Historically, the Medicare inpatient margins for AMCs and other large teaching hospitals have been much higher than those for other hospitals. This continues to be true even after direct GME costs and payments are added to the margin calculation, the IME adjustment is reduced to 5.5 percent, and DSH payments are cut by 3 percent. Under current policy, AMCs' inpatient margins will still be much higher than those for nonteaching hospitals: 20.8 percent, compared with 10.6 percent (Table 3-13). The Medicare inpatient margin under current policy is strongly related to the number of residents a hospital trains. It is also related to the size of the per resident payment amount, with teaching hospitals

28 The current policy Medicare inpatient margin is based on FY 1997 data and adjusted to reflect direct GME costs and payments and selected long-run BBA/BBRA policy changes. These include the 5.5 percent IME adjustment and 4 percent reduction in DSH payments that will be in effect in FY 2002. The margin also reflects the impacts on payments of most policy changes in effect in FY 2000. It does not, however, reflect certain other policy changes, such as the expanded transfer policy and expansion of the critical access hospital program.

TABLE 3-13

Medicare inpatient margins under current policy and alternative payments to teaching hospitals

Hospital type	Number of hospitals	Simulated Medicare inpatient margin			
		Current policy	Option 1	Option 2	Option 3
All hospitals	4,173	13.3%	13.3%	13.3%	12.0%
Geographic location:					
Large urban	1,272	15.8	15.8	15.8	13.9
Other urban	988	10.8	11.0	10.7	9.8
Rural	1,913	10.1	10.1	10.8	10.1
Rural referral	198	10.9	10.9	11.5	10.7
Sole community	568	10.6	10.6	11.0	10.6
Other rural	1,093	9.2	9.3	10.2	9.4
Teaching status:					
Academic medical center	98	20.8	21.6	17.6	16.2
Other teaching >100 residents	105	18.9	18.4	16.3	14.7
Other teaching 51-100 residents	101	14.3	14.0	13.0	11.5
Other teaching 10-50 residents	317	12.2	12.0	12.2	10.9
Other teaching <10 residents	331	10.5	10.6	11.9	10.6
Nonteaching	3,221	10.6	10.7	12.3	11.0
Direct GME per resident payment quintiles:					
0 to 20	178	12.3	13.2	13.0	11.8
20 to 40	172	14.3	15.1	14.1	12.7
40 to 60	185	13.0	13.4	12.1	10.7
60 to 80	189	16.7	16.4	14.9	13.4
80 to 100	183	19.1	17.6	16.1	14.6
Nonteaching	3,221	10.6	10.7	12.3	11.0

Note: GME (graduate medical education). Estimated inpatient margins reflect both payments and costs under PPS and for inpatient direct GME programs. Current policy: Hospital payment under long-run BBA teaching and DSH policies. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option 2: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments constant and with the teaching hospital subsidy redistributed across all hospitals. Option 3: Inpatient direct GME costs folded into PPS payment rates with no constraint on aggregate payments and no teaching hospital subsidy.

Source: MedPAC analysis of 1997 Medicare claims and cost report data.

in the lowest quintile having a margin (12.3 percent) lower than that of teaching hospitals in the top quintile (19.1 percent).

Folding direct GME costs into PPS payment rates decreases the disparity in inpatient margins between hospitals with high and low per resident payment rates. Removing the subsidy reduces, but does not eliminate, the disparity in Medicare inpatient margins between teaching and nonteaching hospitals. Hospitals with the most residents continue to have inpatient margins substantially greater than nonteaching and smaller teaching hospitals.

Folding inpatient direct GME costs into PPS payment rates while holding aggregate Medicare inpatient payments and special payments to teaching hospitals constant does not change aggregate Medicare inpatient margins for nonteaching hospitals. In contrast, eliminating the teaching hospital subsidy and returning these revenues to base PPS payments results in a 1.7 percentage point jump in inpatient margins for nonteaching hospitals. If the subsidy is taken as savings instead—as in option three—nonteaching hospitals would see a 0.4 percentage point increase in their Medicare inpatient margin, because this option increases base payment rates for all hospitals slightly.

Even after the teaching hospital subsidy is removed, AMCs and other large teaching hospitals continue to have higher Medicare inpatient margins, due in large part to DSH payments. DSH payments cover Medicare's share of hospitals' costs of providing uncompensated care and are not a Medicare cost-related payment adjustment. If Medicare DSH payments are excluded from the calculation of the Medicare inpatient margin, the resulting margins under the third option would be very similar for teaching and nonteaching hospitals; for example, the aggregate margin for both AMCs and nonteaching hospitals would be about 7 percent.

None of these policy options reduce the wide disparities in inpatient margins among facilities in teaching hospital size groups. Still, teaching hospitals' margins tend to be higher than those of nonteaching hospitals across the entire distribution. The inpatient margins for teaching hospitals for all policy options are mostly positive and generally well above those for nonteaching hospitals. (See Table B-7 in Appendix B, which shows the distribution of Medicare inpatient margins under the different policy options.)

Total hospital margin

Total margins provide an indication of overall hospital financial condition. For this analysis, we created a hybrid total margin that reflects the impact of Medicare policy changes in the BBA and BBRA on total hospital revenue, based on 1997 hospital cost report data. Because total revenues are reduced to reflect Medicare policy changes, the total margin we show under current policy is lower than what we show elsewhere for 1997.[29] This total margin, therefore, should be used to compare the relative impacts of different options on hospitals' overall financial status, rather than to gauge hospitals' current financial status.

Total margins tend to be inversely related to the number of residents a hospital trains (Table 3-14). AMCs, for example, historically have lower total margins than other facilities. Under current long-run BBA policy, total margins for AMCs are 3.6 percent, compared with 6.0 percent for nonteaching hospitals.

By itself, folding direct GME costs into PPS payment rates would not substantially

TABLE 3-14

Total hospital margins under current policy and alternative payments to teaching hospitals

Hospital type	Number of hospitals	Simulated total hospital margin			
		Current policy	Option 1	Option 2	Option 3
All hospitals	4,173	5.4%	5.4%	5.4%	5.0%
Geographic location:					
Large urban	1,272	4.3	4.3	4.3	3.8
Other urban	988	6.5	6.5	6.5	6.2
Rural	1,913	6.9	6.9	7.0	6.9
Rural referral	198	9.7	9.7	9.9	9.7
Sole community	568	5.9	5.9	6.0	5.9
Other rural	1,093	5.1	5.1	5.4	5.2
Teaching status:					
Academic medical center	98	3.6	3.8	2.8	2.5
Other teaching >100 residents	105	4.9	4.7	4.2	3.8
Other teaching 51-100 residents	101	5.6	5.5	5.2	4.9
Other teaching 10-50 residents	317	5.9	5.9	5.9	5.6
Other teaching <10 residents	331	4.9	4.9	5.3	4.9
Nonteaching	3,221	6.0	6.0	6.4	6.1
Direct GME per resident payment quintiles:					
0 to 20	178	5.3	5.5	5.5	5.2
20 to 40	172	5.3	5.5	5.3	4.9
40 to 60	185	4.5	4.6	4.3	3.9
60 to 80	189	4.6	4.5	4.1	3.7
80 to 100	183	5.2	4.8	4.4	4.0
Nonteaching	3,221	6.0	6.0	6.4	6.1

Note: GME (graduate medical education). Estimated total hospital margins adjusted to reflect long-run BBA payment policy changes for Medicare DSH and IME payments. Current policy: Total inpatient margin under long-run BBA teaching and DSH policies. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option 2: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments constant and with the teaching hospital subsidy redistributed across all hospitals. Option 3: Inpatient direct GME costs folded into PPS payment rates with no constraint on aggregate payments and no teaching hospital subsidy.

Source: MedPAC analysis of 1997 Medicare claims and cost report data.

29 The hybrid total margins are roughly a full percentage point lower than the actual total margin in 1997.

affect aggregate total margins. This is not unexpected, given the small impact on Medicare inpatient margins. In contrast, removing the teaching hospital subsidy would substantially reduce total margins for AMCs and other teaching hospitals with more than 100 residents. AMCs' total margins would drop from 3.6 percent under current policy to 2.8 percent in the second option and 2.5 percent in the third option. In contrast, total margins for nonteaching hospitals would remain unchanged at 6.0 percent under the first option and rise to 6.4 percent under the second option and 6.1 percent in the third option. The disparity in total financial performance between teaching and nonteaching hospitals, therefore, would increase if the teaching subsidy were removed. The distribution of total margins shows a similar picture. (See Table B-8 in Appendix B, which shows the distribution of total margins under the different policy options.)

Recommendations on teaching hospital payments

After reviewing our results, MedPAC concludes that the Congress should adopt the general concepts outlined in the August report. Specifically, we recommend adopting option one, phased in over a reasonable period of time.

RECOMMENDATION 3E

The Congress should fold inpatient direct graduate medical education costs into prospective payment system payment rates through a revised teaching hospital adjustment. The new adjustment should be set such that the subsidy provided to teaching hospitals continues as under current long-run policy. This recommendation also should be implemented with a reasonable transition to limit the impact on hospitals of substantial changes in Medicare payments and to ensure that beneficiaries have continued access to the services that teaching hospitals provide.

Given the current financial environment faced by teaching hospitals, we concluded that reducing the subsidy beyond what the BBA requires would not be desirable now. Total margins for AMCs and other large teaching hospitals are much lower than they are for other hospitals, and a large drop in Medicare revenues from eliminating the teaching hospital subsidy at this time could place undue financial strain on these facilities.

In addition, because this recommendation would redistribute Medicare's special payments among teaching hospitals, many hospitals could see substantial changes in Medicare revenue. We believe a transition mechanism would help dampen the impact of such changes and ensure that beneficiaries have continued access to the services of teaching hospitals.

Although our analysis was based on the inpatient resident count rather than a full hospital resident count, we prefer using a full hospital resident count because we are concerned that hospitals would have an incentive to shift residents from outpatient settings to inpatient settings to increase payments if an inpatient resident count were used.[30] In addition, we assume that the resident caps included under BBA

TABLE 3-15

Payment accuracy under selected policies

Hospital type	Number of hospitals	Standard deviation relative to current policy*		
		Option B	Option 1	Option B1
All hospitals	4,720	86	104	89
Geographic location:				
Large urban	1,481	86	105	90
Other urban	1,133	85	102	87
Rural	2,106	87	100	87
Rural referral	222	86	100	86
Sole community	619	88	100	88
Other rural	1,203	89	100	88
Teaching status:				
Academic medical center	113	83	112	95
Other teaching >100 residents	127	85	108	93
Other teaching 51-100 residents	120	86	105	91
Other teaching 10-50 residents	366	86	102	87
Other teaching <10 residents	380	86	100	85
Nonteaching	3,614	87	99	86

Note: * Current policy =100. Gains refers to the difference between payments and costs. Costs include inpatient direct GME costs for residents. Current policy reflects long-run BBA policies for Medicare DSH and IME payments and includes payments for inpatient direct GME expenses for residents. Option B: Payments based on APR-DRGs, hospital relative value weights and DRG-specific outlier offsets. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option B1: Combines option B and option 1.

Source: MedPAC analysis of a 40 percent sample of 1997 Medicare claims data.

30 We did not use an all-resident count in our impact analysis because it would have greatly increased the number of options we were examining and we did not have the time to examine each option. We did examine the estimated relationship between teaching intensity and costs per case using both inpatient and full resident counts (through a resident-to-bed measure). The empirical level of the adjustment based on an inpatient resident count would be 6.6 percent for every 10 percent increment in resident intensity. The empirical level of the adjustment using the full hospital resident count is 5.2 percent. (Both of these estimates are based on folding only inpatient direct GME costs into the Medicare inpatient cost base.) Although the full resident count produces a lower adjustment level, the distribution of total payments would be similar because the smaller adjustment would be applied to a higher resident-to-bed ratio.

payment policies would still apply, and that residents would not be allowed to bill for patient care services.

Under our recommendation, direct GME payments would continue to be made for residents providing care in outpatient and other settings. However, the use of the full resident count for inpatient payments raises potential problems for calculating outpatient direct GME payments. Unless restrictions were placed on outpatient direct GME payments or resident counts, hospitals would have strong incentives to shift residents to outpatient settings and receive additional payment for the same residents in both inpatient and outpatient settings.

One approach to address these undesirable financial incentives would be to calculate the amount of direct GME payments related to outpatient training and establish an aggregate, hospital-specific, outpatient direct GME payment amount. This amount would be divided by the hospital's full resident count to establish an outpatient per resident payment amount. The outpatient direct GME payment in future years would then be determined by multiplying this new outpatient per resident payment amount, adjusted for inflation, by the number of residents a hospital trains. These payment amounts would be subject to the current caps on hospital resident counts. This approach essentially eliminates the financial incentive hospitals might have to shift residents among settings.

Combined effects of recommended case-mix and teaching hospital payment policies

The combined impacts on hospitals of adopting both the case-mix refinement and the teaching hospital payment recommendations are also important to examine. Overall payment accuracy increases when both sets of policies are combined (Table 3-15). The standard deviation of case-level gains relative to current policy drops by 11 percent. Although the drop in the standard deviation is not as large as under the case-mix refinements alone, it is substantial. The standard deviation of case-level gains also falls for teaching hospitals, even though folding direct GME costs into PPS payment rates increased the variability in gains and losses among this group of providers.

The case-mix refinement recommendations we present here tend to have the greatest impacts on rural hospitals. The recommendation for folding direct GME costs into PPS payment rates has the greatest impact on teaching hospitals. The interaction between these two policies is relatively weak. Consequently, combining the policies does not fundamentally alter the results presented above for the individual policies. The combined impacts tend to have either small offsetting or small compounding effects, depending on hospitals' circumstances (Table 3-16). For example, the case-mix refinement policies we recommend would increase payments to teaching hospitals with 100 or more residents by 0.5 percent, but the teaching hospital policy would reduce payments by 0.8 percent. The combined impact of these two policies is somewhere in between (a 0.2 percent drop in payments). The combined impact of both sets of policies results in a slightly larger reduction in payments for rural hospitals, even though the teaching recommendation had almost no impact on rural hospital payments. The net effect of these polices, however, depends largely on an individual hospital's particular situation. ■

TABLE 3-16

Percent change in Medicare inpatient payments under selected policies

Hospital type	Number of hospitals	Percent change in Medicare inpatient payments		
		Option B	Option 1	Option B1
All hospitals	4,762	0.0%	0.0%	0.0%
Geographic location:				
Large urban	1,499	0.5	−0.1	0.4
Other urban	1,142	−0.1	0.1	0.0
Rural	2,121	−1.6	0.0	−1.7
Rural referral	222	−0.1	0.0	−0.9
Sole community	627	−2.9	0.0	−3.1
Other rural	1,208	−1.6	0.0	−1.8
Teaching status:				
Academic medical center	113	−0.3	1.1	1.1
Other teaching >100 residents	127	0.5	−0.8	−0.2
Other teaching 51-100 residents	120	0.3	−0.4	−0.1
Other teaching 10-50 residents	367	0.5	−0.3	0.2
Other teaching <10 residents	382	0.0	0.0	−0.1
Nonteaching	3,653	−0.2	0.1	−0.3

Note: Payment changes made relative to current policy which reflects long-run BBA policies for Medicare DSH and IME payments and includes payments for inpatient direct GME expenses for residents. Option B: Payments based on APR-DRGs, hospital relative value weights and DRG-specific outlier offsets. Option 1: Inpatient direct GME costs folded into PPS payment rates, holding aggregate payments and special payments to teaching hospitals constant. Option B1: Combines payment policies from option B and option 1.

Source: MedPAC analysis of 1997 Medicare claims data.

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