The Indirect Teaching Adjustment for Medicare's
Prospective Payment System:
Issues and Options


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This analysis does not constitute an official Congressional Budget Office
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Questions concerning the analysis should be directed to Steven Sheingold
(226-2663).

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# SUMMARY

Under current law, Medicare's prospective payment system (PPS) provides higher payment rates for hospitals with approved teaching programs than for nonteaching hospitals. The increases in payments vary directly with each hospital's ratio of interns and residents to its number of beds (IRB). These payments--which will account for 5.5 percent of PPS reimbursements when the system is fully implemented (over $2 billion in fiscal year 1988)--have been labeled as an adjustment for the indirect costs of medical education. Because of the size of this adjustment--11.59 percent is added to the national or regional portion of reimbursement for each 0.1 the IRB ratio is above zero--these payments also provide compensation for a variety of other factors which affect patient care costs.

The indirect costs of medical education programs are the increased patient care costs that are associated with the size of the teaching program. These costs may exist for a variety of reasons, such as an increase in the number of tests and procedures prescribed by residents relative to experienced physicians, and the increased hospital staffing for medical recordkeeping required by the program. These costs have been estimated statistically for the purposes of adjusting Medicare reimbursements. Specifically, the Health Care Financing Administration (HCFA) estimated that a 0.1 percent increase in the IRB ratio would result in a 5.79 percent increase in Medicare's cost per discharge. The Congress set the current indirect teaching adjustment at double this estimate. The rationale for the double adjustment was that it would serve as a partial correction for a variety of nonteaching factors that legitimately increase hospitals' costs, but that were not accounted for under the current system. For example, severity of illness is presumed to be greater within a diagnosis related group (DRG) for teaching hospitals.

The double teaching adjustment has a significant impact on PPS rates and the distribution of reimbursements among hospitals. Because Medicare outlays were mandated to be no more or less than they would have been under prior law in fiscal years 1984 and 1985, all PPS prices are lower than they would have been with a smaller teaching adjustment. When the system is fully implemented, major teaching hospitals (those whose IRB ratios exceed 0.25) will receive half of all indirect teaching payments, increasing their total reimbursements by 54 percent. Moreover, hospitals that serve a disproportionate share of low-income patients receive nearly 30 percent of indirect teaching payments, increasing reimbursements by 20 percent. On the other hand, reimbursement to nonteaching hospitals will be approximately 6 percent less than if there were no adjustment.

Several questions have arisen regarding the size of the indirect teaching adjustment. In particular, should this adjustment be used to compensate for other factors that increase costs but that are not currently accounted for in setting PPS rates? For example, should it be used to provide partial compensation for factors such as severity of illness, location in large urban areas, and serving a disproportionate share of low-income patients? The Congressional Budget Office (CBO) estimates that, depending on which factors the adjustment would compensate for, it might fall from the current 11.59 percent to anywhere from 4.7 percent to 8.4 percent for a 0.1 percentage point increase in the IRB ratio. Finally, all of these estimates imply that Medicare costs increase at a slower rate as teaching programs get larger. Therefore, the current method of using a constant adjustment for each 0.1 increment to the IRB ratio may compensate hospitals more than intended—particularly those with the largest IRB ratios.

Options for reducing the indirect teaching payments can be evaluated by recognizing the tradeoff between budget savings and the other functions served by the current adjustment. On the one hand, the greater the reduction in the adjustment the larger would be the savings to the Medicare program. On the other hand, a large reduction might eliminate compensation for other factors currently provided to hospitals receiving the teaching adjustment. Specific options considered are: reducing the adjustment by 50 percent, reducing it to 8.4 percent; and basing the adjustment on the 8.4 percent estimate but structuring it to reflect the fact that cost increases slow as teaching programs get larger. It is assumed that all options would take effect in fiscal year 1986 and that the resulting reduction in reimbursements would remain in the Hospital Insurance Trust Fund as savings rather than being redistributed within the system.

The various options would significantly reduce Medicare outlays but would also reduce reimbursements to some hospitals substantially. Reducing the adjustment by 50 percent would reduce outlays by $5.9 billion over the next five years, while reducing it to 8.4 percent would save $3.2 billion. Basing a variable adjustment on the 8.4 percent estimate would save $4.3 billion over this period. The largest impacts of these options on reimbursements would be for urban hospitals that serve a disproportionate share of low-income patients. Relative to current law, these hospitals would get 9 percent less if the adjustment were halved, 7 percent less for the variable adjustment, and 4 percent less if the adjustment were 8.4 percent. Major teaching hospitals in this category—a majority being public hospitals—would have reimbursements reduced by 16 percent, 12 percent, and 8 percent for the corresponding options.

## INTRODUCTION

Under Medicare's prospective payment system (PPS), hospitals with approved teaching programs receive additions to their national or regional payment rates to compensate for the indirect costs of medical education programs. These increases vary directly with the ratio of the number of interns and residents to beds for each hospital. The Congressional Budget Office (CBO) estimates that when the PPS is fully implemented, payments for indirect medical education costs will account for approximately 5.5 percent of all reimbursements under the system--or about $2.3 billion in fiscal year 1988.

Several issues have been raised concerning the size of this adjustment and its impact on the distribution of PPS reimbursements among hospitals of different types. After briefly describing the background and history of the current teaching adjustment, this analysis discusses several topics relevant to consideration of any policy change. First, the impact of the teaching adjustment on current PPS payment rates and the distribution of Medicare reimbursements is examined. Next, several issues regarding the size of the adjustment are analyzed. Finally, the budget and distributional impacts of various options to reduce the indirect teaching adjustment are estimated.

## BACKGROUND

Since 1979, the federal government has made several efforts to place more stringent limits on hospital expenditures under Medicare. In all of these efforts, it was recognized that the costs of hospitals' graduate medical education programs should be considered in regulating reimbursement. The section first defines medical education costs--distinguishing direct from indirect costs--and then provides a brief history of how the adjustment for the indirect costs has evolved under Medicare.

### Medical Education Costs: Direct and Indirect

The direct costs of graduate medical education are the actual incurred costs of operating the program. These include teachers' salaries, stipends for residents, administrative costs, and allocated overhead from other hospital departments. These costs are currently excluded from the PPS and reimbursed in proportion to the share of each hospital's total cost generated by Medicare patients.

The indirect costs are other increases in the cost of patient care associated with teaching programs. Even after the direct costs of teaching

are removed, hospitals with medical education programs have higher costs of treating patients than do other hospitals. At least part of this difference is related to the size of hospitals' teaching programs and is known as the indirect costs of medical education. Although the precise sources of these indirect teaching costs are not known, they may result from a combination of several factors. For one, it is generally thought that interns and residents tend to prescribe more tests and procedures than do experienced physicians. Moreover, the existence of a teaching program requires larger staffing levels--for example, by requiring more complete and detailed medical records than in nonteaching hospitals. Finally, it is thought treatment regimens become very intensive, and hence more costly, for the purpose of medical education. On the other hand, not all of the higher costs for teaching hospitals can be explained this way. Other contributing factors could include differences between teaching and nonteaching hospitals in efficiency, hospital size (number of beds), location, and the severity of illness of patients.

## Medicare Reimbursement and Adjustments for Indirect Teaching Costs: A Brief History

As a result of concern over rapidly rising Medicare expenditures, the Congress legislated reimbursement limits as early as 1972. Section 223 of the Social Security Amendments of 1972 empowered the Secretary of Health, Education and Welfare (now Health and Human Services) to limit Medicare reimbursements to levels consistent with the efficient provision of care. Because of difficulties in estimating such limits, early efforts to implement this provision were focused on reimbursement for routine per diem costs. In 1979, new regulations set limits on reimbursement for routine per diem costs at the 80th percentile of the costs of comparable hospitals. In order to determine comparability, hospitals were grouped according to size (number of beds), location (urban/rural), and area wage levels. Moreover, for the first time hospitals were able to exclude all direct teaching costs in calculating routine per diem costs.

In 1980, the Health Care Financing Administration (HCFA) tightened the Section 223 limits, but also adjusted them to reflect differences in indirect medical education costs. In June of that year, the reimbursement limits were lowered from the 80th percentile of costs to 112 percent of the average cost for each group of comparable hospitals. Because there was concern that these new limits would have a particularly severe impact on hospitals with large teaching programs, it was decided that their special circumstances should be taken into account when setting the limits. The method used was to increase each hospital's reimbursement limit (which was based on number of beds, location, and wages) by 4.7 percent for each 0.1 percentage point of the ratio of the number of interns and residents to its number of beds--the IRB ratio. This adjustment was based on statistical analysis which estimated the impact of the size of teaching programs (measured by the IRB ratio) on routine costs per diem. The rationale for

this adjustment was to account for the indirect costs of medical education programs.

Medicare reimbursement to hospitals was substantially changed by the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982. It extended Section 223 limits to cover total operating costs per discharge and added limits to the annual rates of increase in operating costs per Medicare case. The reimbursement limits were again adjusted to reflect differences in indirect medical education costs, but by 5.79 percent for each 0.1 percentage point of the IRB ratio. The new adjustment reflected a statistical estimate by HCFA of the impact of the IRB ratio on total operating cost per discharge. 1/

The Social Security Amendments of 1983 established the current prospective payment system (PPS) for Medicare reimbursement of inpatient hospital services. Under this system, payment rates (or prices) are set in advance for 468 diagnostic categories, known as diagnosis related groups (DRGs). During the three-year phase-in period, the prospective prices are based on a combination of regional, national, and hospital-specific rates. For hospital accounting years beginning after October 1, 1986, the system will only have national rates, calculated separately for urban and rural areas. These rates will, however, continue to vary by area wage levels and by the size of the teaching program--that is, the rates will continue to be adjusted for indirect medical education costs.

The factor chosen to adjust the PPS rates for indirect medical education costs was double the adjustment used for Section 223 limits under TEFRA. 2/ That is, the national rates (and the regional rates during the transition) were to be increased by 11.59 percent for each 0.1 percentage point of the IRB ratio. The rationale for doubling the adjustment was that, in addition to compensating hospitals for indirect teaching costs, it would serve as a partial correction for the system's inability to account for all other factors that legitimately increase costs in teaching hospitals. In

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1. The interpretation given to the statistical result for the purposes of the adjustment was that each 0.1 percentage point increase in the IRB ratio would result in a 5.79 percent increase in Medicare cost per discharge. As discussed later, however, the correct interpretation, is that an increase in the IRB ratio from 0 to 0.1 would result in approximately a 5.79 percent increase in costs and that each additional 0.1 percentage point increment would result in successively smaller cost increases. Throughout this analysis, it is the latter interpretation that is implied whenever a 0.1 percentage point increase in the IRB ratio is associated with a given percent increase in Medicare costs per discharge.

2. In practice, the payments for indirect teaching costs are made in a lump sum annually. For expository purposes, however, they are treated as if they are paid on a per case basis.

particular, there were doubts concerning the ability of the DRG classifications to account for the severity of illness of patients requiring the specialized services that are often provided in hospitals with teaching programs.

## THE IMPACT OF THE CURRENT TEACHING ADJUSTMENT ON THE PROSPECTIVE PAYMENT RATES AND THE DISTRIBUTION OF MEDICARE REIMBURSEMENTS

The current adjustment to PPS rates for indirect teaching costs affects the distribution of Medicare reimbursements in two ways. First, since the adjustment is directly related to the IRB ratio, payments for indirect costs vary considerably among hospitals with teaching programs--that is, the biggest increases in PPS rates occur where teaching programs are large relative to the hospital's size (measured by the number of beds). Moreover, reimbursements to hospitals without teaching programs are also affected by the teaching adjustment because the PPS rates were calculated under the requirement that Medicare outlays for the system be budget neutral--that is, under the requirement that outlays should be no more or no less than they would have been under prior law for fiscal years 1984 and 1985. Since budget neutrality effectively means that the total level of outlays is fixed, increased reimbursements for some hospitals--due to the doubling of the teaching adjustment, for example--results in lower reimbursements to other hospitals. 3/ Moreover, since teaching programs are disproportionately located in particular areas and among certain types of hospitals, this effect is not evenly distributed. This section discusses the impact of the indirect teaching adjustment on prices and on the distribution of reimbursements.

### The Effect on PPS Rates for a Fully Implemented System

The majority of reimbursements for indirect medical education costs are paid to larger hospitals and those in the more populated Metropolitan Statistical Areas (MSAs). Of all hospitals with more than 500 beds, 86 percent have an IRB ratio greater than zero and, thus, receive some teaching payments. Moreover, 44 percent of major teaching hospitals (those with an IRB ratio greater than 0.25) are in this category (see Table 1). As a result, these hospitals receive nearly 55 percent of indirect teaching payments while accounting for 23 percent of total Medicare reimbursements under a fully implemented PPS (see Table 2). Similarly, 96 percent of major

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3.  Budget neutrality was accomplished by proportionately adjusting national, regional, and hospital-specific rates so that total outlays under PPS were equivalent to an estimate of what outlays would have been under TEFRA. All rates therefore are lower than they would have been if the adjustment had not been doubled. Thus, hospitals with no teaching programs or very small ones receive lower reimbursements as a result of the larger teaching adjustment.

TABLE 1. THE DISTRIBUTION OF TEACHING PROGRAMS BY TYPE OF HOSPITAL AND LOCATION, IN PERCENT

| | Percent of Hospitals in Each Category That Are: | | | Percent of All Major Teaching a/ Hospitals in the Category |
|---|---|---|---|---|
| | Non-teaching | Minor Teaching | Major Teaching a/ | |
| **Number of Beds** | | | | |
| Less than 50 | 99 | 1 | b/ | 2 |
| 50 - 99 | 97 | 3 | b/ | 3 |
| 100 - 299 | 82 | 16 | 2 | 18 |
| 300 - 499 | 47 | 46 | 6 | 33 |
| 500+ | 14 | 61 | 25 | 44 |
| **MSA** | | | | |
| Rural | 98 | 2 | b/ | 4 |
| Urban | 68 | 27 | 5 | 96 |
| Small MSA | 81 | 16 | 3 | 7 |
| Medium MSA | 66 | 30 | 4 | 23 |
| Large MSA | 64 | 28 | 8 | 66 |
| **Ownership** | | | | |
| Church | 72 | 27 | 1 | 5 |
| Government | 90 | 5 | 5 | 49 |
| Proprietary | 94 | 5 | 1 | 3 |
| Other Nonprofit | 77 | 20 | 3 | 43 |
| Disproportionate Share Hospitals | 83 | 5 | 11 | 45 |
| Urban Disproportionate Share Hospitals | 65 | 23 | 13 | 44 |

SOURCE: CBO simulations using the 1981 Medicare cost reports.

a. Major teaching hospitals are those whose ratio of the number of interns and residents to their number of beds exceeds 0.25.

b. Less than 0.5 percent.

TABLE 2. THE DISTRIBUTION OF PAYMENTS FOR INDIRECT MEDICAL EDUCATION COSTS AND THE IMPACT ON PROSPECTIVE PAYMENT RATES IN A FULLY IMPLEMENTED SYSTEM, RATES IN FISCAL YEAR 1985 DOLLARS

| | (1) Percent of all Reimbursements | (2) Percent of Indirect Teaching Payments | (3) Average Per Case Reimbursements | (4) Average Per Case Reimbursement Net of Teaching Payments | (5) Ratio of (3) to (4) |
|---|---|---|---|---|---|
| **Number of Beds** | | | | | |
| Less than 50 | 4 | a/ | 2,449 | 2,446 | 1.00 |
| 50 - 99 | 9 | a/ | 2,676 | 2,668 | 1.00 |
| 100 - 299 | 35 | 12 | 3,402 | 3,330 | 1.02 |
| 300 - 499 | 28 | 32 | 4,070 | 3,815 | 1.07 |
| 500+ | 23 | 55 | 4,726 | 4,057 | 1.16 |
| | | | | | |
| **Region** | | | | | |
| New England | 3 | 5 | 3,946 | 3,595 | 1.10 |
| Mid Atlantic | 8 | 10 | 4,172 | 3,854 | 1.08 |
| East North Central | 23 | 29 | 3,896 | 3,608 | 1.08 |
| West North Central | 10 | 8 | 3,167 | 3,019 | 1.05 |
| East South Central | 8 | 5 | 3,094 | 2,972 | 1.04 |
| West South Central | 10 | 6 | 3,115 | 3,013 | 1.03 |
| South Atlantic | 18 | 17 | 3,474 | 3,279 | 1.06 |
| Mountain | 5 | 4 | 3,674 | 3,478 | 1.06 |
| Pacific | 16 | 16 | 4,472 | 4,212 | 1.06 |
| | | | | | |
| **MSA** | | | | | |
| Rural | 18 | 2 | 2,387 | 2,373 | 1.01 |
| Urban | 82 | 98 | 4,155 | 3,863 | 1.08 |
| Small MSA | 13 | 10 | 3,685 | 3,515 | 1.05 |
| Medium MSA | 27 | 34 | 4,056 | 3,773 | 1.08 |
| Large MSA | 41 | 55 | 4,451 | 4,071 | 1.09 |
| | | | | | |
| **Teaching Status b/** | | | | | |
| Minor teaching | 80 | 51 | 4,299 | 3,917 | 1.10 |
| Major teaching | 20 | 49 | 6,781 | 4,403 | 1.54 |
| IRB between 0.25 and 0.5 | 14 | 29 | 6,107 | 4,331 | 1.41 |
| IRB between 0.5 and .75 | 2 | 7 | 6,787 | 3,972 | 1.70 |
| .75+ | 3 | 13 | 9,400 | 4,266 | 2.20 |
| | | | | | |
| **Disproportionate Share of Low-Income Patients c/** | 10 | 28 | 4,245 | 3,548 | 1.20 |
| | | | | | |
| **Urban Hospitals With a Disproportionate Share** | 8 | 28 | 5,068 | 4,120 | 1.23 |

SOURCE: CBO simulations using the 1981 Medicare cost reports.

a. Less than 0.5 percent.
b. Includes only hospitals with teaching programs (for which the IRB is greater than 0).
c. Hospitals for which it was estimated that Medicaid, bad debt, and charity charges were more than 18 percent of total charges for urban hospitals and more than 20 percent for rural hospitals.

teaching hospitals and 94 percent of minor teaching hospitals are located in urban areas--together receiving over 98 percent of teaching payments. Hospitals in the largest MSAs 4/--which include 66 percent of all major teaching hospitals--receive more than half of payments for indirect teaching costs, compared with 41 percent of overall reimbursements. Finally, hospitals that serve a disproportionate share of low-income patients--which account for 10 percent of all reimbursements--receive 28 percent of indirect teaching payments.

Moreover, under a fully implemented PPS, a relatively small percentage of teaching programs would receive about half the indirect teaching payments. Major teaching hospitals--those with IRB ratios greater than 0.25--account for 15 percent of hospitals with approved teaching programs (see Table 3). They would receive 49 percent of indirect medical education payments (see Table 2), however, since these payments are directly related to the size of the IRB.

TABLE 3.  THE DISTRIBUTION OF TEACHING PROGRAMS BY RATIO OF INTERNS AND RESIDENTS TO BEDS

| IRB | All PPS Hospitals | | PPS Hospitals and Those in Waiver States | |
|---|---|---|---|---|
| | Number | Percent of Teaching Hospitals | Number | Percent of Teaching Hospitals |
| Zero | 4,161 | --- | 4,476 | --- |
| Greater than 0 and Less Than 0.25 | 641 | 85 | 798 | 83 |
| .25 - .49 | 84 | 11 | 123 | 13 |
| .5 - .74 | 16 | 2 | 22 | 2 |
| .75+ | 14 | 2 | 15 | 2 |

SOURCE:  CBO simulations using the 1981 Medicare cost reports.

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4.     Those whose populations are greater than one million.

The indirect teaching adjustment also significantly affects the per case reimbursement rate for some hospitals. In a fully implemented system, hospitals with more than 500 beds receive additions to the national PPS rates averaging 16 percent (see column 5 of Table 2). Hospitals with a disproportionate share of low-income patients receive average increases of 20 percent--23 percent for those in urban areas. The most dramatic differences occur when hospitals are grouped by the size of their teaching programs--as measured by the IRB ratio. While minor teaching hospitals (IRB ratio less than 0.25) receive a 10 percent increase in their PPS rate, hospitals with the largest programs (IRB ratio greater than 0.75) receive an average increase of 120 percent. For all major teaching hospitals (all those with IRB ratios greater than 0.25), the average rate increase is 54 percent.

In terms of dollars, hospitals with teaching programs receive an average increase of $450 in a fully implemented PPS (in 1985 dollars). This increase is paid for by all hospitals since national PPS rates are approximately $200 less than they would have been, on average, if there had been no teaching adjustment.

## The Effect on the Distribution of Reimbursements
## Relative to Pre-PPS Costs

Finally, the size of the teaching adjustment has a significant effect on the way PPS redistributes Medicare reimbursements relative to cost reimbursement under prior law. Because national PPS rates are averages of hospitals' actual costs--adjusted for case mix, indirect teaching costs, and wage levels--some hospitals' costs are below the national average and some above. Thus, without any changes in the way hospitals' provide patient care, some receive more under PPS relative to prior law and some less. Because the teaching adjustment provides substantial increases in payments to some hospitals, and results in smaller payments to others, it can alter the pattern of these surpluses and deficits.

The impact of the teaching adjustment on distributional changes is estimated by comparing reimbursement under a fully implemented system with what reimbursement would have been under prior law. Reimbursements for a fully implemented system are simulated for each hospital for both current law and for a system using one-half the current teaching adjustment. Prior law reimbursements were estimated by inflating 1981 Medicare cost per case to 1985 dollars by HCFA's target rates of growth for the hospital-specific component of the PPS. All three reimbursement schemes are budget neutral--that is, yield the same level of aggregate revenues. National average rates, therefore, are higher when the teaching adjustment is halved than when the adjustment is calculated for current law.

These comparisons should be interpreted very carefully, however. The terms deficit and surplus represent estimated differences between Medicare reimbursements to hospitals that would occur under a fully implemented

PPS and what costs would have been if hospitals continued to operate in the same manner as under prior law. These terms do not represent actual financial gains and losses, however, because the model used to simulate payments does not yet include adjustments that hospitals appear to be making to the DRG system--substantially reduced average length of stay for Medicare patients, for example. That is, a reduction in reimbursements under a fully implemented DRG system relative to prior law might be either partially or more than offset by reductions in the actual cost per case incurred by the hospitals.

Relative to cost reimbursement under prior law, the doubling of the teaching adjustment would result in substantial surpluses for some hospitals and deficits for others. Under current law, after the PPS is fully implemented, the reimbursement per case for major teaching hospitals will, on average, be 7 percent higher than their 1981 costs per case (see Table 4). If PPS reimbursement per case is calculated with one half the current teaching adjustment, however, these hospitals would receive 8 percent less than 1981 costs, on average. Furthermore, hospitals that serve a disproportionate share of low-income patients will benefit greatly from the current-law adjustment--receiving 2 percent less than 1981 costs compared with 7 percent less if the teaching adjustment is halved. On the other hand, if PPS rates had been calculated with the single teaching adjustment rather than the double adjustment, per case reimbursements under the PPS would be 3 percentage points higher relative to 1981 costs for both rural hospitals and nonteaching hospitals.

## ISSUES CONCERNING THE INDIRECT TEACHING ADJUSTMENT

A considerable amount of legislative interest has been focused on the indirect teaching adjustment for several reasons. For one, many are concerned that the current-law teaching adjustment is too high--that is, overcompensates for any effect that teaching programs have on patient care costs. Such over compensation might have unintended effects such as providing incentives for hospitals to expand teaching programs. Moreover, some consider windfall gains to some hospitals as a result of the teaching adjustment particularly undesirable, since they are paid for by all hospitals in the form of reduced PPS rates. Finally, since budget neutrality provisions no longer apply for fiscal year 1986, reducing the teaching adjustment would be one way to reduce Medicare outlays.

Several issues arise in considering future policy for the teaching adjustment. The indirect costs of medical education have been defined as the increased patient care costs associated with teaching programs after direct costs have been excluded, but there is little evidence concerning the precise amount of these indirect costs, or what part of them might actually be due to other factors (such as geographic location or number of beds).Therefore, statistical estimates of the relationship between the ratio of interns and residents to beds (a measure of the size of the teaching

TABLE 4. DIFFERENCE BETWEEN AVERAGE PER CASE REIMBURSEMENT UNDER A FULLY IMPLEMENTED PROSPECTIVE PAYMENT SYSTEM AND HOSPITALS' 1981 AVERAGE COST PER MEDICARE CASE, IN FISCAL YEAR 1985 DOLLARS (Difference in percent)

| | Current Law Teaching Adjustment | One Half the Current Law Teaching Adjustment |
|---|---|---|
| All Hospitals | 0 a/ | 0 a/ |
| **Number of Beds** | | |
| Less than 50 | +14 | +17 |
| 50-99 | +2 | +5 |
| 100-299 | -2 | 0 |
| 300-499 | -1 | -1 |
| 500+ | +1 | -3 |
| **MSA** | | |
| Rural | -4 | -1 |
| Urban | +1 | 0 |
| Small MSA b/ | +14 | +15 |
| Medium MSA c/ | +6 | +5 |
| Large MSA d/ | -1 | -8 |
| **Teaching Status** | | |
| Non-teaching | -1 | +2 |
| Minor teaching | 0 | -2 |
| Major teaching | +7 | -8 |
| By IRB | | |
| .25 - .49 | +1 | -10 |
| .50 - .74 | +6 | -12 |
| .75+ | +50 | +14 |
| Hospitals with a Disproportionate Share of Low-Income Patients | -2 | -7 |
| Urban Disproportionate Share Hospitals | -3 | -9 |

SOURCE: CBO simulations using the 1981 Medicare cost reports.

a.     The impact on all hospitals is zero because total reimbursements under all systems are constrained to be budget neutral.

program) and Medicare costs per diem or per discharge (net of direct medical education expenditures) have been used for the purpose of determining Medicare reimbursements. In the case of the PPS, the Congress doubled the statistical estimate in order to adjust payment rates for indirect teaching costs. Specific issues that have arisen regarding this statistical estimate and its being used as a basis for adjusting PPS rates include:

o How large is the estimated impact of medical education programs--measured by the IRB ratio--on Medicare costs per discharge?

o How large would this estimate be if it were to serve as a partial proxy for other factors that also are related to Medicare costs-- such as number of beds and location in a large MSA--that are not fully refelcted in the DRG rates?

o In either case, is the estimated increase in costs associated with the size of the teaching program constant, or does the rate of increase in costs diminish as programs get larger?

### The Estimated Impact of Teaching Programs on Medicare Costs

The HCFA estimate of indirect teaching costs--that a 0.1 percentage point increase in the ratio of interns and residents to beds would increase the cost of a Medicare discharge by approximately 5.79 percent--reflected a number decisions about performing the statistical analysis. For one, it reflected the type of statistical procedure used. More importantly, its magnitude is directly related to the choice of other factors included in the analysis. The CBO estimates this impact to be somewhat smaller--approximately a 4.7 percent increase in costs for a 0.1 percentage point increase in the IRB ratio. Both estimates might be higher than the actual impact, however, because of measurement problems in some of the data used. That is, they reflect more than just the indirect costs of medical education.

Because of the statistical procedure used, both HCFA's and the CBO's estimates are sensitive to the other variables included in the analysis of Medicare's costs. The procedure used--called multivariate regression-- simultaneously estimates the impacts of several factors such as the IRB ratio, location within an urban or rural area, and number of beds (called independent variables) on an outcome of interest such as Medicare cost per discharge (called the dependent variable). In calculating the impact of each independent variable, this technique accounts for the interrelationships between them. Therefore, the size of each variable's estimated impact on Medicare costs will depend on the other variables included in the estimation procedures. For example, the estimated impact of the IRB ratio on Medicare costs would be higher if hospitals' number of beds were excluded from the analysis. This is because in addition to the IRB ratio and Medicare cost

per discharge being positively associated with each other (as one increases the other tends to increase), they are also both positively associated with the number of beds in the hospital--that is, higher costs and large teaching programs both tend to occur in hospitals with greater numbers of beds. If the number of beds is excluded from the analysis of Medicare costs, its interrelationship with both the IRB ratio and Medicare costs per discharge is not accounted for directly. Consequently, the resulting estimated impact would include both the actual effect of teaching on costs and an estimated effect that only occurs because both teaching and costs are positively associated with the number of beds.

The CBO estimates that a 0.1 percentage point increase in the IRB ratio would increase the cost per Medicare discharge by approximately 4.7 percent. The statistical analysis used to estimate this impact included all variables that were found to be important in determining differences in hospital costs and for which data were available (see Table 5). If the variable that indicates whether a hospital is located in a large central city is excluded, the resulting estimate of 5.67 percent is directly comparable to HCFA's estimate of 5.79 percent. 5/ As other related variables are successively excluded from the analyses, the estimated impact gets larger-- reflecting the fact that both the IRB ratio and the Medicare cost per discharge tend to be positively associated with central city locations, location in larger MSAs, and larger numbers of beds. If all variables except those used to determine the PPS's payment rates--hospitals' case mix, area wage index, and urban/rural location--are excluded, the estimated impact implies that a 0.1 percentage point increase in the IRB ratio is related to approximately an 8.4 percent increase in costs.

Finally, all these estimates may include the influence of other factors because of measurement problems for some of the variables. First, the IRB ratio itself may not accurately measure the size of the teaching program. In particular, some may be too large because the number of part-time residents was not correctly adjusted to full-time equivalents. It is not certain, however, how these possible errors would effect the estimated impact of teaching on costs. 6/ Second, the case mix index, which is based on DRGs, does not reflect differences in costs within DRGs that are due to the severity of illness. To the extent that hospitals with large teaching programs systematically treat the most severe (and most costly) cases within DRGs, the estimated impact of the IRB ratio on Medicare costs will be too high relative to the actual impact. That is, the estimate will

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5. The small difference in these estimates is due to the use of a somewhat larger sample of hospitals in the CBO analysis.

6. The Association of American Medical Colleges (AAMC) surveyed its members in order to calculate more accurate IRBs. The estimated statistical impact changes little, however, when these data were substituted for HCFA's data. Since the AAMC data only provided IRB's for 182 hospitals, this result is not conclusive, however.

TABLE 5. STATISTICAL ESTIMATES OF THE IMPACT OF THE RATIO OF INTERNS AND RESIDENTS TO BEDS ON THE MEDICARE COST PER DISCHARGE (In percent)

| Variable Included (adjusted for) in Analysis | Estimated Impact a/ |
|---|---|
| PPS Variables, b/ Number of Beds, Population Size of MSA, and Central City Location c/ | 4.67 |
| PPS Variables, b/ Number of Beds, and Population Size of MSA | 5.65 |
| PPS Variables b/ and Number of Beds | 5.85 |
| PPS Variables Only b/ | 8.36 |

SOURCE: CBO simulations using the 1981 Medicare cost reports.

a. The approximate percent increase in the Medicare cost per discharge that would result from a 10 percent increase in the IRB ratio.

b. These are factors used in determining PPS rates--the case mix index, the wage index, and urban/rural location.

c. Three variables were included to measure MSA size: location in an MSA with a population of less than 250,000, location in an MSA with population between 250,000 and 1,000,000, and location in an MSA with population greater than one million. Central cities are those with populations greater than 250,000 and located in the largest category of MSA's.

incorrectly attribute some of the cost increases that are actually due to treating more severely ill patients to the existence and size of the teaching program. Similarly, many believe that the current case mix measure is "compressed"--meaning that it underestimates the relative costs of the most resource-intensive DRGs and overestimates those of the least costly DRGs. Since large teaching hospitals on average treat cases with diagnoses that are more costly, 7/ the estimated impact of the IRB ratio on costs is also likely

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7. The average case mix index for major teaching hospitals was 1.13 in 1981, compared with 1.08 for minor teaching hospitals and 0.98 for nonteaching hospitals.

to be too high. Finally, the estimated effect of teaching programs on Medicare costs might be too high because the current area wage index may not accurately reflect the relative wages paid by some hospitals--in particular, hospitals located in large central cities sometimes pay higher wages than hospitals in other portions of the same MSA. Since many teaching hospitals are located in central cities, the estimated impact of the IRB ratio on costs would include the effect of paying higher wages for the same types of employees. While the estimate of 4.7 percent is probably affected by the problems of measuring severity of illness and compression, it is less likely to be influenced by the wage index problems, because the association between the IRB ratio and central city location was accounted for in its calculation.

## Using the Teaching Adjustment to Adjust PPS Rates for Other Factors

A further issue that has arisen is whether the teaching adjustment should only compensate hospitals for indirect medical education costs or should compensate for other factors as well. Depending on the resolution of this issue, any of the above estimates might be used, since they reflect the influences of various other factors related to Medicare costs. Some argue that the teaching adjustment might be used to compensate for deficiencies in measures used to calculate PPS rates such as the case mix and wage indices. Others argue that it might also be used as a partial proxy for other factors not currently used in the calculation of payments but that increase costs--such as the hospital's size, location in a large MSA or central city, or proportion of low-income patients. Given the range of estimates presented here, however, the current teaching adjustment would seem larger than implied by taking any of these factors into account.

The CBO estimate of 5.65 percent (or the comparable HCFA estimate of 5.79 percent) would provide compensation for both indirect teaching costs and a variety of factors, such as severity of illness not accounted for in the case mix, potential underestimating of the cost of the most resource-intensive DRGs, and extra costs due to being located in a large central city. Others argue that the estimate of 8.36 percent would be appropriate because only variables used in calculating PPS rates should be accounted for in estimating the teaching adjustment. That is, because other factors that tend to increase costs are not used in setting of PPS rates, their influence on costs should not be removed when estimating the impact of teaching programs. These factors include, for example, the size of the MSA in which the hospital is located and the number of beds in the hospital. 8/

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8    The CBO analysis implies that after accounting for other factors Medicare costs are approximately 14 percent higher in hospitals with 100-200 beds than in hospitals with less than 100 beds. The analysis also implies that costs continue to rise for hospitals with more than 200 beds, but that these increases become very small. For example, costs in hospitals with more than 500 beds are less than 1 percent higher than those in hospitals with 300-500 beds.

There are drawbacks to using the teaching adjustment to compensate for factors not directly reflected in the DRG rates, however. For one, it would only be a partial adjustment for these factors. It would not compensate for the full impact that size, location, and severity have on costs--only that part of these effects that occurs because of a positive association with the size of teaching programs. Moreover, using the teaching adjustment to compensate for factors not used in setting PPS rates would not compensate hospitals without teaching programs that are also affected by these factors.

### Does the Incremental Impact of the IRB Ratio on Costs Change for Larger Programs?

A final issue is whether the teaching adjustment should be the same for all size medical education programs. Under current law, the 11.59 percent adjustment is applied equally to each 0.1 percentage point increase in the IRB ratio, implying that each of the increases--for example from 0.2 to 0.3 and from 0.6 to 0.7--has the same effect on Medicare costs per discharge. The statistical method used to derive these estimates, however, embodies within it the assumption that the incremental cost increases become smaller as teaching programs become larger. To the extent this occurs, the current adjustment may compensate hospitals with the largest teaching programs more than was intended.

According to CBO's estimates (ranging from 4.7 to 8.4 percent) and HCFA's estimates, the increased Medicare costs associated with equal increments to the IRB ratio decline substantially as the size of the teaching program becomes larger (see Column 1 of Table 6). For example, the percent increase in costs associated with the HCFA estimate (5.79 percent) is 5.67 percent for an increase in the IRB ratio from 0.0 to 0.1 but only 3.18 percent for an increase in the IRB ratio from 0.8 to 0.9.

As a result of applying a constant rather than a declining adjustment, payments exceed the increase in medical education costs implied by any of the estimates, particularly for larger teaching programs. If the system were fully implemented, the current adjustment to PPS rates for hospitals whose IRB ratios were equal to 0.4 (about the average for major teaching hospitals) would be 46.32 percent (see Column 5 of Table 6). In contrast, the percent increase implied by double the HCFA estimate would be 39.92 percent (see Column 4). The differences in these adjustments to PPS rates are substantially greater for larger teaching programs and less for smaller ones. For example, if the IRB ratio were 1.0 the adjustment implied by the current method would be 115.8 percent compared to the 81.9 percent actually implied by the estimated. If the IRB ratio were 0.2, the corresponding adjustments would be 23.16 percent and 21.68 percent respectively. In total, the CBO estimates that in 1988 (the first fiscal year for which all hospitals will have payments based only on national rates), the current method will result in indirect teaching payments which are $210 million higher than they would be if the teaching adjustment declined at the rate implied by double the HCFA estimate.

TABLE 6. MARGINAL EFFECT ON MEDICARE COST PER CASE IMPLIED BY VARIOUS TEACHING ADJUSTMENTS AND EFFECTS ON PPS RATES, IN PERCENT

| | Current Law | | | | | Alternative Teaching Adjustment a/ | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Ratio of Residents to Beds (IRB) | Marginal b/ Effect Implied by HCFA Estimate | Double the Marginal Effect Implied by HCFA Estimate | Marginal Effect Implied by Current Law | Total Adjustment to PPS Rates c/ Implied by Double the HCFA Estimate | Total Adjustment to PPS Rates Under Current Law | Marginal Effect Implied by an 8.4 Percent Adjustment | Total Adjustment to PPS Rates Implied by an 8.4 Percent Adjustment | Total Adjustment to PPS Rates for an 8.4 Percent Adjustment Interpreted as Under Current Law |
| 0.1 | 5.67 | 11.34 | 11.59 | 11.34 | 11.59 | 8.29 | 8.29 | 8.36 |
| 0.2 | 5.17 | 10.34 | 11.59 | 21.68 | 23.16 | 7.55 | 15.84 | 16.72 |
| 0.3 | 4.74 | 9.48 | 11.59 | 31.16 | 34.24 | 6.92 | 22.76 | 25.08 |
| 0.4 | 4.38 | 8.76 | 11.59 | 39.92 | 46.32 | 6.39 | 29.15 | 33.44 |
| 0.5 | 4.08 | 8.16 | 11.59 | 48.08 | 57.90 | 5.94 | 35.09 | 41.80 |
| 0.6 | 3.81 | 7.62 | 11.59 | 55.70 | 69.48 | 5.54 | 40.63 | 50.16 |
| 0.7 | 3.57 | 7.14 | 11.59 | 62.84 | 81.06 | 5.20 | 45.83 | 58.52 |
| 0.8 | 3.36 | 6.72 | 11.59 | 69.56 | 92.64 | 4.89 | 50.72 | 66.88 |
| 0.9 | 3.18 | 6.36 | 11.59 | 75.92 | 104.20 | 4.62 | 55.34 | 75.24 |
| 1.0 | 3.01 | 6.02 | 11.59 | 81.94 | 115.80 | 4.38 | 59.72 | 83.60 |

SOURCE: CBO simulations using the 1981 Medicare cost reports.

a. The estimated effect of the IRB ratio on Medicare cost per discharge when only variables used to calculate PPS rates are included in the statistical analysis.
b. The marginal effect is the increase in Medicare cost per discharge associated with a 0.1 increase in the IRB ratio.
c. The total adjustment to PPS rates is the sum of the marginal effects. For example, if a hospital's IRB ratio is 0.2, the total adjustment of 21.68 percent in Column 4 is the sum of 11.34 percent and 10.34 percent (from Column 2).

## OPTIONS FOR THE INDIRECT TEACHING ADJUSTMENT

The current teaching adjustment serves several purposes other than paying for the indirect costs of medical education. It most likely partially compensates teaching hospitals for the limited ability of current indices--such as those that measure case mix and relative wage levels--to account for variations in patient care costs. Moreover, it provides some compensation for factors that are related to higher costs but not reflected in the PPS rates--such as hospital size, location in large MSA and in central cities. Finally, because many teaching hospitals serve a disproportionate share of low-income patients, the current adjustment provides some payments for any additional costs associated with such a patient mix. The current 11.59 percent adjustment appears larger than necessary to compensate for these factors, however, and several options for reducing this adjustment are being considered.

In the long run, especially if other changes to the DRG rates were enacted, the teaching adjustment might be limited to compensating hospitals only for indirect medical education costs and hence, be reduced substantially from its current level. Due to the potential availability of new data and the results of several ongoing research efforts, the PPS rates may undergo a number of changes in the near future. For one, the relative weights assigned to each DRG will be recalculated. Moreover, a number of measures of severity of illness are being developed that might either replace or be used in conjunction with current DRG classifications. Other potential changes include the implementation of a separate adjustment for hospitals serving a disproportionate share of low-income patients and an improved wage index. Beyond these adjustments, more basic decisions might be made concerning the appropriate market areas for hospitals--for example, separate rates might be calculated for central cities or large MSAs in addition to the current urban/rural distinction. To the extent that these potential changes improved the system's ability to account for legitimate cost differences among hospitals, the teaching adjustment could be reduced to levels reflecting only indirect medical education costs--probably between 4 percent and 5 percent.

In the short run, however, there are several levels to which the current adjustment might be reduced, depending on a number of interrelated considerations. On the one hand, the greater the reduction in the teaching adjustment from its current level, the larger would be the savings to the Medicare program. On the other hand, a large reduction might eliminate the compensation for other factors not reflected in the DRG rates that is currently provided to some hospitals through the teaching adjustment. Alternatives for reducing the adjustment, therefore, would generally involve a tradeoff between budget savings and the other functions that the adjustment serves.

Under most proposals the reduced reimbursements to teaching hospitals would remain in the Hospital Insurance Trust fund as budget

savings, rather than being redistributed within the system in the form of increased PPS rates. In effect, therefore, all hospitals will continue to pay for the double teaching adjustment--in this case by contributing to budget savings rather than to indirect teaching payments. Moreover, even after the teaching adjustment was reduced, it would likely continue to compensate for some costs other than those associated with medical education. Nonteaching hospitals are also affected by these factors, however, and this approach would not modify their reimbursements.

Specific options considered in this section are:

o   Reducing the current adjustment by 50 percent--to 5.79 percent-- as proposed in the Administration's fiscal year 1986 budget;

o   Reducing the teaching adjustment to 8.4 percent; and

o   Applying an adjustment based on the 8.4 percent estimate, but structuring it to reflect the fact that costs grow more slowly as the size of the teaching program increases.

It is assumed that the options would go into effect for fiscal year 1986.

## The Budget Effects

The various options for reducing the teaching adjustment would save between $3.2 billion and $6.2 billion in the fiscal year 1980-1990 period (see Table 7). The largest savings would result from the Administration's proposal to reduce the adjustment by 50 percent. The substantial difference in savings between the 8.4 percent constant adjustment and the variable adjustment based on the 8.4 percent statistical estimate--$1.1 billion over five years--would be mostly due to the reduced payments to larger teaching hospitals that would occur under the latter. For example, hospitals with IRB ratios greater than 0.5 would receive 12 percent less in total reimbursements under a variable adjustment than under the constant 8.4 percent adjustment. In contrast, the difference in payments to small teaching hospitals would be less than 1 percent.

The savings estimated in this section would be reduced if other changes being considered by the Congress and the Administration are enacted. The estimates are based on CBO projections for the Hospital Insurance Trust Fund, which assume an annual increase in PPS rates of the cost of the market basket of hospital's inputs plus a quarter of one percentage point and that the transition to national rates will proceed as under current law. Should the 1986 PPS rates be frozen at 1985 levels as proposed by the Administration, or the transition be delayed, savings from reducing the indirect teaching adjustment would be smaller.

TABLE 7. OUTLAY SAVINGS FROM OPTIONS TO REDUCE THE INDIRECT TEACHING ADJUSTMENT, FISCAL YEARS 1986-1990 (In millions of dollars)

| | 1986 | 1987 | 1988 | 1989 | 1990 | Cumulative 1986-1990 |
|---|---|---|---|---|---|---|
| Reduce the Adjustment by 50 Percent (to 5.79 percent) | 680 | 930 | 1,270 | 1,410 | 1,560 | 5,900 |
| Reduce the Adjustment to a Constant 8.4 Percent | 370 | 510 | 690 | 770 | 860 | 3,200 |
| Reduce the Adjustment to 8.4 Percent But on a Variable Basis a/ (see Columns 6 and 7 of Table 6) | 500 | 680 | 920 | 1,030 | 1,150 | 4,300 |

NOTE: These estimates assume that the options would reduce reimbursements to hospitals in waiver states as well as those participating in the prospective payment system. Therefore, they are approximately 15 percent higher than previous CBO estimates. For example, without the waiver state effect, past CBO estimates for reducing the teaching adjustment by 50 percent were $590, $810, $1,110, $1,230, and $1,360 for fiscal years 1986 to 1990, respectively, with a cumulative five-year total of $5,100.

a. That is, it would be structured to reflect the fact that costs grow more slowly as the size of the teaching program increases.

## Impacts on Reimbursements

Under all three options, reimbursements to major teaching hospitals would be reduced substantially relative to current law (see Table 8). These reductions would range between 8 percent and 16 percent, depending on the level chosen for the teaching adjustment. While under current law, major teaching hospitals would receive 7 percent more than under pre-PPS cost

TABLE 8. IMPACTS ON MEDICARE REIMBURSEMENTS OF OPTIONS FOR REDUCING THE TEACHING ADJUSTMENT, FOR FULLY IMPLEMENTED SYSTEM, IN PERCENT

| | Current Law Adjustment | | One-Half Current Law Adjustment | | 8.4 Percent Constant Adjustment | | 8.4 Percent Variable Adjustment | |
|---|---|---|---|---|---|---|---|---|
| | Percent Reduction in Reimbursement | Average Surplus (+) or Deficit (-) a/ | Percent Reduction in Reimbursement b/ | Average Surplus (+) or Deficit (-) a/ | Percent Reduction in Reimbursement b/ | Average Surplus (+) or Deficit (-) a/ | Percent Reduction in Reimbursement b/ | Average Surplus (+) or Deficit (-) a/ |
| **Number of Beds** | | | | | | | | |
| Less than 50 | --- | +14 | c/ | +14 | c/ | +14 | c/ | +14 |
| 50 - 99 | --- | +2 | c/ | +2 | c/ | +2 | c/ | +2 |
| 100 - 299 | --- | -2 | -1 | -3 | c/ | +2 | -1 | -3 |
| 300 - 499 | --- | 0 | -3 | -3 | -2 | -2 | -2 | -3 |
| 500+ | --- | +1 | -7 | -6 | -3 | -3 | -5 | -4 |
| **MSA** | | | | | | | | |
| Rural | --- | -4 | c/ | -4 | c/ | -4 | c/ | -4 |
| Urban | --- | +1 | -3 | -2 | -2 | -1 | -2 | -1 |
| Small MSA d/ | --- | +2 | -2 | +11 | -1 | +11 | -2 | +11 |
| Medium MSA e/ | --- | +6 | -3 | +3 | -2 | +4 | -2 | +3 |
| Large MSA f/ | --- | -6 | -4 | -9 | -2 | -7 | -3 | -8 |
| **Region** | | | | | | | | |
| New England | --- | +2 | -4 | -2 | -2 | 0 | -3 | -1 |
| Mid Atlantic | --- | +4 | -4 | 0 | -2 | +2 | -2 | +2 |
| East North Central | --- | -3 | -3 | -7 | -2 | -5 | -2 | -5 |
| West North Central | --- | -4 | -2 | -6 | -1 | -5 | -2 | -6 |
| East South Central | --- | +6 | -2 | +4 | -1 | +5 | -1 | +4 |
| West South Central | --- | +2 | -2 | 0 | -1 | +1 | -1 | +1 |
| South Atlantic | --- | +4 | -3 | +2 | -1 | +3 | -2 | +2 |
| Mountain | --- | +2 | -3 | -1 | -1 | +1 | -2 | 0 |
| Pacific | --- | -4 | -3 | -7 | -1 | -5 | -2 | -6 |
| **Teaching Status** | | | | | | | | |
| Nonteaching | --- | -1 | 0 | -1 | 0 | -1 | 0 | -1 |
| Minor teaching | --- | +1 | -4 | -5 | -2 | -3 | -3 | -3 |
| Major teaching | --- | +7 | -16 | -10 | -8 | -2 | -13 | -7 |
| IRB 0.25 - 0.50 | --- | +1 | -13 | -13 | -7 | -6 | -10 | -9 |
| IRB 0.50 - 0.75 | --- | +6 | -20 | -14 | -10 | -4 | -16 | -10 |
| IRB 0.75+ | --- | +50 | -25 | +11 | -13 | +30 | -25 | +13 |
| **Ownership** | | | | | | | | |
| Church | --- | -2 | -2 | -4 | -1 | -3 | -1 | -3 |
| Government | --- | +4 | -4 | 0 | -2 | +2 | -3 | +1 |
| Proprietary | --- | -3 | -1 | -4 | -1 | -3 | -1 | -4 |
| Other nonprofit | --- | 0 | -3 | -3 | -2 | -1 | -2 | -2 |
| **Hospitals With a Disproportionate Share of Low-Income Patients g/** | --- | -2 | -7 | -10 | -4 | -6 | -5 | -8 |

a. The percent difference between per case reimbursements under a fully implemented DRG system with the appropri teaching adjustment and 1981 cost per case--both in fiscal year 1985 dollars.

b. Compared with current law reimbursement.

c. Less than 0.05 percent.

d. Population less than 250,000.

e. Population between 250,000 and 1,000,000.

f. Population greater than 1,000,000.

g. Urban hospitals whose estimated ratio of Medicaid, bad debt, and charity revenues to gross revenues (MBS) exceeds 0.18 rural hospitals with MBCs greater than 0.20.

reimbursement, they would receive 2 percent less than under prior law for an 8.4 percent constant adjustment, 7 percent less for the variable adjustment, and 10 percent less if the teaching adjustment were halved to 5.79 percent. Hospitals with the largest teaching programs relative to their size--those with IRB ratios greater than 0.75--would continue to receive substantially more under any of these options, however.

Because of the distribution of teaching programs and payments, the impact of these options would be larger for hospitals with more beds and for those located in urban areas. Reimbursements to hospitals with more than 500 beds would decline by 7 percent if the teaching adjustment were reduced by half, by 5 percent for the variable adjustment, and about 3 percent if the adjustment were reduced to a constant 8.4 percent. As a result, the average difference between reimbursements in a fully implemented PPS and reimbursement under prior law for these hospitals would range from 3 percent to 6 percent, depending on the option chosen. Reimbursement to urban hospitals, particularly those in large MSAs, would also be reduced substantially--by as much as 4 percent, if the 5.79 percent adjustment were adopted.

Reducing the teaching adjustment would also cause large declines in reimbursements for those hospitals that serve a disproportionate share of low-income patients. On average, reimbursements to these hospitals would decline by 7 percent if the adjustment were halved, by 5 percent if it were reduced to a variable adjustment based on the 8.4 percent estimate, and by 4 percent for a constant 8.4 percent adjustment. Relative to pre-PPS costs, per case reimbursement to these hospitals would be 10 percent, 8 percent, and 6 percent less for these options, respectively.

The most severe impacts of these options would be for hospitals located in urban areas and that serve disproportionate shares of low-income patients. Major teaching hospitals in this category--a majority of whom are publicly owned--would have reimbursements reduced by 8 percent to 16 percent for those options (see Table 9). Relative to costs under prior law, per case deficits for these hospitals' would average 13 percent if the adjustment is reduced by half, 10 percent if reduced to a variable adjustment based on the 8.4 percent estimate, and 5 percent for a constant 8.4 percent adjustment. The impacts on public teaching hospitals are of concern to many because they provide a large percentage of all uncompensated care. 9/ Moreover, per case deficits for hospitals that serve a disproportionate share of low-income patients and are located in the largest MSAs would be 12 percent to 16 percent, on average, for those options.

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9.  By some estimates, public hospitals that are members of the Council of Teaching Hospitals (generally corresponding to the major teaching hospitals defined here) provide over 40 percent of uncompensated care although they account for 18 percent of all hospital patient charges.

TABLE 9. IMPACT OF THE VARIOUS OPTIONS ON THE REIMBURSEMENTS OF URBAN HOSPITALS THAT SERVE A DISPROPORTIONATE SHARE OF LOW-INCOME PATIENTS, IN PERCENT

| | Current Law Adjustment | | One-Half Current Law Adjustment | | 8.4 Percent Constant Adjustment | | 8.4 Percent Variable Adjustment | |
|---|---|---|---|---|---|---|---|---|
| | Percent Reduction in Reimbursement | Average Surplus (+) or Deficit (-) a/ | Percent Reduction in Reimbursement b/ | Average Surplus (+) or Deficit (-) a/ | Percent Reduction in Reimbursement b/ | Average Surplus (+) or Deficit (-) a/ | Percent Reduction in Reimbursement b/ | Average Surplus (+) or Deficit (-) a/ |
| All | --- | -3 | -9 | -11 | -4 | -8 | -7 | 10 |
| Major Teaching | --- | +3 | -16 | -13 | -8 | -5 | -12 | -10 |
| Publicly Owned | --- | +7 | -12 | -6 | -6 | +1 | -9 | -3 |
| Minor teaching | --- | -8 | -7 | -14 | -3 | -11 | -4 | -12 |
| Major teaching | --- | +10 | -17 | -8 | -8 | +2 | -4 | -5 |
| Large MSA c/ | --- | -7 | -9 | -16 | -5 | -12 | -7 | -14 |

a. The percent difference between per case reimbursements under a fully implemented DRG system with the appropriate teaching adjustment and 1981 cost per case--both in fiscal year 1985 dollars.

b. Compared with current law reimbursement.

c. Population greater than 1,000,000.