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MEDICARE:
Indirect Medical Education
Payments Are Too High

Statement of
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Subcommittee on Health
U.S. House of Representatives
Committee on Ways and Means



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Summary

Medicare's Prospective Payment System sets in advance the payment rates hospitals will receive for their operating costs. Each patient is placed into 1 of 470 payment groups--called diagnosis related groups--based on the patient's diagnosis. Besides the PPS payment for operating costs, all hospitals are paid an amount to cover their capital costs. If a hospital treats a disproportionate share of low-income Medicare beneficiaries, its PPS payments are adjusted upward.

Hospitals that conduct graduate medical education programs to train interns and residents also receive additional payments from Medicare. They receive payments based on the direct costs of the education program as well as adjustments to compensate them for the indirect costs of medical education. The indirect medical education adjustment was designed to cover the higher cost due to such factors as increased diagnostic testing and procedures and higher staff ratios.

Studies by GAO and others show that there is a positive relationship between Medicare costs and such factors as hospital patient mix, location, and size. While there is also a positive relationship between these factors and the teaching status of hospitals, the other factors explain the largest portion of the higher costs at teaching hospitals.

After accounting for the types of factors discussed above, teaching hospitals still have higher costs than nonteaching hospitals. This remaining cost difference has been attributed to the indirect cost of medical education. We used data on Medicare discharges from 5408 hospitals to estimate the relationship between graduate medical education and Medicare operating cost per discharge.

GAO computed 12 estimates of the indirect effect of teaching on cost per Medicare discharge using different mixes of cost affecting factors. All of the estimates are lower than the adjustment factor currently specified by law.

Selecting from these 12 estimates the one to be used as an adjustment factor for PPS is a policy choice. We recommended in our report that the Congress reduce the teaching adjustment factor for 1989 and beyond. We concluded that our estimate of 5.09 percent represents the best option for determining the additional payments to teaching hospitals to compensate for the indirect costs of medical education for fiscal years 1989-95.

Mr. Chairman and Members of the Subcommittee:

We are pleased that you asked us to be here today to discuss our report on Medicare's indirect medical education payments to teaching hospitals.¹ These payments are intended to compensate hospitals' higher patient care costs associated with graduate medical education. We found that teaching hospitals have significantly higher costs but most of the difference in costs between teaching and nonteaching hospitals is explained by such factors as the mix of patients treated and geographic location that affect hospital costs irrespective of a teaching program. The residual or remaining cost difference--the amount attributed to the indirect costs of medical education--varies depending on the number and types of other cost-influencing factors considered in the analysis.

Our report presents a number of estimates of the indirect effect of medical education on hospital costs. All of the estimates are lower than the adjustment factor currently specified by law. Our estimates of the increase in hospital operating costs ranged from 3.73 to 6.26 percent for each increment of 0.1 in the intern-to-bed ratio. The estimate of 5.09 percent considers only the cost factors currently used in PPS, but measures them more accurately. We believe that this

¹Medicare: Indirect Medical Education Payments Are Too High (GAO/HRD-89-33, Jan. 5, 1989).

estimate is the one most consistent with how Medicare's hospital prospective payment system (PPS) is currently structured.

In our report we recommended that the Congress reduce the teaching adjustment factor for fiscal years 1989 and beyond to the levels shown by our analysis of Medicare hospital costs.

BACKGROUND

Medicare's PPS sets in advance the payment rates hospitals will receive for their operating costs. Each patient is placed into 1 of 470 payment groups--called diagnosis related groups--based on the patient's diagnosis. The amount a hospital receives for its operating costs is determined by two factors--the "weight" of the DRG into which the patient was classified and the standard payment amount for the discharging hospital. The weight for a given DRG represents the national average resources used to care for Medicare patients in that DRG relative to the national average resources used to treat all Medicare patients. The DRG weight is multiplied by the discharging hospital's standard payment amount, which is the national average cost of treating a Medicare patient, adjusted to reflect wage rates in the hospital's area and the hospital's location (urban or rural).

Besides the PPS payment for operating costs, all hospitals are paid an amount to cover their capital costs based on the actual amount of these costs. In addition, PPS payments are

adjusted upward, if a hospital treats a disproportionate share of low-income Medicare beneficiaries².

A hospital that conducts a graduate medical education program to train interns and residents receives additional payments from Medicare. First, it receives a payment based on the direct costs of the education program--that is, such items as classroom space, instructors' salaries, and fringe benefits. Second, teaching hospitals' PPS payments are adjusted upward to compensate them for the indirect costs of medical education. This allowance for indirect medical education costs was introduced to cover the higher patient care costs at teaching hospitals thought to be due to such factors as increased diagnostic testing, increased number of procedures performed, higher staff ratios, and increased record keeping.

When the Congress was considering enactment of a prospective payment system for inpatient hospital services under Medicare, the Health Care Financing Administration estimated that for each increment of 0.1 in the ratio of interns and residents to beds

²It is generally postulated that these patients tend to be more severely ill than other patients and require more hospital resources to treat. There is no direct measure of the number of low-income Medicare patients treated by a hospital. Rather, a hospital's share of low-income patients is determined by adding (1) the percentage of part A patient days that were attributable to patients entitled to Supplemental Security Income (the cash assistance program for the aged, blind, and disabled) and (2) the percentage of a hospital's total patient days that were attributable to patients eligible for Medicaid.

teaching hospitals' costs increased by 5.795 percent. However, the Congress was concerned that PPS rates would not adequately compensate teaching hospitals for the higher costs associated with their being in an urban location, treating more severely ill patients, and treating a disproportionate share of low-income Medicare patients. Therefore, it decided to double HCFA's estimate so that the adjustment factor was set at 11.59 percent. The indirect medical education adjustment factor has been changed several times since 1983; current law provides a factor of 7.65 percent for fiscal years 1989-95 and 8.29 percent for later years.

Section 9202 of the Consolidated Omnibus Reconciliation Act of 1985 directed us to study the variation in Medicare payments (1) among hospitals with different size teaching programs and (2) between teaching and nonteaching hospitals. We were also to account for the reasons for such differences to the extent feasible. The report we are discussing today presented the results of our study.

MOST OF THE DIFFERENCE IN HOSPITAL
COSTS IS NOT RELATED TO
HOSPITAL TEACHING STATUS

As the first step in our analysis, we used cost reports from 4,096 hospitals to determine the average costs and average payment per Medicare discharge. Of these hospitals, 109 were major teaching hospitals (those with an intern-to-bed ratio of at least 0.25), 525 were minor teaching hospitals (with a ratio of less than 0.25), and 3,462 were not teaching hospitals. Our analysis showed that, on average, major teaching hospitals received 106 percent more in payments per discharge and had 95 percent higher costs per discharge than did nonteaching hospitals. Minor teaching hospital's payments were 45 percent higher per discharge while their costs were 40 percent higher per discharge than were those of nonteaching hospitals.

Differences in total patient care costs among hospitals can be explained by three general factors--input prices, outputs, and efficiency. Input prices are those paid by hospitals for resources--such as labor, supplies, and utilities--consumed in providing inpatient hospital care. Output at most hospitals is the health care provided to patients. Teaching hospitals also provide graduate medical education in conjunction with patient care. Efficiency is the ability to effectively treat patients

while minimizing the use of resources. The same factors that affect total hospital costs also affect Medicare costs.

Studies by GAO and others show that most of the variation in hospital costs to treat Medicare patients is explained by specific factors affecting input prices, such as location (e.g., rural, urban, central city), and specific output variables, such as the mix of patients treated ("case mix") and the presence of a graduate medical education program. Also, hospital costs are related to size (number of beds), which in turn is correlated with input prices and outputs.

We gathered data on various factors that affect hospital costs for major and minor teaching and nonteaching hospitals. As you can see from table 1, major teaching hospitals consistently show measures of these factors that indicate costs will be high, and while minor teaching hospitals do not have measures as high as major teaching hospitals, theirs are generally substantially higher than those for nonteaching hospitals. For example, the average case mix indexes of the three groups show that patients treated at major teaching hospitals would be expected on average to be about 17 percent more costly to treat than those at nonteaching hospitals and patients at minor teaching hospitals about 11 percent more costly. Also, the average wage indexes, a measure of the relative cost of labor in the hospitals' areas, show an even more dramatic difference among the hospital groups

with major teaching hospitals having an average index 19 percent and minor ones 12 percent higher than nonteaching hospitals. Thus, these two factors--case mix and wages--account for much of the difference in average costs among the hospital groups and PPS rates are adjusted for these factors.

Table 1: Comparison of Specific Cost Factors by Hospital Type

<u>Cost factors</u>	<u>Nonteaching (4,464)</u>	<u>Minor teaching (790)</u>	<u>Major teaching (154)</u>
Avg. intern-to-bed ratio	.00	.08	.42
Avg. case mix index	.919	1.019	1.079
Avg. wage index	.946	1.082	1.123
Avg. number of beds	121	373	554
Avg. Medicare length of stay (days)	6.7	8.6	8.9
Urban hospitals	41%	93%	95%
Hospitals in central city of large MSA	6%	31%	53%
Discharges that were low-income patients	19%	17%	30%

In summary, it has been shown that there is a positive relationship between Medicare costs and such factors as hospital patient mix, location, and size. In addition, as can be seen from the table, there is also a positive relationship between these factors and the teaching status of hospitals. These factors, rather than the presence of a teaching program per se, help explain a large portion of the higher costs at teaching hospitals.

ESTIMATES OF RESIDUAL COST
DIFFERENCES ATTRIBUTED TO INDIRECT
MEDICAL EDUCATION COSTS

Our analysis concludes that after accounting for the factors discussed above, teaching hospitals still have higher costs than nonteaching hospitals. This remaining cost difference has been attributed to the indirect cost of medical education.

Given the imprecise nature of the "indirect costs" of medical education and the absence of a conventional way of measuring them, Medicare policymakers have used regression analysis as a means of adjusting PPS payment rates to reflect indirect costs. Multiple regression analysis simultaneously estimates the effect of several factors (independent variables)--such as teaching, location, and case mix--on Medicare operating cost per discharge (the dependent variable). The estimated effect of teaching on Medicare costs--and the payment adjustment factor derived from this estimate--can be smaller or larger depending on what factors are included in the analysis and how they are measured.

Using fiscal year 1985 data on 8 million Medicare discharges from 5,408 hospitals, we applied regression analysis to estimate the relationship between graduate medical education and Medicare operating cost per discharge with a number of different approaches

and examined the policy implications of each. Specifically, we examined the differences in estimates obtained by

- adjusting explicitly only for the effect of the factors currently considered in setting hospital payments and three analyses that include additional cost factors;
- doing the analyses with and without outliers;³ and
- limiting the values of certain variables used in the models to their theoretical PPS payment values.⁴

Table 2 shows the cost factors considered in the four different approaches. The basic analysis (that is, model 1) used each hospital's case mix index, wage index, intern-to-bed ratio, and rural/urban location as indicated by metropolitan statistical areas

³Outliers are cases with extremely high costs or long lengths of stay relative to average costs and lengths of stay for treating a diagnosis. Medicare makes additional payments beyond standard PPS rates for such cases.

⁴The PPS payment methodology provides prior expectations of the coefficients for the case mix index and the wage index that should be obtained in regression analysis of hospital operating costs. These prior expectations are called theoretical values. For example, under PPS a hospital's operating cost per discharge should be directly proportional to the DRG-based case mix index; that is, a 1-percent increase in the case mix index should bring about a 1-percent increase in operating cost per discharge. Thus, the coefficient for the case mix index estimated from a regression analysis of hospital operating costs theoretically should be equal to 1.

Likewise, one might expect that the coefficient for the wage index should be 0.75 because of the method used to adjust the "standard amount" for variation in wage levels under PPS. That is, the standard amount is divided into labor and a nonlabor portion, and only the labor portion is adjusted for wages. HCFA has determined that, on average, labor-related costs make up about 75 percent of inpatient hospital operating costs.

(MSAs). The approach that incorporates the largest number of cost factors (model 4) added measures for disproportionate share of low-income beneficiaries, number of beds, and location in a central city. For each of the four analyses, we computed estimates by both including and excluding outlier cases for which hospitals receive extra payments from Medicare. Moreover, we also computed estimates where the values of the case mix and wages were constrained to their theoretical values.

Table 2: Factors Considered in GAO Analysis

<u>Factor</u>	<u>Model</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Case mix	x	x	x	x
Wage index	x	x	x	x
Intern ratio	x	x	x	x
MSA	x	x	x	x
Disproportionate share		x	x	x
Beds			x	x
Central city				x

Table 3 presents the 12 estimates of the indirect effect of teaching on cost per Medicare discharge that resulted from this analysis. As you can see the estimates range from 3.73 percent for the most fully specified model not constrained by theoretical values and including outlier cases to 7.19 percent for the basic model constrained to theoretical values and without outlier cases. All of the estimates are lower than the 7.65 percent adjustment factor currently specified by law.

Table 3: Effect of Teaching on the Medicare Cost Per Discharge

<u>Model</u>	<u>Estimated Effect^a</u>		
	<u>Unconstrained</u>		<u>Constrained</u>
	<u>Without</u> <u>outliers</u>	<u>With</u> <u>outliers</u>	<u>Without</u> <u>outliers</u>
1	6.06	6.51	7.19
2	5.09	5.16	6.26
3	4.10	4.05	4.36
4	3.83	3.73	4.09

^aPercent increase in Medicare operating cost per discharge for each 10 percent increase in the intern-to-bed ratio.

SELECTING AN INDIRECT MEDICAL

EDUCATION ADJUSTMENT FACTOR

Selecting among these 12 estimates the 1 to be used as an adjustment factor for PPS is a policy choice. However, the choice made affects all hospitals, not just teaching hospitals. Because under PPS the total amount paid to hospitals remains the same when adjustments are made for particular hospitals or groups of hospitals, paying more to teaching hospitals results in paying less to nonteaching hospitals.

We recommended in our report that the Congress reduce the teaching adjustment factor for 1989 and beyond. We concluded that our estimate of 5.09 percent represents the best option for determining the additional payments to teaching hospitals for fiscal years 1990-95. Our reasons for this conclusion are fully explained in the report, and I will only highlight them here. This estimate

considers essentially the same factors that will be used to determine PPS rates during the period and is generally free from the influence of other issues affecting these rates. First, the estimate does not include the effect of outlier cases, which involve extremely high costs or long lengths of stay. Including outliers would compensate teaching hospitals more equitably for such cases, but equity would not be improved for other hospitals with outlier cases. We believe it is preferable that any shortcomings in outlier payment policy be addressed by revising that policy so that all hospitals are treated equally.

Second, the estimate was computed without limiting case mix and wages to their theoretical values. If these factors are limited, teaching hospitals would be compensated for potential shortcomings in the current PPS payment rates related to the two factors, but other hospitals would not. Again, we believe it is preferable to address any shortcomings directly by modifying case mix and wage index policies so that all hospitals benefit.

If the indirect medical education adjustment factor used the 5.09-percent estimate, payments to teaching hospitals would be reduced by \$808 million in fiscal year 1990, \$991 million in fiscal year 1991, and \$1.1 billion in fiscal year 1992. If the Congress decides to reduce the adjustment factor, as we believe it should, and if the Congress wants to use the reduced payments to teaching hospitals to lower overall Medicare outlays, the legislation would

have to specifically reflect that decision. Otherwise, under current law the reduction for teaching hospitals would be offset by increases in payments to nonteaching hospitals.

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That completes my prepared statement. I would be happy to address any questions you may have.