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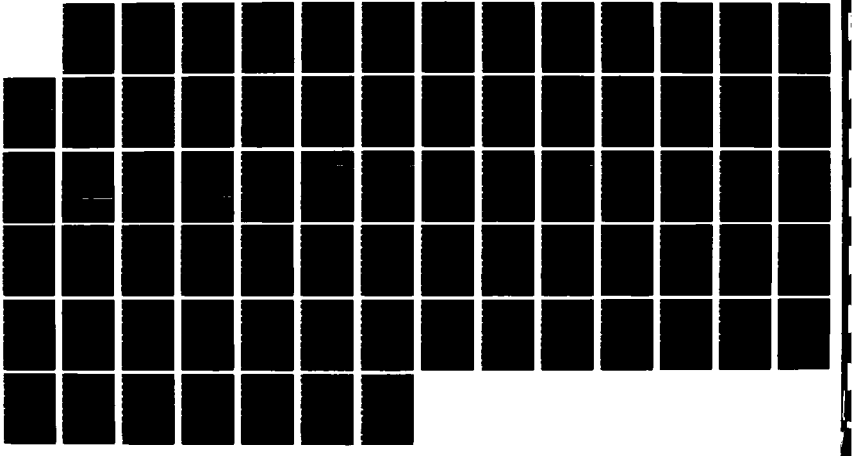

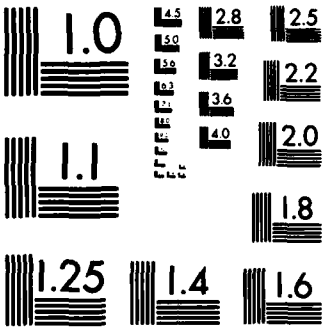

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United States General Accounting Office

GAO

Report to the Chairman, Subcommittee on Health, Committee on Ways and Means House of Representatives

August 1986

MEDICARE

Alternatives for Paying Hospital Capital Costs

GAO/HRD-86-93

GAO

United States
General Accounting Office
Washington, D.C. 20548

Human Resources Division

B-219307

August 11, 1986

The Honorable Fortney H. (Pete) Stark
Chairman, Subcommittee on Health
Committee on Ways and Means
House of Representatives

Dear Mr. Chairman:

This report presents alternative methods for paying hospital capital costs that would lessen the immediate effects of a prospective capital payment system on hospitals. We undertook this review in response to your request.

Comments from the Department of Health and Human Services were considered in finalizing the report. This report contains matters for consideration by the Subcommittee.

As requested by your office, unless you publicly announce the report's contents earlier, we will not make additional distribution for 2 days. At that time we will send copies to the Director, Office of Management and Budget; the Secretary of Health and Human Services; and other interested parties.

Sincerely yours,

Richard L. Fogel

Richard L. Fogel
Director

Executive Summary

Purpose

The Social Security Amendments of 1983 required the Department of Health and Human Services (HHS) to analyze methods for including capital costs related to inpatient services in Medicare's prospective payment system. HHS, industry associations, and others have developed various proposals for including capital costs in the prospective payment system or modifying the current cost reimbursement system.

The Chairman, Subcommittee on Health, House Committee on Ways and Means, asked GAO to identify the numerous proposals and evaluate them. GAO was asked to address the general principles involved with prospective payment of capital costs, the effects on hospitals of various types of proposals, and possible alternatives that would lessen any potential adverse effects.

Background

Medicare has developed a system for paying hospitals a predetermined fixed amount for specific inpatient services—a prospective payment system. The prospective payments do not include capital-related costs, such as depreciation and interest, which are paid on a reasonable cost basis. In fiscal year 1984, the first year of the prospective payment system, total estimated Medicare inpatient hospital costs were about $39 billion, of which HHS estimates 9 percent (or about $3.5 billion) were for capital expenditures.

In its March 1986 report, HHS recommended that all capital costs be included in the prospective payment system over a 4-year transition period. Other proposals put forth by hospital industry groups and health analysts vary in the types of capital costs they would include under a prospective payment system, the time frame during which a prospective capital payment system would be phased in, and many of the other mechanisms for deriving the amount of prospective payments.

Most proposals would eventually result in adding a fixed percentage to the prospective payments for operating costs. The add-on percentage would vary depending on the types of capital costs covered and the base period used to compute the payment rates.

Results in Brief

There is considerable uncertainty about the possible adverse effects that any of the proposals could have on hospitals' ability to raise funds for needed capital improvements. Because prospective capital payment could result in loans to or investments in hospitals being viewed as

involving greater risk, the availability of funds to hospitals from financial markets could be adversely affected. Thus, hospitals might find it more difficult to finance necessary capital improvements, which in turn could adversely affect access to quality health care for Medicare beneficiaries. But prospective capital payments would increase incentives for efficiency.

Given the significance of the proposed change, GAO believes the Congress should consider alternative ways to provide incentives for efficiency while attempting to minimize the risk of reductions in the availability of quality care. These alternatives include examining the length of the transition period to full prospective payment, initially covering only certain capital items on a prospective basis, or changing the current cost reimbursement system to provide greater incentives for efficiency.

Principal Findings

Medicare's current method of reimbursing hospitals' actual capital costs provides several incentives that can result in increased costs to the program. Cost reimbursement provides incentives to

- substitute capital for labor,
- borrow to acquire assets rather than use equity sources,
- acquire new equipment even though it may be only marginally needed, and
- refinance debt.

In addition, cost reimbursement implies regulation to maintain some control over payments. (See pp. 20 to 22.)

On the other hand, cost reimbursement guarantees that Medicare will pay its share of each hospital's capital costs for providing care to beneficiaries. This helps assure that beneficiaries have access to quality health care. (See p. 22.)

Theoretically, prospective payment of capital costs would reduce or eliminate the incentives under cost reimbursement that tend to increase costs to the Medicare program. Advantages are that it would

- treat labor and capital equally,
- encourage the most economical mix of debt and equity, and
- encourage reductions of current hospital excess capacity and proper future sizing.

In addition, prospective payment is consistent with the principles of a competitive marketplace; the more efficient hospitals would tend to be rewarded and the less efficient would generally be penalized. (See pp. 22 and 23.)

Prospective capital payment, however, has certain disadvantages and risks. For example, the prospective payment proposals would generally result in hospitals receiving less than actual costs during the first years of an asset's useful life and more than actual costs in later years. As a result, hospitals must accumulate large amounts in the later years of an asset's useful life to be able to finance replacement assets. This ability may not exist, particularly for hospitals with large amounts of uncompensated care. (See pp. 23 and 24.)

Hospitals with certain characteristics would tend to receive higher payments and some would tend to receive lower payments under prospective capital payment than under cost reimbursement. For example, newer hospitals generally have higher than average costs and would not be fully compensated for them, while older hospitals would receive more than their costs. However, the long-term effects of prospective capital payment cannot be estimated with confidence. A number of other hospital-specific factors, such as occupancy rate, would affect whether a hospital would receive more or less payment under a prospective versus a cost reimbursement system. (See ch. 3.)

The immediate effects on Medicare capital payments to individual hospitals can be predicted. However, because a capital payment system like that proposed by HHS, or like those of the other proposals, has not been tested, the long-term effect on hospitals' ability to raise the funds for needed capital improvements cannot be predicted with any certainty. GAO identified three options that would lessen the immediate effects on hospitals while providing time to assess the long-term effects on hospital capital markets of prospective capital payment. (See pp. 39 to 42.)

Matters for Consideration by the Subcommittee

The Subcommittee may wish to consider alternatives to HHS's proposal that would lessen the immediate effects of prospective capital payment on hospitals. These alternatives include:

1. Using a long transition period to full prospective capital payment to lessen the immediate effect on individual hospitals and to identify emerging problems and make adjustments if necessary.

2. Initially covering only movable equipment under a prospective capital payment system, which also would lessen the effect on individual hospitals and permit HHS to gain experience with prospective capital payments. Moreover, it would provide information to be used in deciding whether to move to a total prospective payment system for capital costs.

3. Making changes to the current cost reimbursement system to give hospitals greater incentives for efficiency similar to those of prospective capital payment. These changes could be targeted at perceived capital payment problems and therefore affect fewer hospitals.

Agency Comments

HHS recognized the merits of two of the three alternatives that GAO proposed. HHS commented that in its June 3, 1986, notice of proposed rulemaking on prospective capital payments, it had requested public comments on options similar to GAO's first two alternatives. However, HHS said that it disagreed with GAO's third alternative because it would not achieve the goals of prospective capital payment.

GAO believes that its third alternative—cost reimbursement with prospectively determined limits—is a viable alternative that could provide many of the advantages of prospective capital payment while adversely affecting fewer hospitals. The Urgent Supplemental Appropriations Act of 1986 (Public Law 99-349, July 2, 1986) imposed a moratorium on the administrative establishment of a prospective capital payment system until October 1, 1987. (See app. IX.)

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Abbreviations

AHA	American Hospital Association
D&I	Depreciation and Interest
DRG	diagnosis related group
E&I	Return on Equity and Interest Offsets on Funded Depreciation
GAO	General Accounting Office
HCFA	Health Care Financing Administration
HFMA	Healthcare Financial Management Association
HHS	Department of Health and Human Services
NCQHC	National Committee for Quality Health Care
PPS	prospective payment system
ProPAC	Prospective Payment Assessment Commission

Chapter 1

Introduction

In December 1985, the Chairman, Subcommittee on Health, House Committee on Ways and Means, requested that we review the various proposals on how capital costs should be treated under Medicare's prospective payment system (PPS). The proposals range from maintaining the current system of paying hospitals based on their actual costs to paying hospitals an all-inclusive, uniform national rate.

Background

The Medicare program, authorized by title XVIII of the Social Security Act (42 U.S.C. 1395), effective July 1, 1966, is a health insurance program that helps beneficiaries pay for the health services they receive. The program covers almost all persons age 65 and over and certain disabled persons. Medicare, which is administered by the Health Care Financing Administration (HCFA) within the Department of Health and Human Services (HHS), has two parts—Hospital Insurance (part A) and Supplementary Medical Insurance (part B).

Part B, covering physician, outpatient hospital, and various other health services, is financed by enrollee premiums (currently about 25 percent of total costs) and general revenues. This report does not deal with part B.

Part A covers inpatient hospital services, home health services, and certain other institution-based services. It is financed primarily by payroll taxes on employers and employees. HCFA administers part A with the assistance of health insurance companies called intermediaries (primarily Blue Cross plans), which contract with HCFA to process and pay claims for services.

The Social Security Amendments of 1983 (Public Law 98-21, Apr. 20, 1983) provided for Medicare payment for hospital inpatient services (part A) under a PPS rather than the former reasonable cost basis. Under PPS, Medicare pays most hospitals[1] a predetermined, fixed amount for inpatient hospital services. The amount paid for each patient depends on the diagnosis related group (DRG) into which the patient was classified based on the principal diagnosis of the condition for which he or she was hospitalized. DRGs constitute a patient classification system that groups patients according to the expected level of resources needed to treat them. Under this system, Medicare pays a predetermined rate for

[1]Certain categories of hospitals, such as psychiatric and children's hospitals, are exempt from PPS and are paid on a cost reimbursement basis. New Jersey and Maryland have waivers to PPS; hospitals in these states are paid on a different basis.

all inpatient operating services, including routine care, intensive care, and ancillary services. PPS is being phased in over 4 years (fiscal years 1984-87), during which an increasing portion of hospital payments are made up of the DRG rates and a decreasing portion based on each hospital's cost. The phase-in was designed to lessen the immediate effects of the new system on hospitals and to give them time to adjust.

The prospective payment rate does not include (1) capital-related costs, such as depreciation, interest, and rent, or (2) direct medical education costs. Both of these cost categories continue to be paid on a reasonable cost basis. The portion of capital and medical education costs paid by Medicare is determined by the hospital's ratio of Medicare utilization to total utilization.

Section 603(a)(1) of Public Law 98-21 required HHS to study, develop, and report to the Congress on methods by which capital-related costs associated with inpatient hospital services could be included within the prospective payment amounts. The study was due in October 1984, but was not submitted until March 1986.

Current Medicare Reimbursement System for Capital Costs

The Social Security Act provides for Medicare to pay hospitals for capital costs, such as interest and depreciation, on a reasonable cost basis while paying for operating costs on a prospective basis. Hospitals receive payments for capital costs during the year based on estimated costs, and final settlements are made after the end of each hospital's accounting year. An annual cost report submitted by hospitals to the intermediaries is the basis for determining final payments for capital costs. Hospital cost reports are desk reviewed, and some are field audited, by the intermediaries. Final settlements for capital costs are limited to costs found by the intermediaries to be allowable and related to patient care.[2]

The following capital costs are reimbursed to hospitals by Medicare:

- Depreciation expense on buildings and on fixed and movable equipment.

[2]Medicare has extensive rules for determining which costs, and the amount of costs, are allowable. Some of the principles involved in these rules are that costs must be actually incurred, must not represent hospital payments in excess of what a prudent purchaser would pay, and must result from arm's length transactions. Also, to be reimbursable a cost must be related to patient care; that is, it must be related to the treatment of patients. Medicare does not pay for such things as stock maintenance costs or income taxes because it has determined that they are not related to patient care.

- Leases and rentals (including license and royalty fees) for the use of assets that would be depreciable if the provider owned them outright.
- Interest expense incurred in acquiring land or depreciable assets (either through purchase or lease) used for patient care.
- Insurance on depreciable assets used for patient care or insurance that provides for the payment of capital-related costs during business interruptions.
- Taxes on land or depreciable assets used for patient care.
- A return on equity capital for proprietary providers.[3]

Table 1.1 shows by category Medicare capital costs in fiscal year 1981, the base year for Medicare's prospective payment rates for operating costs. Total capital costs equaled about 7.4 percent of total Medicare payments.

Table 1.1: Medicare Capital Payments as a Percent of Operating Costs in Fiscal Year 1981

Expense	Percent of operating costs
Depreciation:	
Building and fixed equipment	4.10
Movable equipment	1.08
Interest	1.71
Return on equity (paid to proprietary hospitals only)	.50
Total capital expense	**7.39**

Source: The Blue Cross and Blue Shield Association.

A similar breakdown of capital costs by type of expense was not available for subsequent years.[4] Applying these percentages to estimated total Medicare inpatient hospital costs in fiscal year 1984 ($38.9 billion), the first year under the prospective payment system, indicates that Medicare made capital cost payments of about $2.9 billion. Of the $2.9 billion, about 55 percent ($1.6 billion) was for depreciation of fixed assets, 14 percent ($0.4 billion) for depreciation of movable assets, 23 percent ($0.67 billion) for interest, and 7 percent ($0.2 billion) for return on equity. HCFA estimates that fiscal year 1984 payments for capital

[3]Under the Consolidated Omnibus Budget Reconciliation Act of 1985, return on equity payments are being phased out for inpatient hospital services and will no longer be paid beginning in fiscal year 1990.

[4]HHS used the same percentages in developing table II-1 in its March 1986 report to the Congress.

were about 9 percent of total Medicare payments to hospitals for inpatient hospital services—about $3.5 billion of $39 billion.[5]

Depreciation, the largest element of capital costs, is a concept developed by accountants to allocate the cost of assets with relatively long life spans to individual accounting periods over which the assets are used. In effect, depreciation is a method of charging the cost of the portion of assets "used up" during a period to the revenues generated during that period. Hospital buildings, for example, are generally depreciated over 40 years. Theoretically, when they reach that age, they are no longer useful as hospitals and, therefore, have no value or only a small salvage value. That hospitals are often used longer than 40 years and their market value can increase rather than decrease over time has no relationship to the hospital's ability to claim depreciation as a cost. After 40 years, the hospital building would be fully depreciated, and no more depreciation could be claimed as a cost under Medicare's cost reimbursement system.[6]

The concept of depreciation has a long history and is used not only for Medicare, but also for financial reporting and income tax purposes. For the latter purposes, the effect of depreciation is a reduction in income and taxes paid. However, the major effect of depreciation for hospitals paid for treating Medicare patients is an increase in cash flow to hospitals because Medicare pays depreciation.

Funding of depreciation is the practice of placing funds in a segregated account(s) for the future acquisition of assets. Medicare's cost reimbursement system provides an incentive to encourage hospitals to fund depreciation. Interest earned on funded depreciation is not deducted from interest expense when computing allowable interest expense although interest earned on other investments is deducted from interest expense. There is no requirement, however, that depreciation be funded. Thus, a hospital can use the funds Medicare pays for depreciation in any manner it sees fit and is not required to put aside funds for future asset replacement.

[5]In its technical comments on the report, HHS cited figures of $41.5 billion in total payments for inpatient hospital services, $3.5 billion for capital costs, and 8.4 percent of total payments for capital costs. We had used a 7.4-percent figure for fiscal year 1984 because this was the estimate included in HHS's March 1986 report on prospective capital payments. In verifying the numbers in the HHS comment, we found that HCFA had included total part A payments in computing its estimate. We removed nonhospital payments in the figures given here.

[6]Improvements made to the building could still be depreciable, but the building's original cost would have been fully depreciated.

Allowable costs for Medicare purposes can be less than what hospitals believe are their total capital costs. This results because Medicare's capital cost payments are based on allowable costs as defined by the program and a number of principles have been established to control capital cost payments. For example, Medicare has rules for determining the reasonableness of interest costs and lease payments that can result in hospitals receiving less from Medicare than they pay for the assets or their use.

Wide Range of Proposals for Prospective Capital Payment

Numerous proposals have been made for including capital costs under Medicare's inpatient hospital prospective payment system, and these proposals use a wide range of mechanisms for determining the amount of the prospective payment. We selected six proposals—HHS's and those of five hospital industry groups/health analysts—that cover the spectrum of the proposals. Details about these proposals are included in appendixes III through VIII. A brief summary of each proposal follows.

HHS Proposal

HHS proposes to develop one uniform national rate for urban hospitals and another for rural hospitals which would be fully incorporated into PPS by fiscal year 1991. There would be a 4-year phase-in period (fiscal years 1987-90) during which capital payments to hospitals would be a blend of hospital-specific costs and the national rates.

The national rates would be computed using data from 1983 audited hospital cost reports. The 1983 base would be adjusted by removing capital costs related to return on equity and interest offsets for funded depreciation. The base would then be updated for inflation between 1983 and 1986 by using the capital market basket. During the period 1987-91, the base would be inflated using the prospective payment system update factor. The national rate would account for 20 percent of the total payment to each hospital in fiscal year 1987, 40 percent in 1988, 60 percent in 1989, 80 percent in 1990, and 100 percent in 1991.

HHS's proposed computation of the hospital-specific portion of the payment during the transition is more complex. HHS is proposing that it be composed of the following two payment amounts:

1. Depreciation and interest. The phase-out percentage for this factor is proposed to be 80 percent in fiscal year 1987, 60 percent in 1988, 40 percent in 1989, 20 percent in 1990, and 0 in 1991.

2. Return on equity and interest offsets on funded depreciation. The phase-out percentage for this factor is proposed to be 75 percent in fiscal year 1987, 50 percent in 1988, 25 percent in 1989, and 0 in 1990.

These two hospital-specific cost factors would be inflated annually using the capital market basket until each factor is phased out. The two payments are to be added together (using the appropriate percentages for each fiscal year) and used as the hospital-specific portion of the payment to each hospital unless a hospital's actual allowable capital costs as shown in its cost report are less than the amount computed above. If actual allowable costs are less than the amount computed using the HHS methodology, actual costs will be used for the hospital-specific portion of the rate.

American Hospital Association Proposal

The American Hospital Association (AHA) has stated that it supports replacing the current Medicare cost pass-through capital payment method with a method that incorporates payment for hospital capital into Medicare prospective payment rates, yielding a consolidated, single payment for each DRG.[7] While AHA has not recommended any specific percentage to add on to the current prospective payments rates, it includes several elements that are not now paid by Medicare. AHA also recommends a 15-year transition period, which would include a "floor payment option" to protect hospitals with high capital costs and a "blended phase-in option."

According to AHA, all capital costs should be incorporated into Medicare prospective payments, yielding a single payment to the hospital, without earmarking amounts for either capital or operations. In addition, capital payments (after the 15-year transition period) should not vary as a result of management decisions with respect to such factors as ownership, tax status, capital-labor mix, and debt-versus-equity financing decisions.

[7]AHA's support for a capital add-on to the DRG amounts is conditional on assurance that DRG operating prices will be both adequate and equitable and that the aggregate amount of capital to be made available under Medicare will be sufficient to ensure that all well-managed hospitals are able to meet the needs of their communities.

National Committee for Quality Health Care Proposal for an Age-Adjusted Percentage Add-On

Capital payments under a plan drafted by the National Committee for Quality Health Care would be included in Medicare's DRG payment rates. The total payment per case would be based on the DRG rate, the industry average capital percentage, and a hospital-specific age related index. The unique feature of this proposal is the use of an age-related index to determine the amount of capital payments. As the hospital's weighted average age of assets increases (that is, the older its assets are), Medicare payments would decrease. When a hospital makes capital expenditures, the hospital's average age of assets is reduced and its Medicare payments would increase.

One of the major ways in which this alternative differs from a flat percentage add-on is that it limits the reduction in payments to hospitals that have had recent substantial capital projects.

Kalison/Averill Proposal for a DRG-Specific Percentage Add-On

Health care specialists Michael J. Kalison and Richard Averill have developed a prospective Medicare capital payment proposal that would recognize differences in capital consumption by DRG. They developed their proposal in an attempt to find a method of matching the capital resources consumed in the treatment of individual Medicare patients with the per-case payments made under PPS.

The Kalison/Averill proposal calls for developing a national set of DRG-specific capital factors that would be applied to each patient's DRG operating payment to arrive at a total per-case payment. The capital costs associated with each DRG would be determined through two separate cost allocation processes. Building and fixed equipment capital costs would be allocated based on such statistics as patient days or admissions. Equipment capital costs would be allocated based on charges from certain cost centers. These capital expenses would then be combined and aggregated to each DRG.

Information from Medicare cost reports or the PPS claims data base would be used to determine a DRG-specific capital cost for each hospital. These costs would be aggregated for all hospitals to determine capital costs for each DRG in a process similar to that used to develop national DRG cost weights under PPS. The capital payment rate for each DRG would be determined by multiplying the average capital cost per case by the appropriate capital cost weight.

Healthcare Financial Management Association Proposal for a Combined Prospective and Retrospective System

The Healthcare Financial Management Association (HFMA) has developed a proposal to continue cost reimbursement for plant (land, buildings, fixed equipment, betterments, and improvements) and a fixed add-on percentage to DRG payment rates for major and minor movable equipment. Capital costs for building and fixed equipment would continue to be paid on a reasonable cost basis because of the longer useful life of those assets. Movable equipment would be paid prospectively because the potential for substituting the capital costs of equipment for operating costs is much greater for movable equipment than for plant.

Under HFMA's proposal, payment for the costs associated with movable equipment would be incorporated into the federal portion of DRG payment rates using industry-wide equipment cost averages. A percentage to be added to these rates would be developed as follows:

1. Determine industry-wide depreciation costs, the lease costs of equipment, and interest costs on equipment-related debt.

2. Determine the percentage of total costs by dividing the total equipment costs by industry-wide operating costs (net of capital and direct teaching costs).

The equipment element would be added to the hospital market basket used to calculate the annual update of DRG payment rates, and the equipment element would be updated by an appropriate index as part of the annual update of DRG payment rates.

Capital Pools

Several organizations, including the American Health Planning Association, have suggested capital pooling as a means of assuring that hospitals that are most in need receive sufficient capital funding.

Under one alternative, all capital payments in a region or state would be paid into a capital reimbursement pool. Capital would then be distributed by a state or regional authority to individual hospitals based on their ability to compete effectively to provide needed services. It is suggested that the existing structure for state and local health planning could be used as the base to develop such a system.

Another alternative provides that the designated regulatory entity would distribute payments on the basis of predetermined criteria. The latitude of the local agency in distributing funds would depend on the degree of specificity of the criteria established.

Another pooling alternative would put only costs for hospital plants into the fund and distribute that based on need or predetermined criteria. Funding for equipment would be included in the DRG prices.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Health, House Committee on Ways and Means, asked us to review the various proposals dealing with payment for capital-related costs. He asked that we evaluate the features of the proposals and the effect they would have on hospitals. Regarding the HHS proposal, the Chairman requested that we review it to the extent feasible. Detailed information on that proposal was not available until the end of March 1986.

In discussions with the Subcommittee's office, we were advised that the Subcommittee was interested in the main principles behind and the general mechanisms included in the proposals for prospective capital payment rather than the particulars of the individual proposals. The Subcommittee was especially interested in

- how the types of mechanisms for arriving at prospective payment rates would affect classes of hospitals,
- any potential adverse effects associated with prospective capital payment, and
- possible alternatives that could lessen the potential adverse effects.

For our analysis, we collected studies, position papers, and other data from various industry groups and other parties interested in Medicare capital payments to hospitals. We reviewed the proposals, as well as analyses of them performed by others. To supplement and clarify the information in the proposals, we discussed the proposals and analyses with HHS and industry representatives. A bibliography of the principal documents we used is included as appendix I.

Because of the limited time available for our review, we were not able to do detailed statistical analyses of the effects that the capital cost proposals might have on various categories of hospitals. We were able to make some conceptual analyses of the various proposals. In this report, we discuss the major issues related to prospective capital payments:

- Chapter 2 discusses the advantages and disadvantages of cost reimbursement and prospective capital payment.
- Chapter 3 discusses the potential effects on various types of hospitals of prospective capital payments.

Appendix III discusses HHS's proposal. Appendixes IV through VIII present relatively detailed discussions of the major types of prospective capital alternatives put forward by hospital industry groups and health care analysts.

Our work was conducted from January through March 1986 in accordance with generally accepted government auditing standards.

Advantages and Disadvantages of Cost Reimbursement and Prospective Payment for Hospital Capital Costs

Both cost reimbursement and prospective payment for capital have potential advantages and disadvantages for hospitals and Medicare.

Cost reimbursement helps assure that hospitals will be paid their actual costs for Medicare patients' use of needed improvements and renovations, thereby enhancing their ability to obtain the funds for such projects. This, in turn, helps assure access to quality service for Medicare beneficiaries. However, cost reimbursement implies extensive regulation to prevent manipulation by hospitals to maximize Medicare payments and to protect against the incentives of the cost reimbursement system to overinvest in capital.

Prospective payment, on the other hand, lessens the need for government regulation of capital costs and places on hospitals the burden of making correct decisions about capital expenditures and bearing the consequences of those decisions. However, because of the importance of Medicare to hospitals (about 40 percent of hospital use on a nationwide basis is by Medicare beneficiaries), its capital payment policies can affect hospitals' ability to raise funds for needed capital improvements. This, in turn, could affect access to and quality of beneficiary services.

Major Disadvantages of the Current Payment System

Under the current payment system, hospitals are paid prospectively for their operating costs and retrospectively for their capital costs. Thus, payments for operating costs are fixed, while those for capital costs are open ended. This can give hospitals an incentive to substitute capital for labor because decreasing labor costs does not lower the payment received from Medicare but increasing capital costs results in higher payments. Therefore, on an overall basis the hospital receives greater Medicare payments in relation to total hospital costs if capital goods are substituted for labor. Of course, because of the nature of the work in the hospital environment, the ability to substitute capital for labor is somewhat limited. Primarily, capital goods can be used to increase the productivity of labor. For example, a more automated laundry might enable the hospital to employ fewer laundry workers. Medicare costs would increase if the capital costs of the new laundry equipment were greater than those of the old equipment. A decrease in labor costs would not affect the prospective payment rates.[1]

[1]The prospective payment system for operating costs authorizes adjustments to the DRG rates to reflect productivity changes. Thus, if there were a general trend in the hospital industry toward greater productivity in the laundry area, a productivity adjustment could result.

Another potential problem is that paying for capital-related expenses on a cost basis can give hospitals an incentive to borrow to acquire capital assets. Because interest expense is allowed and depreciation does not depend on the source of funds (equity[2] vs. borrowed funds) used to acquire capital goods, hospitals can have an incentive to maximize borrowing. The cost reimbursement system has controls to help prevent maximization of borrowing to finance the acquisition of capital goods. This is because the interest on unnecessary borrowing (when a hospital has excess cash or investments) is not recognized as an allowable cost and interest income earned by a hospital generally is deducted from interest expense when computing allowable expenses for Medicare reimbursement. Table 2.1 shows the equity financing ratios for hospitals and the manufacturing industry for 1980 and 1984. Although the equity percentage declined (and the debt ratio increased) during the period, the equity ratio for hospitals is comparable with the manufacturing industry's ratio.

Table 2.1: Equity Financing Ratios—1980 and 1984

	Year		Percent change
	1980	1984	
All hospitals	0.535	0.480	−10
Rural	0.613	0.523	−15
Urban	0.514	0.480	−7
Teaching	0.550	0.493	−10
Nonteaching	0.534	0.478	−10
Manufacturing	0.496	0.477	−4

Source: Prospective Payment Assessment Commission Report to the Congress, Medicare Prospective Payment and the American Health Care System, February 1986.

A third potential problem is that cost-based capital payments do not give hospitals incentives to forgo unneeded equipment. However, because equipment also increases operating costs (Arthur D. Little, Inc., estimated that every $1 in equipment generates $0.22 in annual operating costs[3]), paying operating costs on a prospective basis mitigates this.

[2]The term "equity" is normally only used for proprietary firms. In this report, we also use the term to refer to nonprofit hospitals' excess of revenues over expenses (similar to retained earnings for proprietary firms) and donated funds used to acquire assets (similar to paid in capital for proprietary firms).

[3]"Development of an evaluation methodology for use in assessing data available to the certificate of need and health planning programs," Office of the Assistant Secretary for Health, Contract No. 233-79-4003, 1982.

A fourth potential problem with cost reimbursement is that hospitals can have an incentive to maximize Medicare payments by refinancing debt. This results because in the earlier years of a loan, Medicare payments for interest and depreciation exceed the amount of the payments required on the loan. Therefore, cash flow can be enhanced through refinancing.

Finally, cost reimbursement for capital goods implies, as is the case with Medicare, extensive regulation to prevent payment maximization. Many believe that it is better to depend on the marketplace than on regulation to control costs.

Advantages of Cost Reimbursement for Capital Costs

The primary advantage of cost reimbursement for capital costs is that it enhances the hospitals' ability to obtain the funds for needed capital improvements, such as acquiring equipment and undertaking renovations or replacements. In effect, cost reimbursement guarantees the hospital that it will be paid for Medicare's portion of the use of the assets, which averages about 40 percent. This guarantee of payment should enhance hospitals' ability to obtain funds for capital expenditures.

An enhanced ability to obtain capital helps assure that hospitals can acquire new technology and provide high-quality facilities. This, in turn, helps assure that Medicare beneficiaries will have access to quality health care.

Potential Advantages of Prospective Payment for Capital Costs

Although the various proposals for prospective capital payments should theoretically have somewhat different ultimate effects, they have certain purported common advantages. Prospective capital payments would extend to capital costs the incentives for efficiency provided for operating costs by the current PPS. In addition, prospective payment would remove some of the undesirable incentives in the current cost reimbursement method.

One problem that prospective payment for capital costs would address is the current incentive for hospitals to substitute capital for labor (see p. 20). If both capital and labor costs were paid prospectively, hospitals would have an incentive to carefully evaluate the trade-offs between capital and labor and select the mix which provides the lowest total cost to the hospital. Medicare would benefit from lower total costs resulting from such action, assuming appropriate adjustments are made over time to the prospective payments.

Another advantage of prospective capital payment is that it would lessen the current incentive toward borrowing rather than using equity as a source of capital (see p. 21). Under prospective payment for capital, each hospital would have the incentive to review its various sources of funds in order to finance its assets in the least costly manner. Hospitals would also have more of an incentive to consider the level of interest rates when timing the purchase of assets.

Prospective capital payments also would encourage the proper sizing of future hospitals and a reduction in the current excess hospital capacity. As discussed on page 29, underutilized hospitals would be at a substantial disadvantage under prospective payments for capital. Medicare would subsidize unused beds less because capital payments would be based on national average occupancy rates, and highly utilized facilities (those above the average) would be rewarded by receiving higher payments under prospective capital payments than under cost reimbursement. Because of the incentives for high utilization, the need for federal involvement in hospital planning and capital expenditure reviews should be reduced. Hospitals would be at risk for the consequences of their own capital decisions.

Finally, the concept of prospective payments for capital is consistent with the principles of a competitive marketplace because the most efficient hospitals would tend to be rewarded and the least efficient would generally be penalized. In theory, the government would not subsidize hospitals with high capital costs, and the consequences of capital decision making would be placed on the hospital.

Potential Disadvantages of Prospective Capital Payments

Just as the potential advantages of prospective capital payment are the opposite of the disadvantages of cost reimbursement, the potential disadvantages of prospective capital payment are the converse of the advantages of cost reimbursement. While cost reimbursement should enhance the ability of hospitals to obtain funds for capital expenditures through its "guarantee" of payment, prospective capital payment could decrease this ability because capital expenditures would not result in increased Medicare payments but might increase both capital and operating costs. This could adversely affect a hospital's profitability and its ability to obtain funds.

Generally, the prospective capital payment proposals would result in hospitals receiving less than actual capital costs during the first years of

an asset's useful life and more than actual costs in the later years (see p. 27). Thus, in theory, hospitals can accumulate funds in the later years of an asset's life and have substantial funds available to replace the asset when it wears out or to acquire new technology. However, whether hospitals will actually be able to accumulate the often large amounts necessary is questionable. This could be particularly true for public hospitals with high levels of uncompensated care. Faced with the option of seeking appropriation of local tax revenues or using excess Medicare capital payments for older assets to fund uncompensated care, it would be tempting to use the excess Medicare funds. Nonprofit hospitals with large amounts of uncompensated care could be similarly affected, depending on their ability to raise funds through donations.

To the extent that a prospective capital payment system adversely affects hospitals' ability to obtain funds for needed new technology and renovation/replacement of assets, it could also adversely affect Medicare beneficiaries' access to high-quality care. We are not aware of any studies that directly address this issue.

One indication of hospitals' ability to accumulate funds is the extent of funded depreciation in the industry.[4] HCFA does not have data on the amount of funded depreciation or the number of hospitals that use this method of accumulating funds for modernization/replacement of assets. However, HHS estimated that the interest earned by hospitals on funded depreciation and other funds where interest income is not offset against interest expenses was $65 million in 1983. The Prospective Payment Assessment Commission (ProPAC)[5] estimated that such interest was $50 million to $90 million. We extracted data from HCFA's 1984 cost report tapes which showed that about 55 percent (3,556 of 6,491) of hospitals reported that they had at least some funded depreciation. If it is assumed that the average interest rate on funded depreciation was 10 percent, total funded depreciation would range from about $500 million to $900 million based on ProPAC's estimated interest offsets. This is relatively little for an industry that the same cost report data showed had assets of $161 billion and indicates that on the average, hospitals with funded depreciation have accumulated between about $140,000 and $250,000.

[4]Funded depreciation is a technique whereby money is set aside in special accounts solely for the purpose of accumulating funds for asset replacement/acquisition.

[5]ProPAC is an independent commission created by the Congress to provide expertise and experience in health care delivery, financing, and research. ProPAC analyzes PPS and advises HHS and the Congress on ways to improve it.

Potential Effects on Medicare Costs and Hospitals of Prospective Capital Payments

Most prospective capital payment proposals base payments on average hospital capital costs. Because of this, different groups of hospitals would be affected differently by prospective capital payment. For example, older hospitals (generally government owned and small rural hospitals) usually have lower than average capital costs and would receive more under prospective capital payment than under cost reimbursement. Newer hospitals (generally for-profit hospitals) would receive less. Also, hospitals with high occupancy rates (generally large and/or nonprofit hospitals) would receive more than under cost reimbursement, and those with low occupancy rates (generally for-profit and/or small hospitals) would receive less. To mitigate these effects, the proposals normally include a transition period of various lengths during which capital payments are based partially on hospital-specific costs and partially on prospective rates.

Medicare's total payments for capital costs would remain unchanged if DRG rates were increased by a percentage equal to the national average hospital capital costs. Medicare's payments would increase if additional items, such as return on equity for nonprofit hospitals, were considered as capital costs as AHA's proposal would. Medicare payments would decrease if DRG rates were increased by less than the percentage of national average costs as HHS's proposal would. Using such factors as minimum allowable occupancy rates and removing return on equity payments from the base to compute the percentage increase would have the effect of paying less than average costs. Of course, similar controls could be incorporated into the cost reimbursement system.

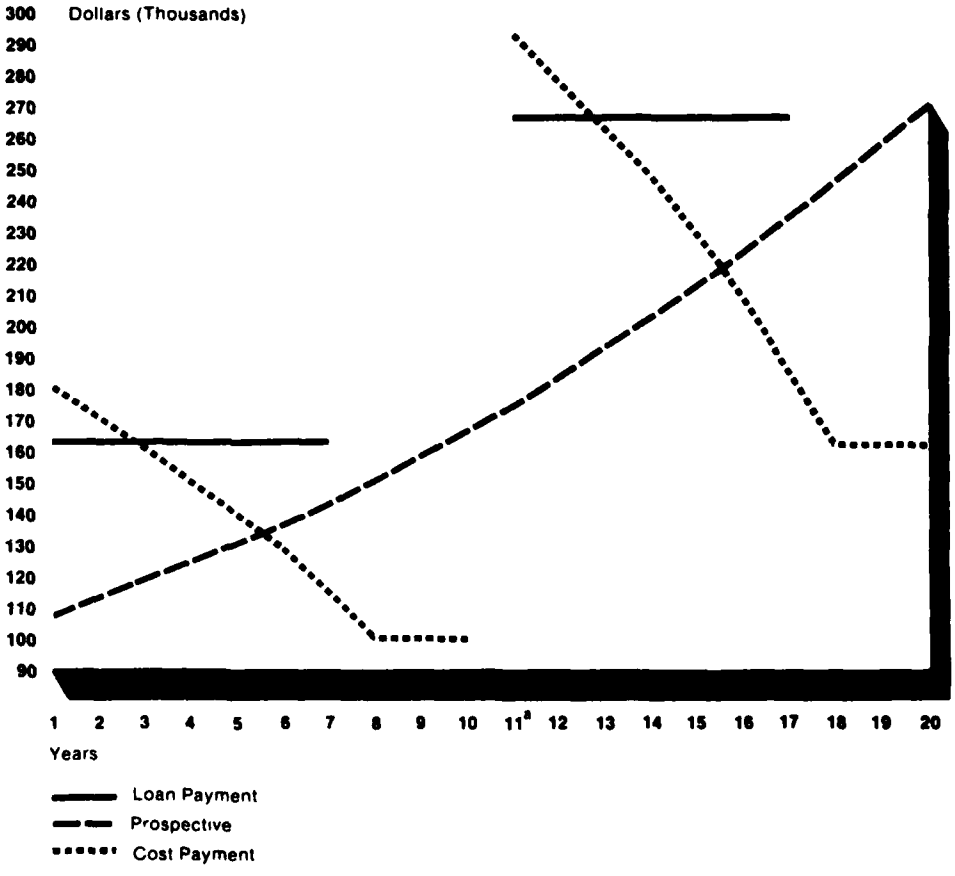
Because of uncertainties about the long-term effects of prospective capital payment on hospitals and their ability to obtain the funds necessary for procuring new technology and replacing/renovating assets, we looked at ways to achieve the objectives of prospective payment while providing time to assess the effects. Three options are discussed.

Medicare Payments in a Cost Reimbursement Versus a Prospective Payment System

The proposals for a prospective payment system for capital costs generally call for an add-on to the DRG payment rates to cover capital costs. The add-on is usually expressed as a percentage of the DRG rates based on average capital costs nationwide. Figure 3.1 illustrates a hypothetical example of Medicare payments under the current cost reimbursement system and a prospective payment system and also shows the mortgage payments the hospital would make. The example shows what would occur for a hospital asset costing $1 million, having a useful life of 10 years, and financed by an $800,000, 7-year note payable in equal annual

installments at a 10-percent interest rate. The example assumes that annual adjustments to the capital add-on will equal 5 percent, that all the patients treated are eligible for Medicare,[1] and that the hospital's capital costs are equal to the national average costs per case. After 10 years the item is replaced at a cost that reflects annual inflation of 5 percent.

Figure 3.1: Comparison of Medicare Capital Payments Under Cost Reimbursement and Prospective Capital Payment Systems



[a]Asset replaced in year 11

In the example, over the asset's 10-year life, total Medicare payments for capital costs would be equal under both payment systems. Under the cost reimbursement system, Medicare payments exceed the financing

[1]If Medicare utilization were 40 percent, for example, each year, the graph would be the same except that Medicare payments would equal 40 percent of total amounts.

payment during the first 2 years, are lower than the financing payment during years 4 through 7, and again exceed financing payments (which are 0) during years 8 through 10. On the other hand, under an add-on prospective payment system, Medicare payments would be lower than the financing payments through the loan period (years 1 through 7) and would be progressively greater than the financing payments in years 8 through 10. The cycles are identical for the replacement asset but at a higher cost level because of the effects of inflation.

The example illustrates how under cost reimbursement a hospital could accumulate surpluses during the early years to meet financing payments in the middle years. In the later years, additional funds could be accumulated for replacement purposes. Under the add-on prospective payment system, a hospital would need to have accumulated funds before acquiring the asset if it were to be able to pay for the financing. If the asset lasts longer than 10 years, the hospital would continue to obtain payments under the add-on method, while under the current cost method, the hospital would receive payments equal to its costs—nothing for depreciation and interest.

The basic difference among the DRG add-on proposals is the degree to which they would move the add-on payment curve up or down the chart. HHS's proposal would lower the curve because it would adjust the add-on percentage to remove certain items currently allowed—that is, return on equity payments to proprietary hospitals and not requiring offset of interest earned on funded depreciation. Also, HHS's proposal, in effect, sets a minimum occupancy rate lower than current rates because 1983 data would be used and average occupancy rates were then higher than they are today. On the other hand, the AHA proposal would raise the curve because it would include certain items not currently paid (a return on equity for not-for-profit hospitals, for example).

Where Do Hospitals Fall in Relation to the Prospective Payment Curve Today?

Based on 1981 data, hospitals have capital costs that vary from less than 2 percent to more than 20 percent of total annual operating costs. Because capital costs averaged about 7.4 percent of total Medicare inpatient hospital costs, individual hospitals would be affected dramatically if a system for capital costs involving an add-on to DRG rates were implemented today. Hospitals at the low end of the range would receive substantially higher capital payments than they do under cost reimbursement, and hospitals at the high end would get much less. However, Medicare payments to all hospitals would remain the same if the add-on percentage was equal to current average capital costs.

The range among hospitals in the percentage of total costs represented by capital costs leads to the question of the need for a transition period. This issue is discussed on page 35.

Potential Problems With Using Average Capital Costs to Establish Prospective Payments

Most proposals for prospective capital payment base them on national average capital costs. There are three main potential problems with using national average capital costs for this purpose.

Occupancy Rates

First, average capital costs depend greatly on average occupancy rates. For example, if a 100-bed hospital has $1 million in capital costs in a particular year, its average capital costs per patient day would be about $27 if its occupancy rate were 100 percent, but about $55 if its occupancy rate were 50 percent. Establishing prospective payments for capital costs based on national average capital costs means that the payments would be based on national average occupancy rates. Table 3.1, which lists the national average hospital occupancy rate between 1975 and 1985, shows that average occupancy has been decreasing since 1981. This resulted because both the number of admissions to hospitals and the average length of stay have decreased for Medicare patients and the population as a whole.

Table 3.1: Average Hospital Occupancy Rates—1975-85

Year	Percent occupancy rate	Change from prior year
1975	75.0	
1976	74.6	−0.4
1977	73.8	−0.8
1978	73.6	−0.2
1979	73.9	+0.3
1980	75.6	+1.7
1981	76.0	+0.4
1982	75.3	−0.7
1983	73.5	−1.8
1984	69.0	−4.5
1985	64.5	−4.5

Source: AHA reported data.

Because of the decrease in the average occupancy rates, the choice of a base year for establishing a prospective capital payment rate has taken on increased importance. As occupancy declines, a hospital's capital costs per patient increase because there are fewer patients to spread the costs over. If occupancy in the base year for prospective capital payment is higher than it currently is, hospitals will receive less under prospective capital payment than they would under cost reimbursement. The following example illustrates this. In our example of a 100-bed hospital with capital costs of $1 million. if the hospital had the national average occupancy rate (73.5 percent) in 1983, its capital costs per patient day would have been about $37. If in 1985 it again had the national average occupancy rate (64.5 percent), its capital costs would have been about $42 but it would have been paid about $37 if a prospective capital payment was based on 1983 cost data.

In effect, the average occupancy rate in the base year becomes the minimum occupancy rate for hospitals to recover their full capital costs, and a lower average occupancy rate than in the base year translates into Medicare savings. HHS's proposal uses 1983 as the base year, and the difference between occupancy rates then and now (about 9 percent) results in lower payments than under cost reimbursement and provides most of the $11.4 billion 5-year savings HHS estimates will result under its proposal.

Table 3.2 lists average occupancy rates for various categories of hospitals generally for 1984. These occupancy rates illustrate that hospitals with a lower than average base year occupancy rate of 73.5 percent (for-profit and small hospitals) would likely receive less under prospective capital payments than they currently do; this could lead to financial problems for these hospitals. On the other hand, hospitals with higher than average occupancy rates (such as large and nonprofit hospitals) would tend to receive higher Medicare payments under a prospective capital system than under cost reimbursement.

Table 3.2: Occupancy Rates in 1984 by Category of Ownership and Size

	Occupancy (percent)			
Number of beds	Nongovernmental nonprofit	For profit	Local government	State government
Overall	71.4	57.4	64.6	71.9
6-24	38.6	40.4	37.9	21.3
25-49	45.1	44.7	43.6	37.4
50-99	58.7	51.9	55.5	48.8
100-199	65.9	55.5	65.8	66.2
200-299	71.8	61.6	69.5	68.0
300-399	72.8	65.2	69.6	79.2
400-499	74.9	61.9	71.3	75.6
500 or more	77.6	66.4	78.4	75.0

Source: AHA Hospital Statistics, 1985 Edition.

Age of Assets

The second potential problem with using national average capital costs as a base relates to the age of hospitals. The national average cost reflects the national average age of hospital buildings and equipment. In general, the older a facility, the lower its capital costs because of the effects of inflation on construction costs over the years and the fact that interest rates were much lower in the past—for example in the 1960's. The same is true for hospital equipment, but this should have a less dramatic effect because the useful life of equipment is generally much shorter than that of buildings. The national average is used for all proposals for prospective capital payments except for one.[2]

Using the national average would generally result in hospitals that are older than average receiving more under a prospective capital payment system than they do under cost reimbursement and new hospitals receiving less. The age of hospital assets varies with respect to ownership, location, and size. As a result, these factors will influence capital payments to hospitals. Table 3.3 shows hospital ages according to those categories.

[2]The National Committee for Quality Health Care proposal adjusts payments for each hospital based on the age of its assets, and therefore, does not require a transition period.

Table 3.3: Age of Hospital Assets by Category of Ownership, Location, and Size

Category	Asset age	
	Mean	Median
National average	8.3	7.7
Ownership:		
Government	8.9	8.4
Nonprofit	8.0	7.6
For-profit	5.4	4.5
Location:		
New England (ME, NH, VT, MA, RI, CT)	9.0	8.8
Mid-Atlantic (NY, NJ, PA)	8.8	8.5
South Atlantic (DE, MD, DC, VA, WV, NC, SC, GA, FL)	7.3	7.1
East North Central (OH, IN, IL, MI, WI)	8.3	7.9
East South Central (KY, TN, AL, MS)	7.6	7.6
West North Central (MN, IA, MO, ND, SD, NB, KS)	9.2	8.5
West South Central (AR, LA, OK, TX)	7.6	7.0
Mountain (MT, ID, WY, CO, NM, AZ, UT, NV)	8.0	7.1
Pacific (WA, OR, CA, AK, HI)	7.2	6.8
Size—number of beds:		
Rural	8.9	8.4
1-49	9.9	9.3
50-99	9.0	8.8
100-169	8.0	7.7
170 +	7.6	7.3
Urban	7.5	7.2
1-99	7.8	7.6
100-404	7.3	7.1
405-684	7.5	7.2
685 +	7.8	7.0

Source: Data are from the AHA 1982 Survey.

As the table shows, in terms of ownership, nonprofit and government-owned hospitals generally have older assets and, therefore, would tend to receive higher payments under prospective capital payments than under cost reimbursement. For-profit hospitals would generally receive lower payments. In terms of hospital size and urban/rural location, small, rural hospitals generally have the oldest assets and thus would tend to receive more money under prospective capital payments than they do now. As rural hospital size increases, the average asset age tends to decrease almost to the level of urban hospitals. As a result, the larger rural hospitals would generally not do quite as well under prospective capital payment as under cost reimbursement. Urban hospitals generally have the newest assets and thus would probably do slightly

worse under prospective capital payments than they do now. The size of urban hospitals does not appear to be a major factor because asset age varies little from small to large urban hospitals. In terms of geographic location, hospitals in New England and the West-North-Central states generally have the oldest assets and thus would do better under prospective capital payments. Hospitals in the Southeast and Pacific regions generally have newer assets and therefore would do worse under prospective capital payments than they do under cost reimbursement.

In addition to the above data, ProPAC has cited variations in ages between teaching and nonteaching hospital assets, as shown in table 3.4. Although the data are not directly comparable to those in table 3.3, they show that teaching hospitals generally have older assets. As a result, teaching hospitals should tend to fare better under a prospective capital payment system than under a cost-based system.

Table 3.4: Average Asset Age of Plant for Teaching and Nonteaching Hospitals

	Year				
Category	**1980**	**1981**	**1982**	**1983**	**1984**
Teaching	7.59	7.36	7.18	7.10	7.27
Nonteaching	7.23	7.14	6.97	6.88	6.80

Case Mix

The third potential problem with using national average capital costs relates to the case mix of hospitals.[3] Although the relationship between case mix and capital costs is not firmly established, it has been postulated that higher case mixes mean higher capital costs. This appears logical because it assumes that treating more complicated cases involves greater use of equipment and longer stays. Because DRG payments are generally higher for more complicated cases, an add-on to payments for capital costs would tend to mitigate any adverse effects that differences in case mix would have on prospective capital cost payments.

HHS's current DRG weights[4] are based on hospital charges. While on an overall basis, charges should be a good indicator of costs for particular

[3]A hospital's case mix is basically the ratio of its average DRG weight to the national average DRG weight during the base period (1981) for computing DRG payment rates. If a hospital has a more complicated mix of patients, its case mix index will be greater than 1.

[4]Each DRG has a weight that currently is the ratio of the average amount of hospital charges for all cases falling under the DRG to the average amount of hospital charges for all Medicare cases. To calculate the DRG payment amount, the DRG weight is multiplied by the average hospital cost of all Medicare cases.

types of cases, and hence possibly DRGs, this is not always true. Historically, cost-to-charge ratios differ significantly by the type of service being charged. For example, hospital charges have been generally much higher than, and frequently twice as high as, actual costs for medical supplies. Also, the capital costs related to the medical supplies department are relatively low. Therefore, a capital add-on to charge-based DRG weights would tend to overcompensate for capital costs for DRGs with large charge amounts for medical supplies.

On the other hand, some types of services have had charges close to actual costs. For example, the operating room cost center often has charges about equal to costs but would have relatively high capital costs because of the expensive equipment used for these services. Therefore, a capital add-on to charge-based DRG weights would tend to undercompensate for capital costs for DRGs with large charge amounts for operating room services.

Because of situations like these, a hospital's case mix could affect the extent of its prospective capital payments in ways not related to its capital costs. One proposal, that of Kalison and Averill, specifically addresses this question by recommending computation of DRG-specific capital costs. Table 3.5 presents average case mix indexes for various types of hospitals.

Table 3.5: Average Case Mix by Hospital Ownership and Bed Size

Hospital ownership	Number of hospitals	Weighted average case mix[a]
Average for 5,739 hospitals		1.16887
County	730	1.08624
City	273	1.08644
City-county	59	1.12201
Hospital district	623	1.12255
Proprietary	704	1.13195
Community	2,478	1.17288
Church	757	1.22018
State	115	1.28486
Hospital bed size		
Average for 5,398 hospitals		1.17050
Rural—less than 100 beds	1,998	1.02296
Urban—less than 100 beds	604	1.06373
Rural—100 to 169 beds	392	1.07649
Rural—greater than 169 beds	219	1.13240
Urban—100 to 403 beds	1,659	1.17182
Urban—404 to 684 beds	418	1.26257
Urban—greater than 684 beds	108	1.30660

[a]HCFA's fiscal year 1985 case mix index weighted by hospital discharges during that year.

Effects of Various Transition Periods

The HHS and AHA proposals for a prospective payment system for capital costs attempt to address the immediate effect on payments to individual hospitals through the use of a transition period. During this period, part of a hospital's capital cost payment would be based on the prospectively determined rate (the prospective rate) and part would be based on the hospital's actual costs (the hospital-specific rate).[5] The HHS and AHA proposals use transition periods of 4 and 15 years, respectively, and use different splits between the hospital-specific and prospective rates.

A transition period gives hospitals time to adjust their capital cost practices to meet the new realities of a prospective payment system. Hospitals with high current costs are buffered against large immediate declines in payments. On the other hand, hospitals with low current capital costs will have less of an opportunity to accumulate funds for the replacement of capital goods because such hospitals receive lower payments than they would under a full prospective system. For this reason,

[5]Medicare's prospective payment system for operating costs is using this type of phase-in period to lessen the implementation shock on individual hospitals.

transition periods primarily benefit hospitals with higher than average capital costs.

Table 3.6 illustrates the effects on hospitals with different levels of capital costs of various transition periods to a 7.4-percent national average DRG add-on prospective payment system. In the example, the hospital has total Medicare costs of $1 million, and the transition period and ratio of capital costs to operating costs vary. It is assumed that payments for operating costs are equal to such costs; that is, DRG payments are equal to operating costs.[6]

Table 3.6: First Year Payments Under Various Transition Periods Assuming Different Percentages of Capital Costs to Total Costs

Dollars in thousands

Capital costs as a percent of total costs	Medicare capital cost payments				
	Cost reimbursement	Prospective payment—transition period of			
		None	4 years	7 years	15 years
20[a]	$200	$59	$165	$180	$191
10	100	67	92	95	98
5	50	70	55	53	51
2	20	73	33	28	24

[a]Because the hospital has total costs of $1 million, of which 20 percent are capital costs, operating costs are $800,000 and capital costs are $200,000. Thus, under cost reimbursement it would be paid $200,000 for its capital costs. Under an add-on without transition prospective capital payment system, the hospital would be paid $59,000 ($800,000 in operating costs times the 7.4-percent add-on percentage = $59,000). With a 4-year transition, the hospital would be paid $165,000 in the first year (75 percent times $200,000 in capital costs plus 25 percent times $800,000 in operating costs times the 7.4-percent add-on percentage = $150,000 + $15,000 = $165,000). Amounts for the other transition periods are calculated in a similar manner.

Table 3.7 lists the percentages of capital costs to operating costs for various categories of hospitals. The table shows that government-owned hospitals tend to have a relatively low ratio of capital costs to operating costs and would receive more than their costs under an add-on prospective capital payment system. For-profit hospitals generally have a high ratio and would receive less than their costs.

[6]In its technical comments on the report, HHS said that table 3.6 does not include an operating margin for PPS hospitals and that this inappropriately skews the analysis. HHS believes a 2-percent margin should have been used. As the example is designed, it reflects an average hospital under PPS which, according to the PPS methodology, would break even. Moreover, the table was designed to reflect the differences that various transition periods would have on payments to hospitals, and adding a factor for an operating margin would not affect the point of the table.

Table 3.7: Hospital Characteristics Associated With Lower and Higher Ratios of Capital to Operating Costs[a]

Characteristic	Percent
Government ownership	5.65
Member of the Council of Teaching Hospitals	5.68
Greater than 15 percent Medicaid patients	5.97
New England location	5.97
National average	6.89
Under management contract	8.10
Bed changes greater than 10 percent in last 5 years	9.14
For-profit ownership	9.75

[a]Excludes return on equity
Source: HHS.

The ratio of hospital capital costs to operating costs by state based on AHA's 1982 survey is shown in appendix II. Briefly, the appendix shows that statewide averages range from 5 to 9 percent and they vary substantially within geographic regions (for example, 8.7 for New Hampshire versus 5.0 for Connecticut, 9.0 for South Dakota versus 6.5 for North Dakota, and 8.2 for Arizona versus 5.4 for Nevada). The table also shows that 62 percent of the hospitals nationwide would receive capital payments at least as high under prospective payment set at the national average compared to cost reimbursement and that most hospitals in 46 of the 50 states (plus the District of Columbia) would be at least as well off under a prospective system. Conversely, 23 percent of the hospitals nationwide would receive substantially lower payments under prospective payments, and in four states, most hospitals would receive lower payments under prospective payments than under cost reimbursement.

Effects of Various Proposals on Medicare Costs

In the long run, increasing DRG payments by a percentage equal to the national average capital costs should mean that Medicare costs would be the same as under cost reimbursement—that is, budget neutral—if all other things are constant. To the extent that prospective capital payment would decrease capital investment and encourage higher occupancy rates, long-run Medicare capital payments would be reduced if the prospective capital payments were appropriately adjusted over time. On the other hand, if hospitals can make capital investments that reduce operating costs more than they increase capital costs, total Medicare costs would increase unless appropriate adjustments were made to the prospective payment rates for operating costs.

If DRG payments are increased by a percentage lower than the current national average capital costs, Medicare capital payments would be reduced in the long run. HHS's proposal would add on less than average capital costs as a result of such things as basing the percentage on higher than current occupancy rates and removing return on equity payments to proprietary hospitals from the base. HHS's proposal would obviously have more serious financial effects on individual hospitals and provide greater disincentives to capital investment and low occupancy rates than less stringent proposals.

Conversely, if DRG payments are increased by more than the national average capital costs, Medicare capital payments would increase. The AHA proposal would have this effect because it includes as capital costs things that Medicare currently does not recognize, such as return on equity for not-for-profit hospitals. Such a system would cushion the effects of a prospective payment system on hospitals and decrease incentives inherent in other proposals for hospitals to control capital expenditures.

In 1986, we expect that the capital costs of many hospitals could decrease from the high levels of the past several years because of the substantial decline in interest rates. Hospitals that were paying high interest rates on their debt should seek to refinance and substantially reduce their interest expenses. As a result of the drop in interest rates, we believe the proposals for establishing prospective capital payments using capital costs during the 1981-85 period as a base would somewhat buffer hospitals from the effects of prospective capital payment.

Importance of Update Factor

As time passes, hospital capital costs will change because of such factors as inflation, changes in interest rates, and new technology. Thus, a prospective capital payment system will need to be periodically updated to reflect such changes if the system is to be fair to hospitals and Medicare. If rates are not appropriately adjusted over time, Medicare will pay either too much or too little. If hospitals are overpaid, they will receive a windfall from Medicare. If they are underpaid, their ability to provide quality care could be adversely affected.

Under the current prospective payment system covering operating costs, an update factor[7] is used to update the PPS rates. HHS noted in its March 1986 proposal that it plans to add a factor for capital to the market basket. The amount of the update would be determined by HHS. The HHS report and other HHS documents did not show how the capital update factor would be developed or what information would be used to develop it. Other prospective capital proposals were also not very specific on how rates would be updated. We believe that the methodology to be used to determine the update factor is needed to properly evaluate any prospective capital payment plan.

Possible Alternatives

The immediate effects on individual hospitals of the various proposals for prospective capital payment and overall Medicare capital payments can be predicted fairly accurately. Generally, low occupancy rate hospitals and newer hospitals would tend to receive lower Medicare payments than under reasonable cost payment, while high occupancy rate hospitals and older hospitals would tend to receive more. Although it is not clear, a hospital's case mix might also affect its level of payment.

The longer term effects of prospective capital payment cannot be predicted as confidently. As HHS's report on prospective capital payment points out, a system like the one it proposes, or like the other proposals, has not been tested here or in other countries. Thus, we are not certain what will be the longer range effects on hospitals' abilities to raise the funds needed to obtain new technologies as they emerge and for renovation and replacement of assets. In theory, under prospective capital payment, an efficient hospital should be able to accumulate funds over an asset's life to replace it. Also, in theory appropriate adjustments to prospective capital payment rates could be made to permit hospitals to obtain emerging technologies. But we are not certain that reality will equal theory.

We do question whether all hospitals will, in fact, be able to accumulate funds to add new technology and replace worn assets. This could be a particular problem for hospitals that provide large amounts of uncompensated care because of the tendency to use current revenues to cover losses from such cases (see p. 24). If prospective capital payment were to adversely affect hospitals' abilities to obtain funds for capital

[7]The update factor consists of the market basket reflecting the change in the price of goods and services hospitals purchase and a discretionary adjustment factor reflecting the change in hospital productivity, technological advances, quality of care, and long-term cost effectiveness of services.

improvements, this in turn could adversely affect access to quality care for Medicare beneficiaries.

Also, operating costs include a substantial portion of variable costs, which are controllable by a hospital. However, capital costs are primarily fixed costs, which cannot be controlled easily in the short term. Thus, it is easier for a hospital to adjust its operating costs than its capital costs to a prospective payment system.

Because of uncertainties about the long-term effects of prospective capital payment, we looked for alternatives that would provide time to assess such effects as the payment system was implemented. These are presented below.

Use a Long Transition Period

The longer the transition period to full prospective capital payment, the less the immediate effects on individual hospitals. Also, a long transition period would provide time to identify emerging problems associated with going to prospective payment and to make adjustments to the system.

A longer transition period would mean that high capital cost hospitals would have their Medicare capital payments decreased more slowly and provide more time to adjust to the new system. On the other hand, low capital cost hospitals would have their Medicare capital payments increased less rapidly. This in turn would lessen these hospitals' ability to accumulate funds for replacement of assets.

A long transition period would reduce the prospective capital payment system's incentives against excess capacity. At the same time, the system's potential adverse effects on hospitals' ability to raise capital funds and the effect this could have on access to quality care for beneficiaries would be mitigated and/or delayed.

Cover Only Movable Equipment Initially

Covering only movable equipment under a prospective capital payment system would also lessen the effects on hospitals. Medicare payments for the depreciation of movable equipment were about 14 percent of total capital payments in 1981. Because of the generally shorter useful lives of movable equipment, capital costs are more uniform across hospitals for such equipment. Thus, hospitals' transition to prospective payment should be easier if only movable equipment were covered.

Again, taking this option would decrease the efficiency incentives of prospective payment but it would permit HCFA to gain experience with prospective capital payment. Also, this option would produce at least some information about the effects of a total prospective capital payment system which could be used in deciding whether to move to a total system.

Modified Cost Reimbursement

Changes could be made to the cost reimbursement system to provide the same kinds of incentives to hospitals that a prospective capital payment system would. These changes could be targeted at particular perceived problems and, therefore, affect fewer hospitals. Because most hospitals would continue receiving the same level of payments but some would receive less, total Medicare payments would decline.

For example, Medicare could use a minimum occupancy rate for hospitals to recover full capital costs. If a hospital's occupancy rate were below the minimum, it could be paid as if its occupancy were at the minimum.[8] This would provide low occupancy rate hospitals an incentive to eliminate excess capacity or to use it for other purposes.

Another example would be to establish limits on the maximum amount of capital costs that would be recognized as reasonable. Such limits have been established for the operating costs of hospitals not covered by PPS and for skilled nursing facilities and home health agencies. These limits are generally referred to as section 223 limits after section 223 of the Social Security Amendments of 1972, which authorized them. This section permitted HHS to establish limits

> ". . . on the direct or indirect overall incurred costs or incurred costs of specific items or services or groups of items or services to be recognized as reasonable based on estimates of the costs necessary in the efficient delivery of needed health services to individuals covered by [Medicare]."

In its March 1986 report, HHS referred to some of the features of its prospective capital payment proposal as being the equivalent of section 223 limits for capital costs.

[8]The following hypothetical example illustrates how this might operate. A 100-bed hospital with total capital costs of $1 million has an actual occupancy rate of 50 percent; thus its costs per patient day are about $55. If Medicare had a minimum occupancy requirement of 75 percent, the hospital's allowable cost would be $37 [$1 million divided by (100 beds x 365 days x 0.75) = $37].

Establishing limits on cost reimbursement could have the same effects on hospitals affected by the limits as a prospective capital payment system would have on higher than average capital cost hospitals. Presumably, fewer hospitals would be affected though. Incentives would probably not be as strong as under a prospective system, and cost reimbursement limits imply more regulation.

Matters for Consideration by the Subcommittee

Because of the uncertainties associated with the long-term effects that a prospective capital system would have on hospitals and Medicare, the Subcommittee may wish to consider the alternatives discussed above. Although these alternatives may not be as intrinsically pleasing as a prospective payment system, they would accomplish some of the objectives of such a system with less chance for large dislocations and more time to develop information on long-term effects of a prospective system for capital costs.

Agency Comments and Our Evaluation

In its comments (see app. IX) HHS said that it believes its June 3, 1986, proposal to include capital payments in PPS addresses many of the issues we raised. HHS said that the notice of proposed rulemaking requests public comment on several alternatives to the method it is specifically proposing. Therefore, the proposal provides for options to be considered for amending HHS's proposal subject to public comments and continued analysis and negotiations with industry and congressional representatives.

We have reviewed the June 3 proposal, which was published after our report was sent to HHS for comment, and noted that HHS requested comments on two options similar to two of the alternatives listed in this report:

- using a longer transition period and
- treating the capital costs for movable equipment separately from those for plant and fixed equipment.

If HHS selects either of these options, many of the questions raised in this report would be addressed.

HHS did not agree with our third alternative—continued cost reimbursement for capital costs but with limits placed on such payments. HHS said that, in its opinion, the law did not permit cost reimbursement for capital costs after October 1, 1986. HHS also said that imposing limits on cost

reimbursement would not achieve the goals of efficiency and elimination of inappropriate incentives that prospective capital payments would.

HHS's first point—whether the law would permit continued cost reimbursement after October 1, 1986—is moot because a provision in the Urgent Supplemental Appropriations Act of 1986 (Public Law 99-349, July 2, 1986) established until October 1, 1987, a moratorium on HHS setting up a prospective capital payment system through regulations. Regarding HHS's second point—whether cost limits could be effective—as we discussed on page 41, cost reimbursement with limits is not as intrinsically appealing as prospective capital payment, but properly designed cost limits could achieve many of the same objectives as prospective payment while affecting fewer hospitals.

Finally, HHS said that our conclusion about the possible adverse effects of the proposals for prospective capital payment would normally be expressed about any new initiative that departs substantially from the prior program approach. HHS said that such concerns should not be the overriding negative factor that prevents change. HHS said similar concerns were expressed about PPS for operating costs before it was enacted but that this system has been quite successful in meeting its objectives. HHS concluded that there is widespread consensus that the current capital payment system creates unacceptable distortions and that the status quo requires substantial reform.

As noted in the report, cost reimbursement can provide hospitals with inappropriate incentives. We are not advocating the status quo but rather are suggesting alternatives to HHS's proposal for prospective capital payment which should lessen the likelihood of unintended adverse effects arising. Also, as discussed on page 40, we view prospective capital payment as being different from PPS for operating costs. While the hospital operating costs covered by PPS include a substantial portion of variable costs, which are under the control of the hospital, prospective capital payments would cover hospital costs that are primarily fixed and over which the hospital has little control in the short term. Therefore, we expect that hospitals would have an easier time adjusting to PPS than they would to prospective capital payment. Operating costs are over 90 percent of total costs and include variable costs, while capital costs are mainly fixed.

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Hospital Capital Costs as a Percent of Operating Costs

State	Mean capital cost ratio	Median capital cost ratio	Percent of hospitals in capital cost ratio ranges		
			0.0-7.0	7.1-9.0	9.+
AK	6.6	5.1	69	15	15
AL	7.5	5.9	56	11	33
AR	8.1	7.7	47	17	36
AZ	8.2	8.2	41	22	38
CA	6.2	5.5	70	12	18
CO	6.8	5.8	69	17	14
CT	5.0	4.8	88	13	0
DC	5.5	4.2	67	22	11
DE	5.1	5.4	100	0	0
FL	7.7	6.5	57	17	26
GA	7.5	6.5	53	21	26
HI	6.7	6.9	57	29	14
IA	6.7	5.7	72	10	18
ID	5.7	5.2	74	14	11
IL	7.4	6.9	53	19	29
IN	8.1	6.9	54	13	34
KS	6.6	5.8	66	11	23
KY	6.7	5.2	65	18	18
LA	7.6	5.7	59	16	25
MA	5.7	5.4	78	13	9
MD	7.1	6.4	59	20	22
ME	5.9	5.6	69	15	15
MI	6.6	6.0	64	13	23
MN	6.6	5.7	66	17	18
MO	8.2	6.7	55	14	31
MS	5.8	4.8	75	13	13
MT	7.1	6.0	55	16	29
NC	6.2	4.9	75	7	18
ND	6.5	6.0	64	17	19
NE	7.1	6.4	61	18	21
NH	8.7	7.1	48	16	36
NJ	7.4	6.5	56	16	29
NM	7.3	5.1	65	10	26
NV	5.4	5.2	86	7	7
NY	6.9	6.1	67	12	20
OH	6.4	5.7	65	16	19
OK	6.2	5.1	62	18	19
OR	6.9	6.3	65	15	20
PA	7.1	6.3	59	15	26

State	Mean capital cost ratio	Median capital cost ratio	Percent of hospitals in capital cost ratio ranges		
			0.0-7.0	7.1-9.0	9.+
RI	5.2	4.3	79	7	14
SC	7.6	6.1	61	18	20
SD	9.0	6.6	53	4	43
TN	7.8	5.3	60	10	31
TX	7.3	6.0	60	17	23
UT	7.5	7.0	50	31	19
VA	8.4	7.2	50	18	32
VT	6.4	5.4	63	19	19
WA	7.3	6.5	58	16	26
WI	8.3	7.2	46	21	33
WV	7.4	6.3	57	19	24
WY	6.3	4.9	63	16	21
National	7.0	6.0	62	15	23

Source: AHA 1982 Survey.

The Department of Health and Human Services Proposal

HHS proposes to develop one uniform national rate for urban hospitals and another for rural hospitals, which would be fully incorporated into PPS by fiscal year 1991. There would be a 4-year phase-in period (fiscal years 1987-90) during which capital payments to hospitals would be a blend of hospital-specific costs and the national rates.

The national rates would be computed using data from 1983 audited hospital cost reports. The 1983 base would be adjusted by removing capital costs related to return on equity and interest offsets for funded depreciation. The base would then be updated for inflation between 1983 and 1986 by using the capital market basket. During the period 1987-91, the base would be inflated using the PPS update factor. The national rates would account for 20 percent of the total payment to each hospital in fiscal year 1987, 40 percent in 1988, 60 percent in 1989, 80 percent in 1990, and 100 percent in 1991.

HHS's proposed computation of the hospital-specific portion of the payment during the transition is more complex. HHS is proposing that it be composed of the following two payment amounts:

1. Depreciation and interest (D&I). The phase-out percentage for this factor is proposed to be 80 in fiscal year 1987, 60 in 1988, 40 in 1989, 20 in 1990, and 0 in 1991.

2. Return on equity and interest offsets on funded depreciation (E&I). The phase-out percentage for this factor is proposed to be 75 in fiscal year 1987, 50 in 1988, 25 in 1989, and 0 in 1990.[1]

These two hospital-specific cost factors would be inflated annually using the capital market basket until each factor is phased out. The two payments are to be combined (using the appropriate percentages for each fiscal year) and used as the hospital-specific portion of the payment to each hospital unless a hospital's actual allowable capital costs as shown in its cost report are less than the amount computed above. If actual allowable costs are less than the amount computed using the HHS methodology, actual costs will be used for the hospital-specific portion of the rate.

Table III.1 summarizes the factors and percentages that HHS proposes to use during the transition.

[1]The Consolidated Omnibus Budget Reconciliation Act of 1985 also provides that return on equity will be phased out by fiscal year 1990.

Table III.1: Factors and Percentages HHS Proposes to Use During Transition Period

	Percentages						
			Hospital-specific[a]				
Fiscal year	National rate	+	(D&I	+	E&I)	or	Actual
1987	20	+	(80	+	75)	or	80
1988	40	+	(60	+	50)	or	60
1989	60	+	(40	+	25)	or	40
1990	80	+	(20	+	00)	or	20
1991	100						

[a]For the hospital-specific portion of the computation, the lower of actual cost or (D&I + E&I) is to be used.

Advantages

The proposal would remove the relationship between Medicare inpatient capital payments and hospital-specific inpatient costs. Consequently, a hospital's decisions about the source of capital financing (debt versus equity) and its mix of capital and labor would no longer directly affect the level of Medicare capital payments received. Hospital managers would have a greater incentive to minimize costs. In addition, since Medicare capital payments would be included in the DRG rates, they would vary with the number of Medicare discharges at each institution. As a result, Medicare would not subsidize low-occupancy facilities to the extent it does under cost reimbursement.

The HHS proposal is consistent with Medicare's PPS for operating costs. It would encourage efficiency with respect to capital acquisition decisions because hospital managers would be operating within the constraints of fixed, prospectively determined capital payment amounts. Also, because of the incentives to make cost-effective capital decisions, the approach may reduce the need for federal planning and capital expenditure review programs.

Medicare capital payments would probably be more predictable and controllable for both the government and individual hospitals. Historical, current, and projected discharges by DRG could be used to project capital payments. Individual hospitals could increase their capital payments by achieving desired discharge levels, while the government could control total Medicare capital payments through adjustments to the DRG rates.

Finally, the relatively short transition period would implement the system and achieve the above advantages more rapidly than the transition proposed by some others.

Disadvantages

The proposal may have a negative effect on hospitals' access to capital markets. While this is a weakness of most of the prospective capital payment proposals, the effect of HHS's proposal is potentially the strongest. Because a hospital's Medicare capital payment would depend on patient volume and national average capital-to-operating-cost ratios, the perceived risk of loans to hospitals would probably increase.

Hospitals with high patient volumes that do well under the DRG rates that combine operating and capital payments would most likely not be adversely affected by the increased risk introduced by the switch to volume-related capital payments. However, hospitals without sufficient patient volumes or operating efficiencies to indicate that they will clearly be successful under the consolidated DRG rates will likely face more difficulty in obtaining funds. This could make projects that were feasible under the cost-based reimbursement system no longer feasible. While this may be the desired outcome in some cases, in other cases hospitals may be prevented from obtaining necessary equipment, performing needed renovation, or providing new services.

The HHS proposal includes a provision for adjusting the capital payment as part of the change in the hospital market basket. The amount of the update would be determined by HHS. The HHS report and the other documents did not show how the capital update factor would be developed or what information would be used to develop it. We believe that the methodology used to determine the update factor is needed to properly assess the effect of HHS's prospective payment proposal.

Also, HHS's proposal bases the prospective payment rates on data from fiscal year 1983, when average occupancy rates were about 9 percent higher than current rates. Using this base period results in hospitals receiving on the average less than current costs (see p. 30) and is the reason for most of the estimated savings associated with the HHS proposal. One of the desired results of the prospective payment system for operating costs was a decrease in patient days and, thus, a decrease in occupancy rates. Therefore, in effect, HHS's prospective capital proposal would penalize hospitals for reacting to the prospective system as was desired.

Finally, due to the short transition period included in the proposal, any adverse effect created by implementation would occur faster than under other proposals with longer transitions. This could have a severe effect on certain categories of hospitals, as discussed in chapter 3. Because of the short transition period, HHS might not be able to identify and act in a

timely manner to correct any adverse effects on access to health care by Medicare beneficiaries.

The American Hospital Association Proposal

AHA has stated that it supports replacing the current Medicare cost pass-through capital payment method with a method that incorporates payment for hospital capital into Medicare prospective payment rates, yielding a consolidated, single payment for each DRG.[1] While AHA has not recommended any specific percentage to add-on to current prospective payments rates, AHA's proposal includes several elements that are not now paid by Medicare. AHA also recommends a 15-year transition period, which would include a "floor payment option" and a "blended phase-in option."

According to AHA, all capital costs should be incorporated into Medicare prospective payments, yielding a single payment to the hospital, without earmarking amounts for either capital or operations. In addition, capital payments (after the 15-year transition period) should not vary as a result of management decisions with respect to such factors as ownership, tax status, capital-labor mix, and debt-versus-equity financing decisions.

Composition of the Rate

In incorporating capital into Medicare prospective payment rates, AHA believes that two types of costs must be recognized—"return of capital" and "return on capital." After the consolidated payment rates are established, they should be updated annually for inflation, and a factor for technology improvements should also be applied, according to AHA.

AHA defines "return of capital" as the cost of consuming capitalized assets. In accounting terms, this is depreciation expense and is intended to replace the capital invested, rather than the assets themselves. For simplicity's sake, AHA also treats lease expenses as a return of capital.

AHA defines "return on capital" as the cost of using money, whether from debt or equity sources.[2] This cost includes the time value of money and such factors as opportunity cost and risk. For borrowed capital, this cost is easily identifiable as interest expense. For proprietary hospitals, the cost of equity capital is expressed as dividends and capital gains to

[1] AHA's support for a capital add-on to the DRG amounts is conditional on assurance that DRG payments for operating costs will be both adequate and equitable and that the aggregate amount of capital payments to be made available under Medicare will be sufficient to ensure that all well-managed hospitals are able to meet the needs of their communities.

[2] Included in equity are retained earnings as well as stockholder or philanthropic investments.

investors. AHA said that, for nonprofit hospitals, the cost of equity capital is expressed as the services returned to the community (such as providing free care to the needy as well as specialty and low-volume services) and the demonstrated capacity to remain fiscally viable to continue to serve the community and meet its future expectations.

According to AHA, the return of capital element should be incorporated into Medicare payments by adding a percentage that reflects industry-wide depreciation and lease costs as a percentage of industry-wide operating costs (net of capital costs and direct costs of approved education programs, to be consistent with the DRG payment rate base). The return on capital element should also be incorporated into Medicare payments by adding a percentage. In this instance, the percentage should be based on appropriate return-on-capital rates applied to the industry-wide debt-plus-equity base. The resultant industry-wide total dollar return on capital should then be divided by industry-wide operating costs (net of capital and direct costs of approved education programs) to obtain a uniform percentage return-on-capital factor to be included in each Medicare DRG payment rate.

The return-on-capital percentage factor would cover the costs of both debt and equity capital. For nonprofit hospitals, AHA believes that defining the equity portion of the debt-plus-equity base as unrestricted fund balance less long-term investments is comparable to current Medicare definitions used in paying a return on equity to proprietary hospitals.

After the first year, according to AHA, the consolidated Medicare payment should be annually updated using an expanded hospital market basket that includes weights and factors pertaining to hospital capital costs. Except during the transition period, AHA believes that no distinction should be made between the capital and operating components of the DRG payment rates.

AHA proposes that a separate factor for technology improvements also be applied in the annual updating of Medicare payment rates. AHA states that the two cost-of-capital elements, return of and return on capital, relate to preserving the hospital's existing capital base and, as such, do not recognize the hospital's need for new capital to take advantage of technology improvements. As is the case with Medicare payments for operating costs, an explicit, minimum technology improvement factor

should, according to AHA, be applied in annually updating the consolidated payment rates to recognize the increases in both capital and operating costs associated with medical technology improvements.

Fairness of a Uniform Rate

AHA recommends that capital costs be incorporated into Medicare prospective prices using a uniform capital factor rather than a set of factors that would vary according to specific hospital characteristics. Others have suggested that a uniform factor would create hardships on certain groups of providers.

AHA said that it has performed extensive analyses of capital-related cost variations across hospitals and has stated that while capital cost percentages vary substantially across individual hospitals and groups of hospitals, commonly used hospital characteristics (such as location, size, teaching status, and ownership) as well as other factors (such as age of assets) fail to account for a large portion of the variation. Developing variable capital payment factors based on particular hospital characteristics would not result in a more equitable allocation of capital payments than a uniform factor, according to AHA, because many hospitals in any given category would be significantly, and inexplicably, higher or lower than the average for that category.

Transition

AHA believes that historical data patterns clearly indicate that a well-designed transition mechanism will be critical, from an equity-of-payment perspective, to a broad spectrum of hospitals—large, small, nonprofit, proprietary, and all other groupings—in moving toward a uniform capital factor.

AHA's mechanism for transition includes a "floor payment option" and a "blended phase-in option." The blended phase-in option moves hospitals toward a uniform capital payment factor over a long transition period, while the floor option protects those hospitals with high capital costs at the start of the transition period.

The phase-in option designed by AHA is structured over a 15-year period. In year 1 the hospital's capital payment would be a blended amount equal to 93.33 percent of its actual capital costs and 6.67 percent of a uniform capital factor; this would diminish to 86.66 percent actual capital costs in year 2, and so on. Each year, the hospital's actual costs (including new capital) would be used to calculate the hospital-specific portion. For example, if the hospital undertook a major capital project in

year 4 and opted for the phase-in, it would receive 73.33 percent of its actual capital costs including the new project, plus 26.67 percent of the uniform capital factor.

The floor option allows the hospital to be paid (1) its actual capital costs for existing and obligated expenditures at the start of the transition period and (2) the costs for any new capital projects necessary to eliminate or prevent imminent safety hazards or comply with licensure, certification, or voluntary accreditation standards or building codes. New capital spending which is not required to comply with codes and standards would not result in increased capital payments under the floor option.

AHA's transition method allows a hospital to elect the floor option in year 1 and every year thereafter during the transition period. In any year the hospital may instead elect the blended phase-in option; however, once it does so, it cannot return to the floor option. When the hospital elects the phase-in option, its payment is based on that year's blended rate. For example, if the phase-in option is elected after 3 years on the floor approach, in year 4 the hospital would be paid 73.33 percent of its actual capital costs and 26.67 percent of the DRG capital factor amount.

Advantages

The AHA proposal, like the HHS proposal, would break the relationship between Medicare inpatient capital payments and hospital-specific inpatient costs. Consequently, a hospital's decisions about the source of capital financing (debt versus equity) and its mix of capital and labor would no longer directly affect the level of Medicare capital payments received. Hospital managers would have a greater incentive to minimize costs. In addition, because Medicare capital payments would be included in the DRG rates, they would vary with the number of Medicare discharges at each institution. As a result, Medicare would not subsidize low-occupancy facilities to the extent it does under cost reimbursement.

The AHA proposal, like that proposed by HHS, is consistent with Medicare's PPS for operating costs. It would encourage efficiency with respect to capital acquisition decisions because hospital managers would be operating within the constraints of fixed, prospectively determined capital payment amounts.

The 15-year transition proposed by AHA can be viewed as an advantage because the longer the transition period to full prospective capital payment, the less the immediate effects on individual hospitals. Also, a long transition period would provide time to identify emerging problems associated with going to prospective payment and to make adjustments to the system if necessary.

To ease the transition, AHA proposes assuring that hospitals could recover their actual capital costs for capital obligations incurred before the proposal's implementation. The proposal also would pay hospitals their actual costs for new capital projects necessary to eliminate safety hazards and comply with licensure, building code, and other requirements. In addition, the AHA approach may reduce the need for federal planning and capital expenditure review programs.

Finally, Medicare capital payments would probably be more predictable and controllable for both the government and individual hospitals. Because actual cost recognition during the transition would be limited to costs incurred before a defined point in time (with exceptions), historical, current, and projected discharges by DRG could be used to project capital payments. Individual hospitals could increase their capital payments by achieving desired discharge levels, while the government could control total Medicare capital payments through adjustments to the DRG rates.

Disadvantages

As with HHS's proposal, the AHA proposal may have a negative effect on hospitals' access to capital markets. Under both proposals a hospital's Medicare capital payment would depend on patient volume and national average capital-to-operating-cost ratios, and the perceived risk of loans and investments may increase. Other potential effects on hospitals' access to capital markets and the consequent effects on their ability to make needed capital improvements are the same as those related to HHS's proposal (see p. 53).

Another problem with the AHA proposal is that the transition period would not be budget-neutral. The proposal allows hospitals with low capital costs to choose consolidated payment rates while paying hospitals with high capital costs according to their actual cost experience. Thus, hospitals could choose the method that gives them the highest payments, and this, in turn, would increase total Medicare costs.

In addition, the formula and factors used to compute the national capital add-on rate include some factors not currently paid by Medicare, such as a return on equity for nonprofit hospitals. As a result, Medicare's costs would be higher.

Finally, the long transition period in AHA's proposal would result in slower introduction of prospective capital payments' incentives for efficiency than a shorter transition, such as that in HHS's proposal.

The National Committee for Quality Health Care Proposal for an Age-Adjusted Percentage Add-On

Like other proposals, capital payments under a plan drafted by the National Committee for Quality Health Care (NCQHC) would be included in Medicare's DRG payment rates. The total payment per case would be based on the DRG operating rate, the industry average capital percentage, and a hospital-specific age-related index. The unique feature of this proposal is the use of an age-related index to determine the amount of capital payments. As the hospitals' weighted average age of assets increases (that is, the older its assets are) Medicare payments would decrease. When a hospital makes capital expenditures, the hospitals' average age of assets is reduced and its Medicare payments would increase.

A major difference between this alternative and a flat percentage add-on is that it limits the reduction in payments to hospitals that have had recent substantial capital projects.

The following example developed by NCQHC shows how the index would be computed:

1. Calculate the weighted average age of each hospital's property, plant, and equipment as shown in table V.1.

Table V.1: Calculation of Hospital Property, Plant, and Equipment

Dollars in thousands

Item	Historical cost		Years since acquisition		
Original building	$ 5,000	X	18	=	$ 90,000
New wing	7,000	X	13	=	90,000
Movable equipment	10,000	X	4	=	40,000
	$22,000				**$220,000**
Weighted average age = $220,000/$22,000 = 10.0 years					

2. Each hospital would compute its capital cost as a percentage of operating costs.

3. HHS would take the data in steps 1 and 2 and plot each hospital's weighted average age of assets against its capital costs as a percentage of operating costs, and a line or curve would be statistically determined. This line or curve would represent the relationship for the entire industry.

4. Each average age would be associated with a capital percentage that would reflect the capital cost experience of hospitals with similar

average ages. HHS would calculate the age-related index using the following formula:

$$\frac{(1 + \text{Average capital percentage for average Age of N})}{(1 + \text{Industry average percentage})}$$

Assuming that capital costs average 7 percent of operating costs for the entire industry, the age-related index shown in table V.2 would result.

Table V.2: Age-Related Index

Average age (years)	Average capital percentage	Age-related index
14	3.0	0.963
12	4.4	0.976
10	5.7	0.988
8	7.0	1.00
6	8.4	1.013
4	9.8	1.026
2	12.0	1.047

5. For example, Medicare's payment per case, including both capital and operating payments, is determined for a hospital with a weighted average age of 10 years and an average DRG payment of $3,000, using the following formula:

Per case payment = Average DRG payment
× (1 + industry average capital percentage)
× (hospital-specific age-related index)

= $3,000 × 1.07 × 0.988

= $3,171

Other features of this proposal are:

- After the first year, capital would be incorporated as an indistinguishable portion of the rate, and only the application of the hospital-specific index would be required.
- Because the capital payment would be an indistinguishable portion of the DRG rate, it would be subject to the market-basket inflation increases. Therefore, a capital component should be included in calculating the market-basket index.

- Each year, hospitals would recalculate their weighted average ages and apply the relevant capital index. The index itself, however, would not be recalculated annually. Rather, it would be reevaluated periodically as the DRG weights are recalibrated.

Advantages

The proposal cited several advantages:

- It should be budget neutral because capital payments would be based on historical costs and there would be no transition period.
- Hospitals should have a greater incentive to minimize costs than under cost reimbursement because the capital payment amount would not be related to hospital-specific actual costs.
- Compared with other prospective payment proposals for capital, it would tend to limit the redistribution of funds from those hospitals that have undertaken significant recent capital projects to those that have not recently upgraded their plants and equipment. This should result because the proposal recognizes variations in hospital capital costs due to varying capital asset age.
- It generally would not penalize or reward a hospital to the degree of other prospective payment proposals because of its particular point in the capital cycle. Because a hospital's capital factor would be based on its weighted average age of assets, and its average age would be recalculated each year, the capital factor that applies to an individual hospital would vary with its capital cycle.
- It should reduce the need for health planning to control costs.
- A hospital could predict its capital payment by projecting its average age of assets and applying the published index to its projected DRG payments because the age-related capital factor would be updated only when DRG weights are revised. From HHS's perspective, total payments would probably be more difficult to predict because aggregate capital payments would depend on hospital investment decisions. However, the total Medicare payment system constraints may be a sufficient deterrent to capital investments that are not cost effective. Capital factor increases for hospitals that invest in new capital would tend to be offset by decreases for hospitals that did not invest.

Disadvantages

The disadvantages of the proposal are:

- It assumes that the average age of capital is the single most significant variable (of those variables that can be readily and objectively quantified) affecting hospital-specific differences in annual capital costs as a percentage of operating costs. Analyses performed by AHA, however, show that age explains only a small percentage of the variation among hospitals. AHA has studied hospital size, location, teaching status, ownership, age of assets, and other factors and found that they fail to account for a large portion of the variations in hospital capital costs.
- It is relatively difficult to compute compared to other prospective capital payment proposals, and it would require additional record keeping and reporting for both the government and hospitals.
- It subjects capital cost payment to the strengths and weaknesses of the DRG payment system. Because capital payments will be included in a consolidated DRG price by increasing the DRG rates by percentage amounts, any methodological problems with the construction of the DRG payment rates will also be reflected in capital payments.
- It assumes that Medicare DRG weights adequately reflect variations in capital required to treat patients with differing diagnoses or illness severity.
- It may result in capital payment shortfalls or windfalls to some institutions because a transition period is not proposed.
- Upon the sale of a hospital, if revaluation of assets is permitted, Medicare payments would increase if the weighted average age was reduced because of increases in the historical cost and a decrease in the years since acquisition.

The Kalison/Averill Proposal for a DRG-Specific Percentage Add-On

Health care specialists Michael J. Kalison and Richard Averill have developed a prospective Medicare capital payment proposal that would recognize differences in capital consumption by DRG. They developed their proposal in an attempt to find an appropriate method of matching the capital resources consumed in the treatment of individual Medicare patients with the per-case payments made under Medicare's PPS.

The Kalison/Averill proposal calls for developing a national set of DRG-specific capital factors that would be applied to each patient's DRG operating payment in order to arrive at a total per-case payment. The capital costs associated with each DRG would be determined through two separate cost allocation processes. Building and fixed equipment capital costs would be allocated based on such statistics as patient days or admissions. Equipment capital costs would be allocated based on charges from certain cost centers. These capital expenses would then be combined and aggregated to each DRG.

Information from Medicare cost reports or the PPS claims data base would be used to determine a DRG-specific capital cost for each hospital. These costs would be aggregated for all hospitals to determine capital costs for each DRG in a process similar to that used to develop national DRG cost weights under PPS. The capital payment rate for each DRG would be determined by multiplying the average capital cost per case by the appropriate capital cost weight.

The proposal suggests a phase-in process for major new capital expenditures. Hospitals would be able to "front load" their capital payments by opting for higher Medicare payments during the early years of major capital expenditures provided that it was eventually returned in a "payment-neutral" arrangement. In effect hospitals could "borrow" from Medicare for major capital expenditures, provided the loan were structured such that in total the hospitals would receive no more and no less money than would otherwise have been provided under PPS.

Special payment provisions would be made for new technology in a case-by-case, rule-making type approach designed to develop and implement a rate structure that recognizes the effects of major technological innovations.

The proposal recognizes a need for a transition period, but provides no detailed information on how the period should be structured.

Advantages

The Kalison/Averill proposal would reduce or eliminate many of the perceived problems of the current cost-based Medicare capital payment system. The proposal is not inherently biased toward either capital or labor, because a hospital's decision to vary the current mix of capital and labor would not directly affect Medicare capital payments. The proposal would tend to enhance hospital sensitivity to capital project costs because prospectively fixed capital payments would not be a function of actual expenditures. The proposal would also tend to reduce the current subsidy to low-occupancy facilities. Because capital would be included in the DRG rates, a hospital's total Medicare capital payments would depend on Medicare discharges.

The proposal is consistent with the incentives and principles of the Medicare PPS. It preserves the PPS principle that Medicare should pay a uniform price for similar services from one hospital to the next; hospitals would receive fixed capital payments for each DRG treated, regardless of the actual costs incurred while treating those patients. Thus, there would be financial incentives for efficiency and prudent investment decisions.

Another advantage is that the proposal would tend to reduce the need for federal planning and capital expenditure approval programs. The proposal should also increase the predictability of Medicare capital payments for both the government and hospitals. Because capital cost factors would be separately identifiable components of Medicare's prospective payment rates, both the government and hospitals could develop accurate capital payment projections for expected levels of Medicare cases.

Finally, the proposal should provide increased control over Medicare capital payments. Because Medicare capital payments would be included in the prospective DRG rates, capital payments could be controlled by revisions or alterations to the prospective rates.

Disadvantages

A major disadvantage of the proposal is that it would be costly to implement and maintain because of the level of data collection, analysis, and administrative effort it would require.

The proposal may also adversely affect access to capital markets for many hospitals. A system of per-case Medicare capital payments could result in a greater degree of risk being assigned to hospital debt. As discussed, whether this increased risk will result in increased capital costs

for hospitals would depend on how well each institution can be expected to perform under the prospectively determined fixed capital payment amounts. Hospitals that are not expected to do well under the fixed prospective capital payments could face increased capital costs that could prevent them from providing needed community services at an acceptable level of quality.

Finally, it has been argued that the proposal may not offer adequate protection for existing capital obligations. Although the proposal recognizes the need for a transition period, the authors provided no specifics about how the transition period should be structured. Consequently, the degree to which hospitals would be protected for existing capital obligations cannot be determined.

The Healthcare Financial Management Association Proposal for a Combined Prospective/Retrospective System

HFMA has developed a proposal to continue cost reimbursement for plant (land, buildings, fixed equipment, betterments, and improvements) and a fixed add-on percentage to DRG payment rates for major and minor movable equipment. Capital costs for building and fixed equipment would continue to be paid on a reasonable cost basis because of the longer useful life of those assets. Movable equipment would be paid prospectively because the potential for substituting the capital costs of equipment for operating costs is much greater for movable equipment than for plant.

Under HFMA's proposal, payment for the costs associated with movable equipment would be incorporated into the federal portion of DRG payment rates using industry-wide equipment cost averages. A percentage to be added to these rates would be developed as follows:

1. Determine industry-wide depreciation costs, the lease costs of equipment, and interest costs on equipment-related debt.

2. Determine the percentage of total costs by dividing the total equipment costs by industry-wide operating costs (net of capital and direct teaching costs).

The equipment element would be added to the hospital market basket used to calculate the annual update of DRG payment rates, and the equipment element would be updated by an appropriate index as part of the annual update of DRG payment rates.

For plant and fixed equipment paid on a reasonable cost basis, HFMA proposes that Medicare pay its share of each hospital's actual costs of plant. The amount of payment would be determined for each hospital based on its depreciation, interest cost on plant-related debt, and other plant-related costs, such as property taxes and insurance.

Advantages

Hospitals with recently constructed facilities would generally receive the funds needed to cover their costs. Thus, the potential for disruptions in hospitals' access to capital markets would be reduced as would the potential effects on access to medical care for Medicare beneficiaries.

The transition to a PPS for movable equipment is potentially much easier and less disruptive than it would be if all capital costs were included. HFMA states that the shorter useful life span of movable equipment helps

reduce the wide variation in costs among hospitals and the length of time in which variation exists.

Paying for movable equipment on a prospective basis would tend to reduce the incentive provided under the current payment system for hospitals to shift costs from labor to capital. It would also reduce the incentives for hospitals to favor debt over equity sources of capital in the purchase of equipment. In addition, it would not encourage refinancing as cost reimbursement does.

Finally, if a prospective system is developed for movable equipment, HHS would have the opportunity to gain experience in paying for part of hospitals' capital costs on a prospective basis. As a result, it should be in a better position to assess the potential problems that might arise if the system were to be extended to all capital costs and to decide whether such a move is desirable. If it is then decided to move to a full prospective payment system for capital costs, HCFA could use its experience in prospective payment for equipment to design a transition that minimizes the potential adverse effects on hospitals and Medicare beneficiaries.

Disadvantages

The disadvantages of cost reimbursement for expenses related to fixed assets would remain. Compared to full prospective payment, the incentives would not be as strong, for example, to minimize excess capacity, or to use the least costly mix of debt and equity. In addition, hospitals and HCFA would still be involved in detailed submissions and reviews of cost data. Further, the potential for Medicare savings would be decreased because a lower amount of capital costs would be covered under the prospective system.

Capital Pools

Several organizations, including the American Health Planning Association, have suggested capital pooling as a means of assuring that hospitals which are most needed receive sufficient funding.

Under one alternative, all capital payments in a region or state would be paid into a capital reimbursement pool. Capital would then be distributed by a state or regional authority to individual hospitals based upon their ability to compete effectively to provide those services deemed by the authority to be needed. It is suggested that the existing structure for state and local health planning could be used as the base to develop such a system.

Another alternative provides that the designated regulatory entity would distribute payments on the basis of predetermined criteria. The latitude of the local agency in distributing funds depends on the degree of specificity of the criteria established.

Another pooling alternative would put only costs for hospital plants into the fund and distribute that based on need or predetermined criteria. Funding for equipment would be included in the DRG prices.

General advantages of pooling are:

- Medicare's capital payments could be capped at a selected level.
- Payment of capital for unneeded projects could be eliminated.
- Capital dollars could be allocated to hospitals with high-priority capital projects.
- It could be used with any payment system.

Disadvantages of pooling are:

- Responsibility for the distribution of the capital payments by the regulatory authority would not ensure that payments would be made to hospitals treating Medicare patients.
- It is potentially more expensive because regulatory agencies would have to be established and funded.
- Decisions relating to the funding of projects may be delayed because of review levels at the agencies.

Advance Comments From the Department of Health and Human Services

DEPARTMENT OF HEALTH & HUMAN SERVICES — Office of Inspector General

JUN 30 1986

Mr. Richard L. Fogel
Director, Human Resources
Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Fogel:

The Secretary asked that I respond to your request for the Department's comments on your draft report, "Medicare: Alternatives for Paying Hospital Capital Costs." The enclosed comments represent the tentative position of the Department and are subject to reevaluation when the final version of this report is received.

We appreciate the opportunity to comment on this draft report before its publication.

Sincerely yours,

Richard P. Kusserow
Inspector General

Enclosure

Comments of the Department of Health and Human Services
on the General Accounting Office Draft Report,
"Alternatives for Paying Hospital Capital Costs"

The GAO's report was prepared in response to a request from the Chairman, Subcommittee on Health, House Committee on Ways and Means. Specifically, GAO was asked to identify the various proposals for including capital costs in the prospective payment system or modifying the current cost reimbursement system. In addition, GAO was asked to discuss the effects of the various proposals on hospitals as well as alternatives that would lessen any potential adverse effects.

GAO basically concludes that there is considerable uncertainty about the possible adverse effects that any of the proposals could have on hospitals' ability to raise funds for needed capital improvements. As a result, and because of the significance of the proposed prospective capital payments, GAO believes the Congress should consider ways to provide incentives for efficiency while attempting to minimize the risk of reductions in the availability of quality care by: examining the length of the transition period to full prospective payment; initially covering only certain capital items on a prospective basis; or, changing the current cost reimbursement system to provide greater incentives for efficiency.

GAO's conclusion concerning the possible adverse effects of any of the proposals would normally be expressed about any new program initiative that departs substantially from the prior program approach. It should not, however, be viewed solely as an overriding negative factor which prevents change. This was a major concern voiced over the initial implementation of the Prospective Payment System (PPS) for other hospital inpatient operating costs which has been quite successful in meeting the objectives it was intended to accomplish including reducing program costs, providing a strong incentive for hospitals to act more efficiently and maintaining or improving quality of care levels. There is widespread consensus that the current open-ended capital payment system creates unacceptable distortions, and that the status quo requires substantial reform.

We believe that the Administration's proposal to include capital payments into PPS addresses many of the issues raised by GAO. However, we recognize that there are other viable options that may better contend with specific concerns. Therefore, the proposed rulemaking on the capital payment policy provides for options to be considered for amending the Administration's proposal subject to public comments and continued analysis and negotiations with industry and Congressional representatives. The options we propose would go well beyond the alternatives presented in the draft report, but would not suggest retrenchment to retrospective reimbursemen..

We agree, however, that a longer transition period should be examined further before a program change to capital payment policy is effected. Our proposal for rulemaking incorporates this as a possible option, on which we have requested public comment. Another option on which we would request comments would be to treat moveable equipment separately from plant and fixed equipment in making capital payments under PPS. However, we would not take this approach in a manner which would delay indefinitely incorporation of plant and fixed equipment into PPS as the draft report suggests. We believe that such a delay would undermine the purpose

of this program initiative since moveable equipment represents such a smaller portion of hospital capital-related costs. In that event, hospitals would have little real incentive to review and improve their purchasing decisions, particularly where capital could be substituted for other operating alternatives.

We do not agree with the draft report's suggestions to consider retaining a revised retrospective reimbursement process as it now exists under reasonable cost reimbursment rules at this time. In our opinion, effective with hospital cost reporting periods beginning on or after October 1, 1986, current law does not allow us this alternative. Further, we note that most of the formal positions presented to date by industry representatives support some type of incorporation of capital payments into PPS.

More important, imposing limits on capital costs will not achieve the goals of efficiency and elimination of inappropriate incentives that can be accomplished by a PPS capital payment. Under the perverse incentives of cost reimbursement, substantial overcapacity has developed, as pointed out by GAO. While an occupancy factor would not be required under a fully prospective system based on discharges, such a factor may be desirable during a transition period for hospital specific cost reimbursement. In our rulemaking on this initiative, we have discussed the option of an occupancy factor.

Technical Comments

Now on p. 2.

a) Page i of the Executive Summary incorrectly cites Medicare payment statistics. In FY 1984, Medicare outlays for inpatient hospital payments were about $41.5 billion, of which about 8.4 percent (or about $3.5 billion) were for capital expenditures. The 7.4 percent figure relates to estimated capital expenditures in FY 1981.

Now on p. 13.

b) The same reference to 7.4 percent on page 5 of the report needs to be corrected.

Now on p. 36.

c) Table 3.6 on page 39 presents an analysis which assumes no operating margin for PPS hospitals. We believe this assumption inappropriately skews the analysis; a better assumption in our opinion would be a margin of 2 percent for estimation purposes.

Now on p. 40.

d) Medicare payments for the depreciation (not capital) costs associated with moveable equipment were about 14 percent of total capital payments in 1981. This statement on page 45 needs to be revised accordingly.

END

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