

J U N E 2 0 0 3

REPORT TO THE CONGRESS

Variation and Innovation in Medicare

MECPAC Medicare
Payment Advisory
Commission



The Medicare Payment Advisory Commission (MedPAC) is an independent federal body established by the Balanced Budget Act of 1997 (P.L. 105–33) to advise the U.S. Congress on issues affecting the Medicare program. In addition to advising the Congress on payments to health plans participating in the Medicare+Choice program and providers in Medicare’s traditional fee-for-service program, MedPAC is also tasked with analyzing access to care, quality of care, and other issues affecting Medicare.

The Commission’s 17 members bring diverse expertise in the financing and delivery of health care services. Commissioners are appointed to three-year terms (subject to renewal) by the Comptroller General and serve part time. Appointments are staggered; the terms of five or six Commissioners expire each year. The Commission is supported by an executive director and a staff of analysts, who typically have backgrounds in economics, health policy, and public health.

MedPAC meets publicly to discuss policy issues and formulate its recommendations to the Congress. In the course of these meetings, Commissioners consider the results of staff research, presentations by policy experts, and comments from interested parties. (Meeting transcripts are available at www.medpac.gov.) Commission members and staff also seek input on Medicare issues through frequent meetings with individuals interested in the program, including staff from congressional committees and the Centers for Medicare & Medicaid Services (CMS), health care researchers, health care providers, and beneficiary advocates.

Two reports—issued in March and June each year—are the primary outlet for Commission recommendations. This report describes variations in Medicare and innovations in purchasing for the program. Annual reports each March focus on payment policy. In addition to annual reports and occasional reports on subjects requested by the Congress, MedPAC advises the Congress through other avenues, including comments on reports and proposed regulations issued by the Secretary of the Department of Health and Human Services, testimony, and briefings for congressional staff.

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601 New Jersey Avenue, NW • Suite 9000 • Washington, DC 20001
(202) 220-3700 • Fax: (202) 220-3759 • www.medpac.gov



601 New Jersey Avenue, NW • Suite 9000
Washington, DC 20001
202-220-3700 • Fax: 202-220-3759
www.medpac.gov

Glenn M. Hackbarth, J.D., Chairman
Robert D. Reischauer, Ph.D., Vice Chairman
Mark E. Miller, Ph.D., Executive Director

June 12, 2003

The Honorable Richard B. Cheney
President of the Senate
U.S. Capitol
Washington, DC 20510

Dear Mr. Vice President:

I am pleased to submit a copy of the Medicare Payment Advisory Commission's June 2003 Report to the Congress: Variation and Innovation in Medicare. This report fulfills MedPAC's legislative mandate to examine issues affecting the Medicare program, including the implications of changes in health care delivery for the Medicare program.

This report examines variation within expenditures, patterns of care, performance, and supplemental insurance, as well as several possible payment innovations.

- The first two chapters of this report look at variation in Medicare spending across the country and at the differing insurance markets for products that supplement Medicare.
- The next four chapters examine variation within major classes of providers, including hospitals, physicians, post-acute care providers, and dialysis facilities.
- The last three chapters investigate, and in some cases offer recommendations for, approaches Medicare could take to purchase more effectively. Ideas discussed include incentives to improve quality, competitive pricing, and alternative methods of paying for Medicare-covered drugs.
- The report includes two appendixes. One fulfills our statutory obligation to analyze the Secretary of HHS's estimate of the update for physician services. The other lays out a new feature of the June report—an agenda for improving data on Medicare and health care.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn M. Hackbarth".

Glenn Hackbarth, J.D.
Chairman

Enclosure



601 New Jersey Avenue, NW • Suite 9000
Washington, DC 20001
202-220-3700 • Fax: 202-220-3759
www.medpac.gov

Glenn M. Hackbarth, J.D., Chairman
Robert D. Reischauer, Ph.D., Vice Chairman
Mark E. Miller, Ph.D., Executive Director

June 12, 2003

The Honorable J. Dennis Hastert
Speaker of the House of Representatives
U.S. House of Representatives
H232 Capitol Building
Washington, DC 20515

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Glenn Hackbarth, J.D.
Chairman

Enclosure

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Executive summary

Executive summary

This report analyzes variation within the Medicare program and explores a variety of possible payment innovations. We study variation along several dimensions. On one of the most important dimensions—quality—we see some evidence that higher cost or service use does not necessarily result in better quality of care. Policymakers should give high priority to developing payment mechanisms that reward quality, and we see attractive opportunities to pursue.

Medicare program spending per beneficiary varies from state to state, hospital financial performance under Medicare varies from hospital to hospital, growth in volume of physician services varies by type of service, and availability and cost of supplemental insurance for beneficiaries vary by where they live and where they worked. Should these variations be a cause for concern? How much should be eliminated? How much is the inevitable result of providing complex services in local markets with different characteristics?

The first part of the report examines these different forms of variation and what they mean for the program, its beneficiaries, and its providers. We first look at variation in overall Medicare spending across the country and then at how insurance markets for products that supplement Medicare differ by state and smaller geographic areas. Next, we investigate aspects of variation within major provider settings. For hospitals, we analyze financial performance under the inpatient prospective payment system. For physicians, we explore the growth and use of various types of physician services. For post-acute care providers, we focus on beneficiaries' use of services and different types of providers, and compare use before and after implementation of prospective payment systems. We conclude our investigation of setting-specific variation by examining whether the differences in the costs of dialysis are related to quality of care.

While some of the variation we study in the first part of the report is caused by factors like health status, some differences remain and, at least on some measures, do not reflect differences in quality. A possible mechanism for addressing some of the undesirable variation in the program would be through innovations to payment, such as using financial incentives for quality and other payment structures that would promote quality care across settings. Improving the way the program pays for services could promote quality, and possibly reduce variation and spending.

Other innovations in payment include using market-based competition to purchase items and services in the fee-for-service Medicare program and improving the payment method for covered drugs, such as using private sector prices as a reference price and competitive pricing. By offering incentives to improve quality, using market forces to set payments for some services, and addressing the shortcomings in payments for Medicare-covered drugs, the program would make better use of scarce dollars. These innovations in payment would begin to establish a relationship between payment, quality, and efficiency.

Finally, the report includes two appendixes. One fulfills our statutory requirement to respond in our June report to the HHS Secretary's estimate of the payment update for physician services. The other is a new feature of our June report—an agenda for improving data on Medicare and health care. MedPAC wants to bring attention to this issue because it is central to payment and other policy decisions for the program.

Variation in per beneficiary Medicare expenditures

Large variation in local per beneficiary fee-for-service spending raises concerns about whether beneficiaries in low-expenditure areas are getting the care they need, and whether care is being efficiently provided in high-expenditure areas. Geographic

variation in per beneficiary spending has three sources: differences in the cost of providing care, in the special payments made for social objectives, and in the quantity of care provided. Chapter 1 finds that the cost of providing care, special payments to hospitals, and health status account for 40 percent of variation in Medicare per beneficiary spending among states. Once we adjust for these factors, the resulting measure—adjusted service use—varies much less across states than unadjusted expenditures do. Using some accepted measures of quality, we also find that higher service use in a state is not associated with higher-quality care.

Consistent with other research, our analysis finds that market-level factors, including the share of the population under age 65 without health insurance, the racial and ethnic mix of the 65 and over population, the supply of providers, and the availability of technology explain 35 percent of the variation remaining in the adjusted service use measure.

Implications of supplemental insurance market variation

We find variation not only in the Medicare program, but also in the availability of supplemental coverage. As we discuss in Chapter 2, 90 percent of Medicare beneficiaries obtain coverage in addition to the Medicare program’s standard benefits through individually purchased Medigap policies, employer-sponsored retiree health benefits, assistance from Medicaid or other public programs, or enrollment in a Medicare+Choice option. Although the value and stability of options vary, this supplemental coverage is important to beneficiaries for a number of reasons, such as making health care spending more predictable and covering services Medicare does not. The options for supplementing Medicare actually available to beneficiaries vary considerably, however, because local markets differ, as do beneficiaries’ resources, past employment histories, and preferences. We also find that the interaction of federal and state oversight of Medicare products influences the evolution of Medigap, employer-sponsored, and M+C options (as well as supplementation available through Medicaid), and thus are important to consider for incremental changes or broad reform proposals.

Sources of variation in hospital financial performance under prospective payment

Moving to the sector level with Chapter 3, we analyze variation in hospitals’ financial performance under Medicare payment. Medicare designed its prospective payment system for inpatient acute care hospitals to capture differences in hospital costs due to patient complexity and geographic variation in input prices. The payment system also contains elements driven primarily by policy considerations, such as spending for medical education.

The payment system accounts for one-quarter of the variation across all facilities’ Medicare inpatient margins. The system appears to be operating largely as expected. Most of the payment system’s effects on hospitals’ inpatient margins are attributable to deliberate policy adjustments that the Congress has added to the payment formulas, such as extra payments for teaching hospitals, those that serve a disproportionate share of low-income patients, and certain rural facilities. Inaccuracies in Medicare’s case-mix and wage-index adjustments also make a small contribution to variation in margins. After taking into account the effects of the payment system, we do not find meaningful differences in margins associated with specific demographic or market characteristics. A substantial portion of the variation in Medicare inpatient margins is due to hospitals’ operating characteristics (for example, length of stay), which are at least partially under management control. This finding is consistent with one of the fundamental assumptions of prospective payment: Managers can exert considerable control over hospital efficiency and the cost of care, and thus financial performance.

Growth and variation in the use of physician services

Chapter 4 picks up the theme of Chapter 1 by exploring the role of service use in determining Medicare expenditures, looking specifically at physician services. Medicare has pursued a number of strategies to address growth in the use (volume and intensity) of physician services, including expenditure targets. At issue is whether other policy options should be considered. Utilization grew at an annual rate of 3.3 percent from 1999 to 2002, and our analysis of the most recent data on Medicare beneficiaries' use of physician services finds that growth of service use is highest (an annual rate of 9 percent) for imaging services, such as magnetic resonance imaging and computed tomography. The data also show the widest geographic variation is in the use of tests and imaging services (a three-fold difference between maximum and minimum among the 50 largest metropolitan statistical areas).

Two major findings from the research literature bear on these conclusions. One, looking at the high degree of geographic differences in service use, concludes that much of the high use may be unnecessary and driven by practice patterns influenced by physician and hospital supply. The other finding from the research literature focuses on growth of use in services over time for specific procedures and concludes that technology diffusion that is often valuable to beneficiaries drives the growth. Further work is needed to understand the growth and variation in service use and, if necessary, to develop options for changing current policy.

Monitoring post-acute care

Chapter 5 shifts to another provider setting where changes in service use have concerned policymakers. In response to rapid growth and wide variation in the use of post-acute care, the Balanced Budget Act of 1997 and subsequent legislation mandated prospective payment systems for all post-acute care settings. This chapter presents research that monitors and assesses how these new payment systems have affected patterns of post-acute care.

Comparing patterns of use before and after the implementation of prospective payment for home health and skilled nursing facility (SNF) care, we find substantial declines in the use of home health care and increases in use of SNFs and other post-acute care providers. The steepest decline in posthospital home health care occurred among beneficiaries in states that previously had the highest use of these services and with diagnoses for which the need for home health care is hardest to define. Although home health care use dropped for beneficiaries of all ages, the declines were higher among younger beneficiaries.

We then turn to long-term care hospitals, which are unevenly distributed across the country, provide a small fraction of this type of care, and are very expensive post-acute settings. We find that patients who used these facilities are similar to those who used other settings and that SNFs and long-term hospitals are substitutes for their post-acute care. Further research is needed to see whether the patterns we see hold after we include more refined measures of illness severity. We also plan to analyze differences in patient severity, cost, and outcomes. Finally, we want to compare the type of care beneficiaries receive in areas with and without long-term care hospitals.

Quality of dialysis care and providers' costs

In Chapter 6 we look at dialysis, a service where the costs of providing a treatment vary substantially and where lower cost is associated with facility characteristics, such as type of ownership, location in rural and low-wage areas, and higher volume. The central question posed in this chapter is whether the lower costs per treatment result in lower-quality care for beneficiaries.

MedPAC's analysis shows that quality of care does not significantly differ between facilities with lower and higher costs for the bundle of services covered by the dialysis composite rate. When we add costs for drugs (not included in the bundle) and composite rate costs together, we find that beneficiaries' outcomes are poorer for facilities with higher than average costs. This finding may mean that certain facilities are less efficient at furnishing drugs than others and this inefficiency may in turn reflect less than optimal patient care. It is also possible that higher drug costs reflect unmeasured higher severity. Either of these explanations suggests the need to refine the outpatient dialysis payment system by broadening the payment bundle to include commonly used services currently excluded from it and accounting for differences in patient case mix. The finding that lower costs do not appear to compromise quality of care also will be useful to the Commission's discussion about the appropriateness of Medicare payments. This study also raises questions about ways that payment might be targeted to performance, a topic explored in greater depth in the following chapter.

Using incentives to improve quality in Medicare

One of Medicare's most important goals is to ensure that beneficiaries receive high-quality health care. Chapter 7 discusses the nonfinancial incentives and other tools Medicare already has for improving quality and innovative approaches used in the private sector. MedPAC strongly supports the work CMS has done in this area, which will improve quality and provide a base for future actions. Nonetheless, the current payment system generally fails to financially reward higher-quality plans or providers. Medicare's beneficiaries and the nation's taxpayers cannot afford for the Medicare payment system to remain neutral towards quality. Change is urgently needed. MedPAC recommends that Medicare pay providers differently based on quality and implement other payment structures to promote it across settings, where some of the most important quality problems occur. Two settings—Medicare+Choice plans and inpatient rehabilitation facilities—offer ready measures and standardized data collection, and we suggest that CMS start with these settings to create payment differentials. However, because other settings, such as hospitals and physicians' offices, affect a much larger number of beneficiaries, demonstrations or other steps should extend to those settings.

Improving beneficiaries' quality of care in the Medicare program is the primary goal of an incentives initiative. However, incentives for providers to improve care may have a secondary benefit of reducing geographic variation in service use, which physicians largely determine by deciding which test, procedure, or surgery is necessary for a given patient. While we know that the increased dollars spent on some of these services are not always associated with improved quality, we do not know which are unnecessary.

Financial incentives for quality could encourage greater use of best practices by first identifying the best way to treat patients and then rewarding providers that follow the guidelines, although such guidelines do not exist for all conditions. Where they do not exist, Medicare may be able to measure and reward outcomes—the ultimate indicators of quality. However, rewarding outcomes is complicated by case mix and other patient characteristics that independently affect outcomes.

By rewarding quality whether measured by guidelines or outcomes, the program would send the strong message that it cares about the value of care beneficiaries receive and encourages investment in quality.

Using market competition in fee-for-service Medicare

Chapter 8 addresses developing alternative payment mechanisms to control Medicare costs while assuring quality and access. This chapter considers how market competition could apply to the program by providing an overview of key design elements—product definition, competitive bidding process, and beneficiary protections—that any

competitive pricing approach must address. After introducing these elements, the chapter shows how two Medicare demonstrations approached market competition. MedPAC finds the results of the demonstration for durable medical equipment promising evidence that competitive pricing can result in cost savings without an adverse effect on quality or access. We recommend that the Congress authorize the Secretary to pursue more demonstrations of this nature and that it grant the Secretary broader authority to incorporate successful innovations into program operations, subject to advance review by the Congress.

MedPAC also finds that bundling services across settings, as with the participating heart bypass center demonstration, is worth exploring further in future demonstrations to control costs. Bundled services may also address the cross-setting quality problems that Chapter 7 describes.

Medicare payments for outpatient drugs under Part B

Chapter 9 looks in-depth at Medicare-covered outpatient drugs, for which the payment method is flawed and spending is growing rapidly at an estimated 35 percent between 2001 and 2002. We examine three major problems: Medicare payments far exceed provider acquisition costs; the system creates incentives for manufacturers to raise their list prices, resulting in increased Medicare payments; and drug administration fees do not reflect the true costs of providing drugs to beneficiaries.

Policymakers are considering how to change the current system. We describe payment methods that other public and private purchasers have developed for physician-administered drugs. We also analyze the alternatives suggested by the policy community, which include benchmarking methods, payment based on invoice prices, and competitive bidding. We discuss several benchmarking methods, including benchmarking payment amounts on transaction prices that could be audited. Combination approaches based on the competitiveness of the therapeutic drug class are also possible. While each method has advantages and disadvantages, any one of these alternatives would be a significant improvement over the current payment system. ■

CHAPTER

1

**Geographic variation in
per beneficiary
Medicare expenditures**

Geographic variation in per beneficiary Medicare expenditures

Large variation in per beneficiary local fee-for-service expenditures raises concerns about whether beneficiaries in low-expenditure areas are getting the care they need and whether care is being efficiently provided in high-expenditure areas. Understanding the sources of the variation may shed light on whether the concerns are justified. Costs of providing care, special payments to hospitals, and health status are known sources of variation. We found that about 40 percent of the variation is attributable to these sources. The variation in adjusted service use across states, therefore, is much less than the variation in expenditures. The remaining variation primarily reflects differences in service use due to practice patterns, propensity to use care, and other factors. We have investigated this remaining variation using regression analysis and found several factors (for example, the proportion of the under-65 population without insurance, the racial and ethnic mix of the 65 and over population, and, depending on the model specifications, several variables representing supply and technology) that explain about 35 percent of the remaining variation.

In this chapter

- Measurement of variation
 - Sources of variation
 - Analysis of total variation
 - Does variation in adjusted service use imply inequity?
 - Factors affecting variation in smaller geographic areas
 - Conclusions
-

Background

Policymakers have given considerable attention to the geographic variation in per beneficiary Medicare expenditures. At the metropolitan statistical area level, per beneficiary program expenditures for beneficiaries in traditional fee-for-service Medicare in 2000 varied from about \$3,500 in Santa Fe, New Mexico to almost \$9,200 in Miami, Florida. At the state level, expenditures vary as well, from a low of about \$3,800 in Hawaii to as high as \$6,700 in Louisiana and \$7,200 in Washington, D.C.

Policymakers are particularly concerned with the large variation among states, because it suggests inequities in a national program. Some are concerned that in states with low expenditures, perhaps beneficiaries are not getting their fair share, or providers are not being adequately compensated for the care they deliver. Others are concerned that states with high expenditures may be using too much care or are being overcompensated for the care provided. To understand if these concerns are justified, we look at how best to measure state-level variation, some of its causes, and what it does or does not indicate about equity in the program. The basic issue is whether differences in expenditures are symptoms of inequity or simply reflect underlying differences in state health care markets and beneficiaries.

Many health services researchers investigating geographic variation in Medicare are interested in variation in **service use** per beneficiary. They immediately adjust for prices and demographic or health status differences, and then attempt to explain the remaining variation in service use, usually at a local market level.¹ This chapter instead first

focuses on the beginning steps—adjusting for prices and health status—because we have to address geographic variation in **expenditures** at the state level. Only after we make those adjustments and show they account for about 40 percent of the total variation do we start to discuss what accounts for the remaining 60 percent, which many would ascribe to variation in service use. Like other researchers, we look at that variation in smaller geographic areas than the state because the sources of that variation are often local in nature.

Measurement of variation

Meaningful analysis of state-level variation in Medicare expenditures requires a reasonable definition of program expenditures per beneficiary. This analysis starts with the amount Medicare spends for beneficiaries in the traditional fee-for-service (FFS) program. It does not consider the amount spent on beneficiaries who instead are in some form of Medicare managed care—for example, Medicare+Choice (M+C) coordinated care plans, cost plans, or demonstration plans—or in the M+C private FFS program. These Medicare private plan alternatives to the traditional FFS program are interesting and important subjects in their own right, but their payment methods reflect many objectives and tend to obscure the underlying causes of variation in per beneficiary expenditures.² This analysis uses FFS expenditures per beneficiary at the county level reported by CMS for two reasons. First, it captures all FFS expenditures on behalf of beneficiaries who reside in a county regardless of where the beneficiary goes for health care. That is, if beneficiaries go to a nearby state for health care, those expenditures are still accounted for and attributed to the

beneficiaries and their counties of residence. Second, it accurately captures expenditures for services provided during a year.

In contrast, some concerned with the issue of variation in state-level expenditures have concentrated on another measure formerly published by CMS that is misleading. The text box opposite discusses the problems with that measure in more detail.

Sources of variation

Variation in Medicare expenditures stems from two basic sources: differences in the cost of providing care and in the quantity of care provided. Differences in the cost of providing care are primarily reflected by input price adjustments. Medicare payment systems use input price adjusters to address geographic differences in the cost of inputs, such as wages and office rents. Previous MedPAC analysis found that the input price adjusters the Medicare program uses do reflect local differences in the cost of providing care. For example, the hospital wage index is used to adjust payments to providers for local differences in the wages paid by health care facilities. In general, one would expect the wage rates paid by providers to vary with the overall wages paid by other employers in the same market area, with both reflecting the local cost of living. MedPAC has found that the hospital wage index and an index of overall wages are closely correlated (MedPAC 2001). Moreover, in Chapter 3 we find that hospital profit margins are largely unrelated to the level of the local hospital wage index. This refutes to some extent arguments that wage indexes in low-cost areas are too low, resulting in hospital payments that are inadequate for hospitals to cover their Medicare costs.³

1 For example, John Wennberg and associates have done considerable work on the variation in service use, as is discussed later in this chapter. Their starting point is expenditures adjusted for health status and input prices. In Chapter 4 of this report we look at variation in use of physician services. That analysis also starts with adjusted expenditures.

2 See MedPAC's March 2003 Report to the Congress for a discussion of M+C payment methods.

3 This is not to say that the hospital wage index is a perfect measure. For example, in previous work we found that the wage index could be improved by properly accounting for the occupational mix in hospitals.

An invalid measure: provider payments per beneficiary

The measure often used to analyze variation in expenditures among states is conceptually: program payments sent to providers and managed care plans in a state divided by the number of beneficiaries living in the state. (The fee-for-service [FFS] amounts are actually the national cash flow amount from the Treasury allocated to states based on their FFS utilization.) Its shortcomings make this measure invalid and it should not be cited in any debate over variation in Medicare expenditures. The measure has two serious shortcomings:

- It does not account for beneficiaries going across state borders to receive care. Thus it can be particularly misleading in states that experience either significant in- or out-migration. For example, providers in Washington, D.C. treat significant numbers of beneficiaries from nearby states. As a result, this measure of Medicare payments to Washington, D.C. providers per resident beneficiary exceeds \$10,000, nearly double the national average, reflecting the high concentration of providers in a city with relatively few beneficiaries. Conversely, in some states there is significant net out-migration for health care. Simply totaling the Medicare payments to providers in those states and dividing by the

number of Medicare beneficiaries will always underestimate health care actually received by beneficiaries residing in them.

- It uses the payments providers receive in a year rather than the payments that result from services provided in a year. This can be a problem when introducing new payment systems, because there are usually delays in claims and payments resulting in an uneven flow of payments over a year. Also, Medicare managed care plans sometimes receive more than 12 cash payments in a year, and other times receive fewer than 12. Payments received by providers in a state can thus vary markedly from year to year.

CMS no longer publishes this measure but rather simply reports total annual state-wide payments to providers—Medicare estimated benefit payments by state (CMS 2002). The footnote to the CMS table reporting these data states that payments are on a paid (not incurred) basis and that “This distribution may differ from similar tables based on the state of the beneficiary. Since payments are based on the state of the provider or plan, **the average payment per beneficiary is not meaningful** and will no longer be provided” [emphasis added]. ■

The Medicare program adjusts physician payments using three geographic practice cost indexes (GPCIs): physician work, practice expense, and professional liability insurance (PLI).⁴ Every three years, CMS reviews the three indexes and updates them with the best available data. The latest revision was in 2000.

Taken together, the three indexes can be combined into the geographic adjustment factor (GAF). That factor has values that range from 0.89 to 1.22 across the country. About 44 percent of beneficiaries live in areas with GAFs within 5 percent of the national average and 90 percent live in areas within 10 percent of the national average.

The mix of providers in a state can also contribute to variation in expenditures. Medicare makes special payments to hospitals to reflect the costs of providing uncompensated care to the poor, the additional costs incurred by teaching hospitals, and conditions facing certain groups of rural hospitals.⁵ If the mix of hospitals that receive special payments differs between two areas, Medicare payments will differ as well.

Medicare payments for the same procedure often differ across sites of care. For example, physicians can perform many of the same procedures in hospital outpatient departments (HOPDs) or in ambulatory surgical centers (ASCs). Medicare pays different facility rates for the same procedure across these settings. Consequently, variation in expenditures can be affected because, for example, physicians use ASCs rather than HOPDs more frequently in some areas than others.

Variation stemming from differences in quantity of care is due to differences in beneficiaries’ health status and propensity to use care, and in practice patterns among

4 The physician fee schedule assigns each procedure code three relative weights. Those weights are multiplied by the appropriate index value and summed to arrive at a value that, when multiplied by the conversion factor, yields the payment for that procedure code. The physician work index is based on professional wage data from the Census. It weights local wages by 25 percent and the national average at 75 percent. Hence, it varies much less than local wages vary across the nation. The practice expense index is derived empirically from Census data on nonphysician staff, Department of Housing and Urban Development data on rental housing costs as a proxy for office space costs, the cost of equipment and supplies, and miscellaneous items. The first two factors vary locally and account for 67 percent of the index. The remaining items are presumed to be bought on the national market and account for the remaining 33 percent. The PLI GPCI is based on data CMS collects from several of the largest malpractice insurers in each state.

5 Some of these special payments are directly related to the costs of providing patient care to Medicare beneficiaries, while others reflect different policy aims. For example, part of the special payments to teaching hospitals increase payments to teaching hospitals beyond the additional costs they incur in caring for Medicare beneficiaries. Because these payments do not strictly reflect cost differences, we adjust for them separately to better understand underlying variation.

physicians. Beneficiaries in relatively poor health tend to use more care than those in good health; hence areas with sicker populations such as Miami tend to have higher use than areas with healthier populations such as Fargo, North Dakota. Beneficiaries' propensity to use care is affected by many factors, including access to care and personal characteristics such as income, education, race, and sex.

Physicians' practice patterns affect quantity of care in two ways. First, physicians in some areas tend to provide more services such as diagnostic tests than physicians in other areas, as discussed in Chapter 4. Second, physicians may prefer to use certain sites of care more frequently in some geographic areas than others. For example, physicians in some areas may prefer the inpatient setting to treat a particular condition, while physicians in other areas may prefer outpatient settings. If inpatient care leads to more service use, then the quantity of care will be greater.

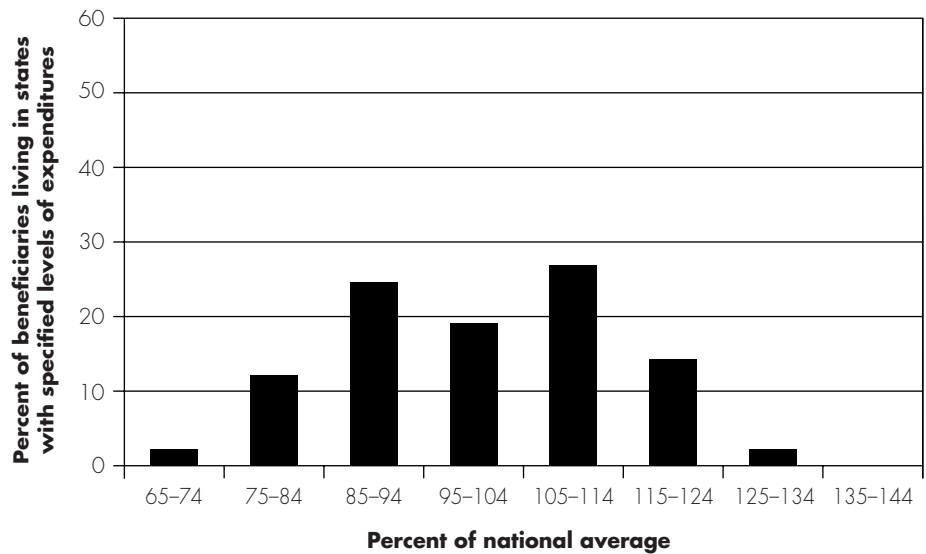
Analysis of total variation

To effectively evaluate variation, the unit of observation should be the beneficiary because providing benefits to beneficiaries is the reason the Medicare program exists. Consequently, we illustrate variation among states by weighting each state by its Medicare population. The result is beneficiaries, not states, being weighted equally. Without weighting, beneficiaries in less populous states would count more than those in more populous states.

Figure 1-1 shows that weighting each state's per beneficiary fee-for-service expenditures by its number of beneficiaries produces a nearly bell-shaped curve that is fairly symmetric around the national average per beneficiary expenditures of \$5,360. About 20 percent of the distribution is within 5 percent of the national average. However, the distribution reveals a large variation in

FIGURE 1-1

State-level per beneficiary FFS expenditures, weighted by number of beneficiaries, 2000



Note: FFS (fee-for-service). National average per beneficiary Medicare expenditures are \$5,360.
Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS.

per beneficiary expenditures among states. As is shown below, much of the variation is due to two factors: the cost of providing care and differences in beneficiaries' health status. Adjustments for input prices are intended to make payments more closely reflect differences in the costs of providing care and generally track with other measures of cost of living (MedPAC 2001). Differences in beneficiaries' health status are important because sicker beneficiaries usually use more health services than healthier beneficiaries. Further, some of the variation is due to special payments to hospitals and to other causes. In the remainder of this section, we show the effect of adjusting expenditures for some of these factors.

Adjusting states' per beneficiary expenditures for differences due to input prices substantially reduces the variation in per beneficiary expenditures. As Figure 1-2 shows, the weighted distribution still

has the same average value of \$5,360, but the variation is less by any measure. For example, almost 40 percent of the distribution is within 5 percent of the national average, as compared with about 20 percent in the unadjusted diagram.

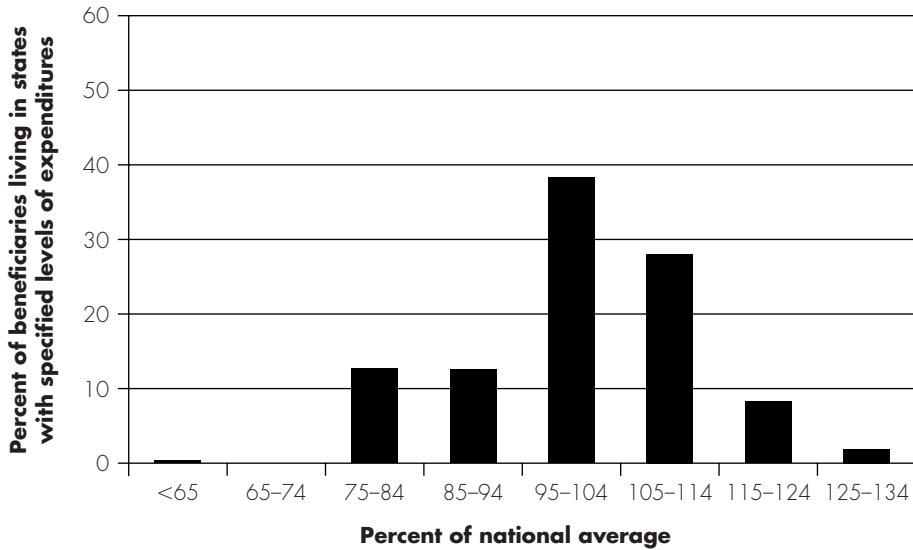
Much of the variation that remains after removing the effects of input price adjusters is attributable to the quantity of services beneficiaries use. We further adjusted state per beneficiary expenditures for two factors that explain some of the variation in quantity of services. The dominant factor is health status. Areas with relatively healthy beneficiaries will tend to use fewer services than areas with sicker beneficiaries. Our state-level measure of health status ranges from 11 percent above to 15 percent below the national average but there are methodological issues that need to be considered.⁶ The other factor we adjust for is beneficiaries' Part A and Part B participation rates.⁷

⁶ We use risk scores from the hierarchical condition category risk-adjustment model as our measure of health status. The measure, which is based on diagnoses, incorporates demographic factors such as age and sex, and is considered to be one of the best measures currently available. Nevertheless, it has its limitations. For example, diagnoses require a visit to a practitioner; thus sick persons who do not seek treatment will not have their conditions reflected in the risk score.

⁷ Variation from differences in beneficiaries' Part A and Part B participation rates, which is small, simply indicates that not all beneficiaries have both Part A and Part B benefits, that participation rates vary among states, and that participation affects use.

FIGURE 1-2

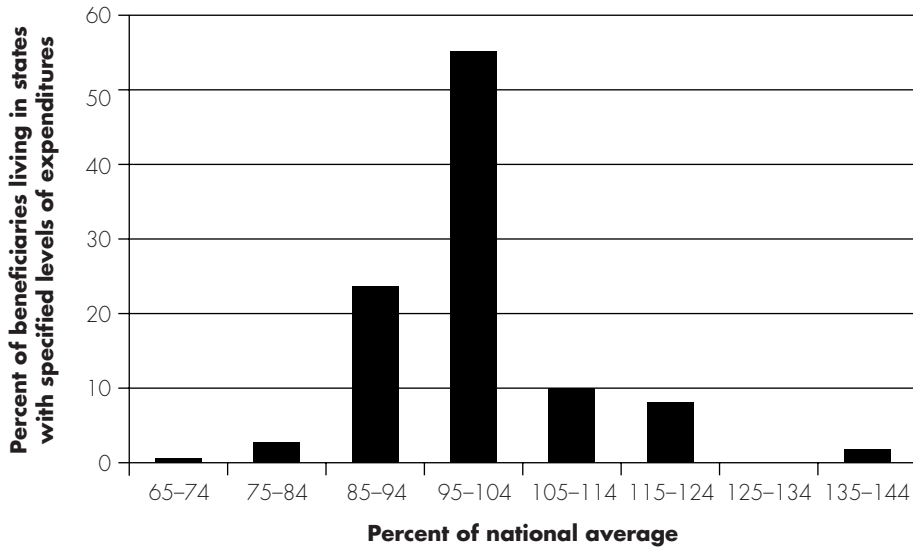
State-level per beneficiary FFS expenditures adjusted for input prices, weighted by number of beneficiaries, 2000



Note: FFS (fee-for-service). National average Medicare expenditures per beneficiary are \$5,360.
 Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS.

FIGURE 1-3

State-level per beneficiary FFS expenditures adjusted for input prices, health status, and special payments, weighted by number of beneficiaries, 2000



Note: FFS (fee-for-service). Also adjusted for Part A and Part B participation rates. National average Medicare expenditures per beneficiary are \$5,360.
 Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS.

Figure 1-3 shows these adjustments for differences in health status and Part A and Part B participation rates, as well as differences from input prices and special payments received by some hospitals. This measure shows less variation than that in Figure 1-2, and has substantially less variation than the unadjusted expenditures. About 55 percent of the resulting distribution is now within 5 percent of the national average, as opposed to only about 20 percent in the unadjusted graph. (Alternatively, the average of the absolute difference among states from the national average per beneficiary expenditure is about \$650 before adjustment, but only about \$400 after adjustment.)

Table 1-1 (p. 8) summarizes the results as the adjustments just discussed are made to the original distribution of Medicare expenditures.

Removing special hospital payments after making the other adjustments does not make much difference in the amount of variation, although it changes some states' relative position within the distribution. By one measure the resulting distribution is slightly less dispersed, by another slightly more.⁸ The text box on page 10 explains the methods and data used to make the adjustments. We refer to the final distribution as a measure of adjusted service use. Removing the effects of differing input prices, health status, and special payments to hospitals reveals that the rate of service use by state varies much less than would appear from looking at unadjusted Medicare expenditures.

⁸ The order of adjustment makes a difference in the apparent contribution of each factor. For example, adjusting for special hospital payments first would make the variation attributable to them appear greater and that attributable to input prices appear less. However, the final adjusted service distribution resulting after making all adjustments will be the same regardless of order.

Does variation in adjusted service use imply inequity?

This adjusted service use measure still exhibits some variation. The remaining variation could be random, or reflect unadjusted differences in cost from provider mix, differences in beneficiaries' propensity to use care, or providers' differing practice patterns. Beneficiaries' propensity to use care depends on many factors such as income, education, race, sex, and supplemental insurance coverage. Other analysis has shown that practice patterns depend on many factors, including the concentration of hospital resources (such as number of hospital beds per resident) and the lack of established guidelines for treating many conditions (Wennberg and Cooper 1999). That work concludes that a greater supply of providers is associated with greater utilization of health care. Recent work indicates that greater use of health care is not associated with better quality or access over the time period analyzed (Fisher et al. 2003). Disentangling the explanatory contribution of these various factors is a difficult task and cannot be done by simply adjusting for known factors as we have done up to this point. Before we attempt to do so let us ask some more fundamental questions.

Is variation in adjusted service use a serious problem and if so, what policies might be pursued to reduce it? The variation in adjusted service use may be a source of concern if some of the care in high-use states is inappropriate or unnecessary, or if beneficiaries in low-use states are not getting sufficient care. We look at three different aspects of this issue.

Use and quality

If the variation in adjusted service use reflects underservice of beneficiaries in low-use states, one might surmise that those beneficiaries are receiving lower-quality care. Figure 1-4 illustrates the

relation between states' per beneficiary adjusted service use and one, admittedly limited, measure of quality of care. It sorts states in order from lowest adjusted service use to highest. In the same order, the diagram plots an ordinal measure of quality. That is, the state with the best quality has the highest rank (51) and states with poorer quality have lower ranks, down to 1. Measuring health care quality is fraught with difficulty. An article in the *Journal of the American Medical Association* used this measure to compare states (Jencks et al. 2003). It is based on how frequently Medicare patients received 24 preventive measures or treatment methods with strong indications of improving outcomes. It does not include all services that might be associated with high quality care.

Figure 1-4 shows that many states with low adjusted service use have relatively high quality by this measure, and many states with high adjusted service use have

relatively low quality rankings. This is true even though some measures of quality—for example, mammography—require use of Medicare-covered services. The figure includes a trend line that indicates the relation that would occur between adjusted service use and quality rank if adjusted service use were a perfect predictor of quality.⁹

Using this measure of quality, Figure 1-4 does not support the hypothesis that low-use states have low-quality care. The data show that some high-use states have low quality by this measure. Other recent research has also shown no increase in quality (using a similar measure of quality) with higher use. That research used smaller geographic areas in its analysis (Fisher et al. 2003).

The measure of quality used above is limited to the use of some specific preventative measures and effective treatments. It is not an overall measure of

TABLE 1-1

Effect of adjustments on variation in Medicare FFS expenditures by state, 2000

Measure	Percent of distribution (as percentage of national average per beneficiary)			Measures of dispersion	
	<85%	85%–115%	>115%	Standard deviation	Average of absolute difference
Unadjusted expenditures	15.2%	68.9%	16.0%	\$740	\$648
Expenditures adjusted for:					
Input prices	13.0	77.6	9.5	625	486
and, health status and Parts A & B participation	3.2	87.3	9.5	551	415
and, special payments to hospitals	3.2	87.3	9.5	552	402

Note: FFS (fee-for-service).

Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS.

⁹ We performed a regression analysis on the same data. The result is in the same direction, higher service use is correlated with lower quality rank. The coefficient is negative (–.57) with a t-statistic of 4.9, and the R² is 0.33.

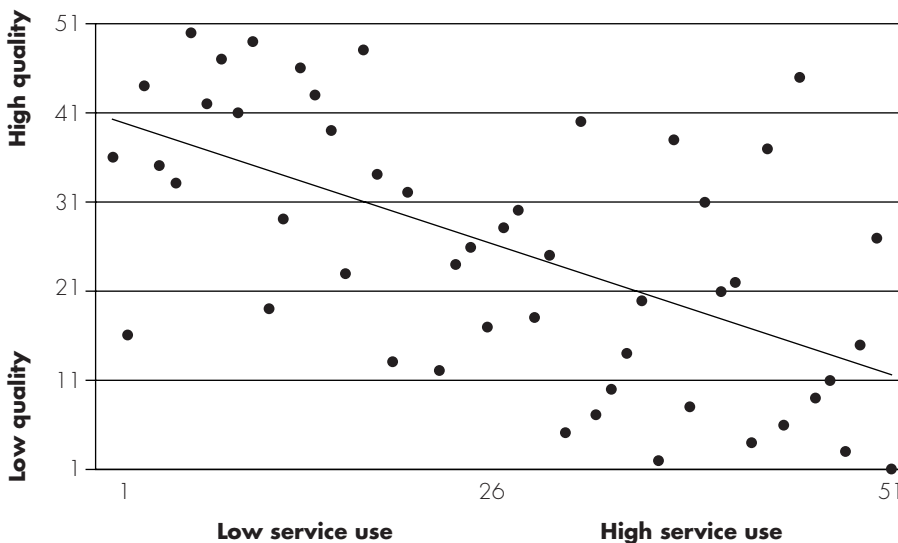
quality, or of appropriate use. Simply knowing the aggregate use rate, shown in Figure 1-4, is not enough to tell whether the services used are appropriate or not. Earlier research, which looked at three procedures, suggested that the use of appropriate care increases with increasing overall use. Also, the ratio of appropriate to inappropriate use did not always change with increases in aggregate use (Chassin et al. 1987, Leape et al. 1990). However, different kinds of procedures show different rates of variation. For example, in Chapter 4, we show that the rate of use of major procedures varies less than the rate of use of other services such as testing and imaging. Therefore, analysis of how appropriate and inappropriate use vary with overall use is sensitive to the kind of procedures analyzed. A fully effective measure of quality would take into account whether the care delivered was appropriate and would permit better analysis of aggregate use and quality.

Use and cost sharing

A simplistic way to reduce the variation in adjusted use rates would be to somehow increase use in low-use areas and decrease it in high-use areas. However, reducing the variation in adjusted service use by increasing use in low-use states (for example, by overpaying for services, which would increase provision of services) would increase beneficiaries' cost sharing (that is, deductibles, coinsurance, and balance billing) for services covered by Medicare. Beneficiary cost sharing increases directly with higher payments in most settings.

Figure 1-5 sorts states in order from lowest adjusted service use to highest. In that same order, it plots per beneficiary cost sharing for services covered by Medicare. The diagram shows that states with low use tend to have low beneficiary cost sharing, and those with high use tend to have high beneficiary cost sharing. Consequently, increasing either the use of care or the prices Medicare pays for care in low-use states would likely increase beneficiaries' cost sharing. Associated with increased cost sharing could be increased premiums for Medigap

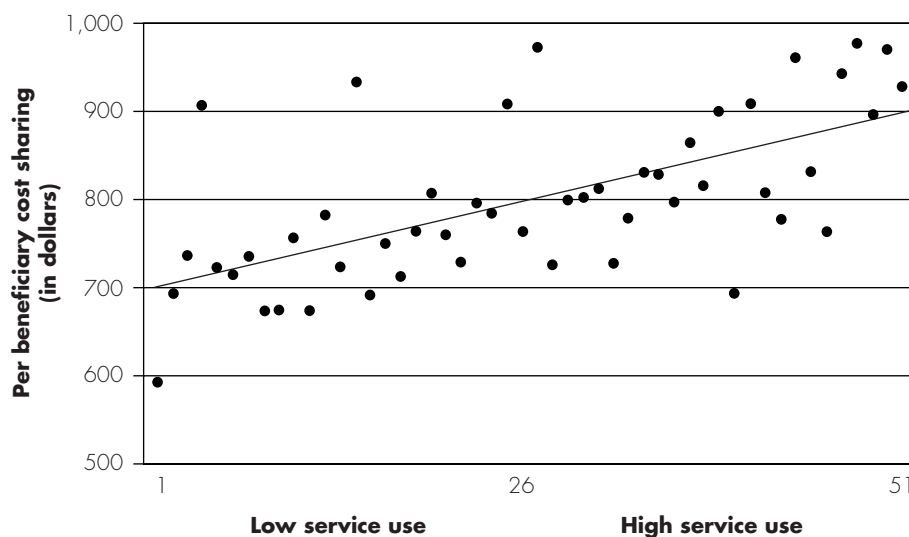
FIGURE 1-4 States' adjusted service use and quality of care, 2000



Note: The measure of both adjusted service use and quality is ordinal. For example, the state with the highest quality has a quality measure of 51 and the state with the second-highest quality has a measure of 50, and so on down to 1.

Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS, and Jencks et al. 2003.

FIGURE 1-5 States' per beneficiary adjusted service use and per beneficiary cost sharing



Note: The cost-sharing data are from 1998; the service use data are from 2000. The measure of adjusted service use is ordinal. For example, the state with the highest service use has a service use measure of 51 and the state with the second-highest service use has a measure of 50, and so on down to 1.

Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS and data from the Health Care Financing Review, Medicare and Medicaid Statistical Supplement, 2000.

supplemental insurance; increased costs to employers for supplemental retiree coverage; and potentially higher costs to Medicaid, because Medicare's cost sharing for beneficiaries directly influences premiums for Medigap and retiree coverage as well as costs to Medicaid.

It is doubtful whether the increased cost sharing that might occur with higher use would be accompanied by better quality of care under the given measure, because there is not a positive relation between use and quality (Figure 1-4).

Variation among counties

Although of tremendous interest to policymakers in the Congress, the state is not the best geographic unit for understanding variation in service use. Substantial variation exists, for example, in adjusted service use among counties within the same state. Figure 1-6 shows the variation in service use among beneficiary-weighted counties in Iowa. At the extremes, per beneficiary adjusted service use ranges from about 30 percent below to about 25 percent above the state average.¹⁰ A similar result is found among counties in New York (data not shown), which although quite different from Iowa, is similar in that it has large differences in adjusted service use among its counties. The standard deviation (a measure of how spread out the counties' per beneficiary service use is) is similar in the two states, \$588 in Iowa and \$655 in New York.

The substantial variation among counties within the same state suggests that much geographic variation would probably remain even if variation among states were eliminated. Our finding of large variation among counties in the same state is consistent with the work of other analysts who have noted that the primary sources of the variation in adjusted service use—practice patterns and propensity to seek care—vary among geographic units smaller than the state (Fisher et al. 2003, Miller et al. 1995, Wennberg and Cooper 1999). Therefore, it may be useful to study smaller geographic units.

Factors affecting variation in smaller geographic areas

Because health care is delivered in local markets, we continue our investigation by looking at local health care markets for the sources of variation in service use. Although we are interested in variation in service use for Medicare beneficiaries,

variation may be a phenomenon of health care in those markets in general and not be specific to the Medicare program. Therefore, some factors not associated with the Medicare population may still help explain variation in the amount of care Medicare beneficiaries receive. Disentangling these factors has been a subject of research for the past several decades. Others have examined variation in health care use in smaller geographic

Methods and data sources

We determined states' per beneficiary expenditures using fee-for-service expenditure and enrollment data from CMS's website. We calculated per beneficiary adjusted use by removing geographic differences in the following factors from the unadjusted expenditures. All data are from CMS's website, except where indicated.

- Input price adjusters are based on the hospital wage index for Part A expenditures and the geographic adjustment factor for Part B expenditures. The Part A adjustment takes into account where beneficiaries resident in a county obtain services. The adjustment normalizes all indices to one.
- Health status is based on risk scores from the hierarchical condition category (HCC) risk adjustment model. We used claims and demographic data to determine HCC risk scores for a 5 percent sample of beneficiaries. An average of those risk scores serves as a health status measure for each state. The adjustment normalizes all weighted states to a risk factor of one.

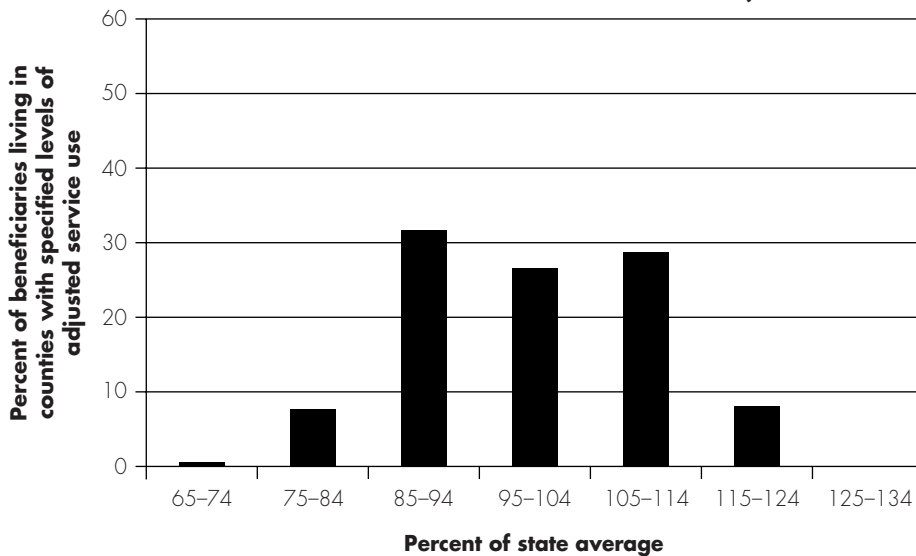
- Part A and Part B participation rates are from CMS data on county-level participation. The adjustment normalizes all states to the national average Part A and Part B participation rates.
- Special payments to teaching hospitals are direct and indirect payments for graduate medical education, and payments to hospitals for care to low-income people are disproportionate share payments. We removed these payments from expenditures and added them back in proportion to remaining Part A expenditures. This essentially keeps all hospital payments in the program and pays all hospitals at the national average rate.

A more precise measure would adjust each element of Part A and Part B expenditures by the appropriate input price adjuster, adjust for base payment differentials, track Part B spending to where it was delivered, and treat special payments to rural hospitals analogously to other special hospital payments. ■

¹⁰ Figure 1-6 shows data for one year (2000) only. Averaging over several years dampens variation somewhat, but still shows significant differences among counties.

FIGURE 1-6

Variation in county-level per beneficiary adjusted service use, weighted by number of beneficiaries (Iowa, 2000)



Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS.

areas. For example, John Wennberg and colleagues at Dartmouth College have done extensive research on this topic. They use the hospital referral region (of which there are 306 in the United States) as the geographic unit of analysis. The text box below summarizes some of their key findings.

Regression analysis to understand variation in smaller geographic areas

To better understand the variation remaining among states in our analysis after we adjusted for cost and health status, we moved to a smaller area of analysis: the metropolitan statistical area (MSA) for beneficiaries living in urban areas or the non-MSA area of a state for beneficiaries living outside metropolitan areas. We chose this definition because the MSA is a better proxy for medical

Findings from research by John Wennberg and colleagues at Dartmouth College concerning variation in service use

Wennberg and Cooper find variation in Medicare expenditures (adjusted for input prices and health status) is affected by the supply of hospital beds, which varies considerably across areas. As the number of hospital beds per beneficiary increases, the amount of hospital care per beneficiary increases (Wennberg and Cooper 1999).

Variation in expenditures is also affected by differences in rates of surgical procedures. The rates at which beneficiaries receive some surgical procedures—such as radical prostatectomy, carotid endarterectomy, coronary artery bypass grafting, and coronary angioplasty—are very different across areas. The rates of radical prostatectomy (surgery for prostate cancer) are nine times higher in Baton Rouge, Louisiana, than in Binghamton, New York. Wennberg and colleagues believe that much of this variation is reflected in differences in diagnostic intensity (how intensely physicians search for a condition that results in surgery). For example,

patients in the early stage of prostate cancer are often asymptomatic, so diagnosis is often made through a screening test for prostate-specific antigen (PSA). The frequency of PSA testing varies greatly, so there is much variation in how frequently patients are diagnosed and, consequently, how often they undergo prostate surgery. Wennberg and colleagues also believe gaps in medical science as well as uncertainty physicians have about the benefits and problems associated with many procedures affect variation in surgical rates. They suggest that variation in radical prostatectomy, for example, may be due in part to a lack of clinical trials comparing the risks and benefits of surgery, radiation therapy, and watchful waiting (Wennberg and Cooper 1999).

Geographic differences in per beneficiary Medicare expenditures are highly correlated with differences in the amount of services beneficiaries receive in the last six months of life. Also, geographic differences in the amount of supply sensitive care (where

the effectiveness has not been scientifically determined and use is largely driven by resource availability, such as number of hospital beds) strongly influences differences in the amount of care at the end of life. In particular, Wennberg and colleagues found large differences in the number of physician visits, likelihood of dying in a hospital, and the percentage of beneficiaries admitted to an intensive care unit at the end of life (Wennberg and Cooper 1999).

Fisher and colleagues examined differences in the services physicians furnish in high- and low-spending areas. They found that physicians' greater use of evaluation and management services—especially inpatient visits and inpatient specialist consultation—and use of diagnostic tests and minor procedures, such as magnetic resonance imaging, skin biopsies, and prostate-specific antigen tests drive spending differences. As discussed, they have also found no correlation between higher use and quality of care (Fisher et al. 2003). ■

care market areas than the state, and CMS uses MSAs and statewide non-MSA areas as the geographic areas for defining the hospital wage indexes used to adjust for differences in price levels.¹¹

We examined factors that may affect variation by performing a regression analysis measuring the relation between adjusted service use and variables that may affect providers' practice patterns and beneficiaries' propensity to use care. We used a set of variables that have been considered in several studies of variation (Cutler and Sheiner 1999, Miller et al. 1995, Skinner et al. 2001). We also examined several other variables, including the hospital wage index and the percent of the non-Medicare population that is uninsured.

We examined demographic variables that may be associated with use of care including: poverty rate among people age 65 or older, percentage age 65 or older who are African American, percentage age 65 or older who are Asian American, percentage age 65 or older who are Hispanic, and percentage of the non-Medicare population that is uninsured. We also examined variables that may affect practice patterns including: HMO penetration among the general population, supply of health resources (measured by the number of hospital beds per 1,000 population), and sophistication in the health care system (measured by the percentage of hospital beds that are in intensive care units [ICUs]).¹² Table 1-2 provides summary statistics for each of these variables.

We performed our analysis in two steps. First, we examined how much of the variation is explained by the demographic variables. Our results indicate that all of the demographic variables are important

**TABLE
1-2**

Summary statistics for variables explaining variation in adjusted service use, 2000

Explanatory variable	National average	Minimum	Maximum
Uninsured, not eligible for Medicare	17.7%	7.7%	30.5%
Hospital beds per 1,000 residents	3.5	0.9	10.6
Percent of hospital beds in ICUs	5.8%	0.0%	20.6%
Poverty rate, 65 and older	9.4%	3.6%	26.4%
Percent African American, 65 and older	8.1%	0.1%	40.5%
Percent Asian American, 65 and older	2.3%	0.1%	72.6%
Percent Hispanic, 65 and older	5.0%	0.2%	92.3%
HMO penetration	27.1%	0.0%	72.3%
Adjusted per capita service use	\$5,360	\$3,678	\$8,105

Note: ICU (intensive care unit). Sample for regression includes 322 metropolitan statistical areas and 46 statewide rural areas.

Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS, 2002 Area Resource File, March 2002 Current Population Survey, and 2002 Interstudy database.

under a statistical test for significance; that use rates increase as the percentages of African American, Hispanic, and uninsured increase; and that use rates decline as the percent Asian American and the poverty rate increase (Table 1-3). Interpreting these results is difficult because whether use rates are directly affected by these variables or if the variables are proxies for other factors that affect service use is not known.

In the second step, we added variables to our regression that reflect differences among health care markets. These variables include HMO penetration, number of hospital beds per 1,000 population, and percent of hospital beds that are in ICUs. A potential problem with these variables is that they may be endogenously determined. That is, the level of service use may affect the values of these variables, rather than the other way around. For example, it is not clear whether a high concentration of hospital

beds increases use of health care services or if hospital capacity expands in areas where there are many sick people who need a lot of care. Despite this uncertainty, we assume that the direction of cause and effect is that the market-related variables affect the level of service use.

Our results indicate that the concentration of hospital beds and percent of hospital beds in ICUs are significant, but HMO penetration is not (Table 1-4). Also, all the demographic variables remain statistically significant. The size and significance of the coefficient on concentration of hospital beds suggests that health care use is greater in areas with greater supply of health care resources. The size and significance of the coefficient on the concentration of ICU beds suggests that greater concentration of sophisticated, high technology resources is associated with greater health care use.

11 The Office of Management and Budget defines MSAs as geographic areas consisting of a large population nucleus together with adjacent communities having a high degree of economic and social integration with the nucleus.

12 We also considered number of physicians per 1,000 population as a measure of resource concentration and percentage of physicians who are specialists and concentration of medical residents as measures of sophistication in the health care system. We chose not to use them because of high levels of correlation among them, which adversely affects statistical tests of significance. Finally, we examined the hospital wage index as an explanatory variable to see if price level has an effect on use—it does not.

**TABLE
1-3**

Using demographic data to explain variation in adjusted service use, 2000

Explanatory variable	Coefficient from regression	t-statistic from regression
Uninsured, not eligible for Medicare	46.1*	6.7
Poverty rate, 65 and older	-53.7*	5.1
Percent African American, 65 and older	38.8*	8.8
Percent Asian American, 65 and older	-19.7*	3.2
Percent Hispanic, 65 and older	19.6*	4.6
R ²	.32	

Note: Sample for regression includes 322 metropolitan statistical areas and 46 statewide rural areas.
* Statistically significant at 5-percent level.

Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS, 2002 Area Resource File, and March 2002 Current Population Survey.

**TABLE
1-4**

Using demographic and health care market data to explain variation in adjusted service use, 2000

Explanatory variable	Coefficient from regression	t-statistic from regression
Uninsured, not eligible for Medicare	49.6*	7.2
Poverty rate, 65 and older	-42.0*	3.4
Percent African American, 65 and older	34.4*	7.6
Percent Asian American, 65 and older	-18.2*	2.9
Percent Hispanic, 65 and older	17.8*	4.0
HMO penetration	3.7	1.6
Hospital beds per 1,000 residents	69.6*	2.6
Percent of hospital beds in intensive care units	43.7*	2.6
R ²	.35	

Note: Sample for regression includes 322 metropolitan statistical areas and 46 statewide rural areas.
* Statistically significant at 5-percent level.

Source: MedPAC analysis of county-level fee-for-service expenditures and other data from CMS, 2002 Area Resource File, March 2002 Current Population Survey, and 2002 Interstudy database.

In summary, Table 1-4 indicates that per capita service use decreases by \$42 for a percentage point increase in the poverty rate and \$18 for a percentage point increase in the percent Asian American. Also, service use increases by \$34 for a percentage point increase in the percent African American, \$18 for a percentage

point increase in the percent Hispanic, \$50 for a percentage point increase in the percent uninsured, \$70 for a unit increase in the number of hospital beds per 1,000 population, and by \$44 for a percentage point increase in the percent of hospital beds in ICUs.

Conclusions

- A frequently used measure of variation in Medicare expenditures is based on the Medicare payments that states' providers receive over a year. This measure is misleading and should not be used when addressing the issue of equity associated with variation in Medicare expenditures.
- Much of the variation in expenditures in different areas of the country is caused by differences in (1) the cost of providing care to Medicare beneficiaries and (2) the health status of beneficiaries.
- Much of the remaining variation is likely caused by differences in the practice patterns of providers and beneficiaries' propensity for seeking care. Together these can lead to wide differences in the use of services by beneficiaries in some states.
- We can explain some of the remaining variation by accounting for several additional factors, including the proportion of the under-65 population without insurance, the racial and ethnic mix of the population age 65 and over, and, depending on the model specifications, several aspects of health care supply and technology.
- Higher quality care does not necessarily follow from higher use of services by the measure we used. In fact, our data show that low-use states tend to have higher-quality services relative to high-use states. It could be that beneficiaries receiving low-quality services do not get well and require more services or are simply receiving inappropriate services. Further analysis is called for to understand what is happening.
- Reducing the variation at the state level that remains after controlling for differences in costs of providing

care and health status may be difficult. Because significant variation exists within states at the county level, the causes of that remaining variation may be better addressed at some level below the state. If practice styles or quality play a major role, they may be local phenomena not accessible at the state level.

- We assume that the objective of the Medicare program is to assure access to quality health care for

beneficiaries. To simply increase payments or use in low-expenditures areas arbitrarily would be a questionable policy. More importantly, policies directed at raising payments for all providers in a geographic area, regardless of their cost or quality, are unlikely to improve quality and would likely increase beneficiaries' cost sharing. Further, these policies would not address quality or efficiency in areas

with high expenditures. None of these would be attractive outcomes. The better policy would be to introduce incentives for quality to increase payments to providers and delivery systems with high quality health care—which are often located in low-use areas. Targeting increased payments in this way is a more attractive option and is discussed further in Chapter 7. ■

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CHAPTER

2

**Market variation: implications
for beneficiaries and
policy reform**

Market variation: implications for beneficiaries and policy reform

Most beneficiaries seek additional coverage to protect themselves from health care costs not covered by Medicare. Previous MedPAC work has concluded, however, that supplementing Medicare can be complicated and expensive, and often fails to shield beneficiaries from high expenses. These options, moreover, vary across the country and are changing.

Medicare insurance markets are complex. Rates of supplemental coverage across markets vary with beneficiary income, age, workforce unionization, and urban and rural location. State regulatory policies can also facilitate access to some insurance products. Our review of the structural and regulatory factors shaping Medicare markets identifies standardization versus flexibility in the design of benefits as critically important for beneficiaries, employers sponsoring retiree health benefits, and health plans and insurers.

The division of regulatory oversight of Medicare products among federal agencies and the states will continue to shape the evolution of Medigap, employer-sponsored, and Medicare+Choice options. Understanding the structure of Medicare supplementation and how federal and state law and regulations affect the ways that different products meet beneficiaries' changing needs will also be important in considering market-based reforms.

In this chapter

- Insurance markets and supplemental benefits
 - Overview of Medicare insurance markets in states and metropolitan areas
 - Conclusions and key policy questions for future work
-

Previous MedPAC reports have documented the importance of supplementing traditional Medicare benefits. Our June 2002 Report to the Congress described how ongoing changes in medical technology and demographic characteristics of the beneficiary population have magnified limitations of Medicare's benefit design. Medicare does not cover most outpatient prescription drugs, certain preventive services, and other services such as routine and dental care. Together with high cost sharing for covered services such as outpatient care and mental health services and lack of protection against catastrophically high out-of-pocket liability, these limitations lead most beneficiaries to seek additional insurance coverage.

The patchwork of supplemental coverage that has evolved, however, only partly addresses the limits of Medicare's benefit package. As a result, many who have supplemental coverage still face large financial liabilities. They must pay out of pocket for health care products and services that Medicare does not cover. In addition, financial incentives may dissuade them from using the most clinically appropriate care. Current demographic trends and continuing advances in technology suggest that these problems will become more serious over time.

Additional analyses conducted by MedPAC have looked more closely at the options available to beneficiaries to supplement Medicare. In our March 2003 Report to the Congress, we described options for supplementing or enrolling in an alternative to the basic Medicare fee-for-service program:

- supplemental insurance purchased by individuals (Medigap);

- supplemental insurance available to retirees through employer- or union-sponsored plans;
- various alternative Medicare+Choice (M+C) plan models including HMOs, preferred provider organizations (PPOs), and private fee-for-service (FFS) plans;¹ and
- additional coverage through the Medicaid or other public programs for low-income beneficiaries.²

Some important options for supplementing Medicare coverage, however, are becoming less prevalent and less generous. Employment-related retiree health insurance is becoming less available and less comprehensive in the benefits it provides. The proportion of employers offering retiree health insurance has declined substantially over time. Retrenchment in benefits has generally affected new employees, rather than tenured employees or retirees (Fronstin 2001). Consequently, the Medicare Current Beneficiary Survey (MCBS) data from 1992 through 2000 show the proportion of Medicare beneficiaries with employer-sponsored insurance declining by only a small percentage. Over the next decade, many workers with coverage will retire, tending to stabilize the rate of employer-sponsored coverage in the Medicare population. The coverage they have will, however, most likely be less generous (with plans requiring higher beneficiary cost sharing); after this cohort retires, fewer workers will have these benefits, and these declines will coincide with the retirement of the baby boom generation (2011 and after).³

Overall, premiums for individual Medigap policies also increased rapidly throughout the 1990s (Atherly 2001), but increases in

premiums varied across policy types and across states (American Academy of Actuaries 2003). Over the past several years, M+C plans have reduced their participation in Medicare markets, and, in those markets where they remain, increased premiums significantly to cover the costs of the benefits beyond those covered by Medicare. Reductions in M+C benefits and increasing premiums may be changing the way that beneficiaries view trade-offs among managed care, PPO options, and Medigap insurance in some market areas.

At the same time, other types of supplementation that can include new benefits such as prescription drug coverage or case management for serious medical conditions are now offered in conjunction with some individual Medigap policies, as well as PPO plans. These newer options may, moreover, serve as possible models for some reforms that would rely on private plans to provide more comprehensive coverage to Medicare beneficiaries.

Understanding these Medicare health insurance markets can inform policies in two ways:

- (1) Understanding better how regulatory policies affect insurers and health plans (or other risk-bearing provider entities) could help inform future policies to reduce barriers to market entry; create incentives for participation in Medicare markets; or help beneficiaries to make more informed, appropriate insurance choices.
- (2) Identifying the characteristics of active, competitive markets should help policymakers to predict more accurately what types of products might succeed, or would have little chance of succeeding, in different localities and for different beneficiary populations.

1 M+C also encompasses comprehensive health care plans designed to address special population needs including the Program of All-inclusive Care for the Elderly, Social Health Maintenance Organizations, and Evercare.

2 Chapter 5 of MedPAC's March 2003 Report to the Congress provides an overview of the health insurance options available to Medicare beneficiaries, including information on supplemental insurance, M+C options, and the distribution of coverage in the Medicare population.

3 An annual survey of employers with more than 500 workers shows that, between 1993 and 2001, the proportion reporting that they expect to continue offering health benefits to future retirees declined from 40 to 23 percent; the same survey showed that from 1997 to 2000, the percentage requiring Medicare-eligible retirees to pay the full costs of retiree benefits increased from 27 to 34 percent (Fronstin and Salisbury 2003).

This chapter first reviews the products available to Medicare beneficiaries and how these products affect beneficiaries' liability for health care costs, and describes the salient differences among the products and the markets where they are sold. In the second section, we review the current landscape of insurance options for Medicare beneficiaries across states and large metropolitan areas. We explore the characteristics associated with patterns of coverage in different markets. In the final section, we identify questions to examine in greater detail to better understand what policies might foster better beneficiary access to affordable supplemental benefits.

Insurance markets and supplemental benefits

Currently, most beneficiaries are able to obtain additional coverage, primarily by supplementing traditional Medicare with employer-sponsored retiree health benefits (about one-third of beneficiaries)⁴ or by purchasing Medigap policies (slightly under 30 percent). Beneficiaries may also choose to enroll in an M+C plan (currently about 13 percent). The M+C options—HMOs, PPOs, and private FFS plans—often provide more comprehensive coverage, which substitutes for other forms of supplementation.⁵ Others obtain assistance from Medicaid or other public programs (around 15 percent).

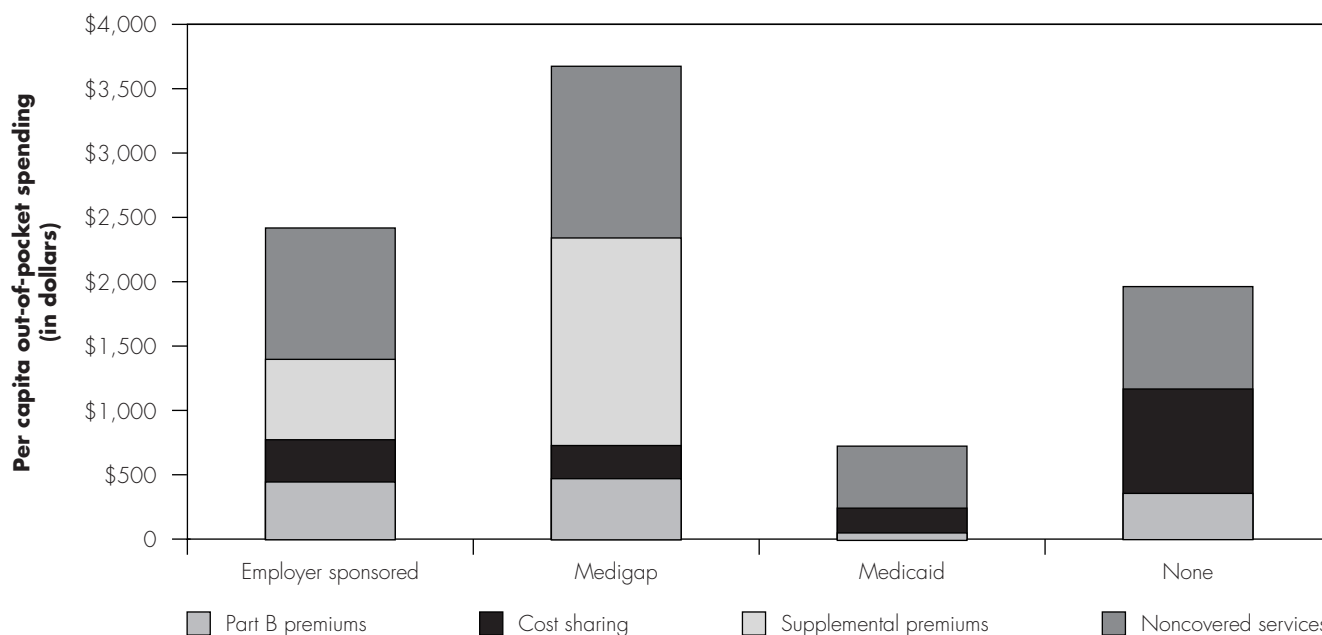
Beneficiary liability and supplementation

The extent to which different forms of supplementation shield beneficiaries from health care costs varies significantly. Previous research has demonstrated that supplemental insurance increases beneficiaries' access to health care (MedPAC 2002). It does not, however, effectively shield them from all out-of-pocket costs.

Figure 2-1 illustrates key differences in the coverage provided by the major forms of supplemental coverage. People with Medigap spend the most out of pocket for health care, followed by those with employer-sponsored supplemental coverage. This spending is both for insurance premiums and for health care services.

FIGURE 2-1

Composition of out-of-pocket spending, by type of supplemental insurance, 2000



Note: Sample of 9,601 consists of community-dwelling beneficiaries who participated in traditional Medicare in 2000. Out-of-pocket spending includes beneficiaries' direct spending in four categories: the Part B premium, cost sharing for covered services, supplemental premiums, and noncovered services.

Source: MedPAC analysis of Medicare Current Beneficiary Survey, Cost and Use file, 2000.

4 The term "employer-sponsored supplemental insurance" or "employer-sponsored insurance" is often used to refer to coverage offered to retirees directly by employers as well as group coverage managed jointly by employers and unions. The Taft-Hartley Act (formally the Labor Management Relations Act of 1947) allowed for the creation of insurance funds formed by multiple employers, allowing unionized workers to retain coverage when they move among participating employers. Throughout this chapter, we use the term employer-sponsored insurance to refer to all employment-related plans, including Taft-Hartley plans.

5 In fact, federal law prohibits the sale of Medigap policies to individuals enrolled in M+C plans. When the M+C program was created, most plans did not require significant cost sharing and Medigap would therefore not have been of value to beneficiaries.

Medigap premiums are, on average, higher than employer-sponsored supplemental premiums. Further, most Medigap policies primarily cover Medicare cost sharing, and offer only limited coverage of non-Medicare services such as preventive services or home care. Those Medigap policies that do include prescription drug coverage require significant beneficiary cost sharing (Fox et al. 2003). Consequently, while those with Medigap spend less on Medicare cost sharing, they have higher total out-of-pocket costs, because they pay higher premiums, and have less coverage for non-Medicare services than beneficiaries with employer-sponsored supplemental insurance.

Beneficiaries with Medigap also use more Medicare services than those with other forms of supplementation and those with no supplementation (MedPAC 2002). While beneficiaries with Medigap are largely protected from out-of-pocket costs for Medicare-covered services, their use of related, uncovered items, such as prescription drugs, increase their out-of-pocket spending.

Low-income beneficiaries with Medicaid do not have to pay Medicare premiums, but some categories of Medicaid recipients (termed specified low-income Medicare beneficiaries) are liable for Medicare cost sharing. Medicaid covers both premiums and Medicare cost sharing for beneficiaries eligible for full Medicaid coverage or for those termed qualified Medicare beneficiaries (see MedPAC 2002). Medicaid pays for a variety of health care goods and services not covered by Medicare for those beneficiaries eligible for full Medicaid coverage, but beneficiaries still are liable for some minimal copayments, and for the costs of some health care services goods and services not covered by Medicaid.

Those with no supplemental coverage pay Medicare premiums, all Medicare cost sharing, and the full costs of noncovered services they use. Because those without supplemental coverage use fewer health

care services, however, their out of pocket spending, on average, is lower than those with supplemental insurance.

Out-of-pocket spending for beneficiaries enrolled in M+C plans is not shown on Figure 2-1 (p. 21) because available data do not separate spending for cost sharing for Medicare-covered services from spending for other services provided by managed care plans. Data do show, however, that spending for premiums by M+C enrollees is on average lower than spending for premiums by beneficiaries who have Medigap or employer-sponsored supplements. In 2000, total premiums (Medicare Part B premiums plus M+C premiums) averaged \$821 for those enrolled in M+C, compared to \$2,037 for those with Medigap and \$1,105 for those with employer-sponsored insurance. M+C enrollees also spend less out of pocket for health care services than beneficiaries with Medigap or employer-sponsored supplements. In 2000 for example, M+C enrollees spent, on average, about \$910 out of pocket for health care services (including copayments and costs of uncovered services), while people with Medigap spent \$1,602 out of pocket, and those with employer-sponsored supplemental coverage spent \$1,236 out of pocket for services (including cost sharing and costs of uncovered services).

Out-of-pocket spending also varies by beneficiary health status. For every category of insurance coverage, beneficiaries reporting that they are in fair or poor health spend more out of pocket on health services than those in good-to-excellent health. Within the groups having each type of coverage, there were only small differences in the average premiums that healthy versus sicker beneficiaries paid for supplements. But beneficiaries in fair or poor health with Medigap spent close to \$2,200 out of pocket for health services in 2000, compared with about \$1,400 for those in good-to-excellent health. For beneficiaries in fair or poor health with no supplemental coverage, out-of-pocket costs for health services

were close to \$2,000, about twice as high as for those in good-to-excellent health. People in fair to poor health need more health care. But having supplemental coverage appears to be more effective in facilitating beneficiaries' access to care than it is in protecting beneficiaries from the costs of health care.

Overview of major options for supplementing Medicare

The available options for supplementing Medicare vary with local market circumstances and beneficiaries' resources and preferences. Options that supplement Medicare FFS or replace it have evolved very differently in local markets across the United States. Medigap premiums vary substantially across, and sometimes within, markets. Higher Medigap premiums may, for example, increase beneficiaries' interest in Medicare managed care options (McLaughlin et al. 2002). In some markets, beneficiaries choose particular Medigap policies much more frequently than in other areas; in some areas, employers provide more supplemental insurance; in some places most employment-based coverage is managed care, which could affect retirees' propensity to choose managed care options. In some markets, a relatively high proportion of beneficiaries have no supplemental insurance and low enrollment rates in Medicaid.

The variations in beneficiary liability and cost sharing associated with different types of supplementation reflect the very different structure of these forms of coverage. Table 2-1 compares the three most prevalent forms of Medicare supplementation. Each form of supplementation—Medigap insurance, employer-sponsored retiree health insurance, and supplementation of standard Medicare benefits currently available through M+C plans—has a distinct structure. Table 2-1 demonstrates that the participants in Medicare insurance markets do not play on a level field, but on different fields that may overlap. The actual market areas they serve are defined

**TABLE
2-1**

The playing field for Medicare supplementation

	Medigap	Employer-sponsored plans	Medicare + Choice Plans
What is covered?	All policy types cover Part A hospital coinsurance, 365 additional hospital days, Part B cost sharing, and cost of blood products. Most cover the Part A deductible and SNF copayments. Some add coverage for other services, including travel, home care, and preventive; three add a prescription drug benefit. Two policy types may be sold with a high deductible option.	Most provide coverage like that for active workers, including: Medicare coinsurance after a deductible, hospital stays exceeding Medicare limits, a cap on total enrollee spending, prescription drugs, and additional preventive services. Some plans include eye, hearing, or dental services, or expanded mental health services.	All plans must cover Medicare Parts A and B services, but may offer additional benefits. In 2003, about 50% of beneficiaries had access to plans that offer some prescription drug coverage, 30% to plans covering cost sharing for inpatient hospital services, and 10% to plans with no cost sharing for physician services. All plans offer some preventive and health promotion services.
How much risk does the insurer bear?	Each plan bears risk for the specific services it covers (see above). For most policy types, the hospital deductible and cost sharing for covered services (20%) represent the bulk of the insurers' risk.	Employers bear full risk for self-insured plans. Plans that are not self-insured assign risk to carriers with whom they contract.	Plans bear full risk under capitation with Medicare. Medicare cost plans do not bear risk, except for any cost sharing they cover for which they charge a premium. In the Medicare PPO demonstration, plans can negotiate risk-sharing arrangements with Medicare.
Can insurers underwrite or adjust premiums to limit their risk?	After a beneficiary's initial six-month open enrollment period, with certain exceptions related to losing other forms of coverage, insurers can rate policies by age; and medically underwrite policies (refuse to insure or charge higher premiums to people with preexisting conditions), unless state law places additional restrictions on rating or underwriting.	Self-insured plans cannot age rate or medically underwrite policies; they can adjust the benefits structure over time or adjust employee contributions, to the extent permitted under contractual obligations with employees. Plans that are not self-insured can experience-rate group coverage.	M+C plans accepting nongroup enrollees must enroll any beneficiary, regardless of age or health condition, except beneficiaries with ESRD. Plans may not adjust beneficiary premiums for health risk or use of services, but can reflect county residence. Medicare payments reflect age, sex, county residence, and Medicaid status. A new risk-adjustment system is phasing in over time.
Who regulates:	States regulate entry and exit of plans selling Medigap products based on state and federal standards. Federal standards apply to loss ratios, filing and approval of policies, claims payment, disclosure and reporting of information, marketing, and plan design (see below). States can impose more stringent standards than those in the federal-NAIC model if consistent with federal intent.	Federal law regulates self-insured plans. Standards address administrators' fiduciary responsibilities and plan requirements relating to the structure of benefits and reporting requirements. Generally, the same federal law regulates plans that are not self-insured, but state requirements may apply as well.	Risk-bearing entities participating in M+C must be licensed or certified under state law in each state where they offer coverage, and must meet all Medicare standards. Federal requirements preempt state requirements if there is a conflict.
<ul style="list-style-type: none"> • What plans can enter markets? 	Federal rules prohibit the sale of Medigap policies to individuals who already hold one, or who are enrolled in an M+C plan. Federal rules cover commission fees, compensation arrangements for issuers, and disclosure requirements, and require specific language in plan descriptions. States may add other requirements.	Federal law sets out standards for plan descriptions to give enrollees in private employer-sponsored plans.	Federal requirements apply to plan descriptions for enrollees. CMS reviews marketing materials for coordinated care and private FFS plans prior to use. Plans can market only in the service areas where they provide services. Materials for employer group plans need not be reviewed in advance.
<ul style="list-style-type: none"> • What data reporting requirements are placed on insurers? 	Insurers must provide data to the states where they do business on plans they sell by policy type, and must submit data needed to certify their compliance with the established loss ratio standards for Medigap.	Federal law requires employer plans to submit data to the Department of Labor to establish compliance with fiduciary standards, nondiscrimination requirements, and basic plan requirements (guaranteed issue, renewability, and minimum benefit standards).	M+C coordinated care plans must submit administrative and patient data for many purposes, e.g., lists of network providers, financial incentives in provider contracts, patient diagnoses (for risk adjustment), quality review and improvement programs, enrollee satisfaction surveys, and marketing materials. Data reporting requirements on quality of care for PPOs and private FFS plans are more limited.

continued on next page

**TABLE
2-1**

The playing field for Medicare supplementation

	Medigap	Employer-sponsored plans	Medicare + Choice Plans
How much risk is borne by the government?	Medicare bears most of the risk for most Part A services and about 80% of the risk for most Part B services covered by the program.	Medicare bears most of the risk for most Part A services and about 80% of the risk for most Part B services covered by the program.	Medicare pays a set amount per beneficiary per month based on enrollees' characteristics. Medicare is not at risk for any costs incurred by plans.
What is the beneficiary's liability?	Beneficiaries bear the costs of premiums. Average premiums ranged from \$91 to \$196 per month across the 10 plan types in 2001. Most Medigap policies do not cover prescription drugs or most preventive services. Beneficiaries are also liable for the costs of eye and dental care, hearing aids, and other assistive devices.	Most employer plans include some drug coverage; for other services not covered by Medicare, coverage varies substantially across employer plans. Beneficiary contributions to premiums vary from 0–100%; the average monthly premium for new retirees over age 65 was \$79 in 2002. Liability is often limited by a catastrophic cap.	Beneficiary liability varies by plan. Premiums range from \$0, plus a rebate of some of the Part B Medicare premium, to over \$200 per month. Some plans shield beneficiaries from most or all liability for inpatient care; most limit cost sharing for physician services to a copayment; most cover some additional services such as prescription drugs.
What are beneficiary's rights to enrollment?	Federal statute requires guaranteed issue without preexisting condition exclusions for 6 months after beneficiaries enroll in Parts A and B at age 65. Additional guaranteed issue provisions apply to beneficiaries involuntarily disenrolled from terminated employer-sponsored plans, some M+C plans, and Medigap plans failing due to bankruptcy or insolvency. States can add protections for beneficiaries, including guaranteed issue for disabled under age 65, or if group benefits erode.	Employers specify enrollment options for retirees. Those offering choice among plans generally limit choice to an annual open enrollment season.	Under current law, Medicare beneficiaries are free to disenroll from M+C plans and enroll in a new plan accepting members, or return to FFS Medicare, at any time. M+C plans must accept new members during an annual open enrollment period (November 15–December 31). There is, however, an exception for plans that have reached their enrollment limit. Beginning in 2005, a lock-in provision will be instituted, allowing beneficiaries to leave plans only during an annual open enrollment period, or under certain other limited circumstances.
What are beneficiary's rights with respect to:	Federal law requires guaranteed renewal of Medigap policies. If a beneficiary drops a Medigap policy, however, insurers are not required to reissue the policy, except under certain conditions (e.g., involuntary disenrollment from an M+C plan).	Federal law requires guaranteed renewal under group policies but allows employers to reduce, eliminate, or discontinue all benefits, if employers reserve the right to do so and keep contractual agreements.	Federal statute and regulations restrict plans from disenrolling beneficiaries (with very limited exceptions). Plans can leave markets or service areas at the end of a year without penalty.
• retaining coverage?			
• retaining specific benefits over time?	Benefits are standardized. New benefits can be offered only under provisions subject to state and federal oversight.	See above.	Plans cannot reduce benefits or increase member liability during the course of a year. They can reduce premiums or cost sharing, or increase benefits.
• increasing premium rates?	States regulate increases and reflect federal maximum loss ratio requirements. Intensity of rate review activities varies by state.	See above.	CMS approves proposed premiums and benefit packages.
What are beneficiary's rights with respect to grievances or appeals for individual claims?	Federal rules require plans to inform beneficiaries about their rights, obtain information and assistance regarding Medigap problems, and coordinate Medigap issues about the appeal of Medicare claims. States address beneficiary grievances and complaints. State resources for investigating insurance complaints and providing consumer assistance vary.	States' involvement in adjudicating appeals of coverage or claims depends on the precise wording of the state laws and interpretations of federal law for ERISA as well as self-insured plans. Federal resources for investigating individual appeals and claims are limited.	Federal law sets out detailed requirements for beneficiary grievances and appeals. State law pertains when it is not clearly preempted by federal law.

Note: ERISA (Employee Retirement Income Security Act of 1974), ESRD (end-stage renal disease), FFS (fee-for-service), M+C (Medicare+Choice), NAIC (National Association of Insurance Commissioners), PPO (preferred provider organization), SNF (skilled nursing facility). For more detailed information, see MedPAC's Report to the Congress: Medicare payment policy, March 2003.

by different laws and regulations, as well as by demographics and economics. Further, because different rules govern when and under what circumstances people can enroll and disenroll, insurance options do not compete against each other directly.

Changes occurring in private markets that serve current Medicare beneficiaries suggest a need to understand how the factors contributing to variations in local markets for Medicare insurance products interact. These different insurance products are broadly defined by the ways products and entities take on insurance risk. However, markets for Medicare insurance products reflect complicated interactions between federal and state regulation and oversight, not just of insurance products that supplement Medicare, but of all insurance products. Markets are, moreover, shaped by many other factors, including population characteristics (density, age structure, economic resources, health status, propensity to use health care), the concentration and ownership of providers (hospitals, physician groups, managed care plans, health insurers), economic structure (employment and industry structure, unionization, cost of living), and the health care environment (safety net programs, Medicaid policy).

As supplemental coverage options have evolved, policymakers have employed different ways of fostering these markets and protecting consumers who rely on them. Looking across these markets allows us to identify some of the basic issues underlying meaningful choice among insurance options for the beneficiary population. Some of these issues relate to how supplemental benefits

are structured, and some relate to how they are regulated.

The structure of supplemental benefits

Medicare supplements—Medigap, or employer-sponsored supplemental insurance—can be either individual insurance or group insurance products. These forms of insurance work differently.

Medigap structure

The individual insurance market has provided supplemental insurance to millions of Medicare beneficiaries since Medicare began in 1966. Reforms enacted in the Omnibus Budget Reconciliation Act of 1990 (OBRA–90) restructured the market for supplemental insurance by creating a set of 10 standardized policies (policies A through J), called Medigap policies, that could be marketed by private insurance companies. These standard plans generally provide coverage of Medicare’s cost-sharing requirements but offer few additional benefits beyond the basic Medicare benefit package.

The most popular Medigap policy is Plan F (37 percent of Medigap policies), which covers most of Medicare’s cost sharing, followed by Plan C (23 percent of policies), which is similar, but does not cover the excess amount beneficiaries may be required to pay to doctors who do not accept Medicare-approved amounts as payment in full. Three of the standard plans (H, I, and J) do offer limited coverage of outpatient prescription drugs, but all come with a \$250 annual deductible, 50 percent coinsurance, and a cap on benefits of \$1,250 per year (Plans H and I) or \$3,000 per year (Plan J); only about 8 percent of beneficiaries hold these

policies (MedPAC 2002, 2003). A significant number of beneficiaries (almost one-fourth) still hold prestandard plans. In three states, Wisconsin, Massachusetts, and Minnesota, the standardized Medigap plans available differ from the federal plans. These states developed their supplemental insurance reforms, including standardization of plan offerings, prior to the enactment of OBRA–90; because the state reforms achieved the same goals as the OBRA–90 reforms, the states obtained waivers from the federal requirements.

Most Medigap enrollees buy policies that are marketed to individuals. The rest buy policies which are only marketed to individuals who belong to particular membership groups.⁶ Group Medigap policies, like other Medigap policies, are subject to rating and other underwriting provisions set out in state or federal law.

The extent of meaningful choice in the Medigap market after beneficiaries have made their initial choice when turning age 65 is debatable (Chollet and Kirk 2001).⁷ Age rating in many states (see p. 28) means that new plans for older beneficiaries can be expensive. Moreover, in some states, or areas within states, the number of plans actively marketed is quite small. National Association of Insurance Commissioners (NAIC) data show that in 2001, nine states had only one insurer, or no insurer at all, offering each of the Medigap plans that include drug coverage (H, I, or J).⁸

In the individual insurance market, beneficiaries have to make decisions for themselves after sorting through available product options. CMS provides assistance to consumers through its publications, internet information services and a national hot line, and through the State

6 In some states, large association plans marketing to membership groups such as AARP are identified as group plans in NAIC data, while in other states similar plans may not be identified as group plans. The proportion of beneficiaries enrolled in group plans varies substantially from state to state. In many states, more than 90 percent of Medigap policyholders are in individual plans, but in some, including California and New Jersey, more than half are in group plans (Chollet and Kirk 2001).

7 Two pieces of evidence support the view that many beneficiaries tend to stay with the same Medigap policy. First, as noted above, close to one-fourth are still in the prestandard plan they purchased prior to the OBRA–90 reforms. Second, according to an analysis conducted for the Department of Health and Human Services (HHS), almost one-third of Medigap policy holders in 1999 were enrolled in closed policy forms (where no new policies are being sold), and in some states, more than half of all policyholders were in closed plans; fewer than half of all Medigap insurers offered open products and were active (actively selling new policies) in 1999. Insurers may close products to new enrollees because the costs, and therefore premiums, are increasing rapidly. Insurers fearing an adverse selection spiral, where only the most expensive enrollees stay with the plan, may limit their losses by closing the plan (Chollet and Kirk 2001).

8 MedPAC’s analysis excluded plans that had not sold at least 10 policies during the last 3 years from the data.

Health Insurance Assistance Programs (SHIPs).⁹ States provide varying forms of information about Medigap policies over the internet. OBRA–90 standardization of policies simplified this task, but the job of sorting through policies, prices, and rating provisions can still be difficult, particularly for older beneficiaries who leave or lose access to M+C plans.

Employer-sponsored supplemental insurance structure

About one-third of Medicare beneficiaries are covered by employer-sponsored retiree health insurance; it is currently the most common form of supplementation. Employer-sponsored retiree health insurance includes both supplemental benefits provided by plans (almost entirely through the group market) and enrollment in M+C plans.

Most supplemental insurance provided through the group market is structured to wrap around or coordinate with Medicare benefits. Some retiree coverage (more common among very large employer or union-negotiated plans) provides full, or close to full, coordination of benefits. In these arrangements, benefits cover Medicare cost sharing (deductibles and coinsurance) for covered services as well as some services Medicare does not cover, including (in most cases) prescription drugs. The dominant method of supplementing benefits, however, is the carve-out. Generally, this means that the benefit package is designed so that, after Medicare benefits are factored in, the beneficiary has the same level of out-of-pocket liability for covered plan services that he or she would have had with the working employee plan.

Employers can offer retiree coverage through M+C plans. Coordinating the benefits that employers seek to offer to retirees with the benefits included in

managed care packages can be difficult. For example, employers may want to include vision or dental benefits that managed care plans do not offer, or prefer to include different copayment or deductibles structures than those incorporated into M+C plans. To address these problems, CMS used authority granted to it in the Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 to modify contracting rules to better accommodate group-based coverage (see text box, opposite).

Although the employer-sponsored group market offers fairly comprehensive supplemental coverage, beneficiaries' choices are limited. The benefit offerings are not standardized and generally reflect, or may be formally linked to, the benefits provided to those still working in any particular organization.¹⁰ Group coverage, including employer group coverage through M+C plans, is shaped by employers' decisions about both corporate and local issues as they negotiate health benefits with insurers, health plans, and employee or union representatives. Large employers may contract with a variety of insurers and health plans, but many smaller ones contract with only one or two (often one is a PPO or other sort of managed care plan). Thus, only retirees of large public or private sector employers generally have any choice among supplemental plans, and not all options offered by their employers may be available where retirees live. Whether beneficiaries have any employer-sponsored supplemental plan available to them, whether their plan continues to be available over time, and, if they retain coverage over time, how much of the premium is paid by the employer, depend on where they or their spouses worked.

Policy directions

The structure of Medicare supplemental products raises two policy issues: standardization of benefits, and beneficiaries' ability to enroll in and move between different supplemental products.

The issue of standardization of benefits is fundamental for all forms of supplementation. Flexibility in benefits design increases both beneficiaries' and employers' ability to obtain the coverage that best meets their needs. However, specialized benefit options could increase the probability of biased selection, leading to increased premiums for beneficiaries enrolled in the plans offering the best coverage for people with greater health care needs. The standardization of descriptions of supplemental benefits in marketing materials, could help beneficiaries to make more informed choices among plan alternatives (Dallek and Edwards 2001).

A second set of issues involves the rules governing enrollment, guaranteed issue, and guaranteed renewal across the different product markets. A coordinated open enrollment period for M+C and Medigap, for example, might provide an opportunity for beneficiaries to compare and choose among available options more systematically. Depending on other policy changes affecting guaranteed issue, rating, or underwriting, an open enrollment period could also decrease favorable selection of health plans (Rice 1999). Significant changes to Medigap rules could, however, also disrupt markets providing products that many beneficiaries value (MedPAC 2003). Any of these proposals could, moreover, entail changes in the laws and regulations governing labor employment and labor relations, as discussed in the next section.

9 SHIPs receive funding from CMS, but they are operated jointly with the states. In addition to small state and regional staffs, they rely heavily on volunteer counselors, often recruited and trained by, or in cooperation with, area agencies on aging. In some states the agencies are administered by the Department of Insurance; in others, by the Department of Aging.

10 M+C employer group plans are employee benefits, so explanations and descriptions are generally the responsibility of the employer. Marketing materials for M+C plans for employer groups are exempt from CMS preapproval of marketing materials, but CMS reviews them to ensure that they are accurate and provide required information, for example, on beneficiary rights.

Employer group coverage in the Medicare+Choice program

CMS established three categories of plans, waiving certain requirements to encourage participation in Medicare+Choice (M+C):

- 1. Employer-only plans.** Under certain circumstances, M+C organizations are allowed to offer employer-only plans (not available to beneficiaries in the individual market). M+C organizations can establish unique service areas for these plans.
- 2. Actuarial swaps.** M+C organizations can swap additional benefits (above the basic benefits) of approximately equal value when an employer prefers a different benefit package from that offered to the individual market. The M+C plans must, however, cover all Parts A and B benefits. For example, an employer may prefer a vision rather than the dental benefit an M+C plan offers in its individual market product. The benefits can be swapped if they are of equivalent value. Or, a union may prefer a dental and a vision benefit rather than a prescription drug benefit of the same value. The M+C plan can replace its drug

benefit with the dental plus vision benefit in the plan it offers to the union.

- 3. Actuarial equivalence.** M+C plans can raise copayments for certain benefits but provide a higher benefit level. The waiver for actuarial equivalence applies to both Medicare benefits and uncovered benefits. For example, a plan offering a \$500 drug benefit with a \$5 copayment in its individual market plan could offer a different benefit (such as unlimited drugs with a \$10 copayment), designed to mirror other employee coverage, in its group plans. Or, an M+C plan that required individuals to pay a \$10 copayment for all physician visits could offer employers or unions plans with copayments for physician visits of \$5 for primary care and \$20 for specialists. To obtain a waiver for this type of adjustment, the plan must indicate to CMS how the cost sharing amounts would tend to affect beneficiary cost sharing, whether the benefit would change, and whether the modifications will be tied to any changes in premiums covering (CMS 2002b). ■

however, federal statute establishes a basic framework and requirements. Technically, responsibility for enforcing Medigap rules is voluntary for states—they could cede these responsibilities to CMS—but all states have chosen to accept this responsibility, and some have chosen to expand regulation of Medigap beyond the federal standards.

Medigap regulation

As required by OBRA-90, the basic Medigap protections are set out in the National Association of Insurance Commissioners (NAIC) model regulation (NAIC Model), which most states have incorporated into their own insurance regulations. Medigap premiums are regulated by states. Federal standards set limits for Medigap loss ratios, but states must review and, where necessary, require adjustments to rates.¹¹ CMS has a formal role in interpreting the statutory provisions and reviewing state policies governing all aspects of Medigap insurance.

Enrollment rules The NAIC Model dictates what products insurers can sell and beneficiary enrollment rules. Issuers can sell up to four types of any standard Medigap plan: individual, group, individual Select,¹² or group Select. Within the Model regulations, however, Medigap insurers may (unless otherwise constrained by state law) deny coverage to applicants enrolled in Medicare for more than 6 months; deny current policyholders from moving (within carrier) to other policy forms 12 months after initial enrollment; deny beneficiaries leaving M+C or retiree plans coverage in many of the standard forms, including those that include prescription drug coverage; or restart a 6-month waiting period for coverage of preexisting conditions when a beneficiary changes Medigap policies (Chollet and Kirk 2001).

Issues in state and federal regulation

State and federal entities regulate health plans and insurers. The rules for entering markets (including licensing and solvency requirements), exiting markets, premium setting, underwriting, guaranteed issue

and renewal, and marketing practices of both insurers and risk-bearing health plans vary for different supplemental products. In the next section, we examine each of the supplemental insurance types' regulatory framework. States are responsible for regulating the individual insurance market. In the case of Medigap,

¹¹ Some states require insurers to submit proposed rate increases for formal review prior to implementing premium changes; the rest review premiums after they have been filed, requiring changes or imposing penalties retroactively if necessary. The majority of states require prior approval of rate increases for Medigap policies. NAIC data from a survey of states indicates that 15 states use a file and use procedure (not requiring prior approval) for Medigap as well as other individual insurance products; some of these, however, employ a rigorous postfiling review process. Conversely, some states that require prior approval employ less rigorous or pro forma reviews, making it difficult to categorize state oversight procedures in an accurate way (Kirk and Chollet 2002).

¹² Medicare Select policies are Medigap policies that cover more of the cost sharing when beneficiaries use network providers; they are a form of PPO, but, until recently, were allowed to contract with networks only for hospital services (MedPAC 2003).

Some states, however, have expanded guaranteed-issue requirements for some or all Medigap policies. Connecticut, for example, required carriers to offer Plans A through G on a guaranteed-issue basis to all Medicare enrollees at all times throughout the year; Michigan extends guaranteed issue to Medicare enrollees who have lost group coverage; and Maryland requires continuous open enrollment for Plans C and I (NAIC 2000).

The NAIC Model places some limits on rating practices, but states can go beyond these. Medigap insurers may, unless prevented by state law, price policies on an issue- or attained-age basis,¹³ and they may underwrite policies, that is, charge higher premiums based on beneficiary health status or health history. A minority of states restrict Medicare age-rating practices. Other states have enacted community rating provisions that prohibit any rating or medical underwriting on Medigap, and some states have enacted legislation requiring guaranteed issue to beneficiaries under age 65 (disabled), who are not covered under federal open enrollment provisions.

States have also enacted laws to address problems caused by the withdrawal of M+C plans since 1998. Some states expanded on the protections for beneficiaries moving from M+C plans back to FFS that were introduced in the Balanced Budget Act of 1997, and other states implemented broader provisions designed to increase access to Medigap. For example, in Colorado, a beneficiary now does not have to wait until an M+C plan terminates to qualify for guaranteed-issue protections. Maine requires that if an eligible beneficiary disenrolled from M+C seeks to return to a Medigap policy no longer being sold in the state, the carrier must reinstate the plan. States have also enacted changes to Medigap requirements to provide additional guaranteed issue or open enrollment

provisions (above federal standards) for retirees who lose retiree supplemental coverage, or experience significant reductions in benefits (NAIC 2000). In 2004, California will require a special one-time open enrollment period for disabled beneficiaries under age 65 for policies A, B, C, F, H, I, or J, during which insurers cannot charge different rates than offered to those age 65 or older.

Innovative benefits Introducing new or restructured benefits is of particular interest for Medigap. The OBRA–90 reforms established standardized plans so that beneficiaries could navigate the supplemental market safely. Over time, as the population and medical technology have changed, a tension has emerged between the commitment to the OBRA–90 principles and a perception that, granted more flexibility, the insurance market could adapt products to meet the changing needs of the beneficiary population.

CMS has used its statutory authority to help clarify federal laws’ intent to expand innovative benefits offered by Medigap. These innovative benefits can include benefits not otherwise available or that are cost effective, as long as they do not compromise the goal of standardization (that is, simplification designed to promote comparability across plans). The statute also specifically states that Medigap insurers may incorporate vendor discounts for products or services not covered by Medicare along with standardized benefit packages. This could be important, for example, for designing a prescription drug benefit that uses the services of a pharmacy benefits management company.

While some insurers have pursued this option, it does not appear to be common across states. NAIC’s state surveys show only a handful of filings submitted to states for innovative benefits.¹⁴ Filings approved include:

- a vision care benefit approved for a subset of policy types by one Medigap insurer;
- a case management benefit approved for policies offered by one insurer; and
- several prescription drug benefit provisions under Plan F, including an unlimited generic drug benefit (under the high-deductible plan option); a drug benefit with a formulary (also high deductible); and a prescription drug benefit under a standard policy.

States have not approved other filings for innovative benefits, including increased deductibles, mental health, smoking cessation and weight management benefits, and several other filings for prescription drug benefits. Some filings for a prescription drug benefit turned down by state insurance commissioners appear identical to those approved in other states (NAIC 2000, 2003). One state reported to NAIC that to maintain the integrity of the standardized plans, the innovative benefit should be made available as a rider rather than as a part of the standard package.

While few states have received requests from insurers to market packages with innovative benefits, CMS believes that this provision could become a significant tool for expanding choice in the Medicare insurance market. More specifically, CMS believes that the HHS Office of Inspector General’s recent statements describing arrangements permissible for insurers under safe harbor provisions of antikickback rules allow Medicare Select policies to incorporate benefits such as prescription drug coverage, case management services, nurse advice lines, or the use of management techniques, including drug formularies.

Medicare Select CMS believes that Medigap can accommodate other

¹³ Under issue-age rating, enrollees pay premiums based on their age when their policy was first issued to them; under attained-age rating, enrollees pay premiums based on their current age.

¹⁴ NAIC had not completed its most recent survey at the time this report was being finalized; information on some innovative benefit plans may not be captured in the data NAIC made available to us.

managed care features involving provider networks under Medicare Select policies (Scully 2002).¹⁵ Individual state insurance law and regulation could impede the expansion of benefits under Medicare Select. Some states do not allow indemnity insurers to offer closed panel benefits, and any willing provider laws could deter provider networks for Medicare Select. State laws regulating hospitals could also make Select contracting more difficult.¹⁶ In 2000, four states (including one waiver state) reported to NAIC that they did not permit the sale of Select policies. Two of these states now allow these sales, although one has not yet enacted the regulations needed before insurers can market the plans (Smolka 2003). In some states, insurers' low level of interest in Select plans may be the problem—if insurers do not ask to market the plans, states have little reason to allow them to do so.

Employer-sponsored supplemental plans

The Employee Retirement Income Security Act of 1974 (ERISA) generally covers self-insured plans, including employer-managed and Taft-Hartley plans. ERISA's standards for employer-sponsored health plans usually preempt state law or regulations.¹⁷ ERISA governs all self-insured plans, and most employer-sponsored plans providing supplemental coverage are self-insured. When employers are not self-insured, states regulate coverage or benefits issues pertaining to employer-sponsored insurance that are not specifically preempted by ERISA.¹⁸

M+C plans and other organizations of providers

Federal oversight of health care markets involves broad legal issues related to business and trade. The Department of Justice and the Federal Trade Commission (FTC) are examining an increasingly difficult set of legal and regulatory questions surrounding contracting; delegation of financial risk; the effect of mergers, monopsony purchasing power, antitrust violations, and price collusion; and complex consumer information and consumer protection issues (Hellinger 1998, Muris 2002, Noble and Brennan 1999, Pauly 1998). In one recent case, the FTC found that collective negotiation of fees by a physician group was reasonable for fostering clinical integration of care and led to more effective, higher-quality care. In another case, the FTC found that physician collaboration resulting in a substantial degree of market concentration was acceptable because the collaboration substantially improved the quality of care. In another case, however, the FTC found that a group of 1,200 physicians had colluded, leading to increased costs to consumers (Muris 2002).

States also regulate managed care plans. Some states, for example, have been more aggressive than others in responding to perceived problems in the managed care marketplace. "Any willing provider" laws, for example, prevent plans from excluding providers from their networks. Other state regulations mandate access to specialists and require plans to give providers access to information about standards for acceptance into a network, reasons for termination, and economic profiles of physician practice patterns developed by

plans (Cornell 2000, Noble and Brennan 1999). Limiting provider organizations' ability to select the participants in their networks, for example, could increase beneficiaries' access to providers, but limit the networks' ability to control costs. Such policies could, therefore, affect organizations' decisions about where to locate and ultimately deter national participation in Medicare.

A state's policies not only influence managed care, but also reflect its local evolution. Depending on how state laws define risk-bearing entities, for example, organizations such as PPOs or provider sponsored organizations (PSOs)¹⁹ may or may not be licensed in the same way as HMOs, and may or may not be subject to the same state oversight of quality of care or consumer protection. The responsibility for oversight of managed care organizations may reside with the insurance department, health department, or some specialized unit, or may be shared among several state agencies. Some states recognize PPOs as separate risk-bearing entities that must be licensed by the department of insurance; others do not. Some states treat PSOs like PPOs, but apply different solvency requirements; having to meet these requirements could discourage providers from incorporating in groups. In other states, PPOs and PSOs may not be structured as risk-bearing entities, but as contractors or subcontractors that affiliate themselves with licensed health plans or insurers. The administrative burdens associated with state regulation, the need to meet solvency standards, and other requirements could deter provider organizations from forming in some states.

15 The March 2003 MedPAC Report to the Congress notes that Medicare beneficiaries currently hold about 1 million Select policies. Many are concentrated in a small number of states.

16 The Maryland hospital payment system, for example, prevents hospitals from discounting charges.

17 Legal experts do not always agree on the interpretation of some aspects of ERISA preemption provisions, including the regulation of nontraditional insurers such as provider sponsored organizations that accept risk (Butler 2000).

18 Generally, states can regulate multiple employer welfare arrangements (when two or more employers jointly sponsor health coverage) for salaried or nonunion employees and regulate hospital rates charged to insurers and others who pay health care bills (Butler 2000).

19 A PSO is a plan offered by a private provider sponsored organization that is not organized as a PPO, but can be licensed by states. Or, until November 2002, upon meeting federal requirements, it could obtain a waiver from CMS allowing it participate in the M+C program until it obtained a license from the state in which it operates.

Under current law, states license and regulate the risk-bearing entities that participate in M+C, while CMS ensures that participating organizations meet national Medicare standards set out in statute, regulation, and agency operational policy. Federal law requires that all M+C organizations (except federally waived physician-sponsored organizations) be licensed under state law as risk-bearing entities eligible to offer health insurance coverage in the states where they offer M+C benefits. An organization already licensed to offer indemnity insurance may have to obtain an HMO license to participate in M+C, and an HMO may need to obtain an additional license to provide a point-of-service option (paid on an indemnity basis).

Federal law specifically preempts state law governing M+C plans on most aspects of benefits and coverage determinations (including appeals and grievances). States may not require an organization to offer a particular state-mandated benefit to Medicare enrollees under an M+C contract.²⁰ However, except for these areas of preemption (see text box at right), M+C organizations must comply with all state laws and regulations applicable to insurers or health plans, unless these laws are incompatible with federal law and standards (CMS 2002a). And, to the extent that health plans and provider organizations do not exclusively serve Medicare patients, state regulations may affect business decisions to enter markets in a given state.

Policy directions

Employers, beneficiaries, health plans, and insurers providing supplemental insurance to Medicare beneficiaries function in a heavily regulated environment. The various regulators, however, may have differing perspectives. Federal regulators are concerned both about competition and how to regulate the organizations contracting with the Medicare program in particular. Self-insured employers and employers

Federal preemption of state requirements for licensed Medicare+Choice organizations

Since Medicare+Choice (M+C) organizations must first be state licensed or certified, the states play a key role in the M+C program. However, not all state laws governing health plans and insurers apply to the M+C products of a health plan or insurer.

Specifically preempted

State standards on:

- Direct access to provider requirements, whether in-plan or out-of-plan
- Benefit mandates, other than cost sharing
- Appeals and grievances with respect to coverage determinations
- Inclusion of providers (such as “any willing provider” laws; requirement of inclusion of specific types of providers as network providers)

Subject to general preemption only in case of a conflict between federal and state standards

- Market conduct examinations
- Timely payment of claims standards

- Enforcement actions
- Unfair claim settlement standards governing the process for determination of benefits as opposed to the benefits themselves
- Investigation of consumer complaints
- Filing and review of advertising and marketing materials
- Utilization review programs and standards
- Quality assurance programs
- Adequacy of provider network
- Filing and review of policy forms and rate filings
- Credentialing procedures (other than those affected by specific preemption on provider participation)
- Agent licensing
- Filing and review of provider contracts
- Enforcement of loss-ratio standards
- Standards and enforcement of commission limitations ■

Source: Reprinted from: CMS, 2002a.

contracting as groups with M+C plans are largely exempt from state regulation, but are important players in local markets. Any significant change to the existing mix of supplemental insurance products will have to address the role of the employer-sponsored market and the rules of play among competing insurers and health plans.

The broader issues surrounding states’ regulatory responsibilities in health care and insurance, and federal preemption of those responsibilities, are complex. These regulatory interactions would need to be weighed as part of any broad market-based Medicare reforms. The NAIC Model for Medigap establishes a

²⁰ This provision does not apply to non-Medicare lines of business offered to Medicare beneficiaries, including employer- or union-sponsored health benefit programs for retirees.

comprehensive set of requirements and consumer protections for insurance products that, in the view of most analysts, substantially alleviates problems that undermined the individual market for supplemental insurance. Whether the regulations and standardized benefit packages set out in the model enable insurers to adapt benefits to meet current market needs, however, is a topic of debate. So, too, is the issue of whether individual states should have a significant role in developing active insurance markets that meet beneficiary needs, in terms of affordable products, adequate consumer information, and protection from fraud and abuse.

In the next section, we examine variations among Medicare markets, focusing on both demographic and regulatory factors affecting beneficiaries' access to and choices of supplemental products.

Overview of Medicare insurance markets in states and metropolitan areas

This section shows the diversity of Medicare insurance markets across the country, illustrates some coverage patterns, suggests some hypotheses that might help explain some of the patterns, and begins identifying interesting local markets for us to investigate in greater depth. Because the relationships between coverage, state and federal regulatory policies, market characteristics, and beneficiary characteristics are so complicated and intertwined, and because the data are so limiting, we do not attempt to reach conclusions about how federal policy choices could, or should, structure insurance markets for Medicare beneficiaries.

Most of the data used in this section come from the March Supplement of the 2002 Current Population Survey (CPS), which measures coverage during 2001. The survey contains insurance coverage data for over 23,000 noninstitutionalized

Medicare beneficiaries, with a minimum of about 200 beneficiaries from every state. We have used the CPS data for three reasons: It is the only national survey that can provide state-level population estimates (as well as estimates for larger metropolitan statistical areas); the 2001 data reported in the Supplement are more recent than data available from other major national surveys, including the Medicare Current Beneficiary Survey (MCBS); and the national results are consistent with other national survey results. We note, however, that relatively small sample sizes in some less-populous states may lead to imprecise estimates for those states, so that they may not support sophisticated multivariate analysis. Nonetheless, the data are sufficient to illustrate levels of variation and to begin to identify possible patterns of coverage for further investigation.

State patterns

Although most states contain several distinct insurance markets, some important features of markets are determined at the state level, such as Medicaid policy and insurance regulation. Our analysis shows great variation among states in the insurance choices made by beneficiaries.

In the series of tables that follow, states are grouped if they are especially high or especially low in the prevalence of a given type of insurance. In establishing these groups, we ranked all states along the prevalence measures and looked for natural breaks at the high and low ends of the distributions; we did not aim for any particular number in a group. The tables report the values for the groups as well as the national average for the relevant insurance type. Because imprecision can occur at the state level, we do not rank the states within the groups; rather, they are listed alphabetically.

Overall, the CPS data show that almost a third (32 percent) of Medicare beneficiaries are covered by employer-sponsored private supplemental health insurance. The percentage ranges among

states from a low of 16 percent to a high of 47 percent. Table 2-2 shows those states with the highest and lowest percentages of Medicare beneficiaries with employer-sponsored coverage. The average rate for the four lowest states is 19 percent, and 46 percent for the four highest states.

The CPS data show that nationally, 14 percent of Medicare beneficiaries also receive Medicaid benefits. At a state level, Medicaid covered between 5 and 28 percent of Medicare beneficiaries. Table 2-3 (p. 32) shows the states with the highest and lowest proportion of Medicare beneficiaries who also receive benefits through Medicaid. The highest group of states has an average of 22 percent of beneficiaries receiving Medicaid benefits, while the lowest group averages 7 percent.

The CPS data show that 28 percent of Medicare beneficiaries across the country have Medigap supplemental coverage, a figure corroborated by data from the NAIC. At the state level, however, the two data sources sometimes show large differences. Both sources show large variation at the state level, with coverage percentages ranging from the single digits to over 60 percent. Table 2-4 (p. 32) shows states with relatively high and low percentages of beneficiaries covered by

TABLE 2-2
Medicare beneficiaries with employer-sponsored coverage, by state

Highest percentage	Lowest percentage
Delaware	Arkansas
Hawaii	North Dakota
Michigan	South Dakota
Ohio	Wyoming

Note: National average 32 percent; range for highest group 43 to 47 percent; range for lowest group 16 to 20 percent.

Source: MedPAC analysis of 2001 data from the March 2002 Supplement of the Current Population Survey.

TABLE 2-3

Medicare beneficiaries with Medicaid coverage, by state

Highest percentage	Lowest percentage
Alaska	Arizona
California	Indiana
Kentucky	Minnesota
Mississippi	Nebraska
South Carolina	New Hampshire
Tennessee	
Vermont	

Note: National average 14 percent; range for highest group 20 to 28 percent; range for lowest group 5 to 7 percent.

Source: MedPAC analysis of 2001 data from the March 2002 Supplement of the Current Population Survey.

Medigap plans. The table uses CPS data; asterisks mark those states for which the NAIC data differ considerably.²¹ Overall, 52 percent of Medicare beneficiaries in the highest group have Medigap coverage while the lowest group averages 18 percent.

Medigap policies that include a prescription drug benefit (forms H, I, and J) constitute about 8 percent of all Medigap policies sold across the country. NAIC data show (Table 2-5), however, that there is considerable state variation in the percentage of policies including a drug benefit, with policies H, I, and J accounting for as much as 27 percent of all standard Medigap policies (in Alaska) and less than 1 percent in several states.

Many beneficiaries may also choose a Medicare managed care plan that offers supplemental benefits. Because CPS did not ask beneficiaries whether they were enrolled in a Medicare managed care plan, we used CMS administrative data to determine the percentage of each state's beneficiaries enrolled in managed care

TABLE 2-4

Medicare beneficiaries with Medigap coverage, by state

Highest percentage	Lowest percentage
Iowa	Alaska
Kansas	California
Montana	District of Columbia
Nebraska	Georgia
North Dakota	Hawaii
South Dakota	Nevada
	New Mexico*
	New York
	Vermont*
	West Virginia

Note: National average 28 percent; range on highest group 44 to 60 percent; range on lowest group 9 to 19 percent.

*State Current Population Survey estimate differs substantially from National Association of Insurance Commissioners reports.

Source: MedPAC analysis of 2001 data from the March 2002 Supplement of the Current Population Survey.

plans. To be consistent with the CPS data we examine 2001 data: 15 percent of Medicare beneficiaries were enrolled in either M+C plans or Medicare cost-based HMOs. Medicare managed care penetration ranged from 0 to over 40 percent among states. The nine states listed on Table 2-6 as the low group had less than 1 percent of their Medicare beneficiaries enrolled in Medicare managed care plans. Some of those states did not have an M+C plan offered to their residents in 2001. The states in the high group all had at least 25 percent of their beneficiaries enrolled in Medicare managed care plans, and averaged 31 percent enrollment.

After incorporating all currently available data, we applied several methods using different data from the available sources to identify which states have a disproportionately high share of beneficiaries with no coverage other than

TABLE 2-5

Percent of Medigap policies that include a prescription drug benefit (H, I, or J), by state

Highest percentage	Lowest percentage
Alaska	Alabama
District of Columbia	Idaho
North Carolina	Kansas
Utah	Louisiana
Virginia	Michigan
Washington	North Dakota
	Rhode Island
	South Carolina
	South Dakota

Note: National average 8 percent; range on highest group 18 to 27 percent; range on lowest group 1 to 3 percent.

Source: MedPAC analysis of 2001 MedSup data from the National Association of Insurance Commissioners.

traditional Medicare. We found Arkansas, the District of Columbia, Georgia, Maine, North Carolina, West Virginia, and possibly Vermont (depending on which source is correct for Medigap coverage) to

TABLE 2-6

Medicare beneficiaries in Medicare managed care plans, by state

Highest percentage	Lowest percentage
Arizona	Alaska
California	Maine
Colorado	Mississippi
Massachusetts	Montana
Oregon	New Hampshire
Pennsylvania	South Carolina
Rhode Island	Utah
	Vermont
	Wyoming

Source: Monthly summary report on Medicare managed care plans, CMS, July 2001.

21 NAIC data include information on policies, not individuals' coverage; people with multiple Medigap policies are counted in the data multiple times. The NAIC analytical file is compiled from the information that insurers provide to states. Errors and omissions in reporting can and do occur. MedPAC staff are obtaining additional information to help explain anomalies in the data.

be the most likely to have the highest percentages of beneficiaries without any supplemental coverage. In these states, about twice the national average of Medicare beneficiaries are in FFS Medicare and have no supplemental coverage. We intend to investigate these states further.

Urban and rural patterns

While state differences are clearly apparent, many states include multiple markets. One way to look at markets below the state level is to divide state markets into urban and rural areas. All of our data, except for the NAIC Medigap data, can be split into urban and rural components. Unfortunately, the CPS sample sizes are not large enough to evaluate urban and rural differences for many states. Therefore, we reexamine the above state findings by grouping the states in order to get adequate sample sizes.

Table 2-7 shows that urban-dwelling beneficiaries are more likely to have employer-sponsored supplemental coverage, and be enrolled in Medicare managed care plans, but less likely to purchase Medigap than their rural counterparts. From these data, we estimate that beneficiaries living in rural areas are more likely to be in the traditional Medicare FFS program without any supplemental coverage.

But do the national-level differences between urban and rural insurance patterns hold at the state level? If insurance markets are influenced by state

characteristics, both urban and rural markets within a state should be affected by state policies. To test this hypothesis we examined states that were high or low in market penetration by the previously mentioned insurance types to see if they were high or low in both their urban and rural areas. To get adequate sample sizes for this analysis we grouped together states particularly high or low for the share of a given product. For example, we grouped those states listed as high on Table 2-2 (p. 31) for employer-sponsored supplemental coverage. We found that, in general, if a state's beneficiaries were more likely to hold a particular type of insurance than the national average, that propensity held in both urban and rural areas. For each of the four insurance types (Medicaid, employer sponsored, Medigap, and managed care), the penetration rate for the high groups are at least twice as high as the low groups, for both urban and rural areas. These findings strongly suggest that state market characteristics transcend urban and rural market differences.

Metropolitan area patterns

Another way to look at some substate markets is to examine insurance coverage at the metropolitan area level. Table 2-8 (p. 34) shows insurance coverage for the 12 metropolitan areas with the largest sample size in the CPS. Coverage patterns vary. Medicare managed care shows the greatest range. Medigap enrollment rates usually do not get above the national average and stay well below some of the higher rates found in rural states.

Even though state characteristics have an important influence over health insurance markets, local factors may also be important. The one example of two metropolitan areas within a state, Tampa and Miami, shows very different types of coverage. In this case, an explanation lies partly in the fact that 21 percent of Miami's senior population is living under the poverty level; Tampa's rate is 11 percent.

Trade-offs and hypotheses

Comparing the markets for Medicare insurance products and health plans is difficult. The market areas for specific products are not the same from product to product. Many demographic and structural characteristics are interconnected, and the intricacies of state policies and regulation are often difficult to measure accurately. It is possible, however, to identify some potentially important relationships among the factors shaping Medicare insurance markets, and patterns that warrant closer examination.

While overall supplemental coverage varies by state, simple bivariate regressions suggest some substitution between products. First, there appears to be substitution between employer-sponsored coverage and Medigap coverage. Second, we found some evidence of state-level substitution between Medicaid and Medigap coverage. We did not, however, find a significant trade-off between Medigap and Medicare managed care at the state level. We are aware of research that has found relationships between Medigap and M+C below the state level that warrant further investigation (McLaughlin et al. 2002).

Increased overall Medigap prevalence is associated with decreased prevalence of Medigap with drug coverage. We have not yet found any statistical evidence that rating policies affect that relationship. Perhaps, because high Medigap states tend to be rural, and rural beneficiaries tend to have lower income, beneficiaries in high Medigap states cannot easily afford to buy the plans that offer drug coverage. We plan to examine this issue further.

TABLE 2-7 Medicare beneficiaries' supplementation, by urban and rural areas

Areas	Medicaid	Employer	Medigap	Managed care
Total	14%	32%	28%	15%
Urban	14	33	25	19
Rural	14	29	33	2

Source: MedPAC analysis of Current Population Survey, 2001 and Medicare Compare data from CMS.

**TABLE
2-8**

**Medicare beneficiaries' supplementation,
selected metropolitan areas**

Metro area	Medicaid	Employer	Medigap	Managed care
New York	26%	26%	11%	19%
Los Angeles	31	29	11	35
Chicago	10	31	28	12
Washington	8	45	23	4
Providence	15	22	34	33
Philadelphia	14	31	33	34
Honolulu	14	44	21	33
Detroit	7	47	19	9
Las Vegas	12	32	17	31
Miami	26	10	5	45
Tampa	8	36	21	30
Boston	13	33	23	21

Note: Areas are listed in order of Medicare sample size in the Current Population Survey. Each beneficiary may have more than one type of coverage.

Source: MedPAC analysis of Current Population Survey, 2001, and Medicare Compare data from CMS.

The level of union membership may help explain the prevalence of employer-based supplemental coverage. Three of the four states that rank high on employer supplemental coverage (Hawaii,²² Michigan, and Ohio) have substantially higher than average shares of union representation, while the four states in the low group all have lower than average representation. Another hypothesis is that states with a high percentage of workers in large firms also have a high percentage of Medicare beneficiaries with employer-sponsored supplemental coverage. We found that only one of our four high-percentage states (Delaware) had a noticeably high number of its workers employed by large firms; however, it was the state whose high percentage of employer coverage was not explained by unionization.

The income level of the beneficiaries in a state seems to influence the markets. All six of the states in the high Medigap group have lower than average poverty ratios for seniors.²³ Meanwhile, most of the states in the low Medigap group have higher than average percentages of seniors in poverty. The percentage of seniors in poverty is also related to the percentage of beneficiaries receiving Medicaid benefits, although the relationship may not be as strong as one might expect from a means-tested program like Medicaid, because states have discretion in determining Medicaid eligibility.

We also examined some state regulatory policies in relation to the age group data. Supplemental insurance coverage varies by age. We looked at three age groups: under 65 (the disabled), 65 to 76, and over 76,²⁴ and found that those under 65 are much more likely to receive benefits from Medicaid (Table 2-9). Those in the 65-to-76 age group are the most likely to be covered by employer-sponsored supplemental insurance, while those over 76 are the most likely to have Medigap coverage. The disabled are the most likely not to have any FFS supplemental coverage.²⁵ Those in the 65-to-76 age group are the most likely to have some coverage.

Table 2-10 lists state mandates affecting Medigap issue and rating. First we grouped the 14 states that mandated, prior to 1998, guaranteed issue for Medigap policies for the under-65 population. We find that overall, these states had slightly higher Medigap participation rates among the disabled, but the significant difference in participation rates between the aged and the disabled remains. When looking at the state level, we find that some of the guaranteed-issue states had high rates of participation among the disabled, and others did not. However, of the seven states that have disabled Medigap participation rates of at least 15 percent, five had mandates prior to 1998, and another one recently enacted a mandate. (The state that reached 15 percent without a mandate has very high overall Medigap participation and still has a large difference in participation between the elderly and disabled.) The conclusion we draw is that mandated guaranteed issue for the disabled is not sufficient to ensure higher participation, but it may facilitate access to Medigap (White et al. 1998).

22 Hawaii also has an employer mandate for health insurance coverage for active workers that could affect retiree benefits as well.

23 The poverty threshold is determined nationally and does not vary by state. It does not reflect the cost of living in particular states.

24 At the time the CPS data were collected, those beneficiaries over age 76 were old enough to have purchased prestandard policies.

25 We did not have managed care data by age group available for this analysis.

**TABLE
2-9**

Medicare beneficiaries' supplementation, by age and state Medigap mandates

Age	Medicaid	Employer	Medigap	Any FFS supplement
United States total				
<65	37%	22%	8%	63%
65-76	10	38	29	73
>76	10	27	34	68
States with under 65 mandates prior to 1998				
<65	40	21	9	65
65-76	9	38	31	74
>76	10	28	35	69
States with community rating				
<65	39	23	10	64
65-76	11	39	25	72
>76	12	29	31	68

Note: FFS (fee-for-service).

Source: MedPAC analysis of Current Population Survey, 2001.

Community rating requires younger beneficiaries to pay more, given their average spending, than older beneficiaries. To test the hypothesis that community rating would increase Medigap participation for those over 76 and decrease it for those in the younger-aged

group, we also examined states that required community rating for Medigap. We do not find any relationship for the eight states that required community rating, although as a group, the overall Medigap participation is slightly lower in those states than in the nation as a whole.

**TABLE
2-10**

State Medigap mandates

States requiring community rating

Arkansas	Minnesota
Connecticut	New York
Maine	Vermont
Massachusetts	Washington

States prohibiting age rating

Florida (entry age)
Georgia (entry age and attained age)
Idaho (entry age and attained age)
Missouri (entry age and attained age)

States mandating coverage of Medicare beneficiaries under age 65

Mandates implemented prior to 1998

Connecticut	New York
Kansas	Oklahoma
Maine	Oregon
Massachusetts	Pennsylvania
Minnesota	Texas
New Hampshire	Washington
New Jersey	Wisconsin

Mandates implemented 1998 and after

California
Louisiana
Maryland
Missouri
Mississippi
North Carolina
South Dakota

Source: American Academy of Actuaries, 2003.

Conclusions and key policy questions for future work

In our June 2002 Report to the Congress we concluded that, on an individual level, beneficiaries who were disabled, poor, living in rural areas, and in poor health were more likely to be covered only by Medicare FFS. Additional analysis shows that in particular areas of the country—states and metropolitan areas—a substantial portion of the Medicare population has no supplemental coverage. Our findings here also show that local market factors and regulatory policies make a difference.

Differences in the structure of supplemental coverage affect beneficiaries' access to coverage and their ability to make meaningful choices among insurance options. We also found evidence that distinct markets are shaped by substantively different regulatory policies. The way that regulatory oversight of Medicare products is divided among federal government and the states will continue to shape and perhaps frustrate the evolution of Medigap, employer-sponsored, and M+C options (as well as supplementation available through Medicaid), and will be critical in the design of any future market-based reforms. In particular, the interplay between standardization and flexibility in the design of benefits is important for beneficiaries, employers sponsoring retiree health benefits, and health plans and insurers in deciding how, or whether, to participate in Medicare markets.

It is difficult, if not impossible, however, to sort out the multiple, interconnected factors that shape specific markets from available data. More in-depth analysis is needed to tease out how these pieces fit together, and whether there are particular policies related to the design of supplemental products, or regulatory policies that would promote efficient markets that meet beneficiaries' needs. To

really understand what is happening within these markets, we plan to undertake case studies to examine a set of specific markets in greater depth.

These specific markets will include one or more markets characterized by a high concentration of employer-sponsored supplemental insurance, Medigap insurance, Medigap policies including drug coverage, and M+C enrollment, and markets with low levels of one or more of the other forms of supplementation, including a market with a low level of any supplementation. We will analyze markets in a state with a waiver from federal Medigap requirements, and markets that

differ with respect to state requirements regarding guaranteed issue and community rating of Medigap products.

We will examine:

- whether, from the perspective of consumer advocates and beneficiaries, public program administrators, or insurers, there are problems (availability, cost, consumer confusion) with products (private or public) that supplement traditional Medicare coverage, and how this may vary across different groups of beneficiaries (disabled, low-income, oldest);

- how the economic and demographic structure of the market is viewed by Medigap insurers, health plans and risk-bearing provider groups, large public and private employers offering supplemental retiree health insurance, and state Medicaid administrators; and
- how the state regulatory environment is perceived by Medigap insurers, health plans, and risk-bearing provider groups and whether there are policy reforms they believe would affect their decisions about marketing to Medicare beneficiaries in the future. ■

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CHAPTER

3

**Accounting for variation in
hospital financial performance
under prospective payment**

Accounting for variation in hospital financial performance under prospective payment

This chapter describes findings from research designed to disentangle the roles of payment policies and other factors that affect hospitals' financial performance under Medicare's inpatient prospective payment system. Although the payment system affects hospitals' Medicare inpatient margins—accounting for one-quarter of the variation across all facilities—it appears to operate largely as the Congress intended. Most of the payment system's effects on hospitals' inpatient margins are attributable to deliberate policy adjustments that the Congress has added to the payment formulas, such as extra payments for teaching hospitals, those that serve a disproportionate share of low-income patients, and certain rural facilities. Problems with Medicare's case-mix and wage-index adjustments also contribute to margin variation. A substantial portion of the variation in Medicare inpatient margins, however, is attributable to hospitals' operating characteristics, which are at least partially under management control. This finding is consistent with one of the fundamental assumptions of prospective payment: Hospital managers can exert substantial control over efficiency and the cost of care.

In this chapter

- Summary of findings
 - Modeling sources of variation in hospitals' Medicare inpatient PPS margins
 - Findings
 - Study limitations
 - Discussion and policy implications
-

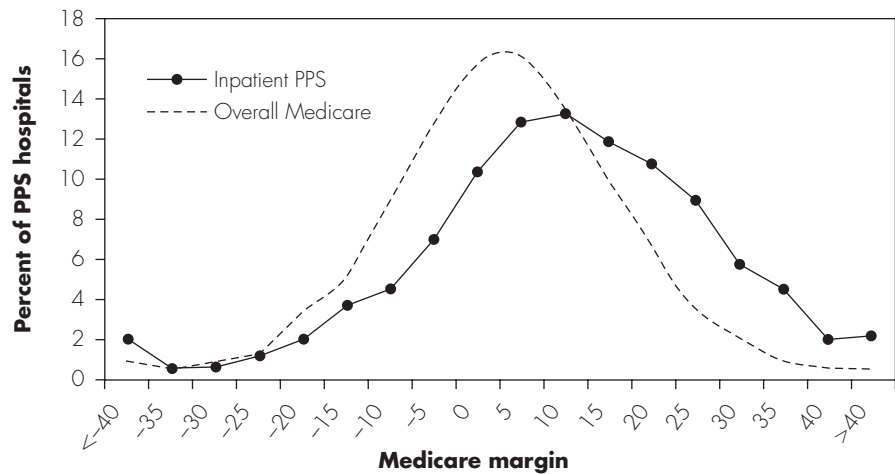
In developing recommendations for the Congress on Medicare's payment policies, MedPAC annually considers payment updates and other policy changes needed to ensure that Medicare's payments to providers are adequate and that they accurately reflect the effects on care delivery costs of factors beyond providers' control. The Commission examines a variety of indicators of payment adequacy, including: providers' willingness to offer services to Medicare beneficiaries; changes in the volume, mix, and cost of the care furnished; beneficiaries' access to and the quality of care; and providers' financial performance for the services they furnish under Medicare's payment systems.

Financial performance measured by financial margins—the difference between payments and costs as a percentage of payments—varies widely among hospitals. In 1999, for instance, the lowest and highest 10 percent of hospitals had financial margins under Medicare's inpatient prospective payment system (PPS) below -13 and above +28 percent (Figure 3-1).¹ Hospitals' overall Medicare margins, which reflect their Medicare payments and costs for all of the major types of services they furnish to beneficiaries, show almost as much variation.

How policymakers should interpret and respond to variation in financial performance depends on why it occurs. Often, health care advocates or other observers cite providers' financial margins under Medicare and the proportion of providers with negative margins to argue that the Congress should raise Medicare's payment rates overall or for specific services or groups of providers. Yet, if margins vary because of systematic problems with the payment system, this would not necessarily mean that the overall level of the payment rates is inadequate. Instead, it might indicate the need to address specific payment system components, such as the case-mix adjustment or the payment policies for

FIGURE 3-1

Distribution of inpatient and overall Medicare margins, 1999



Note: PPS (prospective payment system). Medicare inpatient PPS margin equals PPS payments minus PPS costs, divided by PPS payments. Overall Medicare margin equals Medicare payments for all major services hospitals furnish to beneficiaries (such as inpatient, outpatient, skilled nursing, and home health), minus related costs, divided by Medicare payments.

Source: MedPAC analysis of hospital cost report data from CMS.

hospitals serving low-income patients. Alternatively, if variations in inpatient margins partly reflect differences in business strategies and other management decisions that affect efficiency, policymakers should not alter Medicare's payments to make up the difference; by design, the payment system rewards effective management.

This chapter describes the objectives, methods, and findings of research designed to help us understand why hospitals' financial performance varies so much under the inpatient PPS. This research is motivated by two objectives. The primary objective is to disentangle the roles of Medicare's payment policies and other factors that contribute to differences in hospital financial performance under Medicare's hospital inpatient PPS. The knowledge gained will help us to evaluate the payment system and identify potential areas for improvement. The second objective is to develop a general approach

to evaluating sources of variation in financial performance and the functioning of PPSs in other settings.

We first identify factors that contribute to variation in performance across hospitals in any given year and then measure their separate effects. We started with hospitals' Medicare inpatient operating payments and costs because hospital data are more readily available and reliable than those for other care settings, and payments for hospital inpatient care account for about 40 percent of Medicare spending. We developed our analytic approach using data from fiscal year 1998, but results from a single year can be misleading, so we also applied the model to data from 1992 and 1999 to test the stability of our findings. Most of the results are very similar across time periods, suggesting that the structural relationships among payments, costs, and hospital characteristics are generally stable. For simplicity, we present only the findings based on 1998 data, although we note differences for other years where they occur.

¹ In 1999, about 71 percent of all hospitals paid under Medicare's inpatient PPS had positive inpatient margins; these facilities treated about 78 percent of all Medicare PPS discharges.

Summary of findings

The analysis described in this chapter supports several major findings:

- Our model accounts for about one-half of the variability in PPS inpatient margins across hospitals when we include variables to capture the effects of the hospital inpatient PPS, local market circumstances, and operating characteristics at least partially under management control.
- More than one-quarter of the variability in inpatient margins is associated with the payment factors included in the hospital inpatient PPS. Most of this explained variation is attributable to three policy adjustments (that are only partly related to hospitals' costs for treating Medicare beneficiaries): payments for indirect medical education (IME) costs; payments for treating a disproportionate share (DSH) of low-income patients; and additional payments for rural sole community and Medicare-dependent facilities. About three-fifths of all PPS hospitals benefit from one or more of these policy adjustments.
- Policy adjustments are designed to improve the margins of eligible hospitals; thus some or all of their contribution to variation in financial performance is intentional. The magnitude and distribution of their effects, however, may differ from the outcomes policymakers intended.
- A small portion of the variation in hospital inpatient margins is created by problems with cost adjusters in the PPS payment formula—such as the case-mix and wage-index adjustments that are designed to capture the influence of factors beyond hospitals' control. The evidence suggests that both the case-mix and wage indexes overadjust for expected differences in cost per case for hospitals with high index values.

These effects also increase the influence of two of the three policy adjustments (IME and DSH) because all of these factors apply as multipliers. Any contribution of the case-mix or wage-index adjustments to variation in margins is unintended and undesirable.

- After controlling for the effects of PPS policy and cost adjusters, we do not find substantial differences in margins associated with specific demographic or market characteristics, such as the proportion of the population over age 85, household income, supply of substitute and complementary services, and the market share of health maintenance organizations.
- We do find substantial differences in margins associated with operating characteristics that reflect management decisions, such as inpatient occupancy rates, length of stay (relative to expected length of stay based on their case mix), wage levels (relative to the local market), and scope of services offered. Although adding these variables to our model explains an additional 20 percent of the variation in inpatient margins across hospitals, much of the effect of management choices may be unmeasured because management effectiveness is not easily captured in available data.

These findings suggest that key features of the PPS are partly responsible for variation in Medicare inpatient margins. Policymakers might reduce their influence somewhat by refining the PPS case-mix and wage-index adjustments. Further, if policymakers were to conclude that the effects of the policy adjustments are greater than intended, they could alter these adjustments or change related eligibility rules to reduce variation in hospitals' inpatient margins.

Nearly three-quarters of the variation in hospitals' inpatient PPS margins is associated with management choices and

other factors outside the PPS, or is unexplained. This finding should not be interpreted as an indication that the PPS is malfunctioning. The Congress adopted the PPS to promote efficiency by breaking the automatic link between hospitals' Medicare operating costs and their Medicare payments, thereby creating both incentives for good management and the prospect of variations in margins. Fixed payment rates create the opportunity for gain or loss. Like organizations supplying products or services in all other markets, some hospitals adopt business strategies that work well, while others are less successful, but the payment system provides an ongoing incentive to furnish care efficiently.

The finding that much of the variation in inpatient margins is unrelated to the features of the PPS is also consistent with the results of earlier analyses carried out by the Prospective Payment Assessment Commission (ProPAC 1992a, 1992b, 1991). ProPAC's case studies of matched pairs of high- and low-performing hospitals facing similar market circumstances suggested that differences in their PPS inpatient margins were strongly associated with management performance, especially managers' understanding of and responsiveness to their market circumstances and their relations with the hospital medical staff.

Modeling sources of variation in hospitals' Medicare inpatient PPS margins

The payment rates under the various Medicare PPSs are set before the period in which they apply and are largely unaffected by individual providers' costs or charges. Setting fixed payment rates for different types of products and services puts providers at risk for gains and losses if their costs differ from the payment rates. The objective of prospective payment is to set prices that compensate providers fairly while giving them

incentives to produce services efficiently. This objective can be achieved by setting payment rates that approximate the costs reasonably efficient providers would incur in furnishing care to Medicare beneficiaries (MedPAC 2001b).

Providers' financial margins under a PPS thus reflect two factors:

- overall average margin implicit in the level of the payment rates, and
- differences between their actual average costs per service unit and

those predicted by the payment system, given the mixes of services they furnish and their values for other factors included in the payment formula.

As a result, variation in margins across providers is neither unexpected nor undesirable. Like market prices, PPS payment rates create incentives that reflect the opportunity for gains and losses. But how well providers fare depends, in part,

on their ability to craft appropriate business strategies, and manage production to achieve reasonable levels of operating efficiency, given their market circumstances.

To place hospitals at risk fairly, Medicare's inpatient PPS payment rates are adjusted to account for expected differences in cost per case that result from factors outside of management control, such as case mix or local market wages (see text box below). If properly

Factors that determine inpatient prospective payment system (PPS) payments

National base payment amounts. PPS payments are based on per discharge amounts, which differ for hospitals located in large urban and all other areas.

Cost adjusters. The base payment amounts are adjusted to account for the effects of certain factors (wage index, case mix, and the cost-related portion of the indirect medical education adjustment) that are expected to affect providers' costs, but are outside of their control.

- The wage index measures the average wage for hospital workers in each local market area relative to the national average.
- The case-mix index measures the expected relative costliness of a hospital's mix of Medicare discharges. Each discharge is assigned to one of 508 diagnosis related groups (DRGs) and each DRG has a national weight that reflects its expected relative costliness compared with the national average Medicare case. The case-mix index is the hospital's average relative weight across all Medicare cases.
- Teaching hospitals qualify for additional payments that are intended to cover indirect medical

education (IME) costs—costs associated with operating approved residency training programs that are not directly measurable. Add-on IME payments are based on hospitals' teaching intensity as measured by their numbers of residents per bed.

Policy adjusters. The base payment amounts are also adjusted for certain factors that are only partly related to providers' inpatient care costs; these payments are intended to support other valued activities (such as uncompensated care, or additional support for teaching activities).

- Disproportionate share (DSH) hospitals qualify for additional payments because they treat an unusually high share of low-income patients, including Medicaid patients and Medicare beneficiaries eligible to receive Supplemental Security Income payments.
- The current IME adjustment factor is substantially greater than the estimated effect that teaching intensity has on hospitals' Medicare operating costs per case.
- Certain rural hospitals qualify for additional payments if they are geographically isolated or heavily dependent on Medicare and

payments based on their hospital-specific, inflation-adjusted costs per case for selected years would be higher than those based on the usual PPS payment rates.

Gain/loss limiting adjusters. PPS payment rates also may be adjusted by the transfer and outlier policies, which are intended to limit providers' gains and losses on extraordinary cases.

- Hospitals receive per diem payments up to the full DRG payment rate for cases that are transferred to another PPS hospital or (in 10 DRGs) to a post-acute care setting (such as a skilled nursing facility, rehabilitation facility, or to related home health care) after a very short inpatient stay.
- Hospitals receive extra payments, called outlier payments, when the estimated cost of a case exceeds a fixed loss threshold. Costs are estimated by multiplying the patient's covered charges by the hospital's most recent cost to charge ratio. The fixed-loss threshold is based on the normal DRG payment plus IME, DSH, certain other payments, and a national fixed loss amount. The hospital is paid the normal DRG payment rate for the case plus 80 percent of the costs above the threshold. ■

constructed, these adjustments should not systematically affect providers' Medicare inpatient margins. But the Congress has also deliberately incorporated adjustments (referred to as policy adjustments) that are only partly related to expected cost differences, and therefore create systematic differences in Medicare inpatient margins across types of providers.

Apart from the influence of these policy adjustments, most of the variation in financial performance should reflect differences in efficiency that result, in turn, from management choices and effectiveness. Previous studies from ProPAC and MedPAC have documented that IME or DSH payments account for substantial differences in Medicare inpatient margins (ProPAC 1992a, MedPAC 2000). But when hospitals are grouped according to eligibility for these policy adjustments, aggregate average inpatient margins still differ by location and margins also vary widely among hospitals within these groups (Figure 3-2).²

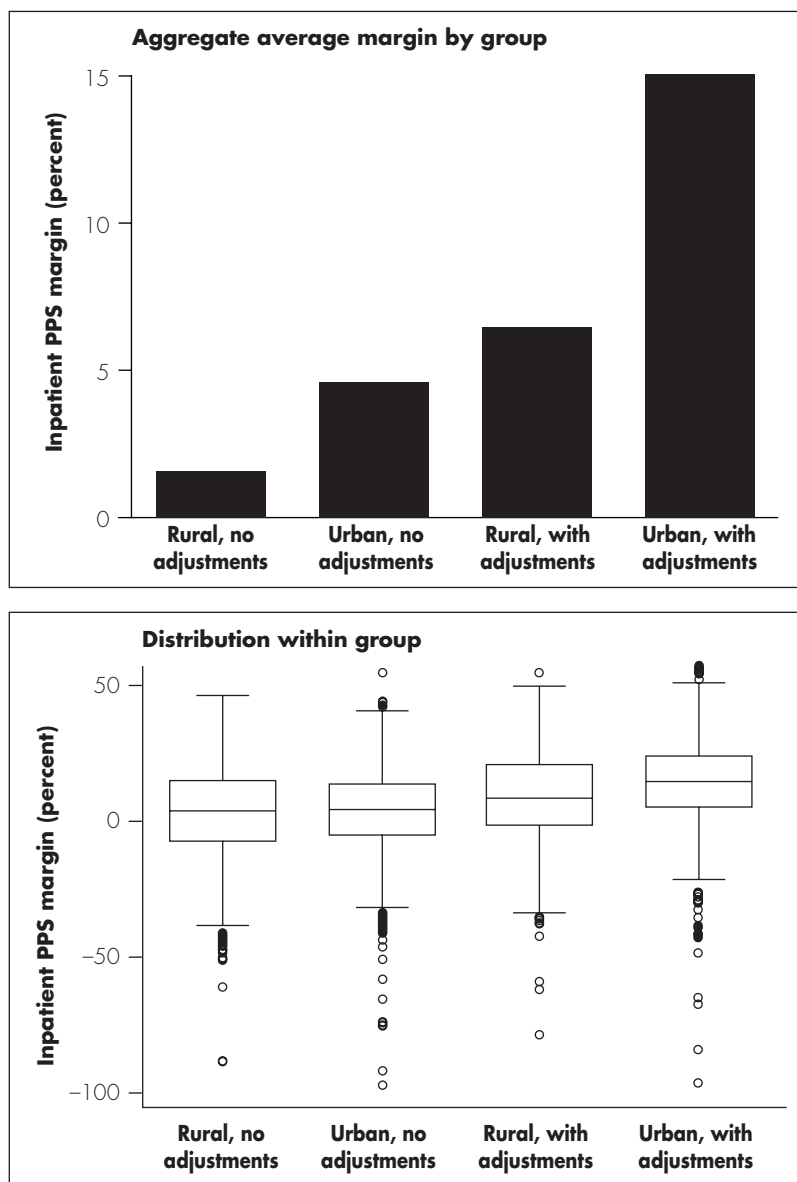
Analytic approach

Differences in hospitals' Medicare inpatient margins may arise from multiple sources (Figure 3-3, p. 46). We begin by separating the contributions of the payment system from those of individual provider characteristics. Variations that flow from the payment system may be unintended—the result of measurement error; or they may be intended—the result of a deliberate policy intervention. Margin differences associated with other provider characteristics can also be separated into two categories: those related to hospitals' external environments (including population demographics or measures of market competition), and those that may reflect providers' choices (such as case-mix adjusted average length of stay, payer and service mix, quality of care, or institutional mission).

Our analysis builds on this framework to address the following questions:

FIGURE 3-2

Differences in performance, by hospitals' eligibility for policy adjustments, fiscal year 1999



Note: PPS (prospective payment system). Inpatient PPS margin equals PPS operating payments minus PPS operating costs, divided by PPS operating payments. In the lower panel, each box diagram shows the distribution of hospitals' inpatient PPS margins among the facilities in the specific group. The top and bottom lines of each box show the 75th and 25th percentiles, respectively, of the margin distribution for the category; the horizontal line inside the box is the median margin. The small circles indicate hospitals that fall outside the range of expected performance as defined by the threshold lines above and below each box.

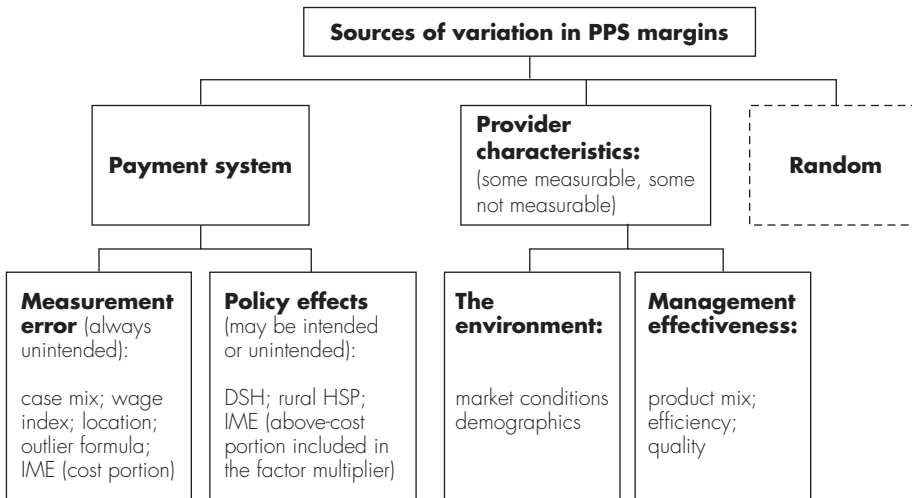
Source: Analysis by Kathleen Dalton, Sheps Center for Health Services Research, University of North Carolina, of fiscal year 1999 hospital cost report information from CMS.

- Of the total variation in hospitals' margins, how much might be due to the PPS payment formula?
- What are the independent effects of each of the payment factors on the margins? Are the payment factors operating as intended?

² The aggregate average Medicare inpatient margin reflects the hospitals where most Medicare patients receive care. The aggregate margin for a hospital group is calculated by summing the differences between hospitals' Medicare inpatient operating payments and costs over all hospitals in the group, then dividing the result by the sum of their payments.

FIGURE 3-3

Conceptual framework for modeling PPS inpatient margins



Note: DSH (disproportionate share) payments, HSP (hospital-specific payments) for certain rural providers, IME (indirect medical education) payments, PPS (prospective payment system).

- What is the practical significance of each factor? How important is any one of them, given the range of hospital inpatient PPS margins?
- Are there other factors, outside management control, to address in the payment formula?

A strong association between factors in hospitals' external environments and their Medicare hospital inpatient PPS margins might indicate that the payment formula needs additional components or further refinement of existing components. These interpretations would be consistent with the principle that PPS rates should adjust for factors that affect providers' costs but are outside of their control.

Hypothetically, if our model showed Medicare inpatient margins negatively associated with the elderly population over age 85, this might mean that the case-mix measure in the inpatient PPS is not fully capturing differences in illness severity among beneficiaries. If margin variation is primarily associated with variables reflecting management decisions, however, changes in policy may not be indicated. Although we are interested in understanding how

management behavior contributes to performance variation, these influences have few implications for an evaluation of the payment system.

The model's conceptual distinction between external conditions and provider choices is important, but in practice, it is not always clear how to categorize a given variable. Payer mix, for example, can be influenced by managers through marketing or other means, although in communities with few providers it may be largely dictated by demographics. The task of modeling is further complicated because many of the measures we use to capture payment factors and provider characteristics are correlated. As a result, it can be hard to separate the effect of one factor from another, even with multivariate modeling techniques. In addition, although many provider choices—such as length of stay, capacity use, or scale and scope of operations—can be measured and analyzed directly, it is difficult to fully capture differences in efficiency and quality. To the extent that they are not correlated with other variables we can include, their contribution to the variation in financial

performance will remain in the unexplained portion of any quantitative model.

Some portion of the variation in performance will also remain unexplained because it is random—the result of multiple chance occurrences that affect operations. In addition, changes in volume will alter a hospital's fixed cost per case, so year-to-year fluctuations in demand can also have an effect on margins; in any model of a single year of data, the contribution of volume fluctuations will appear as part of the random component.

Data

For this analysis, we used payment and cost data for all PPS providers (except those in Puerto Rico) taken from hospital cost reports and various CMS system files for 1992, 1998, and 1999. We adjusted the payment and cost amounts for inflation using the PPS hospital market basket index, which measures changes over time in national average prices for the inputs (labor, supplies, and so forth) that hospitals buy to furnish care. Thus, our modeling results are stated in real (1992) dollars.

The number of hospitals with usable data varies depending on the cost reporting year (Table 3-1). We excluded hospitals reporting PPS payments that appeared erroneous and those where we were missing important variables. In addition, we excluded hospitals with PPS data in the study years that have subsequently chosen to become critical access hospitals (CAHs). These hospitals are very small (CAHs are required by statute to have an inpatient census of no more than 15 acute-care patients, but most have an average daily census that is below 5). Removing them from the analysis may dilute any empirical effects associated with low volume and isolated rural location. However, these hospitals will not be affected by future changes to the PPS rules and arguably should not influence rule changes affecting the remaining PPS hospitals.

**TABLE
3-1**

Hospitals included in analysis by cost reporting year

Data category	Main analysis		Other years
	1998	1992	1999
PPS providers in HCRIS file	4,489	5,233	4,377
Records available for analysis*	3,843	4,168	3,443
Less: hospitals excluded as CAHs (as of July 1, 2002)	423	398	368
Sample	3,420	3,770	3,075

Note: CAH (critical access hospital), HCRIS (Hospital Cost Report Information System), PPS (prospective payment system).
 *Hospitals were excluded if they had fewer than 25 Medicare discharges, a reporting period of less than 6 months, or if they were acute long-term or rehabilitation facilities temporarily paid under the PPS rules. Depending on the year, between 8 and 9 percent of hospitals were excluded from the analysis based on cost report data edits. These edits also excluded providers for which we could not predict total PPS payments with reasonable accuracy using the payment factors included in the PPS payment system. We dropped additional hospitals because claims-based variables or the market-level measures were missing. In the 1998 file, missing data eliminated 5.7 percent of hospitals, but in 1992 this figure was about 20 percent.

Source: Analysis by Kathleen Dalton, Sheps Center for Health Services Research, University of North Carolina, of 1992, 1998, and 1999 data from hospital cost reports; other CMS systems files; and information on population demographic characteristics and health care supply for hospital markets defined by ZIP codes of origin for Medicare acute-care discharges.

In addition to cost report data, we used Part A claims to construct several variables. For each hospital, we computed the ratio of its actual to expected Medicare length of stay (LOS), based on the national geometric mean LOS for the hospital's cases in each diagnosis related group (DRG).³ Other things being equal, hospitals that keep patients longer than expected (and have higher ratios of actual to expected LOS) should have lower PPS margins. We also constructed measures of the extent to which hospitals choose to specialize in treating certain types of patients, including cardiovascular surgery and orthopedic surgery.

Methods

We used multivariate regression techniques to address the study questions, and simulations to translate model results into a form that provides a sense of how important any one explanatory factor is compared with another. Our model is a variant of the Medicare average cost

function—used elsewhere by MedPAC to estimate the indirect effects of hospitals' resident training activities—which regresses hospitals' Medicare operating costs per discharge on measures reflecting the adjusters incorporated in the payment formula for the inpatient operating PPS. We modified the approach, however, both because the outcome of interest is the hospital inpatient PPS margin—a ratio derived from both payments and costs—and we want to study the effects of several factors not included in the PPS rate formula (see text box, p. 48).

We conducted the modeling in stages, adding explanatory variables to the cost equation at each stage (Table 3-2, p. 49). In the first stage, we are interested in the contribution of the PPS payment factors to margin variation, so the first model includes only PPS payment factors. We estimate the effects of the case-mix and wage indexes in separate ranges (sometimes called piece-wise regression) to test whether either of these factors has

different effects on cost per case for hospitals at the lower or upper ends of the measures.

In the second stage, we expand the cost equation to include sets of variables identifying market conditions and rural locations. We include hospital size in this stage, using a measure of total inpatient discharge volume broken into four ranges to capture different effects (if any) based on hospitals' scale.

In the third stage, we test the effects of management choices by including variables for operating characteristics thought to be important determinants of cost per case. In this last stage we also test for any remaining effects associated with hospital location and type of ownership, recognizing that these attributes may represent other differences that are not directly measured.

Findings

A model limited to the factors included in the payment system explains 27 percent of the variation in inpatient PPS margins in 1998 (slightly less in 1992). The lion's share of this appears to be by design, because it is primarily associated with IME and DSH adjustments, or special rural hospital payments. A smaller but still distinct portion is attributable to problems in other PPS payment factors.

If PPS payments were adjusted only for case mix, local market wage rates, and other cost factors outside hospitals' control, we would expect the payment system to account for none of the variation in hospitals' Medicare inpatient margins. Because the formula includes additional policy adjustments, we expect to see some variation in inpatient margins that is systematically associated with those policy factors. However, we find that the case-mix and wage-index variables also contribute to the margin variation, contrary to the intent of the payment system's design.

3 To avoid estimation and interpretation problems that might be associated with predicting hospitals' expected costs using their LOS in the same year, we used their Part A claims for the preceding years (1991, 1997, and 1998).

Methods

Since the outcome of interest is hospital payment margins in the inpatient prospective payment system (PPS), we use a two-equation model that simultaneously estimates hospitals' average Medicare payments and costs per case. We estimate both the payment and cost equations in log form using explanatory variables for each of the payment factors in the inpatient PPS formula. We can add other variables that are not part of the payment system to the cost equation to test their effects on costs and margins. In addition, we can test whether the effects that some factors have on costs or payments differ across types of hospitals.

The multiple equation technique is called seemingly unrelated regression (SUR) because it allows for different outcome variables with overlapping (though not identical) sets of explanatory variables to be estimated within a single model (Greene 2000). The results from SUR are very similar to results from an ordinary regression analysis where the outcome variable

is the hospital's PPS inpatient margin and each hospital has equal weight. However, the two-equation technique provides more information about the components of the margin. It also allows us to incorporate information from the PPS payment formula in the form of restrictions imposed on certain variables in the payment equation, which improve the estimates for other, correlated variables.

The profitability measure obtained indirectly from the two-equation model is a payment-to-cost ratio. This is closely related to the PPS margin MedPAC generally uses, but it has a different scale. A payment-to-cost ratio will be between zero and one if the facility is paid below cost, and greater than one if the facility is paid above cost. The Medicare margin used elsewhere in MedPAC analyses is computed as the difference between PPS payments and cost expressed as a percent of payments; it is therefore negative if the facility has a loss, positive if it has a profit. ■

Relatively little of the variation in hospitals' margins appears to be independently associated with differences in environmental characteristics, such as population demographics, provider supply, or local competition. Although environmental factors are often significant predictors of cost per case, they tend to be correlated with hospital case mix, the market wage index, teaching intensity, disproportionate share status, and urban location. Consequently, market characteristics add only a few percentage points to the variation already explained by the payment factors. When we add other provider characteristics to the model—those generally thought to reflect management decisions or mission, such as

capacity use, length of stay adjusted for case mix, scope of services offered, and ownership—we can explain another 20 percent of the margin variation. Thus, after including all of the explanatory variables—PPS payment factors, environmental conditions, and operating characteristics—the model accounts for about half of the variation.

The role of PPS payment factors

By construction, payments to a hospital with a case-mix index (CMI) of 1.10 will be 10 percent higher than payments to a hospital with an index of 1.00. Other things being equal, if the DRG relative weights are accurate, a 10 percent

difference in average case-mix weight should be associated with a 10 percent difference in cost per case, when averaged across all hospitals. We would not expect this association to hold exactly true for each hospital, because the inpatient PPS is a system based on averages, but we do expect it to hold true for the sample as a whole.

The wage index works in a similar fashion, but it is used to adjust only the labor-related portion of the PPS payment per case, now about 71 percent of the base payment rate. Payments to a hospital located in a region with a wage index of 1.10 will be 7.1 percent higher than payments to a hospital with an index of 1.00. If the wage index accurately tracks the effects on operating costs per case of differences in market wages for hospital workers, we would expect to find that the same 10 percent difference in the wage index is associated with about a 7 percent difference in cost per case, when averaged across the sample.

The results indicate that both the case-mix and wage indexes may be overadjusting for cost differences at the hospital level. The best way to demonstrate this is with a simulation that shows the estimated effect of changes in one of these measures for a realistic base case hospital. We have used the model estimates to calculate predicted payments and costs for this base case hospital—which is merely a device we use to isolate the effects of one factor—by holding all of the other explanatory factors constant. In the illustrations that follow, the base case hospital is a typical facility that:

- is located in an “other urban” area with a wage index of 1.00,
- does not receive any policy adjustments (IME or DSH) under the PPS,
- has a case-mix index of 1.26 (the sample mean value), and
- has outlier payments that equal 3 percent of its DRG payments (again the sample mean).

Payment factors (included in both equations)

- Case-mix index (estimated in three pieces)
- Wage index (estimated in two pieces)
- Indirect medical education (ratio of IME dollars paid to DRG dollars paid)
- Disproportionate share (ratio of DSH dollars paid to DRG dollars paid, identified separately for urban hospitals with more than 100 beds and all others)
- Hospital-specific payments (increment of HSP amount over DRG amount, as a ratio to DRG dollars that otherwise would have been paid)
- Outlier ratio (outlier dollars paid divided by the DRG amounts paid)
- Location in large urban area (actual location or reclassified)
- Location in Alaska or Hawaii (eligibility for adjustment for higher nonlabor input prices)

Environmental and market factors (included only in cost equations)

- Median household income in hospital market
- Percent of workforce unemployed in hospital market
- Percent of population over age 85 in hospital market
- Percent of population nonwhite in hospital market
- Physician-to-population ratio in hospital market
- Managed care penetration (county-level estimate of enrollees per population, Medicare and non-Medicare, as of 1997)
- Numbers of hospitals, nursing homes, and ambulatory surgery facilities within a 15-mile radius
- Numbers of specialty hospitals and federal clinics within a 25-mile radius (measured as of 1998)
- Indicator for “very rural” status (nonmetropolitan county, fewer than 20,000 residents in urbanized settings)
- Number of acute-care discharges, annualized (estimated in four pieces)

Hospital operating characteristics (included only in cost equations)

- Ratio of actual to expected length of stay
- Ratio of hospital hourly wage to PPS market hourly wage
- Hospital occupancy rate (including patients in swing beds)
- Participation in long-term care, based on ratio of LTC days to acute days; variables for low (ratio < 0.10); medium (ratio 0.10–0.50); high (ratio ≥ 0.50)
- Participation in inpatient rehabilitation, inpatient psychiatry, home health, or federal clinics (dummy variable)
- Specialized service mix: variable indicating that percent of Medicare claims from MDC 5 or MDC 8 surgical DRGs greater than 95th percentile for all hospitals
- Ownership indicators (for-profit or public ownership) in combinations with indicators for regions

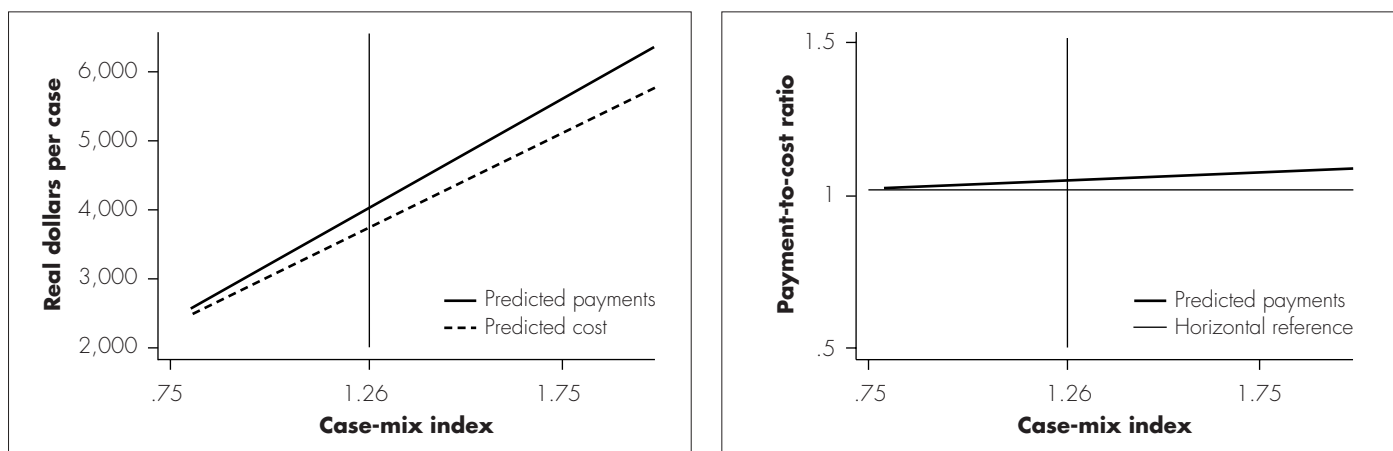
Note: DRG (diagnosis related group), DSH (disproportionate share) hospital, HSP (hospital-specific payment), IME (indirect medical education), LTC (long-term care), MDC (major diagnostic category), MDC 5 (diseases and disorders of the circulatory system), MDC 8 (diseases and disorders of the musculoskeletal system and connective tissue), PPS (prospective payment system). Hospital market definitions based on ZIP codes of origin for Medicare acute-care discharges. All continuous variables are transformed to natural log values.

Source: Kathleen Dalton, Sheps Center for Health Services Research, University of North Carolina.

Using this base case as a reference point, we can trace out the predicted effect of a change in any payment factor or other variable—on PPS payments, costs, and the inpatient margin—while holding the effects of other factors constant. The first illustration focuses on the effects of the CMI (Figure 3-4, p. 50). The left-hand

panel shows how predicted payments and costs per case each increase as case mix increases. Payments increase at about the same rate as predicted costs for hospitals with index values of 1.08 or below. At higher levels of the index, however, the increase in payments is proportionally greater than the predicted rise in costs.

The panel on the right shows the resulting predicted payment-to-cost ratio. For hospitals with case-mix values less than 1.08 the line is almost flat. This indicates that, at low levels, the case-mix index tracks costs as it should, making no contribution to inpatient PPS margins. For hospitals with case-mix indexes above

**FIGURE
3-4****Sample simulation for base case hospital: predicted effect of case-mix weights on payments, costs, and payment margins**

Source: Analysis by Kathleen Dalton, Sheps Center for Health Services Research, University of North Carolina, of 1998 data from hospital cost reports; other CMS systems files; and information on population demographic characteristics and health care supply for hospital markets defined by ZIP codes of origin for Medicare acute-care discharges.

1.08, however, the margin line slopes upward—the horizontal line provides a reference—indicating that the case-mix index overcompensates for expected cost differences associated with higher case complexity. If the DRG relative weights were functioning perfectly, the margin line would be flat for all ranges of the case mix index; higher DRG weights should not, by themselves, be associated with higher margins.

The definition of the base case does not alter the findings on the effect of any factor on the inpatient PPS margin. The gap between predicted payments and costs indicates the size of the margin. For this particular base case with a CMI of 1.26 (marked with a vertical line in the figure), predicted payments are about 6 percent above predicted cost. If the characteristics of the base case hospital were altered, the predicted margin line would shift up or down, but the slopes of the lines in both panels would remain unchanged. The gap between the payment and cost lines reflects the overall adequacy of the PPS rates, while the difference between the two slopes indicates the contribution of the simulated variable (case mix, in this example) to the variation in PPS inpatient margins.

We have repeated this simulation exercise for each of the factors in the PPS payment formula and displayed the results for predicted payment-to-cost ratios (Figure 3-5). The vertical axis for each panel is the predicted payment-to-cost ratio, while the horizontal axis reflects the range of the simulated payment factor. As the vertical scales are the same for each panel, we can gauge the relative importance of each factor (the relative size of its contribution to margin variation) by how steep the slope of its line is compared with those for other payment factors. To give perspective on where hospitals fall along these predicted margin lines, we have added horizontal and vertical lines encompassing the middle 50 percent of the distribution of hospitals. The horizontal and vertical lines in each panel indicate the 25th and 75th percentiles of the distribution of actual payment-to-cost ratios for hospitals in the sample and the simulated payment factor, respectively.

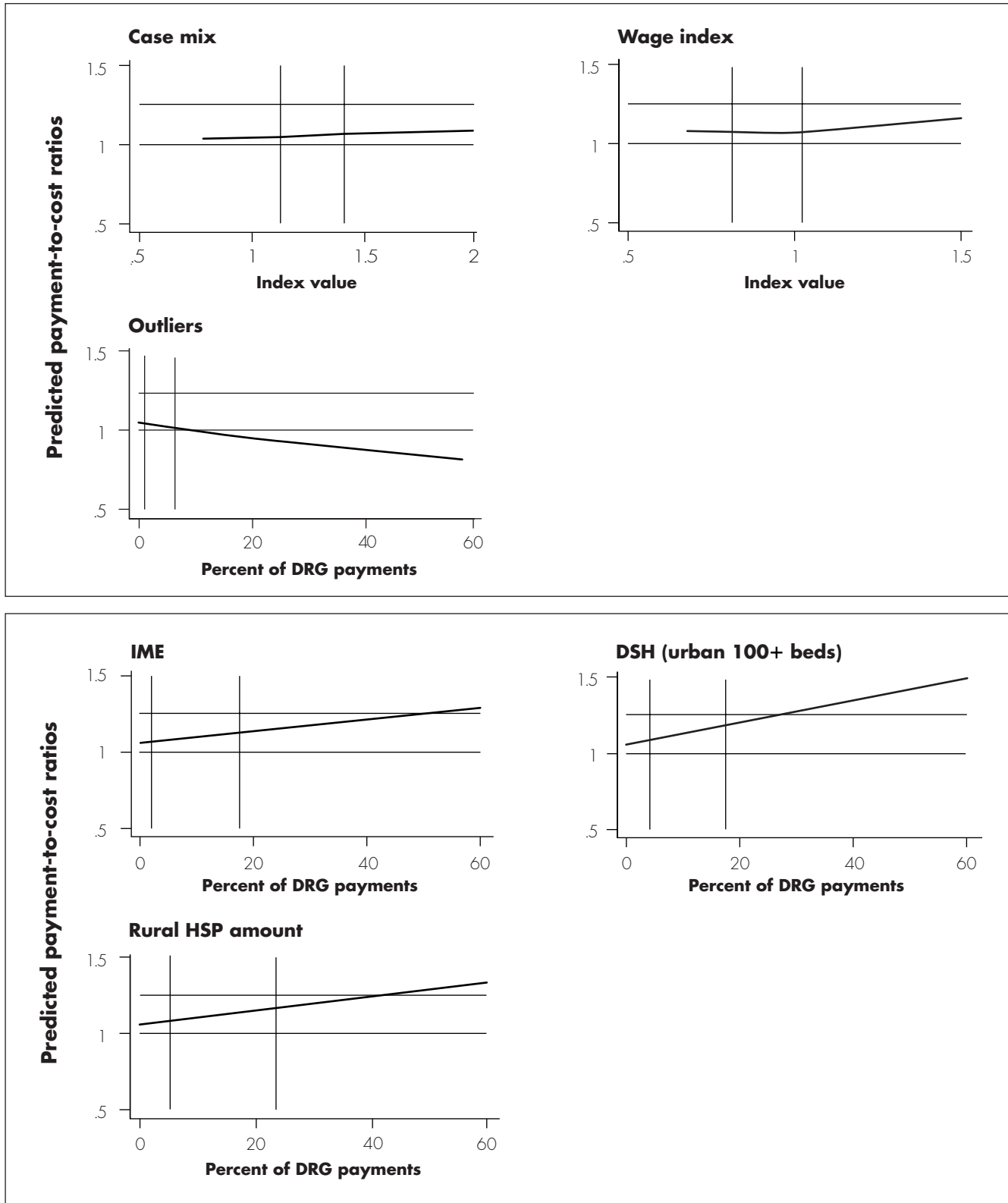
The graphs in Figure 3-5 show the strong influences the IME and DSH adjustments have on the margins of eligible facilities. The proportional effect of rural hospital-specific payments received by sole community and small rural Medicare-dependent hospitals is also quite large.

Each of these policy adjustments is significantly and positively associated with costs per case. If we had included graphs of the separate predicted cost and payment lines, it would be clear that hospitals' costs per case rise with increases in their teaching intensity and low-income patient share (the DSH proxy for uncompensated care). For eligible rural hospitals, the size of the incremental hospital-specific payment per case (compared with the PPS payment per case they otherwise would have received) is also positively related to cost per case—even though eligibility for this adjustment is not based on higher costs.

As expected, the PPS policy adjustments are considerably greater than the related cost differentials. The difference between the cost and payment effects is what can be considered the policy portion of the adjustment. In the case of IME, the payment effects are more than twice the predicted cost effects. Among urban DSH providers with more than 100 beds, the effects are nearly 5 times greater. The disproportionate share variable is not significantly associated with cost per case among smaller urban and rural hospitals that qualify, implying that all of their DSH dollars can be considered a policy subsidy

FIGURE 3-5

Summary of margin effects for three PPS cost adjusters and three PPS policy adjusters



Note: DRG (diagnosis related group), DSH (disproportionate share), HSP (hospital-specific payment), IME (indirect medical education), PPS (prospective payment system). The horizontal and vertical lines show the 25th and 75th percentiles of the sample distributions.

Source: Analysis by Kathleen Dalton, Sheps Center for Health Services Research, University of North Carolina, of 1998 data from hospital cost reports; other CMS systems files; and information on population demographic characteristics and health care supply for hospital markets defined by ZIP codes of origin for Medicare acute-care discharges.

for underwriting uncompensated care. Among rural hospitals receiving hospital-specific payments instead of DRG amounts, the additional payments are nearly twice the size of the related cost differentials. With nearly 60 percent of PPS hospitals eligible for one or more of these three policy adjustments, it is clear that they account for a large share of the margin variation attributable to PPS payment factors.

The case-mix and wage adjustments also contribute to the explained variation in inpatient PPS margins. Although the individual influence of these factors is smaller than that of the policy adjustments, their combined impact could still be substantial because they are highly correlated. Further, all of the contribution of the case-mix and wage indexes—unlike that of the policy adjustments—is unintended. The evidence that both of these measures may overadjust for cost differences is also present in the 1992 and 1999 data. Like the case-mix index, the wage index appears to overstate expected cost differences only at the higher end of the distribution. In markets with index values below 1.00 in 1998, the wage index appears to function as intended—the predicted effects on payments and costs per case are very similar.

The outlier payment variable is negatively associated with PPS margins, but this is consistent with the design of the outlier policy. Providers have always had to absorb the initial excess costs of an outlier case, and are reimbursed for 80 percent of estimated costs in excess of the specified cost threshold. On average, payments are less than costs by design and in the model,

an increase in the proportion of outlier payments is associated with a decrease in margins, other factors being equal. The slope of the margin line for the outlier variable is not very steep; in 1998 and 1999 the effect on margins was not very great. The rules governing outlier cases and payments have changed over the last decade, however, and in the 1992 data the margin line had a much steeper declining slope, indicating that losses on outlier cases were proportionally greater.⁴

The effects of other hospital characteristics and market circumstances

We apply the same simulations to a model that includes variables for hospital environmental and operating characteristics. These variables have no independent influence on PPS payments, but they often do have an independent effect on cost per case, and therefore on PPS margins (Figure 3-6).⁵

Adding providers' operating characteristics substantially increases the proportion of margin variation explained by the model. Still, the individual contributions of most of the management choice variables are relatively small. For all but one of the variables shown here the direction of the effect is as we expected. For example, higher average occupancy rates are associated with higher margins; higher hourly wages (relative to the hourly wages of the local labor market) and higher ratios of actual to expected LOS are each associated with higher cost per case and therefore lower margins. Within the range of commonly occurring values for these factors, however, the lines have relatively shallow slopes. With the

exception of the ratio of actual to expected LOS, the contribution of any one of these operating characteristics to the overall level of variation is probably modest.

The findings on the effects of discharge volume, the share of hospital revenues derived from outpatient business, and the extent of hospitals' participation in other levels of care (such as post-acute and long-term care) tell us something about the effects of economies of scale and scope. Generally, larger overall discharge volume is associated with lower cost per case. The estimates for different volume ranges, however, suggest that Medicare operating costs per case decline only for hospitals with fewer than 10,000 annual discharges (including more than 75 percent of all hospitals in the sample). The estimated decline in costs per case was strongest for hospitals with volumes between 5,000 and 10,000 discharges per year. These findings, however, have been heavily influenced by the exclusion of many small rural facilities that converted to CAH status.⁶

Somewhat surprisingly, greater reliance on outpatient services is associated with higher cost per inpatient discharge, and therefore with lower margins. This finding, however, may simply reflect the strong negative correlations between reliance on outpatient services and other key variables, including the case-mix and wage indexes, IME, and DSH.

Other variables that capture the extent to which hospitals offer other levels of patient care also present mixed evidence about economies of scope. Providing small amounts of post-acute and

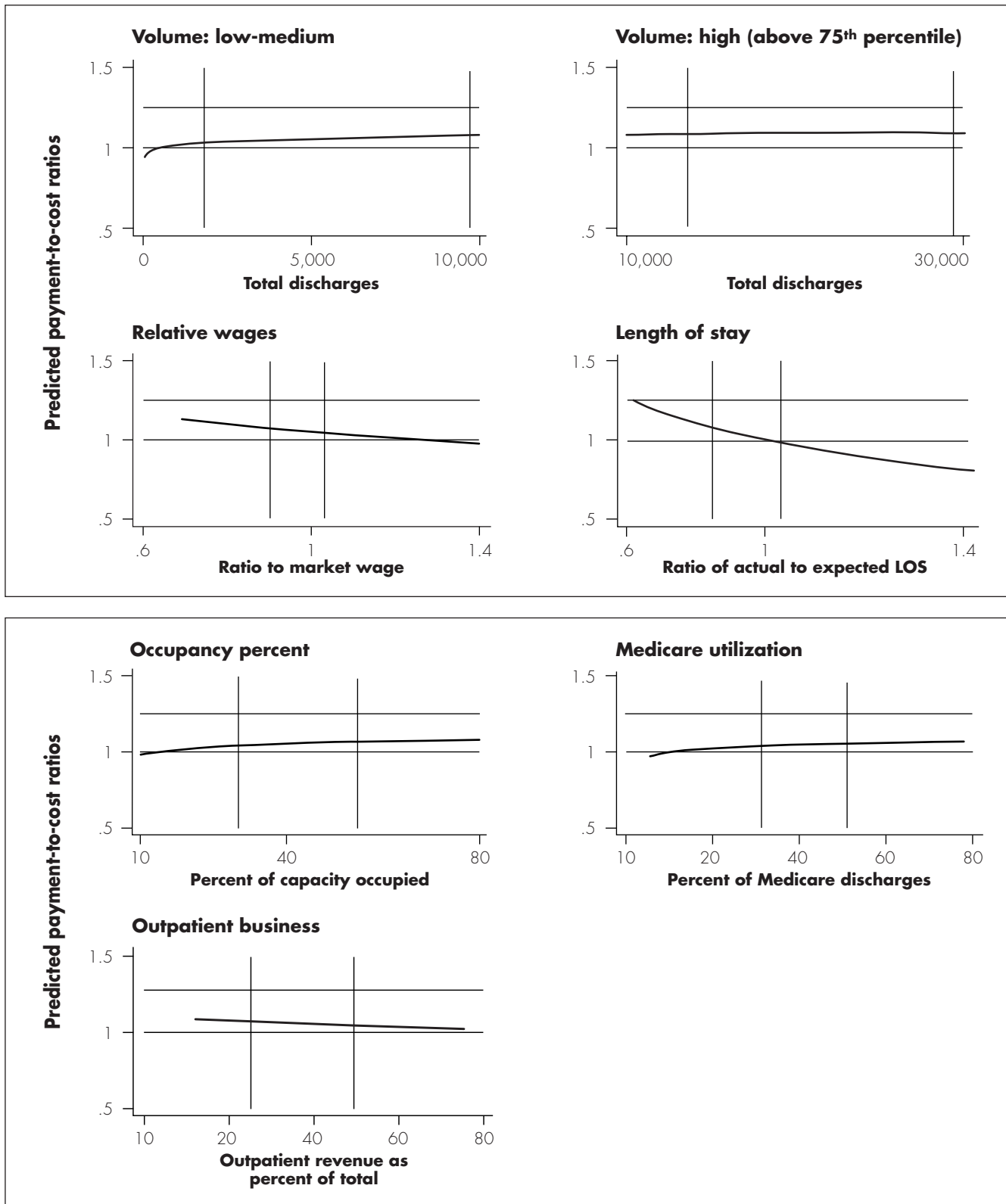
4 We reanalyzed the 1998 data after removing from the sample all hospitals in which outlier payments accounted for 50 percent or more of their total PPS payments. In this analysis, the margin line for the outlier variable had a much steeper declining slope, indicating that the effect of the outlier policy on hospitals' margins is sensitive to extreme values in the outlier payment distribution. Recent data indicate that a small number of hospitals have increased their service charges rapidly, causing a huge increase in their PPS outlier revenues. Thus, an analysis of the outlier policy's effect on the margins of this subgroup might show a very shallow downward or shallowly increasing slope. Proposed changes in the outlier payment regulations (CMS 2003), however, are likely to largely resolve this problem.

5 For these simulations, the definition of a base case hospital must expand to incorporate typical values of the new variables in the model. For Figure 3-6 we assume the same PPS payment-related characteristics as applied in Figure 3-5 (p. 51) and the facility has median values for each of the other continuous characteristics added to the model, operates no post-acute or other subproviders, is under private not-for-profit control, and is located in the South.

6 Before removing the converting CAHs from the sample, the model showed that the lowest volume hospitals had substantially higher costs, with a pronounced drop in predicted cost per case occurring as facilities increased volume up to about 500 cases per year. Above 500 cases, the marginal effect of volume changes was much smaller. These results are consistent with earlier MedPAC findings (MedPAC 2001a) that led to the recommendation for a new low-volume adjustment to PPS rates. With the withdrawal from PPS of low-volume hospitals that also had unusually high adjusted costs per case (Dalton et al. 2003), the data no longer show distinctly higher costs for low-volume providers.

FIGURE 3-6

Summary of margin effects for other cost factors



Note: LOS (length of stay). The horizontal and vertical lines show the 25th and 75th percentiles of the sample distributions.

Source: Analysis by Kathleen Dalton, Sheps Center for Health Services Research, University of North Carolina, of 1998 data from hospital cost reports; other CMS systems files; and information on population demographic characteristics and health care supply for hospital markets defined by ZIP codes of origin for Medicare acute-care discharges.

long-term care (LTC) does not appear to be associated with higher inpatient margins, but among providers in which LTC days constitute more than a third of total hospital days (most of these are in rural areas), inpatient costs per case are estimated to be 2.3 percent lower (and margins are correspondingly higher).⁷ We found similar cost reductions associated with operating hospital-based home health agencies, but none associated with other subproviders such as clinics, inpatient rehabilitation, or psychiatric units. Some of these services may help hospitals reduce length of stay by allowing earlier discharges into post-acute settings, but interpreting the results for the service variables is not straightforward because the model already controls for differences in Medicare lengths of stay. Also, some of the findings appear to be sensitive to whether we include detailed controls for geographic location. These results suggest that further modeling might be helpful to identify expected economies of scope (for example, from sharing fixed overhead over more service areas), and to assess the influence of reimbursement incentives on cost allocation practices in facilities that provide services in settings not previously subject to prospective payment under Medicare. It also might be fruitful to explore further factors associated with differences in the ratio of actual to expected LOS, including the availability of post-acute care alternatives.

Some of the market-level sociodemographic characteristics and a few of the health care supply measures have statistically significant but small effects in the model's cost equation. Both household income and physician-to-population ratios were positively associated with average costs. The proportion of the service area population over age 85 was negatively associated with cost per case in rural areas, though there was no significant association in urban areas. Other local health care supply measures had very little effect on model

results either individually or as a group, with the exception of the county-level measure of managed care penetration. In urban areas only, this measure is associated with lower costs per discharge, although the size of the effect differs by region.

Regional differences in cost and treatment patterns have been noted in the hospital cost literature for many years, and though they are less pronounced now than when prospective payment first started, they are still difficult to explain. We found some reductions in the differences by region between 1992 and the 1998 and 1999 data, but the model continues to identify substantial differences associated with regional location combined with type of ownership (Table 3-3). That these differences remain even after controlling for ownership, length of stay, health care supply, and other competition measures is puzzling.

The differences in margins by type of ownership are also substantial. The simulations show predicted PPS payment to cost margins in for-profit facilities 10 to 15 percentage points higher than those for similar publicly-owned facilities. Average

differences in performance of this magnitude are clearly important, but need to be interpreted with some caution. Much of the greater profitability associated with for-profit ownership may reflect the unmeasured management characteristics mentioned earlier, as well as differences in patient characteristics or service mix not captured by the case-mix index. But selection and survival also may play a role. For example, investor-owned firms may be more likely to acquire facilities with potentially profitable types of patients and services, while public ownership may tend to occur in disadvantaged communities (including very small ones) where the private sector has been unable to succeed. Further, and possibly more important, investor-owned firms may be more likely than others to divest themselves of facilities that prove to be unable to earn a profit under PPS. Teasing out the margin differences associated with selection, survival, and other management choices in the for-profit environment would require a different type of multivariate technique and multiple years of data spanning periods before and after ownership changes.

**TABLE
3-3**

Predicted payment-to-cost margins by location and type of ownership, for an otherwise identical base case facility, 1998

Region	For profit	Nonprofit	Public	All types
Northeast	1.106	1.088	1.008	1.084
Midwest	1.096	1.013	0.997	1.015
South	1.175	1.063	1.044	1.086
West	1.125	1.025	0.989	1.037
All regions	1.154	1.046	1.021	1.058

Source: Analysis by Kathleen Dalton, Sheps Center for Health Services Research, University of North Carolina, of 1998 data from hospital cost reports; other CMS systems files; and information on population demographic characteristics and health care supply for hospital markets defined by ZIP codes of origin for Medicare acute-care discharges.

⁷ This variable is based on LTC days reported in the hospital's cost report and could include a combination of skilled nursing facility days, swing-bed days, and other nursing facility days.

The underlying margin implicit in the level of the base payment rates

Our analysis has focused on the contribution of various payment variables and other factors to the differences between PPS payments and costs. Each factor, however, operates on an underlying margin implicit in the level of the national base payment amounts. Our model also provides information on this underlying margin. We estimate that the standard payment amount in fiscal year 1998 was about 5 percent above the standardized cost per case, averaged across all hospitals paid under PPS that did not convert to CAH status. (Before we removed the hospitals converting later to CAH, the standard payment rate was only about 2 percent above the standardized average cost per case.) This figure measures baseline average PPS profitability for a hospital with a case mix of 1.0 (which is well below average) in an other urban location with a wage index of 1.0, before taking any policy adjustments, location differentials, or outlier cases into account.⁸ Policy, case-mix, wage, and location adjusters all tend to add to this baseline profitability in varying degrees, such that in total, the average operating payment exceeds operating cost by about 15 percent. In 1999, the excess was substantially smaller than in 1998; in 1992, the underlying margin was slightly negative.

Since the introduction of the inpatient PPS, the size of the large urban and other urban base payment differential has also contributed to variation in margins along urban and rural lines. In 1992 the PPS rate differentials were substantially smaller than the average cost differentials by urban location. This partially offset other factors that tended to increase the margins in urban areas. Since that time the models have shown a steady decline in the cost differentials associated with urban settings. During the 1990s the PPS base

rate differential between rural and other urban areas was phased out, but the differential for large urban areas continued to be 1.6 percent until 2003. By 1998, our Medicare average cost model no longer shows a statistically significant cost differential associated with location in large urban areas. The base rate differential therefore also contributed a small amount to the observed variation in PPS inpatient margins in 1998 and 1999.

Study limitations

There are many limitations to this approach to modeling profitability. First among them may be that we are only looking at inpatient Medicare margins, which reflect payments and costs for only one of the various types of Medicare-covered services that hospitals furnish. In addition, although we have examined these models for three different years, these are still three separate snapshots of variation across facilities. The cross-sectional approach is appropriate where the primary study question concerns the extent to which PPS payment factors intentionally or unintentionally contribute to margin variation. But a study of the dynamics of individual hospitals' performance over time could contribute a great deal to our understanding of the effects of market and management factors.

Another limitation of this study is that we are unable to distinguish differences in profitability across types of cases or patients because we are analyzing aggregate hospital data. The absence of accurate DRG-specific cost data limits our ability to consider product mix as a potential explanatory variable in a model of financial performance under PPS. We have tried to offset this lack to the extent possible by testing differences across subsets of hospitals; explicitly modeling interactions between some of the independent variables; and adding

variables computed from the claims data that attempt to capture the degree of specialization within hospitals.

The factors we have identified thus far explain one-half of the variation in performance across hospitals. Whether that should be considered adequate depends on what is potentially hidden in the unexplained portion of the model. With multiple years of payment and cost data it is possible to estimate an upper bound for the random component of variation in margins (Newhouse et al. 1988). Results from this approach suggest that somewhere between 15 and 20 percent of the variation in a given year may be random, but that leaves 30 to 35 percent of variation attributable to factors not yet measured. Much of this may fall in the category of unobservable differences in efficiency, effectiveness, and quality.

A portion of the unexplained variation is also attributable to year-to-year fluctuations in demand. Smaller hospitals experience more instability in demand, and in our analyses, the model error (the absolute value of the difference between the predicted and the actual margin) is greater for smaller hospitals than for larger ones. This finding confirms that the levels of risk experienced under prospective payment are greater for smaller hospitals.

Discussion and policy implications

Our primary objective in conducting this study was to identify the contribution of the PPS payment factors to the variation in hospitals' Medicare inpatient margins, and to determine if these factors are operating as intended. We find that slightly more than one-quarter of the total variation in inpatient margins is attributable to components of the PPS

8 In the context of this type of regression model, "average" means a simple average where each hospital has equal weight. If this were a case or dollar-weighted analysis, both the baseline margin estimate and the average payment margin would be higher, because the larger facilities in the sample tend to have higher margins. In other presentations of average Medicare margins, MedPAC uses an aggregate margin ratio, which is effectively a weighted rather than a simple average.

payment formula. Most of the margin variation related to PPS payment factors can be traced to three policy adjustments. Simulations from the model identify not just the presence and direction but also the magnitude of the effects of IME, DSH, and rural HSP adjustments on the margins of eligible facilities. Whether the impact of these policy adjustments is more or less than the Congress intended, and whether the adjustments are accurately targeted to the types of providers for which they were intended, are matters for policy debate rather than estimation.

A small portion of the variation can be attributed to the case-mix and wage index adjustments. This variation is not deliberate and probably could be addressed by modifying the payment system. Our findings on the wage index, for example, suggest that hospitals located in markets with relatively high wage rates tend to have a smaller portion of costs that are sensitive to wage differences (the labor-related share) than the 71 percent now applied in the payment formula. If so, some of the margin variation could be reduced by lowering the labor-related share of the national base payment rate. It is not yet clear, however, whether this difference in the labor-related share is primarily associated with high wage markets or with large hospitals, which are more likely than small- and medium-sized facilities to be located in high wage markets. The Commission plans to pursue this issue further.

Although the findings indicate that the current case-mix adjustment in the PPS tends to overcompensate high case mix hospitals, the mechanism (and the appropriate solution) is not clear. Adopting a patient classification system that is more sensitive to differences in severity of illness than the current DRGs might eliminate the unintended case mix contributions to margin variation across hospitals. It is also possible, however, that a portion of the problem arises from limitations in the data and methods used to calculate the national DRG relative weights. The DRG weights may be biased because they are based on hospitals' service charges, and thus reflect the systematic differences in mark-ups across services that are built into hospitals' charge structures (MedPAC 2000). Our model cannot tell us whether the problem lies in the patient classification system, DRG relative weights, or both. Rather, we would have to construct alternative case-mix measures and test their effects in the model.

The case for addressing these errors in the wage and case-mix indexes is strengthened since each tends to increase the distributional impact of the IME and DSH adjustments (which are applied to case-mix and wage-adjusted payments). This compounding effect occurs because the wage and case-mix adjustments are correlated with hospitals' teaching

intensity and low-income patient shares, with high values on all four variables tending to benefit the same providers.

We have not found any specific market characteristics associated with differences in margins that suggest the need for additional adjustments within the PPS formulas. However, regional variations persist in the PPS margins that are not related to length of stay or local health care supply measures, and further investigation of these differences may identify other issues. The greater unpredictability that we find among small hospitals (and the impact on the model results from removing CAHs from the sample) also may focus attention on market conditions associated with weak demand.

Finally, we found that hospital operating characteristics generally thought to be at least partially under managements' control account for 20 percent of the variation in Medicare inpatient margins. But much of the impact of management effectiveness is probably unmeasured, and likely represents a substantial portion of the half of PPS margin variation that remains unexplained. Nearly three-quarters of the variation in hospitals' performance under the inpatient PPS is either unrelated to the payment factors or unexplained. While modifications to the payment system could reduce total variation, providers still have a great deal of control over their relative performance. ■

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C H A P T E R

4

**Growth and variation in use
of physician services**

Growth and variation in use of physician services

Historically, Medicare has experienced periods of high growth in use of physician services with implications for program spending, beneficiary cost sharing, and quality of care. In response, the program has pursued a number of broad strategies, such as an expenditure target. At issue is whether other policy options should be considered. The most recent data on Medicare beneficiaries' use of physician services show relatively high growth and wide geographic variation in use of some services, particularly imaging services. A host of factors could explain these patterns, making interpretation difficult. Further work is needed to understand the growth and variation in service use and, if necessary, to develop options for changing current policy.

In this chapter

- Trends in use of physician services
 - Geographic variation in use of physician services
 - Interpreting the data
 - Next steps
-

Over the years, the Congress has instituted a number of policies, such as an expenditure target, to control Medicare spending for physician services. The program had experienced rapid growth in spending during the 1980s, largely due to increases in use of services (Board of Trustees 1995). In addition, research has shown wide variation, geographically, in beneficiary use of physician services (Fisher et al. 2003a, 2003b; Miller et al. 1995; Welch et al. 1993; Wennberg and Cooper 1999).

Despite the significance of these issues for the Medicare program, surprisingly little current information is available on use of physician services by Medicare beneficiaries, and it tends to focus on use of services as an indicator of access to care.

This chapter addresses use of physician services from a different perspective: the role of service use in determining expenditures. From the perspective of Medicare as a prudent purchaser, this is important for both beneficiaries and taxpayers. For beneficiaries, increases in service use lead to higher Medicare Part B and supplemental coverage premiums and higher out-of-pocket costs of care. For taxpayers, increases in service use lead to higher Part B expenditures supported with the general revenues of the Treasury.

Total Medicare payments for physician services (program spending and cost sharing) equaled \$55.9 billion in 2001 and increased at an average annual rate of about 5 percent during the previous 10 years. This spending has been volatile at times, partly because of increases in service use. In the 1980s, for example, annual rates of growth in spending per beneficiary ranged from 4 to almost 20 percent, and growth in service use ranged from 4 to 10 percent (Board of Trustees 1995). Growth then slowed during the 1990s, but recently it has accelerated again.¹

This chapter summarizes the recent data on use of physician services by Medicare beneficiaries from two perspectives:

growth over time and cross-sectional variation among geographic areas. The data on growth show some distinctive patterns. Growth in service use is highest for imaging services, such as magnetic resonance imaging (MRI) and computerized automated tomography (CAT). Use of laboratory tests has also grown rapidly. The cross-sectional data show wide variation in use of services among geographic areas. Here again, imaging services and tests stand out with some of the widest variation in service use.

What do these patterns suggest? In the case of growth in service use, a likely major component is technological change that could lead to better outcomes for patients (Cutler and McClellan 2001; Newhouse 1993, 1992). Technological change includes treatment substitution—substituting newer technologies for older ones—and treatment expansion—treating more people for disease.

The cross-sectional variation in service use among geographic areas must be explained by factors other than technological change. Research has shown that, after controlling for input prices and health status, use of physician services is driven partly by practice patterns, and physician supply and specialization, and that greater use of services is often not associated with demonstrable improvement in outcomes, an issue also discussed in Chapter 1 of this report (Fisher et al. 2003a, 2003b). From this perspective, some service use that we observe could represent overuse. Some of the difference, however, could also come from underuse.

Given the importance of service use in determining expenditures, further work on this topic is critical. In response to the growth in use of physician services and its volatility, the Congress has established an expenditure target for physician services. MedPAC has concerns about that mechanism as a tool for controlling spending, however (MedPAC 2001b). The question then becomes, what is the

alternative? Slowing the development and diffusion of technology would affect growth in service use, but advances in medical technology are viewed as desirable (Fuchs 1999). Nonetheless, the ability of Medicare and the program's beneficiaries to sustain large increases in use of services is an issue. In that case, further work on understanding the cross-sectional variation in service use may be a fruitful path to follow. A better understanding of any unnecessary use of services can lead to policies that affect cross-sectional variation and growth, although growth in service use due to technological change will continue to be a factor. MedPAC plans to do further work on these issues and, depending on the findings, to develop policy options for the Congress and CMS.

Trends in use of physician services

Despite the importance of the topic, little recent information is available about growth in use of physician services. One source is the annual reports of the Boards of Trustees of the Medicare trust funds. The reports include a table that decomposes spending per beneficiary into changes in payment rates and other or residual factors. Most of the residual is growth in the use of services per beneficiary.

- Following the rapid growth in the 1980s, growth in use of physician services slowed. The average annual rate of growth per beneficiary averaged 2.1 percent from 1992 through 2002. The comparable number for the 1980s was 6.6 percent (Board of Trustees 1998, 1995; Boards of Trustees 2003).
- The projected average annual growth in use of physician services, from 2003 to 2012, is 3.3 percent. The reasons offered for continued growth in service use include more physician visits per beneficiary, the aging of the

¹ For further discussion of the recent increase in service use, see Appendix A of this report on reviewing CMS's estimate of the payment update for physician services.

beneficiary population, and a greater use of specialists and expensive techniques (Boards of Trustees 2003).

A closer look at the data helps us further understand these general trends. We did this with a measure of service use that captures both the number of services provided and their level of intensity. The measure is the relative value units for each service, from the physician fee schedule, multiplied by the fee schedule's conversion factor. We calculated this measure with data on the number of services provided from 1999 through 2002. To put service use in each year on a common scale, we used the relative weights and conversion factor for 2002.²

The analysis shows that, from 1999 to 2002, the average annual growth rate for use of all physician services was 3.3 percent (Table 4-1). When we group services into five major categories—evaluation and management, imaging, major procedures, other procedures, and tests—and look at 1999 to 2002 average annual growth rates for each, we see that major procedures had the lowest rate, 1.1 percent. Among the other services, the growth rates for evaluation and management and for other procedures were also relatively low at 1.7 and 3.9 percent, respectively. The growth rates for imaging and tests were higher at 9.0 and 6.1 percent, respectively.

Relatively high growth rates for imaging services are concentrated in several specific categories: nuclear medicine, CAT scans of parts of the body other than the head, MRI of parts of the body other than the brain, and MRI of the brain. Use of these services grew by 15 to 20 percent per year.

One of the highest growth rates we find is for a minor-procedures category that primarily includes outpatient rehabilitation. This rapid growth, 16.7 percent, occurred when spending caps for outpatient rehabilitation, enacted under

TABLE 4-1

Change in use of physician services per beneficiary in traditional Medicare, for selected services, 1999–2002

Type of service	Service use per beneficiary			Percent of total service use
	1999	2002	Average annual change 1999–2002	
All services	691.5	762.4	3.3%	100.0%
Evaluation and management	317.5	333.9	1.7	43.8
Office visit—established patient	137.7	144.1	1.5	18.9
Hospital visit—subsequent	65.7	67.6	0.9	8.9
Consultations	40.7	45.6	3.9	6.0
Emergency room visit	18.0	21.3	5.7	2.8
Hospital visit—initial	17.7	17.4	-0.7	2.3
Office visit—new patient	16.5	16.0	-1.0	2.1
Nursing home visit	13.8	13.7	-0.4	1.8
Imaging	82.8	107.3	9.0	14.1
Echography—heart	11.9	15.6	9.6	2.0
Standard—nuclear medicine	9.9	15.1	15.3	2.0
Advanced—CAT: other	9.1	13.8	14.8	1.8
Advanced—MRI: other	6.4	11.1	20.1	1.4
Standard—musculoskeletal	8.3	9.3	3.7	1.2
Advanced—MRI: brain	4.8	7.3	15.3	1.0
Standard—chest	6.6	6.2	-2.1	0.8
Advanced—CAT: head	2.7	3.0	3.6	0.4
Imaging/procedure—heart, including cardiac catheterization	1.9	2.3	6.8	0.3
Major procedures	68.9	71.2	1.1	9.3
Coronary artery bypass graft	6.4	5.4	-5.4	0.7
Knee replacement	3.8	4.5	5.9	0.6
Coronary angioplasty	3.4	4.0	5.4	0.5
Hip fracture repair	3.6	3.2	-4.5	0.4
Hip replacement	2.7	2.8	2.0	0.4
Explore, decompress, or excise disc	2.1	2.5	5.0	0.3
Colectomy	2.5	2.3	-2.4	0.3
Other procedures	141.2	158.2	3.9	20.8
Minor—other, including outpatient rehabilitation	15.8	25.1	16.7	3.3
Cataract removal/lens insertion	15.6	15.4	-0.4	2.0
Endoscopy—colonoscopy	7.0	9.1	9.0	1.2
Endoscopy—upper gastrointestinal	4.2	4.4	1.6	0.6
Endoscopy—cystoscopy	4.4	4.3	-1.1	0.6
Eye procedure—treatment of retinal lesions	3.6	3.7	1.5	0.5
Endoscopy—arthroscopy	1.5	1.9	7.1	0.2
Tests	21.8	26.0	6.1	3.4
Electrocardiograms	6.1	6.1	0.2	0.8
Cardiovascular stress tests	3.3	4.2	8.6	0.6
Lab tests—other (physician fee schedule)	2.2	3.3	15.5	0.4
Electrocardiogram monitoring	1.8	1.9	2.2	0.2

Note: Service use is measured as the relative weights (relative value units) for services received multiplied by the physician fee schedule conversion factor. To put service use in each year on a common scale, we used the relative weights and conversion factor for 2002. For billing codes not used in 2002, we imputed relative weights based on the average change in weights for each type of service.

Source: MedPAC analysis of 5% random sample of Medicare beneficiary claims from first 6 months of each year.

² This measure of service use is similar to the one used in Chapter 1 in that it does not include the effects of geographic variation in input prices for physician services.

the Balanced Budget Act of 1997, were temporarily lifted. As part of the Balanced Budget Refinement Act of 1999, the Congress passed a moratorium on the spending caps, which CMS implemented in 2000. The Congress later extended the moratorium through 2002.³

Service use decreased for some services. Overall, the reasons for this are not clear. In some cases, they may result from substituting one service for another. The decrease in the volume of coronary artery bypass grafts, for example, may be due to a greater use of coronary angioplasty, which is a newer procedure for treatment of coronary artery disease.

Geographic variation in use of physician services

Geographic variation in Medicare spending per beneficiary has two sources: differences in the cost of providing care and differences in quantity of care provided.⁴ To further understand the differences in the quantity of care, we have analyzed variation in use of physician services among geographic areas. For this analysis, we used either metropolitan statistical areas (MSAs) or the rural areas in different states. The measure of service use is the same as that discussed earlier and shown in Table 4-1 (p. 63). To calculate service use per beneficiary for each area, we assigned beneficiaries to an area based on their county of residence. We then totaled beneficiary use of services for each area and divided by the number of beneficiaries living there. Because service use varies among all beneficiaries depending on their age and sex, we then age- and sex-adjusted our measure. Age- and sex-adjustment partially accounts for differences in the burden of disease among geographic areas. We did not adjust our measure of use of physician

services for differences in beneficiary health status as in Chapter 1 of this report, however. Finally, we calculated the measure for four years—1999 through 2002—and averaged the results for each area to reduce its random component.

For total service use (all services), the results show considerable variation among geographic areas (Figure 4-1). The areas with the highest service use tend to be in the East, the South, and parts of a few states in the West.

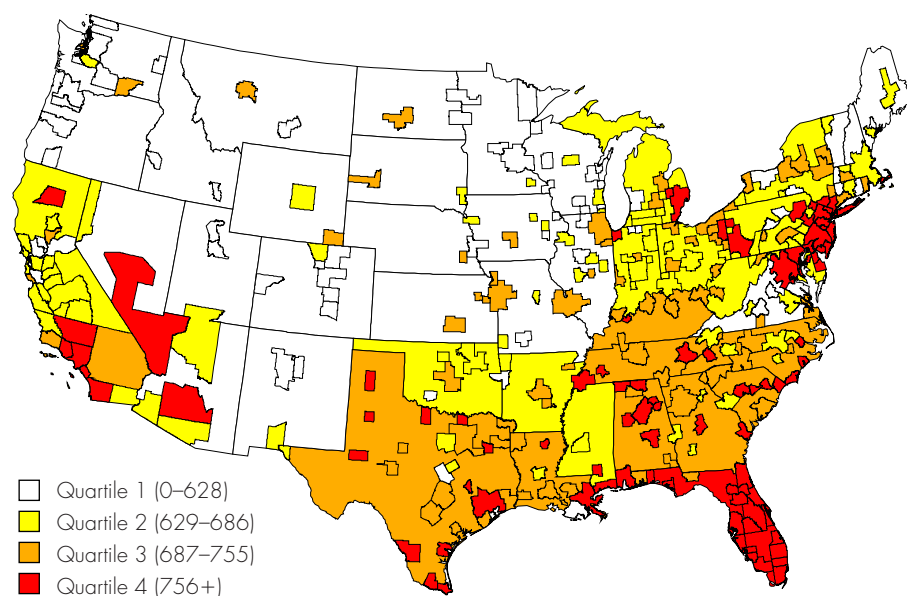
Similar patterns appear when we look at variation in use of imaging services. As in the case of use of all physician services, the areas with the highest use of imaging services are usually in the East and the South, but not so much in the West (Figure 4-2).

To further examine variation in use of physician services, we compared the 50 largest MSAs in terms of adjusted service use per beneficiary, by type of service (Table 4-2). Focusing on these MSAs further reduced the random component of variation in service use.

Comparing the MSAs with the maximum and minimum service use, variation in service use was highest for tests and imaging. For both of these, the ratio of maximum to minimum service use was 3.2. Variation was lowest for major procedures, a type of service category that includes coronary artery bypass grafts, knee replacements, and coronary angioplasties.⁵ The ratio of maximum to minimum service use for major procedures was 1.5.

FIGURE 4-1

Average adjusted per beneficiary use of physician services, by quartile, 1999–2002



Note: Areas within states are metropolitan statistical areas (MSAs) or rural areas outside of MSAs.

Source: MedPAC analysis of 5% random sample of Medicare beneficiary claims from first 6 months of each year.

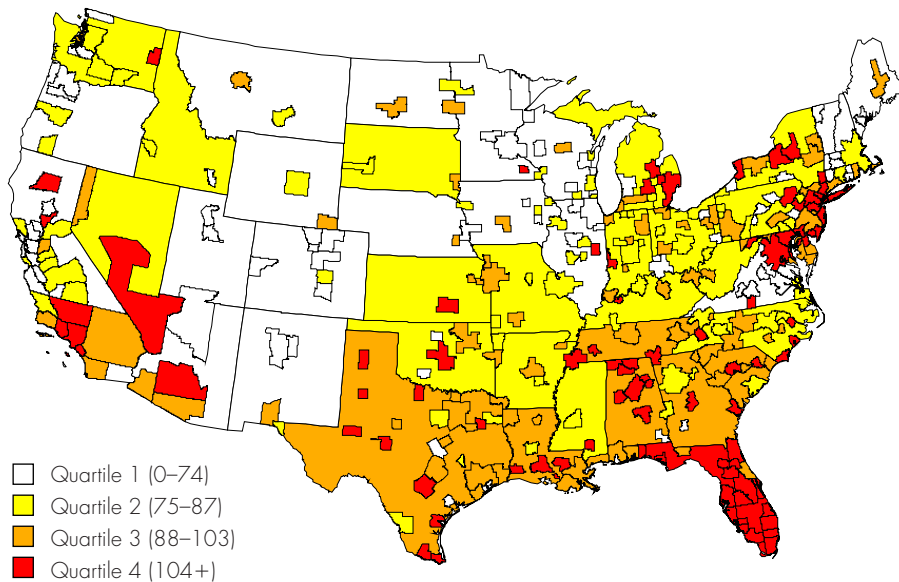
3 Some of the increase in use of outpatient rehabilitation since 2001 may be due to the January 2002 implementation of the prospective payment system for inpatient rehabilitation facilities.

4 See Chapter 1 of this report for further discussion of the sources of geographic variation in Medicare spending.

5 Other examples of major procedures are identified as such in Table 4-1 (p. 63).

FIGURE 4-2

Average adjusted per beneficiary use of imaging services, by quartile, 1999–2002



□ Quartile 1 (0–74)
 ■ Quartile 2 (75–87)
 ■ Quartile 3 (88–103)
 ■ Quartile 4 (104+)

Note: Areas within states are metropolitan statistical areas (MSAs) or rural areas outside of MSAs.

Source: MedPAC analysis of 5% random sample of Medicare beneficiary claims from first 6 months of each year.

Interpreting the data

Two major findings emerge from our analysis of trends in use of physician services:

- Growth in use of physician services varies by type, with imaging services exhibiting relatively high rates of growth in use.
- Cross-sectional variation in use of physician services among geographic areas varies widely, both for use of all services and use of imaging services.

The cross-sectional findings on geographic variation in service use are consistent with the substantial body of existing research (Fisher et al. 2003a, 2003b; MedPAC 2001a; Miller et al. 1995; Welch et al. 1993; Wennberg and Cooper 1999). The most sophisticated study is the recent one by Fisher and colleagues that, based on data for Medicare beneficiaries, looked for a relationship between geographic variation in use of services and health outcomes. They measured service use for three cohorts with specific conditions—acute myocardial infarction (heart attack), colorectal cancer, and hip fracture—and a cohort representing the general beneficiary population.⁶ Members of these cohorts were assigned to quintiles based on the level of Medicare spending per beneficiary in their place of residence. The study then compared costs, service use, quality of care, and access to care for each cohort.⁷

The findings of Fisher and colleagues were:

- Differences in spending among geographic areas were primarily due to greater use of discretionary services sensitive to the supply of physicians and hospital resources in

TABLE 4-2

Geographic variation in use of physician services among the 50 largest metropolitan statistical areas, 1999–2002

Type of service	Adjusted service use per beneficiary			Ratio of maximum to minimum	Coefficient of variation
	Minimum	Average	Maximum		
Evaluation and management	210	357	506	2.4	18
Imaging	56	105	178	3.2	28
Major procedures	54	68	79	1.5	10
Other procedures	101	151	281	2.8	24
Tests	16	26	50	3.2	30

Note: MSA (metropolitan statistical area). Service use is measured as the relative weights (relative value units) for services received multiplied by the physician fee schedule conversion factor. We averaged service use for four years (1999 through 2002) to minimize random variation. To put service use in each year on a common scale, we used the relative weights and conversion factor for 2002. For billing codes not used in 2002, we imputed relative weights based on the average change in weights for each type of service. We used age- and sex-adjusted service use with the U.S. beneficiary population as the standard.

Source: MedPAC analysis of 5% random sample of Medicare beneficiary claims from first 6 months of each year.

⁶ The cohort representing the general beneficiary population consisted of respondents to the Medicare Current Beneficiary Survey.

⁷ Quality measures included receipt of angiotensin-converting enzyme (ACE) inhibitors at hospital discharge (for the acute myocardial infarction patients) and receipt of an influenza vaccine (for the general beneficiary population cohort). Access measures included receipt of a physician office visit within 30 days of discharge (for the acute myocardial infarction patients) and having a usual source of care (for the general beneficiary population cohort).

an area. Examples include evaluation and management services, tests, imaging, minor procedures, and use of the hospital as the site of care.

- On most measures of quality, care was no better in areas with high levels of spending than it was in areas with lower levels of spending. On a few measures, quality was worse in the high-spending areas.
- Areas with high levels of spending had slightly worse access on some measures. For example, among acute myocardial infarction patients, those living in areas with higher spending were less likely to visit a physician within 30 days of hospital discharge than patients living in areas with lower spending.

These findings suggest that Medicare spending and use of physician services may be too high in some geographic areas. Moreover, use of services by Medicare beneficiaries could also affect the non-Medicare population. The Center for Studying Health System Change has documented some declines in access to physician services not only for Medicare beneficiaries, but also for the privately insured (Trude and Ginsburg 2002).

Many hold the view that the growth that we see in use of health care, including physician services, is due to technological change (Fuchs 1999). Support for this view comes from the changes that we see over time in the nature of treatments for certain conditions, including some that are prevalent in the Medicare population. In some cases, such as care for heart attack patients, physicians have substituted more intensive services for less intensive ones. Other examples of technological change involve treatment expansion. For example, evidence indicates that the use of cataract surgery has increased while the acuity of patients receiving it has gone down. For the conditions studied, the net effect is often higher spending but better outcomes, such as longer lives for heart attack patients and improved vision for cataract patients (Cutler and McClellan 2001; Cutler et al. 1999; McClellan et al. 1994; Shapiro et al. 2001).

Next steps

This chapter prompts further questions on growth and cross-sectional variation in use of physician services. For example,

how does growth in service use vary by beneficiary age? Fuchs (1999) has shown that use of selected procedures, such as angioplasty and hip replacement, has grown for all beneficiary age groups and that growth rates were often highest for older age groups, suggesting that indications for use of the procedures has changed. Updating this analysis and expanding it, to include additional procedures, will provide insights about the importance of technological change in determining growth in use of physician services.

MedPAC also plans to use Medicare claims data to analyze growth and variation in use of services during different types of episodes of care, such as treatment of pneumonia and management of diabetes and other chronic conditions. While Medicare has payment rates for over 7,000 discrete services, those services are provided in the context of care for beneficiaries with specific health problems. Analysis of service use in that context will help the Commission better understand growth in service use and its cross-sectional variation. ■

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CHAPTER

5

Monitoring post-acute care

Monitoring post-acute care

In response to rapid growth in post-acute care spending, the Balanced Budget Act of 1997 and subsequent legislation mandated use of prospective payment systems for all post-acute settings. Monitoring efforts are important to assess the impact of these new payment systems on patterns of care. Examining changes before and after the implementation of prospective payment for skilled nursing facilities (SNFs) and home health care—the two most frequently used post-acute settings—we find substantial declines in use of home health care, increases in use of skilled nursing facilities and other post-acute providers, and some substitution of SNFs for home health services following hospital discharges.

We compare patients using long-term care hospitals (LTCHs)—the most expensive and least frequently used post-acute setting—with patients in other settings in 2001. In our preliminary findings, we find that LTCHs and SNFs appear to be substitutes. We also find that LTCH patients have higher mortality rates and Medicare pays more for their care, compared with patients who do not use LTCHs. The higher mortality rates might reflect unmeasured case mix. Further research is needed to determine whether we continue to see these patterns once we control for other factors. Further research also is needed to understand the role LTCHs play in providing acute and post-acute care, particularly how outcomes for this setting compare with those for similar patients in other care settings.

In this chapter

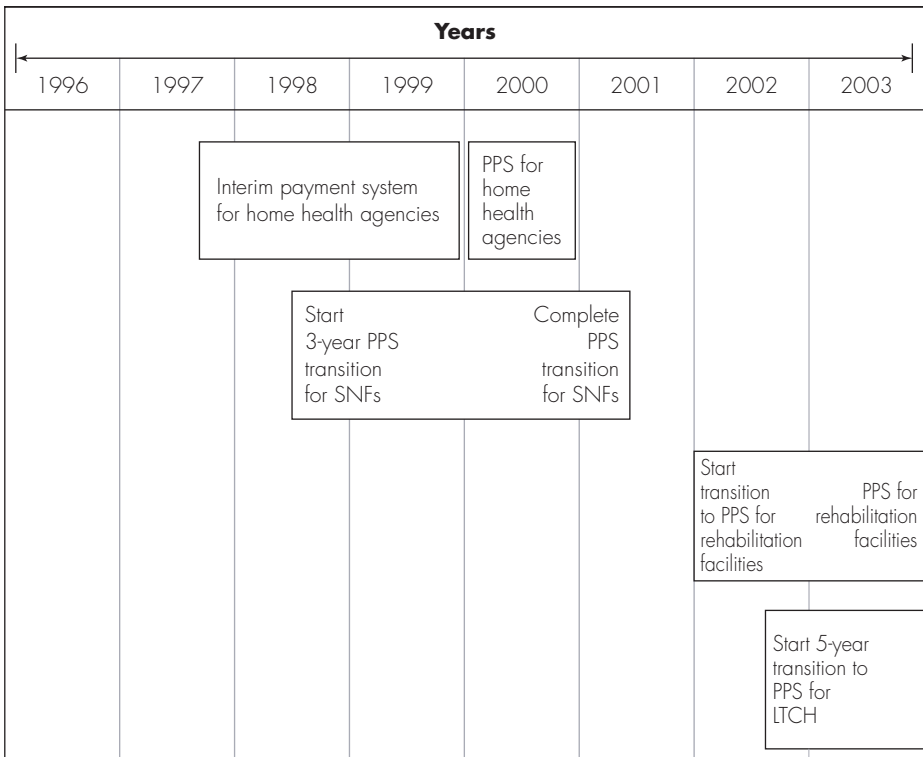
- Patterns of beneficiaries' use of post-acute care pre- and post-PPS
 - Comparing beneficiaries treated in long-term care hospitals and other settings
-

Post-acute care generally follows an acute hospitalization and is provided in four settings—skilled nursing facilities (SNFs), inpatient rehabilitation facilities, long-term care hospitals (LTCHs), and the home. Medicare beneficiaries use post-acute care frequently: In 2001, almost one-third of beneficiaries discharged from acute hospitals used post-acute care. Post-acute care includes eligible beneficiaries referred from the community using home health care without a prior hospitalization.

Post-acute care is a health sector characterized by extremely rapid growth in providers, beneficiaries' use, and spending. For example, between 1988 and 1997,¹ Medicare spending for post-acute care services increased at an average annual rate of 25 percent. Reacting to this rapid growth, in the Balanced Budget Act of 1997 (BBA) and subsequent legislation, the Congress required new prospective payment systems (PPSs) for beneficiaries' care in all four post-acute settings. Medicare's system of post-acute care payments is being converted to prospective payment one setting at a time (Figure 5-1).

Monitoring the impact of these payment system changes requires that all settings of post-acute care should be studied together, in addition to studies of individual settings. For the typical diagnosis related group (DRG), beneficiaries can be discharged to different types of post-acute providers. For example, heart failure and shock is among the top five diagnosis related groups for patients referred to LTCHs, SNFs, and home health care. Patients with identical DRGs may use different post-acute providers because of a number of factors. The patients may have different levels of functional limitation, differences in severity of illness within a given DRG, or personal preferences. The supply of providers, Medicare's eligibility requirements (see text box, opposite), and local practice patterns also may influence what type of post-acute care patients receive. In addition, some beneficiaries use multiple types of post-acute providers in a single episode.

FIGURE 5-1 Time line of Medicare payment changes for post-acute care



Note: LTCH (long-term care hospital), PPS (prospective payment system), SNF (skilled nursing facility).

In this chapter, we examine preliminary results from two ongoing research projects. In the first section, we look at patterns of beneficiaries' use of services across post-acute care before and after implementation of the PPSs for SNF and home health care. Our analysis finds that use of all post-acute care except for home health care increased between 1996 and 2001. The use of home health care substantially declined for both beneficiaries referred following a hospital stay and for those referred from the community. For posthospital home health users, the greatest decline in 2001 was for those patients with diagnoses that had low post-acute care use in 1996. For some diagnoses, we observe that SNF use in 2001 may be partly replacing home health services. For community-referral home health users, the greatest decrease in 2001

was for patients who had lower probability of using home health services in 1996.

In the second section of this chapter we examine a specific post-acute setting—long-term care hospitals—and how patients treated there differ from patients treated in other settings. LTCHs are the post-acute setting least used by beneficiaries and are not available in many areas. In general, policymakers regard rapid growth in any sector as a phenomenon that requires examination. As the number of long-term care hospitals has almost doubled since 1993 and Medicare spending for such care has almost quintupled from 1993 to 2001, questions have arisen about whether beneficiaries using LTCHs are different from patients using other settings. Our analysis found that patients in market

¹ In 1988, major changes in beneficiaries' eligibility for home health and SNF services occurred; in 1997, the Congress passed the Balanced Budget Act of 1997.

Medicare coverage rules, eligibility criteria, and conditions of participation

Medicare's policies for post-acute care—coverage rules and eligibility criteria and conditions of participation—vary by setting. Several examples illustrate these differences in coverage rules and eligibility criteria. Medicare coverage for skilled nursing facility (SNF) care requires beneficiaries to have had a three-day hospitalization in the previous month. SNFs are the only post-acute setting to have a posthospital requirement. In addition, the beneficiary must require daily skilled nursing or rehabilitation care. To be admitted to an inpatient rehabilitation facility—but not to a long-term care hospital, a SNF, or a home health agency, all of which may offer rehabilitation services—patients must be able to sustain three hours of daily therapy (physical, occupational, speech, or a combination) and have the potential to reach predetermined goals. To obtain home health services, patients must be homebound (unable to leave their residence without considerable and taxing effort) and

require part-time or intermittent skilled nursing care or therapy. Medicare has no eligibility requirements for patients admitted to long-term care hospitals (LTCH) other than that they must require acute care.

Post-acute providers must also meet different conditions of participation. For example, physicians must be integrally involved in care provided in rehabilitation facilities and long-term care hospitals, but are required to visit a SNF patient only once every 30 days for the first 90 days and every 60 days thereafter. Requirements for physician involvement in home health care are even less stringent. Rehabilitation facilities are required to have 75 percent of their admissions in 1 of 10 specific diagnoses related to conditions requiring rehabilitation services. LTCHs' only condition of participation in addition to those required of all hospitals is to have an average Medicare length of stay greater than 25 days. ■

areas with LTCHs had similar acute hospital lengths of stay regardless of whether they used long-term care hospitals or not. Patients who used these hospitals were three to five times less likely to use SNF care, suggesting that SNFs and LTCHs may be substitutes. Compared with similar patients who did not use long-term care hospitals, total payments and mortality rates for LTCH patients were considerably higher. Our findings suggest that further research is needed to determine if these patterns continue when we control for other factors and to understand the relationship between quality outcomes and the high cost to Medicare of care in this setting.

Patterns of beneficiaries' use of post-acute care pre- and post-PPS

Medicare payment for post-acute care services is undergoing substantial change. Monitoring is needed to examine whether shifts in the site of post-acute care have occurred. Medicare covers multiple sites of post-acute care and the potential exists for substitution of services among these alternative settings. Changes in service volume among settings could indicate that providers are shifting beneficiaries' care in response to financial incentives reflecting unwarranted disparities in payment rates; alternatively, such shifts

could reflect appropriate sorting according to the capabilities of particular settings and patient needs.

The availability of multiple sites of care requires monitoring use of post-acute care in its entirety, not one provider at a time. Consequently, MedPAC developed an episode-of-care database that permits us to assess post-acute care use throughout the continuum of care. The episode database consists of 1996 through 2001 Parts A and B claims and enrollment data for a 5 percent sample of beneficiaries in traditional Medicare. For each beneficiary, we aggregate consecutive post-acute care use into an episode by linking claims submitted by SNFs, home health agencies, rehabilitation, long-term care, and psychiatric facilities. This enables us to examine episodes of post-acute care following discharge from acute-care PPS hospitals, as well as episodes of home health care not preceded by a hospital discharge (referred to as "community-referral home health services"). The text box on page 74 provides additional information about how the episodes of care were constructed, defined, and classified.

In this section, we present results of an analysis that compares episodes of post-acute care use in 1996, before the implementation of any of the prospective payment systems (pre-PPS period), to 2001, after the PPS for SNFs and home health services started (post-PPS period). Direct Research LLC, under contract to MedPAC, developed the episode database and conducted the analysis (Hogan 2003). Key findings include:

- Medicare spending for post-acute care services in aggregate declined by almost 10 percent between 1996 and 2001, due to a nearly 50 percent decline in spending for home health services. For all types of post-acute care, the average length of an episode and the number of episodes per beneficiary declined between 1996 and 2001, but the total number of episodes and spending increased for episodes not involving home health services.

Constructing the post-acute care episode database

The episode database consists of Medicare Parts A and B claims and enrollment data for a 5 percent sample of beneficiaries enrolled in the traditional Medicare program. The post-acute providers tracked in this analysis include: home health agencies; skilled nursing facilities (SNFs); and long-term care, rehabilitation, and psychiatric facilities. This section describes the two main steps in developing the database: defining episodes and classifying episodes.

Defining episodes. Episodes of care begin with either: (1) being discharged from an acute hospital to post-acute care, or (2) using community-referral home health care—that is, home health care that is not preceded by a discharge from an acute hospital. Linking the acute hospital discharge or initial home health claim to all subsequent bills for post-acute care providers created episodes of care. The episode terminates when:

- there is a break of 31 (alternatively 60) days between post-acute care bills, or
- the beneficiary is readmitted to an acute hospital, dies, or is admitted to a hospice.¹

MedPAC has previously used this method to define an episode of post-acute care (Hogan 2000). We assessed the sensitivity of the 31-day break on

our results by creating episodes of care using a 60-day break. Analyses of both sets of episodes show similar patterns of use and spending for post-acute care in 1996 and 2001.

Beneficiaries may have multiple episodes of care within a given year. Admission to an acute hospital may both terminate one episode and start a subsequent post-acute episode upon discharge. This episode definition is based on timing only, and does not reflect any consideration of diagnoses on the records. The diagnoses on the hospital discharge do not have to match those on the post-acute care records. In theory, a discharge might fall within an unrelated home health episode, triggering the start of a new episode based on our definition. In practice, few beneficiaries have more than one episode of care during the year, so the presence of such post-acute care is likely to be minimal.

Classifying episodes. We classified episodes of care based on the specific post-acute providers furnishing care and whether the episode might have been truncated by the start or the end of the calendar year. An episode can combine different types of post-acute providers, in different sequences. That is, there are not just episodes of SNF care and episodes of home health care, but also episodes of SNF followed by home health, home health followed by SNF, and other combinations. Our

analysis uses 1996 and 2001 data, so an episode may be truncated by the beginning or end of the calendar year. A final post-acute provider bill in December could mean successful return home, or possible continuation of the episode beyond the end of the year.

Truncation at the start of the year may also result in a few “broken” episodes, for example, use of SNF services without preceding hospital discharge.

Consequently, an episode following hospital discharge is classified into one of the following five groups:

- home health care only;
- SNF care only;
- SNF care followed by home health care;
- care furnished by long-term care, rehabilitation, or psychiatric facilities; or
- other combinations of care furnished by SNFs or home health providers, including SNF stays truncated by the beginning of the year and home health followed by SNF care.

A community-referral home health episode is classified as either not truncated by the start or end of the year; or truncated by the start or end of the year. ■

¹ Death dates on the denominator file are typically only recorded to the month (not day) of death. Episodes counted as terminating in death if either the post-acute care bill indicated death or the beneficiary died during the month in which the last post-acute bill was recorded. Home health care bills, in particular, often do not report the beneficiary as discharged dead from home health.

- There was an increase in the proportion of users 85 years and older who used post-acute care, including home health services, following hospital discharge and community-referral home health services in the post-PPS period. Other demographic and clinical characteristics of post-acute care users did not substantially change between 1996 and 2001.
- Use of post-acute care following hospital discharge declined by 6 percent due to the 10 percent decline in posthospital home health care use between 1996 and 2001. By contrast,

use of SNFs and other post-acute providers increased in the post-PPS period. In addition, the declines were not uniform across DRGs. Overall use of post-acute care increased for DRGs with the highest rates of post-acute use in 1996. On average, the lower the rate of post-acute care use for a DRG in 1996, the proportionately greater the decline in the use of post-acute care services between 1996 and 2001.

- Episodes of community-referral home health care declined by about 50 percent between 1996 and 2001, more than the decline in the total number of episodes of care. Beneficiaries with high and low predicted use—based on their demographic and clinical characteristics and 1996 patterns of use—experienced declines. However,

reductions were disproportionately concentrated among beneficiaries with low likelihood of use.

Changes in the number and length of episodes

The total number of episodes per user declined by 10 percent, from 1.57 to 1.42 episodes per user in 1996 and 2001, respectively. The decline in the number of episodes was not uniform across the different post-acute care settings (Table 5-1). Although episodes involving home health care decreased, episodes involving other types of care increased. Between 1996 and 2001, episodes consisting of home health as the sole post-acute setting following hospital discharge declined by nearly half; by contrast, SNF-only episodes increased by 28 percent and episodes consisting of other post-acute providers increased by 33 percent. Consistent with the decline in episodes

involving home health care following hospital discharge, community-referral home health episodes declined by more than half between 1996 and 2001.

The length of all types of post-acute episodes also declined between 1996 and 2001 (Table 5-1). SNF-only episodes had the smallest decline, with an average reduction of 12 percent. By comparison, the average length of home health episodes following hospital discharge declined by 28 percent.

Changes in spending

The nearly 10 percent decline in aggregate spending for post-acute care, from about \$33.7 to \$30.6 billion in 1996 and 2001, respectively, is due to the 50 percent decline in spending for home health services, which totaled \$8.6 billion in 2001.² Total spending for other post-acute care providers increased between 1996

TABLE 5-1

Changes in the spending for and duration of post-acute care episodes, 1996 and 2001

Episode type	1996			2001			Change between 1996–2001		
	Number of episodes	Payment per episode	Days per episode	Number of episodes	Payment per episode	Days per episode	Number of episodes	Payment per episode	Days per episode
All episodes	341,382	\$4,574	70	247,790	\$5,695	46	-27%	24%	-34%
Care following hospital discharge									
SNF only	52,710	5,375	29	67,647	6,426	26	28	20	-12
Home health only	108,529	2,383	60	59,101	2,204	43	-46	-7	-28
SNF + home health	21,523	8,442	78	18,745	9,053	64	-13	7	-19
Other providers	23,517	13,927	53	31,163	13,492	38	33	-3	-28
Mixed provider use	8,036	5,811	49	9,372	6,113	37	17	6	-25
Community-referral home health									
Not truncated by calendar year	66,127	2,229	55	35,969	2,607	48	-46	17	-13
Truncated by calendar year	60,940	5,191	144	25,793	4,063	101	-58	-22	-30

Note: SNF (skilled nursing facility). Other providers include long-term care and rehabilitation facilities. Mixed provider use includes other combinations of care furnished by SNFs or home health providers, including SNF stays truncated by the beginning of the year and home health followed by SNF care. These data show use of and spending for post-acute care services by a 5 percent sample of beneficiaries enrolled in the traditional Medicare program.

Source: Direct Research LLC analysis of 1996 and 2001 claims from CMS.

² We inflated data from the 5 percent claims files from CMS by a factor of 20 to obtain national estimates of post-acute care users.

and 2001. For instance, aggregate payments for services furnished by SNFs, rehabilitation, and long-term care facilities increased by 37, 20, and 87 percent, respectively, between 1996 and 2001.

Although aggregate spending declined, overall spending per episode increased by 24 percent in the post-PPS period (Table 5-1, p. 75). This change is driven by the increase in spending per episode involving SNFs and community-referral home health services (not truncated by the calendar year). Spending for SNF-only episodes and community-referral home health increased by 20 and 17 percent, respectively. By contrast, spending per home health episode following hospital discharge declined by 7 percent.

The change in per capita spending for post-acute care services varied regionally. Use declined disproportionately in those states with the highest level of 1996 spending (Table 5-2). The 10 highest-cost states experienced the greatest decline in total episodes and days of care, total spending, and home health spending and the smallest percentage increase in spending for other post-acute providers. Conversely, the 10 lowest-cost states in 1996 had the smallest decline in the

number of episodes and days, and the largest increase in total spending, particularly for post-acute care other than home health. By 2001, there was a substantial leveling of post-acute use and spending across states.

For the nine census regions and urban and rural counties, changes in spending were steepest in those areas with higher numbers of episodes and days per episode in 1996. For instance, the East South Central and West South Central regions had the highest use of post-acute services in 1996 and experienced the largest decline in episodes per beneficiary, days per episode, total spending, and home health spending in the post-PPS period. Similarly, the counties with highest use of post-acute care in 1996 experienced the steepest decline in spending in the post-PPS period.³

Demographic and clinical characteristics of beneficiaries

The total number of beneficiaries using post-acute care decreased by 18 percent, from 4.3 to 3.5 million users in 1996 and 2001, respectively. However, the proportion of beneficiaries 85 years or

older using post-acute care increased in the post-PPS period. Between 1996 and 2001, the proportion of beneficiaries 85 years or older increased from:

- 27 to 30 percent for any post-acute care following hospital discharge;
- 20 to 22 percent for home health services following hospital discharge;
- 28 to 31 percent for SNF and home health services following hospital discharge; and
- 28 to 32 percent for community-referral home health services.

Other demographic characteristics remained relatively constant between 1996 and 2001. In both the pre- and post-PPS periods, women and African Americans comprised 63 and 11 percent, respectively, of post-acute care users following hospital discharge, and 67 and 14 percent, respectively, of community-referral home health users. Finally, beneficiaries' Medicare entitlement status and Medicaid buy-in status also remained relatively constant between 1996 and 2001.⁴

TABLE 5-2

Changes in the per capita use of and spending for post-acute care, by states' 1996 level of spending

	1996 per capita				Change between 1996–2001			
	Number of episodes	Days per episode	Total spending	Spending for home health	Number of episodes	Days per episode	Total spending	Spending for home health
Quintile of 1996 state spending								
1 (highest)	0.25	21.71	1,454	856	-33	-58	-29	-60
2	0.20	13.29	957	437	-23	-49	-5	-42
3	0.18	12.23	789	354	-24	-51	-3	-43
4	0.19	13.15	667	339	-27	-53	0	-36
5 (lowest)	0.15	7.79	535	216	-17	-44	18	-36

Note: States are categorized into five groups based on 1996 per capita spending for post-acute care by a 5 percent sample of beneficiaries enrolled in the traditional Medicare program.

Source: Direct Research LLC analysis of 1996 and 2001 claims from CMS.

³ The Department of Agriculture classified each beneficiary's county of residence into one of nine groups (urban influence codes) based on its population size and proximity to an urban area.

⁴ Medicaid buy-in status refers to a state Medicaid program paying for the Medicare Part B premium on behalf of a beneficiary.

We assessed clinical characteristics by classifying physician-reported diagnoses on Part B claims into 1 of 170 diagnostic cost groups (DCGs) and aggregated these categories into 13 groups.⁵ Few diagnosis groups changed by 5 percent or more between 1996 and 2001. The proportion of beneficiaries with blood disorders and mental dementia (using any post-acute care service) increased and the proportion of beneficiaries with cancer or HIV (using community-referral home health) and circulatory disorders (using any post-acute care service) decreased by more than 5 percent in the post-PPS period.

Changes in use of post-acute care following discharge from PPS hospitals

Overall, use of post-acute care following discharge from acute-care PPS hospitals declined from 40 to 34 percent between 1996 and 2001. This change was associated with a substantial decrease in the use of home health services and an increase in the use of SNFs and other post-acute providers. Between 1996 and 2001, episodes consisting of only home health services declined from 21 to 11 percent, while episodes consisting of only SNF services increased from 10 to 13 percent and episodes consisting of other providers increased from 4 to 5 percent.

The change in the use of post-acute care following hospital discharge was not uniform across all diagnosis related groups, however. DRGs with higher 1996 levels of post-acute care use experienced smaller changes between 1996 and 2001 than those with lower 1996 levels of use. For instance, post-acute care use increased by 3 percent between 1996 and 2001 for groups with the highest level of use in 1996. Conversely, post-acute care use declined by 32 percent between 1996 and 2001 for DRGs with the lowest level of use in 1996.

Aggregate use of post-acute care was relatively stable in 1996 and 2001 for the subset of discharges with DRGs previously found associated with use of SNFs and home health services (Table 5-3, p. 78). Not unexpectedly, DRGs with higher use of home health as the sole post-acute setting in 1996 experienced the largest increase in the proportion of beneficiaries not using post-acute care in 2001. The proportion of discharges from those groups using services furnished by other post-acute providers either remained the same or increased between 1996 and 2001.

Changes in use of community-referral home health services

As shown earlier in this section, episodes of community-referral home health care use declined by more than 50 percent between 1996 and 2001. At issue is whether the decline occurred disproportionately among specific groups of beneficiaries. As a first step in assessing changes, we compared actual 2001 use of these services to the level predicted based on 1996 patterns of care.⁶ We used ordinary least squares regression to predict 2001 levels based on beneficiaries' demographic and clinical characteristics and their 1996 patterns of care. The model classifies their clinical characteristics into 1 of 170 DCGs based on the diagnoses reported on Part B claims submitted by physicians.

Beneficiaries with high and low predicted use—based on their demographic and clinical characteristics and 1996 patterns of use—experienced declines (Table 5-4, p. 79). For beneficiaries with the highest predicted levels of community-referral home health care use, actual users of care were 54 percent of the predicted level. By contrast, for beneficiaries at the median, actual use was 34 percent of the predicted

level. Similarly, actual spending was 44 percent of the highest percentile's predicted spending level. For beneficiaries at the median, actual spending was 28 percent of the predicted level.

Implications and next steps

This analysis shows that the overall decline in the use of and spending for post-acute care between 1996 and 2001 was a consequence of the decline in beneficiaries using home health services following hospital discharge and community-referral home health services. This finding is not unexpected, as MedPAC has previously noted that the use of Medicare's home health benefit has changed considerably over the past ten years (MedPAC 2003). In 1990, fewer than 2 million beneficiaries used the home health benefit. Between 1990 and 1996, the number of users grew 85 percent, adding over 1 million beneficiaries to the number of users of the benefit. The trend reversed in 1997; by 2001, the number of users had fallen to around 2.2 million, still higher than the 1990 level. By comparison, the total number of beneficiaries increased 1 percent per year during this time.

Much of the drop in the number of users between 1996 and 2001 occurred under the interim payment system (IPS), implemented between 1997 and 2001. CMS designed the IPS to reduce spending for home health services, setting per-visit payment limits at 1994 levels, and also limiting per-beneficiary spending. In addition, about one-third of agencies that had recently begun participating in the Medicare program exited between 1997 and 2001 (MedPAC 2002b, 2000). A number of home health agencies reported changing the way they operated, being more careful about accepting long-term, chronic, or higher-cost beneficiaries (Abt 1999). The IPS did not adjust payments

⁵ Diagnostic cost groups are the underlying diagnosis groups in the system used to risk-adjust payment for plans participating in the Medicare+Choice program (Pope et al. 2000).

⁶ Basing our analysis on observed use in 1996 is the most conservative baseline for predicted use in 2001 because home health use was at its peak in 1996.

**TABLE
5-3**

Hospital discharge destinations for selected DRGs, 1996 and 2001

Percentage of discharges to:

Year	No post-acute care or hospice	SNF only	SNF + home health	Home health only	Other PAC providers	Hospice
DRG 014 Stroke with infarction						
1996	33%	22%	7%	18%	19%	1%
2001	36	24	6	11	20	3
DRG 088 Chronic obstructive pulmonary disease						
1996	65	6	2	25	1	1
2001	74	8	2	12	2	1
DRG 127 Heart failure and shock						
1996	56	8	3	30	1	1
2001	68	12	3	14	2	2
DRG 209 Hip replacement						
1996	19	17	19	22	22	0
2001	17	20	16	17	29	0
DRG 416 Septicemia						
1996	50	21	4	21	2	2
2001	51	27	4	10	3	5
DRG 475 Respiratory with ventilator support						
1996	42	18	6	26	6	2
2001	43	24	5	14	9	4
DRG 483 Tracheostomy with ventilator support						
1996	17	27	7	12	35	2
2001	19	27	4	7	41	2

Note: DRG (diagnosis related group), PAC (post-acute care), SNF (skilled nursing facility). Other post-acute providers include long-term care, rehabilitation, and psychiatric facilities. These data show use of post-acute care and hospice services by a 5 percent sample of beneficiaries enrolled in the traditional Medicare program. Totals may not add to 100 due to rounding.

Source: Direct Research LLC analysis of 1996 and 2001 claims from CMS.

for differences in patient case mix and did not have an outlier policy for especially costly cases.

Factors other than the payment system may also have affected the use of this benefit. Medicare's coverage and eligibility policies for home health services have been modified since the mid-1990s. Medicare removed intravenous antibiotic administration and venipuncture as qualifying services for home care patients in September 1996 and

February 1998, respectively. The BBA more strictly defined "intermittent" to exclude more beneficiaries who required daily care.

In addition to these legislative changes, a number of compliance initiatives put in place by several federal agencies beginning in the mid-1990s may also have affected the use of home health services. Operation Restore Trust increased scrutiny of home health agencies, nursing homes, and durable medical equipment

suppliers and identified fraud and abuse. The Health Insurance Portability and Accountability Act of 1996 imposed civil monetary penalties on physicians who knowingly certified ineligible patients for Medicare home health as eligible. Furthermore, CMS implemented a six-month moratorium on certifying new home health agencies in September 1997.

Our findings suggest that since the implementation of the PPS, home health use has refocused from chronic

**TABLE
5-4**

Comparing predicted use of and spending for community-referral home health to actual levels, 2001

Percentile	Predicted, any use	Actual, any use	Ratio, actual to predicted
Of predicted use			
Total	6.3%	3.0%	0.48
50 th –60 th	4.5	1.5	0.34
60 th –70 th	6.6	2.1	0.32
70 th –80 th	9.2	3.6	0.39
80 th –90 th	13.8	6.2	0.45
90 th –100 th	25.2	13.7	0.54
Of predicted spending			
Total	\$274	\$108	0.39
50 th –60 th	204	57	0.28
60 th –70 th	292	67	0.23
70 th –80 th	415	115	0.28
80 th –90 th	621	216	0.35
90 th –100 th	1,207	527	0.44

Note: These data show use of and spending for postacute care services by a 5 percent sample of beneficiaries enrolled in the traditional Medicare program.

Source: Direct Research LLC analysis of 1996 and 2001 claims from CMS.

maintenance care to rehabilitation and recovery. Our study shows that the length of both posthospital and community-referral home health episodes declined by about 46 percent between 1996 and 2001. In addition, the smallest decline in posthospital home health use was for diagnoses with the strongest indicators for rehabilitation and recovery, such as hip, femur, and major joint and limb reattachment procedures. Conversely, the steepest decline in posthospital home health occurred for diagnoses such as heart failure and chronic obstructive pulmonary disease. These findings suggest that the reductions may be occurring disproportionately among beneficiaries whose needs are less well-defined, particularly those whose needs arise from the ill-defined general frailties of older age.

Our findings also suggest that for beneficiaries with certain clinical conditions, SNF use may be partly

replacing home health use. Consider the following changes in the use of SNF and home health following hospital discharge between 1996 and 2001:

- For septicemia discharges (DRG 416), home health use declined from 21 to 10 percent, while SNF use increased from 21 to 27 percent.
- For discharges with ventilator support (DRG 475), home health use declined from 26 to 14 percent, while SNF use increased from 18 to 24 percent.

Of concern to policymakers are the causes of this shift in care. The Commission has previously stated that if care shifts among settings, it should occur for clinical reasons and not because of different payment rates or the profitability of specific settings of care. Multivariate analyses are needed to examine the factors

influencing the choice of post-acute care setting for a given beneficiary and include information about:

- beneficiaries' demographic and clinical characteristics and functional status, and
- providers' characteristics, including profit status, size, staffing levels, market share, location (in terms of rural versus urban), and affiliation with a national or regional chain.

Comparing beneficiaries treated in long-term care hospitals and other settings

Long-term care hospitals provide intensive care to patients who have multiple comorbidities (coexisting conditions) and use inpatient hospital care for an extended period of time. Although beneficiaries can be admitted directly to an LTCH without being transferred from an acute hospital, about 80 percent of such Medicare patients are transfers. These facilities are the least frequently used post-acute care setting—fewer than 1 percent of beneficiaries discharged from acute hospitals use these facilities.

Since implementing the acute hospital PPS in 1983, hospitals have had strong financial incentives to transfer patients to post-acute care settings. Acute hospitals can benefit from per-discharge payments, based on averages, that are greater than their costs for caring for patients. The earlier in the course of illness that hospitals can discharge patients, the greater the benefit. Since LTCHs provide a hospital level of care, they are able to admit patients earlier in their illnesses.

All post-acute care settings experienced rapid market entry and growth in volume and spending during the 1990s, but long-term care hospitals' growth was the most rapid. For example, the number of LTCHs more than doubled (from 105 to 287) from 1993 to 2003. Medicare spending for care

furnished in these facilities almost quintupled from \$398 million in 1993 to an estimated \$1.9 billion in 2001. Further, CMS estimates that spending for such facilities will reach nearly \$2.7 billion by 2008.

Geographically, LTCHs are unevenly distributed (Figure 5-2). For example, Louisiana, Massachusetts, and Texas together have more than 35 percent of LTCHs, but only 10 percent of Medicare beneficiaries. The oldest and newest LTCHs are concentrated in the Northeast and the South, respectively.

MedPAC has questioned the role LTCHs play in providing acute and post-acute care and the relationship of beneficiaries' outcomes and the high cost of care in this post-acute setting (MedPAC 2002a). More information is needed on a number of issues regarding LTCHs, including the following:

- To what extent do patients treated in LTCHs and in other settings differ?
- How do payments and outcomes compare for similar patients cared for in and outside long-term care hospitals?
- What kinds of relationships do LTCHs have with acute hospitals?

The uneven geographic distribution motivates our comparisons of patients who use and do not use long-term care hospitals and our examination of differences among LTCHs and the acute hospitals that refer to them. We began the study with the purpose of testing the following hypotheses:

- First, we expected clinically similar Medicare beneficiaries not treated in LTCHs to remain in acute hospitals for a longer period of time and to use SNF care following the hospital stay.
- Second, we expected total Medicare spending to be higher for patients who used LTCHs compared with spending for similar patients.

- Third, we expected long-term care hospitals to provide a more complex mix of services reflected in patients with higher severity of illness and higher payments. We also expected LTCH users to have fewer readmissions to the acute hospital because both types of hospitals provide an acute level of care.
- Fourth, we expected acute hospitals with LTCHs located within them to have a stronger relationship with the LTCHs—referring a larger share of patients—compared with other hospitals that are primary referrers.
- Compared with patients who did not use LTCHs, readmission rates for patients who used LTCHs were mixed for lower severity levels and were lower for patients with higher severity levels.
- All LTCHs have a strong relationship with—receive a large share of patients from—one acute hospital.

All of the findings about LTCHs discussed in this chapter are based on descriptive statistics. More research is needed to examine these issues while controlling for patient characteristics and discharge destination. We discuss the next steps in studying LTCHs in the last section of this chapter. The methods used in our study are discussed in the text box on page 82.

Background

Hospitals seeking certification as long-term care hospitals must meet all the same conditions of participation as acute hospitals and, in addition, demonstrate that their Medicare average length of stay is greater than 25 days. However, there are no qualifying criteria for patients admitted to LTCHs. Beginning in October 2002, Medicare began paying LTCHs under a per-discharge prospective payment system, implemented by cost-reporting period.⁷

Analysts generally have perceived LTCHs as a diverse group of facilities whose only common feature was an average length of stay of at least 25 days (ProPAC 1992). More recent research found that most LTCHs specialize in treating a narrow range of medical conditions—either respiratory care, rehabilitation care, or a combination of the two (Liu et al. 2001).

Liu and associates (2001) also found that they could characterize long-term care hospitals by their date of certification. They found trends in location, facility size, type of LTCH, and ownership. Those certified before October 1983, when Medicare implemented the acute hospital

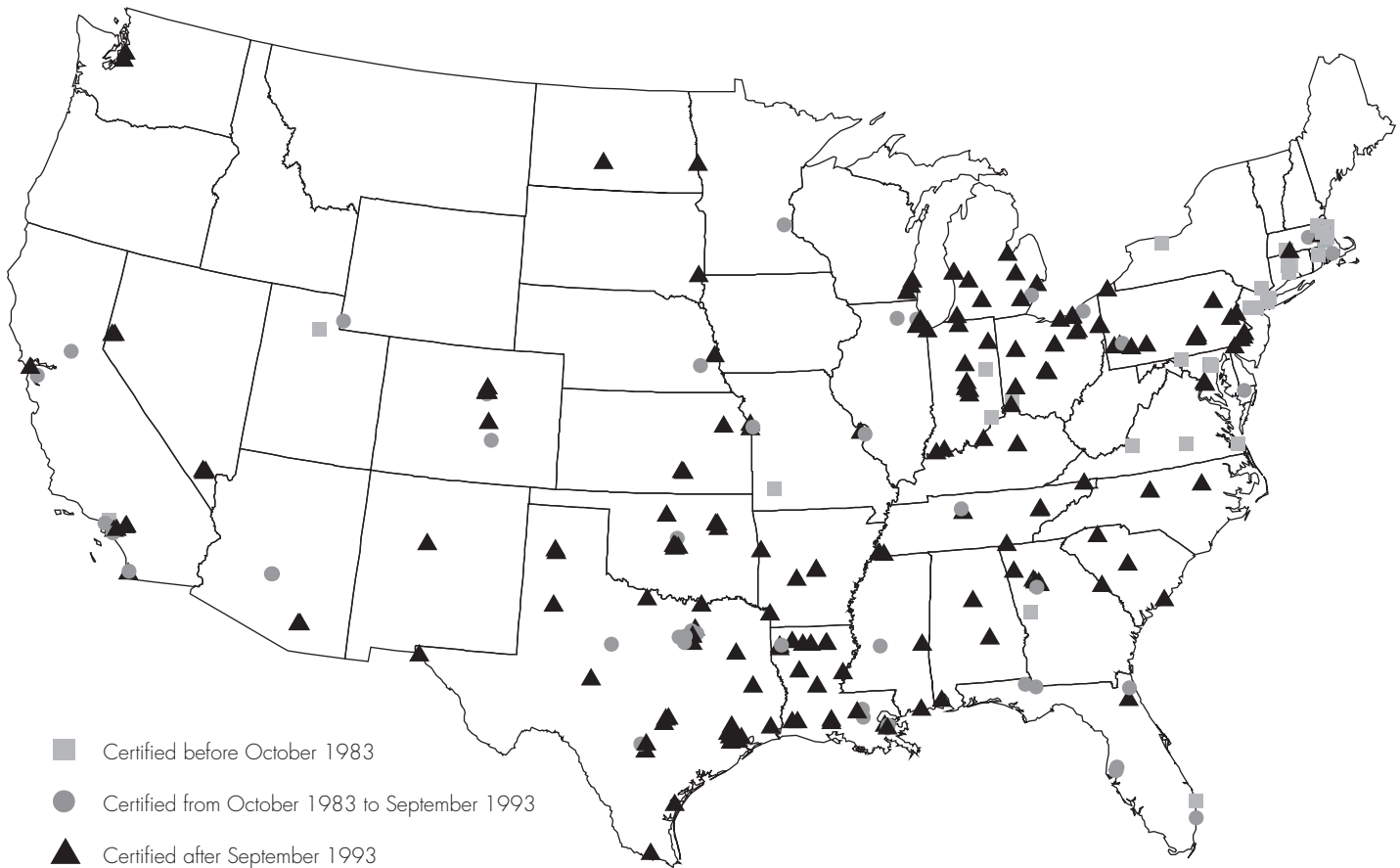
This section of the chapter describes the approach we took to testing these hypotheses and our results. We first compared patients with the same DRG and severity level across markets with and without LTCHs. We then compared patients who used and did not use LTCHs (by DRG and severity level) within markets with LTCHs. Finally, we compared LTCH users with post-acute care users in markets without LTCHs by DRG and severity level. Our analysis provides several major findings, both within and across markets:

- Patients who did and did not use LTCHs had similar lengths of stay in acute hospitals.
- Patients with the same DRG and severity level appear to use SNFs to substitute for LTCH care.
- Total Medicare payments (pre-LTCH PPS) for episodes for most patients who used LTCHs were 140 to 260 percent of payments for patients in the same DRG and severity level who did not use LTCHs.
- The death rate in 2001 for patients who used LTCHs was higher than for similar patients, although this phenomenon may be an indication of unmeasured differences in case mix.

⁷ The design of the PPS is discussed in detail in Appendix A of the March 2003 MedPAC Report to the Congress.

**FIGURE
5-2**

Location of long-term care hospitals, 2002



Source: Online Survey, Certification, and Reporting System from CMS.

PPS, shown on the map in Figure 5-2 by gray squares, are located mainly in the Northeast. Usually big hospitals with more than 100 beds, these older LTCHs generally are freestanding. They are predominately government-owned or nonprofit (none are for profit) and, compared with newer ones, admit the largest shares of Medicaid patients and private pay patients (26 percent each). Less than one-half of their cases are paid for by Medicare.

LTCHs certified from October 1983 through September 1993 are shown on the map by gray dots. About one-half of these are located in the South and most have between 25 and 99 beds (Liu et al. 2001). Most LTCHs in this group are

freestanding and almost one-half of them are for profit. About 70 percent of their cases are paid for by Medicare and about 8 percent are paid for by Medicaid. About 20 LTCHs certified during this period are members of a large national for-profit chain.

Long-term care hospitals certified after September 1993, shown on the map by black triangles, are mainly located in the South (Liu et al. 2001). They are generally for profit, small (with fewer than 50 beds), and many are within hospitals. Eighty percent of their cases are paid for by Medicare and 4 percent are paid for by Medicaid. Many of the LTCHs certified after September 1993 belong to one of two national for-profit chains.

Comparing patients with and without access to long-term care hospitals

We began the study by examining patients' characteristics and use of care in market areas with and without long-term care hospitals. About 61 percent of 2.9 million acute hospital patients with 11 common LTCH diagnoses live in market areas that have 1 or more such facility. Patients who live in market areas with and without them are almost identical in demographic characteristics, clinical characteristics, and use of care (Table 5-5, p. 83). The only difference in demographic characteristics for patients in the two areas is that patients in areas without LTCHs are more likely to be white.

Methods for long-term care hospital study

We selected acute hospital discharges in 2001 using the 11 diagnosis related groups (DRGs) that accounted for 2 percent or more of all long-term care hospital (LTCH) cases (see below). Together, these 11 DRGs accounted for almost 40 percent of LTCH discharges in 2001.

We used 2001 MEDPAR data to identify discharges from the acute hospital, and matched these stays to LTCH discharges, skilled nursing facility (SNF) stays, and home health claims. We also used the latest available cost report data for acute hospitals—either 2000 or 1999.

A patient's discharge DRG from the acute hospital assigned the individual to a clinical group.

We used location of LTCHs and the Dartmouth Atlas hospital referral regions (HRRs) to assign these patients

to two groups¹: patients who live in a market area with access to an LTCH and patients who live in a market area without an LTCH.

If an LTCH is located in an HRR, we assume that all patients living there have access to an LTCH. We excluded 10 percent of patients with the DRGs of interest who traveled outside their HRR to use an LTCH.

We used all patient refined DRGs (APR-DRGs) and diagnoses from the acute hospital stay to assign a severity of illness score for each patient (3M 1998). APR-DRGs use patient age, combinations and interactions of diagnoses to determine severity of illness (the extent of physiological decompensation or organ system loss of function experienced by the patient). Severity level ranges from 1 to 4, with 4 the most severe.

An episode is all care in acute hospitals, in LTCHs, in SNFs, and from home health agencies. We did not include inpatient rehabilitation facilities (IRFs) because the conditions of participation for these facilities are so stringent and different from the conditions of participation for LTCHs. IRFs must have medical directors and nurses who specialize in physical medicine and rehabilitation; have 75 percent of admissions from 10 specific diagnoses; and can only admit patients who can sustain 3 hours of therapy a day and have the potential to meet predetermined goals. The only restriction for LTCHs is that patients must require medically necessary hospital-level services. Due to the more stringent requirements for IRFs, it is unlikely that they can substitute for LTCHs, although the reverse could happen.

Episodes ended if an individual was readmitted to the acute hospital, died, or had no additional Medicare acute or post-acute services for 61 days. To make Medicare payments equivalent for all areas, we removed the effect of local area wage differences from all payments. For total episode payments we summed the standardized amounts for acute and post-acute care.

We used deaths in 2001 regardless of where they occurred.

To answer research questions about long-term care hospitals within hospitals, we divided LTCHs into two groups: LTCHs located within hospitals as identified by individuals familiar with the industry, and all other LTCHs. ■

Eleven DRGs for patients frequently transferred to long-term care hospitals

DRG	Description of DRG	Distribution in acute hospitals	Distribution in LTCHs
127	Heart failure and shock	6%	6%
089	Simple pneumonia	4	4
088	COPD	4	4
014	Stroke with infarction	3	4
416	Septicemia	2	3
079	Respiratory infections and inflammation	2	3
475	Respiratory with ventilator support	1	3
483	Tracheostomy with ventilator support	< 1	3
209	Hip replacement	3	2
296	Nutritional and miscellaneous metabolic disorders	2	2
320	Kidney and urinary tract infections	2	2

Note: COPD (chronic obstructive pulmonary disease), DRG (diagnosis related group), LTCH (long-term care hospital).

Source: MedPAC analysis of 2001 MEDPAR from CMS; Federal Register 2000.

1 The Dartmouth Atlas defines 306 HRRs that represent health care markets for tertiary medical care (Wennberg et al. 1999). HRRs are mutually exclusive regions that are geographically contiguous and have a minimum population of 120,000. A high percentage of hospitalizations of individuals living in the region must have occurred in one or more hospitals located within the HRR. Each HRR contains at least one hospital service area with a hospital or hospitals that performed major cardiovascular procedures or neurosurgery in 1992 to 1993.

Patients in market areas with and without LTCHs are also extremely similar in clinical characteristics, except that patients in areas with LTCHs are slightly more likely to have been treated in an intensive care unit and to have died in 2001. The average hospital length of stay (LOS) and total episode LOS are identical for patients in areas with and without LTCHs. Average Medicare payments for the acute hospital and the episode were roughly similar—with only a 3 percent difference in average payments for acute hospitals and less than 5 percent difference in payments for the episode.

We next examined the patient population in market areas with and without long-term care hospitals to determine whether there were differences in severity of illness. We found the distribution of cases across the 11 DRGs to be identical for the 2 types of market areas. When we compared the severity of illness by each of the 11 diagnoses in areas with and without LTCHs, we found that the distribution of severity was almost identical (Table 5-6, p. 84).⁸ (The 5 DRGs shown in Tables 5-6 through 5-8 account for almost one-half of the patients in the 11 DRGs we studied.) Five of 11 DRGs have identical distributions across the 4 levels of severity, 4 DRGs have a 1 percentage point difference, and the remaining 2 DRGs have a total difference of 2 percentage points. Thus, based on acute and post-acute care use and hospital diagnoses, we see no systematic differences in patients in areas with and without LTCHs.

Comparing patients in LTCH market areas

We next examined the distribution of severity levels for patients using LTCHs and other post-acute settings in market areas with these hospitals. For the 11 DRGs, we found that about 33 and 35 percent of the patients using LTCHs, respectively, have severity levels 3 and 4. Patients with severity levels 1 and 2 make

TABLE 5-5 Comparison of patient characteristics by market areas, 2001

Characteristic	Market areas with LTCHs	Market areas without LTCHs
Patients	1.8 million 61%	1.1 million 39%
Average age (years)	77	77
Female	60%	59%
White	82%	89%
Disabled	10%	9%
Major risk of death	30%	30%
Extreme risk of death	9%	9%
Died in 2001	27%	26%
Intensive care unit use	21%	19%
Readmission after post-acute care	10%	10%
High-cost outlier in acute hospital	2%	2%
Used long-term care hospital	1%	0%
Used skilled nursing facility	22%	23%
Used home health care	17%	17%
Used postacute care	35%	35%
Acute hospital ALOS (days)	6	6
Total episode ALOS (days)	21	21
Average acute hospital payment	\$7,667	\$7,401
Average total episode payment	\$12,117	\$11,528

Note: ALOS (average length of stay), LTCH (long-term care hospital).

Source: MedPAC analysis of 2001 MEDPAR data from CMS.

up the remaining 32 percent of LTCH patients. In contrast, among patients who did not use LTCHs, about 55 percent had severity level 1 and 2 and the remaining 45 percent had severity level 3 and 4.

We hypothesized that clinically similar patients using long-term care hospitals would have shorter stays in the acute hospital and use SNFs less frequently than patients who did not use LTCHs. That expectation in the case of acute hospital use is not supported by the data but is supported for SNF use. For 37 out of 44 diagnosis related group and severity level combinations (11 DRGs each with 4

severity levels), LTCH patients had slightly longer acute hospital LOSs compared with patients with the same DRG-severity level who did not use LTCHs. However, these differences were not large—in 35 categories the difference in LOS was less than 1 day.

The data suggest that skilled nursing facilities and long-term care hospitals may be substitutes. As noted, patients who did and did not use these hospitals had similar LOSs in the acute hospital. At the same time, patients who used LTCHs were three to five times less likely to use SNFs than patients who did not use long-term

⁸ We use 5 of the 11 DRGs studied to illustrate similarities and differences among different groups—those with or without access to long-term care hospitals or those treated in LTCHs and other settings. We chose these five diagnosis related groups because DRG 127 is the most numerous in both acute hospitals and LTCHs, DRG 014 and 209 both frequently require rehabilitation care, and DRG 475 and 483 both require ventilator support.

**TABLE
5-6**

Patients in five DRGs by selected levels of severity of illness, in market areas with and without LTCHs, 2001

DRG	Market areas with LTCHs		Market areas without LTCHs	
	Severity level		Severity level	
	1	4	1	4
014 Stroke with infarction	10%	10%	9%	9%
127 Heart failure and shock	9	3	9	3
209 Hip replacement	33	1	34	1
475 Respiratory with ventilator support	0	71	0	69
483 Tracheostomy with ventilator support	0	86	0	86

Note: DRG (diagnosis related group), LTCH (long-term care hospital). Severity level 1 is lowest, 4 is highest. These five DRGs account for almost one-fifth of all patients transferred to LTCHs.

Source: MedPAC analysis of 2001 MEDPAR data from CMS.

care hospitals. For patients in severity level 4 who did not use LTCHs, across the 11 diagnosis related groups, 61 to 90 percent used SNFs.

As expected, we found long-term care hospital care to be more expensive than care in other post-acute settings. In the LTCH market areas, we generally found that total episode payments (for acute and post-acute care) were much higher for long-term care hospital users. Total payments for patients in the five illustrative diagnosis related group-severity levels who used LTCHs were between 140 and 260 percent higher than for those not using LTCHs (Table 5-7). We found the same pattern in the six DRGs not shown. DRG 483 (tracheostomy with mechanical ventilation), discussed below, was the only exception.

It is important to note that the much higher episode payments for LTCH users are not obvious in Table 5-5 (p. 83)

because the small number of those users are overwhelmed by the much larger number of patients not using them. Thus, we compared patients by DRG and severity level within LTCH markets to get a more accurate picture.

Death rates generally increase with severity of illness for patients who used and did not use LTCHs in the same market areas. However, patients who used LTCHs were more likely to die in 2001—in 41 out of 44 groups—compared with patients who did not use LTCHs (Table 5-8, p. 86). We find that death rates are generally higher among LTCH patients for all levels of severity. In all but DRG 209 (hip replacement), more than 45 percent of patients in severity level 4 who used LTCHs died in 2001, and in two DRGs more than 60 percent died.⁹ We found the same pattern in the six DRGs not shown. Higher death rates may reflect unmeasured severity of illness or may reflect that LTCHs provide end-of-life care.

We also compared rates of readmission to the acute hospital for patients who used and did not use long-term care hospitals. We found mixed readmission rates. Compared with patients who did not use LTCHs, readmission rates for patients who used them were mixed for those with lower severity levels and were lower for patients with higher severity levels. Readmission rates for the six DRGs not shown follow the same pattern.

DRG 483 (tracheostomy with mechanical ventilator) is unique in several ways. It was the only diagnosis related group in which patients in all four severity levels had a difference in acute hospital LOS of more than one day. Patients with severity levels 3 and 4 who used LTCHs had shorter hospital LOSs than patients who did not. It is also the only DRG where total payments in 2001 were very similar for patients with this group and severity level 4 for patients who did and did not use LTCHs—patients who used LTCHs had a 2 percent higher total payment. However, this similarity will disappear under the LTCH PPS—the rate for DRG 483 starting July 1, 2003 will be \$116,000, more than the total episode payment for patients in this group in 2001 (CMS 2003).

Comparing patients using LTCHs with similar patients in market areas without LTCHs

Many areas of the country have no LTCHs. A key question therefore, is where are patients similar to long-term care hospital patients treated in market areas without those facilities? To answer the question we compared LTCH patients with post-acute care users in market areas without LTCHs. The comparison is somewhat limited, because under 4 percent of post-acute users go to LTCHs even in areas with LTCHs. Therefore, overall differences and similarities will be small between areas with and without LTCHs.

We found results similar to our other comparison.

⁹ Deaths in 2001 represent all deaths regardless of where death occurred.

- Distribution by severity level was almost identical for post-acute users in areas with and without LTCHs (Figure 5-3, p. 86).
- Acute hospitals do not appear to substitute for LTCHs. Compared with post-acute users in market areas without LTCHs, the acute hospital LOS was slightly longer for LTCH patients (in 31 out of 44 DRG-severity level comparisons). If they were substitutes, acute hospital LOSs would be shorter by more than one day for LTCH patients. In the 13 categories where post-acute users in markets without LTCHs had a longer LOS than LTCH users, the difference was less than 1 day in 9 categories.
- SNFs may substitute for LTCHs. When we compared skilled nursing facility and long-term care hospital users in market areas with LTCHs by severity level with SNF users in market areas without LTCHs, we found that similar proportions of patients used one of the two settings (Figure 5-3, p. 86).
- Total payments for LTCH users were 140 to 260 percent of payments for post-acute users in market areas without LTCHs (in 42 out of 44 DRG-severity levels). Death rates were higher for LTCH users compared with post-acute users in markets without LTCHs; this phenomenon may reflect unmeasured severity of illness. Readmission rates were mixed—LTCH users with higher severity levels had a lower readmission rate compared with similar patients in market areas without LTCHs, but there was no consistent pattern in readmission rates for lower severity patients.

**TABLE
5-7**

Total payments for patients who used post-acute care, by use of LTCHs, in market areas with LTCHs, 2001

DRG	Mean total payment, 2001 (pre-PPS)	
	Severity Level	
	2	4
014 Stroke with infarction		
LTCH use	\$ 31,164	\$ 36,053
No LTCH use	15,191	21,161
127 Heart failure and shock		
LTCH use	26,720	27,687
No LTCH use	12,451	14,773
209 Hip replacement		
LTCH use	30,776	37,357
No LTCH use	16,813	22,191
475 Respiratory with ventilator support		
LTCH use	41,309	47,527
No LTCH use	19,145	32,991
483 Tracheostomy with ventilator support		
LTCH use	85,533	112,177
No LTCH use	68,423	110,043

Note: DRG (diagnosis related group), LTCH (long-term care hospital), PPS (prospective payment system). Severity level 1 is lowest, 4 is highest. Total payment adjusted for the effect of local area wages for acute hospital, long-term care hospital, skilled nursing facility, and home health care.

Source: MedPAC analysis of 2001 MEDPAR data from CMS.

LTCHs' relationships with acute hospitals

In addition to their concern about rapid growth in long-term care hospitals in general, CMS and other policymakers have expressed particular concern about the even more rapid growth in LTCHs within hospitals. CMS (2002) has suggested that these facilities may increase the host hospitals' ability to manipulate the inpatient PPS by shortening the length of stay and profiting from the DRG payment.¹⁰ Hospitals may transfer patients who could have remained in the acute care hospital under the original DRG payment to LTCHs within

hospitals, thus increasing Medicare's costs by generating two discharges. The rapid growth in these types of LTCHs—from 10 to 114 LTCHs between 1993 and 2002, an average annual increase of about 30 percent—has heightened concern.

We found that a long-term care hospital generally has a strong relationship with one acute care hospital regardless of where it is located. LTCHs within hospitals received 61 percent of cases from their most frequent referrer. Those not located within a hospital received 42 percent of cases from their most frequent referrer.

10 To protect Medicare from this kind of manipulation, CMS developed regulations that try to keep LTCHs within hospitals distinct from the hospital. LTCHs within hospitals are required to have a separate governing body, chief financial officer, chief medical officer, and medical staff. In addition, they must meet one of the following three criteria: (1) perform basic functions independently from the host hospitals, (2) incur no more than 15 percent of total inpatient operating costs for items and services supplied by the host hospital, or (3) have an inpatient load of which at least 75 percent of patients are admitted from sources other than the host hospital. LTCHs within hospitals exempted from the acute care hospital PPS before October 1995 are exempt from these rules.

TABLE 5-8

Death rates and rates of readmission for patients who used post-acute care, in market areas with LTCHs, 2001

DRG	Rates of death by severity level		Rates of readmission by severity level	
	2	4	2	4
014 Stroke with infarction				
LTCH use	28.2%	47.2%	25.4%	31.8%
No LTCH use	16.7	46.7	23.0	37.5
127 Heart failure and shock				
LTCH use	38.2	63.1	35.9	32.5
No LTCH use	27.7	44.6	38.2	42.6
209 Hip replacement				
LTCH use	8.2	34.4	18.9	20.3
No LTCH use	0.0	0.2	13.1	32.4
475 Respiratory with ventilator support				
LTCH use	17.9	54.0	28.6	32.8
No LTCH use	25.3	38.0	32.3	39.8
483 Tracheostomy with ventilator support				
LTCH use	36.7	81.7	30.6	33.0
No LTCH use	29.3	42.0	36.8	44.5

Note: DRG (diagnosis related group), LTCH (long-term care hospital). Severity level 1 is lowest, 4 is highest.

Source: MedPAC analysis of 2001 MEDPAR data from CMS.

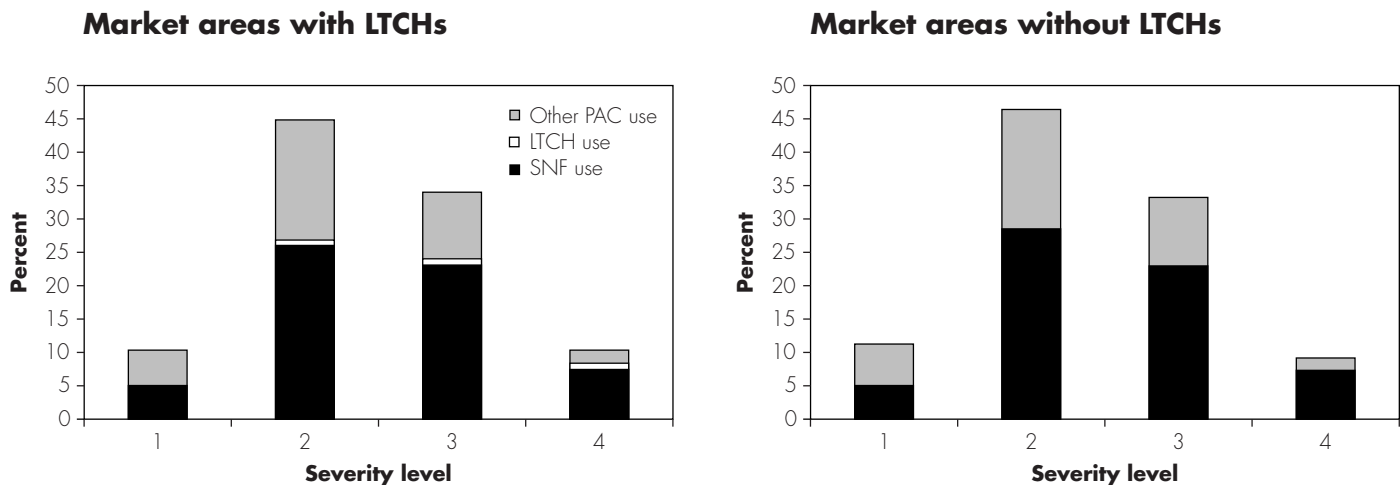
To determine what types of acute hospitals have relationships with long-term care hospitals, we compared the most frequent referrers to LTCHs with general hospitals. The most frequent referrers are more likely than the nation’s general hospitals to be located in urban areas and are two and one-half times more likely to be teaching hospitals (Table 5-9). They also are much more likely to receive disproportionate share payments.

Interestingly, when we compared long-term care hospitals within acute hospitals with those not located within acute hospitals, we found that the LTCHs within hospitals had a somewhat higher proportion of acute hospital transfers that were classified as high-cost outlier cases. This is contrary to our expectation that LTCHs within hospitals would have a lower proportion of cases classified as high-cost outliers in the acute hospital. We also found no difference among LTCHs within hospitals and others in the proportion of patients readmitted to the acute hospital.

For an acute care hospital, the benefits of a strong relationship with a long-term care hospital are clear—an acute hospital can transfer its most costly patients to the

FIGURE 5-3

Patients’ use of post-acute care, by severity level, in market areas with and without LTCHs, 2001



Note: LTCH (long-term care hospital), PAC (post-acute care), SNF (skilled nursing facility). Severity level 1 is lowest, 4 is highest. Percentages may not add to 100 due to rounding. Severity level is determined during the inpatient hospital stay. Distribution is among patients in the 11 DRGs with greatest use of LTCHs.

Source: MedPAC analysis of 2001 MEDPAR data from CMS.

**TABLE
5-9**

Characteristics of primary referrers to long-term care hospitals and nation's general hospitals, 2000

	Primary referrers to LTCHs	Nation's general hospitals
Urban location	> 90%	60%
Voluntary	70	61
Proprietary	16	16
Payment for teaching and DSH	47	16
Payment for teaching only	13	8
Payment for DSH only	22	24
Medicare inpatient margin, 2000	27	11
Adjusted Medicare inpatient margin, 2000	5	2

Note: DSH (disproportionate share) of low-income patients, LTCH (long-term care hospital). Adjusted margin has payments for indirect medical education above 2.7 percent and DSH removed.

Source: MedPAC analysis of cost reports from CMS.

LTCH and thus save money. It was beyond the scope of this part of our research to look at changes in LOS. But we did find some evidence that transfers of most costly patients may take place when we examined margins for the acute hospitals that were the primary referrers to LTCHs and found that the aggregate Medicare inpatient margin was 27 percent for fiscal year 2000. This margin

compares with an 11 percent aggregate inpatient margin for all hospitals in fiscal year 2000. When we adjust margins by removing indirect medical education above the empirical level (above 2.7 percent) and disproportionate share of low-income patients, the Medicare inpatient margin was 5 and 2 percent for primary referrers and all hospitals, respectively. The benefits of a strong

relationship for LTCHs include a steady stream of patients and the ability to choose which patients to admit.

Further research

The geographically skewed distribution of long-term care hospitals, their apparent substitution for skilled nursing facilities, the substantial proportion of admissions with lower severity of illness, and LTCHs representing higher costs to Medicare but with mixed outcomes all mean that more research is needed to determine the role that LTCHs play for Medicare patients and to understand quality outcomes in this setting. Therefore, we plan to:

- model total payments for LTCH patients under the PPS;
- compare quality and cost, controlling for patient characteristics (particularly severity of illness) and discharge destination (including age of the institution);
- determine whether other provider types are being converted to LTCHs; and
- examine financial performance for LTCHs and LTCHs within hospitals. ■

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CHAPTER

6

**Quality of dialysis care
and providers' costs**

Quality of dialysis care and providers' costs

Certain freestanding dialysis facilities incur substantially lower costs per hemodialysis treatment than others. Of concern is whether the lower costs per treatment result in quality problems for beneficiaries. MedPAC's analysis shows that quality of care does not significantly differ between facilities with lower and higher costs for dialysis services included in the prospective payment bundle (the composite rate). Considering both the costs for furnishing dialysis and separately billable injectable drugs, we find that beneficiaries' outcomes are poorer for facilities with higher than average costs. One explanation for this finding is that certain facilities are less efficient at furnishing injectable drugs than other facilities and this inefficiency may in turn reflect less than optimal patient care. Another explanation is that higher drug costs may be a proxy for furnishing care to more medically complex patients. Previous MedPAC recommendations to refine the outpatient dialysis payment system would address either of these issues. These recommendations would broaden the payment bundle to include commonly used services currently excluded from it and account for differences known to affect providers' costs, such as patient case mix.

In this chapter

- Paying for outpatient dialysis services
 - Assessing the relationship between quality and dialysis providers' costs
 - Implications and next steps
-

Certain freestanding dialysis facilities incur substantially lower Medicare-allowable costs per in-center hemodialysis treatment than others.¹ Analysis of 2000 cost reports shows that facilities in the lowest quartile of costs incurred an average cost per hemodialysis treatment of about \$110 for services included in Medicare’s prospective payment bundle (the composite rate).² By comparison, facilities in the highest quartile of costs incurred average treatment costs of nearly \$170 per treatment (Table 6-1). Lower-cost facilities are more likely to be:

- for-profit,
- affiliated with one of four national dialysis chains,
- located in rural and low-wage areas, and
- more productive.

Other investigators have shown that certain demographic, clinical, and functional characteristics of patients are also associated with providers’ costs (Dor et al. 1992, Freund et al. 1998, Hirth et al. 1999, Sankarasubbaiyan and Holley 2000).

Of concern is whether the lower costs per treatment result in quality problems for beneficiaries. Dialysis is somewhat unique among Medicare services for both its availability of a core set of measures to assess key aspects of dialysis care, and that these measures are regularly collected and disseminated by CMS. The key measures of dialysis quality—adequacy (the dose of dialysis delivered) and anemia status—have steadily improved since the mid-1990s (CMS 2002). For instance, the proportion of in-center hemodialysis patients receiving adequate dialysis increased from 74 to 89 percent in 1996 and 2001, respectively (CMS 2002, HCFA 1997a). In addition, CMS data

TABLE 6-1

Characteristics of freestanding dialysis facilities, by quartile of average cost per hemodialysis treatment, 2000

Cost quartile	Cost per treatment	Average number of treatments	For profit	Major chain	Rural
			Percent of all facilities		
Composite rate services only					
Quartile 1	\$110	9,483	94%	83%	26%
Quartile 2	125	8,264	91	73	17
Quartile 3	138	7,151	92	76	12
Quartile 4	167	5,221	88	65	11
Composite rate services and injectable drugs					
Quartile 1	\$162	9,024	93%	81%	23%
Quartile 2	181	7,657	90	77	20
Quartile 3	196	7,015	93	96	12
Quartile 4	229	5,752	88	63	10

Note: Lowest cost quartile is 1; highest is 4. Data are weighted by the number of in-center hemodialysis treatments.

Source: Analysis by Direct Research LLC of 2000 cost reports and claims submitted by freestanding dialysis facilities to CMS.

show that the variation in quality of care has also declined since the mid-1990s. For example, between 86 and 92 percent of in-center hemodialysis patients received adequate dialysis in 2001, whereas dialysis adequacy varied from 63 to 85 percent in 1996.

Other investigators have assessed the association between the facilities’ profit status, a proxy for lower cost, and the quality of dialysis care (Table 6-2). Some of these investigators have hypothesized that, despite the overall improvements in key dialysis processes of care, the steady decline in the inflation-adjusted value of the composite rate has adversely affected dialysis quality.³ In particular, for-profit facilities may be under more pressure than nonprofit facilities to stint on the services and inputs used to produce care in order to generate income. Data from CMS’s

annual facility survey show that an increasing proportion of patients are treated by for-profit facilities, from 60 percent in 1993 to nearly 80 percent in 2001.

Investigators assessing the relationship between facilities’ profit status and quality of care report differing results. CMS investigators concluded that profit status was not associated with adequacy of dialysis and anemia and nutritional status (Frankenfield et al. 2000). A recent analysis by Port et al. (2001) concluded that the risk of mortality does not differ based on facilities’ profit status. Others have found a correlation between facilities’ profit status and rates of mortality and transplantation (Devereaux et al. 2002, Ebben et al. 2000, Garg et al. 1999, McClellan et al. 1998).

1 About 93 percent of all dialysis patients undergo hemodialysis three times per week in dialysis facilities. In hemodialysis, a patient’s blood flows through a machine with a special filter to remove wastes and extra fluids. The remainder of patients undergoing peritoneal dialysis—cleaning a patient’s blood with the lining of his or her abdomen as a filter—have it performed at home.

2 CMS designed the composite rate in 1983 to include all nursing services, supplies, equipment, and drugs associated with a single dialysis session.

3 Since 1983, per treatment payment has only increased on 3 occasions: by \$1 in 1991, by 1.2 percent in 2000, and by 2.4 percent in 2001.

**TABLE
6-2**

Recent studies examining the impact of providers' characteristics on quality of dialysis care

Author	Data and year(s) of study	Measures of outcome/quality	Main finding
Devereaux PJ et al. 2002	Meta analysis; 7 studies used data from 1990–1997; 1 study used data from 1973–1982.	Mortality	Death rate 8% higher among kidney failure patients receiving dialysis at for-profit centers than those treated at nonprofit facilities.
Port et al. 2001	Analysis of 12,791 hemodialysis patients treated in 1,394 dialysis facilities, 1994–1995.	Mortality	No statistical evidence that risk of mortality differed based on facilities' profit status.
Frankenfield et al. 2000	Analysis of 1997 data from HCFA's Core Indicator Project, facility survey, and HCFA's online survey, certification, and reporting system.	Adequacy of dialysis, anemia, and nutritional status	Facility profit status not associated with adequacy of dialysis, anemia and nutritional status. Larger facility size modestly associated with increased adequacy of hemodialysis, but neither anemia nor nutritional status.
Irvin RA 2000	Analysis of 1996 data for 180,913 hemodialysis patients.	Mortality	For-profit dialysis facilities had slightly higher mortality rates than nonprofit facilities, after controlling for patient case mix and market type.
Port and Wolfe 2000	Analysis of patients receiving dialysis between 1996–1997.	Mortality, transplantation	Adjusted rate of placement on a waiting list for a renal transplant was significantly lower in for-profit facilities than nonprofit facilities. Rate of transplantation did not differ based on facilities' profit status. Relative risk of death for patients treated in for-profit facilities was greater than nonprofit facilities.
Ebben et al. 2000	Analysis of 5 cohorts of hemodialysis beneficiaries surviving from July–December of entry year (1991–1995).	Mortality	Compared with nonprofit facilities, for-profit facilities had significantly greater risk of mortality, 1991–1993. In 1994 and 1995, providers' profit status was no longer a significant risk factor.
Garg et al. 1999	Analysis of 1990–1993 data collected by the USRDS.	Mortality, transplantation	For-profit dialysis facilities experienced increased mortality and decreased rates of placement on transplant waiting lists compared to nonprofits.
Fink et al. 1999	Analysis of 1996 data collected from facilities in Va. and Md.	Adequacy of dialysis	Patients dialyzing at for-profit dialysis facilities had a mean URR value 1.5% higher than those dialyzed at nonprofit facilities.
McClellan et al. 1998	Analysis of 1994 data collected from facilities in N.C., S.C., and Ga.	Mortality	Mortality rates of hemodialysis patients are significantly higher in for-profit facilities than nonprofit facilities.
Collins et al. 1998	Analysis of 13,926 patients in 1989–1990 and 20,422 patients in 1991–1993.	Mortality	Risk of mortality did not differ between freestanding and hospital-based facilities not reusing dialyzers in 1989–1990. In 1991–1993, freestanding for-profit units had a higher mortality risk than hospital-based nonprofit units, and hospital-based for-profit units had a lower mortality risk than hospital-based nonprofit units.

Note: HCFA (Health Care Financing Administration), URR (urea reduction ratio), USRDS (United States Renal Data System).

Source: MedPAC analysis of studies published between 1998 and 2003 assessing the relationship between selected outcomes of care (adequacy of dialysis, anemia and nutritional status, and rates of hospitalization, transplantation, and mortality) and characteristics of dialysis facilities (size and profit status).

No recent studies in the peer-reviewed literature examine the relationship between dialysis facilities' costs and quality of care. Therefore, in this chapter, we examine whether beneficiaries' outcomes (quality of care) are associated with the costs incurred by freestanding dialysis providers furnishing in-center hemodialysis in 2000. In the first section, we summarize how Medicare pays for outpatient dialysis services, highlighting important differences in the methods used to pay for dialysis treatments and certain injectable drugs. Next, we provide results from a study conducted by Direct Research LLC on behalf of MedPAC that finds that beneficiaries' outcomes do not significantly differ among facilities with lower and higher costs for composite rate services after controlling for other facility and beneficiary characteristics (Hogan 2003). When considering both the costs for furnishing dialysis and separately billable drugs, we find that beneficiaries' outcomes are poorer for facilities with higher than average costs. We have two interpretations of these findings. First, certain facilities may be less efficient at furnishing injectable drugs than others because of Medicare's payment methods for these drugs and their profitability. This inefficiency may in turn reflect less than optimal care. Second, higher drug costs may be a proxy for furnishing care to more medically complex patients whose characteristics we may not fully capture in the model. This chapter concludes with a discussion of the implications of these findings.

Paying for outpatient dialysis services

Medicare pays a prospective payment—the composite rate—for each dialysis treatment provided in dialysis facilities (in-center) or in patients' homes. The base payment rate was \$127 for freestanding facilities and \$131 for hospital-based

facilities in 2001. The payment rate does not vary with factors known to affect providers' costs, including dialysis dose, frequency of dialysis, differences in the resources used for different dialysis methods, and patient case mix.⁴ Rather, the payment rate is only adjusted to account for differences in local area wages.

By contrast, providers receive an additional, separate payment for furnishing certain injectable drugs during dialysis. The Congress has set the payment for erythropoietin, the costliest of these drugs in terms of spending by Medicare and beneficiaries, at \$10 per 1,000 units. Erythropoietin is the mainstay in the treatment of anemia, affecting nearly all dialysis patients. Providers receive 95 percent of the average wholesale price (AWP) for separately billable injectable medications other than erythropoietin administered during in-center dialysis. (Chapter 9 provides a detailed discussion of drugs paid for by Medicare and the AWP.) Since these injectable drugs are paid on a per dose basis, providers have the incentive to furnish as many of these drugs as the severity of the patient warrants.

Use of injectable dialysis drugs, as measured by Medicare's payments, has steadily increased since the mid-1990s. For freestanding dialysis providers, revenue from injectable medications relative to that from composite rate services has increased from about 33 percent of total payments in 1997 to 40 percent in 2001. The profitability of certain injectable medications has also provided incentives to administer them in certain ways (MedPAC 2003). For instance, Medicare pays \$10 per 1,000 units for erythropoietin administered either intravenously or subcutaneously (under the skin). Paying on a per unit basis promotes the use of the intravenous form of this medication, which requires higher average doses (more units) to achieve target hematocrit levels.⁵ The

predominant use of intravenous erythropoietin persists despite the publication of the National Kidney Foundation's (NKF's) Kidney Disease Outcomes Quality Initiative Clinical Practice Guideline for the treatment of anemia that advocated subcutaneous administration.

Assessing the relationship between quality and dialysis providers' costs

The key issue addressed in our analysis is whether quality differences exist between lower- and higher-cost freestanding dialysis facilities. The four measures of quality we used are:

- adequacy of hemodialysis,
- adequacy of anemia management,
- rate of death, and
- rate of kidney transplantation.

Researchers and providers generally agree that these measures reflect the quality of care furnished by dialysis providers and beneficiaries' outcomes (although these are not the only such measures, as discussed later). The text box beginning on page 95 provides information about each outcome measure.

Both dialysis adequacy and anemia management reflect dialysis facilities' processes of care. We used clinical guidelines developed by the NKF to assess adequacy of hemodialysis and anemia status (NKF 2003). The NKF used an evidence-based approach to develop their guidelines and CMS based its clinical performance measures for hemodialysis adequacy and anemia management on these guidelines. CMS's Clinical Performance Measurement Project, a national effort to improve dialysis patients' care and outcomes, has

4 The Commission previously recommended that the Congress should instruct the Secretary to revise the outpatient dialysis payment system to account for factors that affect providers' costs to deliver high-quality clinical care (MedPAC 2001).

5 Some providers contend that erythropoietin is predominately furnished intravenously rather than subcutaneously because patients experience less discomfort.

Measures used to assess quality of dialysis care and beneficiaries' outcomes

Among the services furnished by traditional Medicare, dialysis is rare in the availability of agreed-upon measures of dialysis quality and beneficiaries' outcomes. As noted earlier, the National Kidney Foundation (NKF) has developed clinical guidelines for several aspects of dialysis care—adequacy of dialysis, anemia management, vascular access management, and nutrition management. CMS and the United States Renal Data System regularly report on these processes of dialysis care.

Adequacy of dialysis. Adequacy of dialysis refers to the delivered dose of dialysis. The proportion of patients receiving adequate dialysis has improved, from 74 to 89 percent in 1996 and 2001, respectively (CMS 2002, HCFA 1999).

This analysis uses the urea reduction ratio (URR), which measures the extent to which the dialysis treatment removes urea from the blood, to assess adequacy of dialysis. Consistent with the NKF clinical guideline, this analysis uses a level of URR of 65 percent or greater as the standard of hemodialysis adequacy. Research has established that excess rates of complications and mortality occur below 65 percent. The delivered dose of dialysis is influenced by a number of patient-related factors (such as patient comorbidities, compliance, and weight) and technical factors (such as the duration of a dialysis treatment, the number of dialysis treatments per week, the type of vascular access and dialyzer membrane, and the blood and dialysate flow rate).

Anemia management. Anemia, mainly caused by erythropoietin deficiency in diseased kidneys, develops early in the course of renal failure, becomes prominent as the

disease progresses, and contributes substantially to morbidity. The anemia status of dialysis patients has shown steady improvements, with the proportion of anemic patients declining from 57 to 24 percent of all patients in 1997 and 2001, respectively (CMS 2002).

This analysis uses hematocrit, the fraction of blood that consists of red blood cells, to assess beneficiaries' anemia status. Consistent with the clinical guideline developed by the NKF, hematocrit levels above 33 percent are the standard of adequacy for anemia management. The NKF's clinical guideline for anemia management recommends a target hematocrit range of 33 to 36 percent and notes that a hematocrit greater than 30 percent has been associated with increased survival, decreased left ventricular hypertrophy, improved quality of life, and improved exercise capacity.

Transplantation. Kidney transplantation is the preferred treatment for renal failure. When successful, it restores patients more nearly to a normal and satisfactory quality of life than does dialysis. In addition, transplantation is more cost-effective than dialysis as a treatment for renal failure, as beneficiaries with functioning grafts are about one-third as costly as beneficiaries on dialysis (Eggers 1988).

The scarcity of organs limits the number of transplant procedures performed. The increase in the number of transplants—from 13,343 in 1998 to 14,287 in 2000—is due to growth in the number of living donor procedures. In addition, other clinical and nonclinical factors may be contraindications for transplant. These factors include advanced coronary artery disease, congestive heart failure

and cardiomyopathy, active infections such as tuberculosis, other advanced organ failures, history of malignancy, active substance abuse, and likely inability to comply with the follow-up treatment regimen.

Finally, patient preferences and financial burden may also play a role in the transplant decision. Socioeconomic factors influence referral for pretransplant medical evaluations and placement on kidney transplant waiting lists (Alexander and Sehgal 1998). The loss of Medicare eligibility 3 years after kidney transplantation for patients under age 65 may limit certain individuals from being considered for a transplant because of the patient's financial burden of maintaining the immunosuppressive regimen.

Unlike dialysis services, Medicare is not the predominant payer for kidney transplants. Younger patients more frequently undergo kidney transplantation and have private insurance as their primary payer than older patients. In 2000, incident end-stage renal disease (ESRD) patients 65 years and older accounted for only 6 percent of all kidney transplant patients but nearly half of all in-center hemodialysis patients (USRDS 2002). Data from the Agency for Healthcare Research and Quality show that Medicare was the primary payer for less than half of all cases.

Mortality rate. ESRD beneficiaries have a higher mortality rate compared with non-ESRD beneficiaries. The Medicare population as a whole has about 5.5 deaths per 100 persons per year; by comparison, the ESRD population has about 17 deaths per 100 persons per year. The leading causes of death are cardiac arrest, septicemia, and heart attack (USRDS 2002). ■

collected data annually since 1994 to assess these measures.⁶ Since 2001, the agency has reported information about hemodialysis adequacy and anemia status for individual facilities on its Dialysis Facility Compare website (CMS 2003).

By contrast, the other measures we use—death and transplantation—reflect processes of care that are also influenced by providers other than dialysis facilities. Although the risk of mortality increases with inadequate dialysis and poor anemia status, death can also be caused by factors not directly related to the dialysis process. As noted in the text box on page 95, patients' preferences and physicians' judgment about the suitability of a patient influence access to transplantation. The extent to which facilities influence access to this treatment is debatable. However, other investigators have used risk of mortality and access to transplantation to compare differences in the quality of care between dialysis facilities; CMS reports a measure of patient survival for individual facilities on its Dialysis Facility Compare website, so we included them in this study (Ebben et al. 2000; Garg et al. 1999; Irvin 2000; Port et al. 2001, 2000).

Our analysis focuses on the cost of in-center hemodialysis. This method treats the majority of dialysis patients, so estimating the average cost per in-center hemodialysis treatment on a facility-level basis is more reliable than for the other methods of dialysis—peritoneal dialysis and home hemodialysis—used by about 9 percent of all patients (USRDS 2002). Our analysis measures facilities' hemodialysis costs in two ways: (1) composite rate services only, and (2) both composite rate services and injectable drugs. Even though Medicare pays for injectable drugs separately, they are an integral part of the

care furnished to beneficiaries and, as mentioned earlier, their use has steadily increased since the mid-1990s.

Our analysis also focuses on the care furnished by freestanding—not hospital-based—facilities because their costs are easier to interpret. Unlike hospital-based facilities, the costs reported by freestanding facilities are not affected by hospitals' cost allocation decisions (MedPAC 2003). And, there is no current evidence showing differences in the costs incurred by freestanding and hospital-based facilities. Freestanding dialysis facilities are the predominant suppliers of dialysis care:

- In 2001, they treated about 80 percent of all dialysis patients and furnished a similar proportion of all in-center hemodialysis treatments.
- The proportion of all freestanding facilities has steadily increased throughout the 1990s, from 60 percent in 1993 to about 80 percent in 2001.

Although the main research question of the relationship between cost and quality is simple in theory, answering it in practice is a complex task. Many factors can affect average cost per treatment but have no particular link to the quality of care delivered. For instance, certain facilities may be able to furnish care at lower costs per treatment because they simply provide more services and can spread their fixed costs over more patients. Patient self-selection to certain providers also confounds any underlying relationship. Numerous attributes, including weight and comorbidities, make certain patients more difficult to dialyze. Such patients are more costly to dialyze as they require greater than average doses of dialysis, which, if not furnished, may result in poorer anemia status and

increased risk of mortality (HCFA 1997b).⁷ A facility with a higher than average share of these patients will have higher costs. For this reason, we control for many patient-level factors in our study.

To control simultaneously for both facility- and patient-level characteristics, we used multivariate ordinary least squares regression analyses to measure the association between cost per hemodialysis treatment and quality on a facility-level basis. We included several patient-level characteristics in the analysis:

- demographic characteristics,
- 16 clinical characteristics assessed at the onset of dialysis,
- weight (in pounds),
- number of years on dialysis,
- tobacco use, and
- 2 indicators of functional status (inability to ambulate and transfer).

We included several facility-level characteristics:

- profit status,⁸
- facility size as measured by the number of in-center hemodialysis treatments furnished in 2000,
- geographic location,
- hospital wage index, and
- the proportion of patients who are not Medicare-entitled.

The text box on page 97 provides additional information about the data sources used in this analysis and how we constructed the analytical file.

6 An evidence-based approach evaluates the use of a medical service while applying the best available scientific evidence according to the generally accepted hierarchy.

7 For example, the delivered dose of hemodialysis in large patients, as measured by the urea reduction ratio, is often less than adequate. Use of large surface area dialyzers, high blood flow rates, high dialysate flow rates, and increased dialysis time can increase the delivered dose of hemodialysis (Powers et al. 2000).

8 Our multivariate regression model includes facilities' profit status instead of chain affiliation because of the overlap between these two variables.

Data sources and constructing the analytical file

This study used 2000 data derived from the cost reports submitted by freestanding dialysis providers, the Renal Beneficiary Utilization System/Program Management and Medical Information System (REBUS/PMMIS) file, a database that integrates administrative and clinical data on end-stage renal disease (ESRD) patients, and institutional outpatient claims submitted by freestanding dialysis providers.

Cost reports. All dialysis facilities are required to submit cost reports to Medicare each year. We used information obtained from the cost reports to calculate:

- Medicare-allowable cost per treatment for furnishing composite rate services, and the aggregate cost per treatment for furnishing both composite rate services and separately billable drugs, including erythropoietin;
- facility size by volume of hemodialysis treatments furnished;
- number of staff furnishing care; and
- provider characteristics, including geographic location and profit status.

As noted in MedPAC's March 2003 report, CMS's contractors—fiscal intermediaries—have not yet audited the 2000 cost reports to ensure that the costs reported by providers are Medicare-allowable. The Balanced Budget Act of 1997 required the Secretary to audit the cost reports of each dialysis provider at least once every three years beginning in 1996. CMS's recent audit of the 1996 data resulted in reopening and auditing 62 percent of submitted cost reports. The

auditing of more recent cost reports is currently underway but not complete.¹

REBUS/PMMIS file. This data system collects and integrates clinical and administrative data on ESRD patients, including data gathered at ESRD entitlement, quarterly summaries of dialysis, transplantation records, inpatient utilization, and death. Information obtained from this file and used in our analysis includes:

- beneficiary demographics,
- patient weight,
- date of death,
- dialysis method of treatment (modality), and
- comorbidities at the most recent start of dialysis treatment, including: AIDS, alcoholism, cancer, cardiac arrest, heart failure, chronic obstructive pulmonary disease, stroke, diabetes, drug addiction, cardiac dysrhythmia, hypertension, ischemic heart disease, acute myocardial infarction, pericarditis, peripheral vascular disease, use of tobacco, inability to ambulate, and inability to transfer.

Institutional outpatient standard analytic file. Dialysis facilities bill Medicare on institutional outpatient claims. In addition to service and payment information, these claims code ongoing clinical information on adequacy of dialysis and anemia status. Anemia values, measured in terms of beneficiaries' hematocrit level, are coded in the value trailers on the records. The first Healthcare Common Procedure Coding System modifier on the revenue center trailer gives ranges for the urea reduction ratio (URR), a measure of dialysis adequacy for the dialysis session being billed.

Constructing the analytical file. The final analytical file is a facility-level file. Construction took several steps, adding data from each of the sources noted above.

For each beneficiary, we calculated mean URR and hematocrit. Next, we aggregated these data to the provider level. Since approximately 25 percent of beneficiaries used multiple facilities during the year, we calculated provider-level averages for dialysis adequacy and anemia status by proportionally attributing the value of these outcome measures to a given facility based on the length of time care was furnished to each beneficiary (based on the first date on the first bill and last date on the last dialysis bill). We calculated rates of transplant and death on a per-beneficiary basis and attributed them to the beneficiary's principal dialysis provider, defined as the provider accounting for the greatest span of time during the year.

We edited the cost report data in stages. First, we dropped providers reporting for a partial year, and providers whose calendar-year claims data and cost reports did not substantially overlap. These changes avoid mismatch between cost and volume numbers drawn from the claims and those reported on the cost reports. We also dropped outlier or grossly misreported data from the analysis. For the key variables (cost per treatment, cost including drugs, cost per dose of erythropoietin), we dropped records at the 1st and 99th percentiles of the distribution. Editing of the file resulted in dropping nearly one-third of facilities, and these were concentrated in nonchain facilities. We included a total of 1,921 facilities in our analysis. ■

1 For example, the proportion of 1997 to 2001 reopened or audited cost reports range from 0.1 percent in 2001 to 11 percent in 1998. During fiscal year 2003, the fiscal intermediaries (FIs) will audit one-third of facilities with cost report years ending between January 1, 2001 and December 31, 2001. In fiscal years 2004 and 2005, the FIs will audit the remaining ESRD cost reports for this time period (CMS 2002).

Quality of care and costs for composite rate services

In a bivariate analysis, we find that both lower- and higher-cost facilities had similar proportions of beneficiaries receiving adequate dialysis (85 percent), not suffering from anemia (70 percent), and dying (17 percent). Only rate of transplantation was modestly greater for higher than lower-cost facilities (Table 6-3). The proportion of beneficiaries undergoing transplantation increased from 2.2 to 2.5 percent for lowest- and highest-cost facilities, respectively.

Once we move to multivariate regression analysis, we find that, after adjusting for facility and patient characteristics, average cost per treatment for composite rate services is unrelated to any of our measures of beneficiaries' outcomes (Table 6-4). Facilities' profit status is also not significantly related to either dialysis adequacy or anemia status, a finding consistent with Frankenfield et al. (2000).

Certain demographic and clinical characteristics are significantly related to outcomes and our findings are generally consistent with those of other investigators.⁹ On average, outcomes decline with greater proportions of beneficiaries who are more difficult to dialyze or sicker. For instance, negative predictors of dialysis adequacy include treating a greater proportion of beneficiaries who are male, minorities, heavier, or diagnosed with certain illnesses such as heart failure, hypertension, and chronic obstructive pulmonary disease. Dialysis adequacy is positively associated with increasing years on dialysis, which is consistent with evidence that the level of renal function is lower during the first year of dialysis.

Quality of care and costs for both composite rate services and injectable drugs

In our bivariate analysis looking at costs for composite rate services and injectable drugs together, the proportion of beneficiaries receiving adequate dialysis

TABLE 6-3

Quality of dialysis care and beneficiaries' outcomes, by quartile of average cost per hemodialysis treatment, 2000

Cost quartile	URR \geq 65%	HCT \geq 33%	Mortality rate	Transplant rate
Percent of all beneficiaries				
All facilities	85%	70%	17%	2.3%
Composite rate services only				
Quartile 1	85%	70%	16%	2.2%
Quartile 2	85	69	17	2.3
Quartile 3	85	70	17	2.4
Quartile 4	84	70	17	2.5
Composite rate services and injectable drugs				
Quartile 1	87%	70%	17%	2.1%
Quartile 2	85	70	16	2.4
Quartile 3	84	69	17	2.3
Quartile 4	83	69	17	2.5

Note: HCT (hematocrit), URR (urea reduction ratio). Lowest cost quartile is 1; highest cost quartile is 4. Data are weighted by the number of in-center hemodialysis treatments.

Source: Analysis by Direct Research LLC of 2000 cost reports and claims submitted by freestanding dialysis facilities to CMS.

declines with facilities' aggregate cost per treatment, from 87 percent for lowest-cost facilities to 83 percent for highest-cost facilities (Table 6-3). Rates of transplantation modestly increase as providers' costs increase, from 2.1 to 2.5 percent for lowest- and highest-cost facilities, respectively. Across all facilities, 70 percent of all beneficiaries achieved hematocrit levels greater than 33 percent and mortality rates ranged between 16 and 17 percent.

The multivariate regression analysis shows a negative association between facilities' costs and three of the four outcome measures: dialysis adequacy, anemia management, and mortality rate (Table 6-5, p. 100). On average, dialysis adequacy and anemia status are lower and mortality rates are greater for higher- than for lower-cost facilities. We again find no association between facilities' profit status

and outcomes. As expected based on our earlier findings, on average, facilities' outcomes decline with increasing proportions of beneficiaries who are more difficult to dialyze or sicker.

Implications and next steps

Our analysis shows that the quality of dialysis care is not linked to the cost per treatment for composite rate services. This finding suggests that providers are not stinting on furnishing composite rate services. The lack of a relationship between dialysis quality and composite rate costs also suggests that many dialysis providers have responded to the economic incentives created by Medicare's prospective payment system and reporting system by improving productivity without compromising quality. The opposite

⁹ Our lack of a significant negative relationship between diabetes and mortality differs from Port et al. (2001), but is consistent with others, such as McClellan et al. (1998).

**TABLE
6-4**

Multivariate regression analysis of facility-level cost per treatment for composite rate services and beneficiaries' outcomes, 2000

Variable	URR ≥ 65%	HCT ≥ 33%	Mortality rate	Transplant rate
Intercept	1.07803**	0.75203**	-0.07046	0.12733**
Facility characteristics				
Average cost	-0.00015	-0.00014	8.83E-05	1.94E-05
Hospital wage index	-0.03087**	0.00866	-0.02099*	-0.00193
Size squared	-4.72E-12	-5.20E-11**	-1.43E-11	1.13E-11*
Non-Medicare share	-0.01113	-0.0213	0.02824**	0.00807*
For profit	-0.00654	0.00439	0.00757	0.000954
Beneficiary characteristics				
Age	6.11E-06**	1.35E-06	1E-05**	-2.5E-06**
Male	-0.10698**	0.04634*	0.00176	0.00371
Minority	-0.04646**	-0.05092**	-0.03275**	-0.01622**
Weight (in pounds)	-0.00141**	-0.00054**	0.000416**	-0.00022**
Years on dialysis	0.00738**	0.00437	-0.00522**	7.14E-05
Heart failure	-0.0891**	-0.04189	0.03002	0.00358
COPD	-0.12619*	-0.14766**	0.15373**	-0.00891
Diabetes	0.07494**	0.03344*	-0.01866	-0.00315
Cardiac dysrhythmia	0.09208	0.08366	-0.10479*	-0.01058
Hypertension	-0.0563*	-0.0041	-0.02113	-0.00387
Peripheral vascular disease	0.09247**	0.08364**	-0.01051	0.00933
Unable to ambulate	-0.20177*	-0.19119*	0.06436	0.00262
R ²	0.14	0.08	0.19	0.05

Note: COPD (chronic obstructive pulmonary disease), HCT (hematocrit), URR (urea reduction ratio).
 Coefficients reported for: cost per treatment; profit status; and variables found to be significant at p < 0.05. See text box on page 97 for a list of all variables considered in this analysis and Hogan (2003) for complete results. Data are weighted by the number of in-center hemodialysis treatments.
 * Statistically significant at 5 percent level.
 ** Statistically significant at 1 percent level.

Source: Analysis by Direct Research LLC of 2000 cost reports and claims submitted by freestanding dialysis facilities to CMS.

interpretation—that all facilities are stinting on composite rate services—is less likely given the substantial and clinically significant improvement in hemodialysis adequacy and anemia status since 1993.

Considering both costs for furnishing dialysis and injectable drugs together, we find that beneficiaries' outcomes are poorer for facilities with higher than average costs. One interpretation is that, since these drugs are paid on a per dose basis, some providers may not furnish these drugs as efficiently as if they were

paid for prospectively. The profitability of injectable drugs subsidizes the lower margins under the composite rate and may provide incentives for their overuse, to the extent possible, by certain providers. Spending varies widely for injectable dialysis drugs by Medicare; for instance, in 2000, per patient per month spending for intravenous iron and vitamin D analogues varied by a factor of two between freestanding dialysis facilities based on their chain affiliation and profit status (USRDS 2002).

Alternatively, this finding may suggest that higher-cost facilities may be furnishing care to more medically complex beneficiaries. As noted earlier, providers have the incentive to furnish as many of these drugs as the severity of the patient warrants since these injectable drugs are paid on a per dose basis. Our model, however, adjusts outcomes for medical complexity by including information about beneficiaries' demographic characteristics, duration of dialysis, 16 comorbidities, and functional status. However, there may be some unresolved case-mix differences. Either interpretation supports previous MedPAC recommendations:

**TABLE
6-5**

Multivariate regression analysis of facility-level cost per treatment for both composite rate services and injectable drugs and beneficiaries' outcomes, 2000

Variable	URR ≥ 65%	HCT ≥ 33%	Mortality rate	Transplant rate
Intercept	1.1132**	0.75667**	-0.09058	0.12878**
Facility characteristics				
Average cost	-0.00041**	-0.00017*	0.000239**	7.29E-06
Hospital wage index	-0.02109*	0.00974	-0.02659**	-0.00148
Size squared	8.22E-12	-5.16E-11**	-2.17E-11	1.21E-11*
Non-Medicare share	-0.01134	-0.02222	0.02838**	0.00825*
For profit	-0.00727	0.00448	0.00799	0.000885
Beneficiary characteristics				
Age	6.26E-06**	1.4E-06	9.93E-06**	-2.5E-06**
Male	-0.10354**	0.0467*	-0.0002	0.00387
Minority	-0.04443**	-0.04973**	-0.03393**	-0.01632**
Weight (in pounds)	-0.0013**	-0.00049**	0.000352*	-0.00023**
Years on dialysis	0.00747**	0.00429	-0.00527**	9.41E-05
Heart failure	-0.0879**	-0.04068	0.0293	0.00341
COPD	-0.11988*	-0.14567**	0.1501**	0.00888
Diabetes	0.06834**	0.03071*	-0.01484	-0.00304
Cardiac dysrhythmia	0.08668	0.08236	-0.10169*	-0.01068
Hypertension	-0.05916**	-0.00458	-0.01949	-0.00397
Peripheral vascular disease	0.09524**	0.08454**	-0.01211	0.00933
Unable to ambulate	-0.2146*	-0.19473*	0.07174	0.00247
R ²	0.16	0.09	0.19	0.05

Note: COPD (chronic obstructive pulmonary disease), HCT (hematocrit), URR (urea reduction ratio).
 Coefficients reported for: cost per treatment; profit status; and variables found to be significant at $p < 0.05$. See text box on page 97 for a list of all variables considered in this analysis and Hogan (2003) for complete results. Data are weighted by the number of in-center hemodialysis treatments.
 * Statistically significant at 5 percent level.
 ** Statistically significant at 1 percent level.

Source: Analysis by Direct Research LLC of 2000 cost reports and claims submitted by freestanding dialysis facilities to CMS.

- The composite rate bundle should include commonly used services currently excluded from it (MedPAC 2001). This would offer providers an incentive to furnish injectable drugs more efficiently than paying on a per dose basis.
 - Payment for outpatient dialysis services should adjust for differences in patient case mix, as well as other factors known to affect providers' costs to deliver high-quality care (MedPAC 2001). The findings from this study show the importance of adjusting for patient case mix with an expanded payment bundle that includes injectable drugs.
- Assessing the link between quality and efficiency is critical when making judgments about the appropriateness of dialysis providers' costs and payment adequacy. Each year, MedPAC considers the adequacy of Medicare's dialysis payments and recommends to the Congress updates of the composite rate. The finding from this analysis—that lower costs do not appear to compromise quality of care—will be useful to the Commission's discussion of how we judge the appropriateness of dialysis providers' costs and how Medicare's payments compare relative to efficient providers' costs. As a next step, it may be useful to compare the margins for higher quality/lower cost providers to those of lower quality/higher cost providers.
- This link is also important for the other providers for which we make annual payment recommendations, including hospitals, skilled nursing facilities, and home health agencies. As reliable information becomes available on quality of care and providers' costs, MedPAC plans to replicate this research for these other providers.

As discussed in Chapter 7, the Commission believes it is important for Medicare to explore the use of nonfinancial and financial incentives to improve quality of care. To date, Medicare has only used nonfinancial incentives, particularly public disclosure of quality of care information, to improve quality in both the traditional Medicare program and Medicare+Choice. Currently, the payments providers receive for the higher-quality care they produce are no higher than they would be for lower-quality care.

Having a set of credible, broadly understood, and accepted measures of quality is a critical component of designing incentives. Based on these criteria, implementing both nonfinancial and financial incentives for dialysis providers is more feasible than for others. As mentioned earlier, CMS measures and publishes information on dialysis quality nationally and for individual facilities.

CMS accomplished the positive trend in improving dialysis adequacy and anemia status since the mid-1990s without the use of financial incentives by Medicare. Rather, quality improvement efforts undertaken by providers and the end-stage renal disease (ESRD) networks and CMS's efforts in measuring and reporting dialysis quality have influenced dialysis quality.¹⁰ Both nonfinancial and financial

incentives, however, might be useful tools to improve other processes of dialysis care.

One area increasingly recognized as a critical component of care is the management of hemodialysis patients' vascular access.¹¹ Vascular access care accounts for about 10 percent of Medicare spending for hemodialysis patients and is the second leading reason for hospitalization for these patients (USRDS 2002). In 1999, CMS began reporting on three measures of vascular access management in its Clinical Performance Measurement Project.¹² This quality measure, however, is not publically reported for individual facilities by the agency. CMS data show that opportunities exist to enhance beneficiaries' quality of care by modifying vascular access practice patterns. For instance, only 30 percent of hemodialysis patients had arteriovenous fistulas, the vascular access type recommended in the clinical guidelines developed by the NKF, compared with 46 percent of patients with arteriovenous grafts and 24 percent with catheters (CMS 2002). In addition, only 47 percent of patients with an arteriovenous graft had the graft routinely monitored for the presence of stenosis.

Dialysis facilities, nephrologists, vascular surgeons, and radiologists together make decisions about beneficiaries' vascular

access care. Publically reporting vascular access measures for individual facilities on CMS's Dialysis Facility Compare website may be one way to improve the quality of vascular access care.¹³ Financial incentives also should be considered if public disclosure alone does not result in improvement.

Finally, there are other measures of dialysis quality in addition to the four measures used in this analysis. The NKF has developed clinical guidelines for vascular access management, adequacy of peritoneal dialysis, and nutrition management. CMS nationally reports these measures in its Clinical Performance Measurement Project. This study did not include the measures of vascular access management and peritoneal dialysis adequacy because of data reliability and availability issues. We did not include the measures of nutrition management because Medicare's payment policies restrict the number of beneficiaries who qualify for nutritional interventions. We also did not assess the relationship between other outcomes of care—patient satisfaction and reasons for hospitalization—and providers' costs because of data availability issues. In the future, it may be fruitful to assess the relationship between these processes and outcomes of dialysis care and providers' costs. ■

10 In 1978, the Congress established the ESRD networks to provide regional oversight for Medicare-certified dialysis facilities. The networks' goals include ensuring that ESRD beneficiaries have immediate access to renal treatment and are furnished quality care through medical standards developed by the scientific community. There are currently 18 networks funded by withholding 50 cents per treatment from the composite rate paid to facilities.

11 Vascular access is the site on a patient's body where blood is removed and returned during hemodialysis. The provision of adequate hemodialysis is dependent on repeated and reliable access to the patient's blood stream. Three types of vascular access are predominantly used: arteriovenous fistulas, arteriovenous grafts, and catheters. The most common complications of these types of vascular access are stenosis (narrowing of graft and blood vessel), infection, and thrombosis (clotting). Arteriovenous fistulas are associated with fewer complications than arteriovenous grafts and catheters.

12 Based on the clinical guidelines developed by the National Kidney Foundation, CMS's Clinical Performance Measure Project calls for having: (1) arteriovenous fistulas as the access for at least 50 percent of incident hemodialysis patients; (2) less than 10 percent of prevalent hemodialysis patients maintained on catheters as their permanent dialysis access; and (3) routine monitoring of patients' arteriovenous grafts for stenosis.

13 As noted in Chapter 7, CMS does not yet release information about individual physicians. Several issues have complicated efforts to implement nonfinancial and financial incentives for individual physicians, including the availability of sufficient sample size to ensure data validity.

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CHAPTER

7

**Using incentives to improve the
quality of care in Medicare**

R E C O M M E N D A T I O N

The Secretary should conduct demonstrations to evaluate provider payment differentials and structures that reward and improve quality.

***YES: 15 • NO: 0 • NOT VOTING: 0 • ABSENT: 2**

***COMMISSIONERS' VOTING RESULTS**

Using incentives to improve the quality of care in Medicare

One of Medicare's most important goals is to ensure that beneficiaries receive high-quality health care. Medicare already uses nonfinancial incentives and other tools for improving quality, but generally the current payment system fails to financially reward plans or providers who improve quality. Medicare beneficiaries and the nation's taxpayers can not afford for the Medicare payment system to remain neutral towards quality. MedPAC recommends that Medicare pursue demonstrations of provider payment differentials and revised payment structures to improve quality. The program should focus its efforts to improve quality in three areas: (1) settings that offer ready measures and standardized data collection—Medicare+Choice plans and inpatient rehabilitation facilities; (2) settings—such as hospitals and physician offices—that affect a large number of beneficiaries; and (3) care delivered across settings.

In this chapter

- How incentives relate to improving health care quality
 - Private sector use of incentives
 - Applying incentives to improve quality in Medicare
 - Examples of private sector efforts to use incentives to improve quality
-

Medicare has a responsibility to ensure access to high-quality care for its beneficiaries. Yet Medicare beneficiaries receive care from a system known to have quality problems. While care is improving in several settings, significant gaps remain between what is known to be good care and the care delivered (Jencks et al. 2003). Studies documenting the gap between high-quality care and the care currently delivered have called attention to the need for improvement. The safety of patients, particularly in hospital settings, is also of concern (IOM 2000).¹

At the same time, measures of quality and guidelines for appropriate care are becoming increasingly available. The Medicare program has been a leading force in these efforts to develop and use quality measures, often leading initiatives to publicly disclose quality information, standardize data collection tools, and give feedback to providers for improvement. CMS has also revised its regulatory standards to require that providers, such as hospitals and home health agencies, have quality improvement systems in place. CMS's focus on quality provides a strong foundation for future initiatives.

While Medicare already uses many tools for improving quality, the lack of financial incentives and the presence of disincentives to improve quality allow the quality gap to persist (IOM 2001). In the Medicare program, the payment system is largely neutral or negative towards quality. All providers meeting basic requirements are paid the same regardless of the quality of service provided. At times providers are paid even more when quality is worse, such as when complications occur as the result of error. In the Medicare+Choice (M+C) program, some types of plans are held to higher standards than others, but paid the same, potentially creating disincentives for investing in quality.

The mechanism of fee-for-service payment also leads to fragmented care delivery. This is particularly problematic

for the increasing number of Medicare beneficiaries living longer with one or more chronic conditions who need management of care across settings and at home.

Some of these negative or neutral incentives also exist in the private sector. Many private purchasers and plans are experimenting with mechanisms to counterbalance these forces and reward those who provide high-quality care. Yet they all agree that Medicare's participation in these efforts is critical.

To develop strategies for Medicare to further use incentives, we interviewed a wide spectrum of quality experts, plans, providers, and purchasers. We found that many private sector purchasers and plans are beginning to use financial and nonfinancial incentives to improve quality. We also found that Medicare is using several nonfinancial incentives and building the infrastructure necessary to implement financial ones.

We conclude that Medicare must find ways within its current payment systems and explore alternative payment structures to reward quality providers and encourage better coordination of services across settings. Further, the Commission believes that these efforts should focus on three specific areas:

- settings with a ready environment for tying quality measures to payment incentives—Medicare+Choice and inpatient rehabilitation facilities. Both settings have well-developed and accepted sets of measures and standard data collection tools, and both present opportunities for improvement on a variety of aspects of care. In addition, groups of providers from those settings have proposed strategies for distributing payment based on those measures.

- settings where improving quality affects a large number of Medicare beneficiaries—hospitals and physician offices. They present many opportunities for improvement and affect many beneficiaries. For hospitals, many measures are available, including those used in CMS's recently announced voluntary public disclosure initiative with the private sector. CMS could link one set of measures, or a combination, to incentives in a demonstration. Measures useful for comparisons at the individual physician office level are limited. However, the agency could link incentives to measures in specific domains of care or to measures applied at a group practice level. Incentives for both physicians or hospitals could also be based on participation in data collection or public disclosure efforts.

- across settings to encourage better collaboration and coordination between providers. Strategies to build incentives into fee-for-service (FFS) payment mechanisms and to develop alternatives to FFS payment should be explored to encourage the development of organized systems of care capable of managing all aspects of a patient's care across settings and time.

In addition to identifying CMS's key priorities, we discuss the reasons incentives are useful for stimulating action, findings from our analysis of current private and public sector use of incentives, and strategies for addressing any unintended consequences resulting from implementing these types of incentives in the Medicare program. The last section of the paper discusses private sector use of incentives, including illustrative examples.

¹ The Commission believes that assuring the safety of care is part of the goal of improving quality. Therefore, in this chapter we describe it as one component to consider in developing strategies to improve quality.

How incentives relate to improving health care quality

The need to improve the quality of health care is widely acknowledged. A growing body of evidence finds that health care is inappropriately used throughout the system (Fisher et al. 2003, IOM 2001, Wennberg et al. 2002) in both low- and high-utilization regions (Chassin et al.

1987). How health care is delivered depends on where someone lives, how many specialists are in their area, as well as how effectively well-known and evidence-based protocols are used. Under use, overuse, and unsafe practices appear to occur in all areas of the country and in all settings of care.

These problems occur along two dimensions. First, some care in individual settings does not meet appropriate clinical standards and is unsafe. Second, health care is fragmented and uncoordinated

across settings. This disjunction is particularly important to older and disabled persons with multiple chronic conditions who may benefit from care designed to coordinate treatment regimens. Many suggest that, absent broad system changes, goals for improvement will not be reached (IOM 2001) (see text box below). Strategies using incentives to improve quality must strive to encourage these system changes.

System changes to support quality improvement

While providers are motivated individually to provide the best care possible, the organization and incentives they work within often make it difficult to do so. Incentives to improve quality must build on the commitment of individuals and help create system support for delivery of the best care possible. Below are several key organizational supports for system change.

Leadership commitment to a culture of quality and safety Quality performance needs to be included as a regular topic of discussion at boards of directors and medical staff meetings. In addition, it could be used as criteria for evaluating effective management. This commitment will encourage more formal and informal mechanisms to be implemented to improve quality, such as the blame-free environment and information technology.

Blame-free environment Effective quality improvement, especially on safety-related problems, relies on a blame-free environment. To reach quality goals, the organization will need to “break down the authority gradient” and encourage health professionals as well as less-trained and -educated health care workers to identify problems and make suggestions to fix them (Weeks and Bagian 2003).

Information technology to measure and improve care Having the appropriate information available at the right time to make informed decisions is key to delivering quality health care. In health care, crucial decisions rely on a continually shifting information base. It is critical to move beyond our memory-based system. Incentives for quality encourage providers to invest in the computer-based systems to track and use the myriad of clinical information available and necessary to deliver high-quality care. Some providers are already investing in several forms of technology:

- Electronic medical records (EMRs). Often described as the silver bullet of health care quality, the use of an EMR to store and make available information on a patient’s past medical history, lab reports, and medications makes it possible for physicians and other health professionals to make better-informed decisions regarding care. Clinical pathways can also be embedded within an EMR. In addition, they allow an organization to measure and benchmark their care against other organizations and the care provided by numerous departments and personnel within

their setting. These tools could also make coordinated care across settings possible when, and if, data definitions are standardized.

- Management tools. Examples such as patient registries, clinical reminder systems, computerized provider order entry, and bar coding help clinicians manage a specific aspect of care.¹ Without patient registries or reminder systems it is difficult for physicians to identify patients in need of certain tests or exams. Without some form of computerized prescription ordering, those in the chain of decision making may not notice a contraindication for a specific patient, or that the dosage ordered is not the dosage produced from the pharmacy.
- Patient communications. E-mail communications with patients have been found to increase patient satisfaction and decrease the number of visits patients make to the practitioner (American College of Physicians 2003). Devices used in patients’ homes to monitor their health can make it easier for the patient to monitor their own condition and help identify the need for a medical intervention. ■

¹ These management tools are often embedded in an electronic medical record, but are also available on their own.

Why incentives are needed

The largest purchasers of health care—including Medicare as the single largest purchaser—often fail to reward and sometimes penalize plans or providers who make the changes necessary to improve quality. In Medicare, for example, plans and providers furnishing higher-quality care are paid no more than those furnishing lower-quality care. In fact, if a hospital reduces readmissions or complications, total payments might decrease. Geographic variations in care patterns we note in Chapter 1 are evidence that the payment system and incentives for quality are not aligned.

Furthermore, the health care market often fails to reward high-quality providers with higher volume. For many consumer goods, consumers can make their own educated choices based on multiple purchases and assessments of similar goods from different vendors. For other expensive consumer goods, reliable sources of comparative information exist. By contrast, health care consumers generally can not gather their own information on the comparative quality of providers, and often they do not have useful comparative information from other sources (Mehrotra et al. 2003, Shaller et al. 2003). If consumers can not make their choices based on the quality of providers, then high-quality providers can not be rewarded with higher volume.

Finally, when an entity makes improvements that decrease overall health care costs, often the resulting savings do not go to the entity that made the investment. If a physician group practice improves its protocols for managing diabetic patients, the result is often fewer hospitalizations. Yet, although the group practice invested the time and resources into improving care (without higher payments), the savings would go to the Medicare program.

In addition to the lack of incentives to improve care within settings, payment on a FFS basis does not support or encourage health care providers to work with each other and the patient to deliver high-quality care across settings and episodes of care. The payment system provides no reward for those providers who act on their own or with others to provide such care.

Purchasers' use of incentives for quality can counterbalance these negative or neutral signals providers and plans are currently receiving. Nonfinancial incentives, such as public disclosure of setting-specific information, could reward high-quality providers with increased volume, thus increasing revenue. Financial incentives could help providers benefit from savings that accrue elsewhere in the system, differentiate payments for high- and low-quality care, and reward those who seek to improve coordination. Although acting through different mechanisms, these incentives all work toward the objective of improving the quality of care for the most patients.

What kind of incentives are possible?

Through discussions with public and private sector purchasers and plans, we identified the following types of incentives that could be used, or used more broadly, by Medicare to encourage improvements in the quality of care beneficiaries receive. Of the incentives listed below, public disclosure, provider payment differentials, and to a lesser extent, cost differentials for enrollees were most commonly used in the private sector. The most common incentive in the Medicare program is public disclosure. However, CMS is developing many of the tools necessary to implement financial incentives and experimenting with other types of incentives such as shared savings and risk sharing.

- Public disclosure. Disclosing quality information on individual providers improves care in two ways. First, because providers want their performance to be as high as possible, they may improve their care. Second, volume may shift to the higher-performing providers, the result being that more beneficiaries receive better-quality care.
- Payment differentials for providers or plans. Paying providers or plans bonuses or higher payments for performance on quality measures benefits those who make the changes necessary to improve care.
- Cost differentials for beneficiaries. Requiring lower cost-sharing amounts for enrollees for plan premiums or lower copays for going to higher-quality providers encourages more enrollees to choose them. These incentives encourage plans and providers to improve quality, because greater volume and good publicity could follow from the cost-sharing differences.²
- Flexible oversight. This strategy for encouraging providers to improve the quality of care involves identifying potentially less burdensome regulatory requirements if an organization demonstrates a high level of performance or effort. This would reduce providers' costs of complying with government or purchaser requirements.
- Shared savings. By calculating savings from quality improvements and sharing them with those who invested the resources to improve quality, providers would want to improve. This strategy assures providers a return on their investments.
- Risk sharing and capitation. These payment mechanisms provide incentives for better overall

² An increase in patient volume may not always increase revenue. For example, if a hospital decreases complications it may result in lower lengths of stay and a greater availability of hospital beds. However, if the hospital sees a large volume of patients who are unable to pay the costs of their care, increasing patient volume may not increase revenue. In addition, if beneficiaries pay lower cost-sharing amounts, and the Medicare program does not make up the difference, the provider may lose revenue.

management of care across settings and time. These payments can apply to management for specific conditions or bundles of services, or for a period of time to cover beneficiaries' entire healthcare use.

Private sector use of incentives

Through our interviews we find that many purchasers and plans are experimenting with incentives for improving quality. Purchasers believe that many of these are effective. These efforts also reveal criteria for choosing effective measures that Medicare can use to best focus its resources and identify additional research needs.

The most prevalent incentives are public disclosure, payment differentials for providers, and cost differentials for beneficiaries. We find few examples where private purchasers or plans use shared savings or risk-sharing payment methodologies to improve quality. We do, however, find that private purchasers and plans often target their incentive initiatives at organizations—either group practices, networks, or health plans that use capitation or other forms of risk sharing—that they believe are more effective at improving quality. The payment structure for these organizations makes it possible for them to better coordinate care and track results than plans or individual providers paid on a fee-for-service basis. We also find one very good example of shared savings, but it may be difficult to reproduce in other settings.

The credibility of the information for comparing providers and plans is probably the most important factor in determining whether financial incentives—particularly those focused on enrollees—are possible to use for improving quality. Thus, most of these initiatives use well-accepted measures with existing mechanisms for

data collection. Many purchasers and plans couple information on quality with information on costs when identifying those eligible for rewards. Those purchasers and plans implementing incentives also face other difficult design issues, such as insufficient market share to obtain provider buy-in, or uncertainty about whether additional dollars or current payments would finance incentives.

In this section we discuss the criteria for identifying and using effective measures, and discuss key issues purchasers and plans face when designing and implementing various incentives. The last section in this chapter provides examples of the different types of incentives.

Choosing effective measures

The most important and difficult aspect of designing an incentives program is identifying appropriate measures. Conclusions from our interviews are formulated here as criteria Medicare could use to identify the most promising settings and types of care delivery practices for implementing incentives. While no setting's or delivery practice's quality measures will meet all of these criteria perfectly, the plans, providers, and purchasers say that all of these issues must be addressed in some fashion.

- To be credible, measures must be evidence based to the extent possible, broadly understood, and accepted. Evidence must show the process or structure measured is important to achieving the most desirable outcomes, and the measure itself should be valid and reliable. The data collection should be reliable and consistent across providers.

Measures developed by third parties, especially voluntary organizations with many stakeholders, gained broad acceptance in the private sector. In one example, the measures of quality of care for diabetes were based upon the best practices developed by the

American Diabetes Association, and used by the National Committee for Quality Assurance (NCQA) in its provider recognition program. To build understanding and acceptance for its measures, the private sector gave individual providers report cards to compare their performance with their peers before attaching an incentive to the scores. Providing feedback privately gave the provider the opportunity to identify and improve on problem areas before facing public scrutiny.

- Most providers and plans must be able to improve upon the measures; otherwise care may be improved for only a few beneficiaries. If the criteria for earning a reward is so demanding that providers or plans perceive it to be beyond their reach, then they may do nothing at all. Yet, a bar set too low may also fail to stimulate action among the majority of providers or plans. In either case, the measure would not meet the goal of improving the quality of care for many or most beneficiaries.
- Incentives should not discourage providers from taking riskier or more complex patients. For example, characterizing the quality of providers on the basis of the proportion of their patients who died or developed complications could make complex patients less attractive to providers. Since the accuracy of current case-mix adjusters is often questioned, purchasers and plans avoid indicators of quality such as outcomes measures in some settings that would require such an adjustment.³ Instead they use process or structural measures less likely to be affected by the complexity of the patient, such as the provision of preventive services or whether a hospital uses intensivists in its intensive care units (ICUs). Patient satisfaction, one measure of the

3 Avoiding outcomes measures is not a useful strategy in all settings. For example, dialysis and inpatient rehabilitation facilities and some M+C plan quality measures are based on outcomes of patient care.

outcome of care which is not as dependent on case-mix adjustment, is also widely used.

- Obtaining information to measure the quality of a plan or provider must not pose an excessive burden on any of the parties involved. To the extent possible, measures should be based on data collected as a routine part of care delivery or for multiple purposes. For example, home health agencies collect Outcomes and Assessment Information Set (OASIS) information for payment purposes, but it is also useful for measuring the functional improvement of patients. Data to construct measures for quality incentives could also come from information collected for private accreditors such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), NCQA, or other private sector employer or health plan initiatives.

Which types of incentives are most used?

The incentives used most often in the private sector are public disclosure, payment differentials, and enrollee cost differentials. In fact, a progression from nonfinancial incentives to financial incentives seems to be a common path.⁴

- **Provider feedback and public disclosure.** Most of our sources began the movement to financial incentives with projects designed to provide feedback to providers or to publicly disclose information on specific ones. This phase establishes the credibility and acceptance of the measures, develops the process for data collection, and creates enrollee and provider expectations that information on specific providers or plans will be made available. Plans and purchasers address concerns regarding risk adjustment and gain knowledge of providers' or plans'

ability to improve on the measures. These strategies lay the groundwork for financial incentives while improving quality.

- **Financial incentives.** Many organizations find public disclosure and feedback to providers do not achieve sufficient improvement. They then design financial incentives around the measures used for internal improvement or public disclosure. Although many organizations believe establishing incentives for providers before doing so for enrollees or consumers is the most effective strategy, some organizations go directly from public disclosure to enrollee incentives. Organizations that implement consumer incentives without doing so for providers say that they do so under the assumption that if more enrollees go to certain plans or providers, increased volume will act as a financial incentive for the provider or plan.

Other important incentives include shared savings and shared risk or capitation arrangements. Although these incentives are less commonly used—most incentive programs involved payment for quality in the context of FFS—many interviewees were interested in the potential for both to address the broader quality challenge of ensuring coordination of care across settings. The limited use of capitation as a quality incentive may say less about its potential to improve quality and more about the current state of the health care market and its reliance on broad, loosely organized networks of providers.

What were the results?

Private purchasers and plans that have implemented these various incentives found both cost savings and improved quality. While many of these initiatives are still in the design phase, several have been implemented. The examples below

represent only a few of the many purchasers and plans that cited improvements resulting from their incentive initiatives.

Disclosing information publicly on groups or individual providers changed provider behavior but less often changed patient choices. In New York, four years after the public release of information on hospital and physician risk-adjusted mortality rates, state deaths from cardiac surgery fell 41 percent. However, patients did not appear to use the information to choose higher-scoring providers (Chassin 2002). One place where releasing information to enrollees did result in enrollees shifting to higher-scoring providers was PacifiCare, a health plan in California. PacifiCare found that by releasing information on the quality of physician groups at the time of open enrollment, 30,000 enrollees chose the higher-quality physician groups. In addition, of the 41 measures reported, 22 showed improved mean performance and reduced variation across provider groups.

Paying providers differently based on their quality performance also seems to encourage providers to improve quality. Empire Blue Cross Blue Shield formed a group with several of its large employer clients to provide bonuses to hospitals that implement two structural systems known to improve the quality and safety of hospital care: (1) computerized physician order entry (CPOE) and (2) staffing intensive care units (ICUs) with physicians who have qualifications in critical care medicine. In 2002 the number of hospitals with which they contracted to implement both improvements increased from 10 to 50. The Employers Coalition on Health in Rockford, Illinois provided monetary bonuses for its physician groups that improved care for their diabetic patients. After only one year, the coalition was able to raise the bar for the bonus from 60 to 65 percent of patients meeting target hemoglobin levels.

⁴ This progression was not conscious; the employer or plan did not intend to create buy-in for the eventual goal of using financial incentives. Often the progression took a number of years.

Cost differentials for enrollees are usually designed to lower costs to the enrollees when they choose a preferred health plan or when they seek care. Many of these initiatives are still in the planning stage. However, General Motors (GM) has found that providing its salaried employees and retirees enrolled in HMOs lower premiums based on quality and cost information has resulted in employees choosing higher performing plans, which are generally lower cost. The result: more employees receiving care from higher-quality plans and cost savings for GM and its employees of \$5 million in 2001.

Applying incentives to improve quality in Medicare

Historically, except for conditions of participation for providers and plans and limited utilization review, the Medicare program has relied on providers to ensure that beneficiaries received high-quality care. This was, in part, because the original statute directed the program to leave decisions regarding care delivery to providers and because few measures or guidelines for quality had been developed at that time. More recently, Medicare has taken a strong, proactive approach towards the quality of care, seeking to continually improve care for beneficiaries.

Recognizing that an inspection approach focusing on individual poor performers would only improve care for a few beneficiaries, CMS reengineered its peer review organization program in the early 1990s to work to improve the overall level of quality beneficiaries receive, especially in hospitals. This shift to what is now called the quality improvement organization (QIO) program has resulted in the development of numerous quality measures and an infrastructure to assist providers to improve. The agency's public reporting initiative has provided a strong

impetus for quality improvement for M+C plans, dialysis facilities, nursing homes, and most recently, home health agencies. The Commission strongly supports these efforts to measure and improve care and believes CMS should continue to expand public reporting of provider quality and use of the QIOs to assist providers in improving quality.

In this section we describe Medicare's current efforts to measure and improve quality, and conclude with a recommendation that CMS explore the use of provider payment differentials and alternative payment structures to improve quality through its demonstration authority. The Commission identifies three priority areas for the Medicare program: (1) settings where measure sets and data collection tools are credible and broadly used, and proposals for distributing payment have been developed—M+C plans and inpatient rehabilitation facilities; (2) settings that impact a large number of beneficiaries—hospitals and physicians—using more limited data sets; and (3) across settings where providers could work together to better coordinate care. The section ends with guidance for CMS on issues to consider in developing demonstrations, and for policymakers to consider if implementing these types of incentives more broadly.

Current Medicare quality efforts

CMS is building and using the tools necessary to implement incentives. It uses two nonfinancial incentives to improve quality—flexible oversight⁵ and public disclosure. By collecting and analyzing data and providing feedback to providers, it identifies appropriate measures and data collection systems to use for implementing financial incentives. In addition, CMS uses its demonstration authority to explore various payment structures, such as shared savings and

capitation, which could also be used as incentives to improve quality. Beyond its initiatives focused directly on quality improvement, CMS has a variety of tools it can use with either financial or nonfinancial incentives (see text box, p. 114).

As noted previously, a critical part of the CMS strategy for improving care is disclosing quality information publicly on M+C plans, nursing homes, dialysis facilities, and home health agencies. Public disclosure provides information to help consumers choose providers and plans, and encourages providers and plans to improve care for beneficiaries. The measures used to compare these organizations are, for the most part, broadly understood and accepted. For M+C plans, the measures often overlap with private accreditation and other purchaser requirements. For nursing homes and home health agencies, the information used to develop the measures is already collected for payment and care management purposes. Industry acceptance is widespread for the dialysis measures.

The results from these efforts are encouraging. Scores on the measures for M+C plans and dialysis facilities have continued to improve. While the improvement is not solely a function of CMS's public release strategy, there is little question of the importance of the Medicare initiative in focusing provider attention on improving care on these measures. The nursing home initiative is new, but CMS believes that the disclosure will improve quality. Since the public release of nursing home information began, the QIOs—the organizations under contract with CMS to help providers improve care—have seen nursing home requests for technical assistance increase dramatically. The public release of home health agency scores in April 2003 is too recent to characterize the results.

5 CMS is implementing one form of flexible oversight in the M+C program by allowing plans that have reached a certain level of performance on a required quality measure to opt out of the national priority project on that topic for one year. This year, several plans will not have to improve because they already have high mammography screening rates.

Tools Medicare uses to improve quality

In addition to purchasing health care, Medicare also regulates, makes coverage decisions, and sponsors research. The Institute of Medicine found that Medicare can direct resources towards quality improvement in each of its roles (IOM 2002b).

In our January 2002 report on quality, MedPAC described the program's current regulatory activities and made recommendations for improving quality of care through quality improvement standards. Establishing standards creates clear expectations; yet, standards tend to rely on external motivation and negative incentives. Incentives for quality complement regulations by rewarding innovation and improvement that flow up from providers themselves rather than down from the administration of the program.

Medicare could consider using coverage policy to improve quality, or eliminate payment for services that contribute more to costs without improving quality. For example, some

have suggested that Medicare find ways to limit payment in hospitals for costs which result from a preventable medical error. Alternatively, Medicare could improve the quality of management across settings of care by establishing payment for a bundle of services.

As a significant sponsor of research, Medicare has already taken steps toward improving quality. Medicare has sponsored the development of performance measures for several types of providers and implemented several demonstration projects to test quality incentives. However, researchers at Harvard University (Fernandopulle 2003) find that additional research is needed to develop more robust performance measures to explore the role of patients in directing their own choices. For example, Medicare could test the costs and benefits of a measure set with many, less robust measures against one with a few very powerful ones. ■

Public release of information comparing hospitals and individual physicians on the basis of quality is more difficult.⁶ While progress has been made on hospital measurement, hospitals do not yet routinely collect information on a uniform set of measures. Hospitals serve so many different types of patients, it has been difficult for CMS or the JCAHO to agree upon a set of measures that reflect a broad enough spectrum of hospital services to make comparisons. However, as of June

2002, JCAHO requires those hospitals it accredits (representing 95 percent of all hospital beds) to report performance on measures which are also used by CMS in the QIO program.⁷ In addition, CMS has worked with the National Quality Forum (NQF) to identify a set of hospital measures that many stakeholders could endorse. The NQF, whose members include hospitals, JCAHO, CMS, private sector purchasers, and consumers, has endorsed a set of hospital measures.

CMS is also working with a coalition of private sector organizations on a voluntary disclosure initiative. Relying on 10 measures used by the QIO program and the JCAHO, CMS and its private sector partners hope to learn more about whether publicly disclosing information can successfully support hospitals' improvement efforts.⁸ Another primary challenge for CMS is deciding how to collect the information for measures without creating an undue burden on themselves or the hospitals.

For individual physician offices, the difficulty for CMS and other private plans has been identifying measures that reflect enough cases for valid comparisons. For example, while provision of certain screening services for diabetes can be measured, some physicians will not see enough diabetics for their scores to be relevant. Further, because diabetics make up differing shares of physicians' practices, other quality measures may be more indicative of the performance of physicians who see few diabetics. These statistical issues are not impossible to address, but they do complicate efforts to publicly disclose information or implement financial incentives. They also mean that data collection may need to be more expansive to reflect a wide variety of patients and to ensure sufficient sample size for validity.

CMS is working to define quality measures to assess clinician performance in providing ambulatory care for beneficiaries with chronic diseases through a three-year initiative called the Doctors Office Quality (DOQ) project. CMS collaborates with a variety of private sector organizations and contracts with three QIOs to pilot measures and develop and evaluate strategies for improvement. The American Medical Association-coordinated Physician Consortium for

6 Since the release of hospital mortality data, CMS has not publicly released information on hospitals, but several private sector health plans have publicly provided information on individual hospitals and also varied payment levels for hospitals based on quality measures.

7 Hospitals have a choice of conditions upon which to collect data for JCAHO accreditation. Therefore, while this set of measures is a standard set, all hospitals do not collect comparable data.

8 The groups involved in the initiative include: American Hospital Association, Federation of American Hospitals, American Association of Medical Colleges, National Association of Children's Hospitals and Related Institutions, the AFL-CIO, Agency for Healthcare Research and Quality, AARP, NCGA, and JCAHO.

Performance Improvement and NCQA assist the project by providing CMS with evidence-based performance measures and reporting tools. The agency looks at measures in three areas: (1) clinical quality; (2) systems of care, for example, a measure of the system for follow-up of abnormal laboratory results; and (3) patient experience of care.

Currently, CMS uses provider feedback as opposed to public release of measures as the primary tool for improving quality of hospital and physician services in part because of the limitations on available measures for these settings. Through the QIO program, CMS collects state-level data on physicians and hospitals on inpatient and outpatient measures. Each state has a QIO accountable for statewide improvement on the hospital and physician measures. Hospitals and physicians are not required to work with the QIOs, but many do. This program has led to improvements in care in the inpatient and outpatient settings (Table 7-1, p. 116) and the identification of measures that could be used in the future to apply financial incentives.

CMS is also working on several demonstration projects to test various payment methods that might encourage providers to improve quality. However, current activities do not focus on the incentives we find most prevalent in the private sector—financial differentials for providers and varied enrollee cost sharing. The demonstrations focus primarily on shared savings, capitation, and a wide variety of other tools to improve care for certain types of diseases.

In one demonstration, CMS is evaluating the prospect of shared savings by focusing on improving care for beneficiaries with chronic conditions. The demonstration allows physician group practices to share in some of the savings they may generate through better care management. An expected amount of spending is calculated per beneficiary, and if savings materialize, the Medicare program will share them

with the group practice. Portions of the savings that go to the group practice are based on achieving quality goals. CMS is also seeking proposals for a disease management demonstration that uses capitated payment and a variety of other types of disease management models. By focusing on group practices, CMS avoids some of the statistical problems of measuring the quality of care at the individual physician level.

Should Medicare implement financial incentives?

CMS efforts to publicly disclose information on quality and provide feedback to providers are essential for improving quality and building the infrastructure necessary to distinguish providers on the basis of quality. The Commission strongly supports this work and believes it should be expanded.

Further, as the nation's single largest purchaser of care, Medicare must lead efforts to improve quality through the use of financial incentives. Medicare's beneficiaries and the nation's taxpayers can no longer afford for Medicare payment to remain neutral towards quality. Medicare's efforts are urgently needed because results from private sector efforts alone may take a much longer time to show the effect.

RECOMMENDATION

The Secretary should conduct demonstrations to evaluate provider payment differentials and structures that reward and improve quality.

IMPLICATIONS

Spending

- CMS does not have the authority to design a demonstration that is not budget neutral; therefore, this recommendation would not increase spending.

Beneficiary and provider

- The beneficiaries in the demonstration—and if implemented more broadly, other beneficiaries—should see improvements in care.
- Depending on how incentives are designed, some providers could receive higher payments or lower payments. In addition, providers or plans may need to shift resources to data collection and improvement efforts.

Although the Commission is limiting its recommendation to demonstrations, CMS or the Congress may wish to use the criteria outlined in this chapter to develop strategies for paying differentials for quality in specific settings without going through demonstrations. Given the wide number of approaches to implementing payment differentials identified in our discussions with purchasers, strategies other than those discussed in this chapter could be simple to implement and improve care for beneficiaries. For example, if broad measure sets are yet to be developed in some settings, payment incentives could be linked with measures already found to be credible. Payment incentives could also be based on provider participation in measurement and improvement initiatives rather than specific measurement goals.

Of the incentives for improving quality we have examined, the Commission believes that the most promising one that Medicare is not currently using is payment differentials for providers.⁹ Defining the measures, collecting the data, and designing a system to distribute the dollars is a complex undertaking. However, CMS could build on and participate in the numerous private sector efforts in designing their demonstrations.

While legislation would be required to fully implement this type of incentive, the precedent exists to adjust Medicare payment for specific policy objectives, such as promoting access or teaching.

⁹ The CMS administrator has recently discussed publicly a planned demonstration where hospitals would be paid based on quality performance. Quality of care for certain conditions, such as heart care, would be measured, and depending on the hospital's performance, diagnosis related group payments for that condition might increase.

**TABLE
7-1**

National summary of Medicare quality indicators

	Median state rate 1998-1999	Median state rate 2000-2001	Weighted average 2000-2001	Median improvement	Median relative improvement
Inpatient setting					
Acute myocardial infarction					
Aspirin in 24 hours	84	85	84	3	15
Aspirin at discharge	85	86	84	2	14
Beta blockers in 24 hours	64	69	68	6	17
Beta blockers at discharge	72	79	78	7	28
ACEI in AMI	71	74	71	4	10
Smoking cessation	40	43	38	3	5
Congestive heart failure					
Evaluation of LVEF	65	70	71	5	14
ACEI in HF	69	68	66	-4	-10
Stroke					
Afibrillation	55	57	57	3	7
Antithrombotic	83	84	83	2	12
Nifedipine	95	99	99	4	77
Pneumonia					
Antibiotic in 8 hours	85	87	85	2	10
Antibiotic Rx	79	85	84	7	32
Blood culture	82	82	81	-2	-9
Influenza screening	14	27	24	9	10
Pneumonia screening	11	24	23	11	12
Any setting					
Adult immunization					
Influenza immunization	67	72	71	5	16
Pneumonia immunization	55	65	64	10	22
Breast cancer					
Mammography	55	60	77	5	11
Diabetes					
HbA1c	70	78	70	8	29
Eye exam	68	70	74	1	4
Lipid profile	60	74	76	16	38

Note: ACEI in HF (angiotensin-converting enzyme inhibitor in heart failure), AMI (acute myocardial infarction), HbA1c (hemoglobin A1c), LVEF (left ventricular ejection fraction). The rate is the percentage of beneficiaries receiving clinically indicated services. These data are representative samples of the median state for each indicator for both time periods. The weighted average is based on the number of beneficiaries in each state. Median improvement refers to the median absolute improvement across all states. Relative improvement is the absolute improvement divided by the difference between the baseline performance and perfect performance (100 percent). Relative improvement is sometimes referred to as the reduction in the failure rate.

Source: CMS data from the quality improvement organization program (Jenks et al. 2003).

Hospitals that serve a disproportionate share of uncompensated care patients and those that provide medical education receive an adjustment for those factors. In

addition, the Secretary is authorized to use a direct payment equal to 10 percent of the reimbursement for a physician service to those who provide services in a health

humanpower shortage area. In this case, the objective would be to encourage the provision of high-quality care.

It may be possible to implement cost differentials for beneficiaries, the other type of incentive prevalent in the private sector, in the future. However, the Commission finds that it is not the best tool to explore at this time. Requiring beneficiaries to pay more or less for care depending on the quality of the provider or plan is a more fundamental shift in policy than implementing payment differentials for providers. In the extreme, if the incentives resulted in too much patient movement, some providers could be overwhelmed by demand and others may lose significant numbers of beneficiaries. And, on the other hand, if beneficiaries did not change providers based on their quality scores, they might experience confusing fluctuations in copay amounts. In either case, beneficiaries could experience far more change in the benefit than they may desire.

One could imagine that Medicare identifying tiers of providers based on quality and varied cost sharing could act as an incentive for providers to improve care. However, because most beneficiaries have some form of supplemental coverage, it is unclear whether these changes would affect beneficiaries' actual use of providers. While Medigap policies could be created to recognize these differences in beneficiary liability, and M+C plans might base networks on these tiers, the financial impact might still be too low to influence beneficiary behavior.

Our analysis shows quality can be improved by building financial rewards for improved care within settings into the payment system. A longer-term but equally important goal is to develop alternative payment structures that encourage individual providers to collaborate with each other to better coordinate and manage a patient's care. While the private sector provides very few examples of experimentation with alternative payment structures, it is evident that it understands the value that organized groups of providers bring to efforts to improve quality. Private sector efforts often focus on organized groups of

providers, such as HMOs, group practices, and integrated networks of hospitals and physicians perceived as better able to achieve these broader quality goals than individual providers.

Targeting demonstrations of payment differentials and structures for providers

Paying providers different amounts based on their performance on certain quality measures is a powerful tool that should be used carefully. Small fluctuations in Medicare payments can have a large impact on providers. Lessons learned from the private sector efforts may help ensure smooth implementation of incentives in Medicare. In this section, we outline implementation issues, and provide guidance on how demonstrations could be targeted in various settings and to encourage better coordination across settings.

Implementation issues

Medicare's primary advantage over the private sector in broadly implementing financial incentives—its size—is also its primary disadvantage. All types of incentives, including financial ones, have weaknesses that are magnified when a purchaser as large as Medicare uses them to improve quality. Multiple barriers to implementing incentives in the Medicare program exist:

- Administering a program to define measures and collect and evaluate data on quality is complex and difficult.
- Other important dimensions of quality might be ignored if all providers focus on only Medicare measures. Further, the need to engage in broad public discussions before identifying specific measures and moving to new ones may slow necessary innovation.

- The limitations of current case-mix adjustment methods may result in providers scoring low because they take sicker or more complex patients, not because they provide low-quality care.
- A broad spectrum of providers participate in Medicare with varying abilities to commit resources to collect and analyze data, and implement strategies to improve care. This diversity makes it difficult to implement incentives across the board.

The criteria for choosing measures which emerge from our private sector analysis address several of these concerns. However, it will be challenging to find measures in every setting that meet all of the criteria. Well-accepted and valid measures may not exist for some important goals. In the private sector, sometimes the simplest method for choosing measures is to use what is available for a specific setting to, as our interviewees described it, "get the conversation going."

Criteria for choosing effective measures include:

- Measures must be evidence based, and broadly understood and accepted.
- Most providers and plans must be able to improve upon the measures; otherwise, care may be improved for only a few beneficiaries.
- Chosen measures should not discourage providers from taking riskier or more complex patients.
- Information to measure the quality of a plan or provider must be reasonably obtained and not pose an excessive burden on any of the parties involved.

After determining which measures to use, the method for distributing payment could also be designed to lessen the potential for unintended consequences. For example, to reach the goal of ensuring that as many Medicare providers as possible improve care, the target goal could be a high level

of improvement. Every provider can improve care. The disadvantage of this approach is that it could reward some providers who may achieve significant improvement, but are still at a relatively low level of quality. Establishing a target goal, if set at a relatively low level, could also encourage all providers to improve. However, if goals are set too high, providers at the low end might be discouraged from trying to improve. A mixed strategy, basing a percentage of the reward on improvement *towards* a specific goal and the other portion of the reward on *attainment* of the target level, might be an effective way to encourage a broad spectrum of providers to improve.

One of the more common mechanisms for distributing payment in the private sector is to identify a certain percentage of high-ranking providers or plans and then reward them. A drawback of rankings is that they guarantee that some providers will be considered poor performers. If the spread between the top and the bottom performers is small, this method creates inequities between providers with very similar scores.

The other variable in determining payment distribution that could address some of the above concerns and help determine whether improvement occurs is the strength of the reward. One could imagine that financial incentives could be greater or lesser depending on the difficulty or impact of the goal. Well-established dollar figures that encourage improvement do not exist, in part because each incentive program is distinct. Purchasers have different market shares in different regions, provider market strategies vary, and incentive programs rely on different types of payment differentials and measures.

However, we do know that even zero direct financial incentive—public disclosure—does result in some improvement. We also know that Medicare’s market share is large enough that even small incentives could impact providers. In the recently launched Bridges to Excellence initiative,

physicians told employers that \$1,000 was enough to engage them. It may not require a large amount of payment from the Medicare program.

The ability to apply incentives in various settings

CMS should broadly target efforts to link payment with quality in the settings where efforts are more well developed and narrowly target efforts in settings used by a broader number of beneficiaries, such as hospitals and physicians. While it will be difficult to meet all the criteria for choosing effective measures, quality measurement and data collection efforts are more mature in some settings than others. A robust set of well-accepted measures and a standardized method of data collection already exist in two settings—M+C plans and inpatient rehabilitation facilities. These settings routinely collect data on the measures as a part of their participation in Medicare or as a part of care management. While these settings of care do not represent the most commonly used settings for beneficiaries, they do provide CMS with the opportunity to use demonstrations to evaluate the impact of incentives in settings that serve a diverse group of beneficiaries and use divergent payment methods (capitation and prospective payment).

Sets of measures and data collection systems are not as well developed for the most commonly used settings of care, hospitals and physician offices, but CMS should focus demonstrations there because of their importance to beneficiaries. It might be possible, for example, to design demonstrations of payment differentials based on measures in the voluntary hospital initiative, those used for JCAHO accreditation and QIO use, or the NQF endorsed set. For physicians, performance on certain domains of care where measures of quality do exist, such as heart disease or diabetes, could be the basis for incentives. In addition, demonstrations in these settings and others, such as skilled nursing facilities, home health agencies, and dialysis facilities might be useful in further developing broader measure sets.

Medicare+Choice plans

Medicare+Choice plans may be prime candidates for applying incentives because they meet, in whole or part, all of the criteria for successful implementation. Standardized, credible performance measures do not exist for many Medicare providers, but are collected on all M+C plans. Each year M+C plans collect audited Health Plan Employer Data and Information Set (HEDIS) data on process measures, such as whether patients received certain preventive screenings, and some outcomes measures, such as hemoglobin levels for diabetics and cholesterol control after an acute cardiovascular event. In addition, plans report on the Consumer Assessment of Health Plans Survey (CAHPS) data that reflect health plan members’ assessments of the care they receive, their personal doctor and specialists, the plan’s customer service, and whether they get the care they need in a timely fashion. While these measures have been in place for a few years and some suggest they need to evolve to new measures, they still represent a broad cross section of plan quality. Most of the measures do not require risk adjustment and, while some suggest these measures are better applied at the provider level, plans have developed a variety of strategies to improve upon their scores by working with providers in their networks.

Targeting incentives at the health plan level serves a dual purpose. First, the health plan can use whatever leverage and data analysis capability it has to encourage improvement in the individual settings with which it contracts. Second, health plans can also address the problem of the lack of coordination and appropriate management of chronic conditions across settings and with patients. Measuring care at the health plan level may make it possible to identify effective mechanisms for better coordination not possible through provider-specific efforts. While care has been improving on these measures, more is possible. To reward high performing plans and further encourage improvement, one group of

M+C plans has proposed a mechanism for using payment incentives to improve quality (see text box at right).

Inpatient rehabilitation facilities

Inpatient rehabilitation facilities are another setting where financial incentives might be implemented. Standardized, credible performance measures are also routinely collected there. The functional independence measures, part of the Inpatient Rehabilitation Facility–Patient Assessment Instrument (IRF–PAI), are not only used for Medicare payment purposes, but as an integral part of delivering care. The measures give the provider information on the functional abilities of patients when they enter the facility, and over time, to help manage a patient’s care. A risk-adjustment mechanism is built into the prospective payment system (PPS) case-mix adjuster which uses the IRF–PAI to assign patients to payment groups (see text box at right).

Hospitals Incentives in the private sector focus mostly on hospitals and physician offices. Improvement is critical because most care is delivered in these settings. As discussed, CMS is already working through the QIO program, several demonstration projects, and voluntary public disclosure of hospital information to improve quality. However, implementing financial incentives would further encourage improvement.

Several sets of measures exist. CMS could base payment differentials on:

- 10 clinical measures used in CMS’s voluntary public disclosure initiative,
- measures jointly agreed upon for use by JCAHO and the QIOs,
- measures endorsed by the NQF,
- structural standards such as CPOE and ICU staffing developed by Leapfrog Group (formed by private and public health care purchasers to promote quality), or
- a combination of these sets of measures.

Two proposals for financial incentives

Medicare + Choice Plans

The Alliance of Community Health Plans, in conjunction with the Group Health Cooperative in Seattle, has developed a proposal for applying financial incentives in the Medicare+Choice (M+C) program that builds on current payment methods and does not exclude plans from the program. They propose that a fund equal to roughly 1.5 percent of health plan spending (approximately \$500 million) be set aside to reward superior performance. To avoid the need to establish a set standard or reward only improvement, plans would be evaluated on their Health Plan and Employer Data and Information Set and Consumer Assessment of Health Plans Survey scores, and then ranked using the National Committee for Quality Assurance (NCQA) methodology. Using a method that parallels one used by NCQA for its accreditation program, Medicare would identify the top 25 percent of plans nationally.

Seventy-five percent of the incentive payment pool would then be distributed to those plans, each receiving an equal amount per capita. To ensure that the rewards would be available in all regions with M+C

plans, Medicare would grant the remaining 25 percent of the incentive payment pool to plans in states with two or more plans. However, no plan would be allowed to receive both a national and state award, nor could a plan receive an award if its performance overall did not reach the 60th percentile nationally.

Inpatient rehabilitation facilities

Concerned that current payment methods may be encouraging inpatient rehabilitation facilities to shorten lengths of stay (LOS), the American Medical Rehabilitation Providers Association developed a proposal to counter the current payment incentives for shorter LOSs. The proposal would provide payment for extra days (beyond the average LOS) for patients who continue to experience increases in functional scores above an average expected improvement. This approach would reward providers delivering higher-quality care and counter the incentive for continual lessening of lengths of stay. One concern is whether these incentives could discourage rehabilitation facilities from taking certain patients, like those with cognitive impairments. ■

Each of these measure sets presents CMS with issues ranging from appropriate case-mix adjustment to the ability for all hospitals to meet them. In addition to the problems specific to each measure is the question of whether, as a whole, any of these sets capture the broad spectrum of services hospitals provide. The first three sets overlap significantly.

The 10 clinical measures of care for heart attacks, heart failure, and pneumonia CMS uses in its voluntary public disclosure initiative are well accepted and

useful for measuring quality in different size hospitals. In addition, the majority of hospitals already collect data on the measures for either JCAHO accreditation or the QIO program. To the extent a hospital does not already collect the data, the QIO in each state could provide assistance.

JCAHO requires hospitals to collect data on well-accepted measures for accreditation purposes. These measures are also used by the QIOs for their work with hospitals and encompass the 10

voluntary disclosure measures. However, because JCAHO only requires accredited hospitals to collect data on two of four priority areas, hospitals are not collecting uniform information. Hospitals not accredited by JCAHO may not be collecting data on any of the measures.

The NQF measures also encompass many of the JCAHO/QIO measures, but include additional measures considered important by NQF members. Because this membership broadly represents those with a stake in hospital quality, many have suggested that CMS should use the NQF-endorsed set as a basis for public reporting and payment differentials. Others caution that the number of measures would place too great a burden on hospitals, and data collection methods are not reliable for some measures.

The structural improvements called for by the Leapfrog Group are important for improving the safety and quality of hospital care. However, hospitals have expressed concerns that implementing computerized physician order entry, while useful, is difficult for some hospitals.

CMS would need to consider all of these sets and the issues they present in order to choose measures to link with payment incentives. However, lack of measures and tools for data collection in hospitals should not be considered barriers to moving forward with strategies to link quality with payment incentives.

Physicians Credible measures of physician quality useful at the physician office level are also available, but on a limited number of conditions. For example, the American Diabetes Association, CMS, NCQA, the Physician Consortium for Performance Improvement, and various private sector purchasers use or develop measures for diabetes and for appropriate management of patients with heart conditions. In addition to its diabetes care recognition program, NCQA expects to begin to offer a heart care recognition program to physicians in July 2003.

Two concerns remain: whether certain types of measures are useful for every physician, and whether the combination of measures currently available represent the whole of the quality of care in a physician office. While measures on specific conditions may not represent the whole of the physician's quality, recent research at NCQA has concluded that care patterns for a fairly small number of patients with diabetes—35—could be enough to characterize the physician's quality of care for that condition.

The private sector addresses these same issues with physician measures by:

- relying on broad matrices of measures. To avoid steering enrollees to individual physicians based on only a few measures, some purchasers and plans have developed as broad a set of measures as possible.
- rewarding physicians for the quality of care for conditions where measures are available separately. This is the approach of the recently announced private sector initiative involving several large employers called Bridges to Excellence. Rewards are available in three separate domains—diabetes and heart care, and system improvements—based on an independently developed certification program in each. Each physician can decide to improve in all, one, or none of the domains.
- developing measures that could apply to any physician office setting—regardless of size of the practice—such as patient satisfaction or physician investment in certain systems to better manage patient care.
- measuring care at the group practice or network level. Paying for care at the group practice level is not currently available in Medicare; however, CMS is measuring quality at the group practice level in several demonstrations. Because systems of care are more effective managers of

patient care, the Commission encourages CMS to expand their efforts to identify mechanisms for encouraging individual physicians to align with groups of physicians to better manage care.

The agency's DOQ project will go a long way toward identifying measures of quality for individual physician offices. While the agency does not intend to use this pilot project to compare individual physician offices, CMS could use the pilot to learn more about which measures are useful for comparisons in the future. The agency could also reward physicians for participating in the pilot.

Another challenge for CMS when measuring physician quality of care is how or whether to measure the quality of care delivered by specialists.

Skilled nursing facilities CMS's public disclosure of quality measures derived from the Minimum Data Set (MDS) on nursing homes is the primary incentive currently in use to improve care for skilled nursing services. In its recent public disclosure initiative, the agency only used four measures to report on the quality of care in skilled nursing beds. While it is useful for skilled nursing facilities (SNFs) to focus on these few measures, and for nursing homes to focus improvement efforts on all of them, they do not necessarily provide a broad picture of the quality of care for SNF patients. Also, the MDS was designed for longer-stay patients with needs primarily for maintenance of care, as opposed to functional improvements. Additional measures focused on short-stay patients may need to be developed, such as readmissions for certain conditions or measures of functional improvement over time. Risk-adjustment methods may also need to be improved for current SNF measures.

The utility of new measures would need to be balanced with the burden of collecting data separately from the MDS. The advantage of deriving measures for quality incentives from the MDS is the

minimization of the data collection burden. SNFs also use the MDS for care management and payment purposes.

Home health agencies CMS currently uses the quality information derived from the OASIS on home health agencies to pilot public disclosure of information. These data represent a broader portion of what home health agencies do than the MDS does for SNFs, and are generally well accepted by providers as reasonable measures of quality. Providers are concerned about appropriate risk adjustment and adequacy of specific measures. However, on the whole, OASIS is well regarded. Home health agencies may be appropriate candidates for financial incentives. However, it might be wise to observe the impact of public disclosure of quality information before moving to financial incentives. While some home health providers consider collecting information for OASIS burdensome, it is mandated by law and currently used for multiple purposes.

Dialysis facilities Dialysis facilities have publicly reported on a core set of measures for several years, including information on the facility's performance on the adequacy of hemodialysis, anemia, and mortality. These are well-accepted measures that represent a broad spectrum of care in the dialysis facility, used both by CMS for accountability and by the facility to improve care. Much improvement has already occurred on the publicly disclosed measures: Therefore, it is not clear whether payment differentials based on these measures would encourage additional improvement.¹⁰

However, CMS could expand its individual facility-level reporting measures to include vascular access and base an incentives program—either nonfinancial or financial—on the broadened measure set. Although national progress on vascular access is reported publicly, CMS does not currently include individual dialysis facility scores on its website. As noted in Chapter 6 in this

report, vascular access is the second leading cause of hospitalization for these patients (USRDS 2002) and care for this condition accounts for about 10 percent of Medicare spending for hemodialysis patients. Further, CMS data show that significant opportunities exist to improve this type of care. Many patients do not receive the type of care recommended by the National Kidney Foundation. It may be important, however, to consider the role that clinicians play in improving this type of care. Nephrologists, vascular surgeons, radiologists, and dialysis facilities together make decisions about beneficiaries' vascular access care.

The ability to apply incentives across settings

In the short term, applying payment differentials to improve care within settings is critical. However, in the long run, to meet the health needs of current and future Medicare beneficiaries, Medicare must lead efforts to develop incentives for better management of care across settings. While it is possible to address this issue to some extent through incentives for individual settings, exploring structural payment system changes that encourage providers to work together to meet beneficiary needs is more direct.

Addressing care coordination within the fee-for-service context The goal for this type of an incentive program is to encourage better care for specific types of beneficiaries for whom care across settings is essential. The incentives might still be applied at the setting level to create expectations for how each setting should contribute to improving that care. Examples of this type of approach include focusing on:

- **Serious chronic illness.** One population in need of targeted quality improvement efforts are those beneficiaries with serious chronic illness (Berenson and Horvath 2003, IOM 2002a). This population often has multiple conditions requiring care

from numerous settings. While one or another of their conditions might be under control at any one time, they will usually not return to full health and will eventually require coordination of care at the end of their lives as well.

Care for such beneficiaries is a large and growing segment of Medicare costs. The need for intense management of care across settings and with patients and their families is high, yet Medicare payment and coverage policies were not designed to address these needs. Incentives for physicians to better coordinate with home health agencies or skilled nursing facilities with other specialists could counterbalance the lack of other incentives for appropriate care management. One of our interviewees suggested creating a continuity index using claims data to determine whether physicians of beneficiaries with serious chronic illness follow their patients across episodes and settings of care.

- **Improving care for specific conditions.** Well-accepted and frequently used measures exist for such important conditions as heart disease and diabetes. Measures could be applied to the Medicare population generally and M+C plans, hospitals, physicians, and possibly other settings. Efforts in these areas would build on a wide variety of private sector efforts and reinforce the work of the QIOs, both of which heavily rely on diabetes and heart measures. Creating the expectation that all providers should improve care of a certain condition makes it more likely that they will coordinate with each other.
- **Certain services that occur in more than one setting, such as pain management.** Pain management represents a type of service that occurs in a variety of settings and is considered a service in need of

¹⁰ Much of the improvement was gained over a period when the only rates CMS disclosed were national scores. Individual setting-specific reporting began in 2001.

improvement. Incentives could be based on measures of appropriate pain management, including whether a provider has a program for assessing and adjusting pain medication levels, processes for patients to evaluate their own pain levels, and tools for gathering information on whether patients believe their pain is managed appropriately.

Addressing care coordination through structural payment changes

One of the barriers to the provision of high-quality care is the fragmentation embedded in a fee-for-service payment system. Needs for care do not begin and end at an individual provider's door, but the predominant mechanism for payment in the Medicare program does. Medicare beneficiaries need multiple providers to communicate fully across and within settings and ensure that the beneficiary and his or her family understand their roles in managing the patient's condition. These services are not currently recognized in the Medicare payment system, except perhaps in the M+C program.

CMS is currently designing several demonstrations that examine different payment structures. These and future ones should focus specifically on how these mechanisms work to improve coordination across settings and outcomes of care. While several current demonstrations use these types of payment mechanisms, they are not explicitly designed to test the impact of these payment mechanisms on quality. Examples include:

- **Risk sharing.** By recognizing the role of multiple providers, these payment mechanisms provide incentives for better overall management of care across settings and time. These payments can apply to management for specific conditions or for bundles of services. These are called risk sharing because CMS shares the risk of the cost of care with the entity it pays. CMS defines a set of services for which a provider entity is responsible,

calculates expected costs for those services, and pays the entity the expected cost for that care. If the entity can provide the care for a lower cost, it can keep the difference. If the costs are greater than the payment, the entity receives no additional money.

Risk sharing, coupled with paying for a bundle of services that spans several providers within a setting or several providers across settings, creates incentives for providers to increase their collaboration to lower the cost of care. For example, the agency could make a single payment for an inpatient procedure instead of paying the hospital and the physician group separately. The Centers of Excellence demonstration that provided a single, predetermined payment to an entity made up of hospitals and physicians for certain types of care delivered in the inpatient setting is an example of risk sharing and bundling.

Another example of bundling is paying a group of providers for a set of services for a condition that requires care in multiple settings. Making a single payment for care in multiple settings creates an incentive for health professionals in those settings to work together to provide care as efficiently as possible. This is also one way of sharing the savings of quality improvements referenced earlier in the chapter. If better physician care saves the broader entity dollars because its patients need fewer hospitalizations, care improves and the physician sees some of those savings.

- **Paying for care or disease management.** Medicare could pay a single amount for a service termed care or disease management. Disease management focuses on a specific disease, whereas care management could be more broadly applied, perhaps to the coordination of care for someone with very serious illness of any type, or for beneficiaries who

are particularly frail. The method most commonly used in the private sector is for the purchaser or payer to pay a fee for these services to be provided to a defined population. We would expect these techniques to improve coordination by specifically creating a payment stream for such services. Disease management could also be paid on a risk-sharing basis. In this case, the bundle of services would be defined as all those needed to treat a patient's condition. In part, because of the difficulty of defining that bundle, few examples have surfaced of disease management paid on a risk basis.

- **Creating artificial groups of providers.** Medicare could define service delivery systems with claims data to map patterns of care in specific regions and create an incentives program based on the quality of care delivered by those providers. Accountability for the quality of care would be measured at the overall group level, but payment incentives could still be paid to individual providers who were a part of the system. While the providers would not need to create a formal affiliation relationship, it would be to their benefit to coordinate with other providers in the delivery system to obtain financial or other types of rewards.

Examples of private sector efforts to use incentives to improve quality

Previous sections in this chapter summarized findings from our research on private sector efforts. In this section, we provide more in-depth discussion of each type of incentive, including examples of specific initiatives, to illustrate the wide spectrum of measures and payment distribution mechanisms the Medicare program could use when implementing incentives.

Public disclosure

While two of the primary objectives of public disclosure of quality information are enhanced consumer choice and public accountability of the provider, such disclosure often motivates providers to improve care. Disclosure is widely used in the private sector, often in tandem with other strategies. It is a precursor to, and an essential part of, providing employees or enrollees financial incentives to use high-quality providers. It takes many forms, from magazines devoted to physician and hospital ratings, to state reports on providers, to facility-specific information on purchaser or plan websites. The private sector, Medicare, many states, and public employers use this strategy.

PacifiCare In California, PacifiCare has designed products that use all types of incentives. However, this managed care company began by disclosing information to their HMO enrollees on the quality performance of groups of physicians. Both current and new members opted for the higher-quality providers. The company released the information at the time of open enrollment and has found that 30,000 enrollees chose the higher quality-physician groups. Although this represented only 3 percent of their enrolled population, PacifiCare believes this to be a significant movement. This shift of enrollees resulted in \$18 million in additional capitated payments for the higher-quality physician groups. In addition, of the 41 measures reported, 22 have shown improved mean performance and reduced variation across all provider groups.

Central Florida Health Care Coalition

Representing 120 employers with over 1 million covered lives in the Orlando region, the Central Florida Health Care Coalition has the data systems and calculations to pay physicians based on their adherence to a set of best clinical practices and their patients' outcomes. The data systems abstract clinical records

and claims data to compare patient outcomes to severity-adjusted expected outcomes, based on national standard benchmarks. These quality benchmarks will be used to assign each physician a rank according to the appropriateness, effectiveness, and cost efficiency of treatments they provide. Once ranked, the physicians will be sorted into one of three levels and paid on one of three different fee schedules; those scoring higher receive higher fees. Even when physicians had not yet been assigned tiers, simply releasing the quality scores of coalition physicians practicing in hospitals is generating some financial bonus for them: Some specialists have seen increased referrals and many have negotiated lower malpractice premiums based on good scores.

New York coronary artery bypass graft (CABG) mortality

A well-known public incentive program is the New York State Health Department's release of risk-adjusted mortality rates after CABG surgery for hospitals and physicians. Studies of the results of this release revealed that while consumers largely did not use it to choose providers, hospitals and physicians responded to the data by finding ways to improve their cardiac surgery programs. Deaths from cardiac surgery fell 41 percent in the first four years of the release.¹¹

Payment differentials for providers

Monetary bonuses for providers meeting quality targets are widespread and range from specific dollar amounts to basing a percentage of payment on quality achievement. Health plans, large purchasers, and members of several coalitions of private-sector purchasers offer them to encourage hospitals, physicians, or other providers to improve the quality of care for their patients.

Interestingly, several plans and purchasers have stated that providers are requesting significant payment increases. Through the negotiation process, purchasers and plans say they are unwilling to increase payments without some accountability for the value of the product. Our interviewees stated that this strategy is successful in prompting providers to tie a portion of their payment increase to performance on quality measures. This willingness to bargain over quality performance varied by market, depending on whether the plan or purchaser had enough market share to command the attention of the provider community.

Integrated Healthcare Association

To foster quality improvement at the physician group level, purchasers and plans in California have banded together to create common financial incentives for physician groups. These incentives are tied to a standardized set of quality measures. Because all the payers request the same information from providers, these efforts also have the potential to lessen provider burden. Six large health plans—Aetna, Blue Cross of California, Blue Shield of California, PacifiCare, CIGNA, and Health Net—worked collaboratively through the Integrated Healthcare Association with medical group representatives, the National Committee for Quality Assurance, and the Pacific Business Group on Health, which represents 45 large employers, to develop a common set of measures for group practices. These measures will be used to reward providers for high performance or lower costs for enrollees who go to the higher-quality providers. Plans and purchasers in Massachusetts and several Midwestern states have formed the same type of coalition.

Buyer's Health Care Action Group (BHCAG)

A coalition of large employers in Minneapolis/St. Paul has encouraged the care systems in its network to meet or exceed minimum levels of patient

¹¹ One recent analysis (Dranove et al. 2002) suggests that while mortality for CABG surgery decreased, mortality for all acute myocardial infarction patients increased, in part because of the public release. The authors contend that in addition to improving care for CABG patients, providers found ways to avoid riskier patients and perform more procedures on patients who would otherwise have been treated without surgery. In response to this claim, other health researchers (Chassin 2002) suggest that the methodology of the study that was critical of the CABG mortality release was based on a flawed risk measurement tool.

satisfaction and delivery of preventive services. It also asked them to identify the focus for quality improvement efforts and to develop a strategy to improve that care. A committee within BHCAG evaluates the improvement effort and can award a system with a gold (\$100,000) or silver (\$50,000) award for its accomplishment. Early results have been positive; for example, one care system proudly informed its patients of its award for “keeping over 85 percent of its patients up to date on 10 key preventive health care services essential to maintaining good health. [The system] employed a number of strategies to reach this high level of compliance including identifying preventive care champions at each clinic, establishing a special mammogram appointment phone line, and creating a computerized registry to keep track of patients’ immunization histories” (Infoscan 2003).

Employers’ Coalition on Health (ECO) Diabetes is the focus of quality incentives at the Employers’ Coalition on Health in Rockford, Illinois. The coalition has chosen diabetes for its cost and because goals for improving care can be adequately defined and measured. ECOH challenged each of its four physician groups to (1) complete a care flow chart for 95 percent of their diabetic patients and (2) maintain hemoglobin A1c levels below 7.5 for a majority of diabetic patients. Physician groups who met both of those goals received a bonus of \$28,000. After only one year, ECOH was able to raise the bar for the bonus from 60 to 65 percent of patients meeting target hemoglobin levels.

Empire Blue Cross Blue Shield Empire Blue Cross Blue Shield has formed a group with several of its large employer clients—IBM, PepsiCo, Xerox, and Verizon—to provide bonuses to hospitals that (1) implement computerized physician order entry systems, and (2)

staff intensive care units with physicians who have qualifications in critical care medicine.¹² Hospitals that met both goals by 2002 were eligible to receive a 4 percent bonus (based on Empire’s total hospital spending for all employees of the participating employers). Hospitals meeting the goals by 2003 and 2004 will receive 3 and 2 percent bonuses, respectively.

In 2002 the number of hospitals that had implemented both improvements increased from 10 to 50, including 8 out of 9 of the major academic medical centers in downstate New York.

Cost differentials for enrollees

Cost differentials for enrollees lower enrollees’ costs when choosing preferred health plans or preferred providers. In these initiatives, providers or plans are usually designated as a preferred plan or provider based both on quality and cost efficiency information. These incentives encourage beneficiaries to use higher-quality plans or providers. They also encourage plans or providers to improve their care to attract more enrollees or patients. Our research uncovered fewer examples of these types of incentives in use, but numerous plans and providers are discussing or developing them. One of the longest-running examples is General Motors’s system for its salaried employees to choose HMOs.

Employees at General Motors make a lower premium contribution for benchmark HMO plans (plans the company determines to be low cost and high quality). The range in 2002 for the family plan was from \$38 to \$186 for a benchmark plan or lower-scoring plan, respectively. The criteria for becoming a benchmark plan is based equally on quality and cost effectiveness. The measures for the quality rankings are plan

performance on such well-known measures as the HEDIS, CAHPS, the NCQA accreditation status, and a customized request for information used by eight large employer purchasing coalitions.

Employees have migrated to those plans with the highest combined quality and cost scores, saving GM and their employees money and prompting more salaried employees and retirees to enroll in better-performing plans. GM and its employees saved an estimated \$5 million in 2001 as a result of employees moving to better-performing plans which generally were lower cost. More important, many plans in the markets where this incentive operated have improved. For example, in southeast Michigan, three HMOs whose prior performance was average or good have attained benchmark status.

PacifiCare, the Central Florida Health Care Coalition, Aetna, and others are planning on or have just implemented cost differentials for enrollees. Each of these organizations has developed a matrix of measures. PacifiCare is offering employers benefit plan options that base cost-sharing requirements, either lower premiums or lower copays, on quality and cost information for physicians. The Central Florida Health Care Coalition will use measures of physician quality to vary copays. Aetna is considering differential copays for use of networks considered higher quality based on quality and efficiency measures.

Other incentives

While the combination of disclosure of quality information with financial incentives is becoming more common in many different settings, these initiatives do not directly address the broader problem of appropriate management of chronic conditions across settings.¹³

12 They chose these two quality improvements from a list developed by the Leapfrog Group, of which these large employers, including Empire Blue Cross Blue Shield, are members. Leapfrog consists of more than 100 Fortune 500 companies and other private and public sector health care purchasers who promote quality through a number of avenues, such as identifying changes with high impact potential, developing standards for judging success at implementing those changes, and disseminating information on providers who meet the standards.

13 Many of these initiatives do use measures that focus on improving care for chronic conditions. However, they target specific settings, as opposed to ensuring better coordination across settings.

While not widely used, the two incentives described below may be better suited to addressing the broader barriers to improving chronic illness care associated with fee-for-service payment (Wagner 2003).

Shared savings Shared savings strategies are designed to align financial incentives among providers to ensure that those who invest in system improvements will share in some of their economic payoff. By measuring the financial impact one setting's action has on another, these strategies may also remove some of the barriers to coordinating care across settings.

While CMS is evaluating the shared savings payment mechanism through a demonstration project, we found only one example in the private sector of a shared savings initiative and that was at Intermountain Health Care (IHC). Administrators at IHC have tried to create mechanisms to account for these savings and share them with those who implement improvements and those who lose revenue. However, they have found the calculations very complex. In addition, the inability to share savings with Medicare limits the number of conditions for generating net savings.

Intermountain Health Care is an integrated system of care including physicians, hospitals, and a health plan. To provide an incentive for providers to implement protocols to improve quality, the health delivery systems and physician groups negotiated with the health plan to share the resulting savings for their private patients. For example, implementing guidelines for community-acquired pneumonia provided savings through not only fewer hospitalizations, but shorter lengths of stay for admitted patients. The average cost per case went from \$2,752 in 1994 to \$1,424 in 1995, before and after implementing the guidelines. Savings

from this program for private patients were shared three ways: one-third each to payers, physicians, and the health system.

Another example at IHC is improved management of diabetes. IHC, the health delivery system, sees approximately 30,000 diabetic patients, 13,000 of whom are IHC's own health plan members. Through implementing an electronic decision support system for their physicians, IHC decreased hemoglobin levels by 2 points for 5,200 of those patients. This reduction helps patients avoid the risk of life-threatening complications such as amputations, kidney disease, and ischemic heart disease. Several studies have also shown that reducing hemoglobin levels by 2 points saves \$2,000 annually per patient in health care costs for the rest of their lives. IHC translates this into a \$10 million annual savings for their own plan patients. Sharing the savings from this intervention is critical for three reasons. First, implementing the technology is costly. Second, physicians often spend more time with these patients or hire care management nurses to assist them. Third, hospitals lose revenue because admissions decline.

IHC can only capture these savings for the health plan's own members, not for their Medicare patients, so they factor in the level of lost Medicare revenue from reduced admissions and less use of higher-reimbursed hospital care when determining whether to implement a quality improvement. In fact, although IHC did implement the community-acquired pneumonia project, the lost revenue for 10 of their small rural hospitals that first implemented it was greater than the saved costs.

Risk sharing and capitation Risk-sharing payment methods pay providers a fixed amount for furnishing a bundle of

services. This creates incentives to improve quality by allowing providers to reap the savings of better care management while also putting them at risk for the increased costs of poorly managed care.¹⁴ It can encourage the provision of preventive services, improve coordination across settings, and avoid complications due to poor quality of care. However, it also creates an incentive for providers to stint on care or to only serve the lowest-risk patients.

Our interviews with health plans revealed that capitated payment for a specific population or for a group practice often led to the development of programs to better manage care. Plans reported that when putting incentives in place, it was easier for such groups to improve quality because they had better data collection and analysis systems. However, we found few examples where purchasers or plans shared risk in order to improve quality. Most of the models relied on payments on top of a fee-for-service payment mechanism. The limited use of capitation as a quality incentive may say less about its potential to improve quality and more about the current state of the health care market and its reliance on broad, loosely organized networks of providers.

One form of risk sharing is bundling of services or care for a particular disease into a single payment, such as disease-management programs paid on a risk basis.¹⁵ Targeting this strategy at types of health conditions for which it is well documented that high-quality care (usually good preventive care) will result in cost savings (fewer hospitalizations) helps avoid the concern that providers will stint on care to achieve savings. However, other than the CMS demonstration project, we found few examples of purchaser or plan use of these initiatives to improve quality.¹⁶ ■

14 Whether the system is able to benefit from these savings also depends on the member staying in the system long enough. If an HMO provides excellent preventive services for some period of time to an enrollee who eventually changes plans, the other plan may actually reap those savings.

15 Most disease-management programs are simply paid a fee for their services over and above whatever the health plan would pay for an enrollee's care. While this is a tool for improving quality, we are not characterizing it as an incentive in this chapter.

16 Some state Medicaid agencies have worked with disease-management providers to develop dialysis management models using risk-sharing payment mechanisms.

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CHAPTER

8

Using market competition in fee-for-service Medicare

R E C O M M E N D A T I O N S

8A The Congress should give the Secretary demonstration authority to initiate competitive pricing demonstrations.

***YES: 14 • NO: 0 • NOT VOTING: 0 • ABSENT: 3**

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8B For demonstrations that prove successful, the Secretary should have the authority to implement competitive pricing. The Congress should have a fixed period of time to review and approve any implementation plan.

YES: 14 • NO: 0 • NOT VOTING: 0 • ABSENT: 3

***COMMISSIONERS' VOTING RESULTS**

Using market competition in fee-for-service Medicare

After reviewing the design and results of two Medicare demonstrations—the competitive bidding for durable medical equipment (DME) demonstration and the participating heart bypass center demonstration—the Commission finds that they suggest competitive pricing can reduce costs without adversely affecting quality or access. Accordingly, the Commission recommends that the Congress grant CMS the authority to initiate competitive pricing demonstrations and incorporate into program operations the approaches that are proven successful. The Congress should have limited time to review CMS’s plan. This constraint is intended to create an implementation process that favors action on competitive pricing. The Commission finds the initial evaluation of the DME demonstration particularly compelling, and voted to recommend that competitive bidding for DME be expanded and integrated into the Medicare program. However, as this recommendation is contingent on the results of the final evaluation, the Commission will await issuance of the final evaluation report before forwarding this recommendation to the Congress.

In this chapter

- Key design issues
 - Two competitive pricing demonstrations
 - Building upon demonstration experience
-

Members of the Congress have expressed interest in pricing fee-for-service Medicare products and services using market-based competition. The appeal of such an approach is based on the theory that if the market failures inherent in the health care sector (for example, lack of consumer information or subsidies that distort the price signal) can be corrected, competition among providers and suppliers will result in a price for their goods and services that more closely reflects their costs than other pricing methods. In a competitive marketplace, providers would have the incentive to offer, or bid, prices close to their costs to gain Medicare market share or other competitive advantages.

By giving providers and suppliers—who should understand their costs better than policymakers—an incentive to offer prices close to their costs, competitive pricing has the potential to improve the value gained from beneficiary and program spending. To implement such a program, policymakers must design the market and bidding incentives to achieve a balance among Medicare’s objectives. In some circumstances, the goals of access, quality, choice, equity, and efficiency may be in conflict.

Using market competition to set prices for fee-for-service products and services—generically referred to as competitive pricing in this chapter—would be a departure from Medicare’s current payment methods. Medicare now bases its payments on an assessment of average or, ideally, efficient providers’ costs. While effective at stemming inflationary tendencies evident under prior cost-based payment approaches, today’s Medicare fee schedules and prospective payment systems may not always accurately reflect the level of and change in providers’ resources required to deliver particular goods and services.

This chapter considers how market competition could apply to the program by first briefly discussing the key design issues that any competitive pricing

approach must address. Second, it describes how each of these design issues was handled under two Medicare demonstrations—the competitive bidding demonstration for durable medical equipment (DME) and the Medicare participating heart bypass center (referred to as the coronary artery bypass graft [CABG]) demonstration. Both demonstrations tested whether competition could lower prices without an adverse effect on quality or access. Evaluation of the recently completed DME demonstration in two markets found that Medicare and beneficiaries saved money when prices were based on suppliers’ bids. Quality of products and services and access to them were described as good, although isolated reports of product substitution and inadequate service among some providers suggests caution. The CABG demonstration found that a national competition among facilities performing bypass surgery resulted in providers accepting lower payment, lower costs in the majority of sites, and high quality of care for beneficiaries, but no consistent positive change in market share across participating sites.

This chapter concludes by discussing the next steps for building upon these demonstration results and the ways successful aspects of the demonstrations may be pursued. The Commission supports testing competitive bidding approaches in demonstrations and, when the results are positive, expanding the program as a permanent aspect of Medicare in market areas and for products that are appropriate. Specifically, the Commission recommends that the Congress direct CMS to initiate competitive pricing demonstrations. The Secretary should have the authority to incorporate tested competitive pricing approaches proven successful into the Medicare program, allowing the Congress limited time to review and approve (or disapprove) CMS’s implementation plan. Overall, the Commission believes the implementation process should favor action on competitive pricing.

The Commission finds the initial evaluation of the DME demonstration compelling, and voted to recommend that competitive bidding for DME be expanded and integrated into the Medicare program. Because this recommendation is contingent on the results of the final evaluation, the Commission will await the release of the final evaluation report before forwarding that recommendation to the Congress. Certain aspects of the CABG demonstration also appear to hold promise, including bundling payment and public recognition for quality care. However, given concern about the demonstration design and the lack of interest in participating in a recent, similar demonstration, the Commission makes no recommendation regarding that demonstration at this time.

Key design issues

Three key areas must be addressed in creating a competitive pricing model for Medicare. First, the market must be defined in terms of the product, geographic boundaries, and eligible participants. Second, a bidding process that provides incentives for competitive bids and balances factors such as price, quality, and capacity must be created. Third, beneficiary protections and education programs may be needed particularly if quality, access to care, or beneficiary choice of provider are adversely affected.¹ The following section discusses some of the tensions that exist in each of these design features.

Defining the market

This first step in any competitive system involves determining which product(s) will be priced by market competition, where the competition will occur, and what types of entities will be allowed to participate. These decisions affect the degree and nature of competition and its potential for improving efficiency and quality, and resulting in Medicare savings.

¹ This chapter generally uses “provider” to include both providers and suppliers.

Defining the product

First, the relative scope of the product (i.e., goods or services) must be determined. The product could be defined based on the classification system already in place for fee-for-service Medicare (e.g., a Healthcare Common Procedure Coding System code or a diagnosis related group [DRG]), a larger bundle of services, or a more narrowly defined product. Bundling creates incentives for providers to be cost efficient because it does not reward provision of a higher volume of services within the bundle. On the other hand, it can lead to stinting on care. In addition, the product should be specified so that the unit of service and, therefore, price, is comparable across providers. Depending upon the nature of the product, the bid for a product may need to be adjusted for differences in the health status of patients.

Defining the geographic boundaries

Competition can occur on a local, regional, or national basis. This choice may depend on the service and nature of competition. Because the relative competitiveness of individual markets varies depending on the number of providers and their relative market share, the effectiveness of competitive bidding approaches will likely vary by market. Similarly, if the market is defined to include multiple local markets, the degree of competitiveness will vary within market areas.

Defining eligible providers

Competition could be open to all providers that offer the selected product or it could be restricted by such factors as provider type or whether providers meet a quality of care threshold measure. The more inclusive the field, the higher the number of participants and the greater the possibility for price competition. (This competitive dynamic may be mitigated, however, if multiple winners are allowed. A higher number of winning bidders tends to reduce the chance for any one bidder to garner a large segment of the market and

thus their willingness to offer a low bid.) Different types of providers tend to have different cost structures, so competition that does not make allowances for these differences may drive higher cost provider types out of the market. This outcome may be acceptable if beneficiaries continue to have choice among quality providers.

Creating a bidding process

The next step in creating a competitive pricing approach is to design a bidding process that specifies how bids are solicited and accepted. Bids could be submitted confidentially so that competitors do not know each others' bids until later, if at all. Under this approach, the bids could either be considered best and final, or further negotiation could take place before reaching a final agreement. Alternatively, bidders could publicly announce the price in an auction process.

The cycle for rebidding for services, another key aspect of the process, also needs to be considered at the outset. A longer bidding cycle may be less administratively burdensome, allow for more continuity in providers, and discourage bidders from lowballing (bidding below costs in the hope of driving competitors from the market and recouping costs later by increasing the price and volume). On the other hand, longer cycles create barriers for other competitors to challenge initial winners, which may, in turn, dampen competition. Also, unless payments are automatically adjusted for inflation, longer cycles can mean that payment is not adjusted during an interval in which provider costs may change. As a result, bids may be higher than otherwise to compensate for this uncertainty in cost trends.

Establishing bidder incentives

Establishing incentives for providers to bid competitively is central to the bidding process. Incentives can take the form of rewards or penalties. In either case, the underlying motivation for providers to bid low tends to be the potential of retaining

or increasing market share or reducing costs per beneficiary served. Possible rewards for bidding low include:

- Bundled payments. For hospitals equipped to work with physicians and other types of providers (e.g., post-acute), bundled payments allow more flexible reimbursement approaches that align providers' incentives and may lead to more cost-efficient care. When providers retain the savings from improved efficiency, their profits increase.
- Marketing advantage based on meeting a quality standard for winners. To the extent that winning a national quality designation is perceived as a way to increase market share, providers may decide the increased share is worth bidding lower.
- Less regulatory oversight. Providers that win the competition could be relieved from certain regulatory requirements, such as audits or surveys, compliance with which can be costly for providers.
- Increased market share. If under competition beneficiaries have access to fewer providers, winners stand to gain increased market share. If they are able to provide a greater volume of services or products at a profit, increased market share would increase their total profits.

The possible penalties for high bids include:

- Threat of exclusion from the marketplace. Those offering bids that are too high are prohibited from participating in the Medicare market for the duration of the bidding cycle.
- Restricted access to the market. Less competitive bidders would have their market share curtailed. For example, nonwinning providers could be prohibited from serving new enrollees for the duration of the bidding cycle.

- Higher cost sharing for beneficiaries. All bidders would continue to participate in the market, but beneficiaries using high bidders would be required to pay higher cost sharing. The potential effectiveness of this approach is constrained by the prevalence of supplemental insurance among beneficiaries, which insulates beneficiaries from most cost sharing.
- Lower prices for losing bidders. Losing bidders that continue to participate in Medicare would receive lower payment rates than winning bidders.

Determining selection criteria

Bids must be assessed and arrayed to calculate a reference price or a cutoff point. Price, quality, and the capacity of providers to meet the needs of beneficiaries factor into this calculation. The way and order in which the assessments are made can affect the intensity of the competition and the resulting characteristics of the winning bidders.

- Price. Depending on the nature of the service or product, bids may need to be adjusted to promote comparability across bidders. If the cost of the product or service is greatly influenced by the relative health status of the beneficiaries served, the bid may need to be adjusted for the relative risk of the beneficiary population served. This adjustment would not be necessary for products when the relative health status of beneficiaries served does not significantly affect product costs. Adjustment for local variation in input prices would only be necessary if bids to serve different geographic areas were being compared with one another.
- Quality. As discussed in Chapter 7, although quality of care can be difficult to measure, certain metrics are available. The purchaser can choose providers based on outcomes

data, such as mortality, rehospitalization rates, or satisfaction surveys; process measures, such as how often aspirin is given after a heart attack; or structural measures, such as infection control systems. The sequence for considering quality indicators and bid prices of each bidder is important, as is the weight given to each. For example, a review of quality information (which can be labor intensive, particularly if CMS conducts site visits or convenes a multidisciplinary review panel) can eliminate competitors before the bid price is considered, or quality can only be examined among low price bidders to prevent poor performing providers from being included among the winners. The latter approach may save administrative costs, but tilt the terms of the competition toward price rather than quality. Ultimately, therefore, policymakers must decide how much Medicare should pay if both low- and high-cost quality providers are available.

- Capacity. If the bidding results in selective contracting, CMS should assess the capacity among potential winning bidders to check that the reduced number of providers or suppliers is able to handle the increased volume of beneficiaries. Assessing capacity can be imprecise, depending on the nature of the product. For example, while a DME supplier may currently serve a certain number of beneficiaries, low capital costs make it possible to increase service rapidly. Determining that upper bound can be difficult, depending upon the assessment of providers' interest in expanding, access to capital, and ability to attract staff, among other factors.

Setting payments and sharing savings

How payments are set based on the bids and how savings are shared with beneficiaries are also intrinsic to the

bidding process. Payment could be set equal to the lowest, median, or mean bid, or some other benchmark. Designs that set payment at or above a number of bids have the advantage of giving beneficiaries choice and preventing the program from becoming too dependent on one provider or supplier. Moreover, having multiple winners creates a second level of competition: After winning the bidding process, a provider would then need to compete to earn beneficiaries' business. On the other hand, having multiple winners leaves savings on the table if CMS pays above the price offered by a number of bidders.

When coinsurance is calculated as a percentage of Medicare's payment rate, as it is for services covered under Part B, beneficiaries' savings can automatically follow from lower payment rates. For other services, including inpatient hospital services, the government may need to specify how to divide savings from lower payment rates between beneficiaries and the program.

Protecting and educating beneficiaries

Since competitive bidding can significantly change choice of providers, beneficiaries need to be informed about how changes in policy will affect them.² CMS may need to monitor outcomes to make sure that a reduced number of providers receiving lower payment rates does not adversely affect quality of and access to care.

Two competitive pricing demonstrations

CMS conducted demonstrations to test the impact of two variations of competitive bidding. The competitive bidding for DME demonstration based Medicare's payment for medical equipment and supplies on suppliers' bids. Under the CABG demonstration, providers competed on price and quality to receive a

² Similarly, providers need to be educated about the terms of the demonstration and why they may not have been selected, but this issue is beyond the scope of the chapter.

bundled payment for all inpatient hospital and physician services related to two DRGs. In addition to the payment, they were designated as Medicare-recognized high-quality facilities. This section explores how each of these demonstrations navigated the design questions discussed above and the results.

Competitive bidding for durable medical equipment

CMS conducted the demonstration in two sites: Polk County, Florida, and San Antonio, Texas. The demonstration ended in both sites on December 31, 2002. As part of its evaluation, CMS surveyed beneficiaries in the demonstration markets as well as in two comparable sites to measure the impact of competitive bidding on access to care and the quality of DME goods and services. CMS also compared the bid prices to the fee schedule to determine whether competitive bidding produced savings. During the three years of the competition, providers lowered their prices an average of 20 percent each year, saving Medicare and its beneficiaries approximately \$8.5 million.³ Evaluations to date characterize beneficiaries' access to, and the quality of, goods and services as good. However, the most recent evaluation notes that "a few isolated findings cause concerns" (Karon et al. 2002).

Currently, DME items are paid according to a fee schedule based upon allowed charges in 1986 and 1987 and subsequently updated by an inflation factor. This fee schedule has failed to keep Medicare's payment rates aligned with the costs of providing the goods and services covered by the benefit and has resulted in overpayments as high as 30 percent (GAO 1998, OIG 1999). CMS has explored

several avenues to reform payments under this benefit, including freezing the payment update; negotiated rule making; applying its inherent reasonableness authority; and the alternative discussed here, competitive bidding.

Defining the market

To define the market for competitive bidding, CMS chose several categories of products covered by the durable medical equipment and prosthetic and orthotic supplies benefit, selected two sites, and invited both local and national providers to participate.

CMS defined the products under this demonstration based on the existing codes used for payment under the current fee schedule. These codes apply to products that have no service component (e.g., a crutch tip) as well as those that have substantial service components, such as delivery of equipment, instructions to beneficiaries on how to operate and store the equipment, maintenance, and some repairs. The products within each code are specific and intended to be comparable.⁴ Nevertheless, some variation exists. The same code may be used for several products of differing cost. For example, catheters that range in price in the private market between \$1 and \$18 are paid under the same code, for which Medicare pays \$11 (GAO 1998). In addition, the same code may be billed for a service that may vary in quality (e.g., timeliness of delivery or adequacy of equipment repair), depending on the supplier or individual encounter. Given this variation, bidders that use lower-cost items and provide less costly services have a competitive advantage, at least in the short term. Because winning bidders must compete with other winning bidders for

beneficiaries' business, providing low-cost, low-quality items may be a poor business strategy in the long run, however.

The Balanced Budget Act of 1997 required the demonstration to include oxygen and supplies among the product categories to be tested; otherwise, CMS used its discretion in selecting test products. It picked items that represented a significant share of the DME market, items CMS suspected might be overpaid on the fee schedule relative to market prices, and included products with characteristics that might influence the design and effect of competitive bidding (for example, items that have a service component or are relatively low priced). For Polk County, CMS solicited bids for five categories: oxygen and supplies, hospital beds, enteral nutrition, urological supplies, and surgical dressings. In San Antonio, the categories of products included manual wheelchairs, nebulizer inhalation drugs, and noncustom orthotics in addition to oxygen and hospital beds. All of these categories combined account for about 50 percent of Medicare spending on DME. CMS excluded custom-fitted orthotics and prosthetics, which have a high service component, from the demonstration in both sites.⁵

Although CMS had the authority to designate up to five sites as market areas, it chose to operate the demonstration in two. The Polk County site had 92,000 beneficiaries and about 40 major suppliers. San Antonio had 118,000 fee-for-service beneficiaries and 48 major suppliers. Suppliers in each site included a mix of both small and large companies.

Any DME supplier in good standing with Medicare was eligible to participate in the demonstration.⁶ Since it is not necessary

3 This estimate compares the competitively-bid price with the fee schedule prices, based on the assumption that volume did not change. Utilization data are not yet available for either items included or not included in the demonstration.

4 Examples are hospital beds with variable height, without side rails, with mattress and rental of stationary compressed gaseous oxygen system, including contents (per unit), regulator, flowmeter, humidifier, nebulizer, cannula mask, and tubing.

5 CMS reclassified some noncustom-fitted orthotics tested in San Antonio to custom fitted after the demonstration began.

6 To participate, a supplier had to have a Medicare supplier number, could not be under a sanction or suspension, and needed to comply with federal and Florida or Texas licensure requirements.

for a supplier to be physically located within a market to provide services in that market, the demonstration design did not exclude providers located outside the market areas. This geographic inclusiveness reflects the nature of the product, which can in some instances be delivered through the mail and is often delivered to the beneficiary's residence, rather than at the DME supplier's location. DME suppliers include drug stores, mail-order suppliers, and offices equipped with laboratories and staffed by licensed professionals, such as orthotists. The suppliers vary widely in terms of size; the largest are several national chains with nearly \$1 billion in revenue and the smallest may submit fewer than 150 claims per year for a very narrow selection of items.

Creating a bidding process

CMS created a bidding process that attempted to balance incentives for participation with concerns about access, provider quality, and cost savings. They conducted 2 rounds of bidding in Polk County 2 years apart for a 2-year contract period, and 1 round of bidding in San Antonio, with resulting prices effective for 23 months.

Under this demonstration, the key motivation for suppliers to offer low bids was the threat of exclusion or limited participation in the market. For noncustomized orthotics, surgical dressings, and urologic supplies, CMS excluded bidders above the cutoff point. For hospital beds, wheelchairs, and enteral nutrition pumps, nonwinning suppliers could complete their rental agreement at regular fee schedule amounts.⁷ For oxygen, nebulizer drugs, and enteral nutrition supplies, nonwinning suppliers could maintain a relationship with a beneficiary if it was initiated before the demonstration prices took effect and if they accepted demonstration prices for their goods and services. Allowing some

nonwinning suppliers to continue serving established clients at demonstration prices reduced sudden disruptions for beneficiaries who had relationships with suppliers before the implementation of the new system. Since nonwinning suppliers could not take new clients in the demonstration categories, the nonwinners would presumably exit the market over time or successfully rebid in a subsequent bidding round. Nonwinners could also choose to sell products outside the demonstration or sell to non-Medicare patients.

Bidders were required to bid for all products within a category: They could bid on one, some, or all of the categories. CMS did not require bidders to serve the entire market area geographically, though many chose to do so. Suppliers bid one time in each category; that is, the process of offering a price was not iterative. CMS sealed bids so suppliers did not see other suppliers' bids.

After suppliers submitted bids, CMS used a multistep process to select the winners. First, an evaluation panel considered each bid submitted by category.⁸ The panel could reject a bid if it was unreasonably low; this addressed concerns that the supplier might not be able to purchase and supply the equipment at the bid price. For all acceptable bids, the evaluation panel calculated a composite bid price for each supplier (see text box at right). This composite was a weighted average of a supplier's prices for all items in a category using weights based on each item's share of the category in the preceding year.⁹ This had the effect of weighting a bid more favorably if the bidder lowered prices for items that Medicare purchases frequently rather than discounting low volume or unusual items. CMS used composite prices to rank each supplier's bid in the category in order from lowest to highest; they were not used as payment rates.

Next, in the ranked list of bids for each category, the bid evaluation panel identified a cutoff composite bid price at the point where the cumulative estimated capacity of lower-priced suppliers equaled the projected demand for the category. CMS assessed the capacity of suppliers based on a number of factors, including annual sales, number of beneficiaries served previously, and, in some cases, site visits to the suppliers. The agency set the cutoff to include more winners than it strictly needed to allow for the possibility that some of the winners might fail to meet the quality requirements in the next step. Members of the bid evaluation panel chose natural breaks among the composite amounts in determining the cutoff price to ensure a large difference between winning and nonwinning bid amounts. Nevertheless, some in San Antonio objected to being excluded because they believed they were so close to the cutoff line (within a dollar) that there was no appreciable difference between the winning bids and their own.

Finally, CMS evaluated suppliers below the cutoff price for quality. The evaluation included site visits to the suppliers and at least five references for the quality of each supplier. Suppliers below the cutoff price that did not meet the quality standards were then given the opportunity to address quality deficiencies. This process allowed CMS to negotiate improvements with suppliers, which is generally not permitted in fee-for-service Medicare. CMS then offered those suppliers that met the standards an agreement to become a demonstration supplier. For each product category in both sites, there were at least four or five winning suppliers from which beneficiaries could select.

Once CMS chose a cutoff bid for a category, it calculated the prices for products within the category. While payment for a single item within the

7 Prices for rental equipment are determined under the fee schedule. The duration of a rental lease can be up to 15 months.

8 The bid evaluation panel was composed of staff from Palmetto GBA, one of the four intermediaries that process all of the claims for DME, and associated companies.

9 Initially, CMS based the item's share of the category on allowed charges. Subsequent rounds of bidding in this demonstration based the share on volume.

Comparing bids and calculating prices under competition

CMS developed systems for calculating prices for durable medical equipment under its demonstration. Each winning supplier is paid the same price, regardless of what they bid. The system is designed to ensure that no winning supplier is paid less, on average, than their original bid. This text box explains the detailed calculation used.

CMS first defined the category for competitive pricing and then came up with a way to take into account all the items within the category. One such category was oxygen, which has 15 items. CMS required suppliers to bid for each individual item, but then rolled all these bids together within the category to come up with a composite bid. The composite is simply a weighted average of the bids across the items, with the weights reflecting the volume of purchases in the previous year.

The table below illustrates a hypothetical example of how the composite bid for each supplier is calculated across a category with two items: one accounts for 90 percent of all items Medicare purchased within the category, and the other for the remaining 10 percent. For this example, there are three suppliers. Since item 1 dominates the category, bids for this item drive the composite bid.

	Supplier		
	A	B	C
Bid for item 1	\$0.80	\$1.00	\$1.00
Weight for item 1	0.9	0.9	0.9
Bid for item 2	\$3.00	\$8.00	\$9.00
Weight for item 2	0.1	0.1	0.1
Composite bid	\$1.02	\$1.70	\$1.80

Once the composite bids are calculated, the next step is to determine the market price that CMS will pay. There are two parts to this step. The first part is to determine winners, or those suppliers that will be accepted into the program for that category. The second part is to determine the payment rate for each item.

CMS determines a cutoff bid within the distribution of composite bids. In the example of the three-supplier, two-item category above, the cutoff composite bid is \$1.70. This means that supplier C will not be a winner within this category.

To determine prices for items in the category, CMS averages the winners' bids for specific items after adjusting the bids to account for the relationship between the cutoff bid and the supplier's specific composite bid for the category. Because supplier B's composite bid is the cutoff bid, no adjustment is needed (the adjustment factor is 1.00). For supplier A, the

adjustment factor is 1.67 (\$1.70/\$1.02). Supplier A's bid price for each item is then multiplied by this factor; then, this adjusted bid price is averaged with supplier B's bid price. So, for item 1, the price paid to all winning suppliers will be $(\$0.80 \times 1.67 + \$1)/2$, or \$1.17.

	Supplier		
	A	B	
Item 1			
Bid price	\$0.80	\$1.00	
Adjustment	1.67	1.00	
Adjusted price	\$1.34	\$1.00	
Price for Item 1			\$1.17
Item 2			
Bid price	\$3.00	\$8.00	
Adjustment	1.67	1.00	
Adjusted price	\$5.01	\$8.00	
Price for Item 2			\$6.51

This method of determining prices ensures that no supplier is paid less than their original bid, on average. Prices for some items may be below the bids of some winning suppliers; others will be higher. For item 2, for example, supplier B will be paid about \$1.50 less than the bid. However, since the payment for item 1 is higher than supplier B's bid, and item 1 represents a greater share of all items in the category, supplier B's total payments in the category will be higher than the bids. ■

category could be less than the bid price, Medicare's prices would be set to provide winners with revenues totaling at least as much as the revenues implied by their composite bid. Beneficiaries shared in savings, as CMS calculated their 20 percent coinsurance off of a lower price.

Protecting and educating beneficiaries

The demonstration included structures and processes to monitor compliance and protect beneficiaries. Suppliers and consumer advocates were concerned that, by excluding providers with high bids, beneficiaries would be limited to a pool of lower-quality suppliers. They were also

concerned that because there were fewer suppliers, these suppliers would compromise on service and quality, and solely compete with one another by reducing price. Some advocates noted that relationships with suppliers, especially those that provide fittings or similar services, could be disrupted by excluding nonwinning bidders. Disabled

beneficiaries were particularly concerned as they may use a supplier of prosthetics or orthotics for many years.

Allowing multiple bidders to participate partly dealt with these concerns, and CMS took other measures to promote quality and access to care. First, CMS screened winning bidders for quality. Second, the agency required an ombudsman in each site to investigate all complaints to resolve quality issues. The ombudsmen also helped promote use of both winning and nonwinning bidders as appropriate under the transition policies. For some types of DME, these transition policies allowed beneficiaries to continue established relationships with nonwinning suppliers that agreed to provide DME at the competitively determined price. In addition, CMS conducted extensive outreach to inform beneficiaries and their referral agents about the winning suppliers in each category. Third, to measure the impact on quality and access, CMS conducted surveys of beneficiaries in the demonstration markets before the competitively bid fee schedule went into effect and while it was in place. For each site, CMS chose a comparison market and surveyed beneficiaries in those markets to compare their satisfaction and experience. In addition, every winning bidder was required to comply with prescriptions for a particular brand of a product.

The demonstration administrators also provided extensive information to suppliers, referral agents (such as discharge planners and home health nurses, who tend to direct beneficiaries to DME suppliers), and beneficiaries to recruit and prepare all participants. In Polk County, beneficiaries, referral agents, and others felt that public information and notification were effective.

Results

Generally, the competition resulted in lower prices for DME without a substantial negative impact on

beneficiaries' access or the quality of the goods and services provided. If utilization had remained constant, Medicare's allowed charges would have been reduced by \$8.5 million, or about 20 percent. The two rounds of the Polk County bidding process also allowed the evaluators to compare prices over time. Round two prices were lower for almost all of the items in the oxygen and surgical dressings categories. Hospital bed prices changed little from round one to round two. Prices for urologic supplies increased. Enteral nutrition was not rebid.¹⁰

The administrative costs of the demonstration totaled \$4.8 million. Start-up costs associated with designing the system and programming new billing processes were the largest single component of this amount (\$1.2 million). As might be expected, administrators can gain economies of scale when expanding the number of sites, increasing the ratio of savings to administrative costs. For example, adding the San Antonio site cost \$510,000 over 3 years, while saving about \$4.4 million. The evaluators noted that a program implemented on a larger scale might require some costs not included in the demonstration, such as hiring and paying a permanent staff for the bid evaluation panel. On the other hand, some offsetting administrative savings would likely result from reducing the number of claims paid based on the DME fee schedule.

Surveys indicated product quality, reliability, and customer service did not change. Beneficiaries reported that their satisfaction with the products and services they received remained high following the demonstration.

Even though the number of suppliers was reduced, beneficiaries continued to have access to DME. Polk County residents indicated that, both before and after the demonstration, they usually received oxygen on the day they ordered it, the same number of refills at the same interval, similar training, and a similar

number of visits from a breathing specialist. San Antonio referral agents, who are presumably even more knowledgeable about quality and access than new users of DME, said that the few problems they encountered were transitional in nature (e.g., becoming familiar with the delivery time of new suppliers).

Some findings concerned the demonstration's evaluators. In Polk County, there were statistically significant declines in providing portable oxygen and in training for surgical dressing and urological supply users. Portable oxygen is important to beneficiaries' quality of life as it allows beneficiaries to use oxygen while out of the house. The decline in use has not yet been explained by evaluators. Among the possible explanations are bidding strategies that may hamper beneficiary access. For example, one industry representative speculated that the winning portable oxygen bidders could bid below costs for portable oxygen, while simultaneously bidding above costs for oxygen concentrators (an alternative therapy used in the home) as a way of lowering their composite bid for the oxygen category, with the intention of reducing the provision of portable oxygen.

Similarly, both beneficiaries and referral agents in Polk County complained that suppliers did not always provide preferred brands for urological supplies and, as a result, beneficiaries were not as comfortable with the equipment. It is possible that suppliers addressed these problems after bids for urological supplies increased in the second round of bids.

In San Antonio, some winning suppliers provided improper equipment and inadequate service to wheelchair users. In Polk County, fewer suppliers made home deliveries and suppliers made less frequent routine visits to maintain equipment, although these findings are not necessarily negative. Fewer home deliveries may be attributable to increased

10 This category was dropped because nursing homes are the primary users of these products. CMS allowed nursing homes to maintain their relationships with nonwinning suppliers and few changed their providers.

use of mail-order services, and fewer equipment maintenance visits may indicate better equipment. On the other hand, fewer visits may reduce opportunities for patient assessment. The third evaluation report will provide additional information on quality and access from postdemonstration surveys of beneficiaries, as well as information about any changes in volume of services delivered.

Overall, the initial evaluation results suggest that the market largely functioned as was hoped. Entry and exit in the market appeared healthy, pricing behavior appeared rational, and consumers switched suppliers if one failed to meet their needs. Each site had a large number of bidders. And, of the 16 winners in Polk County's second round, half were winners in the previous round and half were new. When there were anecdotal reports of quality problems, referral agents tended to direct beneficiaries to better-quality suppliers. Also, the fact that bids for urologic supplies went up in the second round following findings in the initial evaluation that urologic suppliers' profit margins were down suggests that the market corrected itself.

CABG demonstration

Using its existing demonstration authority, CMS (known as the Health Care Financing Administration at the time of this demonstration) conducted the CABG demonstration between 1991 and 1996. It examined the effect of selecting facilities based on discounted price, quality of care, and geographic dispersion to receive a bundled payment for hospital and physician services related to cardiac bypass surgery. It selected a total of seven sites, each of which could market themselves as a Medicare Participating Heart Bypass Center to increase market share.

The evaluation found that the demonstration generated considerable interest among providers, reduced the costs to Medicare and the majority of participants, and increased quality of care. It did not, however, increase market share for the majority of participating sites as many expected. To date, CMS has not successfully relaunched the demonstration.

Defining the market

As a first step in defining the competitive marketplace, CMS selected services surrounding two procedures that were high cost and growing in volume. CMS defined the product as all inpatient hospital and physician services that apply to the two DRGs related to bypass surgery: DRG 106 (with catheterization) and DRG 107 (without catheterization). Payment for hospital services included an estimated outlier amount based on each hospital's previous experience, any related readmissions, and standard Medicare hospital pass-through payments. Physician services included not only those by thoracic surgeons, cardiologists, anesthesiologists, and radiologists (all of whom were assumed to be involved in every bypass surgery), but also any other consulting physicians. For example, if a bypass patient was also depressed, the consulting psychiatrist would be paid under the bundled payment. However, the bundle excluded pre-discharge and post-discharge physician services, except for the standard inclusions in the surgeon's global fee.

All 734 hospitals nationwide that performed coronary artery bypass graft surgery on Medicare patients in 1986 were eligible to participate. Participation was national, but local market pressures largely motivated the competition.

Creating the bidding process

CMS invited applicants to submit their best price for the bundled payment. Hospitals calculated separate cost estimates for Part A hospital and Part B

physician services, decided on a set discount rate for each, and then offered Medicare an overall global payment rate.

An outside panel of experts reviewed the quality of each of the 27 hospitals that submitted formal applications and selected 10 finalists to be evaluated further according to 11 criteria:

- Price-related criteria, such as relative prices, discount rates, financial risk, and volume discounts were weighted 50 percent.
- Quality criteria, including severity-adjusted mortality and appropriateness of care were weighted 25 percent.
- Service criteria, such as coverage of unrelated procedures and readmissions were weighted 10 percent.
- Financial incentives offered to patients (i.e., reduced cost sharing) and referring physicians, the quality of the bypass information systems, and total Medicare and non-Medicare bypass volume were weighted 5 percent each.

After scoring each of the 10 applicants from 0 to 100 on each criterion, CMS combined these weighted scores for a total score.¹¹

These finalists then negotiated extensively with CMS to verify the price discount the applicants offered and arrive at the final bid. When this process was complete, it turned out that four hospitals actually bid higher than current payment levels, rather than discounts, and a fifth hospital submitted a bid with rates identical to CMS's projected expenditures. CMS staff then negotiated ambiguous points in the applicants' proposals, including price, beneficiary incentives, quality assurance, and information systems. Because patients still had full choice of hospitals and physicians from which to receive care, potential capacity was not a concern in this demonstration.

¹¹ Since these weights were subjective, CMS conducted a sensitivity analysis to test the robustness of the rankings by modifying the weights. Doing so had little effect on the ranking of the top four to five hospitals.

CMS selected four hospitals—St. Joseph’s Hospital in Atlanta, St. Joseph Mercy Hospital in Ann Arbor, the Ohio State University Hospitals in Columbus, and University Hospital in Boston—and, in May and June of 1991, these hospitals began receiving payments. At CMS’s invitation, three of the six remaining finalists (St. Vincent’s Hospital in Portland, St. Luke’s Hospital in Houston, and Methodist Hospital in Indianapolis) submitted new bids and were added to the demonstration in the second quarter of 1993.

The opportunities to receive a global payment and gain a competitive edge in their local markets were the prime motivating factors for facilities to offer a competitive price. A bundled payment can align physician and hospital incentives more effectively than under current payment methods. Physicians and hospitals are paid separately for their roles in bypass surgery; therefore, physicians have little incentive to reduce hospital or other physicians’ costs even though physicians directly influence those costs. For example, physicians have little financial incentive to move patients out of the intensive care unit (ICU) sooner; use less expensive, equally effective drugs; or minimize the number of consults.

In contrast, with a global payment for hospital and physician services, the hospital can restructure physicians’ payment to give them the financial incentive to be more cost efficient. For example, each site under the demonstration created a pool of funds from which consulting physicians (such as pulmonologists, nephrologists, internists, and neurologists) were paid their regular Medicare allowable fees. Any money left over from the pool at the end of the year was awarded to the four specialists involved in bypass surgery (thoracic surgeon, anesthesiologist, cardiologist, and radiologist) who had control over the number of consulting physician services.

Any deficits from the pool were made up with lower payment amounts in the next period.

In addition, two sites allowed physicians to share in hospital cost savings, further creating incentives to lower costs. One site awarded physicians one-quarter of any hospital cost savings that they personally generated, on top of the originally negotiated payment. Another awarded surgeons more operating room time and converted their physician assistants in surgery and nurse specialists into hospital employees because of positive changes in surgeon practice patterns.

Some sites also gained efficiencies by reducing staff and introducing clinical nurse specialists to oversee each bypass patient’s stay. This new position helped smooth transitions from service to service, avoid costly complications, prepare patients and families for early discharge, improve communications among specialists making clinical decisions, and review standing orders and recommend changes. Sites also substituted several less expensive or generic drugs for more costly ones; in fact, two hospitals saved \$100,000 per year from doing this.

All four of the original participating institutions wanted to protect or expand their current market.¹² First, they believed it was to their advantage to participate at the beginning of the program if it became the basis for selective contracting or a permanent part of the program. Second, other payers were very interested in bundled CABG payments, and the hospitals feared that the failure to be at the forefront could harm their private market. Third, they worried that another hospital in their local market would be designated a Heart Bypass Center. These fears indicate that hospitals believed the imprimatur of being a Medicare Participating Heart Bypass Center would allow them to maintain, or preferably gain, market share and increase volume.

Educating and protecting beneficiaries

Efforts to protect patients were not needed under this model of competitive bidding because quality criteria were used for selection and patient participation was voluntary. Beneficiaries benefitted under the demonstration by having both a lower and a single copayment for both hospital and physician services.¹³ Individual sites were responsible for informing beneficiaries of the designation and the reduced coinsurance.

Results

Overall, this demonstration had a positive impact by reducing providers’ costs, improving quality, and reducing Medicare spending. Medicare saved about \$42.3 million on bypass patients treated in the demonstration hospitals, a savings of roughly 10 percent of the expected \$438 million spending on bypass patients (this included a 90-day postdischarge period). Eighty-six percent of the savings came from CMS-negotiated discounts; 5 percent resulted from lower than expected spending on postdischarge care; and 9 percent came from a shift in market share towards lower-cost demonstration facilities. In addition, beneficiaries (and their supplemental insurers) saved \$7.9 million, for a total estimated savings of \$50.3 million over 5 years.

Participating sites were largely successful in reducing their internal costs per episode. Of the four original sites whose costs were evaluated in great detail, three had absolute decreases in costs per case ranging from 2 to over 23 percent from 1990 to 1993, depending on DRG and hospital. These hospitals used and improved their existing microcost systems in order to link specific services to patients and attach direct costs to them. This is thought to have been a major impetus for changes in physicians’ practice patterns: These hospitals had statistically significant declines of 10 to

12 Parts of the evaluation focus exclusively on the four original sites.

13 CMS set the coinsurance at a fixed actuarial amount below the (estimated) negotiated Part B amount for a typical admission.

40 percent in direct ICU and routine nursing expenses, and in two of those hospitals, declines of roughly 30 percent in pharmacy costs per case complemented falling laboratory costs of 20 to 60 percent. The three additional hospitals added to the demonstration in 1993 also reduced costs through more cost effective practice patterns, but high costs were less of an issue at the outset.

The fourth original site's costs went up 10 to 24 percent in both DRGs (including wage and other price increases). It did not develop a microcost data system that was so instrumental in reducing costs for other sites. Another site that was disappointed in its cost savings acknowledged that its original strategy in participating in the demonstration had been to increase volume, rather than reduce costs (Cromwell et al. 1998).

As might be expected given the selection criteria, the demonstration hospitals had higher than average quality, as measured by inpatient mortality rates, at the outset of the demonstration. Their overall inpatient mortality rates were lower than Medicare's national rates: an average of 4.6 percent for the demonstration participants compared to 5.2 percent from 1991 to 1996. Holding many patient risk factors constant, the evaluation found that demonstration hospitals reduced inpatient mortality rates, which was notable considering their lower than average baseline mortality rates. These rates declined among competitor hospitals at a similar rate. Beneficiaries receiving care through the demonstration sites were more satisfied with the nursing care, length of stay (which was shorter), and reduced paperwork, compared with beneficiaries at competitor's facilities.

Bundling payments under the demonstration also benefitted the hospitals in their private managed care contracting. By the end of the demonstration, hospitals invested in data systems, billing and collection methods, and staffing improvements (i.e., clinical nurse

specialists), and nearly all of the facilities signed new private managed care contracts that bundled payment of heart surgery. Administrators of participating sites noted that the efficiencies prompted by the bundled payment under the demonstration also accrued to private payers. They believed they were able to negotiate much lower payment rates with private payers.

Despite these important positive results, the majority of participating sites did not see the increase in market share or volume expected; in fact, several experienced decreases in one or both.¹⁴ Several factors may account for this. First, many of the sites did not widely advertise the designation. Various participants said they:

- did not want to offend cardiologists by interfering with patient communication;
- found advertising the designation difficult because they were prohibited from using the more easily understood Medicare Center of Excellence label;
- found that, under managed care contracts, referral patterns and hospital choice were not as influenced by marketing directly to the patients;
- expected CMS to promote the designation (although this promise was never made); or
- planned to market the designation partly by waiving the deductible and coinsurance for those without supplemental insurance, which CMS ultimately prohibited.

A second factor was changing local market conditions and technology. In some of the participants' market areas, competing hospitals were developing bypass surgery capabilities and opening catheterization labs, drawing volume

away from established open heart surgery programs. At least one participant also felt that it already had significant market share and did not need to expand it. In retrospect, this facility speculated that the design of the program was better suited to newer hospitals who needed to gain market share.

Finally, the failure to increase market share may be partly attributed to beneficiaries' and physicians' reluctance to change their patterns of care in response to quality information. Less than one-third of the patients in the demonstration sites responded that the knowledge of the national designation affected their decision to use the demonstration site. Overall, only 6 to 7 percent of patients in the demonstration and competitor hospitals reported considering a different hospital than the one in which they were treated. Similarly, although two-thirds of referring physicians knew about the demonstration status of the hospitals, this knowledge had little or no effect on physician referral patterns.

Avoiding double-paying physicians and coordinating with supplemental insurers were the two most significant administrative challenges. Subsequent improvements in information systems now appear to prevent the possibility of paying for the same physician service twice—once as part of the bundle and again if the service is billed separately.

Building upon demonstration experience

These demonstration results suggest that harnessing competitive market forces can result in better prices for goods and services in fee-for-service Medicare without compromising quality. However, neither approach has been subsequently adopted as an extended demonstration, nor as a permanent part of the program.

14 Two sites increased market share and four sites increased volume, including the two that gained market share. Two sites experienced little change in market share, while three had decreases.

CMS does not currently have the authority to selectively contract, either as part of a demonstration or as part of the permanent program. By providing the agency with the ability to exclude noncompetitive bidders from participating in the program, selective contracting authority can reward and encourage competitive bids. CMS also does not have the authority to adopt a successfully demonstrated purchasing approach as a permanent aspect of the program.

MedPAC’s recommendations encourage an implementation process that favors action. Allowing CMS the administrative flexibility to tailor competitive pricing strategies improves the likelihood that the many variables that influence the success of such an initiative can be addressed in a thoughtful and case-by-case manner. The Congress has a strong interest in promoting payment approaches that are consistent with the intent of the program—improving beneficiaries’ access to quality care without unduly burdening taxpayers or beneficiaries—and should have an opportunity to intercede if those goals are not being achieved.¹⁵ This process should not encourage micromanagement or delay, however. Since the Secretary is best equipped to assess the appropriateness of a given geographic area for competitive bidding, the specific sites should not be subject to Congressional review.

RECOMMENDATION 8A

The Congress should give the Secretary demonstration authority to initiate competitive pricing demonstrations.

RECOMMENDATION 8B

For demonstrations that prove successful, the Secretary should have the authority to implement competitive pricing. The Congress should have a fixed period of time to review and approve any implementation plan.

IMPLICATIONS

Spending

- Medicare demonstration experience suggests competitive pricing can result in savings, depending upon the markets and products selected for competitive pricing.

Beneficiary and provider

- Medicare demonstration experience suggests that competitive pricing can result in reduced beneficiary spending for quality goods and services. Beneficiaries’ choice of provider could be restricted if Medicare contracts exclusively with winning bidders; otherwise beneficiary choice would not be affected. The impact of this approach on providers would vary by provider and product, depending upon the design and providers’ bidding strategy.

In considering how these two somewhat limited demonstrations can be expanded upon, policymakers must recognize several issues:

- Competition may work better in some geographic areas than others. In rural areas of the country, for example, there may not be a sufficient number of providers or beneficiaries to produce a competitive dynamic. Analysis of DME markets indicates that the competitive dynamic varies by geographic market and may not be the same for each product (see text box, p. 144).
- Competition may work better for some products than others. Adjusting bids to account for differences in health status is particularly important for services where the cost varies with the complexity of the patient, and the accuracy of current case-mix adjustment methods may not be sufficient. Services that are less influenced by the relative health

status of the patients served, such as laboratory and diagnostic imaging services, may be particularly good candidates for this purchasing approach.

- The results of a demonstration relying on competitive forces may be influenced by the market conditions and Medicare payment policy at the time. For example, competitive pricing may be more likely to result in savings when there is excess capacity in the delivery system and purchasers are in a better position to negotiate low payment rates. Similarly, changes in fee-for-service rates, like pending Medicare physician payment rate reductions, may affect provider willingness to participate in a new demonstration. Providers told CMS staff this was a reason for not participating in a renewed CABG demonstration.
- The results of a demonstration might not be the same when implemented more broadly. Providers in a demonstration may take different strategies when the competitive terms are limited to only a small segment of their market. For example, a supplier doing business in many market areas may be able to afford to bid low in one or two markets and cross-subsidize any losses from profits in other market areas. However, if CMS conducted bidding in a larger subset of markets, cross subsidization may not be as likely and the bids could be higher.
- A demonstration that reduces payment or volume for a subset of services that tends to have a higher profit margin (e.g., heart bypass surgery) may undermine the financial viability of core services (e.g., emergency department services) that are cross subsidized.

¹⁵ The Congress currently has the authority to disapprove major rules within 60 days from transmittal to the Congress through a joint resolution under the Congressional Review Act. Under this Act, the President has the right to veto the resolution.

Competitive bidding for DME

The Commission finds the initial evaluations of the DME demonstration compelling, and voted to recommend that such competitive bidding be expanded and integrated into the Medicare program. Because this recommendation depends on the results of the final evaluation, the Commission will await issuance of the final evaluation report before forwarding that recommendation to the Congress. Due for public release this summer, this evaluation will be an important indicator of the impact on quality and access in both sites, as well as our first indication of whether competitive bidding has affected the volume of items supplied. It will also provide the first information on the results of initial and follow-up surveys of San Antonio beneficiaries.

The Congress and CMS will have numerous design choices to make in the broader implementation of competitive bidding for DME. Although the Commission has not undertaken an exhaustive consideration of possible options, the following design choices have merit:

- Expanding into markets that stand a good chance of producing savings helps to prevent administrative costs from exceeding savings achieved from competitive forces.
- Including transition policies, such as those in the DME demonstration, that allow beneficiaries to continue receiving service from current suppliers may help allay their concerns about reduced choice of providers. Similarly, allowing them opportunities to receive services from nonwinning providers is another option. For example, all beneficiaries could be required to use winning DME suppliers for a period of time. If after that period, a beneficiary was dissatisfied with his or her choice of

suppliers, he or she could use a nonwinning supplier. Allowing beneficiaries to opt out may satisfy those who are disgruntled, while directing the majority to winning bidders. These policies may be necessary to gain the support of beneficiaries, one of Medicare's key political stakeholders, for this purchasing approach. In dissecting reasons for the demise of the Medicare Competitive Pricing Demonstration, which sought to determine Medicare's payment for health plan care through competitive bidding, policymakers cited the united opposition of health plans and beneficiaries (Nichols and Reischauer 2000).

- Testing bidding of products under a demonstration prior to competitively bidding these products on a larger scale may help identify problems that could be averted upon broader implementation. For example, adverse product substitution that might stem from coding problems (e.g., codes that include an overly broad array of goods or services) or imprecise prescribing practices (e.g., the failure of a physician to specify the brand or type of product essential for the patient) could be addressed prior to expansion. Identifying a problem within a demonstration does not necessarily mean that it is not appropriate for expansion, however.
- Monitoring is needed and immediate assistance should be available. Such activities would help avoid decreased quality or access that could result from reducing the number of suppliers and the price paid for their services. Having multiple winners in each category also appears to promote quality and access while fostering competition.

CABG demonstration

After the CABG demonstration, CMS twice tried to launch similar demonstrations. In 2000, after receiving over 100 responses to a request for proposals (RFPs) for cardiac and orthopedic procedures, CMS suspended its new Centers of Excellence demonstration citing resource constraints from Y2K and the Balanced Budget Act of 1997. Later, CMS renamed the initiative Partnerships for Quality and sent RFPs to eligible providers in three states. Response was limited and ultimately interest dissolved due to a combination of factors. Those declining to participate cited pending physician fee schedule reductions and DRG classification issues, both of which have been subsequently addressed to some extent.¹⁶

Certain aspects of the CABG demonstration hold promise. In particular, bundling payment for Parts A and B services may effectively align incentives to coordinate care, which could, in turn, improve both quality and efficiency. In addition, rewarding facilities for high quality or improved performance with public recognition could be an incentive for all facilities to improve, assuming there were multiple rounds of competition over time (see chapter 7 for a detailed discussion of incentives for quality). However, because this demonstration simultaneously tested a number of interventions (including restructuring payments, publicly designating certain facilities as high quality, and setting competitive prices), and facilities responded differently to the mix of interventions, the demonstration's results are difficult to interpret. Providers' lack of interest in participating in a renewed demonstration also casts some doubt on the feasibility of this particular demonstration approach. Accordingly, the Commission is not making a recommendation at this time with respect to continuation of this purchasing model. ■

¹⁶ In a related matter, the Secretary has announced that CMS will contract with and pay a consortium of Virginia hospitals a bundled fee for cardiac procedures, discounted in later years of the demonstration.

Identifying new markets for competitive bidding for durable medical equipment

We have begun to explore two factors to identify vigorous, sustainable new markets for durable medical equipment (DME): the number of suppliers in a market and the relative concentration of market shares among those suppliers. We analyzed a 5 percent sample of claims for DME in 2001—about 3,500,000 claims—to measure market conditions across the country. Our initial findings suggest:

- About 75 metropolitan statistical areas encompassing about 20 million beneficiaries have as many suppliers as Polk County, or more.
- Market concentrations vary by type of DME.

The number of DME suppliers in a market (defined as either a metropolitan statistical area or a statewide nonmetropolitan rural area) varies widely across the country. Market sizes vary from 1,600 suppliers in Los Angeles to 30 in nonmetropolitan Massachusetts. The median market has about 170 suppliers. Compared to markets across the country, Polk County and San Antonio had a fairly large number of suppliers, with 320 and 370 suppliers, respectively, before the demonstration. A large total population in the market appears to attract a large number of suppliers.

The number of suppliers per 1,000 beneficiaries also varies widely. The median market has 3.4 suppliers per 1,000 beneficiaries. There are over 7 suppliers per 1,000 beneficiaries in nonmetropolitan Massachusetts but only 1 per 1,000 beneficiaries in San Diego. This could suggest that San Diego is relatively underserved compared to rural

Massachusetts. Alternatively, and perhaps more likely, it suggests that in larger markets, the suppliers are simply larger instead of more numerous. DME suppliers could be very large since they do not have the same constraints as facility-based providers.

Many suppliers do not provide the full range of DME goods covered by the benefit. For example, there are over 930 suppliers in Atlanta, Georgia, but only 93 of them supply oxygen and oxygen-related supplies. We subdivided our analysis of the size of markets by the type of DME.¹ The same positive relation between the number of suppliers and the total population held, though it varied somewhat from type to type.

We also considered a measure of market concentration as a possible criteria for identifying promising markets for competitive bidding. Though a market has a large number of beneficiaries and suppliers, it could be dominated by only one or two suppliers. Such a market could be less competitive than one with fewer suppliers whose shares of the market are spread more evenly.

The Herfindahl index (HI) is widely used in health services research to measure market concentration (Baker 2001).² However, this measurement seems unlikely to be predictive of the outcome of a competitive pricing program. The difficulty of identifying and anticipating the behavior of potential market entrants (Bernstein and Gauthier 1998) or the behavior of winning competitors in a market with far fewer competitors following the exclusion of nonwinning suppliers substantially limits its usefulness as an indicator of whether a given geographic

market is a good candidate for competitive bidding.

The HI did uncover some differences in market concentrations for the various types of DME (Table 8-1). Most markets for medical and surgical supplies were relatively unconcentrated; many suppliers had evenly distributed market shares. However, most markets for drugs and nutrition products were very concentrated; there were either very few suppliers in the market or dominant market shares were held by one or two suppliers. Markets for other types of DME were moderately concentrated.

The relative concentration of DME markets is not strongly associated with population size. Most markets, regardless of size, were highly

TABLE 8-1

Concentration of markets, by type of DME

Type of DME	Median index
Other DME	700
Medical or surgical supplies	780
Hospital beds	1,500
Oxygen	1,530
Wheelchairs	1,570
Orthotic devices	1,660
Nutrition	2,570
Drugs	3,660

Note: DME (durable medical equipment). The type of DME is defined using Berenson-Eggers type of service. The index is Herfindahl index score. A higher score indicates a less competitive market.

Source: MedPAC analysis of the 5 percent standard analytic file of claims for durable medical equipment in 2001.

1 To divide markets by type of DME, we used the eight-category Berenson-Eggers Type of Service (BETOS) classification. The BETOS classification assigns each DME code to one clinically-related group, such as hospital beds.

2 A Herfindahl index is based upon the sum of the squares of the market share of each competitor in the market. Two different markets may have the same number of competitors, for example, four suppliers. In the first market, each supplier has a 25 percent share; the score would be 2,500 ($25^2 + 25^2 + 25^2 + 25^2 = 2,500$). In the second market, one supplier has 70 percent of the market and the rest have only 10 percent apiece; the score would be 5,200 ($70^2 + 10^2 + 10^2 + 10^2 = 5,200$). In this hypothetical example, both markets are relatively concentrated, but the second market is far more concentrated than the first.

Identifying new markets for competitive bidding (continued)

concentrated for nutrition and drugs. However, in oxygen for example, markets with as few as 100,000 people had enough suppliers with evenly distributed market shares to be considered relatively unconcentrated, while some markets with as many as 2 million people were highly concentrated.

As a simple policy proxy, total population is probably sufficient to identify markets with many suppliers. However, identifying markets with both a large number of suppliers and an even distribution of market shares, by type of DME, requires more detailed analysis.

Refinements to the analysis should also be made. Our sample included over 50,000 DME suppliers, but some very small suppliers may not be included in our analysis. Statewide nonmetropolitan areas are not likely to be true markets because many suppliers might not provide DME to the entire market or even to most of the market. These market areas should be subdivided and tested further. Also, the analysis discussed here does not account for substantial common ownership of suppliers in any market. For example, a single chain of drugstores may operate dozens of suppliers in a single market.

Also, our use of BETOS codes in this analysis should be tested for its adequacy as a market definition. In the demonstration, CMS required suppliers in most cases to bid for every product category, thus defining the market. However, nonmanual wheelchairs were excluded from the wheelchair category, and custom orthotics were exempted from the orthotics category. Defining markets with such exemptions could lead to different results in our analysis. ■

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CHAPTER

9

**Medicare payments for
outpatient drugs under Part B**

Medicare payments for outpatient drugs under Part B

This chapter looks in depth at one service—Medicare-covered outpatient drugs—for which the Medicare payment method is flawed. Three major problems are that Medicare payments far exceed provider acquisition costs; the system creates incentives for manufacturers to raise their list prices, resulting in increased Medicare payments; and drug administration fees do not reflect the true costs of providing drugs to beneficiaries.

Policymakers are considering how to change the current system. We examined payment methods that other public and private purchasers have developed for physician-administered drugs. We also analyzed the alternatives suggested by the policy community, which include benchmarking methods, payment based on invoice prices, and competitive bidding. Several variants of benchmarking methods are possible, including benchmarking payment amounts to transaction prices that could be audited. Combination approaches based on the competitiveness of the therapeutic drug class are also possible. While each method has advantages and disadvantages, any one of these alternatives would be a significant improvement over the current payment system.

In this chapter

- Coverage and spending
 - Issues raised by the current payment system
 - Reform efforts
 - Lessons from other payers
-

Spending for outpatient drugs covered under Medicare Part B has grown rapidly. Preliminary estimates suggest that expenditures reached \$8.5 billion in 2002, an increase of nearly 35 percent over 2001 totals. For the past four years, expenditures have increased annually by more than 20 percent. This growth reflects increased use of the drugs, rising prices, and incremental coverage expansions. Medicare-covered outpatient drugs are mainly used in cancer treatment, dialysis, organ transplantation, and hemophilia. Medicare also covers some outpatient drugs used with durable medical equipment such as infusion pumps and nebulizers.

Medicare pays providers 95 percent of the average wholesale price (AWP) for each covered drug. Despite its name, AWP does not represent the average wholesale price but rather can be thought of as a manufacturer's suggested list price. AWP is not defined in law or regulation and does not have to correspond to any transaction price or average transaction price. A series of studies by the General Accounting Office (GAO) and the Department of Health and Human Services' (HHS) Office of Inspector General (OIG) showed that the current Medicare payment method leads to payments that far exceed providers' costs (GAO 2001b; OIG 2001, 1997, 1996). In some cases, beneficiaries' coinsurance payments alone exceed the price physicians and other providers paid for the drugs.

This chapter describes the current payment method and looks at the potential alternatives being considered by the policy community. We examine the mix of drugs covered by Medicare and analyze trends in spending and provide an overview of the legislative and regulatory history of the payment system, including recent administrative steps taken by CMS. We focus on three problems with the payment system: Medicare payments far

exceed provider acquisition costs; the system creates incentives for manufacturers to raise list prices; and high drug prices may, in part, subsidize drug administration fees, which may not reflect the true cost of providing drugs to beneficiaries.

We present some alternatives to reform the Medicare payment system, and analyze how they would affect Medicare payments for covered drugs, how likely they are to affect beneficiary access to needed therapies, what administrative costs they would entail, and how they might affect the operation of the wider pharmaceutical market. While all payment methods have advantages and disadvantages, each option analyzed would be a significant improvement over the current payment system. Most would eliminate manufacturer incentives to raise list prices. Finally, we examine payment methods developed by other public and private payers for physician-administered drugs. These methods provide additional insight into alternatives to the Medicare payment system.

Coverage and spending

Medicare spending for Part B drugs has increased rapidly in recent years, growing by 26 percent in 2001 with corresponding increases in beneficiary obligations for copayments. Beneficiaries who receive these drugs are responsible for paying 20 percent coinsurance after they meet the annual Part B \$100 deductible. CMS projects that expenditures totaled \$8.5 billion in 2002, an increase of nearly 35 percent.¹ Increased spending is associated with recent coverage expansions. Spending for Part B drugs is highly concentrated. The top 35 drugs accounted for almost 90 percent of drug spending and three specialties—hematology oncology, medical oncology, and urology—accounted for more than half of total billing in 2001.

Which drugs are covered?

In general, Medicare covers drugs administered in physician offices, used as part of durable medical equipment or infusion devices, as well as some oral drugs used following organ transplants. Of the top 20 drugs covered by Medicare in 2001, 7 received Food and Drug Administration (FDA) approval in 1996 or later.

Drugs currently covered

Under Part B, Medicare covers about 450 outpatient pharmaceutical products and biologics. Spending is highly concentrated among these products. Thirty-five of the covered drugs account for 88 and 95 percent of Medicare drug spending and drug claims volume, respectively. The top 20 drugs covered under Part B are shown in Table 9-1. They accounted for about 77 percent of Part B drug expenditures; nonend-stage renal disease erythropoietin² alone accounted for more than 12 percent.

Not generally available through retail pharmacies, these drugs are provided by physicians in their offices or through pharmacy suppliers that provide drugs used with durable medical equipment. They include:

- drugs not self-administered and furnished incidental to a physician's service, such as prostate cancer drugs;
- certain cancer and anti-nausea drugs available in pill form;
- blood clotting factor;
- immunosuppressive drugs used following organ transplants;
- erythropoietin used to treat anemia in end-stage renal disease patients and cancer patients;
- drugs used as part of durable medical equipment or infusion devices like the albuterol used in nebulizers for asthma and other pulmonary diseases; and

¹ Expenditure totals for 2002 are still preliminary. These totals represent carrier paid drugs and do not include intermediary paid drugs including drugs dispensed in outpatient departments of hospitals and freestanding dialysis facilities (see text box, p. 155).

² The Congress established a separate payment rate for erythropoietin supplied to end-stage renal disease patients in dialysis facilities (see text box, p. 155).

**TABLE
9-1**

**Top 20 drugs covered by Medicare Part B,
by share of expenditures, 2001**

Drug name	Clinical indications	Type of competition	Date of FDA approval	Percent of Part B drug spending
Non-ESRD erythropoietin	Anemia	Multisource; biological	1989	12.1%
Leuprolide acetate suspension (Lupron)	Prostate cancer	Multisource	1985	10.4
Ipratropium bromide	Asthma and other lung conditions	Generic	1993	7.3
Goserelin acetate implant (Zolodex)	Prostate cancer	Sole source	1989	6.8
Albuterol	Asthma and other lung conditions	Generic	1982	5.5
Paclitaxel injection*	Cancer	Multisource	1992	4.2
Rituximab	Non-Hodgkins lymphoma	Sole source biological	1997	4.2
Pamidronate disodium*	Cancer related	Sole source	1991	3.0
Infliximab	Rheumatoid arthritis, Crohn's disease	Sole source biological	1999	3.1
Docetaxel	Cancer	Sole source	1996	2.6
Carboplatin injection	Ovarian carcinoma	Sole source	1989	2.6
Filgrastin injection	Cancer	Multisource biological	1991	2.5
Irinotecan injection	Cancer	Sole source	1996	2.5
Gemcitabine Hcl	Cancer	Sole source	1996	2.1
IV immune globulin	Immunodeficiency for transplants; HIV	Multisource biological	early 1980s	1.8
Dolasetron mesylate	Cancer related	Sole source	1997	1.8
Hylan G-F 2 injection	Pain from osteoarthritis	Multisource	1997	1.3
Unclassified drugs	N/A	N/A	N/A	1.0
Leucovorin calcium injection	Cancer	Generic	before 1982	1.0
Influenza vaccine	Influenza prevention	Multisource biological	N/A	1.2

Note: ESRD (end-stage renal disease), FDA (Food and Drug Administration), HIV (human immunodeficiency virus), IV (intravenous), N/A (not applicable).
*Now have generic equivalents available.

Source: MedPAC analysis of 2001 Medicare claims data from CMS and unpublished FDA data.

- osteoporosis drugs provided to certain beneficiaries by home health agencies.

Physician-billed drugs account for the largest share of program spending. In 2001, physician claims accounted for

more than 80 percent of total Medicare expenditures for outpatient drugs. This category includes many brand name drugs and biologicals for which no competition exists, and that tend to be more expensive than generic drugs (see text box, p. 153).

Billing is concentrated in certain specialties (Figure 9-1, p. 152). Most claims are submitted by oncologists. Three specialties—hematology oncology, medical oncology, and urology—submitted claims for 58 percent of total billing for Part B-covered drugs. Primary care physicians submitted claims for an additional 6.4 percent of covered drugs. For some specialties, payments for Part B drugs represent a large portion of total Medicare payments. In 2001, 72 percent of all Medicare payments to hematology oncologists and medical oncologists were for Part B drugs. Similarly, 64, 43, and 31 percent of Medicare payments to hematologists, urologists, and rheumatologists, respectively, were for covered drugs.³

Pharmacy-supplier billed drugs account for the largest volume of drug claims: Two inhalation therapy drugs, albuterol and ipratropium bromide, accounted for 88 percent of prescriptions filled by pharmacy suppliers for home administration in 1999. This category tends to contain more lower cost drugs with generic equivalents.

Medicare also pays for some outpatient drugs and biologicals provided in immunization centers and independent laboratories.

How coverage has expanded

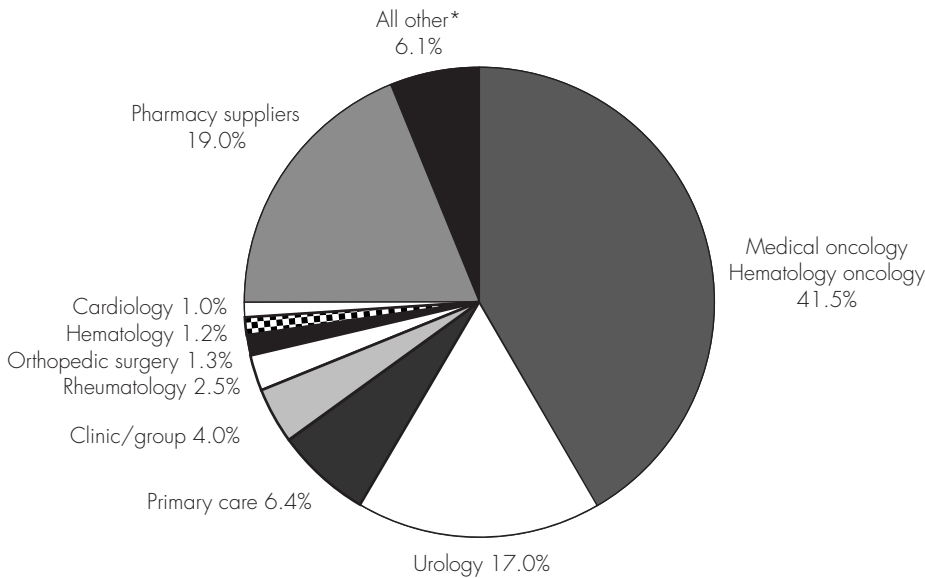
Coverage policies for Part B-covered drugs have been a continuing subject of Congressional interest and controversy. The Congress has gradually increased the quantity, type, and duration of drugs covered to address additional beneficiary needs. Although the Congress mandates the categories of drugs that Medicare covers, decisions by CMS and local carriers determine the specific drug products eligible for reimbursement. There can be significant differences in coverage for specific drugs by regional carriers.

Legislation expanded drug coverage under Part B three times in the past decade. Each legislative change has led to calls for further expansions:

3 MedPAC analysis of 2001 Medicare claims data from CMS.

**FIGURE
9-1**

Medicare drug spending, by physician specialties and other providers, 2001



* No other provider had expenditures equal to at least 1 percent of total Medicare drug spending.

Source: MedPAC analysis of Medicare claims data, 2001.

BIPA removed the three year time limit for coverage. In the 107th Congress, legislation was introduced to require continuing coverage of immunosuppressives for Medicare beneficiaries, regardless of whether they received transplants while enrolled in Medicare.

Several other bills requiring incremental expansions in Part B drug coverage are before the Congress.

What is Medicare's payment policy?

Medicare has used different methods to reimburse providers and suppliers for outpatient drugs over time. Before 1992, Medicare carriers generally paid for drugs based on physicians' estimated costs as measured by the AWP. In 1992, Medicare formalized this policy and it fixed payments for covered outpatient drugs at 100 percent of AWP.

AWP and Medicare payments

Despite its name, AWP does not represent the average wholesale price. AWP can be thought of as the published suggested wholesale price of a drug or a manufacturer's suggested list price. It does not have to correspond to any transaction price or average transaction price. Actual transaction prices often reflect substantial discounts. Every drug has its own AWP. Because information about the actual prices manufacturers charge their customers is proprietary, AWP's are one of the few publicly available sources of drug prices.

AWP has never been defined in statute or regulation. Individual AWP's are compiled and reported in compendia like the Red Book and First Databank, largely on the basis of information supplied by manufacturers. Because there is no official calculation method, CMS potentially can use alternate sources of information like market surveys to establish new AWP's for setting Medicare payment rates. These rates could be tied to actual transaction prices.

- Since 1993, Medicare has covered cancer drugs administered through oral dosages if injectable forms were already available, but not otherwise. This policy left gaps that led advocates to call for the coverage of all cancer drugs. For example, a new class of cancer drugs that disrupt the growth of cancer cells without damaging surrounding tissues is being developed. The first such drug, Gleevec, approved for treatment of chronic myelogenous leukemia, came on the market last year. Because this breakthrough drug has never had an injectable form, it is not covered by Medicare.
- A provision in the Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 (BIPA) expanded the class of drugs eligible for coverage from those that are not self-administered to those not *usually* self-administered. This policy has led to calls for broader coverage of self-injectable

drugs. In May 2002, a CMS program memorandum clarified the coverage rules: Drugs delivered by intramuscular injection are covered, but drugs delivered through subcutaneous injections are not. Thus, Medicare will cover Avonex, one drug that treats multiple sclerosis, because it is delivered through intramuscular injection, but does not cover any other drugs for this condition. Carriers can make exceptions based upon a number of factors including frequency of administration, but not based on the capabilities of the individual patient. Legislation in both Houses of Congress would increase Medicare coverage for self-injectables.

- A previous expansion mandated coverage of immunosuppressives for beneficiaries receiving organ transplants. Coverage was limited to three years even though patients must continue taking these medications for the rest of their lives. A provision in

Glossary of terms

Biologic: a product derived from living material—human, plant, animal, or microorganism—applicable to the prevention, treatment, or cure of diseases or injuries of humans. A company patents the *production process* for manufacturing a biologic rather than the product itself.

Biotechnology: a set of tools that employ living organisms (or parts of organisms) to make or modify products, improve plants or animals, or develop microorganisms for specific uses. Modern biotechnology includes the use of recombinant DNA and monoclonal antibodies.

- **Recombinant DNA** (rDNA or *in vitro recombination*): molecules constructed outside living cells by joining natural or synthetic DNA segments to DNA molecules that can replicate in a living cell.
- **Monoclonal antibody:** laboratory-produced substances that can locate and bind to cancer cells wherever they are in the body. Many monoclonal antibodies are used in cancer detection or therapy. Monoclonal antibodies can be used alone or to deliver drugs, toxins, or radioactive material directly to a tumor.

Drug: any chemical compound used in the prevention, diagnosis, treatment, or

cure of disease, for the relief of pain, or to control or improve any physiological or pathological disorder in humans or animals. Drugs produced by more than one manufacturer are called generic or multiple source. Drugs produced by one manufacturer are called single source drugs.

- **Generic drug:** identical, or bioequivalent, to a brand name drug in dosage form, safety, strength, route of administration, quality, performance characteristics, and intended use. Although generic drugs are chemically identical to their branded counterparts, they are typically sold at substantial discounts from the branded price.
- **Multiple source (multisource) drug:** marketed or sold by two or more manufacturers or labelers, or a drug marketed or sold by the same manufacturer or labeler under two or more different brand names. This category includes both generic and brand name drugs.
- **Single source drug:** marketed or sold by only one manufacturer or labeler under one brand name.

Inhalation therapies: a group of respiratory treatments designed to help restore or improve breathing function

in patients with a variety of diseases, conditions, or injuries.

Infusion therapies: treatments involving the administration of medications, nutrients, or other solutions into the bloodstream, under the skin, into the digestive system, or into the membranes surrounding the spinal cord.

Injection methods: Three injection methods are intramuscular, intravenous, and subcutaneous.

- **Intramuscular injection:** an injection given into a muscle of the body. CMS defines drugs delivered by this method as not usually self-administered by the patient.
- **Intravenous injection:** a process of slowly injecting fluids and drugs into a blood vessel.
- **Subcutaneous injection:** an injection beneath the skin.

Radiopharmaceutical: a pharmaceutical, biologic, or drug that contains a radioactive entity.

Therapeutic class: a group of drugs similar in chemical structure, pharmaceutical effect, and/or clinical use. There are many different ways of classifying therapeutic classes. ■

From 1992 until 1997, Medicare calculated reimbursement for covered outpatient drugs on the basis of 100 percent of the published AWP. A continuing series of investigations by the OIG (OIG 1997, 1996) demonstrated that this method resulted in Medicare paying far more than other public purchasers for these drugs. The OIG compared the rates

Medicare paid with the prices advertised in catalogues published by drug wholesalers and group purchasing organizations, the sources most physicians and pharmacy suppliers use to purchase their stock. The drugs were widely available to purchasers at prices well below AWP. After considerable debate, the Balanced Budget Act of 1997 (BBA)

set payment rates for Medicare covered single source drugs and biologics at 95 percent of AWP.⁴

Current Medicare payment rates are:

- for brand name drugs produced by a single manufacturer (referred to as single-source drugs), 95 percent of AWP.

4 The President's fiscal year 1998 budget contained an alternate proposal for AWP reform.

- for drugs for which there are two or more competing brand name products (referred to as multisource drugs) or generic equivalents available, 95 percent of the lower of (a) the median AWP of all generic forms of the drug or (b) the lowest brand-name product AWP.

Coding issues

The AWP payment method has resulted in reimbursement inconsistencies among carriers.⁵ The OIG found wide variation in prices paid by local carriers for covered drugs even though all payments were based on the same formula. Much of the difficulty stems from differences in how physician-administered drugs are coded by Medicare as well as many private payers. Medicare relies on Healthcare Common Procedure Coding System (HCPCS) codes to identify drugs for payment. Under this classification scheme, most covered drugs are assigned J-codes. For drugs administered outside of physician offices, other public and private payers use a coding system based on national drug codes (NDCs) maintained by the FDA. Every drug sold in the United States has a unique NDC that provides information on the chemical molecule, the drug manufacturer, dosage, dosage form, and package size. AWP's are attached to each NDC. To determine drug AWP's for purposes of Medicare payment, carriers must convert HCPCS codes into corresponding NDC codes.

While some HCPCS codes correspond to only one NDC, others can represent as many as ten. Even when a HCPCS code identifies a single drug, NDC codes might differ depending upon the size of the package from which the drug was dispensed. Carriers had to choose the AWP from a single NDC code or compute an AWP from several corresponding NDC codes. Each carrier could make a different decision. Carriers also differed in frequency of updating AWP's. In a recent study, the OIG found that carriers' payment amounts for a single HCPCS code differed by more than 10 percent.

CMS recently addressed this problem by the establishment of a single drug pricer (SDP) for drugs and biologicals covered under Medicare Part B. The section on CMS efforts to reform the payment system discusses inherent reasonableness and the SDP policy.

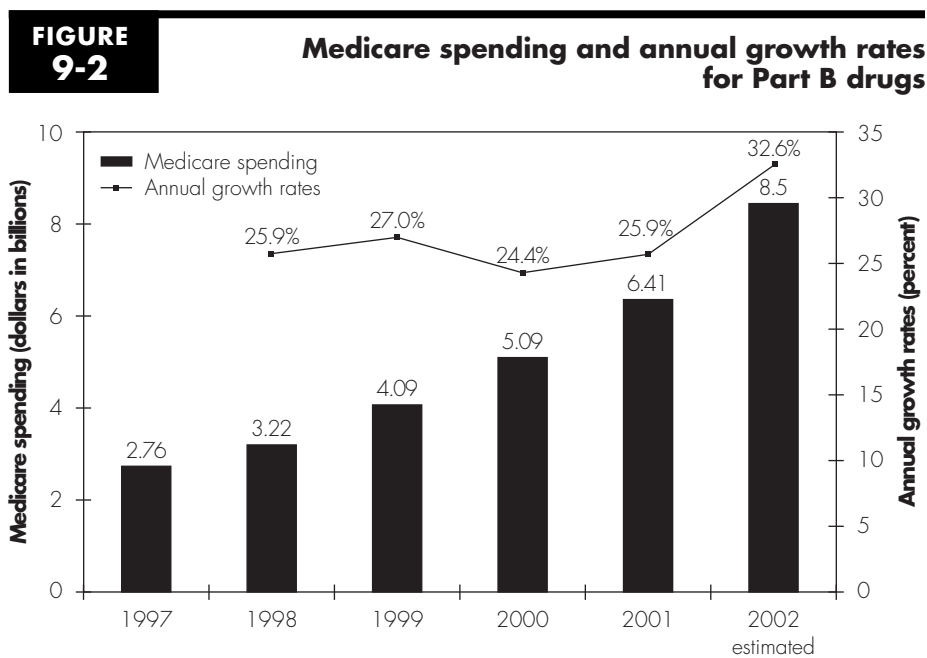
Why has spending increased?

Total spending for Medicare Part B-covered drugs (that is, program spending and beneficiary cost sharing) rose from about \$700 million to \$4 billion from 1992 to 1999. Between 1999 and 2000 alone, spending increased an additional \$1 billion. Total spending increased by 26 percent, or nearly \$1.5 billion, in 2001 to reach \$6.4 billion (Figure 9-2). Expenditures for Part B drugs now equal about 3 percent of total Medicare spending (see text box at right). Preliminary estimates suggest that expenditures rose to \$8.5 billion in 2002, an increase of nearly 35 percent.

The primary reason for growth in this sector is the increased volume of drugs used and the substitution of newer and

more expensive medications for older therapies. More people are living with serious chronic diseases and new treatments for managing these diseases are being developed. Of the top 20 drugs covered by Medicare in 2001, 7 received FDA approval in 1996 or later (Table 9-1, p. 151). In addition, the types of new drugs under development are driving up costs. Manufacturers of breakthrough technologies for these diseases have some incentive to produce injectables rather than oral solids because they have lower drug development costs, greater potency per dose, and higher efficacy rates (Ransom 2002). Also, Medicare coverage for outpatient drugs, other than those supplied in conjunction with certain items of durable medical equipment (DME), is generally limited to those requiring physician administration.

The most significant factor driving spending growth is the emergence of an increasing number of drugs produced through the use of biotechnology. More than 80 such products have received FDA approval and over 350 additional products targeting more than 200 diseases are



Source: Unpublished CMS data.

⁵ Carriers are private organizations, usually insurance companies, that serve as the government's fiscal intermediary for items and services provided under Medicare Part B.

currently in human clinical trials (AIS/PharMedQuest 2001). Not only are these products expensive when initially marketed, they face only limited competition over time because the FDA has no approval process for generic versions of biologicals.

MedPAC sponsored a study conducted by a team of researchers at NORC at the University of Chicago and Georgetown University (NORC/Georgetown 2003a) on drugs in the final stages of clinical trials. The goal was to determine if these drugs are likely to be covered under Part B under current Medicare coverage rules. Researchers identified more than 650 drugs in development by over 100 pharmaceutical and biotechnology companies, with nearly one-fourth in the late stages of development. A large number of these products are biological agents.

Researchers interviewed experts on the pharmaceutical industry to help identify important trends. They found that about 70 percent of the identified drugs are being tested for treatment of various cancers. However, they noted a trend toward the development of physician-administered drugs for other conditions. Many of these products could be eligible for Medicare coverage if they reach the market. Some are important for future Part B spending because they treat conditions with high prevalence in the elderly, such as heart disease, rheumatoid arthritis, and diabetes.

On the other hand, researchers found that the incentives created by Medicare coverage rules to develop physician-administered forms of drugs are countered by other market incentives. Patients prefer the convenience of self-administered drugs, and physicians believe that this convenience is likely to lead to better patient compliance with therapy. For many conditions, the majority of patients are covered by private insurance, not Medicare. Experts believe that on balance the trend towards self-administration more

Drug spending in outpatient departments of hospitals and freestanding dialysis facilities

While this chapter focuses on drugs administered in physician offices or provided by pharmacy suppliers, Medicare Part B also pays separately for some drugs provided through outpatient departments of hospitals and in freestanding dialysis facilities. The expenditure totals for Part B drugs examined in this chapter do not include payments for these drugs.

In 2001, freestanding dialysis facilities billed Medicare for more than \$2 billion for drugs. This total includes \$1.4 billion for erythropoietin, an anemia drug paid at a Congressionally mandated rate for end-stage renal disease (ESRD)

patients.¹ In addition, CMS estimates that Medicare expenditures for drugs and radiopharmaceuticals eligible for pass-through payments under the outpatient department prospective payment system totaled \$370 million in 2002.

Previous MedPAC reports analyzed some of the reimbursement issues associated with drugs dispensed in outpatient departments and freestanding dialysis facilities.² Any change in payment methods for Part B drugs should take into account ongoing efforts to modify the payment systems for outpatient drugs in these settings. ■

1 By statute, Medicare pays \$10 per 1,000 units for erythropoietin administered to ESRD patients. The average wholesale price –5 percent formula is applied for purchase of erythropoietin provided other than through a dialysis facility and for all other conditions including cancer.

2 These issues are analyzed in detail in previous MedPAC reports to the Congress (MedPAC 2002, 2001).

strongly influences research and development decisions than does the potential for Medicare coverage.

Issues raised by the current payment system

Three issues raised by the current payment system have received particular public attention:

- Payments far exceed provider acquisition costs.
- Manufacturers have an incentive to raise list prices.
- Payments for drug administration may be too low.

AWP and provider acquisition costs

After implementation of the 1997 BBA reform, continued investigations by the OIG (2001), the Department of Justice, and the GAO (2001b) concluded that Medicare still paid for drugs at rates well above providers' acquisition costs. In a report issued September 21, 2001, the GAO examined prices available to physicians through wholesaler and group purchasing organization catalogues. The GAO (2001b) concluded that widely available prices at which both physicians and pharmacy-suppliers could purchase drugs were substantially below AWP—catalogue prices ranged from 13 to 86 percent below AWP. Even physicians who billed Medicare for only a few covered drugs reported receiving discounts equal to or greater than the

widely available discounts advertised in these catalogues. Using catalogue prices for 31 high volume drugs for which data was available, the GAO (2001b) concluded that in 2000 Medicare paid at least \$532 million more than physicians' acquisition costs for these drugs and \$483 million more than pharmacy suppliers' costs. These figures do not include rebates and other discounts that would have lowered still further the final sales price paid by physicians and suppliers. In the course of our research, MedPAC learned that these discounts are of increasing value.

- In 2000, average catalogue prices for albuterol and ipratropium bromide, drugs that accounted for 88 percent of pharmacy-supplier drug claims, were 85 and 78 percent less than AWP, respectively. Although the cost of an individual dose of either of these drugs was not high, Medicare expenditures for them totaled more than \$500 million.
- The OIG's recent study (2001) of the 24 drugs most commonly paid for by Medicare in 2000 determined that Medicare paid \$587 million more than the prices paid by physicians and suppliers for these drugs and almost \$2 billion more than prices available through the federal supply schedule (FSS). Had beneficiaries realized these savings, their total copayments would have been \$400 million less.

Estimates of the difference between Medicare payments and providers' actual costs are problematic. The net price providers pay for covered drugs is not clear at the time of purchase. For example, physicians and suppliers may belong to group purchasing organizations that negotiate with manufacturers or wholesalers. Negotiated agreements may include rebates and other discounts that depend on the volume of purchases made

over time or changes in market share for a particular product. Payment of the rebates follows a negotiated time period.

The phenomenon of a gap between AWP and actual wholesale prices is not limited to Medicare. The market for prescription drugs is very segmented by purchaser. Manufacturers typically offer different prices for different classes of trade.⁶ For example, hospitals generally pay less for drugs than retail drugstores do. Further, within each market segment, manufacturers negotiate individually with purchasers such as drug stores, health plans, and pharmacy benefit managers. Pharmacy benefit managers also negotiate with pharmacies over the amount that they will reimburse pharmacies on behalf of their clients. Thus the actual price charged to any one customer is a closely guarded trade secret. Under these circumstances, AWP is a benchmark for negotiations. For example, a typical contract between a pharmacy benefit manager and a pharmacy might call for reimbursement for drugs according to a formula based on AWP minus 13 percent plus a dispensing fee. However, the Medicare payment method has resulted in increasing gaps between AWP and provider purchase prices.

A study conducted by Hoerger and Wittenborn (2002) for CMS found considerable differences in average discounts available for Part B drugs based upon whether the drug was generic or a brand name innovative product. Using data from IMS Health, a large pharmaceutical market research and consulting firm, researchers looked at prices different purchasers paid for 30 of the top 38 Medicare drugs for which data were available, by payment level in 2000. IMS Health collects transaction prices paid to manufacturers and wholesalers for drugs for specific classes of trade. These prices do not include rebates and discounts that took place after the purchase. Using these data, researchers

calculated the difference between Medicare payment rates and average transaction prices for clinics (which include physician practices.) All but one of the reported prices were lower than the Medicare payment rates.⁷ Prices varied, however, by whether the drug was a generic or brand name product. Transaction prices averaged 83.1 percent below Medicare rates for albuterol and 70.4 percent below for ipratropium bromide, the two generic drugs with the highest Medicare expenditures. For single source brand name drugs, discounts typically ranged from 13 to 20 percent below Medicare rates. However, because brand name drugs tend to be more expensive than generic drugs, the actual difference between Medicare payment and drug costs is likely to be greater for brand name drugs.

Incentives for increasing AWP

In percentage terms, the biggest difference between the listed AWP for drugs and actual prices paid by physicians and suppliers tends to occur with generic drugs or brand name drugs for which there are alternatives available in the same therapeutic class. For these drugs, manufacturers compete to increase their market share. This competition can take two forms. A manufacturer may raise the AWP for its product without changing the price charged to purchasers. Although the manufacturer's profit per dose will not increase with the rise in the listed price, the bigger difference between providers' acquisition costs and Medicare payment leads to higher profits for providers when they choose the manufacturer's product over its competitor. At the same time, coinsurance payments charged to beneficiaries will rise as the AWP increases. A hearing before the House Energy and Commerce Subcommittee on Health highlighted this outcome on September 21, 2001. One chemotherapy drug, Vincasar, which had an AWP of

⁶ Classes of trade included hospitals, HMOs, clinics, mail-order pharmacies, food stores, chain stores, independent pharmacies, home health agencies, long-term care facilities, and federal facilities.

⁷ The exception was imiglucerase. Clinic prices were, on average, 0.1 percent higher than Medicare payment rates.

\$740, was sold to physicians for \$7.50 per dose. The beneficiary's copayment (about \$150) was about 20 times providers' acquisition cost.

Possibly in response to increasing scrutiny of drug pricing practices by the courts, some manufacturers have adopted an alternative marketing strategy (see text box, p. 158). They leave the AWP at existing levels, and offer larger discounts directly to physicians who choose their drugs over products offered by competitors. In this case, the manufacturers' profit per unit dose will be less, but overall profits increase if the discounts result in increased market share.

On May 5, 2003, the Office of Inspector General (2003) issued voluntary compliance guidelines for pharmaceutical manufacturers. If a manufacturer manipulates the AWP to increase federal payments to its customers, the federal antikickback statute is implicated. In other words, it is illegal for a manufacturer knowingly to establish or maintain an AWP if one purpose is to manipulate the spread to induce customers to purchase its products. It is too soon to know how these guidelines will affect pharmaceutical company marketing practices.

The relationship between AWP, Medicare payments, and provider profits are shown in Figures 9-3 and 9-4. These examples are for illustrative purposes only and do not represent any specific drugs.

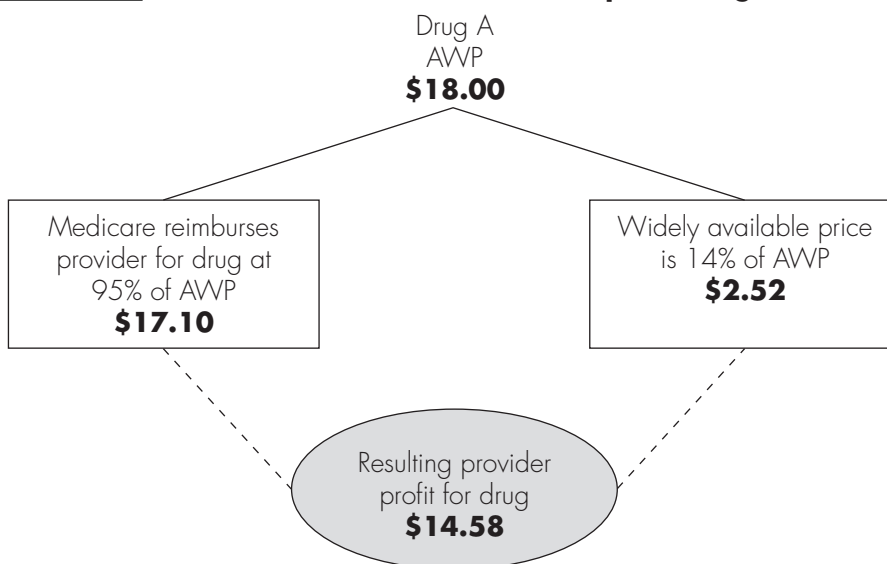
Drug administration fees and cross subsidies

In addition to reimbursement for the cost of covered drugs, the Medicare physician fee schedule includes fees for drug administration. These payments may be too low, particularly for administration of chemotherapy. Physicians have argued that they need the high payments for drugs to offset inadequate payments for provision of these services.

The focus of controversy is the calculation of practice expenses for the administration of chemotherapy. Components of practice expenses in the physician fee schedule

FIGURE 9-3

Medicare payments vs. provider costs: an example for a generic drug



Note: AWP (average wholesale price).

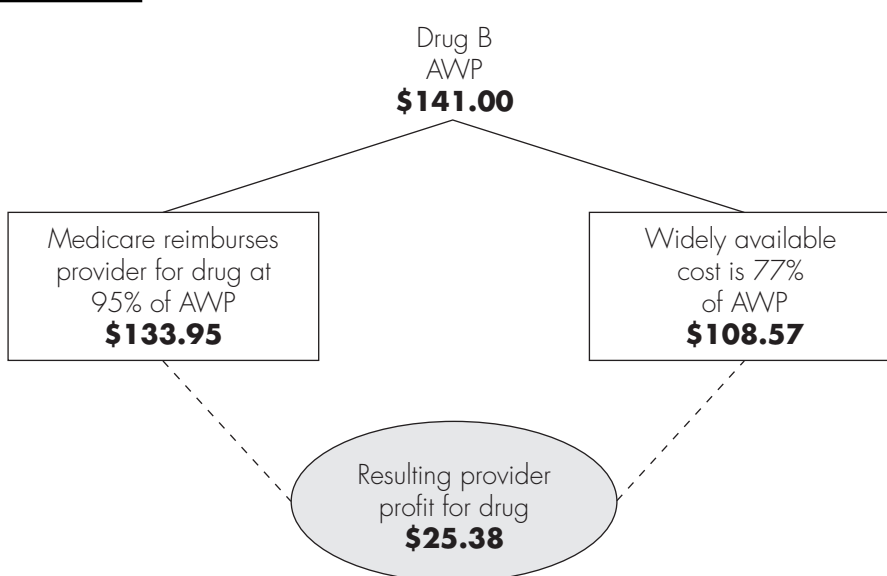
Source: Based on information from U.S. General Accounting Office, Medicare payments for covered outpatient drugs exceed providers' cost. September 2001.

include compensation for nonphysician staff, rent and utilities, equipment, and supplies. To establish the practice expense

component of the physician fee schedule, CMS first estimates the total allowable expenses for physician practices and then

FIGURE 9-4

Medicare payments vs. provider costs: an example for a brand name drug



Note: AWP (average wholesale price).

Source: Based on information from U.S. General Accounting Office, Medicare payments for covered outpatient drugs exceed providers' cost. September 2001.

allocates the estimated expenses to each service performed by physicians.

Each specialty's total practice expense pool is derived from Medicare claims data and data collected by the American Medical Association's Socioeconomic Monitoring System (SMS) survey, collected from 1995 to 1999. Using the survey, CMS calculated average expenses per physician work time for practice expenses. Hourly expenses are multiplied by the total hours spent by all physicians in each specialty treating Medicare beneficiaries to establish each specialty's practice expenses.

Once the practice expense pools are created, CMS allocates them to specific services. In doing so, CMS distinguishes between direct and indirect expenses. Direct expenses are supplies, equipment, and nonphysician clinical staff. To allocate the direct expense pools, CMS uses detailed data on the direct expenses that physicians incur in providing specific services.

Allocation of indirect expenses for administrative labor, office, and other expenses not directly attributable to specific services is more difficult. For most services, CMS allocates indirect expense pools to specific services based on their direct expenses and the fee schedule's relative weights for physician work. For other services, including chemotherapy administration, CMS developed an alternate practice expense method because they are not typically provided by physicians and, therefore, do not have relative weights for physician work.⁸ The alternate method results in the creation of a separate practice expense pool for all nonphysician services. The pool is then distributed on the basis of historical charges for each service. Specialties can opt out of this method for specific services and have payments determined through the method used for other services that include physician work.

AWP and the courts

In October 2001, TAP Pharmaceutical Products, Inc. pleaded guilty to conspiring to violate the Prescription Drug Marketing Act. The central issue in the case was the allegation that TAP had encouraged urologists to bill Medicare for free samples provided by the company. TAP markets Lupron (leuprolide acetate suspension), a treatment for prostate cancer. Lupron competes with another drug called Zolodex (goserlin acetate implant). In 2001, expenditures for Lupron and Zolodex were, respectively, the second and fourth highest of all drugs covered under Part B.

Payments based on the easily manipulated average wholesale price (AWP) have allowed marketing abuses by manufacturers of these drugs. In the civil suit, the government alleged that the company had set AWP's far above the price that any of its customers paid and encouraged physicians to take

advantage of the difference by billing Medicare for the AWP minus 5 percent. As part of its settlement with the federal government, TAP agreed to pay \$875 million dollars to resolve criminal and civil liabilities in connection with its pricing and marketing of Lupron. More than a dozen former TAP employees are still under indictment for using kickbacks and bribes to get doctors to use Lupron rather than Zolodex. This litigation also has led to further lawsuits by the Attorneys General in many states. These as yet unresolved suits focus on the discrepancy between AWP's and the actual acquisition prices available to retailers.

Similar charges have been filed against the makers of Zolodex. One physician pleaded guilty to billing Medicare for between \$30,000 and \$70,000 for free samples he received from the manufacturer (Bureau of National Affairs 2002). ■

However, critics have raised issues about the method of allocating indirect expenses for chemotherapy administration. Two potential problems have been identified. First, some oncology representatives believe that practice expense data derived from the original SMS survey did not accurately reflect the mix of oncology practices, so the practice expense pool was underestimated. Specifically, they believe that oncologists who responded to the survey must have been disproportionately in practices that did not give chemotherapy in their offices, so they did not have the direct expenses of nursing, supplies, and equipment.

Second, supply expenses for chemotherapy were underestimated. The original tabulations included the cost of drugs used in chemotherapy in the total cost of supplies. Since drugs are paid for separately, they were subsequently removed. CMS then substituted the average supply expenses reported for all specialties instead of a number specific to chemotherapy supplies. GAO (Scanlon 2001) suggests that this number might be too low given the level of supplies necessary for the administration of chemotherapy.

GAO recommended that CMS use the basic method to compute practice expenses for all services and develop more accurate data to estimate supply expenses for oncologists. GAO estimated

⁸ The GAO (2001a) notes that overall practice expense payments for oncology are 8 percent higher than they would have been had the previous charge-based system remained in effect in 2001.

that these changes would increase payments to oncologists by about \$51 million per year (Dummit 2002). However, making these changes within current statutory authority would be difficult because of budget neutrality provisions in the fee schedule. Increases in practice expenses for administration of chemotherapy would lower fees for other services, including services performed by oncologists.

Estimates of the additional budgetary impact of adjusting the practice expense component of chemotherapy are very controversial. Oncologists believe that the CMS and GAO estimates do not take into account their true costs. They emphasize the deficiencies of the SMS survey, and also suggest that these expenses would be higher than in 1998 because of changes in the way chemotherapy is delivered. In addition, they believe that they have more nonbillable activities that are not included in the pool of practice expenses, including patient monitoring.

CMS allows specialty societies to submit new practice expense surveys, and the American Society of Clinical Oncology (ASCO) submitted a new survey. A Lewin Group analysis for CMS pointed out concerns with the resulting data: The survey showed more than a 300 percent increase in “other” expenses compared with the 1998 survey. The data also reflected extraordinarily high clerical and clinical staff expenses. In December 2002, CMS announced that it was not going to accept the survey at that time (CMS 2002).

In response, ASCO questioned Lewin’s methodology. For example, they argued that the survey category of clerical workers included high-salary administrators, transcribers, and other office workers. ASCO also emphasized that the survey results for “other” expenses fell within the range of estimates for this category provided by other specialties. At this time, discussions between CMS and ASCO continue.

Other providers have also argued that high payments for drugs were necessary to offset inadequate or lack of payments for

services. As with physicians, pharmacy suppliers report that reimbursements received for covered drugs are necessary to offset the uncovered expenses incurred in providing services to beneficiaries. Services provided by pharmacy suppliers include compounding many of the drugs used, responding to emergencies, patient education in the use of the required equipment, and general monitoring of the patient’s health status. In general, these are noncovered services and pharmacy suppliers cannot bill for them. Medicare does provide a dispensing fee for one drug type—inhalation therapy drugs—but no similar payment for other covered drugs like infusion therapy or covered oral drugs.

One area of concern is the provision of clotting factor to Medicare beneficiaries with hemophilia. Clotting factor is provided in hemophilia treatment centers or through homecare companies. Medicare may pay as much as \$200,000 annually on clotting factor for a patient with severe hemophilia. For the beneficiary, this would mean coinsurance payments totaling \$40,000. While Medicare payments for clotting factor exceed provider acquisition costs, Medicare makes no payment for providing clotting factor to hemophilia patients. Dispensing costs for clotting factor include inventory management, storage, and shipping. In addition, infusion of clotting factor requires needles, syringes, and tourniquets. Medicare does not pay for the cost of any of these supplies. GAO (2003) has recommended that Medicare establish a fee for these costs if payments for clotting factor are reduced to a level closer to provider acquisition costs.

Reform efforts

The Administration and the Congress have tried repeatedly to reform Medicare’s payment methods for covered outpatient drugs. For example, the fiscal year 1998 President’s budget called for physicians to bill Medicare for their actual acquisition costs. The Congress rejected

this proposal in favor of the modified AWP minus 5 percent standard. Among the methods for lowering excessive prices are a policy based on the principle of inherent reasonableness and the implementation of a single drug pricer (SDP).

CMS efforts to reform the payment system

The Congress first passed an inherent reasonableness provision in the Catastrophic Coverage Act of 1988. The provision required CMS, not the carriers, to institute a process for reducing payments for Medicare-covered items where payment rates were not inherently reasonable. In 1991, CMS was first allowed to use this process to adjust payments for medical equipment and supplies. It has only done so successfully once, for blood glucose monitors, a process which took almost three years.

The BBA allowed CMS to reduce payments for drugs if the formula price was not inherently reasonable. It created a streamlined inherent reasonableness process that allowed the agency to adjust payments up to 15 percent annually. In 1998, the agency tried to use this provision to lower the price of albuterol by 11 percent. This attempt generated considerable controversy as providers noted that CMS had not followed the customary regulatory process, including providing a full comment period before issuing a final rule. The Congress suspended use of the inherent reasonableness provision in the Balanced Budget Refinement Act of 1999.

A further attempt to reduce drug payments occurred in 2000. The Department of Justice and the National Association of Medicaid Fraud Control Units collected market wholesale prices for 49 drugs covered by Medicaid. CMS instructed Medicare carriers to use these prices as an additional source of AWP data in determining drug reimbursement updates for 2001. Carriers were instructed not to use the data for chemotherapy drugs and blood clotting factor. However, a provision in BIPA prevented the agency

from implementing this change pending release of a now-complete GAO study on Medicare drug pricing and related issues.

Following release of the GAO report, CMS continued efforts to reform the payment system, issuing an interim rule on inherent reasonableness on December 13, 2002. The rule states that if the payment system results in payments that are grossly deficient or excessive (more than 15 percent variation from market price) for an item or service, the agency can act to change the price. If the payment adjustment results in payment differences exceeding \$100 million per year, CMS must publish its plans to adjust the fees in the Federal Register and allow a comment period of 60 days. Reductions cannot exceed 15 percent annually. The rule states that inherent reasonableness can be applied to drug prices.

On December 3, 2002, CMS announced the establishment of an SDP policy for drugs and biologicals covered under Medicare Part B. The new prices went into effect on January 1, 2003. The agency chose Medicare carrier Palmetto GBA to calculate AWP for the program. Covered drugs will still be reimbursed at the rate of 95 percent of AWP and the carrier will continue to use current sources such as the Redbook and National Data Bank to determine AWP. A CMS spokesperson estimated that the SDP will save the program about \$50 million dollars annually because the chosen carrier “has a strong record for thoroughly researching prices” (Medicine and Health 2002). CMS estimates that beneficiaries could save between \$10 and \$30 million in lowered copayments (Coughlin 2002). Establishment of a single national price ensures that all providers will be paid at the same rate for identical products. Drugs provided in outpatient departments of hospitals under the outpatient prospective payment system or in conjunction with durable medical equipment are not affected by the new policy.⁹

In Congressional testimony, CMS administrator Tom Scully noted that choosing a single carrier to price covered Part B drugs would create the infrastructure for further changes. In time, the carrier could use market surveys to calculate AWP based on what physicians and other purchasers pay for drugs. He estimated that this step could save \$500 million annually.

Alternatives to the current system

Analysts have suggested a number of alternatives to the current AWP-based formula to pay for Medicare-covered drugs in a manner more consistent with market prices. The majority of the proposals involve two steps: First a benchmark price is chosen and then a payment method is developed based upon it. Additional approaches include: competitive bidding, basing payment on provider invoices, and empowering an independent commission to recommend updates to Medicare fees. Although all of these payment methods have the potential to reduce Medicare payments for Part B drugs, each must also be evaluated on the basis of a number of other dimensions including its: effect on beneficiary access, administrative costs entailed (for both the government and providers), and possible impact on the pharmaceutical marketplace. Since policy options will differ on these dimensions, policymakers must weigh the advantages and disadvantages of each approach. In addition, proposals may be more or less feasible for different types of drugs: Some payment alternatives may work better for single source than for multisource drugs and vice versa. In this section, we will outline a framework for analyzing these alternatives.

Evaluation criteria

- **Price.** How would a new payment system affect Medicare payments for drugs? Any new payment method would be expected to reduce Medicare payments to a level closer

to the market price. However, proposals may have different effects for existing payments compared to those for products just entering the market. Further, the impact may differ on payments for generic drugs and multisource drugs compared to single source drugs.

- **Access.** Would changing payment methods affect beneficiary access? Research has concluded that some providers receive inadequate reimbursement for administration of covered drugs (see p. 157). For this reason, providers have argued that high drug reimbursement has been necessary to subsidize drug administration costs. They contend that changing drug payments without increasing administration rates would adversely affect beneficiary access.

The following analysis does not attempt to measure inadequate fees for drug administration or dispensing services. MedPAC recognizes that changes in the drug payment method have implications for other parts of the payment system. Our analysis of drug payment alternatives assumes that payment changes for drug administration will be corrected separately through the appropriate payment systems.

Any change in the payment system could also affect access by providing incentives for providers to move treatment from one site of care to another. Inappropriate changes in the site could affect the quality of care received by beneficiaries. It could also increase beneficiary and program expenditures by transferring services to a more expensive setting.

- **Administrative costs.** What sorts of administrative costs would the new system entail? Implementing a new payment system could increase administrative costs for both the Medicare program and providers. Costs could come in the form of

⁹ The durable medical equipment carriers already have a system in place to ensure a single price for each HCPCS drug code for the claims they process.

requirements for increased data collection and analysis, drug invoice processing, or in implementing and managing a new payment system.

- **Market effects.** How would the new payment system affect the pharmaceutical market? A new payment system has the potential to affect the way drugs are priced, marketed, and distributed. Currently, pricing information is regarded as proprietary information by pharmaceutical manufacturers. A Medicare payment system that resulted in price transparency could change the dynamics of the pharmaceutical marketplace, shifting the relative negotiating power of buyers and sellers. A payment method that required Medicare to receive the best price offered by manufacturers to any customer could result in higher prices for other public and private payers. Additionally, a system that requires changes in the way providers purchase drugs could create winners and losers in the pharmaceutical distribution market. Finally, a system that resulted in lower profits for drug manufacturers could lead to decreased investment in research and development. As a result, fewer new drugs might be developed.

In the following section, we analyze proposed new payment systems in terms of these dimensions, after briefly discussing each payment method. We focus on the areas of price, beneficiary access, administrative costs, and market effects. When appropriate, we will refine our analysis to reflect the potential effects of payment methods on different types of drugs. To avoid unnecessary repetition, we focus on those factors likely to be affected by the proposed method.

Payment system approaches

Multiple approaches could reform the way Medicare pays for covered drugs. The following list, culled from Congressional testimony, government reports, and other studies, is not exhaustive but includes a wide range of options that have been publicly discussed.

Some methods would result in a standard Medicare payment rate for each drug and others would increase payment variation. There are advantages to having one standard payment rate for each drug, particularly since the market for drugs is national. Because they would receive one predetermined fee, physicians would have an incentive to be prudent purchasers. They could keep any difference between what they paid for a drug and the Medicare payment. Over time, this might result in lower prices for the Medicare program and beneficiaries. On the other hand, in a competitive bidding model, payment variation could encourage competition among suppliers, leading to lower prices. Payment based on invoice prices also would increase payment variation. It would reduce incentives for prudent purchasing and could lead to higher prices. However, some physicians might have trouble purchasing drugs at a standard Medicare payment rate, particularly if they are in small practices. For them, payment variation would ensure access to drug supplies.

Benchmarking methods

AWP-based method Medicare could continue to use AWP as a benchmark price but change the payment formula to require a steeper discount. The Congressional Budget Office (CBO) has suggested that Medicare could reduce its payments for Part B drugs to 85 percent of AWP (CBO 2003). The proposal would also limit annual increases in the allowed charges for covered drugs to changes in the consumer price index.

This method would lower the price Medicare pays for existing covered drugs but, as CBO noted, might provide some incentive for manufacturers to price new drugs at AWP higher than might otherwise be the case. As in the current system, providers would have the incentive to switch from an existing drug to an equally effective new drug priced with a higher AWP to maximize their profit. In recent years, there has been rapid diffusion of new covered drugs under Part B. As our research indicates, we expect this trend to continue, making the launch price¹⁰ problem an important consideration.

In addition, the effect of the payment change on existing drugs would be uneven. For many multisource or generic drugs, the additional discount would still result in payments substantially higher than acquisition costs. However, some providers might have difficulty acquiring less heavily discounted innovative drugs at the new rate. Further, as within the current payment method, AWP would not correspond to any transaction prices and could not be audited.

In general, this proposal should have a very limited effect on beneficiary access to drugs. Providers would still profit from differences between the list price of a drug and their acquisition costs. If the new system substantially changes incentives for different types of drugs, prescribing patterns could be affected. For example, providers might have an incentive to use new drugs introduced with high AWP marketed at discounted rates, regardless of whether the new drug was more effective or offered other health benefits. For new drugs, beneficiary cost sharing would increase since they would be responsible for 20 percent of a higher price. On the other hand, for older drugs, beneficiaries would pay 20 percent of a *reduced* price. The overall effect is unclear. The payment method would not change the incentives for manufacturers to market their products on the basis of the spread between AWP and provider acquisition costs.¹¹

¹⁰ A launch price is the price a manufacturer gives to a new drug when it is first marketed.

¹¹ However, it is possible that OIG guidelines might eliminate this practice (see p. 157).

This method would not substantially increase administrative costs for CMS or providers. The potential effect on the market would be to increase the launch price of new drugs. Distribution channels for covered drugs should not be affected.

Another method that continues the use of AWP as a benchmark would be to maintain the present payment method but change the way CMS calculates AWP. As noted previously, no method for calculating AWP exists in law or regulations. The agency could conduct a survey of market prices for covered drugs and use the resulting averages as their benchmark measure of the AWP. Information could be based on wholesalers and group purchasing organization catalogues or surveys of private health plans and physicians. In testimony before the House Ways and Means Committee in October 2002, CMS administrator Tom Scully stated that the agency would take this approach in the absence of Congressional action.

Implementing this method should result in lower prices, especially for generic drugs, without affecting access to needed therapies. A need for ongoing market surveys to obtain pricing information would entail additional administrative costs for CMS or its contractors.

This payment system could affect the pharmaceutical market if manufacturers limit the publicly available discounts from AWP and substituted additional rebates and private discounts for their best customers. These rebates would not be captured in market surveys. In the MedPAC survey of private payer methods, one informant suggested that manufacturers were already taking this approach. If manufacturers tie rebates to increasing the market share of their products, it could affect pharmaceutical prescribing patterns. The result would be a wider variation in prices available to providers to purchase covered drugs, and providers with lower market shares paying higher prices.

Methods based on alternative benchmarks Medicare could base its payment method on a computed average transaction price such as the average manufacturer price (AMP), the average sales price (ASP), or the average acquisition price (AAP). The AMP is the computed average price paid by wholesalers to manufacturers after accounting for discounts for a particular dosage, form, and strength of a drug distributed through retail outlets. Manufacturers calculate and submit this figure to CMS to determine the rebate owed by manufacturers to Medicaid. The figure is not publicly available. Manufacturers could use the same method to calculate the ASP or AAP to capture transaction prices beyond drugs distributed through the retail level. Together, they represent the weighted average of all final sales prices charged for a product in the United States, excluding products exempt from calculations for the Medicaid best price.¹² All rebates and discounts are included in the calculation. Proposals would pay providers a specified percentage above the benchmark price. Although proposals differ as to how high to set the additional payment, the goal is to ensure that all providers will be reimbursed for their acquisition costs.

This proposal would reduce payment levels for Medicare-covered drugs. Estimated savings would depend upon the percentage Medicare paid above the benchmark price. Providers would be paid based on an average transaction price, but some would pay higher than average prices for drugs. The Medicare payment rates would have to be set above the benchmark to accommodate those purchasers. Savings would likely differ by type of drug. Currently, a large difference exists between listed AWP and provider costs for generic drugs. Under a payment system based on these benchmarks, Medicare payments for generic drugs would be reduced to sums closer to actual market prices. The gap between AWP and

provider purchase price is narrower for most brand name drugs that do not face competition. Before enacting a payment method based on this approach, policymakers should ensure that the payment rate is set high enough to meet provider purchase costs but not so high as to increase Medicare payments for these drugs. Payment rates could be set differently for generic and single source drugs.

In general, payment systems based upon these benchmarks should not affect access to covered drugs because the payment rate would have to be set high enough to cover acquisition costs for providers.

Administrative costs to implement this system would be modest. Manufacturers already compute average prices for their products and submit them to the Medicaid program, although the OIG (1998) has identified inconsistencies in the present methods used by manufacturers to calculate the AMP. Calculation of some of these benchmarks would require that manufacturers include more pricing information in the measures than they currently do for Medicaid. The data collection process would not change much, except to address coding issues. Because manufacturers calculate average prices for their products in terms of individual NDCs (see p. 154) while Medicare pays on the basis of HCPCS codes, CMS would have to create a process to translate NDC prices into the appropriate Medicare codes.¹³ HHS also would require some additional resources for an auditing system to ensure the integrity of the data.

Using AMP, ASP, or AAP could have an impact on the pharmaceutical marketplace by lessening manufacturers' ability to charge different prices to different purchasers. Although customers would not know exactly what amount other purchasers negotiated with manufacturers, they would know the average price embedded in the fee schedule. Purchasers would be reluctant to pay above that level.

¹² Determinations of which prices should be excluded from calculations of the ASP have varied in different discussions of this method.

¹³ This would also be necessary if the benchmarks used were FSS prices.

One result might be that manufacturers would reduce the size of the discounts they offered their best customers (i.e., raise prices) to prevent reductions in their average price. When the Medicaid rebate program was implemented, manufacturers reduced the size of discounts they offered their best customers to limit the size of the rebates they owed to the Medicaid program (CBO 1996). This would have a negative impact on the Department of Veterans Affairs (VA) and other users of the federal supply schedule (FSS) entitled to the lowest privately contracted price for any drug.

Another way to create a new benchmark would be for Medicare to base its payments on the FSS prices (Grob 2001). Generally, under the FSS the price for a drug may not be higher than the lowest contracted price paid to a manufacturer by any nonfederal purchaser.

Because providers, in general, could not purchase covered drugs at FSS prices, Medicare payments would be based on a percentage level above the FSS price. Potential savings would depend upon the designated amount. The proposal would be expected to have the same impact on access as detailed for other benchmarking proposals. That is, if the amount is above acquisition costs, it should not affect access. Administrative burdens would be modest since FSS prices are publicly available.

As with other benchmarking approaches, this payment method could affect dynamics in the pharmaceutical marketplace. Since FSS prices are based on the lowest contracted price paid by any private purchaser, manufacturers might raise prices to private purchasers to avoid having to offer their products for the designated percentage above that price to all Medicare beneficiaries.

Payment based on invoice prices

Medicare could require providers to submit invoices for drug purchases to receive reimbursement. Medicare

payments would be based upon these prices. The invoice price likely would not take into account later rebates and discounts offered on the basis of volume purchases or changes in market share.

It is unclear what effect this method would have on prices. It would tend to increase variation in Medicare payments for drugs compared to the previously described methods. In general, drugs would no longer be marketed on the basis of the difference between the AWP and provider acquisition costs. Providers that were paid their costs would have no reason to be prudent purchasers; the result could be higher prices. On the other hand, as in the method of using market surveys to determine AWP, manufacturers might limit public discounts from AWP and substitute additional rebates and discounts for their best customers. Those with less market power would pay higher prices. Providers could maximize their purchase of particular therapies if manufacturers tie rebates to increasing the market share of their products.

Administrative burden would increase for both providers and CMS if each must submit and process invoices. For the agency, in particular, payment for each drug claim would need to be calculated individually.¹⁴

Competitive bidding method Under this approach, designated entities compete to supply Part B drugs to beneficiaries or their physicians. Under one variant, durable medical equipment (DME) suppliers could submit bids to cover the cost of providing drugs used with inhalant or infusion therapy to beneficiaries. CMS tested this alternative in the San Antonio DME competitive bidding demonstration project. In this project, pharmacy suppliers bid for albuterol, a drug used with nebulizers for respiratory illnesses. Medicare saved 20 percent over what it would have paid without competitive bidding, with no discernable decline in access for beneficiaries.¹⁵ (See Chapter 8 for a detailed analysis.)

Administrative costs for the demonstration were high, but savings clearly outweighed them. Costs included educating providers on the bidding process, collecting and analyzing bids, and hiring a full-time ombudsman to monitor beneficiary access to products. It is expected that these costs relative to savings would be lower once the infrastructure for the bidding process is in place and overhead costs are spread across more areas.

A system of competitive bidding by pharmacy suppliers for drugs dispensed with durable medical equipment should not initially affect the operation of the pharmaceutical marketplace, because drugs used in this sector tend to be generic, and multisource drugs are available from multiple manufacturers. Suppliers already have purchasing practices for these items in place. Similarly, beneficiaries currently purchase these drugs through pharmacy suppliers. Although the number of suppliers would be reduced, the system should be designed to ensure that enough successful bidders participate to maintain beneficiary access. Additional suppliers could bid in subsequent rounds. However, if the number of bidders accepted is too low, this method could result in fewer suppliers and reduce the competitiveness of a market over time.

A system of competitive bidding for physician-administered drugs would require a different structure. One variant on this approach would be the preferred supplier. Under this system, suppliers such as group purchasing organizations, pharmacy benefit managers (PBMs), specialty pharmacies, or retail pharmacies could bid to provide physician-administered drugs to the Medicare program at a set price. Physicians would purchase drugs from the successful bidders. They would be free to choose the supplier of their choice among the winning bidders and would bill Medicare for the drugs. Medicare payment would be

14 There may be some administratively less burdensome methods to implement a payment system based on invoice prices.

15 As noted on p. 156, GAO found that widely available discounts for albuterol averaged 85 percent below AWP.

based on the average successful bid. In some variants, physicians could purchase from other suppliers as well but would receive lower Medicare payments.

A second method,¹⁶ currently being tested by some private purchasers, takes physicians out of the process of purchasing drugs and billing Medicare. It requires Medicare-designated plans or other entities like specialty pharmacies or PBMs to negotiate with manufacturers over prices for their covered products. Physicians order drugs as needed and the designated entity bills Medicare directly for the product at the negotiated price. This method eliminates any incentive for manufacturers to increase the spread between Medicare payments and physician purchase prices.

Policymakers would have to address certain design issues. The system would have to minimize disruption to physician procurement practices. In the case of chemotherapy, physicians have to prepare drugs for individual patients on the day of administration. Planned courses of medication change depending upon the patient's condition and physicians have to maintain inventories sufficient to handle these changes. In the selective contracting model, physicians have to order drugs in advance. Last minute changes could only be accommodated through inventory on hand. Although the supplier could then replace the drugs, physicians could object to having the risk of maintaining an inventory that might not be used and could not be billed to Medicare.

The selective contracting model should result in lower Medicare payments for generic drugs and brand name drugs with therapeutic equivalents. However, it might not achieve much savings for innovative brand name drugs because there is little variation in the prices charged by manufacturers for these drugs. This raises as a question whether payment methods should vary by type of drug.

Method based on commission-recommended updates In Congressional testimony, the OIG (Grob 2001) suggested that one possible way to reform the payment system would be to charge an independent commission with the task of recommending updates to Medicare fees for covered drugs. Using a method analogous to the framework used by MedPAC, the commission could judge the adequacy of current drug payments and consider factors affecting future costs before recommending changes for the upcoming year. However, more detail would be necessary to analyze this approach according to the framework developed here.

Although every approach analyzed here has advantages and disadvantages, each option, if carefully constructed, has the potential for a significant improvement over the current payment system. All methods eliminate the current incentive for manufacturers to raise the AWP of a product in response to competition, but those based on AWP or invoice prices could lead to lower public discounts and wider use of rebates and discounts for best customers. The analysis suggests that it might be appropriate to vary payment methods by drug types, for example, depending upon whether the drug is a single source brand name or generic, or an innovative product compared to one with therapeutic equivalents.

Lessons from other payers

Analysis of payment methods used by other public and private payers may provide lessons helpful for reform of the current system. Public programs like Medicaid and the VA may provide insights into reform of the Medicare payment system. Little is known about how drugs like those covered by Medicare are distributed and paid for in the competitive private market. MedPAC surveyed large private payers on their

current payment rates for physician-administered drugs and any plans they have to change their payment formulas. Most private payers are still using AWP-based payment methods similar to the Medicare model. Increasingly, however, rising expenditures are leading them to consider different strategies. We will explore some of the new developments in the pharmacy distribution market that relate to these drugs to see what implications they may have for Medicare payment policy.

Public programs

The Medicaid program and the VA designed payment systems to reduce drug expenditures for both programs. Medicaid as a third-party payer for drugs purchased by others relies on payment formulas to determine reimbursement rates. The VA, both because of statutory provisions and because it operates within an integrated delivery system, is able to negotiate particularly low prices for use in its own facilities.

Medicaid's payment system for drugs is very complex. It has two elements: payments made at the point of sale and rebates returned to the program from pharmaceutical manufacturers. At the point of sale, each state determines its own payment rates within certain federal guidelines. In most cases, Medicaid reimburses pharmacies using discounted AWP prices plus a dispensing fee.

Manufacturers who want Medicaid to cover their products must submit information to CMS on both the average manufacturer price (AMP) and the best price offered to private payers. The AMP is a computed average price paid by wholesalers to manufacturers after accounting for discounts for a particular dosage, form, and strength of a drug distributed through retail outlets. To receive rebates, states inform manufacturers of the number of units of each drug they paid for and the payment totals for each NDC. States then receive

¹⁶ A number of different terms have been used to characterize this method including selective contracting, stock replacement method, and mandatory acquisition method.

manufacturer rebates equal to the greater of 15.1 or 11.1 percent off the AMP for single source drugs and multisource or generic drugs, respectively, or the difference between the AMP and the best price.¹⁷ The rebate formula also requires an additional payment if drug prices rise faster than the consumer price index. Since the retail price paid by the states will be greater than the AMP, Medicaid prices do not equal the lowest price paid to any customer. Figure 9-5 illustrates this process.

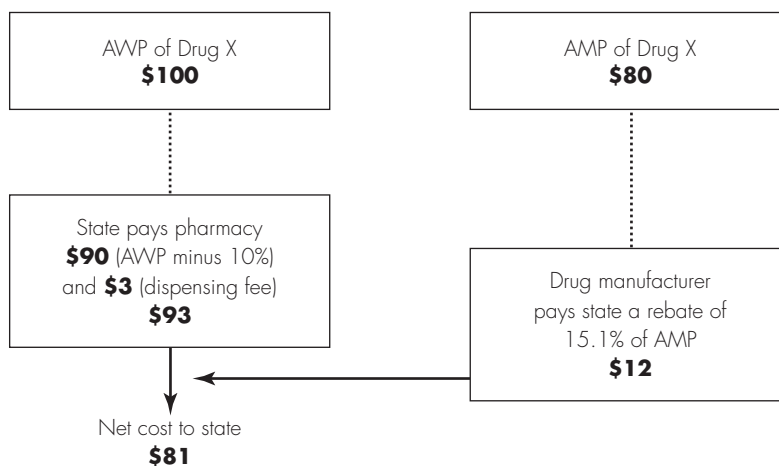
While this formula applies to drugs provided through pharmacy suppliers and home health agencies, states have generally not received rebates on drugs administered incident to a physician's services. Physician-administered drugs are usually paid through the state-established physician fee schedule, in a process like Medicare's payment system. Recently, CMS issued a program memorandum instructing states to collect data on physician-administered drugs in order to obtain rebates.

Prices paid by the VA are affected by various factors. The VA administers the federal supply schedule (FSS), a list of prices for drugs available for federal purchasers. Since passage of the Veteran's Health Care Act of 1992, manufacturers must make drugs available to specified public purchasers at the FSS price to have their products covered by Medicaid. The schedule is based on market transactions reported by the manufacturers and may not be higher than the lowest price provided to private payers for outpatient drugs in the domestic market. In addition, manufacturers must sell brand name drugs to the VA, the Department of Defense, the Public Health Service, and the Coast Guard at prices at least 24 percent below the AMP.

The VA uses competition to further lower the prices it pays for drugs dispensed within in its own facilities. For certain therapeutic classes, physicians within the system create lists of therapeutic equivalents or drugs that can be used

FIGURE 9-5

Medicaid drug reimbursement example



Assumptions:

- The state's Medicaid reimbursement formula is AWP minus 10 percent.
- The state does not have a "usual or customary" standard for drug reimbursement.
- The state pays a dispensing fee of \$3.00.
- The difference between the drug's AMP and the manufacturer's "best price" is not greater than 15.1 percent of the drug's AMP.
- The drug is not a generic, which would have a rebate of 11 percent of AMP.

Note: AMP (average manufacturer price), AWP (average wholesale price).

Source: Gencarelli D. Average wholesale price for prescription drugs: Is there a more appropriate pricing mechanism? Issue brief No. 775, National Health Policy Forum. 2002.

interchangeably to treat the same condition. Administrators then use these lists to create closed formularies offering access to only a few drugs within a class. Manufacturers that offer the lowest price can get their product listed on the formulary.

Private payers and specialty drugs

In describing trends in the private market, this section focuses on physician-billed drugs and other high-cost injectables because they represent the most rapidly growing portion of the public and private pharmaceutical market. This rapid growth has prompted insurers, health plans, specialty pharmacy companies, PBMs, and retail pharmacies to explore new ways to monitor and control expenditures without impeding access to needed medications by patients. The results of the

survey of health plans presented below show implementation of these new payment methods is still in an early stage, and it is too soon to evaluate the success of these models.

Physician-administered drugs are often grouped with a class of medications known as specialty drugs. The specialty drug category typically includes injectable drugs, infusible drugs, biotechnology drugs, and other medications administered in a physician's office. One of the major differences between Part B drugs and the types of medications classified as specialty drugs in the private market is that a much greater percentage of private injectables are self-administered and delivered by pharmacies directly to the patient's home. Medicare coverage rules generally require Medicare to cover only those injectables that are not usually self-administered.

¹⁷ Both the AMP and "best price" are confidential.

Specialty drugs treat life-threatening and chronic conditions such as cancer, HIV/AIDS, hemophilia, hepatitis C, multiple sclerosis, rheumatoid arthritis, and anemia. Medications for these conditions are distinguished by their high cost (\$5,000 to \$250,000 per patient per year)¹⁸ and the complex care required for their preparation, delivery, administration, and continuing patient care. For example, many of these drugs must be individually prepared based upon the patient's weight and the physician's dosage instructions. Each unit dose is prepared separately and must be kept refrigerated and shipped quickly to prevent spoilage. As these products are expensive, many insurers require providers to obtain prior authorization before dispensing them. Since drug regimens within these disease categories are often characterized by serious drug interactions and unpleasant side effects, patients require frequent monitoring to prevent adverse reactions and to ensure that patients continue taking their medications as prescribed.

IMS Health, a large pharmaceutical market research and consulting firm, estimates that purchasers spent \$19 billion on specialty drugs in 2001, an increase of 24 percent from 2000. These drugs represent about 11 percent of the United States pharmaceutical market¹⁹ and are its fastest growing sector. One analyst estimates that the use of injectables alone has doubled over the last five years (Tercero 2002).

How do private payers determine payment rates for physician-administered drugs?

Until recently, private payers devoted little attention to price and utilization of specialty drugs. Their payment systems, and the problems associated with them, have mirrored Medicare's AWP-based formula. These drugs are most often administered through a health plan's

major medical benefit rather than as part of the pharmacy benefit.²⁰ When billing drugs through the major medical benefit, physicians purchase needed drugs and submit claims to their patient's insurance plan along with other claims for services. Any discounts or rebates that the physicians receive for drug purchases are not passed on to the plan.

This system also makes it difficult to screen for interactions between drugs administered by different physicians or additional outpatient drugs taken by the patient. The J-codes used by Medicare and most private payers to pay claims for physician-administered drugs can limit the effectiveness of all utilization management techniques. Because they are aggregated across several NDC codes, they mask important information needed to manage utilization. Their use limits the insurer's ability to examine physicians' prescribing patterns and to make sure they are providing or paying for the amount of a drug that the patient uses. Further, many physician-administered drugs are newly approved products, and there can be significant delay in the assignment of a J-code after FDA approval. In the interim, claims for such drugs use a miscellaneous J-code that further inhibits the ability of an insurer to manage the benefit.

Analysts argue that the multiple definitions, multiple claims administration processes, and the difficulty providers have in classifying drugs of this type have created barriers to effective management.

Survey results

In conjunction with a MedPAC-sponsored survey of health plans on their physician payment rates, Dyckman et al. (2002) surveyed 32 health plans on their pricing formula for physician-administered drugs (Table 9-2). They also asked respondents about anticipated changes in their pricing methods. Surveyed plans had a combined

commercial enrollment of 45 million covered lives. Plans included Blue Cross Blue Shield plans and national managed care health insurance companies.

Findings from the survey include:

- All plans reported pricing formulas based upon the AWP but at least 13 plans use different pricing strategies for different categories of drugs or providers.
- Eight plans have entered into selective contracting, or prescribed distribution channel agreements, with pharmacy providers for at least some therapeutic classes. Plans sometimes noted that the pricing formula differed for products purchased for physicians through specialty pharmacies.
- Some of the plans used varying percentages of AWP for different categories of drugs, such as medications for chemotherapy, immunization, and vaccines.²¹ Of those plans specifying different pricing formulas for chemotherapy drugs, four paid a lower percentage of AWP for these drugs than for other types, and three paid at a higher rate than for other drug categories.
- There was considerable variation in the frequency with which plans updated AWP's.

Plan respondents were aware that physicians typically purchased drugs at prices well below AWP and that the payment methods resulted in additional profits for physicians. About one-half of the plans considering changing their payment methods for drugs noted that they might have to raise physician administration fees to partially offset the reduced income generated for physicians.

18 One large PBM estimates that the average injectable drug costs more than \$1,000 dollars per month (Express Scripts 2003).

19 Because of the lack of precision in the definition of specialty drugs, estimates of total expenditures differ considerably by source.

20 One source estimates that injectable drugs are covered under the major medical benefit about two-thirds of the time (Atlantic Information Services 2002).

21 When pricing formulas differed by category of drugs, the researchers reported the formula used for pricing of chemotherapy drugs.

**TABLE
9-2**

Health plans' pricing for physician-administered drugs, by AWP formula

	85-90% of AWP	95% of AWP	100% of AWP	101-109% of AWP	110-115% of AWP	Health plans responding
Number of plans	7	8	10	5	2	32
Percent of plans	22%	25%	31%	16%	6%	100%

Note: AWP (average wholesale price).

Source: Dyckman and Associates, memorandum, December 22, 2002.

At least nine of the responding plans reported that they were changing or evaluating their payment method for physician-administered drugs in 2003. They cited a variety of strategies including: changing the payment formula to a lower percentage of the AWP; reducing prices based on actual market prices or acquisition prices for drugs; implementing group purchasing programs to enable physicians to purchase drugs at competitive prices (and lowering the amount paid to physicians who purchased outside of the contracted arrangement); and contracting with specialty pharmacy vendors who could supply physicians with needed drugs at reduced prices. In some cases, anticipated changes in payment formulas were limited to specific categories of drugs.

What new methods are being employed by payers?

As reflected in the range of options being considered by plan respondents, the market for providing specialty drugs is still evolving and has been characterized in recent years by mergers, purchases, and strategic partnerships. Specialty pharmacies, PBMs, and health plans, working individually or in concert, are developing diverse methods for the payment and delivery of these drugs. Some retail pharmacies also have developed specialty pharmacy subsidiaries. Only as expenditures sharply increased in the past few years have payers begun to focus on more efficient methods for paying for these drugs and

managing utilization. As payers implement changes, they tend to focus on the characteristics of specific diseases or therapies.

MedPAC contracted with researchers at NORC at the University of Chicago and Georgetown University (NORC/Georgetown 2003b) to conduct a series of structured interviews with physicians, payers, specialty pharmacies, and PBMs for further insight into how these new payment methods work in practice. The study emphasized, but was not limited to, channels of distribution and payment for chemotherapy drugs. Informants discussed the traditional acquisition and payment system as well as new methods. While health plans, specialty pharmacies, and PBMs were generally positive about potential benefits from the new payment methods, physicians expressed significant concerns about both the clinical and financial implications of most of the innovations being adopted by private payers.

Specialty pharmacy and pharmacy benefit managers

Specialty pharmacies developed as niche providers, specializing in providing drugs for one or a small number of serious medical conditions. Currently, about \$7 billion, or 30 percent of all specialty drugs dispensed in the United States, are distributed through specialty pharmacies (Ransom 2002). They are generally mail-order facilities without retail settings. The pharmacies are distinguished by their

expertise with the preparation, management, and delivery of all therapies associated with a particular disease. Among the additional services offered are compliance programs to assure that providers will be reimbursed for dispensed products, and 24-hour patient assistance programs to address patient concerns and ensure that drugs are taken as prescribed.

Some specialty pharmacies have developed disease management programs to assist patients with serious chronic conditions in maintaining their therapeutic regimens. They also provide informational services to pharmaceutical manufacturers in the form of detailed nonpatient specific information on treatment trends and patient outcomes within disease categories (Ransom 2002). Some specialty pharmacies develop special business relationships with particular manufacturers. For example, Biogen, the manufacturer of the multiple sclerosis drug Avonex, has a preferred mail-order agreement with one specialty pharmacy.

While proponents of the specialty pharmacy model argue that these entities are able to negotiate lower prices with manufacturers and achieve higher rates of patient compliance, others believe that the special relationship between the pharmacies and manufacturers creates the potential for conflict of interest. In addition, because the specialty pharmacies focus on specific diseases, they may be unable to monitor for interactions between drugs taken for different conditions. However, some larger specialty pharmacy companies provide services for an increasing number of diseases.

Most large pharmacy benefit managers (PBMs) have created their own specialty pharmacy units or purchased existing specialty pharmacies. They differ from the traditional specialty pharmacy in three ways: They provide integrated management programs that achieve efficiencies in claims processing and cost reporting, track all drug usage and develop programs to prevent adverse drug interactions, and apply tools developed for

outpatient drugs within the injectable drug setting. For example, PBMs use techniques such as prior authorization and preferred drug lists to control drug utilization and expenditures. Utilization management offers payers the potential to reduce costs by identifying clinically inappropriate uses of physician-administered drugs. This type of management is common for self-administered drugs but has not been used much for physician-administered drugs. PBMs can provide the opportunity to examine utilization, especially if they use NDC codes that capture size and strength of dispensed drugs. Although it does not create closed formularies in this setting, one PBM establishes pharmacy and therapeutics (P&T) committees to determine therapeutic equivalents using evidence-based research. These determinations can be used to negotiate lower prices with manufacturers (Tercero 2002). However, critics contend that P&T committees may not have the expertise to evaluate biotechnology drugs and that their focus on utilization management may keep individual patients from receiving the most appropriate drug for their particular condition (AIS/PharMedQuest 2001).

Health Plans

As noted in the survey results reported above, most health plans are only beginning to address payment issues for specialty drugs. Some have contracted with specialty pharmacies or PBMs for management of particular categories of drugs. Others have created their own in-house specialty pharmacy to meet their needs.

One large health plan created a specialty pharmacy network (SPN) and has contracted with individual specialty

pharmacies for purchase and management of drugs for specific conditions. Each of the contracted providers specializes in a particular disease. Members of the SPN distribute drugs directly to physicians and patients, and bill the health plan. They also provide patient education and disease management services in some cases (Atlantic Information Services 2002).

New acquisition methods and chemotherapy

In comparison to other specialty areas, relatively few private payers have implemented selective contracting methods for chemotherapy-related drugs (NORC/Georgetown 2003b). One difference is that the administration of oncology drugs involves a greater number of ongoing clinical decisions, with frequent changes in drugs and dosages based on how the patient responds. Physicians need to have sufficient inventory²² on hand to be able to change therapies based upon a patient's condition on the day of chemotherapy administration. Physicians also object to losing the ability to have one organization handle all their drug transactions, as is typically the case under traditional arrangements. Several note concerns about the quality of drugs received from unknown suppliers. They also indicate problems stemming from the need to keep track of multiple insurers and maintain multiple inventories.

The ability of insurers to get physicians to accept the new payment methods appears to depend upon the relative clout of physicians and insurers in a particular market. In one case, physicians closed down their office-based practices for three months in response to new payment methods and shifted treatment to hospital

outpatient departments. This raised the cost of a chemotherapy session from \$3,000 to \$5,000. At least one respondent noted that resistance can be overcome, but it requires considerable effort and outreach. Several respondents noted that, among different parties, oncologists have the greatest leverage in these disputes.

Because of these difficulties, many insurers have chosen not to become involved in the distribution channel but have lowered the amounts they are willing to pay oncologists for the drugs they use in their offices. Many of them raised administration fees at the same time.

Impact of new payment methods

Interviewees cited two sources of potential cost savings—reduced prices for drugs, and, to a lesser extent, savings achieved through utilization management. Interviewees agreed that the prescribed distribution channels and new payment levels do yield lower per unit prices, but few were willing to provide data on savings. One PBM noted that it worked with a medical group that was given the option of using a prescribed distribution channel or accepting a payment level equal to what the PBM could achieve if it purchased the drugs. They estimated that, under this system, they achieved an average savings of 14.1 percent below AWP. Another company reported experiencing savings in the range of 10 to 25 percent by lowering payment levels, especially for nononcology drugs. No interviewee could quantify the savings realized through utilization management of cancer drugs. Many of the new payment methods are still pilot projects and results are as yet unavailable. ■

22 Two respondents reported that their large group practices might keep an inventory worth \$300,000 to \$500,000 on hand, about a week's worth of medication. These larger practices have a regular volume of patients that necessitates having a good supply to accommodate changes in treatment on the day the patient comes to the office. Certain drugs are not used often but may be needed urgently on short notice (NORC/Georgetown 2003b).

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A P P E N D I X

A

**Review of CMS's estimate of
the payment update
for physician services**



Review of CMS's estimate of the payment update for physician services

Medicare makes payments for physician services according to a fee schedule that assigns relative weights to services, reflecting resource requirements. These weights are adjusted for geographic differences in practice costs and are multiplied by a dollar amount—the conversion factor—to determine payments. Thus, the conversion factor is a key element of the payment system. If it changes, there is a proportional change in the payment rates for all of the more than 7,000 services represented in the fee schedule.

The conversion factor is updated annually, based on a formula in law designed to control spending while accounting for factors that affect the cost of physician services. CMS issues a final rule on the update in November each year and implements the update on January 1 of the following year. To help the Congress and others anticipate the update, the Balanced Budget Refinement Act of 1999 (BBRA)

requires CMS to prepare, by March 1 of each year, a preliminary estimate of the next year's update. The BBRA also requires MedPAC to review that estimate in the Commission's June report. This appendix fulfills the requirement that we review the estimate of the update for 2004.

For 2004, CMS provided both a point estimate and a range for the update. The point estimate is an update of -4.2 percent. Before November, a number of factors that determine the update are likely to change. To acknowledge this uncertainty, CMS allowed factors in the calculations to vary within limits based on experience.¹ The agency did so with stochastic forecasting techniques and projects that there is a 95 percent probability that the update will range between -5.8 and 0.6 percent.

Calculating the update is a two-step process. First, CMS estimates the sustainable growth rate (SGR). The SGR

is the target rate of growth in spending for physician services and is a function of projected changes in:

- input prices for physician services,²
- enrollment in traditional fee-for-service Medicare,
- real gross domestic product (GDP) per capita, and
- spending attributable to changes in law and regulation.

For 2004, CMS's preliminary estimate of the SGR is 6.4 percent (Table A-1, p. 174).

Second, CMS calculates the update, which is a function of:

- the change in input prices for physician services,³
- a legislative adjustment required by the BBRA,⁴ and

1 CMS allowed three factors in the update calculations to vary: growth in real gross domestic product (GDP) per capita, growth in use of physician services, and change in input prices for physician services.

2 For the SGR, physician services include services commonly performed by a physician or in a physician's office. In addition to services paid for under the physician fee schedule, these services include diagnostic laboratory tests and drugs covered under Medicare Part B. To estimate this factor, CMS uses a weighted average of the Medicare Economic Index (MEI), a measure of changes in input prices for physician services; the change in payment rates for laboratory services; and a weighted average of the change in payment rates for Part B-covered drugs.

3 For the update, physician services include only those paid for under the physician fee schedule.

4 This adjustment maintains the budget neutrality of a technical change in the calculation of the update intended to reduce year-to-year changes in the conversion factor.

**TABLE
A-1**

**Preliminary
sustainable growth
rate, 2004**

Factor	Percent
Change in input prices	2.3%
Change in traditional Medicare enrollment	1.3
Change in real GDP per capita	2.7
Change due to law and regulations	0.0
Sustainable growth rate	6.4

Note: GDP (gross domestic product).

Source: Grissom 2003.

- an update adjustment factor that increases or decreases the update as needed to align actual spending with the target that is determined by the SGR.

Of these factors, the update adjustment factor has the largest effect on the estimate for 2004 (Table A-2). This is negative because actual spending for

**TABLE
A-2**

**Estimate of the
update for physician
services, 2004**

Factor	Percent
Change in input prices	2.0%
Legislative adjustment	-0.2
Update adjustment factor	-5.9
Update	-4.2

Source: Grissom 2003.

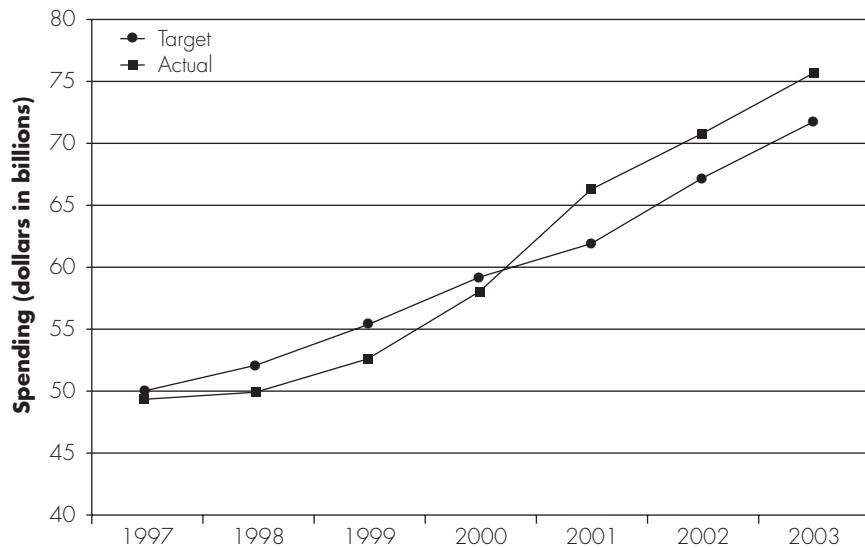
physician services is above and projected to stay above the target through 2003 (Figure A-1), for two reasons. First, actual spending for physician services grew in 2002—despite a reduction in the conversion factor for that year of 5.4 percent—because of an increase in use of services. Second, the update for 2003 was positive when, in retrospect, it should have been negative.⁵ The result is a difference between actual spending and the target that is wide enough to require an update adjustment factor of -5.9 percent. When this negative adjustment is combined with the other factors that determine the update—a change in input prices and legislative adjustments of 2.0 and -0.2 percent, respectively—the result is an update of -4.2 percent.

On the technical issues of how CMS estimated the update, MedPAC finds no reason to question CMS's assumptions about factors that determine the update.

- The 2.0 and 3.0 percent changes in input prices for 2004 and 2003, respectively, (as measured by the Medicare Economic Index [MEI]) are similar to MEI changes for earlier years.^{6,7}
- A change in fee-for-service enrollment of 1.3 percent is close to the projected overall increase in Medicare enrollment for 2004 of 1.0 percent and assumes some continued disenrollment of beneficiaries from Medicare+Choice plans.
- The projected change in real GDP per capita of 2.7 percent is based on the

**FIGURE
A-1**

**Target and actual spending for physician services,
1997-2003**



Source: Office of the Actuary 2003.

5 CMS recently revised some of the factors that determined the update for 2003, including the SGRs for 2002 and 2003 and actual spending for physician services in 2002. Recalculating the update with this new information results in an update for 2003 of -1.6 instead of the +1.6 percent update implemented on March 1.

6 For a historical perspective on changes in the MEI, see MedPAC's June 2001 Report to the Congress: Medicare in rural America. Washington (DC), MedPAC. June 2001, p. 129.

7 CMS's estimate of the change in input prices includes a productivity adjustment of 1.0 percent, which makes the estimate a measure of changes in cost and not just a measure of the change in input prices. Thus, the estimate is lower than MedPAC's estimate of the change in the cost of providing physician services for 2004, which is 2.5 percent (MedPAC 2003). There are two reasons for the difference between CMS's and MedPAC's estimates. First, CMS's productivity adjustment is slightly larger than MedPAC's (0.9 percent). Second, CMS uses a retrospective measure of changes in cost, while MedPAC uses a projection. For further discussion of this issue, see MedPAC's March 2001 Report to the Congress: Medicare payment policy. Washington (DC), MedPAC. March 2001, p. 25.

President's budget proposal for fiscal year 2004. This estimate equals the forecast of real GDP growth for 2004 (adjusted for population growth) from the Congressional Budget Office (CBO 2003).

- An estimate of no change in spending due to law and regulation is valid as long as the Congress does not change the Medicare benefit package and there are no other relevant changes in law and regulation.

The difficulty comes in assessing CMS's estimates of actual spending for physician services. The estimate of actual spending in 2002 is based on nearly complete information for the first three quarters of the year but incomplete data for the last quarter. Therefore, this estimate may vary somewhat before CMS issues the final rule on the update in November. A bigger change is possible in the estimate of actual spending for 2003, however, because CMS currently has no relevant information for 2003. This lack is a reason why CMS chose to acknowledge the uncertainty in the update estimate for 2004 and to project a range for the update.

The estimate of actual spending in 2003 is \$75.8 billion. Compared to 2002, this is an increase of 6.9 percent. This implies a rise in use of physician services per beneficiary of about 4.3 percent.⁸ Such growth would be lower than CMS's estimate for 2002 of 6 to 8 percent. A 4.3 percent increase is consistent with the experience before 2002, however.

If the actual increase in use of physician services in 2003 is greater than 4.3 percent, the payment reduction in 2004 will be larger than the -4.2 percent update CMS estimates, assuming no other changes in the factors that determine the update. That is, the update could approach the 5.8 percent reduction CMS calculated when projecting a range for the update. On the other hand, if the rise in use of physician services is less than 4.3 percent, the payment reduction will be less than the agency's estimate and, according to CMS's projected range, the update could even be a small positive increase.

Other questions concern actual spending: Why did actual spending go up in 2002 despite the 5.4 percent reduction in the fee schedule's conversion factor, and will a

similar increase occur in 2003? There are a number of possible explanations for the 2002 increase, but two have received much attention (Hawryluk 2003). According to CMS, physicians offset the reduction in the conversion factor by increasing the number of services provided to Medicare beneficiaries. The opposing view, from the American Medical Association and other physician groups, is that much of the growth was due to medical research, quality improvement programs, and other initiatives aimed at improving patient care. In addition, there is evidence that the spending increase started in 2001, and that it was not limited to physician services (American Medical Association et al. 2003).

The uncertainty about what happened in 2002 only adds to the difficulty of projecting actual spending for 2003, a problem that CMS can only overcome with data on actual spending. Partial information, for the first and second quarters of 2003, will be available before November of this year, when CMS will issue a final rule with the update for 2004. ■

8 We calculated the implied increase in use of services per beneficiary as the increase in actual spending of 6.9 percent minus an increase in payment rates of 1.4 percent and minus an increase in fee-for-service enrollment of 1.2 percent. The increase in payment rates is a weighted average of the change in the physician fee schedule's conversion factor (no change in rates for the first quarter of the year and a 1.6 percent increase for the last three quarters), the payment update for laboratory services (1.1 percent), and an estimate of the change in the payment rates for Medicare Part B-covered drugs from CMS actuaries (3.3 percent).

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A P P E N D I X

B

**Agenda for improved data on
Medicare and health care**

B

Agenda for improved data on Medicare and health care

This appendix is our inaugural publication of a new MedPAC effort—an agenda on Medicare and health care data. We plan to make it an annual part of our June report. Data underlie most of MedPAC’s work and are critical to the policy agenda at large. They do not often receive the emphasis they deserve. Data issues are central to payment policy decisions for Medicare specifically and the health care industry more generally. As a public program, Medicare must ensure that payments are sufficient to at least meet the costs of efficient providers in order to maintain beneficiary access to services. Data analysis is the best way to assess costs, track access, and evaluate the factors that have an impact on providers, beneficiaries, and taxpayers. Data shape the way we think about many of the most compelling policy questions. Since we believe that data availability and integrity are important issues for policymakers, we will use this agenda to highlight issues we and other data users face in completing health care policy analyses.

MedPAC, along with other government oversight and regulatory agencies, depends on available cost, claims, survey, and other data to conduct its analyses and develop payment and other policy recommendations. We examine many data sources and run a spectrum of statistical analyses in the effort to fulfill our statutory mandates to: (1) review and

make recommendations to the Congress on Medicare payment policies; and (2) examine and report on issues affecting the Medicare program, including changes in health care delivery in the United States and in the market for health care services. MedPAC’s ability to complete its mission depends almost wholly on access to relevant and accurate data. Health policy decisions are only as accurate as the data they are based upon.

At present, the data agenda provides a list of disparate data improvement areas. In this appendix, we have collected important data issues that can be organized into three Medicare-related categories: access, quality, and cost data issues, plus a fourth category on private sector data. We recognize that these issues are only a start and that other important data issues are not addressed (for example, the need to identify costs at the case level). In the future, this appendix may expand to contain a framework identifying the types of data needed for sound policy analysis on costs, access, and quality and criteria that could be used to set priorities. In the future, the appendix could also select a single data issue and explore in detail the specific barriers to data access and integrity, and document the costs of addressing the identified issue.

On a final note, the Centers for Medicare & Medicaid Services is the collector and custodian for most of the data we use. Data collection and dissemination is only one of its many responsibilities. Data availability and integrity can only be assured through the dedication of sufficient resources. CMS, however, has long struggled with a lack of adequate resources. MedPAC commends CMS for its efforts on data issues and notes the calls for increased support for the agency (Butler et al. 1999, GAO 2001, King et al. 2002).

Monitoring access

In July 1998, the Medicare program began the transition to a prospective payment system (PPS) for skilled nursing facility (SNF) services. Home health services moved to prospective payment in October 2000. MedPAC uses a variety of measures in assessing the adequacy of payments under these systems, including margins and provider entry and exit. In the following sections, we address the need for access to timely and reliable cost data, which is extremely important in making these assessments. Equally important to the payment adequacy analysis, however, are data on beneficiaries’ access to care.

In MedPAC's March 2000 Report to the Congress, we recommended that the Secretary conduct annual studies to identify potential problems in beneficiaries' access to care that may arise in the evolving Medicare program, particularly from the implementation of new payment systems in the various sectors (MedPAC 2000). For several years, the Department of Health and Human Services' Office of Inspector General (OIG) studied beneficiary access to SNF and home health services. The OIG reported on beneficiary access to SNF services annually from 1999 to 2001 (OIG 2001a, 2000b, 1999b, 1999c).¹ It also issued reports on access to home care from 1999 to 2001 (OIG 2001a, 2001b, 2000a, 1999b).²

The OIG did not issue a report on beneficiary access to SNFs in 2002 and has indicated that it does not plan to continue to in the future, nor has it continued its study of access to home health services. We believe that these studies provided an important piece of our assessment of access and payment adequacy and are concerned about their demise. While MedPAC is itself developing resources to provide more information on access to post-acute care, the OIG's work would provide an important parallel source of information on access. The ongoing series of such studies provides a baseline of access from the start of the SNF and home health PPS, allowing policymakers to monitor changes over time.

In its March 2003 report, the Commission recommended that the Secretary continue to conduct a series of nationally representative studies on access to home health and skilled nursing facility services

(similar to the studies previously conducted by the OIG) (MedPAC 2003). Due to the importance of maintaining information on access, we reiterate those recommendations here. The Secretary should determine the frequency of future surveys and reports. As these payment systems mature, surveys may only be needed every few years.

Assessing quality of care

Elsewhere in this report, MedPAC discusses mechanisms for improving quality of care for Medicare beneficiaries. As we describe in Chapter 7, most quality efforts depend upon relevant data. Regarding home health care services, two sources of CMS data could, if linked, further our understanding of the relationship between the care received and outcomes of care. These are the Outcomes and Assessment Information Set (OASIS) and the home health claims database.

The OASIS is an assessment instrument used to assess patient status and is unique to the home health setting. Information collected includes sociodemographic, environmental, support system, health status, and functional status attributes of adult (nonmaternity) patients. CMS collects and compiles home health payment claims in a different database. Keeping these two databases apart separates data on the quality of home health services from data on use. Linking these two streams could provide a potentially powerful source of information on the relationship between the amount and type of home health services beneficiaries receive and the outcomes of their care. Combined with cost

information, such a database could be used to develop a picture of the truly efficient home health provider and relate changes in service use to changes in outcomes.

CMS has begun work on just such a database, linking data on use with quality data. We strongly encourage the agency to continue this project. To make this linked database as useful as possible, we make several suggestions. First, the data should be compiled as close to real time as possible. Use of home health care has changed rapidly; timely information is key to reacting appropriately to emerging trends. Further, the data should include the OASIS assessment of patients at discharge, so that improvement or stabilization of condition during patients' care can be measured. Finally, the linked database should be made available to the wider research community.

Assessing costs of care

Physician practice expense

The Medicare program pays physicians under a fee schedule representing the resources used in furnishing a service. Resource amounts are based on national uniform relative value units (RVUs). There are three types of RVUs in the fee schedule calculation: physician work, practice expense, and malpractice expense.³ For services provided after January 1, 1999, CMS has used what it calls a top-down approach to calculating the practice expense RVUs, based on data from the American Medical Association's (AMA) Socioeconomic Monitoring System (SMS), along with data collected

1 The OIG based these reports on claims analysis as well as surveys of hospital discharge planners, nursing home administrators, and others responsible for assessing residents' needs.

2 The OIG based the 2001 reports on early 2001 surveys of hospital and nursing home discharge planners, as well as physicians and community representatives, after the home health prospective payment system (PPS) had been in place for about six months. The OIG based the 1999 and 2000 reports on survey information gathered before the implementation of the home health PPS.

3 At its most basic level, the fee schedule calculation consists of the product of the RVUs, a geographic adjustment factor to account for geographic variation in input costs, and a conversion factor which translates the other values into a dollar figure.

through expert panels.⁴ The most recent SMS data on practice expense are from 1999.

The AMA conducted a scaled-down survey in 2001, collecting data from 2000 with less detailed expense information than the SMS. These data do, however, contain the necessary components to enable CMS to calculate the practice expense RVUs. The AMA is currently looking for partners to help fund the survey in future years.

If CMS continues to use the top-down methodology to determine practice expense values, a data source to replace the SMS must be assured. One option for collecting such data would be for the agency to pursue a collaborative approach, perhaps involving the AMA, physician specialty societies, and the federal government.

Ambulatory surgical center costs

Medicare pays the facility costs of ambulatory surgical center (ASC) services on a fee schedule. The law authorizes the Secretary to determine which procedures may be payable when provided in an ASC and requires that the fee schedule, also set by the Secretary, take into account the costs incurred by such centers in providing services in connection with such procedures.⁵ In 1994, the Congress required the Secretary to determine costs through a survey of a sample of representative procedures and facilities, to

occur not later than January 1, 1995, and every five years thereafter.⁶ These data are to be used to revise the ASC payment rates.

Payment for ASC services began in 1982. Initial ASC payment rates and subsequent rate revisions were based on agency surveys conducted in the early 1980s and in 1986.⁷ In 1994, CMS conducted the survey required by the Congress. CMS issued the revised ASC rates in 1998, as part of a proposed rule that also sought to restructure the ASC payment system to make it more consistent with the outpatient hospital prospective payment system, then under development. The proposed payment rates were based on the 1994 cost survey data.

However, the Congress delayed implementation of the restructured payment system and required that CMS base the payment rates on cost survey data from 1999 or later.⁸ As of early 2003, CMS has not completed the new cost survey needed to revise the ASC payment rates.⁹ Thus, current payment rates are based on a 1986 cost survey and are probably no longer consistent with ASC costs.

The lack of current ASC cost data makes it difficult for CMS to set accurate rates. It presents further issues for policymakers in attempting to assess the adequacy of the current ASC rates. Collection of this information is vital. As we recommended in our March 2003 report, the Secretary should expedite the collection of recent

ASC cost and charge data so that CMS can analyze and revise the ASC payment system (MedPAC 2003).

Cost report data

Any discussion of cost reports must begin with an emphatic statement of the continuing need for the information contained in these filings. The movement to prospective payment for many service types has caused many to question the ongoing need for filing cost reports. Although prospective payments are not directly based on a facility's costs, cost information is a significant input into determining the rates paid under PPS and figures into the calculation of updates and adjustments to that system. Policymakers must recognize the importance of this data source. While others suggest that the cost reports be streamlined, we do not address this issue here. Our intent is to focus on near-term issues of cost report data availability.

The move to prospective payment and resource constraints have raised concerns over the timeliness and accuracy of cost report data, which are of paramount concern for policymakers. Data must be sufficiently recent and accurate to reflect providers' current financial status in order to assure adequate payment levels and beneficiary access. For Medicare data on provider costs, both timeliness and integrity are currently at issue.

The extent of the lag between data collection and access has varied. It is unclear whether there is a continuing

4 Clinical Practice Expert Panels (CPEPs), convened by a CMS contractor, met twice during 1996. A 1996 survey effort by the same contractor to gather additional practice expense data was discontinued due to a poor response rate. CMS is currently refining the CPEP data through a public-private partnership with the AMA and other physician specialty societies.

5 Sec. 1833i of the Social Security Act.

6 Sec. 141 of the Social Security Act Amendments of 1994, P.L. 103-432 (Oct. 31, 1994).

7 Medicare began paying for services provided in ASCs in 1982, pursuant to an amendment contained in the Omnibus Budget Reconciliation Act (OBRA) of 1980, P.L. 96-499 (December 5, 1980). The Secretary based the initial payment rates on a survey of ASC cost and charge data from 1979 and 1980. A second survey was completed in 1986 to update the payment amounts. While the text of the law did not then require the Secretary to use surveys to determine costs, the legislative history accompanying OBRA-80 stated the Congress's expectation that surveys be used.

8 See section 424 of the Medicare, Medicaid, and State Children's Health Insurance Program Benefits Improvement and Protection Act of 2000, P.L. 106-554 (December 15, 2000). The legislative history to this provision indicated the Congress's understanding that CMS was then (in 1999) conducting a new ASC cost survey that would better reflect the current costs experienced by ASCs.

9 The agency developed a survey instrument but has not yet fielded the survey.

increase in the lag time or whether independent events have caused recent delays in access. Under a cost-based system, providers were less at risk and policymakers less pressured to immediately assess data to determine trends. Under prospective payment, both providers and policymakers need to track payment adequacy. Policymakers track it to ensure payment rates are consistent with the costs of efficient providers and to evaluate whether beneficiaries have access to needed services, so they can act quickly if problems arise.

A number of events have made the release of cost report data more difficult. With the complexity of legislative and regulatory changes that came with and followed the Balanced Budget Act of 1997, the Congress has granted providers a variety of extensions for filing cost reports. In addition, data release has at times been delayed as CMS has struggled to maintain the pace of cost report processing, including auditing functions that must be done prior to data release. These difficulties appear to stem from increased and competing responsibilities addressed by the agency, resource limitations, and retirement of some key CMS staff.

The difficulties experienced by CMS have an impact on the timing of data availability and may also affect its soundness. Auditing ensures data integrity, which must be a priority. Again, cost data is a significant piece of the calculations for determining the adequacy of payment rates and, in turn, access to care for beneficiaries.¹⁰ We strongly encourage CMS to prioritize its

responsibility for maintaining the timeliness and integrity of the data. We further note that the resources to carry out this responsibility must be provided by the Secretary and the Congress.

Use of early sample to facilitate access to data

To facilitate expedited access to cost report data, one mechanism to explore is the collection of an early sample of provider cost reports. This could be accomplished by requiring or paying a representative sample of providers to file their cost report information early. Perhaps these providers would submit a scaled-down version. In either case, CMS and the fiscal intermediaries would need to commit to quickly processing and auditing this information.

A number of questions would need to be addressed to make this process work. Providers use different fiscal years in tracking their costs. How could this be accommodated in gathering the early sample? Would varying fiscal periods bias the data? Would payment for early completion bias the information reported? CMS, MedPAC, and other researchers would need to explore all of the ramifications of using an early sample to ensure that the resultant data are reliable and unbiased.

CMS recently took steps to expedite access to cost report data. The agency has changed the format of the cost report data to relational databases. While this format provides access to all of the data collected by CMS, it may raise hurdles for researchers who worked with the previous format. The agency has agreed to issue

hospital and skilled nursing facility cost report data in the previous format, on a short-term basis, perhaps to enable researchers to transition to the new system. While we commend CMS for these efforts, we believe it should provide several data formats during the transition, and ensure technical support once the relational databases are finalized.

Access to private payer information

In addition to tracking providers' Medicare costs, policymakers must monitor developments in the health care market at large to gauge factors that could affect the Medicare market and providers' ability to serve beneficiaries. More specifically, information on private payer rates could help in assessing the adequacy of Medicare fee-for-service payment rates.¹¹ These data would help Medicare calibrate its payments, whether through its current administered pricing systems or through competitive pricing.

There are a number of possible sources for such information, most notably the Federal Employees Health Benefits Program. A number of states also collect private payer data. Assessing such data would raise a number of issues. Differences in benefit design and demographics could limit the ability to make comparisons. Confidentiality of business information would also need to be ensured. However, the need for a consolidated source of information on rates paid by private payers calls for these and other potential problems to be resolved. ■

10 Some associations, including the American Hospital Association (AHA) and the American Medical Association (AMA), used to survey their members on a range of information, including costs. These surveys had provided a wealth of information for both association members and policymakers. Both the AHA and the AMA have, however, discontinued some of those survey efforts.

11 The Commission has tried to gather information on private payer rates. We were unable to complete a national survey, pursued in 1999, due to a poor response rate. More recently, we gathered limited private payer data on physician payments through claims analysis and a small-scale survey.

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A P P E N D I X

C

**Commissioners' voting
on recommendations**

Commissioners' voting on recommendations

In the Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000, the Congress required MedPAC to call for individual Commissioner votes on each recommendation, and to document the voting record in its report. The information below satisfies that mandate.

Chapter 1: Geographic variation in per beneficiary Medicare expenditures

No recommendations

Chapter 2: Market variation: implications for beneficiaries and policy reform

No recommendations

Chapter 3: Accounting for variation in hospital financial performance under prospective payment

No recommendations

Chapter 4: Growth and variation in use of physician services

No recommendations

Chapter 5: Monitoring post-acute care

No recommendations

Chapter 6: Quality of dialysis care and providers' costs

No recommendations

Chapter 7: Using incentives to improve the quality of care in Medicare

The Secretary should conduct demonstrations to evaluate provider payment differentials and structures that reward and improve quality.

Yes: DeBusk, DeParle, Durenberger, Feezor, Hackbarth, Muller, Nelson, Newhouse, Raphael, Reischauer, Rosenblatt, Smith, Stowers, Wakefield, Wolter

Absent: Burke, Rowe

Chapter 8: Using market competition in fee-for-service Medicare

8A The Congress should give the Secretary demonstration authority to initiate competitive pricing demonstrations.

Yes: DeBusk, DeParle, Durenberger, Feezor, Hackbarth, Muller, Nelson, Newhouse, Raphael, Reischauer, Smith, Stowers, Wakefield, Wolter

Absent: Burke, Rosenblatt, Rowe

8B For demonstrations that prove successful, the Secretary should have the authority to implement competitive pricing. The Congress should have a fixed period of time to review and approve any implementation plan.

Yes: DeBusk, DeParle, Durenberger, Feezor, Hackbarth, Muller, Nelson, Newhouse, Raphael, Reischauer, Smith, Stowers, Wakefield, Wolter

Absent: Burke, Rosenblatt, Rowe

Chapter 9: Medicare payments for outpatient drugs under Part B

No recommendations

Acronyms

Acronyms

AAP	average acquisition price
ACE	angiotensin-converting enzyme
ACEI	angiotensin-converting enzyme inhibitor
AFL-CIO	American Federation of Labor and Congress of Industrial Organizations
AHA	American Hospital Association
AIDS	acquired immunodeficiency syndrome
ALOS	average length of stay
AMA	American Medical Association
AMI	acute myocardial infarction
AMP	average manufacturer price
APR-DRG	all patient refined diagnosis related group
ASC	ambulatory surgical center
ASCO	American Society of Clinical Oncology
ASP	average sales price
AWP	average wholesale price
BBA	Balanced Budget Act of 1997
BBRA	Balanced Budget Refinement Act of 1999
BETOS	Berenson-Eggers Type of Service
BHCAG	Buyer's Health Care Action Group
BIPA	Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000
CABG	coronary artery bypass graft
CAH	critical access hospital
CAHPS	Consumer Assessment of Health Plans Survey
CAT	computerized automated tomography
CBO	Congressional Budget Office
CMI	case-mix index
CMS	Centers for Medicare & Medicaid Services
COPD	chronic obstructive pulmonary disease
CPEP	Clinical Practice Expert Panel
CPOE	computerized physician order entry
CPS	Current Population Survey [of the Census Bureau]
DCG	diagnostic cost group
DME	durable medical equipment
DNA	deoxyribonucleic acid
DOQ	Doctors Office Quality
DRG	diagnosis related group
DSH	disproportionate share
ECOH	Employers' Coalition on Health
EMR	electronic medical record
ERISA	Employee Retirement Income Security Act of 1974
ESRD	end-stage renal disease

FDA	Food and Drug Administration
FFS	fee-for-service
FI	fiscal intermediary
FSS	federal supply schedule
FTC	Federal Trade Commission
GAF	geographic adjustment factor
GAO	General Accounting Office
GDP	gross domestic product
GM	General Motors
GPCI	geographic practice cost index
HbA1c	hemoglobin A1c
HCC	hierarchical condition category
HCFA	Health Care Financing Administration
HCPCS	Healthcare Common Procedure Coding System
HCRIS	Hospital Cost Report Information System
HCT	hematocrit
HEDIS	Health Plan Employer Data and Information Set
HF	heart failure
HHS	Department of Health and Human Services
HI	Herfindahl index
HIV	human immunodeficiency virus
HMO	health maintenance organization
HOPD	hospital outpatient department
HRR	hospital referral region
HSP	hospital-specific payment
IBM	International Business Machines Corporation
ICU	intensive care unit
IHC	Intermountain Health Care
IME	indirect medical education
IOM	Institute of Medicine
IPS	interim payment system
IRF	inpatient rehabilitation facility
IRF-PAI	Inpatient Rehabilitation Facility–Patient Assessment Instrument
IV	intravenous
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
LOS	length of stay
LTC	long-term care
LTCH	long-term care hospital
LVEF	left ventricular ejection fraction
M+C	Medicare+Choice
MCAC	Medicare Coverage Advisory Committee
MCBS	Medicare Current Beneficiary Survey
MDC	major diagnostic category
MDC 5	diseases and disorders of the circulatory system

MDC 8	diseases and disorders of the musculoskeletal system and connective tissue
MDS	Minimum Data Set
MedPAC	Medicare Payment Advisory Commission
MedPAR	Medicare Provider Analysis and Review
MEI	Medicare Economic Index
MRI	magnetic resonance imaging
MSA	metropolitan statistical area
N/A	not applicable
NAIC	National Association of Insurance Commissioners
NCQA	National Committee for Quality Assurance
NDC	national drug code
NKF	National Kidney Foundation
NORC	National Opinion Research Center
NQF	National Quality Forum
OASIS	Outcomes and Assessment Information Set
OBRA	Omnibus Budget Reconciliation Act
OIG	Office of Inspector General
P&T	pharmacy and therapeutics
PAC	post-acute care
PBM	pharmacy benefit manager
PLI	professional liability insurance
PPO	preferred provider organization
ProPAC	Prospective Payment Assessment Commission
PPS	prospective payment system
PSA	prostate-specific antigen
PSO	provider sponsored organization
QIO	quality improvement organization
rDNA	recombinant deoxyribonucleic acid
REBUS/ PMMIS	Renal Beneficiary Utilization System/Program Management and Medical Information System
RFP	request for proposal
RVU	relative value unit
SCHIP	State Children's Health Insurance Program
SDP	single drug pricer
SGR	sustainable growth rate
SHIP	State Health Insurance Assistance Program
SMS	Socioeconomic Monitoring System
SNF	skilled nursing facility
SPN	specialty pharmacy network
SUR	seemingly unrelated regression
URR	urea reduction ratio
USRDS	United States Renal Data System
VA	Department of Veterans Affairs
Y2K	year 2000

More about MedPAC

Commission members

Glenn M. Hackbarth, J.D., chairman

Independent consultant
Bend, OR

Robert D. Reischauer, Ph.D., vice chairman

The Urban Institute
Washington, DC

Term expired April 2003

Autry O.V. "Pete" DeBusk

DeRoyal
Powell, TN

Glenn M. Hackbarth, J.D.

Alan R. Nelson, M.D.

American College of Physicians
Washington, DC

Robert D. Reischauer, Ph.D.

David A. Smith

AFL-CIO
Washington, DC

Ray E. Stowers, D.O.

*Oklahoma State University College
of Osteopathic Medicine*
Tulsa, OK

Term expires April 2004

Sheila P. Burke, M.P.A., R.N., F.A.A.N.

Smithsonian Institution
Washington, DC

Allen D. Feezor

*California Public Employees'
Retirement System*
Sacramento, CA

Ralph W. Muller

University of Pennsylvania Health System
Philadelphia, PA

Joseph P. Newhouse, Ph.D.

Harvard University
Boston, MA

Alice Rosenblatt, F.S.A., M.A.A.A.

WellPoint Health Networks
Thousand Oaks, CA

John W. Rowe, M.D.

Aetna Inc.
Hartford, CT

Term expires April 2005

Nancy-Ann DeParle, J.D.

JPMorgan Partners
Washington, DC

David F. Durenberger, J.D.

National Institute of Health Policy
Washington, DC

Carol Raphael

Visiting Nurse Service of New York
New York, NY

Mary K. Wakefield, Ph.D., R.N., F.A.A.N.

Center for Rural Health
University of North Dakota
Grand Forks, ND

Nicholas J. Wolter, M.D.

Deaconess Billings Clinic
Billings, MT

Commissioners' biographies

Sheila P. Burke, M.P.A., R.N., F.A.A.N., is the Smithsonian Institution's undersecretary for American Museums and National Programs. Before joining the Smithsonian, she was executive dean and lecturer in public policy at the John F. Kennedy School of Government, Harvard University, Cambridge. From 1986 to 1996, Ms. Burke was chief of staff for former Senate Majority Leader Bob Dole and was elected Secretary of the Senate in 1995. She currently serves as a board member of the Kaiser Family Foundation, the Kaiser Commission on Medicaid and the Uninsured, the Center for Health Care Strategies, Inc., the Academy for Health Services Research and Health Policy, the American Board of Internal Medicine Foundation, WellPoint Health Networks, Chubb Insurance, Community Health Systems, the University of San Francisco, and Marymount University. She also sits on the national advisory council at the Center for State Health Policy and has chaired the National Academy of Social Insurance's project on Restructuring Medicare for the Long-Term. Ms. Burke holds a B.S. in nursing from the University of San Francisco and an M.P.A. from Harvard University.

Autry O.V. "Pete" DeBusk is chairman, chief executive officer, and founder of DeRoyal, a global supplier of medical products and services in the acute care, patient care, wound care, and original equipment manufacturing markets. Mr. DeBusk formed his first company in 1970 with a patent he received on an orthopedic product. In 1976 he consolidated his many product lines into one company, DeRoyal Industries. A member of several community organizations, Mr. DeBusk is also chairman of the Board of Trustees at Lincoln Memorial University in Harrogate, Tenn., as well as a founder of the Autry O.V. DeBusk facility, Boys and Girls Club, Powell, Tenn. As an innovative leader in the medical industry, he received a prestigious award from Duke University in 2000 recognizing his original contributions to orthopedic surgery. He received his B.S. degree from Lincoln Memorial University and attended graduate school at the University of Georgia.

Nancy-Ann DeParle, J.D., is a senior advisor to JPMorgan Partners, LLC, and adjunct professor at the Wharton School of the University of Pennsylvania. From 1997 to 2000, she served as administrator of the Health Care Financing Administration (HCFA), which is now the Centers for Medicare & Medicaid Services. After resigning from HCFA, Ms. DeParle became a joint fellow of Harvard University's Institute of Politics at the Kennedy School of Government and the Interfaculty Health Policy Forum. Before joining HCFA, Ms. DeParle was associate director for health and personnel at the White House Office of Management and Budget. From 1987 to 1989 she served as the Tennessee Commissioner of Human Services. She has also worked as a lawyer in private practice in Nashville, Tenn., and Washington, DC. Ms. DeParle received a B.A. degree from the University of Tennessee; B.A. and M.A. degrees from Oxford University, where she was a Rhodes Scholar; and a J.D. degree from Harvard Law School.

David F. Durenberger, J.D., is president of Policy Insight, LLC; senior health policy fellow at the University of St. Thomas; and chairman and chief executive officer of the National Institute of Health Policy. He is also chairman of Citizens for Long Term Care, president of the Medical Technology Leadership Forum, and a member of the Kaiser Foundation Commission on Medicaid and the Uninsured. From 1978 to 1995, he served as the senior U.S. Senator from Minnesota, as well as a member of the Senate Finance Committee and chair of its Health Subcommittee. He was a member of the Senate Environment Committee as well as the committee now known as the Health, Education, Labor, and Pensions Committee, and chaired the Senate Select Committee on Intelligence. He was vice chairman of the Pepper Commission and a member of the Congressional Bio-Ethics Commission, the Advisory Commission on Intergovernmental Relations, and the Congressional Advisory Committee to the Office of Technology Assessment. Senator Durenberger is a graduate of St. John's University, received his J.D. degree from the University of Minnesota, and served as an officer in the U.S. Army.

Allen D. Feezor is assistant executive officer, Health Benefit Services, California Public Employees' Retirement System (CalPERS). Previously, Mr. Feezor was vice president for planning, marketing and managed care for University Health Systems of East Carolina in Greenville, NC. From 1985 to 1995, he was chief deputy commissioner for the North Carolina Department of Insurance, where he chaired two national task forces that pioneered state health insurance and small group reform. He has headed the 430,000-member North Carolina Teachers,' State Employees' and Retirees' Health Plan and has served as Senior Representative in Washington, DC, for the Blue Cross/Blue Shield Association. He was a founding faculty member of the National Academy for State Health Policy and a contributor to two Institute of Medicine studies—one on the future of health benefits and another on improving Medicare. He currently serves on the boards of Pacific Business Group on Health and the Integrated Health Association. Mr. Feezor earned his B.A. and M.A. degrees in political science from Duke University.

Glenn M. Hackbarth, J.D., is chairman of the Commission and an independent consultant living in Bend, Ore. He has experience as a health care executive, government official, and policy analyst. He was chief executive officer and one of the founders of Harvard Vanguard Medical Associates, a multispecialty group practice in Boston that serves as a major teaching affiliate of Harvard Medical School. Harvard Vanguard was created from the staff-model delivery system that was the original core of Harvard Community Health Plan. Mr. Hackbarth previously served as senior vice president of Harvard Community Health Plan. From 1981 to 1988, he held positions at the Department of Health and Human Services, including deputy administrator of the Health Care Financing Administration. Mr. Hackbarth received his B.A. from Penn State University and his M.A. and J.D. degrees from Duke University.

Ralph W. Muller is chief executive officer of the University of Pennsylvania Health System. Most recently he served as managing director of Stockap & Associates, a hospital consulting firm, and as a visiting fellow at the King's Fund in London. From 1985 to 2001, he was president and chief executive officer of the University of Chicago Hospitals and Health Systems (UCHHS). Before joining the hospital, he held senior positions with the Commonwealth of Massachusetts, including deputy commissioner of the Department of Public Welfare. Mr. Muller is past chairman of the Association of American Medical Colleges, past chairman of the Council of Teaching Hospitals and Health Systems, and past vice-chairman of the University Health System Consortium. He is past chairman of the National Opinion Research Center, a social service research organization. Mr. Muller received his B.A. in economics from Syracuse University and his M.A. in government from Harvard University.

Alan R. Nelson, M.D., is an internist-endocrinologist who was in private practice in Salt Lake City until becoming chief executive officer of the American Society of Internal Medicine (ASIM) in 1992. Following the merger of ASIM with the American College of Physicians (ACP) in 1998, Dr. Nelson headed the Washington office of ACP-ASIM until his semi-retirement in January 2000 and now serves as special advisor to the executive vice president and chief executive officer of ACP. He was president of the American Medical Association in 1989 to 1990. Dr. Nelson also serves on the Board of Trustees of Intermountain HealthCare, a large integrated health system headquartered in Salt Lake City. A member of the prestigious Institute of Medicine of the National Academy of Sciences (IOM), he serves on the IOM Roundtable on Environmental Health Sciences Research and Medicine and was chair of the study committee on Rural and Ethnic Disparities in Health Care. Dr. Nelson received his M.D. from Northwestern University.

Joseph P. Newhouse, Ph.D., is the John D. MacArthur Professor of Health Policy and Management at Harvard University and director of Harvard's Division of Health Policy Research and Education. At Harvard since 1988, Dr. Newhouse was previously a senior corporate fellow and head of the economics department at RAND. He has conducted research in health care financing, economics, and policy, and was the principal investigator for the RAND Health Insurance Experiment. Recipient of several professional awards, he is a member of the Institute of Medicine, a former chair of the Prospective Payment Assessment Commission, and a former member of the Physician Payment Review Commission. He is also a past president of the Association for Health Services Research and the International Health Economics Association and has been elected to the American Academy of Arts and Sciences. Dr. Newhouse is editor of the *Journal of Health Economics*. He received a B.A. from Harvard College and a Ph.D. in economics from Harvard University.

Carol Raphael is president and chief executive officer of the Visiting Nurse Service (VNS) of New York, the country's largest voluntary home health care organization. VNS programs include post-acute and long-term care, family and children services, rehabilitation, hospice, mental health, and public health, as well as a health plan for dually eligible Medicare and Medicaid beneficiaries. Ms. Raphael developed the Center for Home Care Policy and Research, which studies the management, cost, quality, and outcomes of home- and community-based services. Previously, Ms. Raphael served as the executive deputy commissioner of the Human Resources Administration in charge of the Medicaid and public assistance programs in New York City. Ms. Raphael has served on several Robert Wood Johnson Foundation advisory committees and New York State panels, including the New York State Hospital Review and Planning Council, for which she chairs the Fiscal Policy Committee. She is on the boards of Excellus, Inc., the Staten Island University Health System, and the American Foundation for the Blind, and is a member of the Pfizer Hispanic Advisory Board. She has an M.P.A. from Harvard University's Kennedy School of Government.

Robert D. Reischauer, Ph.D., is vice chairman of the Commission and president of The Urban Institute. Previously, he was a senior fellow with the Brookings Institution and from 1989 to 1995 was the director of the Congressional Budget Office. Dr. Reischauer currently serves on the boards of the Academy of Political Sciences, the Center on Budget and Policy Priorities, and the Committee for a Responsible Federal Budget. He also serves on the editorial board of *Health Affairs*, chairs the National Academy of Social Insurance's project on Restructuring Medicare for the Long-Term, and is a member of the Institute of Medicine and the National Academy of Public Administration. Dr. Reischauer received his A.B. degree from Harvard College and his M.I.A. and Ph.D. from Columbia University.

Alice Rosenblatt, F.S.A., M.A.A.A., is chief actuary and executive vice president of Integration Planning and Implementation at WellPoint Health Networks. Before joining WellPoint in 1996, she was a principal at Coopers & Lybrand LLP (now PNC), where she consulted with insurers, health plans, providers, and employers. She is a former senior vice president and chief actuary of Blue Cross Blue Shield of Massachusetts and Blue Cross of California. Other positions include work for The New England and William M. Mercer, Inc. Ms. Rosenblatt has served on the Board of Governors of the Society of Actuaries and the American Academy of Actuaries. She previously chaired the Academy's federal health committee and work group on risk adjustment. Ms. Rosenblatt has testified on risk adjustment before subcommittees of the Committee on Ways and Means and the Committee on Commerce of the U.S. House of Representatives. She has a B.S. and an M.A. in mathematics from the City College of New York and the City University of New York, respectively.

John W. Rowe, M.D., is chairman and chief executive officer of Aetna Inc., one of the nation's largest healthcare insurers. Prior to joining Aetna, Dr. Rowe served as president and chief executive officer of Mount Sinai NYU Health. Previously, Dr. Rowe was president of The Mount Sinai Hospital and the Mount Sinai School of Medicine in New York City, where he currently is a professor of medicine. Before joining Mount Sinai in 1988, Dr. Rowe was a professor of medicine and the founding director of the Division on Aging at Harvard Medical School and chief of gerontology at Boston's Beth Israel Hospital. He has authored over 200 scientific publications, mostly on the physiology of the aging process, as well as a leading textbook of geriatric medicine. Dr. Rowe was director of the MacArthur Foundation Research Network on Successful Aging and is coauthor, with Robert Kahn, Ph.D., of *Successful Aging* (Pantheon, 1998). He served on the Board of Governors of the American Board of Internal Medicine and as president of the Gerontological Society of America, and is a member of the Institute of Medicine of the National Academy of Sciences.

David A. Smith is senior policy advisor to the president of the AFL-CIO, where he previously served as director of the Public Policy Department. Prior to joining the AFL-CIO, he served as senior deputy budget director and as Commissioner of Economic Development for the City of New York. Mr. Smith spent most of the 1980s in Washington as an aide to Senator Edward M. Kennedy and as a senior economist at the Joint Economic Committee. Mr. Smith has taught economics and public policy at the University of Massachusetts and the New School for Social Research, and is a senior fellow at the Century Foundation. He is a member of the Board of Directors of Public Campaign and of the National Bureau of Economic Research, a fellow of the National Academy of Social Insurance, and a member of the Advisory Committee to the Export-Import Bank. Mr. Smith attended Tufts University and received an M.Ed. from Harvard University.

Ray E. Stowers, D.O., is director of the Oklahoma Rural Health Policy and Research Center as well as director of rural health in the Department of Family Medicine at the Oklahoma State University College of Osteopathic Medicine. He was in private rural practice for 25 years at Family Medicine Clinics, Inc., in Medford, Okla., and is a member of the National Rural Health Association. Dr. Stowers is first vice president of the American Osteopathic Association and has served that organization in many capacities, including several related to physician coding and reimbursement issues. He has been on the Physician Payment Review Commission and was a founding member of the American Medical Association's Relative Value Update Committee. Dr. Stowers received his B.S. and B.A. degrees from Phillips University in Oklahoma and his D.O. degree from the University of Health Sciences College of Osteopathic Medicine in Kansas City, Mo.

Mary K. Wakefield, Ph.D., R.N., F.A.A.N., is director and professor, Center for Rural Health at the University of North Dakota. Dr. Wakefield has held administrative and legislative staff positions in the U.S. Senate and served on many public and private health-related advisory boards. From 1997 through 1998, she was on President Clinton's Advisory Commission on Consumer Protection and Quality in the Health Care Industry. Dr. Wakefield was a member of the Institute of Medicine's Committee on Quality Health Care in America and a fellow of the American Academy of Nursing. In 2000, she was appointed to the National Advisory Committee on Rural Health, Office of Rural Health Policy, Health Resources and Services Administration. Dr. Wakefield received her B.S. in nursing from the University of Mary, Bismarck, N.D., and her M.S. and Ph.D. from the University of Texas at Austin.

Nicholas J. Wolter, M.D., is a pulmonary and critical care physician who serves as chief executive officer for Deaconess Billings Clinic (DBC), Billings, Mont. DBC is a regional, not-for-profit medical foundation consisting of a multispecialty group practice, hospital, health maintenance organization, research division, and long-term care facility serving a vast rural area in the northern Rockies. Dr. Wolter began his Billings Clinic practice in 1982 and served as medical director of the hospital's intensive care unit from 1987 to 1993. He began his leadership role with the successful merger of the clinic and hospital in 1993. Dr. Wolter is a diplomate of the American Board of Internal Medicine and serves on the boards of many regional and national health care organizations. He has a B.A. from Carleton College, an M.A. from the University of Michigan, and an M.D. from the University of Michigan Medical School.

Commission staff

Mark E. Miller, Ph.D.

Executive director

Publications director

Sarah Thomas, M.S.

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Jack Ashby, M.H.A.

Jill Bernstein, Ph.D.

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Sharon Bee Cheng, M.S.

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