CHAPTER 3

Issues in physician payment policy

RECOMMENDATIONS

3A The Secretary should use Medicare claims data to measure fee-for-service physicians' resource use and share results with physicians confidentially to educate them about how they compare with aggregated peer performance. The Congress should direct the Secretary to perform this function.

COMMISSIONER VOTES: YES 16 • NO 0 • NOT VOTING 0 • ABSENT 1

3B The Secretary should improve Medicare's coding edits that detect unbundled diagnostic imaging services and reduce the technical component payment for multiple imaging services performed on contiguous body parts.

COMMISSIONER VOTES: YES 16 • NO 0 • NOT VOTING 0 • ABSENT 1

3C The Congress should direct the Secretary to set standards for physicians who bill Medicare for interpreting diagnostic imaging studies. The Secretary should select private organizations to administer the standards.

COMMISSIONER VOTES: YES 16 • NO 0 • NOT VOTING 0 • ABSENT 1

3D The Congress should direct the Secretary to set standards for all providers who bill Medicare for performing diagnostic imaging studies. The Secretary should select private organizations to administer the standards.

COMMISSIONER VOTES: YES 16 • NO 0 • NOT VOTING 0 • ABSENT 1

3E The Secretary should include nuclear medicine and PET procedures as designated health services under the Ethics in Patient Referrals Act.

COMMISSIONER VOTES: YES 16 • NO 0 • NOT VOTING 0 • ABSENT 1

3F The Secretary should expand the definition of physician ownership in the Ethics in Patient Referrals Act to include interests in an entity that derives a substantial proportion of its revenue from a provider of designated health services.

COMMISSIONER VOTES: YES 16 • NO 0 • NOT VOTING 0 • ABSENT 1

CHAPTER 3

Issues in physician payment policy

In this chapter

- Growth in the volume of physician services
- Measuring physician resource use
- Managing the use of imaging services
- Creating new incentives in the physician payment system
- Future work

In this chapter, we examine ways to reduce inappropriate use of physician services and improve the quality of services provided to beneficiaries. We recommend that Medicare measure physician resource use so that physicians can compare their practice patterns with those of their peers. We identify ways to improve Medicare's coding edits to better detect improper imaging claims and to pay less for multiple imaging studies. To ensure that Medicare beneficiaries receive high-quality imaging services, and to help control the rapid growth of imaging spending, we recommend that CMS set standards for providers who perform and interpret imaging tests. We recognize that setting such standards is a new direction for the Medicare program, but we believe it is warranted by the rapid growth of imaging services and their migration from the hospital setting to physician offices. In addition, CMS should strengthen the physician self-referral rules to minimize financial incentives that might affect clinical decisions to order imaging studies. We also discuss potential ideas for creating incentives for more efficient delivery of care.

The financial challenges to the program enumerated in Chapter 1 highlight the pressing need to ensure that Medicare's resources are used efficiently. The volume and intensity of services provided to Medicare beneficiaries have grown steadily, with program expenditures rising accordingly. Although some of this volume growth undoubtedly contributed to the health and well-being of beneficiaries, other increases probably did not. Research has shown that wide regional variation in service volume is not reflected in differences in health outcomes.

The way in which traditional Medicare pays for physician services does nothing to create incentives for coordinated evidence-based care. The program does not reward quality nor recognize when services provided are inappropriate or inefficient. In its landmark report, the Institute of Medicine (2001) concluded that health care should be safe, effective, patient-centered, timely, efficient, and equitable. Here, we examine ways in which changes in the Medicare physician payment system can help further these goals while reducing unnecessary expenditures.

In this chapter, we analyze tools that would encourage providers to furnish efficient, quality care to Medicare beneficiaries. The strategies include:

- measuring resource use by physicians in comparison with that of their peers,
- setting quality standards for imaging services, and
- creating new incentives for individual physicians to control unnecessary volume.

The proposals in this chapter, along with recommendations in Chapter 4 on pay for performance and adoption of information technology, can be viewed as a package. We recognize that these proposals will add to CMS's administrative responsibilities. For the programs to succeed, CMS must be given the necessary resources.

In future work, we also intend to examine how prices are set for individual services within the fee schedule. For example, the introduction of new treatments and procedures may have resulted in a misalignment between the fees paid for older and newer services. The goal is to ensure that services are paid accurately and that the pricing structure does not create incentives for inappropriate volume growth. We also plan to look at geographic adjusters and the design of the payment areas used in the fee schedule.

Growth in the volume of physician services

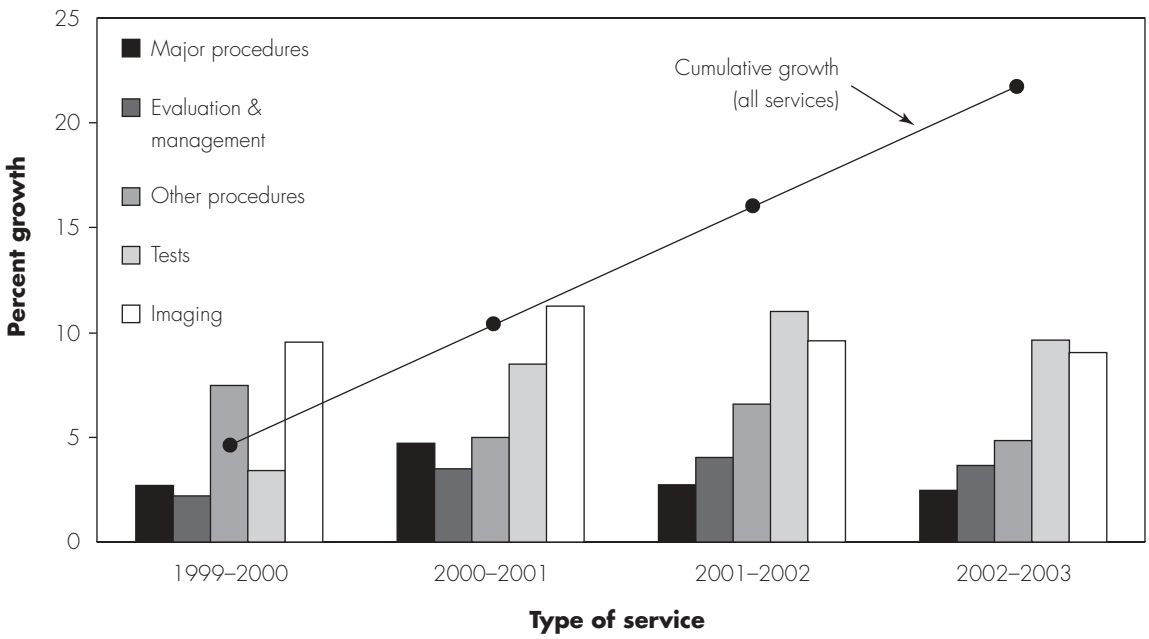
The volume of physician services provided to Medicare beneficiaries has been growing steadily since the Congress established the physician fee schedule (Figure 3-1). The per beneficiary volume of physician services increased by more than 30 percent between 1993 and 1998. Most recently, per capita volume growth increased by nearly 22 percent from 1999 to 2003. Volume is measured as per capita use of physician services by beneficiaries in traditional Medicare.[1]

The causes and consequences of volume growth are controversial. Some analyses (Cutler and McClellan 2001, Newhouse 1993, Newhouse 1992) emphasize that growth in service use is largely driven by technological change. Technological change includes both treatment substitution (substituting newer technologies for older ones) and treatment expansion (treating more people for disease). In some cases, new treatments are provided in addition to older treatments. These changes may result in better health outcomes for patients.

However, other research (Wennberg et al. 2002, Fisher et al. 2003a, Fisher et al. 2003b) that emphasizes the level of variation in the volume of physician service in geographic areas suggests that much additional service use does not improve health. After controlling for input prices and health status, researchers found that the volume of physician services is driven partly by local practice patterns and partly by differences in physician supply and specialization. They did not find an association between greater volume and demonstrable improvement in outcomes.

Since the development of the physician fee schedule, the Congress has attempted to moderate expenditure growth by implementing volume targets. However, volume has continued to grow, and legislated targets have not succeeded in differentiating between beneficial volume growth and increases in inappropriate services. The current sustainable growth rate (SGR) formula has resulted in both budgetary and policy problems. By 2003, the cumulative impact of actual spending for physician services was about $6 billion higher than the SGR target for that year. The policies discussed in this chapter cannot be expected to close the gap between this target and actual spending (see Section 2B).[2]

FIGURE 3-1 **Continued growth in the use of physician services per beneficiary, 1999–2003**



Source: MedPAC analysis of Medicare claims data for all beneficiaries, 1999–2003.

In the following section, we address the way in which unexplained variation in volume might be reduced by providing physicians with data on their resource use compared with the practice patterns of their peers.

Measuring physician resource use

Medicare beneficiaries living in regions of the country where physicians and hospitals deliver many more health care services do not experience better quality of care or outcomes. Moreover, they do not report greater satisfaction with care than beneficiaries living in other regions (Fisher et al. 2003a, Fisher et al. 2003b). This finding is provocative. It suggests that the nation could spend less on health care, without sacrificing quality, if physicians whose practice styles are more resource intensive reduced the intensity of their practice—that is, if they provided fewer diagnostic services, used fewer subspecialists, used hospitals and intensive care units (ICUs) less frequently as a site of care, and did fewer minor procedures.

In assessing the potential savings in our health care system, consider also that even within low spending regions, providers acknowledge unharvested opportunities to eliminate services that are not likely to improve health (James 2002).

One strategy for Medicare to realize a portion of these potential savings is to measure physicians' resource use over time and feed back the results to physicians. Physicians would then be able to assess their practice styles, evaluate whether they tend to use more resources than either their peers or what evidence-based research (when available) recommends, and revise their practice style as appropriate.[3] This process is critical to precipitating change. Moreover, when physicians are able to use this information in tandem with information on their quality of care, it will provide a foundation for improving the value of care received by beneficiaries.

We consider here how Medicare could both engage in resource use measurement and encourage its use more widely. We discuss Medicare's use of quality measures in the following chapter. The use of both measures together is ideal.

What is the experience with and effectiveness of resource use measurement?

Resource use measurement is increasingly used by private plans to contain costs. MedPAC identified this trend in a series of interviews staff conducted with health plans and consultants (MedPAC 2004b). Nearly all plans and purchasers mentioned resource use measurement as central to their cost-containment and quality improvement strategies. Some collected information and gave it back to patients or providers, others used it as a basis for bonus payments to providers, and still others used it to select providers to be in preferred tiers or limited network plans.

The Center for Studying Health System Change reported similar findings based on a survey of 12 communities. It found that since 2001, 15 health plans in 9 communities increased their use of retrospective review and provider resource measurement and that 9 plans in 6 communities developed tiered provider network products. In addition, four plans in three communities developed limited network plans (Mays et al. 2004).

Purchasers, eager to better understand which providers, delivery systems, and plans (including their disease management programs) are the best value, have pursued greater standardization in resource use measurement. The National Committee for Quality Assurance (NCQA) is first developing and testing national standards for plans to report their aggregate relative resource use to purchasers and hopes to integrate an efficiency measure into its public reporting on health plan performance by 2006. The next phase of NCQA's effort will develop criteria and guidelines for measuring individual physicians' and hospitals' resource use. The NCQA process is being partially informed by the work coordinated by Bridges to Excellence, an employer-sponsored program that recognizes and rewards high-quality physician care, and the Leapfrog Group on identifying best practices in resource use measurement (Bridges to Excellence and the Leapfrog Group 2004).

Evidence on how effective resource use measurement is in containing costs is mixed and varies depending upon how the results are used. Providing feedback on use patterns to physicians alone has been shown to have a statistically significant, but small, downward effect on resource use (Balas et al. 1996, Schoenbaum and Murray 1992). When paired with additional incentives such as public disclosure or payment incentives, the effect on physician behavior can be considerably larger (Eisenberg 2002). Some note that the effectiveness of feedback is diluted if physicians receive multiple "report cards" from different insurers that provide different results (Sandy 1999).

How could Medicare promote resource use measurement?

Medicare could measure the resource use of its fee-for-service physicians. As the nation's largest single purchaser of health care services, Medicare has a wealth of data and the potential to have the greatest influence on physicians. This policy option is the focus of this section of the chapter.

Medicare could also encourage plans and providers to undertake and expand their independent use of resource use measurement. We make no recommendations on these options here, but note them for discussion. First, Medicare could share its claims data with private health plans and purchasers, enhancing their ability to measure physicians' resource use. Second, the Congress could potentially promote hospitals' and physicians' use of resource measurement if it allowed the Secretary to regulate gainsharing arrangements (as discussed in the Commission's report on specialty hospitals). Current restrictions prohibit physicians from receiving financial compensation for making changes in their practice patterns that reduce hospital inpatient costs. Allowing physicians to receive compensation with appropriate safeguards would give physicians and hospitals a greater impetus to measure resource use during a hospital admission for each physician and, in turn, reward those who appropriately constrained resource use.

Medicare could measure physicians' resource use to encourage change in practice

Resource use measurement may be used in a number of ways to encourage physicians to change their practice patterns. Confidential feedback of the results to physicians may be sufficient to induce some change, particularly if provided by such a large purchaser as Medicare. Many

physicians are highly motivated individuals who have continually strived for high grades and peer approval (Tompkins et al. 1996). If identified as having an unusually resource-intense practice style, some physicians may respond by reducing the intensity of their practice. Some private purchasers use additional incentives to encourage physicians to modify their practice styles. For example, the data on individual physician performance could be shared with physicians' peers or the public, or used as the basis for increased or decreased payment. MedPAC has concluded, however, that Medicare should, for an initial period, use resource use measurement only to confidentially educate physicians.

RECOMMENDATION 3A

The Secretary should use Medicare claims data to measure fee-for-service physicians' resource use and share results with physicians confidentially to educate them about how they compare with aggregated peer performance. The Congress should direct the Secretary to perform this function.

RATIONALE 3A

Improving longitudinal efficiency in health care delivery is a goal Medicare cannot afford to ignore. Resource use measurement has the potential to encourage physicians to reduce the number of services they provide without sacrificing quality of care, and thereby improve efficiency. In addition, it may encourage physicians to use less expensive, nonphysician resources to reduce spending and use of costly services. The private sector has used this approach for at least two decades, and it is sufficiently developed to be used in Medicare for confidential physician education.

IMPLICATIONS 3A

Spending

- This recommendation should lead to a minimal reduction in program spending.

Beneficiary and provider

- No adverse impact on access or quality is expected. To the extent that physicians adopt more conservative practice patterns, beneficiaries would pay less coinsurance and premiums.
- Because this recommendation could reduce the number of services provided over time, it could reduce aggregate payments to some Medicare providers over time.

Using measurement results only for confidential education allows CMS to gain experience using the measurement tool and explore the need for refinements. Similarly, physicians can review the results, make changes to their practice as they see appropriate, and help shape the measurement tool. Once greater experience and confidence are gained, Medicare might use the results in payment, for example as a component of a pay-for-performance program (which rewards both attainment and improvement) or to enable beneficiaries to identify physicians with more conservative practice styles. As mentioned earlier, resource use and quality measures taken together are the best indicator of value for Medicare (see Chapter 4 for discussion of physician quality measures).

The measurement tool should provide sufficient detail on use of each type of service. For example, CMS or one of its contractors could send out a form to each physician that is computer-generated based on claims data that looks like Table 3-1 (p. 148). In this example, spending is shown for a given episode of care. Risk adjustment is, in part, achieved by assigning patient care to a given type of clinically homogenous episode. Each episode is defined by a variety of factors, including diagnoses codes, complicating conditions, age, and gender. Spending is adjusted for geographic differences in input prices. Spending on all types of care, rather than just physician services, is measured. This inclusive approach is warranted by the fact that as much as 80 percent of spending for medical care is prescribed by physicians (Eisenberg 2002). This example shows that Physician A uses more services—especially inpatient hospital services—in caring for patients with a given condition (e.g., pneumonia) than his peer group.

Because this recommendation is educational only, the Commission cannot estimate the magnitude of savings. While research suggests that, on balance, providers do respond to such educational reports, resulting in small savings, we recognize that assessing physicians' potential response to this recommendation is complicated. Some physicians who use fewer resources than average may increase their service intensity; without quality measures validating a low-intensity practice style, they may believe that better quality is associated with higher intensity. Other physicians might ignore resource use reports, particularly since there is no financial penalty for doing so.

TABLE 3-1

A sample physician report showing comparative resource use

	Standardized spending for an episode of care							
	Average spending per episode	Physician visits	Diagnostic tests	Hospital admissions	Medical/ surgical procedures	Prescriptions	Other	Overall resource use score*
Peer group	$2,500	$260	$480	$ 870	$140	$250	$500	1.00
Physician A	3,000	265	460	1,400	140	230	505	1.20

Note: Examples of episodes of care include pneumonia, diabetes, and sinusitis.
*Score is calculated as a ratio of physician A's spending to the peer group's spending.

It is also possible that Medicare's feedback of resource use performance could be more successful than previous private sector experience. As the single largest purchaser, Medicare's reports may command greater attention. Because Medicare's reports would be based on more patients than private plan reports, they might have greater validity and acceptance from physicians. In addition, measurement tools have evolved to capture longitudinal use across all services and, as such, may be more successful in promoting conservative practice styles. Third, to the extent physicians see this as a first step leading to financial incentives or likely to be emulated by private plans, they may be more inclined to respond.

The Commission recommends that the Congress direct the Secretary to undertake this task in order to clarify the Secretary's existing authority in this area. Under current law, the Secretary may require carriers to monitor and profile physicians' billing patterns and provide comparative data to physicians whose utilization patterns vary significantly from other physicians in the same area (Section 1842 [b][3][L] of the Social Security Act). Many carriers do not perform this activity, and those that do tend to focus on incorrect billing (e.g., upcoding) rather than variation in imaging services or hospitalizations, for example, during an episode of care.

To implement this recommendation, the Secretary would need to develop or select an existing resource use measurement tool, assess its accuracy and effectiveness, and address a number of design issues (discussed in the next section).

How would Medicare measure resource use?

Several approaches to measuring resource use are available. Private sector purchasers are increasingly measuring resources (expressed as standardized resource units [akin to relative value units, or RVUs] or spending) used across all settings in an episode of care (see text box, p. 150). The episode could be relatively short, such as a hospital stay; include all care in the course of a year for a given chronic condition; or fall somewhere in between, such as all services incident to hip replacement surgery or cardiac bypass surgery. Episode measures can apply to both primary and specialist physicians. A patient's care may be ascribed to multiple providers (e.g., if two physicians provided 50 percent of a patient's care during an episode, that patient's care would be assigned to both physicians), and the duration of an episode may vary.

Episode measurement software tools tend to define the beginning of an episode when care (e.g., physician visit, hospitalization) is delivered to a patient for a given diagnosis. A grouper sorts care into specific health conditions or types of episode (the most common grouper has more than 800 types of episodes; other groupers have more). The episode ends with a period (e.g., 90 days) of no claims activity. The length of this "clean period" can vary by type of episode.

Multiple episodes can occur simultaneously. Chronic condition episodes could span six months or one year, for example. Feedback to providers on patterns of service use can be presented by condition (e.g., ischemic heart disease, hip fractures, diabetes) and by service category (e.g., hospitalizations, prescription drugs, outpatient

services, diagnostic testing). In addition, the report could include a variety of statistics on per episode care (e.g., emergency room use, use of specific prescription drugs).

Alternative approaches to measuring episodes of care include measuring the rate at which a certain intervention is performed across a physician's risk-adjusted patient population (e.g., number of hospitalizations or diagnostic tests performed per 1,000 patients) or measuring total costs associated with primary care physicians' patient populations over a year. Compared with these alternative approaches, episode measurement has multiple advantages:

- It is more *versatile*. It may be used to measure specialists' performance, who may be driving a lot of costs. Unlike approaches that examine aggregate care patterns, breaking patient care into episodes allows the needed precision to assign care to specialists.
- It is an *inclusive* measure. Because it measures the spectrum of care across multiple sites, it respects providers' discretion in selecting site of care and does not ask providers to perform to a narrow set of measures (e.g., length of stay) while ignoring other factors that increase resource use (e.g., readmissions, and imaging services).
- Its output is more *clinically relevant* and therefore "actionable"—that is, it can identify specific changes in practice that would align the provider with her peers or some other benchmark. For example, a report showing that a provider performs far more upper gastrointestinal endoscopies for her heartburn patients than her peers would point the provider to reevaluate her practice style with respect to this procedure. Armed only with information comparing her number of hospitalizations or costs of a year of patient care with a peer group, the provider may not know how to adjust her practice style to affect the rate.
- It appears to *better account for differences* in patient health status. Assigning care by episode can be more precise as well as selective. For example, the grouper may sort care into different types of diabetes episodes by severity, presence of comorbidities, or complications. Less common episodes may be omitted because they are likely to have greater random variation in resource use.

The main limitation of episode-based efficiency measurement is that it does not recognize physicians who expend more resources per episode but in so doing achieve a more cost-efficient 12- or 24-month result. Accordingly, Medicare may wish to initially apply both an episode and a one- to two-year window as developed by Wennberg and Fisher in order to capture both dimensions of resource use (Wennberg et al. 2004).

Validity and effectiveness: the criteria for good measurement

Resource use measurement must be more than conceptually appealing. It is only useful if it is sufficiently able to distinguish between efficient and inefficient providers and if providers respond to the measures by changing their practice styles as appropriate.

How do we determine the validity of resource use measurement?

Validity in resource use measurement hinges on the ability to reflect differences in a physician's practice style, not the relative health status of his patient panel, statistical error, or inaccurate data. Unfortunately, there is no definitive way to measure the validity of resource use measurement. One way is to see if the results from a given approach identify the same providers as efficient from one year to the next. A provider's practice style should not vary much from year to year (Schoenbaum and Murray 1992). Until more outcomes research allows us to know what comprises the least costly path to the best clinical outcome, this method may be acceptable. However, the measurement technique should not unduly sacrifice sensitivity in order to achieve stability in physician resource use scores.

Empirical evidence about the accuracy of episode measurement tools is scant. MedPAC plans to evaluate factors that improve accuracy of measurement in its future work, but for now has examined the techniques purchasers have developed to improve the face validity of their results. A consensus is emerging among purchasers that not all data available on each physician should be used to assess resource use. For example, one approach stresses the importance of measuring performance only on patients with common types of conditions or episodes. Many choose to disregard or truncate outlier cases and require that any physician measured have a threshold number of cases. These choices mean that less care is measured, though the measures are less volatile.

Illustration of resource use measurement in Medicare

Episode-of-care software is useful for providing information on practice variation among physicians. We present here the results of an analysis done by Cave Consulting Group, using 2001 Medicare Part B claims data. It illustrates the degree of practice variation among physicians.

The measurement method selected here is just one of many possibilities. This method identifies the core types of episodes (of prevalent conditions) frequently treated by a given speciality and based on resource use across those core episodes, produces an aggregate resource use score. By contrast, other methods report resource use by patient conditions, like diabetes or pneumonia.

This analysis finds that physicians within a given specialty vary in their service intensity. In one example, resource use scores range from .81 to 1.48 across all cardiologists in a given region (Table 3-2). This score is a ratio that compares the resources (defined as a function of unit price, volume, and intensity) of a physician treating a set of episodes with the resources used by a peer group of the same specialty.

(continued next page)

TABLE 3-2

Illustration of variation in resource use among cardiologists in single region

	Average score	Physician visits	Diagnostic tests	Medical/ surgical procedures	Inpatient facility	Outpatient facility	Inpatient admissions
Peer group	1.00	2.75	3.32	1.22	3.18	0.13	0.20
Decile 2 physicians	0.81	2.69	2.21	0.49	2.79	0.13	0.17
Decile 6 physicians	1.00	2.75	3.93	1.35	2.73	0.13	0.18
Decile 10 physicians	1.48	2.64	4.01	2.29	4.00	0.16	0.22
Ratio of highest to lowest	—	1.09	1.99	4.67	1.43	1.60	1.29

Note: Regions reflect a single geographic practice cost index payment area.

Source: Cave Consulting Group using 2001Medicare carrier file data from CMS.

Researchers agree that the results may not need to be perfectly accurate to be useful, particularly for confidential feedback (Garnick et al. 1994, Thomas et al. 2004). Nevertheless, users of these measures should understand any bias inherent in the results and carefully consider how the results will be used.

How can resource use measurement encourage practice pattern change?

Because the goal of resource use measurement is to improve the efficiency of health care delivery, providers should be able to use the results to change their practice style. Thus, measures should be clinically meaningful. In addition, the method should be transparent and a detailed analysis of use patterns should be available to the provider.

What are the implementation issues?

Medicare will need to address several design issues in measuring the resource use of its fee-for-service physicians. They include how to assign patients to providers, what care to measure, and what benchmark to use. In addition, other issues concerning data collection and interpretation, such as risk adjustment and outlier trimming, are technical, but may enhance accuracy of measurement and improve perceptions of fairness and equity in profiling. In future work, the Commission plans to examine some of these design issues using Medicare claims data.

Illustration of resource use measurement in Medicare (continued)

What services account for the variation? High-intensity physicians (those in decile 10) perform nearly 5 times as many medical/surgical procedures and 2 times the number of diagnostic tests than physicians in decile 2. They also have more admissions. Interestingly, the number of physician visits does not vary widely.

Analysis by the Cave Consulting Group also finds that variation differs considerably across specialties. Medicare may want to target high-variation specialties. Ophthalmologists and dermatologists generally have the largest practice pattern variation across four regions of the country. In an upper Midwest region, ophthalmologists in the decile with the highest resource use furnish three times more services than their peers in the decile with the lowest resource use (Table 3-3).

The practice pattern variation is also consistently large for general internists, cardiologists, and allergists. Because the average episode cost for cardiologists is about $3,000, a relatively high amount for an episode, this variation may be of particular concern. Because the number of general internists and the volume of services they provide is high, variation in this specialty is also of concern. In contrast, general surgeons, whose services tend to be less discretionary, appear to have the lowest variation in practice patterns. ■

TABLE 3-3

Illustration of variation in resource use among specialties in two regions

Selected specialty type	Number of physicians	Decile 1	Decile 6	Decile 10	Ratio of highest to lowest decile
Upper Midwest region 1					
Allergist	48	0.68	0.94	1.41	2.07
Cardiologist	325	0.68	0.99	1.51	2.22
Dermatologist	172	0.58	0.94	1.52	2.62
Endocrinologist	38	0.75	0.98	1.30	1.73
Gastroenterologist	137	0.81	1.00	1.32	1.63
General internist	1362	0.69	0.97	1.64	2.38
General surgeon	241	0.90	1.01	1.08	1.20
Ophthalmologist	270	0.54	0.94	1.70	3.15
Orthopedist	239	0.78	1.00	1.33	1.71
Southeast region 1					
Allergist	18	0.69	1.01	1.36	1.97
Cardiologist	76	0.71	1.00	1.48	2.08
Dermatologist	41	0.57	.86	1.46	2.56
Endocrinologist	11	0.83	.94	1.14	1.37
Gastroenterologist	22	0.79	.97	1.32	1.67
General internist	216	0.73	1.00	1.53	2.10
General surgeon	58	0.90	1.00	1.16	1.29
Ophthalmologist	59	0.51	0.97	1.76	3.45
Orthopedist	75	0.77	0.99	1.35	1.75

Note: Regions reflect a single geographic practice cost index payment area.

Source: Cave Consulting Group using 2001 Medicare carrier file data from CMS.

Assigning patients to providers

Measuring a physician's practice pattern requires that patient care be attributed to a given physician. Assigning patients to providers can be complicated when multiple physicians are involved in a patient's care. How much and what type of care for a patient meets the threshold for that patient's care to be attributed to a physician?

On the one hand, the measurement should encourage physicians—particularly primary care providers (PCPs)—to actively coordinate care among other efficient providers and be invested in judicious use of resources. Care coordination should be just as incumbent upon physicians, including subspecialists, as using sterile surgical equipment. On the other hand, once patients are under the care of a specialist, PCPs may argue that they do not have any control over a specialist's treatment choices. A cardiac specialist may also object to being held accountable for patient costs associated with a hip fracture, for example, which is outside treatment for the heart condition. This same tension may also exist between primary care doctors who cover for one another. Should a physician be held responsible for a partner's decisions?

Because many private plans do not assign enrollees to PCPs, their experience is relevant to Medicare. Some private plans use a percentage of dollar spending to identify the physicians guiding care. Plans could assign patients to providers based on a threshold of expenses. A physician responsible for a certain percentage of a patient's care over a given period of time (episode, year), for example, would be assigned that patient's cost of care. Other physicians could also be assigned that patient's cost if they also provided more than a threshold percentage of care.

The threshold approach may create an undesirable incentive for the physician to quickly refer a patient to another physician if concerned that the patient will not be compliant with the physician's orders or will otherwise reflect poorly on the physician's resource use score. This incentive could be mitigated by technical adjustments like risk adjustment, trimming outliers, and using a minimum threshold of observations (discussed below). Moreover, this dynamic is far less likely to occur when measurement results are used only for confidential feedback to physicians.

What type of care is measured?

It may be appropriate for Medicare to initially begin resource use measurement for select types of physicians or certain types of care. This decision could be based on research on which types of physicians or episodes of care have the widest variation or which make up a substantial portion of costs (see text box, p. 150–151). Research findings that show resource use measurement to be most accurate for certain specialties or types of medical conditions could also help determine the priorities of measurement.

Attention could also be targeted to the types of care for which we also have quality measures available, since using resource use and quality data together is the ideal way to measure efficiency. Focusing resource use measurement in this way might lead Medicare toward measuring care for chronic conditions and patients with certain cardiac and renal conditions, for which quality measures are relatively well tested.

What is the appropriate benchmark for comparison?

While evidence-based guidelines are the best benchmark of appropriate care, peer performance often is the more practical and available benchmark. Currently, no real consensus exists on the appropriate timing or frequency of many diagnostic and therapeutic services, particularly among patients who have had a condition for some time. In addition, developing and updating evidence-based guidelines requires a large investment in time and money.

Accordingly, a central question is how to define the peer group. The peer group could be defined along the following dimensions:

- those physicians practicing in the same region or all physicians;
- all physicians in the area or everyone except a portion of those with the extreme (most and least) resource-intensive practice patterns; or
- only the same specialists or subspecialists or all other types of physicians treating similar patients.

Once the peer group is defined, physician performance could be compared with the average of the peer group or a higher standard (e.g., the 70th percentile).

Risk adjustment and other data measurement issues

The way in which measurements are calculated and adjusted will affect the accuracy of resource measurement. For example, resource use measurement should take into account the health status of a physician's patients and the number of cases measured.

Because resource use measurement should attribute cost variation to practice style differences, not health status differences, risk adjustment is needed. It should be sufficiently sensitive so that physicians who care for more complicated, severely ill patients are not penalized or encouraged to avoid these types of patients.

In episode measurement, the ability to risk-adjust accurately is enhanced to the extent the grouper is able to account for different levels of severity. These differences may be based on diagnosis codes, age, and gender, among other factors. Additional adjustments may be needed to account for complicating conditions external to a particular episode of care.

In addition, having a higher number of cases enhances the validity of profiling results. The appropriate minimum number of cases may depend on other parameters of the measurement approach, and it appears to vary significantly across private plans. The tension among private plans in establishing the threshold of observations is that ideally they want to measure as many physicians as possible. Yet, the measurement may be inaccurate if the evaluation includes physicians with a small number of patients or complicated, rare cases.

Medicare could encourage stakeholders to measure resource use

Policymakers may also consider policies that encourage health plans and providers to engage in resource use measurement. Current policy dampens the incentive for, or ability of, the private sector to undertake effective resource use measurement in at least two ways. This section will discuss current policy and possible alternatives.

Medicare could share its claims data with individual physician identifiers with private purchasers

Currently, CMS believes that it is restricted from sharing its data with private purchasers by laws that protect physicians' privacy. If purchasers had access to Medicare claims data with physician identifiers, they would have enough data to measure more precisely the resource use of physicians. Individual purchasers do not have enough data on many physicians to adequately measure their resource use.

If private purchasers were more effective in measuring resource use and encouraging providers to modify their practice style, Medicare could benefit from a spillover effect—that is, physicians who reduce the intensity of their practice style would also care for Medicare beneficiaries in a less resource intensive way. A number of issues would need to be addressed if this approach were pursued, however. For example, how would physician privacy concerns be addressed? Would Medicare have any control over how its data are used? Control may be important to prevent data from being used in a way that unfairly harms physicians' livelihoods or impedes access to care. However, giving the private sector wide latitude may increase the spillover effect. The private sector use of the information should be designed to maximize the effectiveness of Medicare's own efforts to measure resource use and feedback results.

The Secretary could be given authority to regulate gainsharing arrangements

Although care delivered in the hospital reflects only a portion of existing variation in practice patterns among physicians, it is a costly portion. Resource use measurement can inform stakeholders about such things as how often a physician uses the most costly implantable devices compared with his peers and the average length of stay in the hospital or ICU for a particular type of episode of care.

Currently the civil monetary penalty provision of the Social Security Act prohibits gainsharing, a practice that allows physicians to share in the savings they generate for hospitals under Medicare prospective payment. Although this provision is intended to protect beneficiaries from the possibility of physicians stinting on care to benefit financially, it can undermine the incentive for hospitals and physicians to cooperate in efforts to reengineer clinical care and change physician practice patterns in the hospital. If gainsharing were permitted with appropriate safeguards, hospitals and physicians could be expected to use resource use measurement to address variation in physician care patterns for hospitalized patients. Gainsharing arrangements could also encompass care immediately before and after a hospitalization. For example, arrangements could discourage avoidable readmissions within a specified time after discharge.

This gainsharing issue is discussed further in MedPAC's report on specialty hospitals. It includes a discussion of the history of the provision and of a policy option that would give the Secretary authority to regulate gainsharing arrangements.

The Commission believes that measuring physician resource use will provide valuable information to physicians about how their practice patterns compare with their peers'. However, it is also possible to develop strategies that target a specific type of physician service. As described in the next section, MedPAC recommends policies to address the rapid growth of diagnostic imaging services and concerns about the quality of those services.

Managing the use of imaging services

The last several years have seen rapid growth in the volume and intensity of diagnostic imaging services paid under Medicare's physician fee schedule. This increase has been driven by technological innovation that has improved physicians' ability to diagnose disease and made it more feasible to provide imaging procedures in physician offices. Other factors include:

- possible misalignment of fee schedule payment rates and costs,[4]
- physicians' interest in supplementing their professional fees with revenues from ancillary services, and
- patients' desire to receive diagnostic tests in more convenient settings.

These factors have contributed to an ongoing migration of imaging services from hospitals, where institutional standards govern the performance and interpretation of studies, to physician offices, where there is less quality oversight. This diminished oversight, coupled with rapid volume growth, create an urgent need for Medicare to develop quality standards for all providers that receive payment for performing and interpreting imaging studies. These standards should improve the accuracy of diagnostic tests and reduce the need to repeat studies, thus enhancing quality of care and helping to control spending.

As many physicians integrate imaging services into their office practices, Medicare has an interest in ensuring that these studies are done by skilled technical staff using appropriate equipment and interpreted by qualified physicians. Requiring physicians to meet quality standards as a condition of payment for imaging services represents a major change in Medicare's payment policy. Traditionally, Medicare has paid for all medically necessary services provided by physicians operating within the scope of practice for the state in which they are licensed. We believe that this policy change is warranted by the growth of imaging studies provided in physician offices and the lack of comprehensive standards for this setting.

In addition to setting quality standards for facilities and physicians, CMS should also:

- measure physicians' use of imaging services so that physicians can compare their practice patterns with those of their peers,
- expand Medicare's coding edits for imaging studies, and
- strengthen the rules that restrict physician investment in imaging centers to which they refer patients.

Imaging services have been growing rapidly

Imaging services have been growing much more rapidly than other services paid under the physician fee schedule. We examined per-beneficiary growth in the volume and intensity, or complexity, of fee schedule services. Between 1999 and 2002, the per-beneficiary average annual growth rate in the use of fee schedule imaging services was twice as high as the growth rate for all fee schedule services (10.1 percent vs. 5.2 percent) (Table 2B-4, p. 80).[5] Use of the following types of imaging services increased by 15 percent to 20 percent per year: magnetic resonance imaging (MRI) of parts of the body other than the brain, nuclear medicine, computed tomography (CT) of parts of the body other than the head, and MRI of the brain. Between 2002 and 2003, the per beneficiary growth rate for imaging services moderated to 8.6 percent but was still much higher than the growth rate of all fee schedule services (4.9 percent). Although imaging services paid under the fee schedule have been shifting from facilities, such as hospitals, to physician offices, about 80 percent of the increase in the volume and intensity of these services between 1999 and 2002 was unrelated to this shift in setting (MedPAC 2004a).[6]

Are all imaging services appropriate?

The rapid growth in Medicare spending for imaging services raises questions about whether these services are always used appropriately. Clearly, imaging technology can improve patient outcomes by allowing greater precision in diagnosing and treating patients. For example, image-guided biopsies for bone cancer are associated with fewer complications and faster wound healing than open surgical biopsies (Jelinek et al. 2002). Similarly, coronary angioplasty—a minimally invasive cardiac procedure guided by imaging—leads to better outcomes than drug therapy for certain patients (Andersen et al. 2003). Despite such successes, however, evidence exists of overuse, underuse, and misuse of imaging services.

Perhaps the most significant reason to be concerned about potential overuse of imaging services is the threefold variation in the number of imaging services provided across the country. This difference is twice that seen in the use of major procedures (MedPAC 2003). Are regions that provide more imaging services improving patient outcomes? Seminal work by Dartmouth researchers found that more health services, in general, do not result in better outcomes (Fisher et al. 2003a, Fisher et al. 2003b). Similarly, in an unpublished analysis based on the same data and the same methodology, these researchers found that regions providing more imaging services do not have better survival rates among Medicare beneficiaries. This analysis ranked all U.S. regions by the intensity of imaging use in the last six months of life for all Medicare beneficiaries.[7] Because the average use of imaging during the last six months of life is unaffected by differences in health status, differences in imaging are likely due to geographic variations in practice patterns rather than patients' health status. The study then examined whether long-term survival in three cohorts—patients with heart attacks, colon cancer, and hip fractures—varied in regions with higher and lower imaging use. Increased use of imaging services was not associated with improved survival in any of the three study populations (Gottlieb 2004).

In some cases, the use of imaging to detect disease can improve patient outcomes. For example, there is evidence that regular mammography screening for women aged 50 to 69 significantly reduces mortality from breast cancer (U.S. Preventive Services Task Force 2002). However, using imaging to detect disease may present risks, particularly when patients have minor or no symptoms (Fisher and Welch 1999). Imaging technology can identify trace amounts of disease (e.g., cancer) or abnormalities (e.g., of the back and knee) that frequently never affect the health of the patient. Detection often causes patient anxiety and leads to follow-up testing and treatment, and may have only a limited chance of improving patient outcomes. In these circumstances, the costs of imaging services may outweigh the potential benefits.

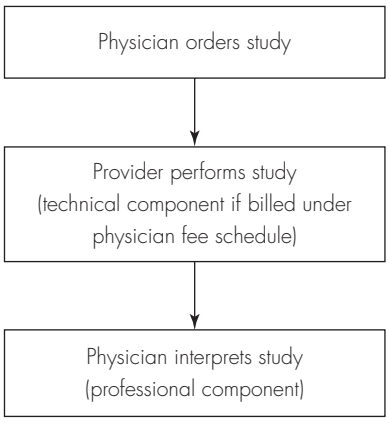
On the other hand, one study has found that several imaging services are underused, compromising the quality of care. For example, carotid imaging is not done as frequently as recommended for patients with symptomatic cardiovascular disease or transient ischemic attack (McGlynn et al. 2003).

Equally disturbing is evidence of misuse of imaging services. For example, some providers have been found to produce relatively high numbers of inaccurate carotid ultrasound tests, which could lead to inappropriate surgical interventions (Brown et al. 2004). As discussed below, the experience of imaging benefit managers and health plans also suggests that faulty equipment or poor imaging techniques harm the quality of images and may result in repeat studies. Not only do repeat tests increase spending, they could potentially expose patients to unnecessary radiation and inconvenience.

Imaging services involve three steps

Our recommendations address different parts of the process of obtaining a diagnostic imaging study. Imaging studies involve three steps (Figure 3-2). First, a physician decides to order a study for a patient. Next, a provider—such as a hospital, freestanding imaging center, or

FIGURE 3-2 **Three steps of an imaging study**



physician office—performs the study. If the service is provided by a freestanding center or physician office, a technical component claim is submitted under the physician fee schedule. If a facility such as a hospital outpatient department performs the service, it receives a facility payment. The technical component or facility payment covers the cost of the equipment, supplies, and nonphysician staff. Finally, a physician interprets the images and writes a report, which is sent to the ordering physician. The interpreting physician bills for the professional component under the physician fee schedule.

A physician who both performs and interprets the study submits a global bill, which includes the technical and professional components. The same physician who orders the study may in some cases also bill for performing and interpreting it. For example, an orthopedist may order an X-ray of a patient with a broken arm, perform the X-ray in his or her own office, and interpret the results.

Each stage of this process—ordering, performing, and interpreting—could have problems with appropriateness or quality. Physician specialty groups and private plans have developed clinical guidelines for many conditions that help physicians order appropriate studies based on a patient's specific situation. Some physicians who order tests—whether they refer patients to other providers for the study or perform it themselves—do not request a study recommended by clinical guidelines. An imaging benefit manager, CareCore National, administers a preauthorization program that compares physician requests for imaging services with clinical criteria based on medical necessity. These criteria were developed by board-certified physicians and undergo regular review and revision based on improvements in technology and clinical research. CareCore found that 16 percent of physician requests for MRI, and 9 percent of requests for CT scans, were not consistent with the criteria (CareCore National 2004). These requests represent potential overuse or misuse of imaging services.

Problems might also arise when the imaging study is performed and interpreted, as discussed below. The provider performing the test may lack the proper equipment or trained technicians. The physician interpreting the test may not produce an accurate interpretation or complete report. As we describe our recommendations, we will highlight which stage of the imaging process each one addresses.

Private plan strategies that Medicare should pursue

Fee-for-service Medicare should adopt several strategies used by private plans to help manage the volume growth and quality of imaging services. In our June 2004 *Report to the Congress*, we discussed several approaches that, according to a panel of experts, private plans use to control growth in the delivery of imaging services while ensuring access to appropriate care. To learn more about these strategies, we subsequently interviewed physicians and executives at eight health plans and three imaging benefit managers (which contract with plans to manage the delivery of imaging services), studied organizations that accredit imaging providers, and reviewed published articles on the quality of imaging providers and programs that manage imaging services. Two of the plans we spoke with have products in multiple geographic regions; the other plans are located in specific regions. We also contracted with the National Opinion Research Center (NORC) to assess the challenges fee-for-service Medicare would face in implementing private plan approaches. NORC interviewed staff at Medicare carriers, CMS officials, and outside experts (NORC 2004).

All of the plans we contacted were concerned about increases in the use of imaging services, particularly expensive procedures such as CT and MRI. Most plans were developing policies to improve how they managed these services. Many of the plans told us that they were specifically concerned with:

- the lack of familiarity with clinical guidelines for imaging services among many physicians, particularly among those who both order studies and perform them with equipment in their offices;
- direct-to-consumer marketing of imaging services that increases consumer demand;
- defensive medicine in response to physician concerns about professional liability; and
- the low quality of some imaging providers, which may lead to repeat studies.

We focused on four private sector strategies that should improve Medicare's ability to manage the use of diagnostic imaging services:

- measuring physicians' use of imaging services and comparing it with peer benchmarks;

- coding edits, including adjusting payment for multiple imaging procedures on the same claim;
- developing standards for physicians who bill Medicare for interpreting imaging services; and
- setting quality standards for providers who bill Medicare for performing imaging services.

One of these approaches (measuring physicians' use of imaging services) addresses the ordering of imaging studies by physicians, while the others address the performance and interpretation of studies. We considered other private sector strategies but do not recommend them for Medicare at this time (see text box).

In considering which policy options to recommend, the Commission weighed administrative costs against expected benefits. For this reason, we did not recommend requiring prior authorization for imaging procedures. We expect our recommendations to be cost effective for the Medicare program.

Other private plan strategies to manage the use of imaging services

In addition to the approaches we recommend for Medicare, private plans and imaging benefit managers employ several other strategies to control the use of imaging services.

Beneficiary education

Several private plans try to educate their members about the risks, benefits, and appropriate use of imaging procedures. One plan encourages its physicians to inform patients about the risks of excessive radiation. These efforts are meant to help patients make better medical decisions and to counter demand stimulated by the marketing of imaging services directly to consumers. The effectiveness of this strategy has not yet been examined.

Preauthorization

Some of the private insurers we interviewed employ preauthorization programs. In these programs, physicians who wish to order certain diagnostic tests in nonemergency circumstances must first obtain approval from the health plan by submitting a request that contains clinical information. Some plans only require preauthorization for positron emission tomography (PET), while others also require it for magnetic resonance imaging (MRI) and computed tomography (CT) studies. The goals of preauthorization are to reduce the use of inappropriate services and to educate physicians about clinical guidelines. Although some plans reported success in meeting these goals, several plans claimed that this strategy is ineffective and has high administrative costs.

We also learned of strategies that are variants of preauthorization, such as prior notification and review of requests by radiologists. One plan requires that physicians notify it before they order a MRI, CT, or PET. The plan's staff reviews the order for consistency with clinical guidelines. If the order does not meet the guidelines, they suggest an alternative approach to the physician but do not deny payment. Some insurers require that practicing radiologists, rather than plan employees, review requests by physicians for high-cost imaging tests. These plans prefer to use radiologists because they are familiar with clinical guidelines and often have collegial relationships with the physicians who order tests.

Creating tiered networks of imaging providers

Some insurers have created two-tiered networks of providers for some or all imaging services: a preferred tier and a nonpreferred tier. Providers included in the preferred network are willing to accept lower plan fees in exchange for higher patient volume. One plan requires facilities in its preferred network to meet certain quality standards, which are verified by site inspections. Currently, however, this plan does not provide a financial incentive for enrollees to use preferred providers; enrollees pay no copayments for imaging services regardless of which facility they use. Another plan charges lower copayments when enrollees use preferred imaging facilities and markets these facilities to its members. Insurers did not have data on cost savings related to tiered networks. ■

Measuring physicians' use of imaging services

One policy that has the potential to improve the appropriate use of imaging services is to measure individual physicians' use of imaging and educate them about how their use compares with that of their peers or clinical guidelines. Measuring use of imaging services should be done as part of a broader initiative in which the use of a variety of types of services for episodes of care is measured, as we describe in recommendation 3A (see p. 147).

Educating physicians about their resource use should encourage those who order significantly more studies than their peers to reconsider their practice patterns. As discussed earlier in the chapter, several important design issues emerge. For example, deciding how to assign patients to physicians is a significant question. This initiative should focus on the physicians who order imaging studies, because Medicare, with few exceptions, will not pay radiologists for performing studies without an order by the treating physician.[8] Thus, for a given ordering physician, CMS would develop measures of imaging volume per beneficiary for patients seen by that physician. Because radiologists may at times suggest modifications to the original order, their resource use could also be measured.

Several health plans have developed profiling programs that compare individual physicians' ordering of imaging services with either clinical guidelines or peer benchmarks. These programs identify physicians who account for a high amount of imaging spending. Plans seek to educate these physicians about the appropriate use of imaging. One plan excludes from its network high-use physicians who do not change their practice patterns (Ruane 2004). This plan found that the threat of network exclusion motivated most high-use physicians to change their behavior. The insurers we interviewed did not use information on imaging volume to adjust physician payments, although one plan was considering this idea.

Expanding coding edits

A second policy option is to expand Medicare's current coding edits for imaging services. This action would improve Medicare's ability to detect improper claims and help the program pay more accurately for multiple imaging services performed during the same encounter. Currently, Medicare uses the Correct Coding Initiative (CCI) edits to determine whether a claim meets the program's coverage rules. These edits apply to claims for performing and interpreting imaging studies (the technical and professional components). They have been effective in reducing payment for many unbundled services and inappropriate combinations of services (MedPAC 2004b).

Some private insurers have developed their own set of coding edits that go beyond Medicare's current edits. First, some plans have implemented more rigorous coverage policies to address unbundling of services—that is, separately billing for procedures inclusive of one another that should have been combined and billed for a single payment—and billing for mutually exclusive procedures. Mutually exclusive procedures are those that are impossible to perform together or should not be performed at the same time because each service provides similar diagnostic information. To illustrate this point, one imaging benefit manager does not pay for both a CT of the head and CT of the maxillofacial region because the head includes the maxillofacial area. Private sector coding edits also may examine services provided on separate claims (for example, an MRI test that is repeated a week later).

Second, a number of plans use coding edits to adjust payments when providers bill for multiple imaging services performed on contiguous body parts. Private insurers usually pay the full amount for the first service but a reduced amount (usually half) for the technical component of an additional study that is of the same modality (e.g., MRI or CT).[9] This policy is based on the premise that savings in clerical time, preparation, and supplies occur when multiple studies of the same modality are performed on contiguous body parts during one patient encounter. For example, a CT of the pelvis, performed immediately after a CT of the abdomen, takes much less time than if performed separately because the patient and equipment have already been prepared for the procedure. The percentage reductions in payment for the second and third procedures may vary by modality because different modalities produce different efficiencies when done contiguously. For example, multiple CT scans may produce greater savings than multiple MRI scans.

Although Medicare does not discount payments for multiple imaging services provided during the same encounter, it has such a policy for surgical services. Under

the physician fee schedule, Medicare pays the full fee schedule rate for the most expensive surgical service, but a discounted rate for the other services.

Medicare calculates physician fee schedule payment rates for imaging services using the assumption that each service is done independently. The rates do not account for efficiencies that may be gained when studies are done in tandem. Thus, it would be appropriate for CMS to apply a separate adjustment to payments for multiple services performed during the same visit when there are efficiencies.

When expanding coding edits for imaging services, CMS should consult with private plans and imaging benefit managers that have developed such edits. CMS should encourage physicians to review and comment on the edits before they are finalized, as the agency does with its CCI edits.[10] CMS should also make the edits public and communicate them in advance to physicians so they can bill correctly.

Two imaging benefit companies estimate that coding edits for imaging services, in particular reducing payments for multiple procedures, decrease actual spending by private plans by 5 percent to 6 percent (CareCore National 2004, Farnsworth 2004a). Based on their experience, expanding imaging coding edits for Medicare should reduce physician fee schedule spending. However, we have not estimated the magnitude of these savings. The size of Medicare's savings would partly depend on how often claims include multiple imaging services. Our analysis of Medicare claims data for CT services indicates the potential for savings: About 40 percent of claims with any CT services include two or more CT services. Among these, CT of the abdomen and CT of the pelvis are the services that are billed together most frequently. CMS's administrative costs for improving coding edits should be relatively low because it already uses coding edits.

To the extent it reduces Medicare spending, the following recommendation would reduce beneficiaries' Part B premiums and cost sharing (beneficiaries are responsible for a $110 deductible and 20 percent coinsurance on Part B services). Because implementation of the CCI edits did not appear to reduce beneficiary access to and quality of care, we expect that expanding coding edits for imaging services will not adversely affect access or quality. Providers that frequently bill for unbundled, mutually exclusive, or multiple imaging procedures under the physician fee schedule would experience a decrease in Medicare payments. However, we do not expect the recommendation to affect providers' willingness and ability to provide quality care to Medicare beneficiaries.

RECOMMENDATION 3B

The Secretary should improve Medicare's coding edits that detect unbundled diagnostic imaging services and reduce the technical component payment for multiple imaging services performed on contiguous body parts.

RATIONALE 3B

Expanding coding edits for imaging services will help control the rapid growth in imaging spending by allowing Medicare to better detect improper billing by providers and to reduce payments for imaging procedures that use fewer resources when performed together.

IMPLICATIONS 3B

Spending

- This recommendation would decrease federal program spending.

Beneficiary and provider

- The recommendation would decrease beneficiary premiums and cost sharing. No adverse impacts on beneficiary access and quality of care are anticipated. This recommendation is not expected to affect providers' willingness and ability to provide quality care to Medicare beneficiaries.

Standards for physicians who interpret imaging studies

CMS should develop standards for physicians who bill for interpreting imaging studies (the professional component) to ensure that they are qualified to do so. Although this requirement would represent a major change in Medicare's payment policy for physician services, it is justified by the rapid growth in the use of imaging studies, the migration of imaging from the hospital setting to physician offices and freestanding centers, and evidence of variations in the quality of physician interpretations. This policy would improve diagnostic accuracy and prevent unqualified physicians from billing Medicare, which should enhance quality of care and help control spending on imaging services.

Some private plans set standards for physicians Some of the plans we interviewed have implemented standards that determine which physicians are paid for performing and interpreting imaging procedures. Under these privileging programs, a plan restricts payment for certain imaging procedures to physicians in specific specialties whom the plan determines are qualified to provide those services. According to the plans that use such programs, when images are read by physicians who lack the proper training and experience, the interpretations may be inaccurate and the reports may be incomplete. For example, one study found that the interpretations of CT scans by emergency physicians were frequently inaccurate (Alfaro et al.1995). In at least some cases, poor-quality interpretations led to repeat tests (Farnsworth 2004b). Inaccurate interpretations can also lead to inappropriate interventions.

According to the American Medical Association, a written report is an "integral part of a radiologic procedure or interpretation" (American Medical Association 2003). CareCore National examined about 200 reports on X-ray studies produced by radiologists and nonradiologists. Many of the reports produced by nonradiologists lacked important demographic and clinical information, such as the indication for the study (missing in 47 percent of the reports), description of findings (39 percent), views taken (58 percent), and impression or conclusion (53 percent) (Weiner 2004a). Although radiologists' reports were generally more complete, about half lacked the indication for the study and one-quarter lacked information on the views taken (Weiner 2004b).

In determining which physician specialties are qualified to receive payment for providing a specific imaging service, plans often consider several criteria, including whether physicians are members of a specialty that receives training in diagnostic imaging in residency programs (Farnsworth 2004b). Other criteria may include whether the physicians are certified as competent by a specialty society or credentialed to perform specific procedures at a hospital (Verrilli et al. 1998).

In a typical privileging program, radiologists are not restricted because they are trained to provide most imaging procedures. Consistent with their training, cardiologists can bill for nuclear cardiology and cardiac ultrasound services. Restrictions on other specialties vary by plan. For example, more restrictive programs allow orthopedic surgeons to provide plain films of the skeleton but not MRI or CT studies. Other plans focus mainly on restricting services provided by primary care physicians and podiatrists but impose few restrictions on specialists. Some insurers waive privileging requirements in some rural areas to ensure access to care.

Privileging programs may at first encounter significant opposition from physicians who do not get paid for providing imaging services. In the case of one plan, physicians claimed that privileging policies would harm their ability to care for patients and, consequently, their patients' health. However, this plan found that quality of care did not decline, as measured by the number of hospital inpatient days, emergency department visits, or complaints by enrollees (Moskowitz et al. 2000). One benefit manager reported that most physicians become comfortable with privileging programs over time.

Plans told us that privileging programs can reduce spending on imaging, depending on how they are structured, and are less expensive to administer than other policies, such as preauthorization. HealthHelp, an imaging benefit manager, has developed a privileging program that restricts payment for both performing and interpreting studies to specific specialties. When a private plan implements this program, HealthHelp estimates that about 40 percent of studies that would have been done by nonprivileged physicians are done instead by privileged physicians (Farnsworth 2004b). The remaining studies are not performed, which leads to a 4 percent reduction in overall imaging spending. CareCore National estimates that its privileging program reduces imaging spending by 6 percent to 9 percent (Ryan 2005). A BlueCross BlueShield plan that implemented a privileging program for the professional component (interpretation of a study) estimated imaging savings of 2 percent (Verrilli et al. 1998).

Another health plan primarily restricted payment for test interpretations to radiologists but allowed all physicians to receive payment for the performance of a study, or the technical component (Hillman et al. 1995). The plan did not set standards for providers billing the technical component. Many nonradiologists who were not allowed to provide interpretations performed more studies in their offices and submitted additional technical component claims, which contributed to an overall increase in plan spending for imaging services.

Private accreditation and government standards for physicians Several private accreditation programs and one government agency have developed standards for physicians who interpret certain types of imaging studies and prepare the reports. Accreditation organizations generally set minimum standards for the professional training, experience, and education of physicians who interpret studies at accredited providers. For example, the American College of Radiology's (ACR) accreditation program for ultrasound requires interpreting physicians to either:

- have received formal training (in a residency, fellowship, or postgraduate program) and interpreted a certain number of examinations, or
- in the absence of formal training, have attained a certain level of experience.

The American Institute of Ultrasound in Medicine (AIUM), which also accredits ultrasound providers, requires physicians to have received formal or informal training and continuing medical education and to interpret a minimum number of studies per year.[11] Physicians who interpret echocardiography studies at providers accredited by the Intersocietal Commission for the Accreditation of Echocardiography Laboratories must complete a six-month training program or have three years of interpretation experience. Some accreditation programs also review a sample of reports produced by interpreting physicians for completeness and accuracy.

Under the Mammography Quality Standards Act (MQSA), the Food and Drug Administration (FDA) sets standards for physicians who interpret mammograms. The rules require that these physicians:

- either be certified by an appropriate specialty body *or* have received a certain amount of formal training in mammography,
- have received a minimum number of hours of education in mammography,
- have interpreted a certain number of mammography examinations, and
- obtain continuing education and experience.

The rules also require that mammography facilities receive accreditation by the ACR and pass annual inspections by state agencies.

Medicare should set standards for physicians It would be a major policy change for Medicare to require that physicians meet standards to receive payment for interpreting imaging services. CMS generally covers medically necessary services provided by physicians operating within the scope of practice for the state in which they are licensed, without regard to their specialty or specific qualifications.

There are two limited exceptions related to imaging, however. First, the Medicare carrier for New York (Empire) sets standards for physicians who wish to bill for interpreting an echocardiography study (CMS 2004a). The physician must be board certified in cardiovascular diseases, have received training in echocardiography, provided the interpretation in conjunction with a study performed at an accredited facility, or have staff privileges at a hospital to interpret echocardiograms. Another exception is contained in CMS's recent decision to cover PET scans for the diagnosis of patients with mild cognitive impairment and early dementia. The coverage decision specifies that the tests can only be interpreted by physicians in certain specialties, such as nuclear medicine and radiology, who have expertise in reading these scans (CMS 2004c). Other coverage decisions related to PET, however, do not include this requirement.

Several factors justify setting standards for physicians who bill Medicare for the professional component of imaging studies:

- advances in imaging technology that have made it possible to provide services in nonhospital settings;
- the migration of imaging from hospitals, which establish criteria for who may interpret studies, to nonfacility settings, where there are often no such rules;
- rapid growth in physician fee schedule spending for imaging services; and
- variations in the quality of physician interpretations and reports, which can affect treatment decisions.

This policy should improve diagnostic accuracy and treatment. It should also help control the growth of imaging spending by restricting payment for interpretation to only qualified physicians. Because this policy would represent a new direction for Medicare, CMS probably

requires statutory authority to implement it. Such a grant of statutory authority to a federal agency has a precedent: In 1992, the Congress gave the FDA authority to set standards for physicians who read mammograms.

Implementation issues CMS would need to address at least two key questions in developing standards for physicians who bill Medicare for interpreting imaging studies: What criteria should the agency use to evaluate whether individual physicians are qualified to interpret studies? How should CMS verify that physicians meet the standards, without imposing undue burdens on the agency and providers?

Although private plans sometimes base permission to bill for imaging procedures on the physician's specialty, Medicare should not limit payment to specific specialties. The practice of medicine is evolving quickly and specialty training may change over time. Thus, CMS should develop criteria that are flexible enough to allow physicians of different specialties to receive payment for interpreting imaging studies. Similar to the requirements set by private accreditation organizations for interpreting physicians, Medicare's standards should be based on some combination of physician training, experience, and continuing education. There will likely need to be different standards for each imaging modality (e.g., ultrasound, radiography, nuclear medicine, MRI). Thus, a physician who is considered qualified to receive payment for vascular ultrasound interpretations may not be qualified for MRI. Because of the complexity involved in setting standards, the Congress should grant the Secretary a great deal of flexibility in deciding how to carry out this task.

Because physician specialty organizations often have different criteria for determining when a physician is qualified to provide a service, CMS should consult with physician specialty groups and private accreditation organizations when developing standards for Medicare payment. The Intersocietal Accreditation Commission (IAC) has demonstrated that it is possible for different specialties to agree on common standards. The IAC uses a process in which representatives of several specialty groups jointly develop facility and physician standards for three types of imaging services: echocardiography, nuclear medicine, and vascular ultrasound. In addition, the ACR and the American College of Surgeons have jointly developed an accreditation program for stereotactic breast biopsy.

We recognize that CMS has limited administrative resources. Thus, CMS should develop the standards but select private accreditation organizations that would verify physicians' compliance with them. CMS should have the authority to select the organizations and to replace them if necessary. Many private organizations currently receive authority from CMS to ensure that various types of providers—such as hospitals and dialysis centers—meet Medicare's quality standards. In the unlikely event that private organizations would be unwilling to administer Medicare's standards for physicians who interpret imaging studies, CMS would have to contract with states or carriers to enforce the standards, thus increasing the agency's costs.

In addition to selecting accreditation organizations, CMS would need to develop a process for verifying that physicians billing Medicare for the professional component meet Medicare's standards.[12] These standards should apply whether physicians interpret images at the same site where the study is performed or at a separate location (see text box).

This recommendation would decrease physician fee schedule spending because it would prevent unqualified physicians from submitting claims for interpretation of imaging studies. Based on the experience of HealthHelp, some of these studies would likely be sent to qualified physicians for interpretation, but others would not, thus reducing the number of professional claims. These standards, when combined with rules for providers billing Medicare for the technical component (recommendation 3D), would discourage unqualified providers from performing and interpreting tests. Because CMS would authorize private organizations to verify compliance with Medicare's standards, the agency's administrative burden should be relatively low. CMS's burden would increase, however, if private organizations are unwilling to participate and CMS has to contract with states or carriers to administer the standards.

The recommendation should increase the quality of studies received by beneficiaries, which should improve diagnostic accuracy and treatment. To the extent that it reduces the overall number of professional claims, it would reduce beneficiaries' Part B premiums and cost sharing (beneficiaries are responsible for a $110 deductible and 20 percent coinsurance on Part B services). Some beneficiaries may be inconvenienced if their physicians are no longer able to bill for interpretations. Some physicians may incur costs to meet Medicare's

Teleradiology

Some hospitals and other health care facilities transmit images electronically to physicians in a different location for interpretation. This practice is known as teleradiology. For example, hospital emergency rooms or small hospitals may use this process to ensure that images are interpreted when there is no radiologist on site (during the night, for example). This practice reduces the amount of time that hospital radiologists have to be on call. Some hospitals contract with physicians who are located outside the U.S. to interpret their images, which makes it easier to obtain interpretations at night.

In most cases, the off-site physician provides a "wet read," or initial interpretation, that is used to guide immediate treatment decisions. No bill is submitted to Medicare. When the hospital's in-house radiologist returns, he or she reviews the images, writes a report, and submits a bill to Medicare. Sometimes, the off-site physician does the formal interpretation, writes the report, and bills Medicare. The program will pay for imaging interpretations performed by Medicare providers via teleradiology within the U.S. However, Medicare does not cover services provided outside the country, such as interpretations provided by overseas physicians. ■

standards. For example, they might need to increase their level of training, education, or experience. Some physicians might be unable to comply with Medicare's standards and would stop billing for the interpretation of studies. If so, physicians who meet the standards might be able to increase their volume of interpretations.

RECOMMENDATION 3C

The Congress should direct the Secretary to set standards for physicians who bill Medicare for interpreting diagnostic imaging studies. The Secretary should select private organizations to administer the standards.

RATIONALE 3C

It would be a major policy shift for Medicare to determine whether physicians are qualified to bill for a professional service. We believe this policy is warranted, however, because of the rapid growth in physician fee schedule spending for imaging services; the migration of imaging from hospitals to physician offices and freestanding centers; and variations in the quality of physician interpretations, which can affect diagnostic and treatment decisions. This recommendation should improve diagnostic accuracy and prevent unqualified physicians from receiving payment for interpreting imaging studies, thereby enhancing quality of care and helping to control Medicare spending.

IMPLICATIONS 3C

Spending

- This recommendation would decrease federal program spending.

Beneficiary and provider

- This recommendation would decrease beneficiary premiums and cost sharing and is expected to improve beneficiary quality of care. No adverse impacts on beneficiary access to care are anticipated. This recommendation is not expected to affect providers' willingness and ability to provide quality care to Medicare beneficiaries.

Standards for providers that perform imaging studies

In addition to setting standards for physicians who bill Medicare for interpreting diagnostic imaging studies, CMS should establish standards for providers that perform the studies and bill for the technical component.

Several private plans implement quality standards Several of the private insurers we interviewed require that outpatient imaging providers (hospital outpatient departments, freestanding facilities, and physician offices) meet basic standards. These standards relate to the quality of imaging equipment, the qualifications of radiology technicians, the quality of the images, and the procedures for ensuring patient safety (such as minimizing radiation exposure). Plans and their vendors may develop their own criteria or require that providers become accredited by a private organization that sets standards for the equipment, technicians, image quality, radiation exposure, supervising physician, and interpreting physicians. Several organizations, such as the ACR, AIUM, and IAC, have developed such accreditation programs.

According to published studies, as well as health plans and experts we consulted, providers vary in their ability to perform quality imaging procedures. BlueCross BlueShield (BCBS) of Massachusetts inspected 1,000 imaging providers to evaluate the quality of their equipment, technical staff, and other features (Verrilli et al. 1998). Nearly one-third of the providers had at least one serious deficiency, such as film processing problems, failure to monitor radiation exposure, poor image quality, or lack of an equipment calibration report. Eleven percent of the providers had severe problems that could not be easily remedied, while 20 percent had deficiencies that could be remedied. Chiropractic and podiatric offices were the most likely to have deficiencies; cardiology, radiology, and surgical specialty offices were the least likely. Another health plan that inspected almost 100 nonradiologist offices that provided radiography services identified serious problems in 78 percent of the offices (Moskowitz et al. 2000). These problems ranged from lack of a formal radiology report to use of equipment that had not been inspected during the previous year.

Health plans and imaging benefit managers informed us that some providers fail to meet standards because their imaging equipment is old or not working properly (Farnsworth 2004b). Physician offices sometimes acquire used equipment from a hospital and continue to use that equipment beyond its useful life (Ruane 2004).

Problems with imaging providers may lead to inaccurate studies, misdiagnoses, and inappropriate treatment. For example, a recent study found that vascular ultrasound providers that were not accredited by the IAC produced a relatively high number of inaccurate carotid ultrasound examinations (Brown et al. 2004). Vascular surgeons use these services to decide when to surgically treat carotid artery disease. In the study, carotid ultrasound tests performed by nonaccredited labs were repeated by an accredited lab, which follows standards for diagnostic criteria, testing protocols, and technician training. For 61 percent of the patients, findings by the accredited provider contradicted findings by the nonaccredited providers in a clinically significant way. The inaccurate studies could have led to unnecessary surgery for many patients.

Requiring compliance with quality standards may lead to reduced use of imaging services as facilities that fail to meet standards are dropped from a plan's network. At least some of the reduction is offset, however, if patients of those facilities receive services elsewhere. Implementing standards should also reduce the number of tests that must be redone because of poor-quality facilities. One plan that required facility accreditation said that it did not experience cost savings. On the other hand, HealthHelp found that its quality program reduced a private plan's spending on plain film, fluoroscopy, and ultrasound by 5 percent (Farnsworth 2004b). A private insurer found that combining facility inspections with physician standards for test interpretation led to a 6 percent aggregate reduction in the volume of radiographic studies (Moskowitz et al. 2000).

Current government efforts to set standards CMS and other federal agencies set standards for some types of diagnostic imaging services, such as mammography, and some settings in which imaging is provided. In addition, state radiation control boards license facilities that use radiation-producing equipment. However, some imaging modalities, such as MRI, are not covered by any government standards. Where standards exist, they may not be comprehensive or well enforced.

Medicare beneficiaries may receive imaging services in three primary settings: hospitals (inpatient and outpatient departments), independent diagnostic testing facilities (IDTFs), and physician offices. CMS has developed national standards for the first two settings. For example, hospitals that treat Medicare beneficiaries must comply with Medicare's conditions of participation, which set standards for nurse staffing, laboratory services, radiology services, and other aspects of health care delivery. However, aside from a physician supervision requirement,

no national Medicare standards apply to physician offices (some Medicare carriers have established standards for some studies).

Although CMS has established specific requirements for IDTFs, they are incomplete and not well enforced. IDTFs are entities—independent of a hospital or physician office—that furnish diagnostic procedures. CMS sets minimum standards for staff qualifications, equipment, and the supervising physicians, but not for image quality or patient safety. Carriers must verify that IDTFs meet these standards when they enroll in Medicare but are not required to vigorously enforce them.[13] Physician offices are not governed by IDTF standards.

Medicare requires that all diagnostic tests paid under the physician fee schedule be provided under at least general physician supervision. At this level of supervision, a physician is responsible for the training of the technical staff performing the test and the maintenance of the necessary equipment and supplies. However, CMS does not set standards for the technical staff and equipment nor does the agency systematically monitor compliance. Certain studies, such as those involving the use of contrast material, require closer physician supervision (direct supervision, in which the physician must be in the office and available to provide assistance during the procedure, or personal supervision, in which the physician must be in the room during the procedure).

Several Medicare carriers have established coverage standards for some types of ultrasound studies. Carriers often set criteria for determining which services are eligible for Medicare coverage, based on what is considered "reasonable and necessary" care. As part of this role, several carriers in the South have set minimum standards for the technical quality of noninvasive vascular ultrasound studies, which are used to examine blood vessels outside the heart. These carriers require that all such studies be performed by properly credentialed technicians or in accredited laboratories, whether they are located in a hospital or physician office.[14] Four carriers have set similar standards for echocardiography studies (CMS 2004a). These two services have received special attention from carriers because the quality of the study is highly dependent on the technician's skill.

Other federal agencies, such as the FDA and the Nuclear Regulatory Commission (NRC), also regulate certain imaging modalities. Under the MQSA, the FDA implements quality assurance standards for mammography equipment and technical staff (as well as the physicians who interpret mammograms). The FDA program has increased mammography facilities' compliance with quality standards and led to improvements in image quality (GAO 1997). The NRC requires that nuclear medicine facilities obtain a license to use radioactive materials.[15] These facilities must have proper equipment, trained technicians, and a safety education program.

All states have radiation control boards that monitor the use of radiation by imaging facilities (Conference of Radiation Control Program Directors 2004). These boards do not regulate equipment that does not produce radiation, such as MRI or ultrasound machines. Their primary mission is to ensure patient safety rather than the quality of images.[16] For example, the boards set safety standards for X-ray machines. However, the comprehensiveness of the rules and the stringency with which they are enforced vary by state. State agencies often lack the resources to inspect facilities to verify compliance. Indeed, compliance may be a problem; BCBS of Massachusetts, for example, found that 5 percent of the imaging providers they inspected were operating without a state radiation control license (Verrilli et al. 1998).

Medicare should establish standards for all imaging providers Although CMS and several of its carriers have set quality benchmarks for some types of diagnostic imaging services and some settings where they are provided, no national standards exist for most imaging modalities provided in physician offices. The Government Accountability Office (GAO) has credited the FDA standards for mammography facilities with improving the quality of mammograms. Similarly, directing CMS to establish requirements for all imaging modalities would help improve the quality of imaging services for Medicare beneficiaries. This improvement would increase diagnostic accuracy and reduce the need to repeat poor-quality tests. These standards should apply to both facility and nonfacility providers who wish to bill Medicare for performing an imaging study.

As with the previous recommendation, the Congress should grant the Secretary a great deal of flexibility in developing the standards. Based on the criteria used by private plans and accreditation organizations, CMS should strongly consider setting standards for at least the following areas: the imaging equipment, qualifications of technicians, qualifications and responsibilities of the

supervising physician, technical quality of the images produced, and procedures for ensuring patient safety (for example, monitoring radiation exposure). We believe that it is important for providers to designate a supervising physician who is responsible for overseeing the imaging process. Several private accreditation programs require that the provider have a supervising physician who is qualified to interpret imaging studies.

The specifics of each standard would vary based on the imaging modality. Each setting should have the same minimal standards. As with the previous recommendation, CMS should consult with imaging accreditation organizations and physician specialty groups when developing these requirements.

As with standards for physicians who interpret imaging studies, CMS should authorize private accreditation organizations to verify that providers meet Medicare's quality standards for the technical component.[17] Private insurers often rely on accreditation programs to certify that their imaging providers meet quality standards. CMS should also have the authority to replace the organizations that verify compliance. Delegating the authority to administer the standards to private organizations should reduce CMS's administrative burden. In the unlikely event that private organizations are unwilling to administer the standards, CMS would have to contract with states or carriers to enforce them, thus increasing the agency's costs.

Because there are many types of imaging services and many providers that perform them, and because CMS has limited administrative resources, the agency might want to first focus on modalities that receive higher payment rates and are growing fastest. MRI, CT, and nuclear medicine (including PET) fall within this high-priority category. Ultrasound and standard radiography (such as chest X-rays) could be lower priorities. As mentioned earlier, federal standards already exist for mammography.

To ensure that CMS is able to implement national standards in all settings, the Congress should provide the Secretary with specific statutory authority to do so. Although CMS has set quality standards for various types of facilities (such as hospitals and skilled nursing facilities), there are very few examples of federal standards for physician offices (the primary exceptions are mammography and clinical laboratory services).[18]

Physicians can receive Medicare payment for providing medically necessary services within the scope of medical practice for the state in which they are licensed.[19] Although CMS has fairly broad authority for defining what constitutes "reasonable and necessary" services, it has not used this authority to set national standards for imaging studies performed in physician offices.

The following recommendation would decrease physician fee schedule spending because it would reduce the need to repeat poor-quality tests. In addition, some providers would probably be unable to meet Medicare's standards. Although some tests that would have been performed by unqualified providers would probably be done instead by qualified providers, others would not be performed at all, thus reducing the overall number of studies. Because CMS would authorize private organizations to verify compliance with Medicare's standards, the agency's administrative costs should be relatively low. CMS's burden would increase, however, if private organizations are unwilling to participate and CMS has to contract with states or carriers to certify providers.

To the extent that it decreases Medicare spending, this policy also would reduce beneficiaries' Part B premiums and cost sharing (beneficiaries are responsible for a $110 deductible and 20 percent coinsurance on Part B services). Reducing repeat tests would save beneficiaries time and alleviate their anxiety. This policy would also increase the quality of imaging studies provided to beneficiaries, which would improve diagnostic accuracy and treatment. In estimating the impact of Medicare standards on beneficiaries' access to care, we considered whether the FDA standards for mammography facilities reduced access to mammograms. GAO found that the overall capacity to provide mammography services is generally adequate to meet growing demand (GAO 2002).[20] Thus, we expect that Medicare standards for imaging providers should not adversely affect beneficiaries' access to care.

Although many imaging providers are currently accredited by private organizations, some providers may incur costs to meet Medicare's standards. For example, they might need to invest in newer equipment or hire credentialed technicians. Some providers might choose not to meet Medicare's standards and would stop billing for the performance of imaging services. These decisions could inconvenience beneficiaries. However, we do not expect the recommendation to affect providers' willingness and ability to provide quality care to Medicare beneficiaries.

RECOMMENDATION 3D

The Congress should direct the Secretary to set standards for all providers who bill Medicare for performing diagnostic imaging studies. The Secretary should select private organizations to administer the standards.

RATIONALE 3D

Providers vary in their abilities to perform quality imaging procedures. Poor-quality studies can lead to repeat tests, misdiagnoses, and improper treatment. Establishing national standards for imaging services would increase diagnostic accuracy and reduce the need for repeat tests, thereby improving quality of care and helping to control Medicare spending.

IMPLICATIONS 3D

Spending

- This recommendation would decrease federal program spending.

Beneficiary and provider

- This recommendation would decrease beneficiary premiums and cost sharing and is expected to improve beneficiary quality of care. No adverse impacts on beneficiary access to care are anticipated. This recommendation is not expected to affect providers' willingness and ability to provide quality care to Medicare beneficiaries.

Strengthening the rules that restrict physician investment in imaging centers

CMS should strengthen the rules restricting physician investment in imaging centers to which they refer Medicare or Medicaid patients. It should prohibit physician investment in:

- freestanding nuclear medicine facilities to which physician investors refer patients, and
- entities that provide services and equipment to imaging centers and other providers to which physician investors refer patients.

These changes should reduce physicians' financial incentives to refer patients for additional imaging services, which should help control Medicare spending on these services.[21]

Physician ownership of facilities to which they refer patients

Supporters of physician investment in health care facilities contend that physicians are a valuable source of capital and that their investments lead to improved quality, efficiency, and access to care. Opponents offer two main criticisms:

- Physician ownership creates a financial incentive to order additional services.
- Rather than considering quality and convenience, physician investors might refer patients to the facility they own, which undercuts fair competition among facilities.

A GAO study found that physicians who were investors in diagnostic imaging centers referred their patients more frequently for tests such as MRI, CT, nuclear medicine, and ultrasound, than nonowners (GAO 1994). The study also concluded that physicians with imaging equipment in their office or group practice ordered tests more frequently than physicians who referred patients to facilities outside their practices. The report did not control for the health status of patients treated by each physician or address whether the additional services were appropriate or not. However, another study adjusted to some extent for differences in patient mix by examining the use of imaging for patients with 10 common clinical episodes (e.g., chest pain, congestive heart failure, knee pain). These researchers found that physicians who performed studies in their offices were more likely to use imaging services for patients with each of these conditions than physicians who referred their patients to a radiologist (Hillman et al. 1992).

Ethics in Patient Referrals Act (Stark law)

The Ethics in Patient Referrals Act (also known as the Stark law) was enacted in 1989 (Stark I) and expanded in 1993 (Stark II). The statute prohibits physicians from referring Medicare or Medicaid patients for certain services to providers with which the physician has a financial relationship unless the relationship falls within a protected category. It also prohibits those entities from submitting claims for services provided to patients referred by the physician investor. The law applies to a set of "designated health services" (DHS), which include radiology and certain other imaging services (MRI, CT, and ultrasound).

Exceptions to the Stark law The Stark law and its regulations contain several exceptions that are relevant to imaging services. The Stark II final rule excluded nuclear medicine from the list of services covered by the law and allowed physicians to own entities that furnish services and equipment to DHS providers. These two provisions are problematic, and the Commission recommends changes to the rule to address them. Most important, the Stark law allows physicians to provide most designated health services, including imaging, in their own offices (this provision is called the in-office ancillary exception). Proponents of the exception argue that allowing physicians to offer ancillary services in their own offices can improve quality of care and enhance patient convenience. When the law was enacted, this exception was expected to apply mostly to in-office laboratory tests or X-rays, recognizing that a need often exists for a quick turnaround time on crucial tests (Congressional Record 1989). However, the exception protects almost all designated health services, as long as they are provided in the offices of the physician or medical group, and creates financial incentives for physicians to order and provide additional services for their patients.[22]

Adding nuclear medicine to the Stark law's list of designated health services

In the 1998 Stark II proposed rule, CMS stated that nuclear medicine, including PET, falls within the category of "radiology services" covered by the Stark law. In the final rule, however, the agency excluded nuclear medicine services because "they are not commonly considered to be radiology" (HCFA 2001).[23] The American College of Radiology, on the other hand, considers nuclear medicine to be a radiology service. For example, the examination process used by the American Board of Radiology to certify diagnostic radiologists includes nuclear medicine (Thorwarth 2004). CMS has indicated that it plans to issue a rule that would add diagnostic and therapeutic nuclear medicine services to the Stark law's list of designated health services (CMS 2004b).

We urge CMS to add nuclear medicine to the list of designated health services because of the rapid growth of these services and the recent coverage expansions for PET procedures. The per-beneficiary use of nuclear medicine procedures increased by 18 percent per year, on average, between 1999 and 2002, and grew by 13 percent between 2002 and 2003 (Table 2B-4, p. 80). CMS has been expanding the conditions for which it will cover PET procedures, which creates opportunities for increased use of these expensive services (CMS 2003). Under current rules, physicians may invest in freestanding centers that provide PET and other nuclear medicine procedures and refer Medicare or Medicaid patients to these facilities. Such investments create financial incentives to refer patients for services, which could lead to overuse.

The following recommendation would decrease potential future physician fee schedule spending because it would reduce the financial incentive for physicians to order additional nuclear medicine studies. Because physicians could still receive payments for nuclear medicine services performed in their own offices (under the in-office ancillary exception), these savings would likely be small.

To the extent that fewer studies are ordered, beneficiary Part B premiums and cost sharing should decline. Reducing financial incentives that encourage physicians to order additional tests also might improve beneficiaries' quality of care. Physicians who invest in nuclear medicine facilities outside their office would no longer be able to refer Medicare or Medicaid patients to these facilities. However, they would still be able to provide these services in their own offices. Of course, physicians who wish to offer nuclear medicine in their offices would need to have sufficient patient volume to cover the fixed costs of the equipment and staff and also would need to comply with recommendation 3D (standards for imaging providers), if adopted by the Congress.

RECOMMENDATION 3E

The Secretary should include nuclear medicine and PET procedures as designated health services under the Ethics in Patient Referrals Act.

RATIONALE 3E

Evidence suggests that physician investment in facilities that provide nuclear medicine services is associated with higher use. Prohibiting physicians from referring Medicare or Medicaid patients to nuclear medicine facilities they own should reduce their financial incentives to refer patients for these services. Thus, this recommendation should help limit referrals that are based on financial,

rather than clinical, considerations. It would also lead to fairer competition among facilities that provide imaging services.

IMPLICATIONS 3E

Spending

- This recommendation would decrease federal program spending.

Beneficiary and provider

- This recommendation would decrease beneficiary premiums and cost sharing. No adverse impacts on beneficiary quality or access to care are anticipated. This recommendation is not expected to affect providers' willingness and ability to provide quality care to Medicare beneficiaries.

Prohibiting physicians from owning entities that furnish services to certain providers

The Stark II final rule permits physicians to own entities that provide services and equipment to imaging centers and other DHS providers to which they refer Medicare or Medicaid patients, as long as the physicians do not own the actual entity submitting claims to Medicare or Medicaid. These arrangements are permitted because the rule defines "ownership" of an entity under the Stark law as an interest in the entity that bills Medicare or Medicaid. For example, physicians can buy an MRI machine from a manufacturer and then lease it to an imaging center for an amount that is fair market value. This arrangement creates a financial incentive for the physicians who lease the MRI to the center to refer patients there. Because the Stark law was intended to minimize such incentives, permitting these kinds of arrangements undermines the law's intent.

Moreover, a second regulatory interpretation increases the incentive to refer patients to certain providers. This ruling permits physicians to lease equipment to the imaging center (or another provider) on a per-service basis. In other words, physicians can lease an MRI to a center for a fixed amount per use. Every time the physicians refer a patient to the center for an MRI, they receive a fee. This allows physicians to increase the return on their investment by referring additional patients.

The financial incentives for physicians to refer patients to imaging centers could lead to overuse or inappropriate use of imaging services. Thus, the Secretary should revise the Stark rules to prohibit these arrangements. The Stark law states that physician ownership or investment "may be through equity, debt, or other means," which gives CMS the authority to define "other means" to include interests in an entity that derives a substantial proportion of its revenue from DHS providers. This change, which could be accomplished by revising the Stark II rules, would prevent the creation of physician-owned companies whose primary purpose is to provide services to DHS entities (such as imaging centers).

The concern remains that if CMS prohibits these kinds of financial arrangements, new ones will emerge that create similar incentives. We believe that the best way to address this behavior in the long term is to examine whether the pricing of imaging services by Medicare is accurate. For example, physician fee schedule payment rates for the performance of imaging services (the technical component) are based, to a large extent, on historical charges. By contrast, rates for most other services are based on relative resource use. If payment rates for imaging studies are too high relative to the resources used, physicians may seek opportunities to share in the profits from these services. Because this analysis will take time, CMS should in the meantime limit the ways in which physicians may profit from referring patients to imaging providers.

This recommendation would decrease potential future physician fee schedule spending because it would prohibit arrangements that create financial incentives for physicians to order additional services. Because physicians could still receive payments for imaging services performed in their own offices, these savings would be small.

To the extent that fewer studies are ordered, beneficiaries' Part B premiums and cost sharing should decline. Reducing financial incentives that encourage physicians to order additional tests also might improve beneficiaries' quality of care. Physicians who own entities that derive a substantial share of their revenues from a DHS provider would no longer be able to refer Medicare or Medicaid patients to the provider.

RECOMMENDATION 3F

The Secretary should expand the definition of physician ownership in the Ethics in Patient Referrals Act to include interests in an entity that derives a substantial proportion of its revenue from a provider of designated health services.

RATIONALE 3F

The Stark II final rule creates a narrow exception that is inconsistent with the underlying intent of the Stark law. Physician ownership of entities that provide services and equipment to imaging centers and other providers creates financial incentives for physicians to refer patients to these providers, which could lead to higher use of services. Prohibiting these arrangements should help ensure that referrals are based on clinical, rather than financial, considerations. It would also help ensure that competition among health care facilities is based on quality and cost, rather than financial arrangements with entities owned by physicians who refer patients to the facility.

IMPLICATIONS 3F

Spending

- This recommendation would decrease federal program spending.

Beneficiary and provider

- This recommendation would decrease beneficiary premiums and cost sharing. No adverse impacts on beneficiary quality or access to care are anticipated. This recommendation is not expected to affect providers' willingness and ability to provide quality care to Medicare beneficiaries.

In this section, we recommended strategies to directly address the quality and volume of imaging studies. Although we continue to prefer direct strategies to deal with volume increases, we recognize that the Congress may need to continue overall physician spending targets in the current budget environment. In the next section, we present some ideas about ways to modify the current payment system to tie spending targets more closely to physician accountability. They are intended to reward performance while maintaining beneficiary choice of providers. These ideas cannot solve the budget problems created by the sustainable growth rate (SGR) formula, which would require negative payment updates for physicians for at least five years.

Creating new incentives in the physician payment system

Since the adoption of the physician fee schedule, the Congress has sought ways to constrain excessive expenditure growth for Medicare Part B services. The sustainable growth rate ties updates for physician fee schedule services to the rate of growth in the volume of services. Under current law, implementing the SGR would result in negative updates from 2006–2011 (CMS 2005). MedPAC has consistently raised concerns about the suitability of the SGR as a volume control mechanism and recommended its elimination. We believe that the other changes recommended in this report, including our pay-for-performance and information technology proposals discussed in Chapter 4, can help Medicare beneficiaries receive high-quality appropriate services. Although the Commission's preference is to address issues of inappropriate volume increases directly as discussed in the previous section on imaging, we recognize that the Congress may wish to retain some form of limit on aggregate volume.

Any alternative volume target would raise many design and policy issues. In this section, we describe the SGR and reiterate some of the Commission's criticisms. Next we sketch some ideas for modifying the system. These ideas do not represent Commission proposals but are preliminary thoughts about how alternative volume targets might be constructed. Finally, we discuss some of the issues that these targets would raise. Any implementation of a new target would require considerably more analysis, including development of a pilot program to test its feasibility.

What are the problems with the SGR?

Because of rapid growth in the volume of physician services in the 1980s, the Congress established an expenditure target for the fee schedule in 1989. Known as the volume performance standard (VPS), it was based on growth in the volume of services. The VPS linked annual updates of the fee schedule's conversion factor to growth in the number and type of services physicians provide. If volume growth in a year exceeded that allowed by the VPS, the update was adjusted downward two years later.

Experience with the VPS formula showed that it had several methodological flaws that prevented it from operating as intended. As the result of a slowdown in the growth of the volume of services during the 1990s, the VPS became unrealistically stringent.

These problems prompted the Congress to replace the initial standard as part of the Balanced Budget Act of 1997. That law instituted the sustainable growth rate as the new target for Part B services. The SGR is based on the number of beneficiaries in fee-for-service Medicare, input prices, the effects of law and regulation, and an allowance for volume growth based on the gross domestic product (GDP). The GDP—the measure of goods and services produced in the United States—is used as the benchmark of how much growth in volume society can afford. The basic SGR mechanism is to compare actual spending to target spending and adjust the update accordingly.

Since 2000, spending has remained above the target. MedPAC (2004a) studied the factors contributing to above-target spending in this period. Our analysis concluded that most recently the main reason has been the high growth in the volume of services relative to the growth allowed by the SGR. From 1999 to 2003, growth in volume per beneficiary averaged about 5 percent per year. By contrast, the allowance in the target for volume growth—the trend in growth of real gross domestic product per capita—was only about 2 percent.

So far, only one negative update has occurred—in 2002—to realign actual spending with the target. To prevent further negative updates, the Congress intervened through the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 and legislated positive updates through 2005. This action has only delayed the negative updates, however, because the target was not changed. CMS now projects negative updates through 2011 (CMS 2005).

Criticisms of the SGR are widespread. MedPAC first recommended repeal of the SGR in 2001, and we have consistently raised concerns about the formula, both when it has set updates above and below changes in input prices. The formula is flawed as a volume control mechanism. Because it is a national target, it creates no incentives for individual physicians to control volume. In the short term, physicians may have an incentive to increase services. It is inequitable because it treats all physicians and regions of the country alike, regardless of any behavior that influences volume. Further, it does not create incentives for physicians to develop structures of care that coordinate beneficiary care across multiple physicians and sites of care.

Although the Commission's preference is to address issues of inappropriate volume increases directly, as discussed in the previous section on imaging, we also are considering ways to modify the SGR so that individual incentives could be more directly linked to a volume target. The following section presents some preliminary ideas directed toward this goal. Any modified SGR system would be designed to incorporate pay-for-performance and physician resource measurement programs, as discussed in Chapter 4.

Multiple spending targets

Potentially, the SGR could be modified by creating smaller groups subject to a spending target. Research shows that reducing the size of groups subject to collective incentives may increase the likelihood that the actions of individuals within the group will be influenced by the incentives (see for example, Kralewski et al. 2000, Town et al. 2004).[24]

This section presents four ways in which Medicare could move from one national spending target to multiple spending targets:

- create an alternate pool based on membership by organized groups of physicians,
- divide the United States into regions and adjust the annual conversion factor based on changes in the volume of services provided in each region,
- set targets based on the performance of hospital medical staffs, or
- develop volume targets for specific services or types of services.

All of these ideas raise many questions about design, implementation, and policy.

Group target pool

The Congress could create an alternate voluntary spending pool with its own expenditure target. Organized groups of physicians would apply for inclusion, and services

provided by group members would be aggregated in this separate pool. In order to participate in the pool, groups would have to meet certain criteria that demonstrate that they have a means of organization, accountability, and commitment to the use of evidence-based medicine. Specific standards might vary, but possibilities include group use of clinical information technology, establishment of systematic techniques for quality improvement, and development of processes of coordinated care for patients with multiple chronic conditions. Continued membership would be subject to performance standards. One version of this approach was proposed by Tompkins et al. (1996). A similar idea is reflected in the group practice demonstration currently under development at CMS. This project would assign beneficiaries to physician group practices based on where they receive their evaluation and management services. Reimbursement would combine fee-for-service payments with performance payments based on improved management of care.

Policymakers would have to decide what types of groups could participate in the pool. Multispecialty group practices would be the model for the kind of group that would join. Currently, more than 600 multispecialty groups with over 50 physicians practice in the United States. Groups such as the Permanente Medical Group, the Mayo Clinic, Marshfield Clinic, Intermountain Health, and the Geisinger Clinic have adopted techniques to bring up-to-date medical science systematically to the practice of medicine. They monitor the impact of these techniques on patients outcomes. Many have electronic medical records and other information technology.

Ideally, the pool would not be limited to those groups. The goal would be to set the criteria for participation in the alternate pool high enough so that it provides incentives for physicians to develop organized processes of care, but not so high that certain kinds of providers, like rural physicians, are automatically precluded from joining. Other possible organizations include independent practice associations (IPAs) and other smaller groups of physicians who have developed alliances among practices to contract with health plans, medical staff of hospitals, and single specialty group practices. These organizations would have to develop organizational structures to meet the accountability and communication standards necessary for inclusion in the pool.

CMS would have to develop measures to determine and then monitor whether applicants meet the standards for inclusion in the alternate pool. CMS could deem independent accrediting entities to ensure that groups qualify for inclusion and continue to meet the standards.

CMS also would have to devise a way of attributing the services received by individual beneficiaries to groups without locking beneficiaries into receiving care from any specific group. Some health plans have developed algorithms that attribute patient care to particular groups on the basis of the percentage of care they receive from any one group. Medicare might adopt such a methodology for its own uses, but the process would likely be complex and raise many questions. For example, would all of the physician services received by a beneficiary count within a pool, even if only 30 percent of the patient's care was provided by group members?

The group target approach would require a means of risk adjustment. The system must ensure that groups do not have an incentive to discourage patients with high-volume medical needs or discourage group membership by physicians who provide high-quality care to patients with particularly costly medical conditions.

Regional targets

An alternative mechanism for controlling expenditures would address regional variation in practice patterns. An SGR-type formula could be used to determine how much spending growth society could afford, but the overall target would be adjusted regionally. Each year, the regional targets would be based on how the rate of increase for Medicare physician services in one area compared with the national average. The target could be based on the rate of increase in volume and intensity, the level of per capita spending, or some combination of the two. Because reducing volume growth would be more difficult to achieve in areas where the volume of services provided was already low, the formula would have to take into account the initial volume level. CMS would have to ensure that this system did not result in stinting on medical services. Regional per capita spending would be adjusted for risk and changes in input prices.

Updates would be higher in areas that controlled volume growth and lower in areas where volume grew at rates above the national average. Although these targets would still affect all physicians in an area without regard to their individual practices, physicians would have a stronger

incentive and greater ability to organize themselves to increase the efficiency of medical practice within their regions if the area were small enough.

Choosing the appropriate types of regions would be critical for this policy. Policymakers could define pools by census regions, states, markets, or hospital referral regions. In making a decision, they would have to balance the administrative efficiencies that could be achieved with larger regions with the ability of physicians in smaller regions to create mechanisms for accountability and attribution of services to specific pools.

Spending targets based on hospital medical staffs

Recent research (Fisher et al. 2004) has demonstrated the extent to which hospital medical centers function as de facto systems of care. It might be possible to develop spending targets based on services provided by hospital medical staffs. This concept would combine elements of the first two ideas. Medical staff would be defined as all the physicians practicing in a given hospital. Since virtually all physicians have admitting privileges in at least one hospital, all would be affected by the potential gains and losses of this alternative. Per capita spending would be case-mix adjusted and adjusted for changes in input prices. Regional variation would also have to be taken into account. As in the previous alternative, updates would be higher for medical staffs that controlled spending growth and lower for staffs for whom spending grew at rates above the national average. Hospital medical staffs have organizational structures that might facilitate collaboration among physicians, and might be more capable than other groups of responding to incentives created by the target.

This proposal could be implemented in stages, with initial targets based on physician services provided within hospitals (Welch and Miller 1994). Services could be measured by episodes of care provided within the hospital. Because these episodes of care could also be linked to efficiencies on the hospital side, it might be possible to link medical staff efficiencies to hospital savings with opportunities for gainsharing among physicians, hospitals, and the Medicare program (see MedPAC report to the Congress on specialty hospitals).

This proposal could create some disruptions in the health care system as physicians redirect their referrals to hospitals that better control spending growth. If there was widespread shifting, the viability of some hospitals could be threatened. In addition, shifting admissions could lead to particular administrative problems as CMS determines the identity of specific physicians to include in each medical staff pool.

Service-specific spending targets

A system of expenditure targets could have separate adjustments to fees based on targets for various types of services, rather than having a single adjustment for all physician services (PPRC 1988). For example, fees for imaging services could depend upon actual expenditures for imaging services compared with an expenditure target specifically for those services. Such a target would apply to all imaging services, regardless of the specialty of the physician providing them. Practitioners who concentrate on providing a given type of service might be better able to organize and collaborate. They would have strong incentives to develop and disseminate practice guidelines indicating the appropriate use of their services.

The service-specific target presents a number of difficulties. One problem is that the volume of specific kinds of services depends only in part on the physicians who provide them. For example, the volume of imaging services depends in large part on the referral patterns of physicians seeking diagnostic services for their patients, as well as the physicians who provide them.

An additional concern emerged when service-specific targets were included as part of the VPS system. The VPS included separate standards for surgical services, primary care services, and other nonsurgical services. Different performance standards and updates for each of the three categories of services distorted relative payments, so that an RVU in one category was no longer paid the same as an RVU in another category. For example, in 1997, the conversion factor for surgical services was $40.96, compared with $35.77 for primary care services (PPRC 1997). In effect, payments for primary care services were reduced relative to surgical services despite equivalent levels of time, skill, and effort. As a result, service-specific targets were eliminated when the Congress established the SGR. Although this could be a problem, as Medicare moves toward a system based on paying for performance, payment differentials among providers will be inevitable.

Cross-cutting issues

Although each of these ideas raises unique issues, some questions are common to them all:

- How would the expenditure target be set?
- How many pools should be established?
- How can differences in health status among target pools be captured?
- How would individual services be attributed to the target pool?
- Will the system be considered fair?
- How can separate target pools be combined with other measures like pay for performance?

Further analysis is needed to answer each of these questions.

How would the expenditure target be set?

The expenditure target might be based on changes in GDP, similar to the current SGR system. Alternatively, targets could be based on the historical experience of the groups in question. Policymakers will have to take into account differences between volume growth and differences in the level of volume between groups or regions. If regional practice patterns are taken into account, targets could be different in areas where volume is already high. If pools are based on organized groups, it might be possible to take into account cases in which more efficient and effective physician care reduces hospital spending. If the target is based on the national average growth in the volume of services, decisions will have to be made on how far above and below the target volume growth must be to generate a higher or lower conversion factor.

How many pools should be established?

One of the most critical challenges concerns the number of pools to be established. Whether targets are based on groups, regions, or services, decisions will have to be made about how many target pools are most appropriate. Since one of the key goals of multiple target pools is to link individual incentives with payment to control unnecessary volume, it would make sense to have smaller pools in which physicians had more ability to influence the behavior of their peers. On the other hand, larger pools would be easier to administer and would likely result in more stable estimates of volume growth.

How would services be attributed to the pool?

Of all the alternatives described, it would be easiest to attribute beneficiary services to regional pools and hospitals. Services delivered within a region would count toward expenditures in that target pool. As noted earlier, attribution of services to groups in a target system based on organized groups would require a system that could allocate beneficiary services to a particular group based on the percentage of care the beneficiary received from that group. Pools based on specific services would have to take into account the extent to which service use depends on the actions of referring physicians.

Will the system be considered fair?

None of the aggregate target systems will be able to fully account for efficient providers in high-volume pools or inefficient providers in low-volume pools. But any attempt to create multiple target pools will require a good system of risk adjustment to ensure that targets do not lead to selection against patients with high-volume medical needs or physicians who provide high-quality care to patients with particularly costly medical conditions.

How can separate target pools be combined with other measures like pay for performance?

Our proposals on pay for performance and information technology, as well as our recommendations on measuring physician resource use and setting standards for imaging services, are intended to apply to all physicians. All physicians should have incentives to provide high-quality medicine that is evidence based and, thus, we prefer these more direct measures. The interaction of these measures with multiple target pools may increase the administrative complexity of the program but will be necessary for implementation. As a next step, we will examine private sector efforts like the Buyers Health Care Action Group to introduce complementary measures of physician accountability within a competitive marketplace.

Future work

The recommendations in this chapter represent the beginning of our work on reforming the physician payment system. In upcoming months, we intend to extend our empirical analysis on measuring physician resource use. We will use Medicare claims data to construct episodes of care and examine variation in the use of physician services within these episodes. As we consider policy options, we will analyze historical changes in volume within different sets of parameters, considering variation by type of practice, region, and service. We also intend to examine how prices are set for individual services within the fee schedule. Finally, we will look at geographic adjusters and the design of payment areas used in the fee schedule. ■

Endnotes

1 Using claims data from 1999 through 2003, we calculated per capita growth in the units of service beneficiaries used. We then weighted the units of services used by each service's relative value units (RVUs) from the physician fee schedule. The result is a measure of growth—or volume—that accounts for changes in both the number of services and the complexity, or intensity, of these services. We thus distinguish growth in volume from growth in units of service. Volume growth includes an adjustment for changes in intensity; units-of-service growth does not.

2 For additional analysis of this issue see GAO (2004).

3 Potential changes in practice style could include not only modifying the number and types of services provided and the sites of those services, but also using more nonphysician, less-expensive resources to reduce spending and use of costly services.

4 Medicare fee schedule payment rates for the performance of imaging services (the technical component) are based, to a large extent, on historical charges. By contrast, rates for most other services are based on relative resource use.

5 The measure of service use combines the number of services used, their level of intensity, and the conversion factor (units of service multiplied by each service's relative weight from the 2003 physician fee schedule multiplied by the 2003 conversion factor).

6 Almost all imaging services have two distinct parts: the performance of a diagnostic test and the interpretation of the results by a physician. If the study is performed in a physician office, the physician submits a technical component claim to cover the costs of performing the test; the interpreting physician submits a professional component claim. Both claims are paid under the physician fee schedule. Studies performed in a hospital do not generate technical component claims. Thus, if more imaging services are performed in physician offices, technical component claims will increase as a share of all fee schedule imaging claims. Such an increase occurred between 1999 and 2002, which indicates that imaging procedures shifted to physician offices. Because the technical component is generally assigned a higher payment rate than the professional component, growth of technical component claims as a share of all imaging claims leads to additional payments. These additional payments accounted for about 20 percent of the growth in the volume and intensity of imaging services between 1999 and 2002 (MedPAC 2004a).

7 Similarly, in their published research, the Dartmouth researchers ranked U.S. regions according to the use of hospital and physician services by Medicare beneficiaries during their last six months of life (Fisher et al. 2003a).

8 One of the exceptions allows a radiologist to bill for the use of contrast material in a study, even if it was not ordered by the treating physician.

9 Some plans assert that the professional fee for interpreting the study should also be reduced because the physician spends less time interpreting additional studies for the same patient.

10 The CCI edits are shared with the medical community and the American Medical Association's Correct Coding Policy Committee for review and comment before their implementation (MedPAC 2000).

11 The American Institute of Ultrasound in Medicine develops its standards in collaboration with the American College of Radiology, American College of Obstetricians and Gynecologists, and American Society of Breast Surgeons.

12 For example, CMS or its contractors would need to develop a program that lists the imaging codes for which each physician is permitted to bill Medicare.

13 For example, after an initial site visit and document review for new IDTFs, carriers are not required to continue monitoring them.

14 These carriers cover Arkansas, Louisiana, Oklahoma, New Mexico, and Eastern Missouri.

15 However, the NRC does not have authority over positron emission tomography.

16 One notable exception is New Jersey, which requires that facilities using X-ray equipment establish quality-control programs.

17 CMS has similar "deeming" arrangements with private accreditation groups for several types of providers, such as hospitals and ambulatory surgical centers.

18 Under authority of the Clinical Laboratory Improvement Amendments, passed in 1988, CMS establishes quality standards for clinical laboratories. These laboratories are located in physician offices as well as in hospitals, skilled nursing facilities, and other locations.

19 This same principle applies to other medical professionals, including dentists, optometrists, podiatrists, and chiropractors.

20 The GAO found that access problems exist in some locations. However, the inability of some providers to meet FDA's quality requirements was one of several factors contributing to problems in these areas. Other factors included high demand for services at some facilities, a shortage of technologists, financial difficulties, and temporary problems caused by the closure of large facilities (GAO 2002).

21 This section is based, in part, on an analysis of the Stark law conducted by a MedPAC contractor, Kevin McAnaney.

22 The in-office ancillary exception does not apply to most durable medical equipment and parenteral and enteral nutrition services because there was no clear justification for permitting these services to be provided by the referring physician.

23 Although certain nonradiology services are covered under the law (e.g., MRI and CT), these procedures, unlike nuclear medicine, were explicitly included in the statute.

24 This research is mostly based on the experiences of multispecialty group practices. Analysts agree that more research is necessary to determine any causal relationships between group size and the effectiveness of incentives.

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