

CHAPTER

9

**Analysis of changes
to physicians' practice
expense payments**

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Chapter summary

The physician fee schedule has three components: physician work, practice expense (PE), and professional liability insurance. The PE component pays for the direct costs (nonphysician clinical staff, medical equipment, and medical supplies) and indirect costs (administrative staff, office rent, and other expenses) of operating a physician practice.

In this chapter, the Commission examines how CMS determines PE payment rates, because PE payments are substantial, accounting for close to half of the \$58 billion Medicare spent under the physician fee schedule in 2005. The goal of this chapter is to help policymakers understand this complex payment methodology and focus attention on major changes that CMS has recently made to improve its accuracy. We describe these changes and their impacts, examine CMS's method for allocating indirect costs to specific services, and explore how the agency adjusts PE payment rates to account for geographic differences in input prices. Although the Commission does not recommend changes to the PE methodology in this chapter, we have previously suggested

In this chapter

- CMS's methods and data changes redistributed practice expense payments across services
- Allocating indirect practice expenses
- Adjusting for geographic differences in practice expenses
- Conclusion

ways for CMS to improve the accuracy of the survey data, direct cost estimates, and equipment prices used in the methodology (MedPAC 2006).

Ensuring the accuracy of payments under the physician fee schedule is important for several reasons. First, inaccurate payment rates can distort the market for physician services. Overvalued services may be overprovided, because they are more profitable than other services. Undervalued services may prompt providers to increase volume to maintain their overall level of payment. Conversely, some providers may not furnish services that are undervalued, which can threaten beneficiaries' access to care. Second, if certain types of services become undervalued relative to others, the specialties that perform them may become less financially attractive, which can affect the supply of physicians. Finally, when services are misvalued, Medicare is paying too much for some services and not enough for others and therefore is not spending taxpayers' and beneficiaries' money wisely. Because Medicare spends a great deal of money on PE, those payments could be a tool for achieving important policy goals such as rewarding providers for efficient use of resources.

Beginning in 2007, CMS is using:

- new methods to calculate direct and indirect PE relative value units (RVUs),
- the same approach to calculate PE RVUs for services that do and do not involve physician work, and
- more current practice cost data to calculate indirect PE RVUs for eight specialty groups.

In addition, CMS adopted significant changes to physician work RVUs, which affect both the physician work and the PE components of the fee schedule. Collectively, these changes represent the biggest revision to the methods and data used to calculate PE RVUs since the agency implemented resource-based PE payments in 1999. CMS will phase in these changes over a four-year period.

The new PE methods and data redistribute PE payments across services. When CMS fully implements the changes in 2010, PE RVUs will increase by 7 percent for evaluation and management (E&M) services and by 3 percent for other (nonmajor) procedures and tests. By contrast, PE RVUs will decrease by 8 percent for major procedures and by 9 percent for imaging services.

To better understand these impacts, we isolated the separate effects of the new methods and the new data on PE RVUs. Our analysis shows that E&M services, other (nonmajor) procedures, and tests, on average, benefited from the change in the methods, while major procedures and imaging services did not. In some instances, the new methods and new data CMS used—more current practice cost data from some (but not all) specialties and the 2007 work RVUs (which include the budget-neutrality adjustment)—had offsetting effects. On average, other procedures, imaging services, and tests benefited from using more current practice cost data because the specialties that submitted the data account for a substantial share of the total volume of these services. Finally, using the 2007 work RVUs to calculate indirect costs had a downstream benefit for services, such as E&M services, whose work values increased because of the third five-year review.

Because indirect costs represent about two-thirds of total practice costs, we examine CMS's new method for calculating indirect PE RVUs, explore other methods to pay physicians' indirect practice costs, and analyze the sensitivity of PE RVUs to changes in the indirect method. We find that indirect PE RVUs are quite sensitive to changes in the methodology. For example, under an alternative approach, allocating indirect costs using nonphysician clinical labor plus physician work for the service would shift PE RVUs from imaging services, tests, and other procedures to E&M services and major procedures.

Finally, we examine how CMS adjusts PE payment rates to account for geographic differences in the price of inputs used in operating a physician practice. The PE geographic practice cost index (GPCI) includes three components that correspond to three types of practice costs: nonphysician

staff wages; office rent; and medical equipment, supplies, and other expenses. The current PE GPCI does not recognize that individual services have different shares of inputs for which prices vary geographically (e.g., nonphysician staff and office space) and for which prices are uniform (e.g., equipment and supplies). Thus, for services with below-average shares of equipment and supplies, the index does not adjust a large enough portion of the PE RVU; for services with above-average shares of equipment and supplies, it adjusts too large a portion of the RVU. This distorts prices, which may alter the mix of services provided within a high- or low-cost area.

PE payments might be more accurate if CMS excluded the equipment and supplies component from the GPCI and applied the GPCI only to the portion of the PE RVU related to nonphysician clinical labor and indirect costs. This alternative would better recognize that services have different shares of inputs for which prices vary geographically. ■

CMS's methods and data changes redistributed practice expense payments across services

The physician fee schedule has three components: physician work, practice expense (PE), and professional liability insurance. PE payments cover the direct and indirect costs of operating a physician practice. Direct expenses include costs for nonphysician clinical labor, medical equipment, and supplies. Indirect expenses include costs for administrative labor, office expenses (e.g., rent and utilities), and all other expenses. CMS bases PE payments on the relative resources needed to provide a service, known as relative value units (RVUs). PE accounts for close to half of the \$58 billion Medicare spent under the physician fee schedule in 2005.

In the final rule for the 2007 physician fee schedule, CMS:

- implemented new methods to calculate direct and indirect PE RVUs;
- calculated PE RVUs using the same method for services that do and do not involve physician work (i.e., eliminated the nonphysician work pool);
- used more current practice cost data to calculate indirect PE RVUs for eight specialty groups; and
- adopted significant changes to physician work RVUs, which affected both the physician work and the PE components of the fee schedule.

To mitigate the impact on providers, the agency will phase in the changes over a four-year period beginning in January 2007. The text box (pp. 228–229) describes the changes in calculating PE RVUs.

Implementing new methods and data will redistribute PE RVUs across services because CMS is implementing the changes in a budget-neutral manner, as required by statute (Table 9-1, column C, p. 230). On average, PE RVUs will fall for major procedures and imaging by about 8 percent and 9 percent, respectively. PE RVUs for evaluation and management (E&M) services, other (nonmajor) procedures, and tests will increase on average by about 7 percent, 3 percent, and 3 percent, respectively, when CMS phases in all of the changes.

More specific types of services experience fairly large changes under the new PE method and data. The largest reductions in PE RVUs occur in echography of the heart,

standard chest X-ray, and electrocardiograms. For these types of services, the average reductions in PE RVUs range from about 20 percent to 28 percent. The largest gains in PE RVUs go to echography—other, coronary angioplasty, ambulatory skin procedures, colonoscopy, and upper gastrointestinal endoscopy, with increases ranging from 24 percent to about 37 percent.

We isolated the effect of using new methods, more current utilization data, more recent practice cost data for some specialties, and 2007 work RVUs to better understand their impact on PE RVUs. We found substantial redistributions of PE RVUs across some types of services.

First, we isolated and examined the effect of changing the methods—moving to a bottom-up method to calculate direct PE RVUs, refining the methods used to calculate indirect PE RVUs, and eliminating the nonphysician work pool—and using more current utilization data on PE RVUs (Table 9-1, column A, p. 230). We compared 2006 RVUs (the baseline) with an alternative in which we calculated RVUs with the new 2007 methods and new (2005) utilization data. Both the baseline and alternative approach use old practice cost data for all specialties and 2006 work RVUs.

Next, we quantified the effect of using more current practice cost data on PE RVUs (Table 9-1, column B, p. 230). We compared 2006 RVUs with an alternative in which we calculated RVUs using the new 2007 methods, new utilization data, and more current data for the eight specialties. Both the baseline and alternative approach use 2006 work RVUs.

Last, we quantified the impact of all changes CMS made to PE RVUs (Table 9-1, column C, p. 230). This analysis compares 2006 PE RVUs with 2007 PE RVUs (assuming full implementation of the changes). The 2006 PE RVUs reflect the old methods, old practice cost data for the eight specialties, 2006 work RVUs, and old utilization data. The 2007 PE RVUs reflect the new methods, more current practice cost data for the eight specialties, 2007 work RVUs, and 2005 utilization data.

Changing the methods and using more current utilization data

The combined effects of moving to a bottom-up method, refining the indirect methods, eliminating the nonphysician work pool, and using more current utilization data increase payments for E&M services, other (nonmajor) procedures, and tests and decrease them for imaging and major

CMS is using new methods and data to calculate practice expense payment rates

For 2007, CMS made significant changes to both the methods and data used to determine practice expense (PE) relative value units (RVUs); we discuss each type of change separately.

CMS implemented three major changes to the methods

CMS's new method to calculate direct PE RVUs sums the costs of the direct resources—nonphysician clinical staff time, medical supplies, and equipment—required to furnish each service.¹ Stakeholders refer to this method as “bottom-up.” Prior to 2007, CMS calculated direct PE RVUs by starting with total direct cost pools and then allocating practice costs to individual services using direct resource estimates—referred to as the “top-down” method. The bottom-up method does not use specialty-specific cost pools, which makes it more understandable and transparent than the top-down method.

Indirect practice costs, which include office rent, utilities, and administrative staff, are important because they represent about two-thirds of total practice costs. Because it is difficult to link indirect costs to specific services, CMS had to come up with a way to allocate them to services based on some other metric. The agency developed a method in which it allocates specialty-specific indirect cost pools to individual codes. Prior to 2007, CMS allocated indirect costs to individual services based on the sum of the direct practice cost and physician work RVU for each service. Beginning in 2007, the agency made two changes in how it allocates costs to specific services:²

- It adjusts the direct practice cost of a service based on the ratio of total indirect to total direct costs for the specialties that perform the service.
- For services with low or no physician work RVUs, CMS uses the clinical labor RVU (e.g., the cost of a nurse's time) instead of the physician work RVU in the allocation method (CMS 2006).

In its third major change, CMS began using the same direct and indirect methods to calculate PE RVUs for services that do not involve physician work—nonphysician work pool services—as for

other services. The major specialties composing the nonphysician work pool are radiology, cardiology, and internal medicine. Prior to 2007, the agency used a different method to calculate PE RVUs for services that did not involve physician work.

Now that CMS is using a bottom-up method, it is important to make sure that the direct resource estimates are as accurate as possible. The Commission discussed several ways to improve the accuracy of these estimates in our June 2006 report. Because the agency has limited administrative resources, we suggested that CMS focus on areas where the estimates are most out of date and the impact on relative weights is likely to be greatest. The Congress should provide CMS with the financial resources and administrative flexibility to undertake this effort as it will improve the accuracy of Medicare's payments. We summarize each of these four areas in order of priority.

First, CMS should revisit how it estimates the per service price of medical equipment, in particular the assumption that all equipment is operated half the time that practices are open for business. If this assumption is an underestimate, Medicare's per unit price is too high. Our survey of imaging providers in six markets indicated that providers in those markets use MRI machines more than 90 percent of the time they are open for business and use computed tomography (CT) machines more than 70 percent of the time (MedPAC 2006). CMS also assumes that practitioners pay an interest rate of 11 percent per year when borrowing money to buy equipment, but more recent data suggest a lower interest rate may be more appropriate. Increasing the assumption about equipment use and lowering the interest rate estimate would reduce PE payments for CT and MRI services. Because changes to PE relative values are budget neutral, these savings would be redistributed among other physician services.

The American Medical Association (AMA)/Specialty Society Relative Value Scale Update Committee recommended that CMS use a competitive market interest rate and an equipment use rate higher than 50 percent, while allowing specialty societies to present evidence supporting lower rates for specific equipment

CMS is using new methods and data to calculate practice expense payment rates (cont.)

(CMS 2006). In the final rule on the physician fee schedule for 2007, CMS said that it did not have sufficient evidence to change the interest rate and equipment use rate assumptions for 2007 but expressed interest in potentially revising these assumptions in a future rule (CMS 2006).

Second, CMS should set a reasonable schedule for periodically updating the prices it assigns to the direct cost inputs (clinical staff, supplies, and equipment). The agency could also review the prices of expensive supply and equipment items more frequently than other items. Third, to ensure that the types and quantities of direct cost inputs are accurate and complete, CMS—with the assistance of the medical community—could check the consistency of values across similar services and obtain current estimates for services that have no information. Fourth, CMS should set a reasonable schedule for reviewing PE relative weights at least every five years (as required by statute) and more often for services experiencing rapid changes.

Data on practice costs and work RVUs affect the value of indirect PE RVUs

CMS uses four sources of data to calculate indirect PE RVUs: (1) estimates of the types, quantities, and prices of clinical labor, medical equipment, and medical supplies; (2) estimates of each specialty's hourly practice costs; (3) physician work RVUs; and (4) Medicare utilization data. We focus on the latter three data sources, which CMS updated between 2006 and 2007.

CMS multiplies each specialty's average hourly indirect practice cost by the total volume of services it furnishes to derive the specialty's indirect cost pool (i.e., total indirect dollars). The agency allocates this pool to each service the specialty performs (see p. 235).

Beginning in 2007, CMS determines indirect PE RVUs by using more current hourly practice cost data submitted by eight specialties (allergy/immunology, cardiology, dermatology, gastroenterology, urology, radiology, radiation oncology, and independent diagnostic testing facilities). Prior to 2007, CMS had begun using more current cost data from five

specialties. The Balanced Budget Refinement Act of 1999 mandated that the agency establish a process to consider more current practice cost data submitted by specialties when updating the physician fee schedule. For most other specialties, CMS uses practice cost data that the AMA collected between 1995 and 1999.³

Using more current data for the eight specialties:

- increases their hourly practice costs relative to all other specialties,
- increases their total indirect cost pools relative to all other specialties, and therefore
- distributes a larger share of indirect costs to the services these eight specialties perform relative to all other groups.

The AMA and specialty societies are in the process of fielding a survey to collect more current practice cost data from nearly all specialty groups. CMS supports the AMA's effort to field a new survey and will consider using the data once they are available (CMS 2006). The agency anticipates that the data will be available to incorporate in the fee schedule no earlier than 2009.

CMS uses physician work RVUs to calculate indirect PE RVUs. The larger a service's work RVU, the more indirect costs it will be allocated, all other factors being equal. Using the 2007 work RVUs benefits those services whose work values increased due to the third five-year review, such as some evaluation and management services.

CMS uses Medicare volume data to calculate the indirect cost pools (by multiplying each specialty's hourly practice costs and the total volume of services that each specialty performed). For the 2007 PE RVUs, CMS used 2005 volume data, the most current available. Before 2007, the agency used older (1997–2000) volume data for services that existed during that time period and newer data for services that were introduced after 2000. Using more current volume data increases the PE RVUs of those services with high growth rates between 1997 and 2005, such as imaging services. ■

**TABLE
9-1**

CMS's changes had a large effect on PE RVUs

Impact on PE RVUs due to changes in:

Type of service	Methods and use data only (column A)	Methods and use data, plus practice costs (column B)	All changes* (column C)	Change in volume per beneficiary 2004-2005	Percent of total volume
Evaluation and management	7.5%	0.9%	6.5%	2.9%	40.0%
Office visit—established patient	6.2	2.9	7.2	2.5	17.1
Hospital visit—subsequent	9.0	-2.9	13.0	2.4	7.8
Consultation	5.9	3.8	9.4	3.6	5.7
Emergency room visit	12.7	-11.7	-4.6	5.0	2.7
Hospital visit—initial	7.8	-8.0	4.3	1.2	1.9
Office visit—new patient	9.0	1.7	0.2	1.9	1.8
Nursing home visit	20.9	2.2	-4.9	1.3	1.8
Imaging	-19.5	-5.8	-9.0	8.7	16.3
Standard—nuclear medicine	-27.2	-12.6	-16.5	7.1	2.4
Echography—heart	-38.5	-26.0	-28.2	8.2	2.2
Advanced—CT: other	-11.3	6.8	0.7	14.7	2.2
Advanced—MRI: other	-17.0	-3.6	-7.8	14.2	1.9
Standard—musculoskeletal	2.4	6.7	1.7	4.9	1.2
Advanced—MRI: brain	-25.6	-12.3	-16.5	7.1	1.1
Echography—other	10.5	24.0	18.8	12.5	0.8
Standard—chest	-30.8	-14.0	-19.9	3.0	0.7
Standard—breast	-88.9	-82.7	-2.3	4.3	0.7
Imaging/procedure—other	-28.6	-15.8	-19.3	12.8	0.6
Major procedures	-6.1	-9.9	-7.6	3.5	8.9
Cardiovascular—other	-19.9	-11.4	-3.4	0.4	2.0
Orthopedic—other	4.9	-13.2	-13.0	7.7	1.1
Knee replacement	4.0	-14.8	-13.0	11.1	0.7
Coronary artery bypass graft	-5.5	-20.2	-14.3	-8.6	0.6
Coronary angioplasty	-6.3	43.9	36.9	-0.8	0.5
Hip fracture repair	4.6	-13.8	-12.1	0.5	0.4
Hip replacement	6.0	-13.3	-11.3	2.0	0.4
Other procedures	5.0	5.4	2.9	8.5	22.3
Minor—other, including outpatient rehab and drug administration	11.0	7.8	6.0	15.6	4.8
Ambulatory—skin	20.5	30.5	24.9	4.9	2.1
Cataract removal/lens insertion	12.7	-6.4	-9.7	7.8	1.8
Colonoscopy	15.6	33.9	23.6	2.9	1.1
Upper gastrointestinal endoscopy	18.1	40.0	29.3	1.2	0.6
Cystoscopy	-26.0	0.8	-1.5	13.9	0.5
Tests	1.9	4.7	2.6	6.2	5.2
Other tests—other	4.6	6.0	2.4	11.1	2.1
Lab test—other (physician fee schedule)	18.0	14.0	12.9	3.5	1.5
Electrocardiogram	-31.5	-20.4	-25.0	0.8	0.7
Cardiovascular stress test	-6.2	17.4	13.9	4.7	0.6

Note: PE (practice expense), RVU (relative value unit), CT (computed tomography). This analysis does not include the effect of the Deficit Reduction Act cap on imaging services. Some low-volume categories and services are not shown in the table but are included in the summary calculations. Column A models the impact on PE RVUs due to changing the methods and using more current volume data. The impacts in column A are based on old practice cost data for all specialties and 2006 work RVUs. Column B models the impact on PE RVUs due to changing the methods and using current volume data and current practice cost data for eight specialties. The impacts in column B are calculated using 2006 work RVUs. Column C compares the fully phased in new PE RVUs to 2006 PE RVUs and shows the impact of all method and data changes, including using the 2007 work RVUs for calculating PE. Volume is measured as units of service multiplied by each service's RVU from the physician fee schedule. The estimated impact assumes that CMS has phased in all PE changes, which will occur in 2010.
* All changes include using the 2007 work RVUs for calculating PE.

Source: MedPAC and NORC analysis of physician RVU and utilization files, direct practice cost data, Medicare claims, and specialty practice cost-per-hour file from CMS.

procedures (Table 9-1, column A). Each of these changes has a different effect on PE RVUs.

Moving to a bottom-up method increases the PE RVUs of services that are office based and use costly medical equipment and supplies, such as some imaging services, tests, and other procedures. By contrast, moving to a bottom-up method has a negative effect on office-based services that do not use costly equipment and supplies (e.g., E&M services) and services furnished in facilities (e.g., major procedures). Changing the indirect methods has a stronger effect on PE RVUs than changing the direct methods because indirect PE RVUs account for at least two-thirds of total PE RVUs, on average, for the broad service categories. In the case of E&M services, the positive effect of modifying the indirect methods offsets the negative effect of moving to a bottom-up method for direct costs.

Eliminating the nonphysician work pool affects PE RVUs of services administered by nonphysician staff, such as imaging services. Before 2007, the PE RVUs of services administered by nonphysicians (e.g., performing an X-ray) were not resource based. Rather, the services—called nonphysician work pool services—were valued using 1998 charges. The Government Accountability Office noted that some nonphysician work services were overvalued and some were undervalued (GAO 2001). Moving to a resource-based method causes some nonphysician work services to increase and some to decrease depending on the relationship between charges and estimates of resources.

Finally, using more current volume data benefits those services whose volume grows more rapidly than other services. Between 2000 and 2004, imaging services, other procedures, and tests grew 10 percent, 6 percent, and 8 percent per year, respectively, while E&M services and major procedures each grew 4 percent per year (MedPAC 2007).

Changing the methods and using more current utilization and practice cost data

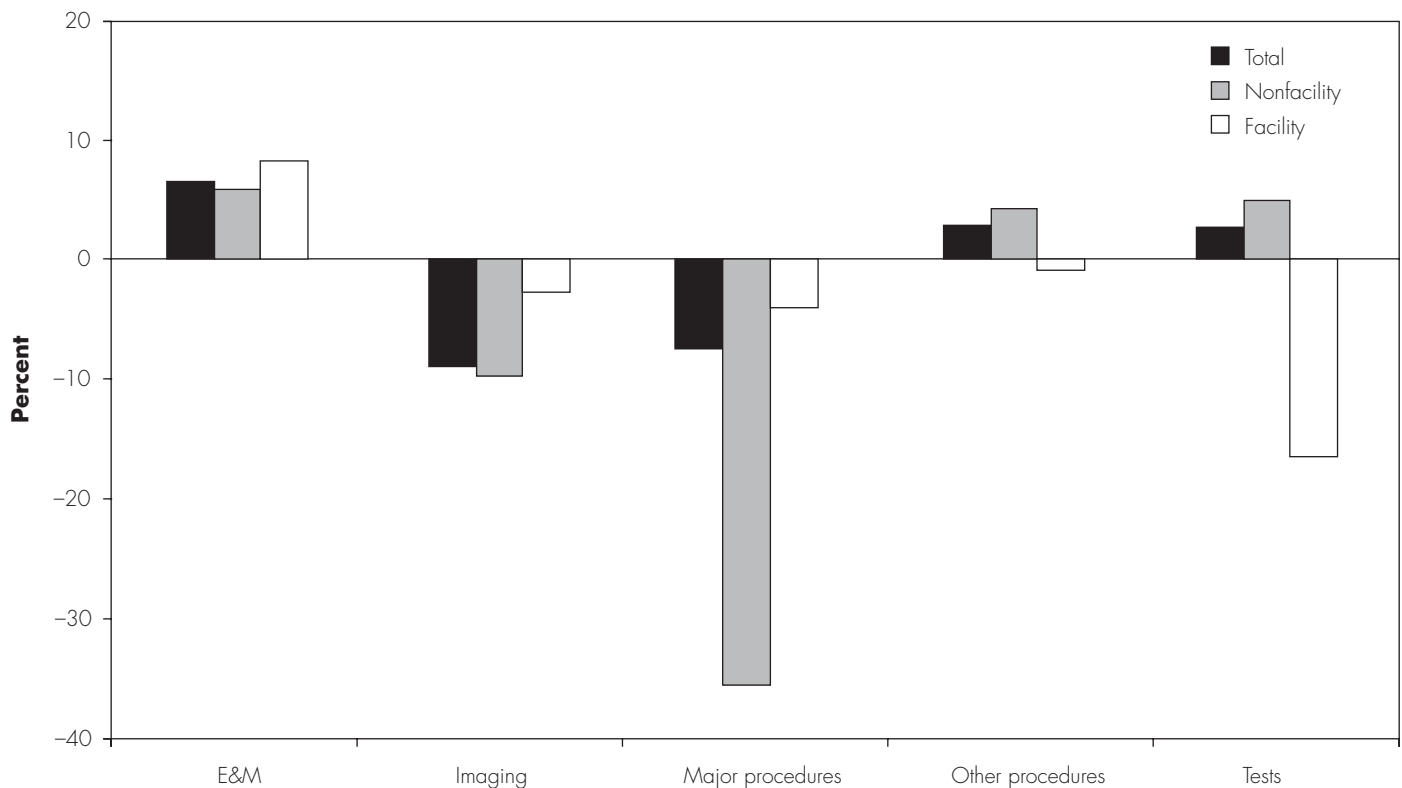
The impact of the new methods is somewhat offset when we use more current practice cost data from eight specialties to determine PE RVUs (Table 9-1, column B). Using more current practice cost data benefits imaging services, other procedures, and tests because specialties that submitted more current data account for a substantial share of the total volume of these services:

- Radiology and cardiology together provide about 60 percent of the total volume of imaging services.
- Dermatology, gastroenterology, urology, and radiation oncology together account for about 35 percent of the total volume of other procedures.
- Cardiology, dermatology, and independent diagnostic testing facilities together account for about one-quarter of the volume of tests.

By contrast, for E&M services, using more current practice cost data offsets some of the increases realized from the changes in the methods. The leading two specialties that provide E&M services—internal medicine and family practice—did not submit more current practice cost data. In aggregate, using more current practice cost data for some specialties decreases PE RVUs for major procedures except those services performed primarily by cardiology (e.g., coronary angioplasty).

The American Medical Association (AMA) and specialty societies are in the process of fielding a survey to collect more current practice cost data from nearly all specialty groups. CMS, which supports this effort, anticipates that the new data will be available for use in the fee schedule no earlier than 2009 (CMS 2006).

CMS uses the survey data to estimate *average* hourly practice costs for each specialty, which are used to calculate indirect PE RVUs. Consistent with the Commission's position that Medicare should pay for costs incurred by efficient providers, it is worth asking whether cost data used to set indirect PE RVUs should reflect the costs of efficient practices rather than the costs of average practices. For example, CMS could explore using the hourly cost of a practice at the lowest 25th percentile of costs rather than the mean.⁴ In calculating the cost of an efficient practice, CMS would need to adjust for practices' service mix and geographic location, because differences in the type of services provided and input prices probably affect practice cost variations. Unfortunately, the survey data that CMS currently uses to calculate PE RVUs do not contain information on practices' service mix, nor does the survey that the AMA and specialty societies are currently fielding. Thus, in future surveys, CMS might want to consider collecting the data necessary to identify efficient practices, controlling for service mix and other factors. Basing RVUs on the cost of efficient practices might require a statutory change.

**FIGURE
9-1****Changes in PE RVUs vary by type and place of service**

Note: PE (practice expense), RVU (relative value unit), E&M (evaluation and management). Changes include new methods, new volume data, new practice cost data for eight specialties, and the use of 2007 work RVUs in PE calculations. The estimated impacts assume that CMS has phased in all the PE changes, which will not occur until 2010.

Source: MedPAC analysis of physician RVU and utilization files from CMS.

Implementing all methods and data changes: Comparing 2006 and 2007 PE RVUs

Finally, we look at all the changes—including using the 2007 work values to calculate indirect PE RVUs—by comparing the values of 2006 and 2007 PE RVUs (Table 9-1, column C) (p. 230). The comparisons between 2006 and 2007 RVUs assume that all the PE changes have been fully phased in, which will not occur until 2010. The impact of using the 2007 work RVUs, refined during the third five-year review, is apparent when comparing columns B and C of Table 9-1 (p. 230). The values of many E&M services increase due to the third five-year review. Using the 2007 work RVUs to calculate indirect PE RVUs benefits those categories of E&M services whose work values increased on average due to the five-

year review, such as office visits for established patients and hospital visits. By contrast, using the 2007 work RVUs does not help those categories of E&M services whose work values remain unchanged due to the five-year review, such as nursing home visits. To maintain budget neutrality, CMS cut the work value of all services by 10.1 percent when it implemented the five-year review changes.⁵

For major procedures, the use of the 2007 work RVUs to calculate indirect PE RVUs offsets some of the negative impacts from the change in the methods and the use of more current practice-cost data. The third five-year review increases the work value of several major procedures. Nonetheless, when CMS phases in all the methods and data changes, PE RVUs will decline by 8 percent for major procedures.

For other procedures and tests, using the 2007 work RVUs to calculate indirect PE RVUs offsets some (but not all) of the positive effect of the methods changes and the use of more current practice cost data. Even so, PE RVUs will increase by 3 percent for other procedures and tests when considering all the methods and data changes.

Using the 2007 work RVUs to calculate indirect PE RVUs offsets some of the positive effects that imaging services realize from the use of more current practice cost data. Considering all the changes, including the new methods' negative effect on their PE RVUs, imaging PE RVUs will fall by 9 percent.

Our analysis also shows that the changes to the methods and the data can affect PE RVUs of services differently depending on whether providers most frequently furnished them in a facility or in an office (nonfacility) setting (Figure 9-1). For example, PE RVUs for E&M services will increase for services furnished in both settings. By contrast, PE RVUs will decrease substantially for major procedures performed in nonfacility settings (35 percent), while the decrease in PE RVUs will be more modest for facility-based care (4 percent) when CMS phases in all the changes.

Allocating indirect practice expenses

Indirect costs, which include office rent, utilities, and administrative staff, represent about two-thirds of total practice costs. Because it is difficult to link these costs to specific services, CMS has to allocate them based on some other measure of resource use. CMS uses a complex method to allocate specialty-specific indirect cost pools to individual services based primarily on the direct practice cost and physician work value for each service. In this section, we explain CMS's current approach, review some alternatives to this approach, and illustrate that changes to the method can significantly affect the distribution of PE payments across services.

In general cost-accounting systems, indirect costs are allocated to specific items or services by a two-step process (Hawkins and Cohen 2004). First, *cost pools* that incorporate a grouping of indirect costs (e.g., office rent) are created. Second, each cost pool is assigned to individual items by using a *cost allocation basis*, which ideally should reflect a cause-and-effect relationship between the cost pool and the item. For example, in a manufacturing process, direct labor hours might be used to allocate indirect labor costs (e.g., management) to a

product; the demand for indirect labor is assumed to be a function of the direct labor hours worked. Likewise, CMS creates cost pools of indirect practice costs and allocates them to specific services based on the amount of physician work and direct practice costs (medical equipment, medical supplies, and nonphysician clinical labor) that each service requires. The underlying assumption of this method is that the use of indirect practice resources is a function of a service's physician work and direct practice costs.

It is important to recognize that, given the variety of physician practices and services and the very nature of overhead costs, there is no single best method for allocating indirect practice costs (CMS 2006, 1998). Since the 1990s, researchers and CMS have examined various ways to allocate indirect costs, some of which are described below. Policymakers may wish to use the following four broad principles to guide any allocation approach:

- The allocation should be based on the factors that influence indirect practice costs.
- It should avoid creating financial incentives that favor certain sites of care over others (PPRC 1992).
- It should limit the administrative burden on CMS and providers.
- It should be understandable.

Most indirect costs are fixed in the short run

Practice expenses include costs that are fixed in the short run (e.g., office rent, utilities, equipment) and variable costs (e.g., medical supplies and clinical labor). CMS classifies most fixed costs as indirect costs and most variable costs as direct costs. Some researchers have proposed that Medicare should pay for a practice's fixed costs only until those costs have been covered, perhaps by making a periodic, lump-sum payment that would be related to practice characteristics such as size and location (Latimer and Becker 1992). Because practices incur variable costs for each additional service, Medicare would pay for variable costs on a per service basis.

This approach is conceptually appealing but it would be quite difficult to implement. CMS would need to collect very detailed information about practice characteristics that could affect the level of fixed costs, such as: size, number of individual offices, site of practice, service

FIGURE 9-2

How CMS calculates indirect practice expense for a specific service

Step 1: Estimate total indirect costs for specialty A

Administrative labor \$150,000,000	+	Office expenses \$200,000,000	+	Other expenses \$100,000,000	=	Total indirect costs \$450,000,000
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Step 2: Allocate total indirect costs to specific services

2A: Calculate indirect allocator for service A

Direct cost service A \$11.80	x	Ratio of indirect to direct costs specialty A 1.2	+	Physician work service A \$33	=	\$47.16
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2B: Calculate scaling factor for specialty A

Total indirect costs \$450,000,000	=	$\frac{\$450,000,000}{\$1,290,000,000^{**}}$	=	0.35
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2C: Multiply indirect allocator by scaling factor

\$47.16	x	0.35	=	\$16.51**
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Note: All numbers are for illustrative purposes. In this illustration of service A, the physician work value is greater than the nonphysician clinical labor value. Hence, the physician work value is used in the allocator.
 *The sum of indirect allocators for all services performed by specialty A is derived by (1) multiplying each service's indirect allocator by the Medicare volume of each service, and (2) summing the products across all services.
 **CMS applies a budget-neutrality adjustment to this value.

mix and volume, Medicare's share of overall volume, and specialty. CMS and other organizations do not currently collect nationally representative data on these characteristics at the practice level. Even if CMS collected this information, developing homogeneous payment groups would be difficult. There could also be opportunities for physicians to increase their payments by changing their practice characteristics. For example, physician practices might increase their number of offices to gain more payments if the additional payments exceed

their actual indirect costs. Given the difficulty of paying practices for their indirect costs on a lump-sum basis, the more practical alternative is to pay physicians for their indirect costs on a per service basis, which is CMS's current approach.

CMS's method for assigning indirect costs

CMS uses a complicated, two-step process to calculate indirect PE RVUs per service, as described in the following sections.

Creating indirect cost pools

First, CMS creates separate indirect cost pools for each specialty by:

- estimating the specialty's average hourly costs for indirect expenses (administrative labor, office expenses, and other expenses), as derived from an AMA survey or supplemental surveys submitted by specialties; and
- multiplying the average hourly indirect cost by the total Medicare volume of services the specialty furnishes and the amount of time it takes to provide each service.⁶

An illustrative indirect cost pool is shown in Figure 9-2, step 1. Services performed by specialties with indirect cost pools that are larger than average (e.g., cardiology and dermatology) receive more indirect RVUs, while services performed by specialties with indirect cost pools that are smaller than average (e.g., internal medicine and emergency medicine) receive fewer indirect RVUs.

Allocating cost pools to specific services

Until 2007, CMS allocated specialty-specific indirect cost pools to individual services based on the sum of the direct cost RVU (which includes nonphysician clinical labor, medical equipment, and medical supplies) and physician work RVU for each service. The agency used both physician work and direct practice costs in the allocator so that indirect costs could be spread across a broad range of inputs that are traceable to specific services. Although some researchers and stakeholders have argued that only physician work or physician time should be used to allocate indirect costs (see text box, p. 236), using both physician work and direct costs helps balance services performed by office-based and hospital-based specialties. Hospital-based specialties, such as general surgery, incur few direct costs but perform services with higher physician work RVUs. Thus, if the allocator were based only on direct costs, it would be difficult to allocate indirect costs for hospital-based physicians. On the other hand, office-based specialties, such as internal medicine and dermatology, generally perform services with lower work RVUs but higher direct costs.

For 2007, CMS made two changes to the indirect cost allocator (the formula for the current indirect allocator appears in Figure 9-3, p. 237):

- CMS decided to adjust direct costs by the ratio of indirect to direct costs for the specialty that performs

the service. To use the example in Figure 9-2 (step 2A), direct costs for service A (\$11.80) are multiplied by the ratio of overall indirect to overall direct costs for specialty A (1.2). Because most specialties have higher indirect costs than direct costs (i.e., their ratio of indirect costs to direct costs is greater than 1.0), this adjustment increases the weight of direct costs in the allocator. Because of this change, direct costs now account for roughly one-third of the allocator (on average), compared with one-quarter of the allocator previously (Thompson 2007). This change benefits services whose direct cost RVU is higher than the physician work RVU, such as the technical component of diagnostic tests. Previously, CMS expressed concern that using physician work to allocate indirect costs may disproportionately benefit hospital-based services (CMS 1998).

- Because certain services, such as the technical component of imaging studies and radiation therapy, have no physician work RVUs, CMS decided to use the higher of a service's physician work RVU or nonphysician clinical labor RVU (e.g., the cost of a radiology technologist's time). For example, the technical component of MRI of the brain (without contrast followed by contrast) has no work RVU, but it has an estimated cost of \$42.30 for the MRI technologist's time. This cost is converted to an RVU and used twice in the indirect allocator, first as part of the direct cost RVU (nonphysician clinical labor is part of direct costs) and then in place of the physician work RVU. This change increases indirect payments for services with low or no work RVUs.

If a service is performed by multiple specialties, its indirect cost equals the average of each specialty-specific indirect cost for that service. In calculating the average, each specialty's indirect cost is weighted by its Medicare volume for that service.

Issues with CMS's allocation method

Some observers have raised important issues about the allocator, including that it:

- double counts nonphysician clinical labor for services with little or no physician work;
- includes medical supplies and equipment, even though the relationship between indirect costs and equipment and supplies may not be linear; and

Allocating indirect costs using only physician work or time

Some researchers and stakeholders favor allocating indirect costs based solely on the physician time or work involved in a service (Lewin Group 2000, Latimer and Becker 1992). Physician work includes both the time and intensity (mental effort, technical skill, stress, and risk) involved in performing a service. Proponents of this approach argue that physicians should receive the same indirect payment per unit of physician “involvement,” defined as the work or time they expend in providing the service (Latimer and Becker 1992). If the indirect payment amount is proportional to the physician’s involvement in the service, physicians should have no financial incentive to provide one service over another. An important concern about using only physician time or work as the allocator is that indirect costs would not be assigned to services that are performed primarily in physician offices by nonphysician staff, such as diagnostic tests (CMS 1997).

The Lewin Group simulated the effects of using only physician work or physician time in the allocator. They found that using only physician work would shift about 12 percent of indirect payments to facility-based (e.g., hospital) services and using only physician time would shift about 8 percent of indirect payments to facility-based services (Lewin Group 2000). These effects occur because facility services are more likely to have higher work and time values than office-based services.

Some specialties have favored using physician time over physician work because they argue that indirect costs should vary by the time, but not the intensity, related to a service (CMS 2006, 1998). One study claimed that allocating indirect expenses based on physician time, rather than physician work, is more likely to create neutral financial incentives across services (Latimer and

Becker 1992). According to this study, time is a better measure of physician involvement than work because physicians are more constrained by the time they have available for practice than by the number of work relative value units (RVUs) they can bill. (It is easier to substitute a high-work RVU service for a low-work RVU service than to practice more hours.) Allocating indirect costs on the basis of time instead of physician work would reduce practice expense (PE) payments for services that require more work per unit of time (e.g., surgery) and would increase payments for services that require less work per unit of time (e.g., office visits).

For many services, however, the physician time estimates have not been as rigorously validated as the physician work values, which raises concerns about using physician time to allocate indirect costs (Rich 2007, Lewin Group 2000). The physician time data come primarily from: (1) the American Medical Association/Specialty Society Relative Value Scale Update Committee (RUC), and (2) surveys conducted by William Hsiao and his colleagues during development of the original fee schedule—known as the Harvard time data (Becker et al. 1988). When CMS and the RUC reviewed physician work RVUs during the early 1990s, time estimates did not receive the same scrutiny as the work values because time is one of several components of work (other factors include technical skill, mental effort, and psychological stress) (Rich 2007). However, physician time became more important when CMS implemented resource-based PE RVUs in 1999 because physician time was used in the methodology. For example, CMS uses the time per service to determine the specialty cost pools that are used to calculate indirect PE RVUs. Thus, since 1999, CMS and the RUC have scrutinized physician time estimates more closely. ■

- is calculated using new data for some specialties, which creates distortions among RVUs.

The current allocator double counts nonphysician clinical labor for services with low or no physician work RVUs (e.g., the technical component of imaging studies). This

adjustment means that such services are allocated more indirect costs—and receive higher indirect PE RVUs—than they would otherwise, which may create a stronger financial incentive for providers to perform them. Some stakeholders have asked why these services should be treated differently (CMS 2006). Although they have low

**FIGURE
9-3**

CMS's new method for allocating indirect costs and two alternatives

CMS's new method

$$\text{Allocator} = \left(\text{Direct PE RVU of service} \times \frac{\% \text{ indirect cost for specialty}}{\% \text{ direct cost for specialty}} \right) + \text{Physician work RVU of service (or clinical labor RVU if clinical labor > work)}$$

Alternative 1

$$\text{Allocator} = \left(\text{Nonphysician clinical labor RVU} \times \frac{\% \text{ indirect cost for specialty}}{\% \text{ direct cost for specialty}} \right) + \text{Physician work RVU of service}$$

Alternative 2

$$\text{Allocator} = \left(\text{Direct PE RVU of service} \times \frac{\% \text{ indirect cost for specialty}}{\% \text{ direct cost for specialty}} \right) + \text{Physician work RVU of service}$$

Note: PE (practice expense), RVU (relative value unit). Direct PE RVU includes nonphysician clinical labor, medical equipment, and medical supplies. CMS's current method and alternative 1 use specialty-specific indirect cost pools; alternative 2 uses a single indirect cost pool across all specialties.

Source: CMS 2006 and MedPAC.

or no work RVUs, these services can still be allocated indirect costs based on their direct costs. Indeed, the average direct cost of services with no physician work is nearly twice as high as the direct cost of services with physician work.⁷ In addition, multiplying the service's direct cost by the ratio of total indirect to total direct costs for the specialties that perform the service benefits many services with no physician work. This adjustment increases the weight of direct costs and decreases the weight of physician work in the allocator for services performed by specialties with a ratio of indirect to direct costs greater than 1.0. The three specialties that account for the largest share of spending on nonphysician work services (radiology, cardiology, and internal medicine) have ratios greater than 1.0.⁸ On the other hand, CMS contends that services with low or no physician work RVUs would be undervalued unless the agency used a proxy for physician work, such as nonphysician clinical labor, when allocating indirect costs to these codes (CMS 2006).

The indirect allocator includes all three components of direct costs: nonphysician clinical labor, medical equipment, and medical supplies. Practices that use expensive medical equipment probably incur additional costs for office space, utilities, and—in the case of certain imaging machines—radiation shielding. The question is whether the relationship between equipment or supply costs and indirect costs is linear; do overhead costs increase in direct proportion to equipment and supply costs? For example, a \$1,000 supply should not require 10 times as much office rent or administrative staff as a \$100 supply. Similarly, a \$1 million imaging machine may not require overhead costs 10 times as high as a \$100,000 machine. CMS's current method allocates indirect costs in proportion to equipment and supply costs and thus may overvalue services that use expensive supplies and equipment. Medicare pays for the direct costs of equipment and supplies through the direct PE method; at issue here is the magnitude of indirect costs associated with equipment and supplies.

By contrast, it seems more likely that a service's overhead costs vary in proportion to the amount of time it takes to perform the service. In other industries, the amount of time required to produce an item is considered a reasonable allocator for overhead costs (Hawkins and Cohen 2004, Bruns 1993). Nonphysician clinical labor and physician work are better proxies of service time than equipment and supplies. Neither, however, is a pure measure of service time; nonphysician clinical labor is based on both time and wage rates and physician work is based on both time and intensity. In addition, using both nonphysician labor and physician work in the allocator may overestimate the time required for a service because nonphysician staff and physicians might be involved in performing a service at the same time (e.g., when a nurse assists a physician during an in-office procedure).

CMS creates indirect cost pools for each specialty using a specialty's average hourly costs for indirect expenses. For most specialties, the agency derives these hourly costs from an AMA survey of physicians, which reflects practice costs from 1995 through 1999. However, CMS uses more recent practice cost data for 13 specialties to estimate their hourly costs. The use of older cost data for many specialties, and newer cost data for others, creates distortions in the indirect cost pools. In addition, the use of separate cost pools for each specialty makes the methodology more complex and difficult to understand.

An alternative would be to use a single indirect cost pool across all specialties, which was the approach CMS proposed in 1997 (GAO 1998). A single cost pool could be based on the amount of indirect PE RVUs in the current payment system. On the other hand, some stakeholders contend that, for the indirect method to be resource based, it should use specialty cost pools based on survey data, including the more recent survey data for the 13 specialties (CMS 2006). If CMS eventually uses the survey data that the AMA and specialty societies are currently collecting on practice costs for all specialties, this would address concerns about the distortions caused by using more recent data for some, but not all, specialties.

Sensitivity of PE RVUs to changes in the indirect method

Based on the four principles outlined earlier (p. 233), we modeled two alternatives to show that choices made in designing the indirect method can significantly affect the distribution of payments (Figure 9-3, p. 237). Neither of these alternatives should be viewed as a proposal or even

the best way to allocate indirect costs; other allocators would also be consistent with the four principles.

Our contractor, NORC, estimated the impact of each alternative on PE RVUs by type of service and place of service (facility or nonfacility). Their model uses the new methodology for direct PE RVUs, 2005 utilization data, new practice cost data for eight specialties, and the new work RVUs that CMS adopted for 2007. In addition, each model applies an overall budget-neutrality adjustment to ensure that total indirect payments do not exceed the current level. The text box (pp. 240–241) and Table 9-2 describe the impact of each alternative by type of service.

Alternative 1

Alternative 1 is based on the nonphysician clinical labor RVU (adjusted by the ratio of indirect to direct costs for the specialties that perform the service) plus the physician work RVU for the service. This approach is based on a relatively simple assumption: Indirect costs are related to the amount of labor involved in a service, whether it is provided by a physician or nonphysician clinical staff. It does not allocate indirect costs to services based on their use of equipment and supplies and does not double count nonphysician clinical labor for services with low or no physician work RVUs (e.g., the technical component of imaging studies).

Although this alternative does not allocate indirect costs to individual services on the basis of medical supplies and equipment, it does take into account that some specialties have higher overall indirect costs related to their use of supplies and equipment. The relationship between equipment and indirect costs may not be linear, but practices that use expensive equipment probably incur some additional overhead costs. Like CMS's allocator, this alternative uses the specialty-specific indirect cost pools, which include overhead costs related to medical equipment and supplies. The use of specialty-specific cost pools means that services performed by specialties with large cost pools (e.g., radiology, radiation oncology, and cardiology) will receive higher indirect PE RVUs than if specialty cost pools were not used.

Removing equipment and supplies from the indirect allocator increases the weight of physician work in the allocator from about two-thirds to five-sixths of the total (nonphysician clinical labor accounts for the remaining one-sixth). As described in the text box (pp. 240–241), increasing the weight of physician work would shift PE RVUs from office-based to facility-based services.

**TABLE
9-2**
Alternative indirect cost allocation methods can change PE RVUs significantly

Type of service	Impact on PE RVUs (relative to current method)		Percent of total volume
	Alternative 1	Alternative 2	
Evaluation and management	10.4%	6.8%	40.0%
Office visit—established patient	6.6	3.7	17.1
Hospital visit—subsequent	18.4	9.4	7.8
Consultation	17.6	-6.6	5.7
Emergency room visit	5.9	80.4	2.7
Hospital visit—initial	18.1	16.1	1.9
Office visit—new patient	9.4	2.8	1.8
Nursing home visit	9.8	21.6	1.8
Imaging	-13.5	-7.2	16.3
Standard—nuclear medicine	-19.0	-21.7	2.4
Echography—heart	-16.6	-25.4	2.2
Advanced—CT: other	-6.9	1.2	2.2
Advanced—MRI: other	-20.3	0.8	1.9
Standard—musculoskeletal	-12.6	-4.3	1.2
Advanced—MRI: brain	-17.4	1.6	1.1
Echography—other	-17.1	-2.3	0.8
Standard—chest	20.8	2.8	0.7
Standard—breast	90.8	7.1	0.7
Imaging/procedure—other	1.7	-7.1	0.6
Major procedures	11.0	-6.6	8.9
Cardiovascular—other	12.0	-5.9	2.0
Orthopedic—other	8.9	-10.2	1.1
Knee replacement	12.4	-13.9	0.7
Coronary artery bypass graft	7.5	8.7	0.6
Coronary angioplasty	34.7	-39.1	0.5
Hip fracture repair	11.6	-14.1	0.4
Hip replacement	12.5	-14.0	0.4
Other procedures	-1.9	-2.7	22.3
Minor—other, including outpatient rehab and drug administration	-4.0	7.5	4.8
Ambulatory—skin	-1.1	-14.4	2.1
Cataract removal/lens insertion	11.1	-9.8	1.8
Colonoscopy	2.9	-22.7	1.1
Upper gastrointestinal endoscopy	3.4	-25.5	0.6
Cystoscopy	-3.5	-12.7	0.5
Tests	-8.5	-5.3	5.2
Other tests—other	-12.4	-2.3	2.1
Lab test—other (physician fee schedule)	-6.9	2.7	1.5
Electrocardiogram	0.4	-22.2	0.7
Cardiovascular stress test	-5.8	-32.6	0.6

Note: PE (practice expense), RVU (relative value unit), CT (computed tomography). This analysis does not include the effect of the Deficit Reduction Act cap on imaging services. Some low-volume categories and services are not shown in the table but are included in the summary calculations. Alternative 1 uses an indirect cost allocator that is based on nonphysician clinical labor (adjusted by the ratio of indirect to direct costs for the specialties that perform the service) plus physician work for the service. Alternative 2 uses an indirect cost allocator that is based on the direct practice costs (equipment, supplies, and nonphysician clinical labor), adjusted by the ratio of indirect to direct costs for the specialties that perform the service, plus physician work for the service. Alternative 1 uses specialty-specific indirect cost pools. Alternative 2, however, uses a single indirect cost pool for all specialties that is based on the amount of indirect PE RVUs in the current payment system. Both alternatives 1 and 2 use current practice cost data for the eight specialties that recently submitted such data, 2007 work RVUs, and 2005 Medicare utilization data. Volume is measured as units of service multiplied by each service's RVU from the physician fee schedule.

Source: NORC analysis of physician RVU files, direct practice cost data, Medicare claims, and specialty practice cost-per-hour file from CMS.

Impact of two alternative indirect cost allocation methods

Under indirect alternative 1, practice expense (PE) relative value units (RVUs) would shift from imaging services (13.5 percent lower than under CMS's current method), tests (–8.5 percent), and other procedures (–1.9 percent) to evaluation and management (E&M) services (+10.4 percent) and major procedures (+11 percent) (Table 9-2, p. 239). Because services that use expensive equipment and supplies are not allocated more indirect costs, PE RVUs would be lower for office-based services that use costly equipment and supplies (e.g., nuclear medicine, MRI, radiation therapy, and certain lab tests). Because work RVUs account for a larger portion of the allocator than under the current method, services with high work RVUs relative to their direct costs would be assigned more indirect expenses. Thus, PE RVUs would increase for hospital visit–subsequent (18.4 percent), cardiovascular procedures–other (12 percent), knee replacement (12.4 percent), and cataract removal and lens insertion (11.1 percent). PE RVUs for some office-based services, such as office visit–established patient and office visit–new patient, would increase because these codes have relatively small equipment and supply costs. Thus, these services would receive some of the indirect expenses no longer allocated to codes that use costly equipment and supplies. Many services would experience fairly large changes in PE RVUs; codes accounting for 40 percent of overall volume would change by more than 15 percent.

PE RVUs for services performed in facilities (e.g., hospitals) would increase by 22 percent, on average.

Conversely, PE RVUs for codes provided in physician offices and other nonfacility settings would decline by 7 percent, on average. This shift would occur because physician work RVUs account for a larger share of the allocator, and services with high work RVUs are more likely to be provided in facilities.

Alternative 2 would result in large changes in PE RVUs for several categories of services, but the changes are not as extreme as under alternative 1 (Table 9-2, p. 239). PE RVUs for E&M services would increase by 6.8 percent, while they would decline for other procedures (–2.7 percent), major procedures (–6.6 percent), imaging (–7.2 percent), and tests (–5.3 percent). Imaging and tests would decline for two primary reasons:

- Alternative 2 does not substitute nonphysician clinical labor for physician work if the nonphysician labor RVU is higher than the physician work RVU. This change would result in fewer indirect costs being allocated to imaging services and tests that have no work RVUs (e.g., the technical component of an MRI study).
- Cardiology, which performs about one-quarter of imaging studies and one-fifth of tests, has an indirect cost pool that is much larger than average. Because alternative 2 does not use specialty-specific cost pools, services performed by cardiology would be assigned fewer indirect costs.

(continued next page)

Alternative 2

Alternative 2 uses all the direct practice costs (equipment, supplies, and nonphysician clinical labor), adjusted by the ratio of indirect to direct costs for the specialties that perform the service, plus physician work for the service. However, it does not double count nonphysician clinical labor for services with low or no physician work RVUs. In addition, this alternative does not use specialty-specific indirect cost pools. Instead, it uses a single indirect cost pool across all specialties that is based on the amount

of indirect PE RVUs in the current payment system. In CMS's current method, services performed by specialties with larger-than-average indirect cost pools receive more indirect RVUs than other services. In alternative 2, services are neither advantaged nor disadvantaged by the relative size of specialty-specific cost pools.

Eliminating specialty-specific cost pools makes the allocator less complex and eliminates the distortions caused by using more recent data for some, but not all,

Impact of two alternative indirect cost allocation methods (cont.)

Within the major procedures category, PE RVUs would decline for services frequently performed by specialties with indirect cost pools that are larger than average. For example, coronary angioplasty (often performed by cardiology) would decline by 39 percent and hip replacement (often provided by orthopedic surgery) would drop by 14 percent. Conversely, PE RVUs would increase for major procedures generally performed by specialties with indirect cost pools that are smaller than average. For example, heart bypass surgery (performed by cardiac surgery) would increase by 9 percent.

There would be a large effect on PE RVUs for many individual codes: services that account for about one-third of overall volume would change by more than 15 percent. However, shifts of PE RVUs from nonfacility to facility services would be minimal: Facility services would increase by 3 percent, on average, and services provided in physician offices and other nonfacility settings would decline by 1 percent, on average.

Alternative 2 would result in higher PE RVUs for outpatient therapy services (physical therapy, occupational therapy, and speech–language pathology services), which would lead to higher overall Part B

spending. This would occur because physician fee schedule rates apply to outpatient therapy services provided in hospital outpatient departments and nursing homes outside of a Part A stay.⁹ Thus, when physician fee schedule rates for outpatient therapy increase, this increase affects these other settings. When CMS changes RVUs for services paid under the physician fee schedule, the agency applies a budget-neutrality adjustment to ensure that overall physician spending does not change significantly. However, this adjustment does not consider the impact of RVU changes on spending for other providers, such as outpatient departments and nursing homes. The outpatient prospective payment system (PPS) has its own budget-neutrality adjustment, but it does not include services whose rates are set by the physician fee schedule (e.g., mammography and outpatient therapy). Thus, when changes to the physician fee schedule lead to higher rates for therapy, the additional Part B spending for outpatient department and nursing home services is not offset by a budget-neutrality adjustment.¹⁰ CMS would probably require a change in statute to consider this additional spending when applying budget-neutrality adjustments to the outpatient PPS. ■

specialties to construct the cost pools. On the other hand, some stakeholders could argue that, by not using specialty cost pools based on survey data, this approach is not resource based. Eliminating the specialty cost pools would shift payments from services performed by specialties with relatively high practice costs to services performed by specialties with relatively low practice costs, which may be undesirable. Finally, if CMS eventually uses the survey data that the AMA and specialty societies are currently collecting on practice costs for all specialties, this would address concerns about the distortions caused by using more recent data for some, but not all, specialties.

Although the relative size of specialty-specific cost pools does not matter under alternative 2, each specialty's ratio of indirect to direct costs plays a role because the direct

cost for a service is adjusted by the ratio of indirect to direct costs for the specialties that perform the service. Consequently, services performed by specialties with a higher ratio of indirect to direct costs will be assigned higher indirect costs. CMS would still need to use physician survey data to estimate this ratio.

Adjusting for geographic differences in practice expenses

Under the physician fee schedule, Medicare adjusts payment rates to account for geographic differences in the price of inputs used in furnishing physician services. Three separate geographic practice cost indexes (GPCIs)

correspond to each of the three components of physician payment: physician work, PE, and professional liability insurance.¹¹ The current PE GPCI does not recognize that individual services have different shares of inputs for which prices vary geographically (e.g., nonphysician staff and office space) and for which prices are uniform (e.g., equipment and supplies). Thus, for services with below average shares of equipment and supplies, the index does not adjust a large enough portion of the PE RVU; for services with above average shares of equipment and supplies, it adjusts too large a portion of the RVU. This distorts prices, which may alter the mix of services provided within a high- or low-cost area.

We developed an alternative GPCI, which better recognizes that services have different shares of inputs for which prices vary geographically. This alternative—which excludes equipment and supplies—would be applied to the portion of the PE RVU related to indirect costs and nonphysician clinical labor but not to the portion related to equipment and supplies. It would produce more accurate prices for specific services among different markets, thus reducing financial incentives to provide one service over another. CMS is required to review and revise the PE GPCI every three years and to phase in any changes over two years.¹² The next review is under way and CMS expects to implement any changes in 2008 (CMS 2006). We believe that CMS could adopt the alternative GPCI described here within its current statutory authority.

CMS's current PE GPCI

The PE GPCI includes three components that correspond to three types of practice costs: nonphysician staff wages; office rent (which includes utilities); and medical equipment, supplies, and other expenses. Other expenses include legal, office management, and accounting services; professional association memberships; journals; continuing education; and other professional expenses (CMS 2005).¹³ CMS assumes that nonphysician staff wages and office rent vary geographically, while the cost of equipment, supplies, and other expenses is uniform nationally because these inputs are generally purchased in national, rather than local, markets. The portion of the index related to equipment, supplies, and other expenses is set to 1.0 for each market. This assumption is based on a study the Urban Institute conducted for CMS, which found no evidence that prices for medical equipment and supplies vary geographically (Zuckerman et al. 1990).¹⁴ When CMS last updated the GPCI for the 2005

fee schedule, it also was unable to find evidence that demonstrated geographic price differences for these inputs (CMS 2004). CMS concluded that some price differences exist among providers but are more likely based on volume discounts than on geographic variations.

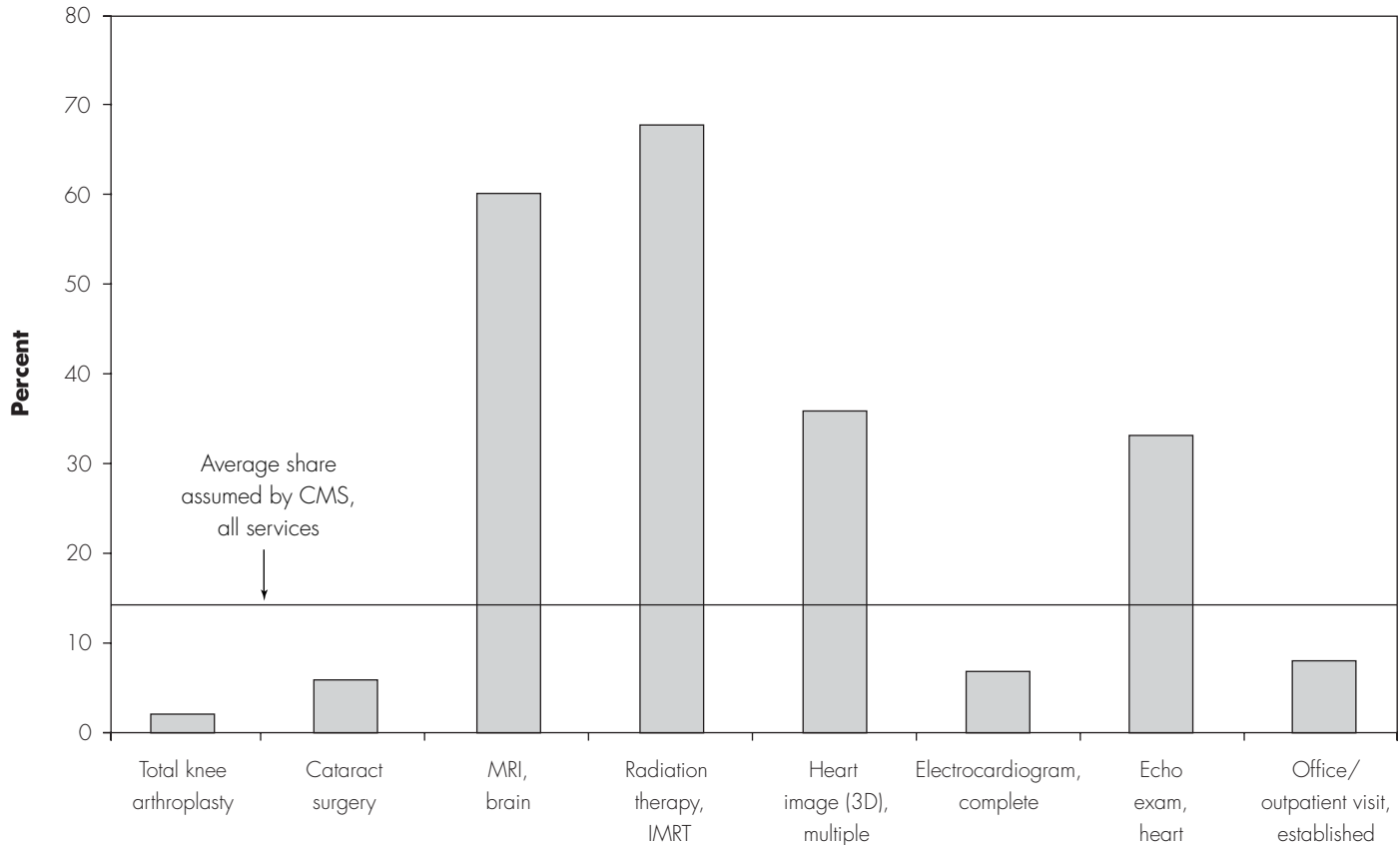
Each component of the GPCI is assigned a weight based on the share of each input in the Medicare Economic Index (MEI), which is based on the AMA's 2001 Patient Care Physician Survey (CMS 2005). Staff wages account for 43 percent of the GPCI; equipment, supplies, and other expenses account for 29 percent; and office rent accounts for 28 percent.¹⁵ The national average of the GPCI is 1.0. Geographic areas with input prices above the national average have GPCI values above 1.0. Areas with below-average input prices have index values under 1.0.

The current GPCI uses the average share of equipment, supplies, and other expenses across all services, even though the share of practice expense related to equipment and supplies varies among services. Based on the MEI, CMS assumes that, on average, 14.6 percent of practice costs are related to medical equipment and supplies. As Figure 9-4 demonstrates, the portion of PE attributable to equipment and supplies varies greatly by service (other expenses are not shown because we lack data on these costs by service). Services performed in facilities (e.g., hospitals) tend to have very low equipment and supply costs because Medicare makes a separate payment to hospitals to cover these costs.¹⁶ For example, for cataract surgery and total knee arthroplasty (both facility-based services), equipment and supply shares are well below average (Figure 9-4). Some office-based (nonfacility) services, such as office/outpatient visit (established) and electrocardiogram (complete) also have relatively low equipment and supply shares. Assuming that medical equipment and supplies are indeed purchased in a national market, the GPCI should adjust for a larger share of inputs for these services than it currently does. Consequently, PE payments for these services are too low (relative to input prices) in high-cost areas, and too high (relative to input prices) in low-cost areas.

On the other hand, some high-technology services performed in physician offices have much higher than average shares of PE related to equipment and supplies. For example, equipment and supplies account for 60 percent of the PE rate for the technical component of MRI of the brain, without contrast followed by contrast, and for 67 percent of intensity-modulated radiation therapy

**FIGURE
9-4**

Share of practice expenses related to equipment and supplies varies by service, 2007



Note: IMRT (intensity-modulated radiation therapy). The facility (e.g., hospital) values are shown for total knee arthroplasty and cataract surgery. The nonfacility (e.g., physician office) values are shown for the other services. The global values are shown for MRI, brain; heart image (3D), multiple; and echo exam, heart. CMS's geographic practice cost index assumes that 14.6 percent of practice expenses are related to equipment and supplies.

Source: NORC analysis of physician relative value unit file and direct practice cost data from CMS.

(Figure 9-4). Assuming that medical equipment and supplies are indeed purchased in a national market, the GPCI should adjust for a smaller share of inputs for these services than it currently does. Consequently, PE payments for these services are too high (relative to input prices) in high-cost areas, and too low (relative to input prices) in low-cost areas. These pricing distortions may alter the mix of services provided within a high- or low-cost area. For example, there may be financial incentives to provide more imaging services and fewer office visits in high-cost regions.

An alternative PE GPCI

We developed an alternative PE GPCI that takes into account that individual services have different shares of inputs for which prices vary geographically (e.g., nonphysician staff and office space). This alternative excludes equipment and supplies; it is composed of nonphysician staff wages (50 percent of the index), office rent (33 percent), and other expenses (17 percent). The weights for each component are based on the relative size of each component in the MEI. Staff wages and office rent vary geographically and, according to CMS, input prices for other expenses do not; thus, this portion of the index is uniform across all areas. Even though other

expenses do not vary geographically, we included them in the alternative GPCI because there are no data on the share of other expenses by service.¹⁷ We can exclude equipment and supplies from the alternative GPCI because we have data on their shares by service from the direct cost database used to calculate direct PE RVUs. Compared with the current GPCI, a larger share of the alternative GPCI has inputs that vary geographically (83 percent vs. 71 percent). Thus, the alternative index has more extreme values than the current index. The highest payment area, San Francisco, has a value of 1.55 under the current GPCI and 1.65 under the alternative. The lowest payment area, Puerto Rico, has a value of 0.70 under the current GPCI and 0.65 under the alternative.

Although the alternative GPCI has more extreme values, it is balanced by not applying it to the entire PE RVU. We apply the alternative GPCI to the portion of the RVU related to indirect costs and nonphysician clinical labor but not to the portion related to equipment and supplies. The reason is because the alternative GPCI includes inputs related to indirect costs and nonphysician clinical labor but not equipment and supplies. To determine the full PE RVU, the portion of the RVU adjusted by the GPCI is added to the unadjusted portion (representing equipment and supplies).

Our contractor, NORC, modeled the impacts of the alternative GPCI on PE payments compared with payments under the current GPCI. The alternative would reduce PE payments for services with below-average shares of equipment and supplies (e.g., office/outpatient visit) in areas where input costs are low and increase them in areas where input costs are high. It has the reverse effect on services with above-average shares of equipment and supplies (e.g., MRI of the brain).

Although moving to the alternative GPCI would cause PE payments for individual services to shift geographically, NORC found that the net impact on PE payments by type of service (imaging, E&M, major procedures, other procedures, and tests) across all payment areas would be minimal; aggregate payments for each category would change by less than 1 percent. Increases to payment rates for a given type of service in some geographic areas would be almost fully offset by decreases in other areas. In addition, the alternative GPCI would cause very small shifts in total PE payments among geographic areas; almost all areas would experience total payment changes of less than 1 percent. Within a payment area, payment increases for some types of services would generally be balanced by decreases for others.

Conclusion

This chapter assesses how CMS determines PE payment rates because PE payments are substantial, accounting for close to half of the \$58 billion Medicare spent under the physician fee schedule in 2005. This chapter aims to help policymakers understand this complex payment methodology and focus attention on major changes that CMS has recently made to improve its accuracy. Although the Commission does not recommend changes to the PE methodology in this chapter, we have previously suggested ways for CMS to improve the accuracy of the survey data, direct cost estimates, and equipment prices used in the methodology (summarized on p. 228) (MedPAC 2006).

CMS's changes represent the biggest revision to the methods and data used to calculate PE RVUs since the agency implemented resource-based PE payments in 1999. Our analysis showed that CMS's recent changes to the PE methods and data will redistribute PE RVUs across services when they are fully phased in. PE RVUs will fall for major procedures and imaging and increase for E&M services, other procedures, and tests.

CMS uses a complex process to calculate indirect PE RVUs. This method involves creating separate indirect cost pools for each specialty and allocating the cost pools to individual services based primarily on the direct practice cost (nonphysician clinical staff, medical equipment, and supplies) and physician work value for each service. If a service has little or no physician work (e.g., the technical component of imaging studies), CMS counts the nonphysician clinical labor cost twice. Some observers have expressed concern that CMS double counts nonphysician clinical labor for services with little or no physician work, includes medical supplies and equipment in the allocator, and uses more recent cost data for some specialties, which creates distortions among RVUs.

We discussed some alternatives to CMS's indirect allocation method and illustrated two specific approaches based on four principles. Neither alternative should be viewed as a proposal or even the best way to allocate indirect costs; other allocators would also be consistent with these principles. Our modeling of two alternatives demonstrates that choices made in designing the indirect method can significantly affect the distribution of payments.

Finally, we examined how CMS adjusts PE payment rates to account for geographic differences in the price of inputs used in operating a physician practice. CMS assumes that nonphysician staff wages and office rent vary

geographically while the cost of equipment, supplies, and other expenses is uniform nationally because these inputs are generally purchased in national, rather than local, markets.

The PE GPCI assumes an average share of equipment and supplies across all services, even though the share of PE related to equipment and supplies varies among services. Thus, for services with below-average shares of equipment and supplies, the index does not adjust a large enough portion of the PE RVU; for services with above-

average shares of equipment and supplies, it adjusts too large a portion of the RVU. This distorts prices, which may alter the mix of services provided within a high- or low-cost area. PE payments might be more accurate if CMS excluded the equipment and supplies component from the GPCI and applied the GPCI only to the portion of the PE RVU related to nonphysician clinical labor and indirect costs. This alternative would better recognize that services have different shares of inputs for which prices vary geographically. ■

Endnotes

- 1 CMS uses a database that contains estimates of the prices, types, and quantities of the clinical labor, medical equipment, and supplies required to provide each service paid under the physician fee schedule.
- 2 The new formula for the allocator appears in Figure 9-3, p. 237.
- 3 The AMA did not collect practice cost data from certain nonphysician specialties, such as audiology, clinical social worker, and nurse practitioner.
- 4 If all specialties have the same variance between their mean hourly cost and their cost at the 25th percentile, then the RVUs would not be affected. This is because each specialty's indirect cost pool would be reduced by the same percentage. However, if some specialties have a larger variance in practice costs than others, using the 25th percentile instead of the mean would affect RVUs because indirect cost pools would be reduced by different proportions. This change could be implemented in a budget-neutral manner.
- 5 CMS reduced the work RVUs, rather than the conversion factor, to maintain budget neutrality because reducing the conversion factor would have affected payments for services with no physician work, which were outside the scope of the five-year review (CMS 2006). After the second five-year review in 2002, CMS applied the budget-neutrality adjustment to the conversion factor. After the first five-year review in 1997, the agency applied the budget-neutrality adjustment to the work RVUs.
- 6 The data on the amount of time it takes to perform a service come from the AMA/Specialty Society Relative Value Scale Update Committee and from surveys conducted during development of the original fee schedule (Becker et al. 1988). Utilization data for each service are from Medicare claims.
- 7 The average direct cost for services with no physician work is \$48 (not adjusted for budget neutrality), compared with \$25 for services with physician work RVUs. The average direct cost is weighted by the volume of services for each code.
- 8 Based on 2000 data, these specialties had the largest share of nonphysician work pool dollars (CMS 2002).
- 9 Outpatient therapy services provided during a Part A-covered skilled nursing facility (SNF) stay are included in Medicare's per diem payment to the SNF. Outpatient therapy services provided in a nursing home outside of a Part A-covered stay are paid separately according to physician fee schedule rates.
- 10 The sustainable growth rate formula includes outpatient therapy services provided in a nursing home that are paid under Part B. This spending, however, is not offset by changes to the RVUs for therapy services.
- 11 There are 89 geographic payment areas, each with its own value for each index.
- 12 Social Security Act, section 1848 (e) (1) (C).
- 13 CMS uses wage data from the decennial census to account for geographic wage differences and residential rent data from the Department of Housing and Urban Development to account for variations in office rent.
- 14 According to the study, anecdotal evidence suggested only minimal price variation for equipment and supplies (Zuckerman et al. 1990).
- 15 Equipment and supplies combined and other expenses account for equal shares of the index (just under 15 percent each).
- 16 For facility-based services such as surgery, the physician fee schedule pays for equipment and supply costs related to postoperative follow-up visits in the office.
- 17 Other expenses are a component of indirect costs. Indirect costs are allocated as a group, rather than by component, to individual codes, so we cannot estimate the share of indirect costs related to other expenses at the level of individual services.

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