

June 2008

# MEDICARE PART B IMAGING SERVICES

Rapid Spending  
Growth and Shift to  
Physician Offices  
Indicate Need for CMS  
to Consider Additional  
Management Practices





Highlights of [GAO-08-452](#), a report to congressional requesters

### Why GAO Did This Study

The Centers for Medicare & Medicaid Services (CMS)—an agency within the Department of Health and Human Services (HHS)—and the Congress, through the Deficit Reduction Act of 2005 (DRA), recently acted to constrain spending on imaging services, one of the fastest growing set of services under Medicare Part B, which covers physician and other outpatient services. GAO was asked to provide information to help the Congress evaluate imaging services in Medicare. In this report, GAO provides information on (1) trends in Medicare spending on imaging services from 2000 through 2006, (2) the relationship between spending growth and the provision of imaging services in physicians' offices, and (3) imaging management practices used by private payers that may have lessons for Medicare. To do this work, GAO analyzed Medicare claims data from 2000 through 2006, interviewed private health care plans, and reviewed health services literature.

### What GAO Recommends

To address the rapid growth in Medicare Part B spending on imaging services, GAO recommends that CMS examine the feasibility of expanding its payment safeguard mechanisms by adding more front-end approaches, such as prior authorization. HHS stated that it would need to examine the applicability of prior authorization for Medicare.

To view the full product, including the scope and methodology, click on [GAO-08-452](#). For more information, contact A. Bruce Steinwald at (202) 512-7114 or [steinwalda@gao.gov](mailto:steinwalda@gao.gov).

## MEDICARE PART B IMAGING SERVICES

### Rapid Spending Growth and Shift to Physician Offices Indicate Need for CMS to Consider Additional Management Practices

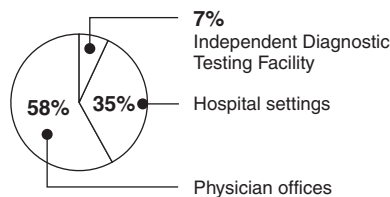
#### What GAO Found

From 2000 through 2006, Medicare spending for imaging services paid for under the physician fee schedule more than doubled—increasing to about \$14 billion. Spending on advanced imaging, such as CT scans, MRIs, and nuclear medicine, rose substantially faster than other imaging services such as ultrasound, X-ray, and other standard imaging.

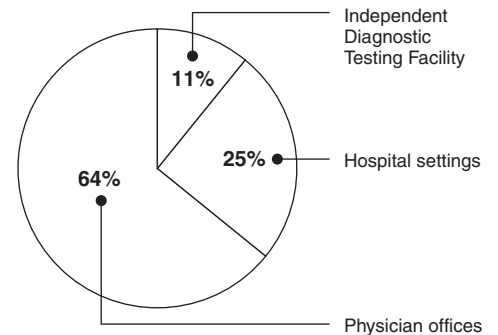
GAO's analysis of the 6-year period showed certain trends linking spending growth to the provision of imaging services in physician offices. The proportion of Medicare spending on imaging services performed in-office rose from 58 percent to 64 percent. Physicians also obtained an increasing share of their Medicare revenue from imaging services. In addition, in-office imaging spending per beneficiary varied substantially across geographic regions of the country, suggesting that not all utilization was necessary or appropriate. By 2006, in-office imaging spending per beneficiary varied almost eight-fold across the states—from \$62 in Vermont to \$472 in Florida.

**Medicare Part B Spending on Imaging by Setting, 2000 and 2006**

**2000 Medicare Part B imaging spending**



**2006 Medicare Part B imaging spending**



**Total: \$6.89 billion**

**Total: \$14.11 billion**

Source: GAO analysis of Medicare Part B claims data.

Private health care plans that GAO interviewed used certain practices to manage spending growth that may have lessons for CMS. They relied chiefly on prior authorization, which requires physicians to obtain some form of plan approval to assure coverage before ordering a service. Several plans attributed substantial drops in annual spending increases on imaging services to the use of prior authorization. In contrast, CMS employs an array of retrospective payment safeguard activities that occur in the post-delivery phase of monitoring services and are focused on identifying medical claims that do not meet certain billing criteria. The private plans' experience suggests that front-end management of these services could add to CMS's prudent purchaser efforts.

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# Contents

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<b>Letter</b>		<b>1</b>
	Results in Brief	5
	Background	7
	In Recent 6-Year Period, Medicare Part B Expenditures for Imaging Services More Than Doubled, as Use of Advanced Imaging Services Grew	11
	Several Spending Trends Associated with In-Office Imaging Raise Concerns about Incentives for Physicians to Overuse Services	16
	To Manage Imaging Expenditures, Private Health Care Plans in Our Study Use Certain Practices to Constrain Spending Growth	26
	Conclusions	33
	Recommendation for Executive Action	33
	Agency and Professional Association Comments and Our Evaluation	34
<b>Appendix I</b>	<b>Scope and Methodology</b>	<b>38</b>
<b>Appendix II</b>	<b>Medicare Spending on Imaging Services Paid for under the Physician Fee Schedule by Modality, 2000 through 2006</b>	<b>42</b>
<b>Appendix III</b>	<b>Medicare Imaging Use by Modality, 2000 and 2006</b>	<b>43</b>
<b>Appendix IV</b>	<b>Characteristics of GAO Sample of Private Plans That Actively Manage Imaging Services (February 2008)</b>	<b>44</b>
<b>Appendix V</b>	<b>Comments from the Department of Health and Human Services</b>	<b>46</b>
<b>Appendix VI</b>	<b>GAO Contact and Staff Acknowledgments</b>	<b>49</b>

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## Tables

Table 1: Imaging Modalities	8
Table 2: Medicare Physician Fees for Most Commonly Billed Imaging Services in 2006, by Imaging Modality	14

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## Figures

Figure 1: Total Medicare Expenditures for Imaging Services Paid under the Physician Fee Schedule, 2000 through 2006	13
Figure 2: Factors Associated with Growth in Total Medicare Spending on Imaging Services Paid for under the Physician Fee Schedule, 2000 through 2006	15
Figure 3: Medicare Part B Spending on Imaging by Setting, 2000 and 2006	18
Figure 4: Share of Total Medicare Part B Revenues Derived from In-Office Imaging Services by Physician Specialty, 2000 and 2006	20
Figure 5: Per Beneficiary Spending on In-Office Imaging Services, 2006	22
Figure 6: Steps That Typically Occur in the Prior Authorization Process	27

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## Abbreviations

ACR	American College of Radiology
AHIP	America's Health Insurance Plans
AMIC	Access to Medical Imaging Coalition
BESS	Medicare Part B Extract Summary System
BETOS	Berenson-Eggers Type of Service
CMS	Centers for Medicare & Medicaid Services
CPT	current procedural terminology
CT	computed tomography
DRA	Deficit Reduction Act of 2005
FDA	Food and Drug Administration
FEHBP	Federal Employees Health Benefits Program
HCPCS	Healthcare Common Procedure Coding System
HHS	Department of Health and Human Services
IAC	Intersocietal Accreditation Commission
IDTF	independent diagnostic testing facility
MedPAC	Medicare Payment Advisory Commission
MRI	magnetic resonance imaging
NRC	Nuclear Regulatory Commission
OPPS	Medicare hospital outpatient prospective payment system
PET	positron emission tomography
RBM	radiology benefits manager
RVU	relative value unit

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United States Government Accountability Office  
Washington, DC 20548

June 13, 2008

The Honorable Gordon H. Smith  
Ranking Member  
Special Committee on Aging  
United States Senate

The Honorable John D. Rockefeller IV  
Chairman  
Subcommittee on Health  
Committee on Finance  
United States Senate

Federal budget experts—including the Comptroller General, the Congressional Budget Office Director, and the Medicare Trustees—agree that the Medicare program is unsustainable in its present form.<sup>1</sup> Because of rising health care costs and the baby boom generation’s aging into eligibility for Medicare, future program spending is projected to encumber an untenable share of the government’s resources. In their 2008 annual report, the Medicare Trustees project that expenditures for Part B, which covers physician and other outpatient services,<sup>2</sup> will increase over the next decade at average annual rates that far outpace the national economy’s growth rate for that period (about 8 percent for Part B, compared with 4.8 percent for the national economy).

Policymakers face a particular dilemma with respect to spending for imaging services, one of the fastest-growing set of services paid for under the Medicare Part B physician fee schedule. On the one hand, cutting-edge imaging technology, such as computed tomography (CT) and magnetic resonance imaging (MRI) scans, help diagnose and treat life-threatening

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<sup>1</sup>See GAO, *21st Century: Addressing Long-Term Fiscal Challenges Must Include a Re-examination of Mandatory Spending*, [GAO-06-456T](#) (Washington, D.C.: Feb. 15, 2006); Congressional Budget Office, *The Long-term Outlook for Health Care Spending*, Pub. No. 3085 (Washington, D.C.: November 2007); and The Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds, *2008 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds* (Washington D.C.: Mar. 25, 2008).

<sup>2</sup>Medicare Part B pays for physician, outpatient hospital, home health care, and certain other services.

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diseases like cancer and heart disease; these technologies enable physicians to perform a wide range of less-invasive medical tests and procedures and can foster earlier diagnosis, quicker recovery, shorter hospital stays, and reduced disability than more invasive surgical or other procedures. On the other hand, in recent years, spending for CT scans, MRIs, and other imaging services paid for under the Medicare physician fee schedule has experienced double-digit growth.

In 2005, the Medicare Payment Advisory Commission (MedPAC) reported to the Congress on growth in the volume (number) of imaging services provided and the intensity (complexity) of these services—for example, the greater use of MRIs instead of X-rays in diagnostic testing.<sup>3</sup> The report attributed this growth to technology advances that improve physicians' ability to diagnose disease, but it also pointed to two trends suggesting that not all of this growth may be desirable. First, the site of care has shifted substantially from hospital inpatient and outpatient settings, where national Medicare standards relating to patient safety and quality govern the provision of imaging services, to physician offices, where there is less quality oversight. Second, the number of imaging services provided across the country varies threefold—a difference that raises concerns about the potential overuse of these services in some areas.<sup>4</sup>

MedPAC's 2005 report included recommendations to the Centers for Medicare & Medicaid Services (CMS)—the agency within the Department of Health and Human Services (HHS) that administers Medicare—to address concerns about quality and efficiency with respect to imaging services. Certain of the recommendations incorporated approaches similar to those other health care payers have adopted to constrain rapid growth in spending on imaging services. CMS adopted some of MedPAC's recommendations, and beginning in January 2006, among other things,

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<sup>3</sup>Medicare Payment Advisory Commission, *Report to the Congress: Medicare Payment Policy* (Washington, D.C.: March 2005). MedPAC was established by the Balanced Budget Act of 1997 (Pub. L. No. 105-33) to advise the Congress on issues affecting the Medicare program.

<sup>4</sup>Medicare Payment Advisory Commission, *Report to the Congress: Variation and Innovation in Medicare* (Washington D.C.: June 2003). MedPAC measured variation in the number of imaging services across metropolitan statistical areas and rural areas using Medicare data from 1999 through 2002.

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reduced physician fees under certain conditions for multiple images taken during the same session.<sup>5</sup>

The Congress, through the Deficit Reduction Act of 2005 (DRA), also took action to restrain the growth in spending for Medicare imaging. The DRA required, among other things, that Medicare payment for certain imaging services under the Medicare physician fee schedule, including those services performed in physician offices, not exceed what Medicare pays for these services performed in hospital outpatient departments.<sup>6</sup> This provision was effective for services furnished after January 1, 2007. The DRA changes sparked intense reactions by interest groups with a stake in Medicare's payment for imaging services, which included representatives of imaging manufacturers, diagnostic imaging facilities, physician specialties, and patient advocacy groups.

In light of these concerns and MedPAC's findings on imaging services, you asked us to provide additional data to help the Congress evaluate the provision of these services in the Medicare program and examine management practices other payers use to ensure appropriate spending for these services. In this report, we provide information on (1) trends in Medicare Part B spending on imaging services from 2000 through 2006, (2) the relationship between spending growth and the provision of imaging services in physician offices, and (3) imaging management practices used by private payers that may have lessons for Medicare.

To determine trends in Medicare spending for imaging services paid for under the physician fee schedule, we analyzed Medicare Part B claims data from 2000 through 2006. We examined trends in aggregate spending and by the six major categories of imaging services.<sup>7</sup> Our spending totals include the two parts of the imaging service paid under the Medicare physician fee schedule—the examination itself and the physician's interpretation of the examination. CMS refers to the performance of the image examination as the "technical component" and the physician's interpretation of the image as the "professional component." Our spending totals do not include the

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<sup>5</sup>70 *Fed. Reg.* 70116, 70262 (Nov. 21, 2005).

<sup>6</sup>Pub. L. No. 109-171, § 5102(b), 120 Stat. 4, 39-40 (2006).

<sup>7</sup>The six major categories of imaging services—also referred to as modalities—include: CT, MRI, nuclear medicine, ultrasound, X-ray and other standard imaging, and procedures that use imaging. For the purposes of this report, we classify the first three modalities listed as advanced imaging services.



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technical component when the image examination is performed in an inpatient hospital or other institutional setting, as an examination performed in these settings is paid for under Medicare Part A. In addition, our spending totals do not include the technical component when an examination is performed in a hospital outpatient department setting, as an examination performed in this setting is paid for under Medicare's hospital outpatient prospective payment system (OPPS).

To examine the relationship between spending growth and the provision of imaging services in physician offices, we analyzed Medicare claims data from 2000 and 2006. We examined the extent to which Medicare Part B spending on imaging services shifted to physician offices from hospital settings and how physicians' shares of their Medicare revenue from imaging services have changed during this period. We supplemented our quantitative analyses with interviews with physician specialty groups and private health care payers and reviewed the health services literature. To determine the share of Medicare beneficiaries who received any imaging services or a specific imaging service and, for those beneficiaries, the average number of services provided, we used Medicare Part B Physician/Supplier claims data for 2000 and 2006 and Denominator File data for those same years.

To examine the management practices used by private payers to manage spending on imaging services, we selected a combination of 17 national and regional private health plans known to be active in managing imaging benefits. We also interviewed radiology benefits managers (RBM)—organizations hired by private payers to manage radiology services for their enrollees. We also conducted interviews with CMS officials and several companies that contract with Medicare to process, review, and pay Medicare Part B claims.

We examined the reliability of the claims data used in this report by performing appropriate electronic data checks and checks for obvious errors such as missing values and values outside of expected ranges. We also interviewed officials who were knowledgeable about the data, including CMS and Medicare contractor officials. We determined that the claims data we used were sufficiently reliable for purposes of our analysis, as they are used by the Medicare program as a record of payments to health care providers. As such, they are subject to routine CMS scrutiny. Appendix I provides more detailed information on our methodology.

We conducted our work from January 2007 through May 2008 in accordance with generally accepted government auditing standards.

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## Results in Brief

From 2000 through 2006, Medicare Part B spending for imaging services paid for under the physician fee schedule more than doubled—increasing to about \$14 billion. Spending on CT scans, MRIs, and nuclear medicine, which are generally more complex and therefore more costly, rose faster—17 percent a year, on average—than ultrasound, X-ray and other standard imaging, and procedures that use imaging—which grew at an average 9 percent annually. Overall, about 4 of every 5 dollars of the spending growth for imaging services was associated with the growth in volume and complexity of imaging services rather than other factors, such as changes in physician fees or beneficiary population increases.

Our analysis of the 6-year period showed certain trends linking spending growth to the provision of imaging services in physician offices. First, the proportion of Medicare spending on imaging services performed in-office—where physicians receive payment for both the technical and professional components of the service—rose from 58 percent to 64 percent. Second, physicians obtained an increasing share of their Medicare revenue from imaging services. For example, in 2006 cardiologists obtained 36 percent of their total Medicare revenue from in-office imaging, compared with 23 percent in 2000. Third, during the 6-year period, in-office imaging spending per beneficiary varied substantially across geographic regions of the country, suggesting that not all utilization was necessary or appropriate. In 2006, in-office imaging spending per beneficiary varied almost eight-fold across the states—from \$62 in Vermont to \$472 in Florida. Together these trends raise concerns about whether Medicare’s physician payment policies embody financial incentives for physicians to overuse imaging services. While some of this growth may represent appropriate increases in clinical applications of imaging to diagnose and treat diseases and medical conditions of Medicare beneficiaries, the increased provision of imaging services in physician offices also has potential implications for quality. Several studies we reviewed have shown quality concerns such as inadequate staff credentials, poor image quality, failure to monitor radiation exposure, and inadequately maintained equipment.

Similar to Medicare, private health plans in recent years have experienced rapid growth in imaging services, particularly in advanced imaging. To manage expenditures for these services, private health care plans in our study used certain management practices that have helped constrain their spending growth on imaging services. The private plans adopted a prospective, or preapproval, orientation toward managing physicians’ use of imaging services that was in addition to retrospective payment safeguards used to identify medical claims that do not meet certain billing

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criteria. For their prospective approach, they relied chiefly on prior authorization, which requires physicians to obtain some form of plan approval to assure coverage before ordering imaging services—generally, advanced imaging services. Plans approve requests based on consistency with recommended clinical guidelines, including those developed by physician specialty societies. Several plans attributed substantial drops in annual spending increases on imaging services to the use of prior authorization. To a lesser extent, the plans used privileging, by which a plan limits its approval for ordering certain imaging services to physicians in certain specialties, and profiling, which entails a statistical analysis of medical claims data measuring an individual physician’s use of services relative to a desired benchmark. In contrast, CMS’s management practices are not oriented toward controlling spending prospectively through preapproval practices. Instead, CMS employs, through its claims administration contractors, an array of retrospective payment safeguards, which are activities that occur in the post-delivery phase of monitoring services. Although the agency has the tools to do profiling, it currently has no policies in place specifically to profile physicians’ use of imaging services. CMS’s profiling and other review activities are focused on identifying medical claims that do not meet certain billing criteria. The private plans’ experience suggests that front-end management of these services, in addition to retrospective safeguards, could add to CMS’s prudent purchaser efforts.

To address the rapid growth in Medicare Part B spending on imaging services, we recommend that CMS examine the feasibility of expanding its payment safeguard mechanisms by adding more front-end approaches to managing imaging services, such as using privileging and prior authorization. In its written comments on a draft of this report, HHS stated that Medicare contractors, through post-payment claims review, have identified imaging services as an area that poses a high risk to the Medicare Trust Fund, and are continuing to conduct ongoing medical review and provider education in this area. The department raised concerns about the administrative burden of implementing prior authorization, as well as its applicability for Medicare. HHS stated that the use of proprietary systems to deny payment for imaging services may not be feasible under Medicare’s claims appeals process, which usually requires an explanation of the basis for the denial. It noted that these circumstances may limit the effectiveness of radiology benefits managers and prior authorization as a policy tool. We do not dispute HHS’s reservations about prior authorization, and agree that these concerns will require careful examination within the context of Medicare statutes and regulations. Because we believe that post-payment claims review alone is

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inadequate to manage one of the fastest growing parts of Medicare, addressing these concerns should be incorporated into CMS's feasibility analysis of adding front-end approaches to its prudent purchasing efforts.

In oral comments, two organizations representing a broad array of industry and other stakeholders, offered contrasting views on prior authorization. Specifically, officials from America's Health Insurance Plans (AHIP)—a trade group representing about 90 percent of health insurers—suggested prior authorization was primarily a tool to improve quality and ensure appropriate use rather than strictly a cost-cutting measure. Representatives of the Access to Medical Imaging Coalition (AMIC)—a diverse group of stakeholders including imaging providers, manufacturers and patient advocacy groups—suggested prior authorization had been tried and proven unfeasible for Medicare.

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## Background

Medical imaging services, grouped into six major modalities, use different types of imaging equipment and media for creating an image. Physicians bill for providing these services under the Medicare physician fee schedule, which, for payment purposes, divides an imaging service into two components: the technical component, which pays for the performance of the imaging examination, and the professional component, which pays for the physician's interpretation of the image. Recently, CMS implemented two payment changes in 2006 and 2007 that reduce physician payments for certain imaging services.

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## Imaging Services Fall into Six Modalities

Medical imaging is a noninvasive process used to obtain pictures of the internal anatomy or function of the anatomy using one of many different types of imaging equipment and media for creating the image. Imaging tests fall into six modalities: CT, MRI, nuclear medicine, ultrasound, X-ray and other standard imaging, and procedures that use imaging. Depending on the service, imaging equipment uses radiation, sound waves, or magnets to create images. X-rays and other standard imaging services, CT, and certain nuclear medicine services, such as positron emission tomography (PET), use radiation; ultrasound uses sound waves; MRI uses magnets and radio waves. For certain X-rays, CTs, and MRIs, contrast agents, such as barium or iodine solutions, are administered to patients orally or intravenously. By using contrast, sometimes referred to as "dye," as part of the imaging examination, physicians can view soft tissue and organ function more clearly. Table 1 provides further details on each imaging modality.

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**Table 1: Imaging Modalities**

<b>Imaging modality</b>	<b>Description</b>
CT	An imaging modality which uses ionizing radiation and computers to produce cross-sectional images of internal organs and body structures.
MRI	An imaging modality which uses magnets, radio waves, and computers to create images of internal body tissues.
Nuclear medicine	The use of radioactive materials in conjunction with an imaging modality to produce images that show both structure and function within the body.
Ultrasound	An imaging modality which uses high-frequency sound waves to create images of internal body organs and blood flow.
X-ray and other standard imaging	Imaging modalities which use ionizing radiation to produce images of bones and tissue. For example, the most common standard imaging modalities are X-rays and mammography.
Procedures that use imaging	Medical procedures that incorporate the use of an imaging modality which provides the physician with information at the time the procedure is performed. For example, using ultrasound to localize a needle when performing a biopsy.

Source: GAO analysis of medical literature.

Imaging equipment using radiation poses more potential risk to patients than other imaging mediums. The amount of radiation patients are exposed to varies based on whether the image is obtained by X-ray or CT. CTs emit the largest amount of radiation, but estimates of the radiation dose—or the amount of radiation absorbed—from a diagnostic CT procedure can vary by a factor of 10 or more, depending on the type of CT procedure, patient size, and the CT system and its operating technique. For example, the typical dose in a CT of the abdomen is about five times that of the head, and about eight times that of an X-ray of the spine.

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## Physicians Bill for Imaging Services under the Medicare Physician Fee Schedule

Medicare generally covers medically necessary services provided by physicians operating within the scope of practice allowed by their state licensure, without regard to their specialty or specific qualifications. All diagnostic tests are required to be provided under at least general physician supervision—that is, a physician is responsible for the training of the technical staff performing the test, and the maintenance of the necessary equipment and supplies.

Medicare’s physician fee schedule in 2006 included more than 7,000 services—together with their corresponding payment rates. About 900 of these services are associated with imaging. Each imaging service on the

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fee schedule has three relative value units (RVU), which correspond to the three components of physician payment: (1) physician work—the financial value of physicians’ time, skill, and effort that are associated with providing the service, (2) practice expense—the costs incurred by physicians in employing office staff, renting office space, and buying supplies and equipment, and (3) malpractice expense—the premiums paid by physicians for professional liability insurance.

Each RVU measures the relative costliness of providing a particular service. For example, in 2006, the three RVUs for performing and interpreting a standard chest X-ray summed to .74.<sup>8</sup> In contrast, the RVUs for CT of the head/brain without dye summed to 6.15,<sup>9</sup> indicating that this service, on average nationally,<sup>10</sup> consumed more than eight times more resources than the standard chest X-ray. To determine Medicare payment for a particular service, the sum of the RVUs is multiplied by a conversion factor, which is a dollar amount that translates each service’s RVUs into a payment rate. For example, in 2006, Medicare paid \$233, on average nationally, for physicians performing and interpreting a CT of the head/brain without dye (6.15 multiplied by a conversion factor of \$37.8975). Some items paid under the physician fee schedule that are used in the provision of imaging services—such as radiopharmaceuticals—do not have RVUs associated with them. Instead, these items are priced locally by Medicare’s Part B contractors and billed separately from the imaging services paid for under the Medicare physician fee schedule.

Physicians under the Medicare physician fee schedule can be paid for performing the imaging examination—the technical component—and interpreting the image examination—the professional component. The payment for the technical component is intended to cover the cost of the equipment, supplies, and nonphysician staff and is generally significantly

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<sup>8</sup>A more complete description of this current procedural terminology (CPT) code—number 71010—is radiologic examination, chest, single view, frontal. CPT codes and descriptions are copyrighted by the American Medical Association.

<sup>9</sup>The CPT code for this service is 70450 and it is described as computed tomography, head or brain, without contrast material.

<sup>10</sup>In practice, payment rates are adjusted for variations in physicians’ costs of providing care in different geographic areas or payment localities. These adjustments raise or lower Medicare fees, depending on whether the payment locality’s average cost of operating a physician practice is above or below the national average. The locality adjustments are made to each of the three RVUs before they are totaled and multiplied by the conversion factor, which converts the RVUs into a dollar payment amount.

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higher than the payment for the professional component, which is intended to cover the physician's time in interpreting the image and writing a report on the findings. Medicare allows physicians to bill for these services separately because performing and interpreting the examination could be done by different physicians and in different settings. If the same physician performs and interprets the examination, the physician can submit a global bill to Medicare. The same rules apply under the physician fee schedule if the imaging services are completed by radiologists in independent diagnostic testing facilities (IDTF)—facilities that are independent of a hospital and physician office or “free-standing” and only provide outpatient diagnostic services.

When the imaging examination is performed in an institutional setting, such as a hospital or skilled nursing facility, the physician can bill Medicare only for the professional component, while payment for the technical component is covered under a different Medicare payment system, according to the setting in which the service is provided. For example, the technical component of an imaging examination in a hospital inpatient setting is bundled into a facility payment paid under Medicare Part A, whereas the technical component of an examination in a hospital outpatient department is paid under Medicare's hospital outpatient payment system, which is financed through Part B.<sup>11</sup>

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### CMS Recently Implemented Two Payment Changes Related to Imaging Services

In recent years, CMS has implemented two payment changes to the way Medicare pays for imaging services under the physician fee schedule. Starting January 1, 2006, CMS reduced physician payments when multiple images are taken on contiguous body parts during the same visit. CMS adopted a recommendation made by MedPAC in 2005 as a way to ensure that fee schedule payments took into account efficiencies, such as savings from technical preparation and supplies, which occur when multiple imaging services are furnished sequentially.<sup>12</sup> Physicians receive the full fee for the highest paid imaging service in a visit, but fees for additional imaging services are reduced by 25 percent. The reduction is applied only to the technical component.

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<sup>11</sup>In 2006, about two-thirds of all imaging services were performed in a hospital setting.

<sup>12</sup>MedPAC, March 2005.

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Beginning January 1, 2007, CMS implemented two provisions in the DRA: it (1) established a cap on the physician fee schedule payments for certain imaging services at the payment levels established in Medicare's OPPS and (2) in certain cases, eliminated the Medicare budget neutrality requirement, which is designed to ensure that the result of specific payment changes neither increase nor decrease the total amount of Medicare payments to physicians beyond a specified amount. The first provision, in practice, requires that payment for the technical component of an image in the physician office does not exceed what Medicare pays for the technical component of the same service performed in a hospital outpatient department. For example, in 2006, Medicare paid \$903 under the physician fee schedule for an MRI of the brain, yet paid \$506 for the same test under OPPS. Under the DRA payment change, in 2007, Medicare paid the lesser amount for this examination, regardless of whether it was performed in a hospital outpatient department or in a physician's office. The second provision, excluding the two imaging payment reductions from the calculation of budget neutrality, results in Medicare savings as a practical matter. Savings attributed to the 25 percent multiple payment reduction and the capping of certain payments at the OPPS levels are not offset by increases for other services under the physician fee schedule.<sup>13</sup>

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## In Recent 6-Year Period, Medicare Part B Expenditures for Imaging Services More Than Doubled, as Use of Advanced Imaging Services Grew

From 2000 through 2006, Medicare spending on imaging services paid for under the Part B physician fee schedule more than doubled. About 80 percent of the spending growth was associated with growth in the volume and complexity of imaging services. Compared with 2000, in 2006 more beneficiaries obtained imaging services, and average use per beneficiary also increased.

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<sup>13</sup>CMS estimated that the elimination of budget neutrality for the multiple payment reduction would result in a 0.3 percent decrease in payment for all physician fee schedule services in 2007, while the additional effect of capping of payments at the OPPS level would result in a total 0.9 percent decrease. 71 *Fed. Reg.* 69,766 (2006).



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## Medicare Spending on Imaging Increased across the Six Imaging Modalities but Grew Faster for Advanced Imaging Services

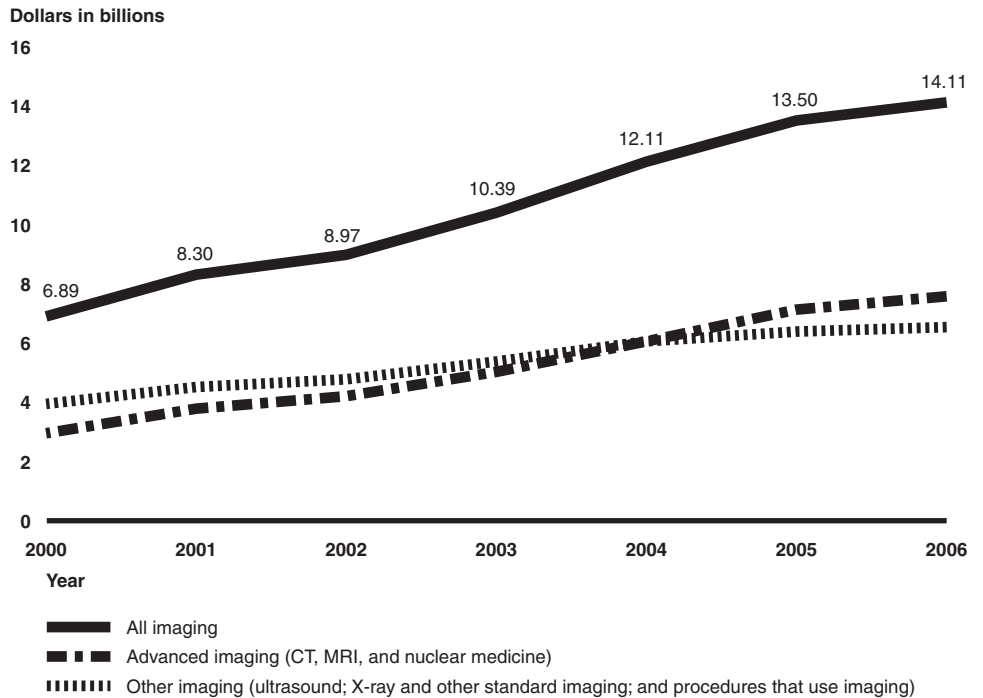
Medicare spending on imaging services paid for under the Part B physician fee schedule more than doubled from 2000 through 2006, increasing to about \$14 billion. (See fig. 1.) This increase represents a growth rate of 13 percent a year on average, compared to 8.2 percent for all Medicare physician-billed services during that period.<sup>14</sup> Although spending increased each year since 2000, the rate of growth slowed in 2006. In that year, CMS implemented a payment change for imaging that reduced physician fees by 25 percent for additional imaging services involving contiguous body parts imaged during the same session.<sup>15</sup> (See app. II for total expenditures for imaging services paid for under the physician fee schedule and expenditures by imaging modality for each year from 2000 through 2006.)

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<sup>14</sup>Average annual spending growth on physician-billed imaging services was also greater than spending growth for all services paid under Medicare Part B during this period, which was 8.9 percent and included spending on Part B institutional services such as outpatient hospital and home health services.

<sup>15</sup>We have work underway examining the effect of the 2006 payment change as well as the imaging payment changes established in the Deficit Reduction Act of 2005 and implemented in 2007.

**Figure 1: Total Medicare Expenditures for Imaging Services Paid under the Physician Fee Schedule, 2000 through 2006**



Source: GAO analysis of Medicare Part B claims data.

Note: Expenditures include fees for physicians’ interpretation of imaging services in hospital settings, and fees for interpretation and provision of services in physician offices and independent diagnostic testing facilities. When the imaging examination is performed in an institutional setting, such as a hospital or skilled nursing facility, the physician can bill Medicare only for interpreting the examination, while payment for performing the examination is covered under a different Medicare payment system.

Advanced imaging services—CT, MRI, and nuclear medicine—saw the highest growth rates. Spending on these advanced imaging modalities increased almost twice as fast, at an average annual rate of 17 percent, as spending on services in the three other imaging modalities—ultrasounds, standard imaging (mostly X-rays), and procedures that use imaging.

The faster-growing advanced imaging services are more complex and therefore more costly. Medicare pays physicians more for both the technical component and the professional component for these services, on average, than it pays for other imaging services. (See table 2.) The payment is higher, in part, because advanced imaging equipment is more costly to obtain and requires more skilled technicians to operate. For example, in 2006, Medicare paid \$1,118 for the most commonly physician-billed MRI imaging test—an “MRI brain without and with dye”—of which

\$995 was for performing the examination. In contrast, Medicare paid \$28 for the most commonly performed standard imaging service, a chest X-ray.

**Table 2: Medicare Physician Fees for Most Commonly Billed Imaging Services in 2006, by Imaging Modality**

Imaging modality	Most commonly billed imaging test	Fee for performing the test	Fee for interpreting the test	Total fee
MRI	MRI brain without and with dye	\$995	\$123	<b>\$1,118</b>
Nuclear medicine	Heart image (3D), multiple	\$471	\$77	<b>\$548</b>
CT	CT of the head/brain without contrast	\$189	\$44	<b>\$233</b>
Ultrasound	Doppler echo examination, heart	\$69	\$20	<b>\$90</b>
X-ray and other standard imaging	Chest X-ray	\$19	\$9	<b>\$28</b>
Procedures that use imaging	Injection for coronary X-ray	<sup>a</sup>	<sup>a</sup>	<b>\$22</b>

Source: GAO analysis of Medicare Part B claims data.

<sup>a</sup>The physician fee schedule does not include separate fees for performing and interpreting this imaging procedure.

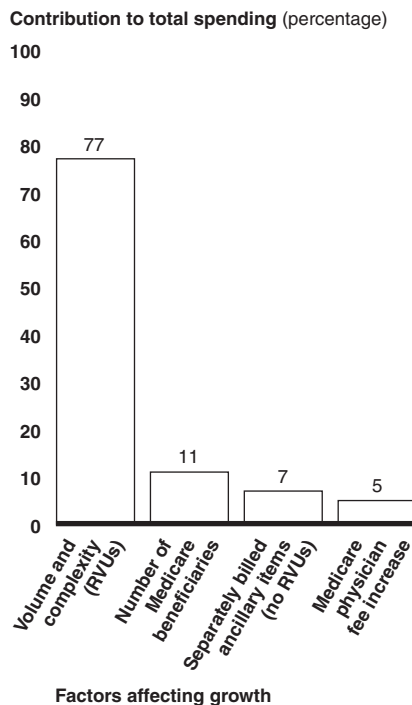
As a result of faster growth in the more expensive services, advanced imaging accounted for 54 percent of total imaging expenditures, up from 43 percent in 2000. In dollar terms, spending on advanced imaging increased from about \$3 billion to about \$7.6 billion, with spending on MRI services accounting for nearly half of this increase. In contrast, spending on ultrasounds, standard imaging (mostly X-rays), and procedures that use imaging grew more slowly, from about \$4 billion to about \$6.5 billion.

### Most Spending Growth on Imaging Services Associated with Volume and Complexity Increases

Overall, 77 percent of Medicare’s spending from 2000 through 2006 on imaging services paid for under the physician fee schedule was associated with the growth in volume and complexity of imaging services (as measured by growth in RVUs) rather than other factors. Compared with 2000, in 2006 more beneficiaries obtained imaging services and average use per beneficiary also increased. The proportion of Medicare beneficiaries receiving at least one imaging service increased from 63 percent to 66 percent during this period. Moreover, beneficiaries’ average annual use of imaging services from 2000 through 2006 increased about 25 percent, from 5.6 to 7 imaging services, for those who received at least one imaging service. More complex advanced imaging modalities generally showed the fastest growth. For the same period, the proportion of beneficiaries using CT scans increased 39 percent, and use of CT scans on a per beneficiary basis increased 22 percent. (See app. III for beneficiaries’ use of imaging services for 2000 compared with 2006.)

Several factors account for the rest of the growth in Medicare spending for imaging services. Growth in ancillary items, such as radiopharmaceuticals, which are required to provide certain imaging tests, represents 7 percent of the spending growth. Physicians bill separately for these items. Growth in the number of beneficiaries and changes in Medicare’s physician fees from 2000 through 2006 account for another 16 percent of the spending growth (see fig. 2).

**Figure 2: Factors Associated with Growth in Total Medicare Spending on Imaging Services Paid for under the Physician Fee Schedule, 2000 through 2006**



Source: GAO analysis of Medicare Part B claims data.

Contrasting explanations have been offered for why imaging use and use of advanced imaging services, in particular, have grown rapidly during this period. In interviews with physician specialty organizations that use imaging services, representatives cited the following as contributors to imaging growth: technological innovation (such as equipment becoming smaller and more portable), patient demand influenced by direct-to-

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consumer advertising, defensive medicine to protect physicians from malpractice suits, and an increase in clinical applications.<sup>16</sup> Representatives from physician specialty organizations also stated that older invasive diagnostic procedures are being replaced in some cases with new less invasive imaging procedures that are less costly, reduce patients' discomfort, and reduce patients' recovery time.<sup>17</sup> While representatives from private health plans and the companies they contract with specifically to manage imaging services concurred that some of these factors were key contributors to growth, they cited two other factors for the growth in spending. First, they noted that the ability of physicians to refer patients to their own practices for imaging was a major spending driver. Second, they noted that primary care physicians often lacked knowledge about the most appropriate test to order for a patient, and therefore tended to order a significant portion of imaging tests that would be considered unnecessary based on clinical guidelines.

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## Several Spending Trends Associated with In-Office Imaging Raise Concerns about Incentives for Physicians to Overuse Services

From our analysis of data from the 6-year period, we observed several trends regarding spending growth and the provision of imaging services in physician offices. First, a larger share of Medicare Part B spending for imaging services has shifted from the hospital settings—where the institution receives payment for the technical component of the service—to physician offices, where physicians receive payment for both the technical and professional components of the service. Second, consistent with this shift, physicians who provided in-office imaging services obtained an increasing share of their Medicare Part B revenue from imaging services. Third, in-office imaging spending per beneficiary varied substantially across geographic regions of the country, suggesting that not

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<sup>16</sup>In February 2007, we reported on the potential multiplier effect resulting from the diffusion of new technology and increases in diagnostic capability, which in turn may increase the identification and treatment of diseases and conditions. In some cases, this capability can lead to overdiagnosis and the excessive use of health care resources. See GAO, *Health Care Spending: Public Payers Face Burden of Entitlement Program Growth, While All Payers Face Rising Prices and Increasing Use of Services*, [GAO-07-497T](#) (Washington D.C.: Feb. 15, 2007). See also Richard A. Deyo, "Cascade Effects of Medical Technology," *Annual Review of Public Health*, vol. 23 (May 2002).

<sup>17</sup>For example, a study of inpatient costs at a Chicago-area breast center found that in treating cancer, mastectomies and lumpectomies that use image-guided core biopsies were less expensive than those using surgical biopsies. See Robert M. Golub et al., "Cost Minimization Study on Image-guided Core Biopsy Versus Surgical Excisional Biopsy for Women with Abnormal Mammograms," *Journal of Clinical Oncology*, vol. 22, no. 12 (June 15, 2004).

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all the spending was necessary or appropriate. These trends raise concerns about whether Medicare's physician payment policies contain financial incentives for physicians to overuse imaging services. In addition, the increased provision of imaging services in physician offices may have implications for quality.

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### Imaging in Physician Offices Accounted for Increasing Share of Part B Imaging Spending

A large share of Medicare Part B spending for imaging services has shifted to physician offices from institutional settings, such as hospital outpatient departments. As a result, physician office settings accounted for about two-thirds of spending for imaging services paid for under the physician fee schedule in 2006 (about \$9 billion), compared with 58 percent in 2000 (about \$4 billion). In contrast, the share of Medicare Part B spending for the professional component for imaging in hospital settings—inpatient and outpatient departments and emergency rooms—declined from 35 percent to 25 percent during this period (see fig. 3). Increased spending in the physician office setting resulted from a combination of increased services provided in this setting and payment for the technical component of imaging examinations that were previously performed and paid for in the hospital setting.<sup>18, 19</sup>

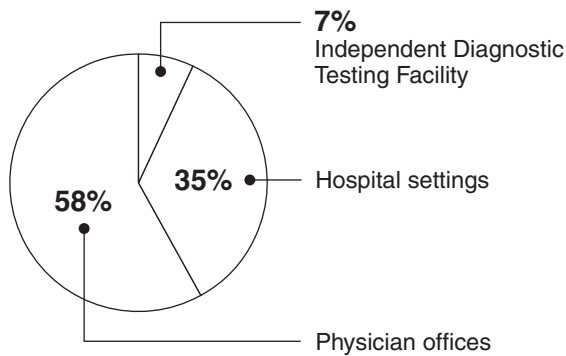
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<sup>18</sup>We estimate that about one-tenth of the growth in Part B spending on imaging from 2000 through 2006 resulted from this shift in settings.

<sup>19</sup>From 2000 through 2006, spending on imaging increased in both treatment settings. However, spending in physicians' offices grew twice as fast—at an average annual rate of 14 percent—compared with spending in the hospital setting which grew at an average annual rate of 7 percent.

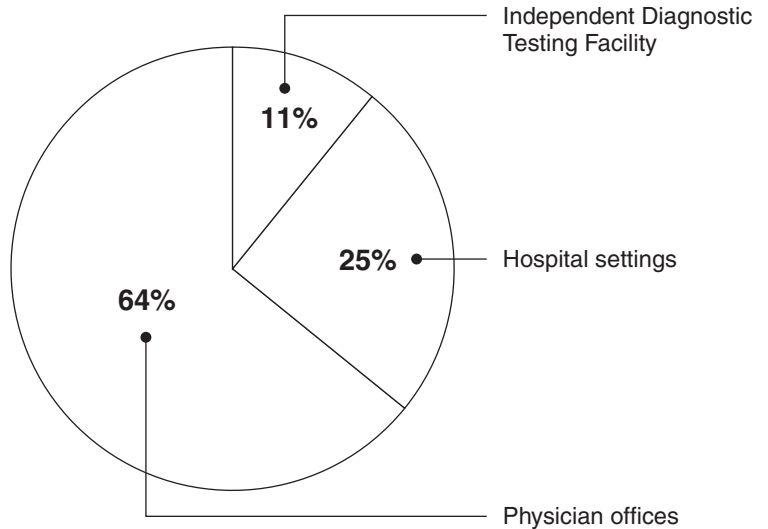
**Figure 3: Medicare Part B Spending on Imaging by Setting, 2000 and 2006**

2000 Medicare Part B imaging spending



**Total: \$6.89 billion**

2006 Medicare Part B imaging spending



**Total: \$14.11 billion**

Source: GAO analysis of Medicare Part B claims data.

Notes: Hospital settings include inpatient and outpatient departments and emergency rooms. The independent diagnostic testing facility category also includes imaging services provided in other outpatient facilities such as mammography screening centers and independent physiological laboratories that are paid under the physician fee schedule. Expenditures include fees for physician interpretation of imaging services in hospital settings, and fees for interpretation and provision of services in physician offices and independent diagnostic testing facilities. When the imaging examination is performed in an institutional setting, such as a hospital or skilled nursing facility, the physician can bill Medicare only for interpreting the examination, while payment for performing the examination is covered under a different Medicare payment system.

During the period from 2000 through 2006, radiologists accounted for a declining share of in-office imaging spending—36 percent in 2000 compared to 32 percent in 2006. Physicians in specialties other than radiology accounted for an increasing share of in-office imaging—64 percent in 2000 compared to 68 percent in 2006. Cardiologists’ spending on imaging services represented the largest share of in-office imaging spending of physician specialties other than radiology, growing from about \$1.2 billion to about \$3.0 billion—29 percent in 2000 compared to 35 percent in 2006. An array of physician specialties—including primary care, orthopedics, and vascular surgery—accounted for the remainder of in-office spending.

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The growth in spending by physicians in specialties other than radiology is partly due to an increasing proportion of these physicians billing for in-office services. While still small, this proportion has grown rapidly—more than doubling from 2000 to 2006 (from 2.9 to 6.3 per 100 physicians), and is much higher for certain specialties, such as cardiology. For example, the proportion of cardiologists who billed for advanced in-office services nearly doubled between 2000 and 2006, rising from about 24 per 100 physicians to about 43 per 100 physicians. Although physicians generally are prohibited from referring Medicare beneficiaries for imaging services to an entity with which the physician has a financial relationship, there is an “in-office ancillary exception.” Under this exception physicians may be paid by Medicare, for example, if the services are provided by the referring physicians in the same building where the physicians provide other services unrelated to the furnishing of imaging services.<sup>20</sup>

MedPAC and others have reported on the recent emergence of leased or other shared arrangements whereby “in-office” imaging services are actually delivered at another site.<sup>21, 22</sup> For example, physicians may rent an imaging center’s services (employees and machinery) for a specific day of the week and refer their patients to that center on that day. The referring physician bills Medicare for providing the test, in turn paying the provider or center that actually performed the test a lower fee. In other instances, physicians may purchase imaging equipment which is then leased to an imaging center. In this case, the physician refers patients to the imaging center which bills for the service and then pays the physician a fee. MedPAC has expressed concerns that such arrangements create financial incentives that could influence physicians’ clinical judgment, leading to unnecessary services.

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<sup>20</sup>42 U.S.C. § 1395nn (a), (b)(2).

<sup>21</sup>Statement of Glenn M. Hackbarth, J.D., Chairman of MedPAC, at a hearing entitled: “Use of Imaging Services: Providing Appropriate Care for Medicare Beneficiaries,” on July 18, 2006, for the Subcommittee on Health, Committee on Energy and Commerce, House of Representative, 109th Cong.

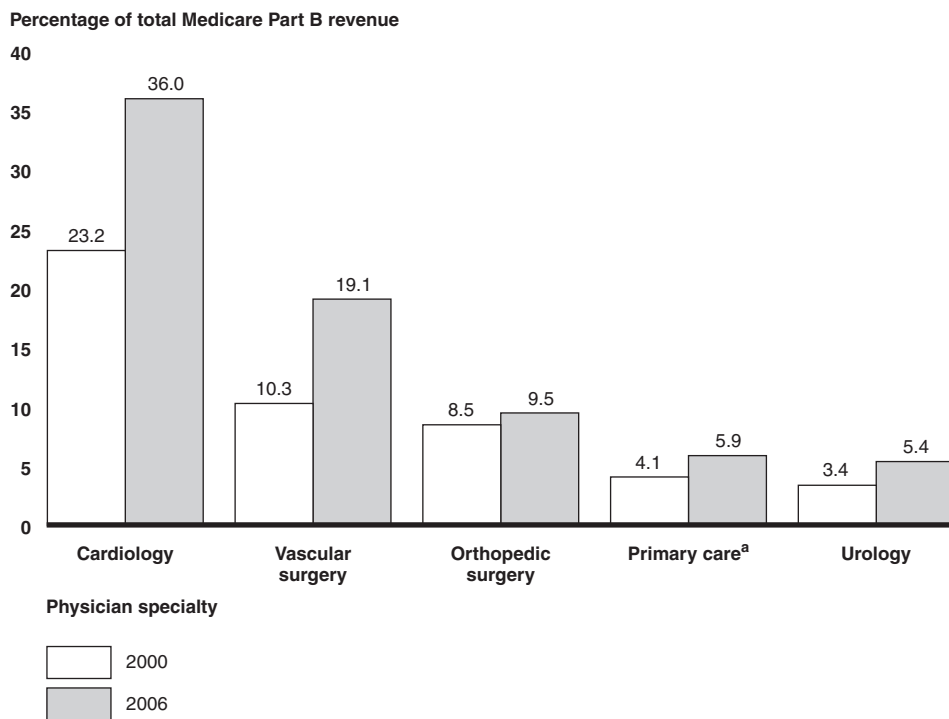
<sup>22</sup>A recent study of imaging providers in California estimated that about 60 percent of providers billing for in-office imaging did not actually own the imaging equipment, but were involved in leasing or other arrangements designed to take advantage of the in-office ancillary exemption. Jean M. Mitchell, “The Prevalence of Physician Self-Referral Arrangements After Stark II: Evidence from Advanced Diagnostic Imaging,” *Health Affairs*, Web exclusive (Apr. 17, 2007).



## Physicians Generated an Increasing Share of Revenue from In-Office Imaging Services

Consistent with these trends, physicians in specialties other than radiology who billed Medicare for in-office imaging services obtained an increasing share of their Medicare revenue from imaging services from 2000 to 2006. For example, cardiologists' share of Medicare revenue attributable to in-office imaging services increased from about one-quarter in 2000 to over one-third in 2006 (see fig. 4). During this period, vascular surgeons also saw a large increase—from 10 percent to about 19 percent—in the share of their Medicare revenue generated from in-office imaging services. The same trend was evident for orthopedic surgeons, primary care physicians, and urologists.

**Figure 4: Share of Total Medicare Part B Revenues Derived from In-Office Imaging Services by Physician Specialty, 2000 and 2006**



Source: GAO analysis of Medicare Part B claims data.

<sup>a</sup>Includes general and family practitioners and internists.

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## Substantial Variation of In-Office Imaging Use across Geographic Regions Raises Concerns about Appropriate Use

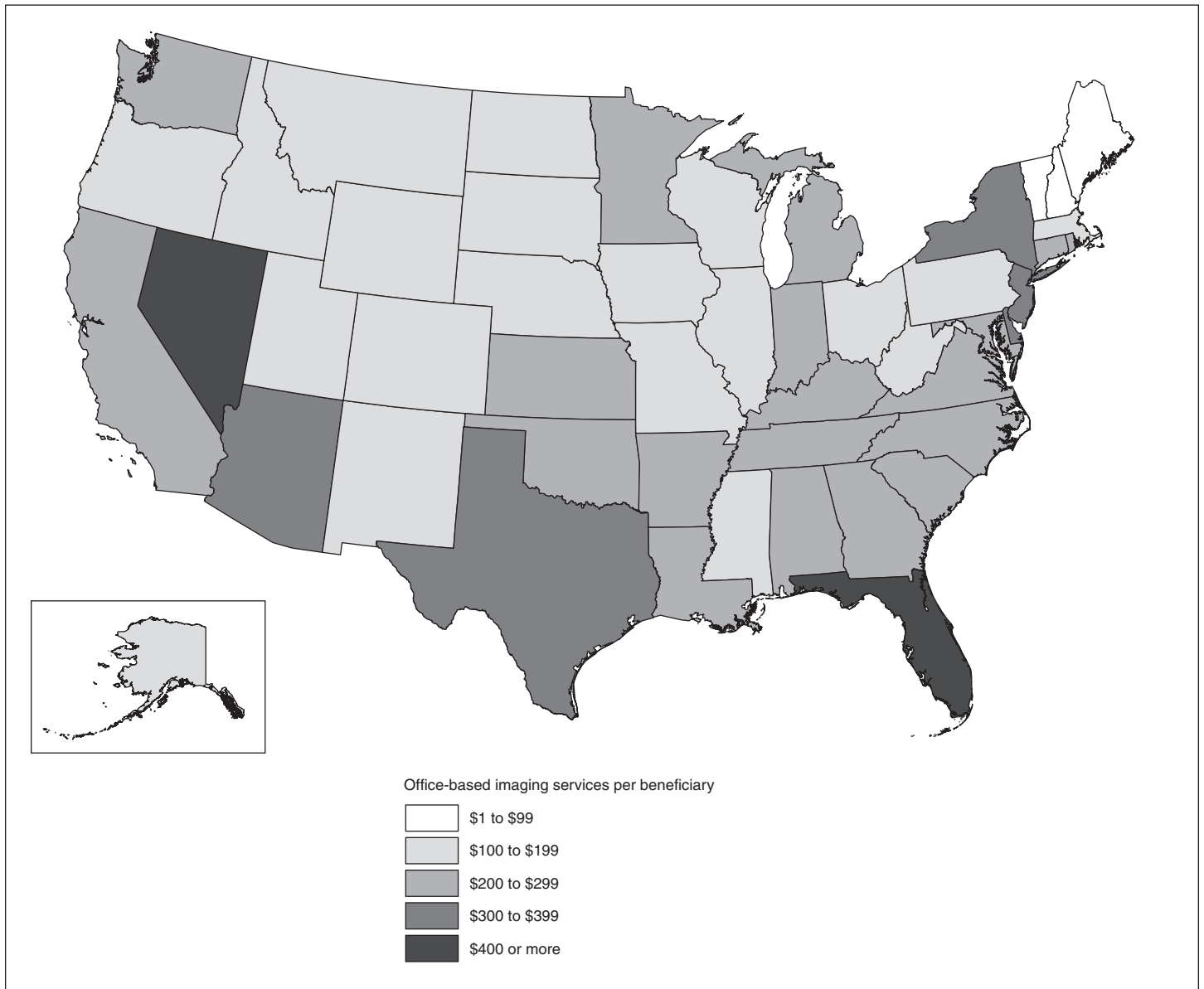
Substantial variation in imaging use across geographic regions of the country suggests that not all utilization of in-office imaging services may be appropriate. We found that per beneficiary spending on imaging services provided in physician offices varied almost eight-fold across the states in 2006—from \$62 in Vermont to \$472 in Florida (see fig. 5). Physician spending on in-office imaging was the highest in the South, Northeast, and in certain states in the West.<sup>23</sup> Given the magnitude of the differences in imaging use across geographic areas, variation is more likely due to differences in physician practice patterns rather than patient health status. Further concerns about the appropriateness of imaging use are raised by research on geographic variation showing that, in general, more health care services do not necessarily lead to improved outcomes.<sup>24</sup>

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<sup>23</sup>Mirroring trends in spending on in-office imaging, total spending per beneficiary across all settings—including hospitals, physician offices, and IDTFs—also varied widely across states. The variation across these settings ranged about five-fold across the states in 2006—from \$150 in Vermont to \$684 in Florida.

<sup>24</sup>Elliot S. Fisher et al., “The Implications of Regional Variation in Medicare Spending: Part I: The Content, Quality, and Accessibility of Care,” and “The Implications of Regional Variation in Medicare Spending: Part II: Health Outcomes and Satisfaction with Care,” *Annals of Internal Medicine*, vol. 138, no. 4 (February 2003).

**Figure 5: Per Beneficiary Spending on In-Office Imaging Services, 2006**



Sources: GAO analysis of Medicare Part B claims data, Map Resources (map).

Notes: Per beneficiary spending across states is adjusted to account for differences in Medicare fees across geographic areas. Data for Maryland, Virginia, and Washington D.C., were not available separately; therefore, we used the average of the three for each state. We excluded data from Hawaii because spending per beneficiary appeared to be too low based on a comparison with other states of similar size and Medicare beneficiary population.

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The shift in imaging services to physician offices has the potential to encourage overuse, given physicians' financial incentives to supplement relatively lower professional fees for interpretation of imaging tests with relatively higher fees for performance of the tests. Physician ownership of imaging equipment can generate additional revenue for a practice, even after taking into account the high costs of purchasing advanced imaging equipment. MedPAC has expressed concern about whether Medicare's payment methodology overpays physicians for imaging equipment, because of outdated estimates of equipment use.<sup>25</sup> An analysis published in 2005 of private insurance claims data on X-ray services concluded that orthopedists, podiatrists, and rheumatologists were two to three times more likely to order imaging services if the ordering physician also performed the examination, compared with those who referred patients to a radiologist. In addition, the authors found that podiatrists and rheumatologists were also more likely to order more intensive tests.<sup>26</sup> Another study showed that physicians who refer patients for imaging in their own office are at least 1.7 to 7.7 times more likely to order imaging than those physicians in the same specialty who do not self-refer.<sup>27</sup>

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### Increasing Provision of Imaging Services in Physician Offices Raises Additional Concerns about Quality

In addition to concerns about incentives for inappropriate use of imaging services, the shifting of services from hospital and other institutional settings to physician offices may have implications for quality. Hospitals must comply with Medicare's "conditions of participation" rules, which include general standards for imaging equipment and facilities, staff qualifications, patient safety, record-keeping, and proper handling of radioactive materials. In contrast, no comprehensive national standards exist for services delivered in physician offices other than a requirement

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<sup>25</sup> Medicare Payment Advisory Commission, *Report to the Congress: Increasing the Value of Medicare* (Washington, D.C.: June 2006). MedPAC conducted an equipment capacity study in six markets across the country to determine the average usage levels for MRI and CT equipment. MedPAC found that providers used CT and MRI equipment more than 70 percent of the time they were open for business, rather than CMS's current estimate of 50 percent.

<sup>26</sup> Andrew W. Litt et al., "Relative Procedure Intensity with Self-Referral and Radiologist Referral: Extremity Radiography," *Radiology*, vol. 235 (2005): 142-147. Also, we reported in 1994 that physicians with equipment within their practices ordered three times as many MRI scans and twice as many CT scans for their patients than physicians without such equipment. See GAO, *Medicare: Referrals to Physician-Owned Imaging Facilities Warrant HCFA's Scrutiny*, [GAO/HEHS-95-2](#) (Washington, D.C.: Oct. 20, 1994).

<sup>27</sup> Brian E Kouri et al., "Physician Self-Referral for Diagnostic Imaging: Review of the Empiric Literature," *American Journal of Roentgenology*, vol. 179 (October 2002).

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that imaging services are to be provided under at least general physician supervision—that is, a physician is responsible for the training of the technical staff performing the imaging service, and the maintenance of the necessary equipment and supplies. CMS, however, has expanded existing quality and business performance standards for IDTFs. For example, CMS has explicitly prohibited hotels and motels from being considered appropriate sites for an IDTF setting.<sup>28</sup>

Regulatory responsibilities relating to imaging devices and services are divided among federal agencies as well as the states. The Food and Drug Administration (FDA) and the Nuclear Regulatory Commission (NRC) each have regulatory responsibilities for devices that are used to provide imaging services. For example, FDA is responsible for establishing quality standards for mammography equipment,<sup>29</sup> and ensuring that manufacturers of radiation-emitting imaging equipment are in compliance with applicable performance standards. While FDA does not regulate the practice of medicine, such as the establishment of patient radiation dose limits, it is responsible for ensuring that medical imaging systems are safe and effective. NRC does not regulate medical products, but does oversee the medical uses of nuclear materials used by physicians, hospitals, and others through licensing, inspection, and enforcement programs. Regarding licensing, in many cases NRC has transferred this authority to the states. While all states have radiation control boards that monitor the use of radiation by imaging facilities, they do not regulate nonradiation imaging such as MRI or ultrasound, nor do they monitor the quality of imaging. Their primary mission is to ensure patient safety. In addition, officials from the Conference of Radiation Control Program Directors, Inc.—whose primary membership is made up of radiation professionals in state and local government who regulate the use of radiation sources—told us that states vary in the comprehensiveness of their rules as well as their ability to monitor compliance, often lacking the resources to perform all of their functions. Further, officials from the American Society of Radiologic Technologists told us that states also vary in their licensure requirements for imaging providers—some do not have any licensure or certification laws for radiology technologists, and most states also allow technicians to perform advanced imaging without additional training. In a 2007 report we

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<sup>28</sup>42 C.F. R. § 410.33(g)(3) (2007).

<sup>29</sup>Under the Mammography Quality Standards Act of 1992, as amended, FDA implements quality assurance standards for mammography equipment, personnel, and facility practices. 42 U.S.C. § 263b(f).

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recommended that CMS require sonographers—technologists that perform ultrasound examinations—paid by Medicare to be credentialed or work at accredited facilities.<sup>30</sup>

Although physicians can seek to have their facility accredited—a process by which facilities and providers are recognized as meeting certain quality, safety, and performance thresholds by one of the three primary accreditation organizations for imaging—officials we interviewed from these organizations estimated that very few physician offices are accredited.<sup>31</sup> Studies of the provision of imaging tests in this setting showed quality concerns in several areas such as staff credentials, poor image quality, failure to monitor radiation exposure, and inadequately maintained equipment.<sup>32</sup> Officials from some of the health plans, accreditation organizations, and other industry groups that we interviewed indicated similar concerns. For example, a health plan official told us that 25 percent of facilities in its network, including physician offices, failed credentialing, most commonly because of a lack of a board certified radiologist on staff, or problems with imaging equipment. Two of the three primary accreditation organizations told us that general problems encountered during the accreditation process of facilities, including physician offices, related to failure of staff to keep up with professional education requirements, lack of documentation of quality assurance policies, poor quality of the images, and incomplete or inadequate interpretation. The third accreditation organization told us that the failure rate for initial applications was about half, although the majority of reapplicants passed after correcting deficiencies. Typically, the main deficiency was equipment that needed to be recalibrated, and a lack of quality control programs. The officials from this organization were concerned about the implications for quality of the vast majority of

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<sup>30</sup>GAO, *Medicare Ultrasound Procedures: Consideration of Payment Reforms and Technician Qualification Requirements*, [GAO-07-734](#) (Washington, D.C.: June 28, 2007). In its written response, CMS stated that while it would consider our recommendation, it would rather have states engage their own licensing bodies in implementing sonographer licensure programs.

<sup>31</sup>The three primary accreditation organizations in imaging are the American College of Radiology (ACR), the Intersocietal Accreditation Commission (IAC), and the American Institute of Ultrasound in Medicine.

<sup>32</sup>Kouri et al., “Physician Self-Referral for Diagnostic Imaging: Review of the Empiric Literature,” pp. 843-850. (This article contains a compilation and empirical review of several studies on quality of imaging services, including those provided in physician offices.)

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providers who did not apply for accreditation, given a 50 percent initial failure rate for providers self-selecting to apply for accreditation.<sup>33</sup>

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## To Manage Imaging Expenditures, Private Health Care Plans in Our Study Use Certain Practices to Constrain Spending Growth

Similar to Medicare, private health plans in recent years have experienced rapid growth in imaging services, particularly in advanced imaging. We examined a sample of 17 private health care plans which were selected because they were known to take steps to actively manage imaging services. Most of the plans in our study contracted with companies called radiology benefits managers (RBM) to perform imaging management activities on their behalf. Officials of the plans or the RBMs they use told us that prior authorization, which requires physicians to obtain some form of plan approval before ordering a service, was the practice most important to managing their physicians' use of imaging services. Other practices they noted included privileging, by which a plan limits its approval for ordering certain imaging services to physicians in certain specialties, and profiling, which entails a statistical analysis of medical claims data measuring an individual physician's use of services relative to a desired benchmark.

With respect to managing the growth in Medicare physician expenditures on imaging services, CMS does not employ the practices used by the plans in our study. The agency's focus is largely on physician billing practices, and its management activities therefore occur at a point when services have already been ordered and performed. CMS conducts profiling activities, but these are consistent with the agency's focus on identifying improper billing rather than on targeting services showing high spending growth rates. CMS officials indicated that approaches such as prior authorization would likely require significant administrative resources, and that the agency would have to consider any specific initiatives in light of its existing legal authority.

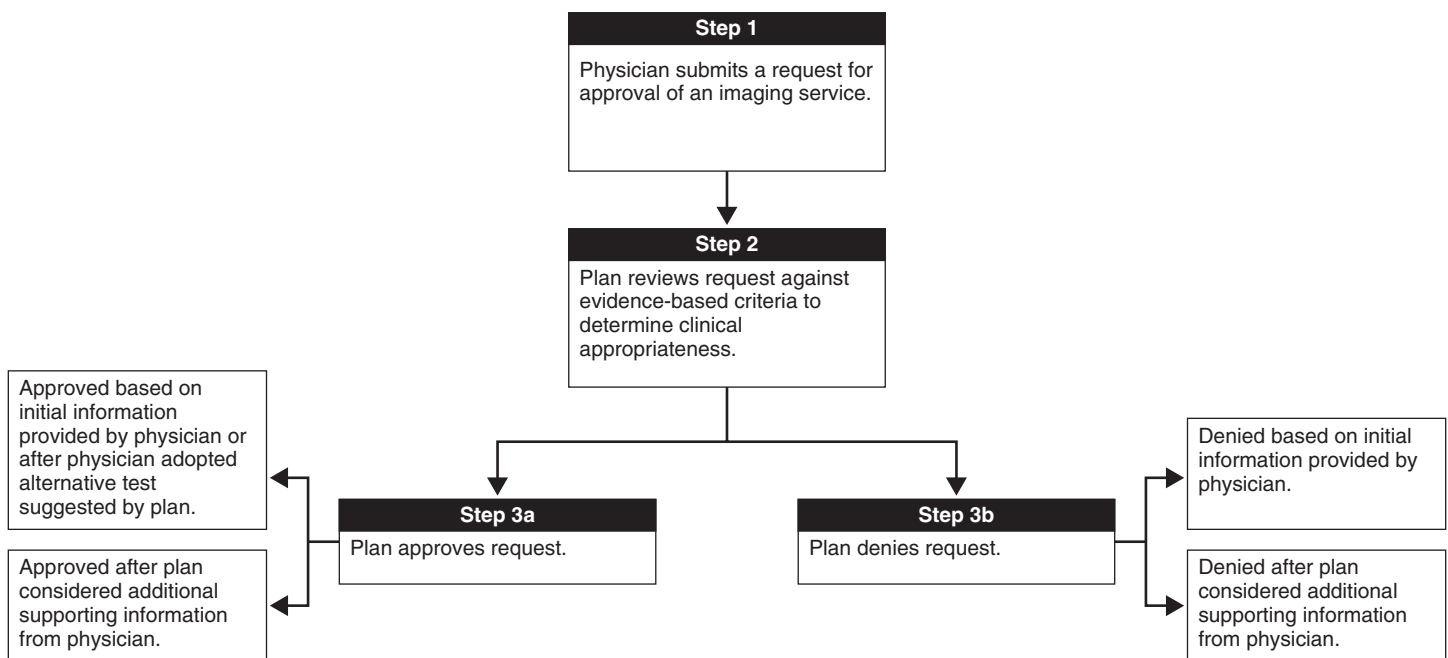
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<sup>33</sup>Private payers are increasingly requiring that all providers obtain accreditation of their imaging facilities from one of the three main accrediting agencies. For example, United Healthcare Group, one of the nation's largest private purchasers, requires that all independent diagnostic testing facilities and physician offices performing outpatient advanced imaging services for their enrollees will have obtained ACR or IAC accreditation as of March 1, 2008.

## Plans' Management of Imaging Services Relies Mostly on Prior Authorization

All the health plans in our study used prior authorization, the practice of determining whether to grant physicians approval to order some or all imaging services before they are delivered, to manage spending on imaging services.<sup>34</sup> This practice was in addition to retrospective payment safeguards commonly used to identify medical claims that do not meet certain billing criteria. Under prior authorization, plans only pay physicians for imaging services rendered that have received plan approval. Almost all of the plans—16 of 17—conducted their prior authorization activities through an RBM. The steps plans typically use in the prior authorization process are shown in figure 6.

**Figure 6: Steps That Typically Occur in the Prior Authorization Process**



Source: GAO analysis of information from RBMs and private plans.

Note: In this figure, the term plan is used to refer to either a health plan or its RBM contractor.

<sup>34</sup>This is a growing trend among private health plans. For example, on the basis of its 2007 Community Tracking Surveys of health care trends in 12 markets across the country, the Center for Studying Health System Change reported an increasing use of prior authorization as a tool to manage advanced imaging services in the private sector.



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For example, prior authorization is typically used by RBMs for physicians requesting imaging services for lower back pain, a common condition for which physicians inappropriately request MRIs. Typically, the process works as follows: A physician requests an MRI of the lumbar spine with contrast for a patient with symptoms of lower back pain and no other symptoms. In considering this request, the RBM's nurse manager follows a protocol of questions based on the ACR clinical guidelines for "acute low back pain, uncomplicated." Such questions could include "How long has the patient had symptoms? Have you tried conservative management?" These questions are aimed at discouraging the use of advanced imaging at the condition's onset, unless certain other symptoms or conditions are present.<sup>35</sup> The physician has the option of consulting with one of the RBM's board-certified radiologists or its medical director if there is disagreement with the initial decision to deny a request. If the physician still disagrees with the decision and proceeds with the request, the RBM will likely deny it. Alternatively, if the physician's request for an MRI of the lumbar spine with contrast is made for a patient with low back pain and the other specified symptoms or conditions, the RBM waives conservative management and approves the request.

The plans in our study varied in their prior authorization policies. For example, officials we interviewed from almost all of the plans reported that they targeted prior authorization for technologically complex or high-cost imaging tests, but varied in what specific tests were included under their programs. In addition, to determine the appropriateness of a given diagnostic test or procedure, most plans relied on criteria developed by the American College of Cardiology or the ACR, but they also customized these criteria to their specifications. Three of the plans used a variant of prior authorization, called prior notification, which requires the physician to contact the plan prior to sending a patient for an imaging scan. If the plan determines that another test is more appropriate, based on clinical guidelines or other criteria, the plan can make this suggestion to the physician, but the physician has ultimate discretion to choose among options.

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<sup>35</sup>Such symptoms or conditions include recent significant trauma, or milder trauma for individuals older than 50; unexplained weight loss; unexplained fever; immunosuppression; history of cancer; intravenous drug use; prolonged use of corticosteroids for osteoporosis; age over 70; focal neurological deficit progressive or disabling symptoms; and duration of symptoms greater than 6 weeks.

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Plan officials reported significant decreases in utilization after implementing a prior authorization program. For example, several of the plan officials we interviewed reported that annual growth rates were reduced to less than 5 percent after prior authorization; these annual growth rates had ranged for these plans from 10 percent to more than 20 percent before prior authorization programs were implemented. The biggest utilization decreases occurred immediately after implementation. One plan's medical director said that prior authorization was the plan's most effective utilization control measure, because it requires physicians to attest to the value of ordering a particular service based on clinical need. Plan officials noted that there were costs associated with implementing a prior authorization program. Under a typical arrangement, plans paid a per-member per-month fee to an RBM to conduct prior authorization on their behalf.

The plan and RBM officials we spoke with indicated that outright denial rates for requests to order imaging services were low, primarily because requesting physicians typically agree to a more clinically appropriate test or decide to forgo the test after they are shown countervailing evidence. These officials also contended that a spillover effect exists with respect to future ordering. That is, the interaction between plans and physicians that occurs during the prior authorization process enables physicians to make more educated decisions about what services to order for future patients with the same condition. The net effect has been to reduce unnecessary utilization to levels that are lower than they would have been in the absence of prior authorization.

An official at one plan told us about the plan's experience using RBM-performed prior authorization. To control rapid spending growth, the plan contracted with an RBM in the late 1990s to perform prior authorization for advanced imaging services. After 3 years, when expenditures for these services stopped growing, the plan discontinued using the RBM for prior authorization, assuming that a lasting change had been achieved in physicians' ordering of the services. However, over the subsequent 3 years, annual growth in imaging services climbed to more than 10 percent, on average. In 2006, the plan reinstated the RBM's prior authorization program and 6 months after implementation, growth had again declined to single digits.

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To a lesser extent, plans in our study used privileging and profiling to manage utilization and spending on health care services in general, which include imaging services in particular. Over one-third of the plans used privileging, a practice which limits, according to specialty, a plan's pool of physicians who can order certain imaging services. For example, one plan in our study allowed orthopedic surgeons to perform CT scans of body joints, but did not allow endocrinologists to perform these scans. One of the RBMs we interviewed permitted ear, nose, and throat physicians to perform CT scans of the sinuses, head, or neck but none below the neck. Plan and RBM officials told us that their privileging rules were based on established medical practice guidelines and research and that physicians received advance notice of the plan's privileging rules—that is, which specialties were permitted to perform specific services. Plans enforced adherence to these rules through their claims adjudication systems: if a physician was not privileged to order or perform a specific imaging service, the plans would not pay for the images taken or interpreted. Typically, radiologists were allowed to perform all imaging services because of their imaging-specific education and training.

Profiling is a practice that is carried out through a statistical analysis of paid claims. Eight of the plans in our study used profiling to collect information about individual physicians' ordering history and provision of imaging services. Using this information, the plans compare a physician's practice patterns against a benchmark, or norm, based on the practice patterns of the plan's other physicians in the same specialty. Typically, the plans inform physicians of their relative performance based on these profiling analysis results and provide additional education to physicians who order inappropriately or order at rates higher than their peers. An official at one RBM we interviewed noted that in addition to the contemporary peer comparisons, the firm's profiling activities include longitudinal analyses to determine if a physician's ordering of services has increased over time relative to the physician's peers regionally and nationally. The official noted that after implementing its profiling program, the RBM observed a reduction in the number of images ordered by physicians who provide high-technology imaging in their own offices. Prior to profiling, these physicians provided three to five times more imaging services than their counterparts who referred the imaging services to other practitioners or facilities.

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## CMS's Management Activities, Focusing on Improper Billings, Have a Retrospective Rather Than Prospective Orientation

Unlike the private plans in our study, CMS's management practices are not oriented toward controlling spending prospectively—that is, through preapproval practices, such as prior authorization and privileging. Instead, CMS employs, through its claims administration contractors, an array of retrospective payment safeguards, or activities, that occur in the post-delivery phase of monitoring services. These activities are designed to achieve payment accuracy; in fact, CMS evaluates contractors' performance in terms of a payment error rate.<sup>36</sup>

In general, the contractors responsible for administering Part B payments are required to perform ongoing data analyses and take action on the services or physicians that present the greatest risk of improper payments. The contractors use various techniques, such as profiling, to examine unexplained increases in utilization, abnormally high utilization of services by an individual physician relative to the physician's peers, and other indicators of aberrancies. Some of the analyses result in recovering overpayments from individual physicians who have been found to bill the program inappropriately. They have also resulted in producing the evidence needed to modify coverage or payment policies at the local contractor level—referred to as a local coverage determination.<sup>37</sup> For example, with respect to imaging services, one contractor that had conducted reviews of echocardiograms, nuclear medicine, and PET and CT scans, modified its coverage policies for these services by limiting the number of times the services could be billed for an individual patient within a certain time frame.

In a 2007 report,<sup>38</sup> we concluded that CMS's existing physician profiling and educational outreach activities, while focused largely on improper billing practices and potential fraud, put the agency in a favorable position to adopt profiling as a strategy to curb inappropriate spending resulting from physicians' inefficient practices. As with the private plans we reviewed for this study and the health care payers in our 2007 study, a

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<sup>36</sup>GAO, *Medicare Payment: CMS Methodology Adequate to Estimate National Error Rate*, [GAO-06-300](#) (Washington, D.C.: Mar. 24, 2006).

<sup>37</sup>CMS also makes determinations or policies on whether certain imaging services are covered at the national level—referred to as a national coverage determination. For example, CMS has a national coverage determination that describes under what circumstances CMS will cover PET scans for dementia and neurodegenerative diseases such as Alzheimer's.

<sup>38</sup>GAO, *Medicare: Focus on Physician Practice Patterns Can Lead to Greater Program Efficiency*, [GAO-07-307](#) (Washington, D.C.: Apr. 30, 2007).

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consequence of profiling for efficiency could be to achieve physician compliance with clinical practice standards and, in doing so, reduce inappropriate ordering and use of services. In response to our recommendation to adopt an efficiency-oriented profiling program, CMS commented that this program fit into efforts the agency was pursuing to improve quality and efficiency in Medicare.<sup>39</sup>

To that end, CMS has contracted with a firm to develop efficiency measures for certain anatomically-specific imaging services with an anticipated completion date of December 2008.<sup>40</sup> These measures are to be based on clinical evidence and are designed to provide the agency, in the firm's words, "the ability to more effectively manage the rapid diffusion of new technologies and patient-driven demand." The firm plans to test these measures and provide insight into their development and use. In the case of lumbar MRI, for example, the plan is to track physicians' behavior with respect to the conventionally accepted use of this service—namely, that the service is not typically indicated unless the patient has received a period of conservative therapy. Using a coding system, the firm will track whether the physician (1) provided documentation that the patient had a trial of conservative therapy prior to the MRI, (2) provided no documentation or conservative therapy prior to the MRI, or (3) documented that the patient did not require conservative therapy. The codes, in this instance, are intended to capture whether appropriate evidence-based guidelines were adhered to.

CMS officials indicated that approaches, such as prior authorization, would likely require significant administrative resources. In addition, they stated that they were not aware of any statutory provision either explicitly authorizing or prohibiting the use of such approaches. Accordingly, they stated that if they were to pursue prior authorization, they would need to evaluate any specific initiatives in light of CMS's overall authority with respect to the Medicare program.

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<sup>39</sup>CMS has several ongoing demonstrations examining alternative methods to pay physicians, which combine Medicare fee-for-service payments with new incentive payments. For example, in the Physician Group Practice demonstration that began in April 2005, 10 physician groups (groups with 200 or more physicians) may earn annual bonus incentive payments by achieving cost savings and meeting quality targets on conditions such as diabetes.

<sup>40</sup>The services are MRI and magnetic resonance angiography (MRI of the blood vessels) of the brain, MRI lumbar spine, CT in combination with pelvic CT, mammography, and cardiac single photon emission computed tomography.

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## Conclusions

The rapid increase in Medicare spending on imaging services paid for under the physician fee schedule from 2000 to 2006 poses challenges for CMS in managing the spending growth on these services. While much of this growth may be appropriate, the pace of increase and shift towards more costly advanced imaging; a shift towards providing imaging in physician offices, where there is generally less oversight; broader use of imaging by physician specialties other than radiologists; and the substantial variation of in-office imaging spending per beneficiary across geographic regions of the country raise concerns. Our examination of private plans—selected because they were known to take steps to actively manage imaging services—provides examples of practices to constrain spending growth. Unlike CMS, the private plans in our study had management practices oriented toward controlling spending prospectively rather than solely focusing on activities that occur after the imaging service has been provided to the beneficiary. Specifically, our examination of these plans found a common thread that requiring prior authorization of certain imaging services, such as advanced imaging services, was effective for them in reducing spending growth in this area.

Given the pressures of a fiscally unsustainable Medicare program, CMS has undertaken several initiatives aimed at improving its performance as a purchaser of health care services. With respect to rapidly growing imaging services, the experience of the private plans in our study suggests that the benefits of front-end management of these services exceeded their costs. We believe CMS may be able to improve its prudent purchaser efforts by adopting strategies such as prior authorization and privileging. To do this, CMS would need to assess the feasibility of using these approaches for imaging services under the Medicare Part B program, including the costs or staffing resources needed to carry out these activities and the potential savings that might accrue from these activities. Moreover, CMS would also need to assess any specific activities in light of its authority under the Medicare program and determine if additional legislation is necessary.

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## Recommendation for Executive Action

To address the rapid growth in Medicare Part B spending on imaging services, we recommend that CMS examine the feasibility of expanding its payment safeguard mechanisms by adding more front-end approaches to managing imaging services, such as privileging and prior authorization.

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## Agency and Professional Association Comments and Our Evaluation

We obtained written comments on a draft of this report from HHS (see app. V). We obtained oral comments from representatives of two organizations, AHIP and AMIC, selected because they represent a broad array of stakeholders with specific involvement in the imaging industry.

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### HHS Comments

HHS stated that, through ongoing data analysis and evaluation, Medicare contractors have identified imaging services as an area that poses a high risk to the Medicare Trust Fund, and are therefore continuing to conduct ongoing medical review and provider education. We are pleased that CMS contractors are scrutinizing imaging services through post-payment claims review; however, as we noted in the draft of this report, we believe that more front-end approaches to managing these services may also be desirable.

Regarding our recommendation, HHS raised several concerns about the administrative burden, as well as the advisability of prior authorization for the Medicare program. First, the agency said there was no independent data—other than self-reported—on the success of RBMs in managing imaging services. Second, it stated that RBMs' use of potentially proprietary information, including clinical guidelines and protocols for approval of services, may be inconsistent with the public nature of Medicare. Third, the effectiveness of a prior authorization program could be diminished if a high proportion of denied services were overturned through Medicare's statutory and regulatory appeals process. HHS also raised a question about how prior authorization would fit within its current post-payment review program.

Regarding the effectiveness of prior authorization and use of RBMs in the private sector, as we noted in the draft report, all the plans in our study had implemented some form of a prior authorization program, and all but one had hired an RBM to manage imaging services for its enrollees. It is unlikely that these plans—ranging in size from small FEHBP plans to nationwide private sector plans with up to 34 million covered lives—would incur RBM fees to implement prior authorization unless they believed it to be effective. As we also noted in the draft report, the use of prior authorization as a tool to manage imaging is a growing trend in the private sector. We do not dispute HHS's reservations about prior authorization, and agree that these concerns will require careful examination within the context of Medicare statutes and regulations.

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Because we believe post-payment claims review alone is inadequate to manage one of the fastest growing parts of Medicare, addressing these concerns should be incorporated into CMS's feasibility analysis of adding front-end approaches to its prudent purchasing efforts. If Medicare is to become a "value-based" purchaser of health services, for the sake of both its beneficiaries and taxpayers, it should consider going beyond its traditional methods of managing benefit payments to achieve this result.

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## Professional Association Comments

AHIP and AMIC representatives presented contrasting concerns about our discussion of prior authorization in the draft report. AHIP representatives characterized prior authorization as primarily an educational tool to persuade physicians to prescribe imaging studies in conformance with practice standards, while AMIC representatives characterized it as a cost-cutting tool that achieves savings by imposing burdens on physicians, with little or no educational benefit. Their views on the value of RBMs as implementers of prior authorization are similarly contrasting.

Specifically, AHIP representatives' primary concern was our characterization of prior authorization as a cost-control measure rather than a tool used by plans to improve quality and ensure appropriate use of imaging services by adherence to evidence-based guidelines. Officials we interviewed from plans and RBMs generally viewed prior authorization as the most effective tool to reduce inappropriate utilization and spending growth rather than to improve quality—many of the representatives described it as a utilization management tool. AHIP representatives said the draft report did not include provider consultations with radiologists as another strategy that plans employ. We have revised the report to note that providers have that option if they disagree with a plan's initial decision to disapprove a requested imaging service. AHIP representatives also raised concerns that the draft report did not give sufficient attention to market structure incentives, such as leasing arrangements and manufacturers' attempts to increase acquisition of imaging equipment. Our report does address the topic of incentives for inappropriate use of imaging; however a detailed analysis is beyond the scope of our work. AHIP representatives also provided technical comments, which we incorporated as appropriate.

AMIC representatives raised four principal concerns about the draft report. First, they stated the draft report should have focused on strategies such as accreditation (which improves quality), and adherence to clinical practice guidelines (that result in appropriate use of imaging services), rather than private sector strategies such as use of RBMs, prior-authorization, and other techniques which focus solely on controlling



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costs. Specifically, AMIC representatives expressed several concerns about RBMs. They stated that the for-profit structure and lack of transparency in sharing appropriateness guidelines make RBMs incompatible with the Medicare program. They also contended that there is no evidence that RBMs improve care or add value, and RBMs involve physicians in lengthy interactions. Moreover, they stated that prior authorization had been tried and proven unfeasible for Medicare for lack of sufficient administrative resources. In the draft report, we noted plans' increasing use of accreditation to assure quality of imaging services. With regard to prior authorization and RBMs, we are recommending that CMS consider the feasibility of these and other front-end approaches. We would also note that while HHS indicated that prior authorization might be inconsistent with the Medicare program, the department did not rule it out as a strategy that had been tried and proven unfeasible for Medicare.

Second, AMIC representatives stated that in emphasizing spending growth we had failed to recognize the benefits of imaging and its effects in reducing overall health costs by substituting for more invasive procedures or treatments. We acknowledged the benefits of imaging throughout the draft report and noted that while some of this spending growth may be appropriate, financial incentives inherent in Medicare's payment policies for potentially inappropriate use of imaging in physicians' offices, and their implications for a fiscally unsustainable Medicare program cannot be ignored. We are not aware of any peer-reviewed studies that conclusively show the role of imaging in reducing overall health care costs.

Third, AMIC representatives stated that by focusing only on Part B spending under the physician fee schedule, the draft report did not acknowledge growth in imaging across other sites of care such as hospitals. As we stated in the draft report, Medicare's physician payment policies contain financial incentives for physicians to directly benefit from higher fees paid for the provision of imaging services in their offices, while receiving lower fees for interpretation of in hospitals. However, we have added additional information to the report, noting that about two-thirds of all imaging services were delivered in the hospital setting in 2006, and that spending on imaging services delivered in physician offices grew twice as fast compared to spending on services delivered in the hospital setting.

AMIC's fourth concern was that the draft report did not discuss the fairness of the payment reductions resulting from the changes mandated in the DRA. As noted in the draft report, we will examine the effects of payment changes mandated by the DRA in a separate report.

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As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this report. We will then send copies to the Secretary of HHS, the Administrator of CMS, appropriate congressional committees, and other interested parties. We will also make copies available to others upon request. This report is also available at no charge on GAO's Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-7114 or [steinwalda@gao.gov](mailto:steinwalda@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made contributions to this report are listed in appendix VI.

A handwritten signature in black ink that reads "A. Bruce Steinwald". The signature is written in a cursive style with a large, stylized "S" at the end.

A. Bruce Steinwald  
Director, Health Care

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# Appendix I: Scope and Methodology

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To determine trends in Medicare Part B spending, we analyzed Medicare claims data from 2000 through 2006 using the Part B Extract Summary System (BESS)—a data source that aggregates data to the billing code designated under the Healthcare Common Procedure Coding System (HCPCS). We extracted claims where the first digit of the Berenson-Eggers Type of Service (BETOS) code was equal to “I”, indicating the line item was an imaging service.<sup>1</sup> On the basis of data from the Denominator File—a database that contains enrollment data and entitlement status for all Medicare beneficiaries enrolled and/or entitled in a given year—we excluded beneficiaries who had 12 months of enrollment in a health maintenance organization in a given year.<sup>2</sup> We aggregated the 18 BETOS categories into six major categories of imaging services, also referred to as modalities: CT, MRI, nuclear medicine, ultrasound, procedures that use imaging, and X-rays and other standard imaging. Our spending totals include two parts of the imaging service paid for by Medicare: (1) the technical component—the performance of the examination itself, and the (2) professional component—the physician’s interpretation of the examination.<sup>3</sup>

We also examined the association between growth in total Part B imaging spending and various factors, including the growth in the volume and complexity of services, the number of Medicare fee-for-service beneficiaries, and Medicare fees for imaging services. To do this, we first calculated the growth in total Part B spending from 2000 through 2006 and then estimated the relative contribution of each factor to the growth in total Part B imaging spending. To estimate the effect of volume and intensity on the growth in total spending, we totaled the Relative Value Units (RVU) associated with each imaging service from 2000 and 2006. Because RVUs for imaging services may change from year to year, we used RVUs for the most recent year for which data were available, 2006. We estimated the effect of separately billed items used to deliver imaging services, such as radioactive agents and iodine supplies, by comparing total spending on these items in 2000 and 2006. Physicians submit separate

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<sup>1</sup>The BETOS categorization system was developed by CMS primarily for analyzing the growth in Medicare expenditures by broad service categories. Each billing code is assigned to only one BETOS category. There are 18 distinct BETOS categories for imaging services.

<sup>2</sup>For beneficiaries with less than 12 months of enrollment in Medicare Part B, we totaled the number of months they had been enrolled and divided this by 12.

<sup>3</sup>Our spending totals are in nominal dollars and do not include the technical component of services provided in hospitals or other institutions that fall under Medicare Part A.

bills for these items and are paid based on prices established by Medicare's claims administration contractors. These services are not assigned RVUs in the physician fees schedule. We compared the number of Medicare beneficiaries from 2000 to 2006 to determine the effect of their growth and compared changes in Medicare fees for imaging services using the Medicare conversion factor in 2000 compared with 2006.<sup>4</sup> To determine the share of Medicare beneficiaries who received any imaging services and, for those beneficiaries, the average number of services provided, we used Medicare Part B Physician/Supplier Claims data for 2000 and 2006 and Denominator File data for those same years.

To supplement our quantitative examination of spending trends and to understand stakeholder perspectives on these trends, we obtained information from 19 physician specialty groups, including the American College of Cardiology and the American College of Radiology.<sup>5</sup> These 19 specialties were chosen because imaging is integral to their practices. In addition, we interviewed officials from two organizations, the Access to Medical Imaging Coalition and the Medical Imaging & Technology Alliance (a division of the National Electrical Manufacturers Association), that represent a diverse and large number of stakeholders including equipment manufacturers, physician specialties, patient-advocacy organizations, and others. We also interviewed representatives from America's Health Insurance Plans (AHIP), a trade association that includes about 90 percent of health insurers, 17 private plans, and five of the largest RBMs that manage imaging services for health plans.

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<sup>4</sup>Medicare fees for each service are determined by multiplying the RVUs for each service by a "conversion factor" expressed in dollars. Thus, fees could change from year to year due to changes in both the conversion factor and the RVUs for each service.

<sup>5</sup>Specifically, we interviewed representatives from the following 18 physician specialty groups: American Academy of Orthopaedic Surgeons, American Academy of Ophthalmology, American Academy of Family Physicians, American Association of Neurological Surgeons, American Academy of Neurology, American College of Cardiology, American College of Emergency Physicians, American College of Obstetricians and Gynecologists, American College of Physicians, American College of Radiology, American Gastroenterological Association, American Society of Clinical Oncology, American Society of Echocardiography, Society of Nuclear Medicine, American Society for Therapeutic Radiology and Oncology, American Society of Radiologic Technologists, Society of Interventional Radiology, and Society for Vascular Surgery. In addition, the American Urological Association provided us written comments on imaging services in lieu of an interview. We also interviewed representatives from the American Medical Association, a physician-member advocacy organization.

To examine the relationship between spending growth and the provision of imaging services in physician offices, we analyzed Medicare claims data from 2000 and 2006. We first examined the extent to which Medicare Part B spending on imaging services shifted to physician offices from Independent Diagnostic Testing Facilities (IDTF) and hospital inpatient, outpatient, and emergency room settings. To examine geographic variation in per beneficiary spending on in-office imaging, we divided total in-office spending for each state by the number of Medicare beneficiaries for that state. However, since total in-office spending may vary across states because of Medicare's geographic price differences, we derived an adjusted spending total by multiplying the total RVUs for in-office imaging in each state by the national Medicare physician fee schedule conversion factor.<sup>6</sup> For this analysis, we excluded data from Hawaii because spending per beneficiary appeared to be too low compared with other states of similar size and Medicare beneficiary population.

We also examined how physicians' share of their Medicare Part B revenue from imaging services has changed during this period and its relationship with certain physician specialties. Specifically, by physician specialty, we examined the number of non-radiologists<sup>7</sup> who submitted bills that included the provision of the imaging examination, and the share of overall allowed charges that were attributable to imaging services provided in physician offices. To do this, we used Medicare Part B claims data from the National Claims History files and constructed data sets for 100 percent of Medicare claims for physician services performed by physicians in the first 28 days of April 2000 and April 2006. We established a consistent cutoff date (the last day of the year) for each year's data file and only included those claims for April services that had been submitted by that date. Because claims continue to accrete in the data files, this step was necessary to ensure that the earlier year was not more complete than the later year. If non-radiologist physicians performed imaging examinations, either billed separately or in conjunction with an interpretation, and the place of service was "physician's office," then they were deemed to be performing those services in-office. We focused on

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<sup>6</sup>Some services, including separately billed ancillary services, do not have RVUs; therefore we used the actual spending in each state for these services unadjusted for Medicare's geographic price differences. Spending on these services provided in physician offices accounted for about 5 percent of total in-office imaging spending in 2006.

<sup>7</sup>Some physicians billed under more than one specialty. To avoid double counting, we grouped these physicians into the specialty that comprised a plurality of their allowed charges.

non-radiology specialties that had at least 500 individual physicians who billed Medicare for any service and at least 5 percent of those billed for any imaging in the period examined, which yielded 297,000 physicians in 2000 and 353,000 in 2006.

To examine the approaches used by private payers that may have lessons for Medicare in managing spending on imaging services, we selected 17 private payers known to be active in managing imaging benefits that included a combination of national and regional payers. We selected five plans because they had publicly presented information to the Congress or MedPAC on prior occasions about their imaging management practices, or had descriptions of their programs appear in the medical literature. We selected six private plans offered to federal employees under the Federal Employees Health Benefits Program (FEHBP), and six private plans identified through our interview with AHIP. Appendix IV provides characteristics of our sample of private plans. We conducted interviews with, or submitted questions to, these plans.<sup>8</sup> We also interviewed five radiology benefits managers—organizations hired by private payers to manage radiology services for their enrollees—to learn about the management practices that they use to manage spending on imaging services. To determine what management practices the Centers for Medicare and Medicaid Services (CMS) uses for imaging services, we interviewed CMS officials including those from the Office of Clinical Standards and Quality, the Coverage and Analysis Group, and the Program Integrity Group, and officials from Medicare Part B contractors that together process claims for nine different states.

We conducted our work from January 2007 through May 2008 in accordance with generally accepted government auditing standards.

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<sup>8</sup>We used the Office of Personal Management to assist us in collecting information from the six FEHBP plans and AHIP to assist in collecting information from the six private plans.

# Appendix II: Medicare Spending on Imaging Services Paid for under the Physician Fee Schedule by Modality, 2000 through 2006

Dollars in millions

Imaging modalities	2000	2001	2002	2003	2004	2005	2006
CT	975	1,205	1,308	1,521	1,818	2,076	2,171
MRI	1,002	1,316	1,451	1,768	2,155	2,738	2,982
Nuclear medicine	973	1,263	1,439	1,735	2,080	2,303	2,418
Ultrasound	1,842	2,116	2,204	2,490	2,823	3,208	3,334
X-ray and other standard imaging	1,711	1,925	2,013	2,189	2,391	2,464	2,485
Procedures that use imaging	386	473	555	686	840	708	715
Total for advanced imaging	2,951	3,783	4,197	5,025	6,052	7,116	7,571
Total for standard imaging	3,939	4,515	4,771	5,366	6,054	6,380	6,534
<b>Overall total</b>	<b>6,891</b>	<b>8,298</b>	<b>8,969</b>	<b>10,390</b>	<b>12,106</b>	<b>13,496</b>	<b>14,105</b>

Source: GAO analysis of Medicare Part B claims data.

Note: Advanced imaging includes MRI, nuclear medicine, and CT. Standard imaging includes ultrasound, X-ray and other standard imaging, and procedures that use imaging.

# Appendix III: Medicare Imaging Use by Modality, 2000 and 2006

Imaging modalities	Percentage of beneficiaries			Services per beneficiary for those who received at least one service in each category		
	2000	2006	Percentage change	2000	2006	Percentage change
CT	16.0	22.2	39	2.1	2.5	22
MRI	6.8	12.0	76	1.4	1.6	15
Nuclear Medicine	9.4	11.6	23	2.0	2.6	27
Ultrasound	27.7	32.7	18	2.7	3.2	19
X-ray and other standard imaging	55.8	57.0	2	3.6	4.0	12
Procedures that use imaging	5.7	8.7	53	3.6	3.2	-11
Total for advanced imaging	25.0	33.0	34	2.5	3.1	27
Total for standard imaging	61.0	64.0	4	4.8	5.7	18
<b>Overall total</b>	<b>63.2</b>	<b>66.4</b>	<b>5</b>	<b>5.6</b>	<b>7.0</b>	<b>24</b>

Source: GAO analysis of Medicare Part B claims data.

Note: Advanced imaging includes MRI, nuclear medicine, and CT. Standard imaging includes ultrasound, X-ray and other standard imaging, and procedures that use imaging.



# Appendix IV: Characteristics of GAO Sample of Private Plans That Actively Manage Imaging Services (February 2008)

Plan name	Approximate number of covered lives affected	Locations	RBM used	Imaging management practices used by plan or RBM		
				Prior auth/pre-cert used	Privileging used	Profiling used
American Postal Workers Union	143,000	Nationwide	Yes	Yes	No	Yes
Highmark Blue Cross Blue Shield	1.8 million	PA	Yes	Yes	Yes	No
Blue Cross Blue Shield of Massachusetts	1.3 million	MA	Yes	Yes	Yes	Yes
Blue Cross Blue Shield of Michigan	5 million	MI	Yes	Yes	Yes	No
Blue Cross Blue Shield of Texas	2.2 million	TX	Yes	Yes <sup>a</sup>	No	Yes
CIGNA	4.5 million	Nationwide	Yes	Yes	No	Yes
Government Employees Health Association, Inc.	423,000	Nationwide	Yes	Yes	No	No
Harvard Pilgrim	1 million	MA, NH, and ME	Yes	Yes <sup>b</sup>	No	Yes
HealthPartners	438,000	MN, ND, SD, and WI	Yes	Yes	No	No
Humana CoverageFirst	1 million	LA, KY, parts of IN, and OH	Yes	Yes	Yes	No
Independence Blue Cross	1.9 million	PA and NJ	Yes	Yes	No	No
Panama Canal Area Benefit Plan	17,000	Panama Canal area	No	Yes	No	No
Tufts Health Plan	507,000	MA	Yes	Yes	Yes	No
UniCare <sup>c</sup>	10,000	Chicagoland area, IL, and IN	Yes	Yes	Yes	Yes
UnitedHealthcare	18 million	Nationwide	Yes	Yes <sup>d</sup>	No	No
Wellpoint <sup>e</sup> (FEHBP)	78,000	MO, OH, and CA	Yes	Yes	No	Yes
Wellpoint (Commercial)	34 million	CA, CO, CT, GA, IL, IN, KY, MA, ME, MO, NV, NH, NY, OH, TX, VA, and WI	Yes	Yes	Yes	Yes

Source: GAO interviews and analysis of plan data.

<sup>a</sup>These covered lives are part of BCBS-TX's Radiology Quality Initiative (RQI), which only requires prior notification for an imaging test. BCBS-TX also has a separate program that requires prior authorization of imaging services and affects 50,000 covered lives.

<sup>b</sup>Harvard Pilgrim employs prior notification for some imaging tests, and does not deny services on a clinical basis; however, it may deny for administrative reasons.

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**Appendix IV: Characteristics of GAO Sample  
of Private Plans That Actively Manage  
Imaging Services (February 2008)**

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<sup>e</sup>UniCare is owned by Wellpoint.

<sup>f</sup>UnitedHealthcare employs prior notification for some imaging tests.

<sup>g</sup>Includes BlueChoice HMO in MO, Blue Cross HMO in CA, and Blue HMO in OH.

# Appendix V: Comments from the Department of Health and Human Services



DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of the Assistant Secretary  
for Legislation

Washington, D.C. 20201

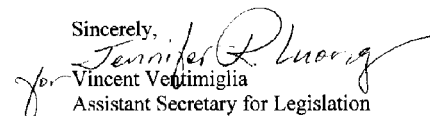
APR 10 2008

A. Bruce Steinwald  
Director, Health Care  
U.S. Government Accountability Office  
Washington, DC 20548

Dear Mr. Steinwald:

Enclosed are the Departments comments on the Government Accountability Office Draft Report Entitled: "MEDICARE PART B IMAGING SERVICES: Rapid Spending Growth and Shift to Physician Offices Indicate Need for CMS to Consider Additional Management Practices," (GAO-08-452).

The Department appreciates the opportunity to review and comment on this report before its publication.

Sincerely,  
  
for Vincent Ventimiglia  
Assistant Secretary for Legislation

**GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE U.S. GOVERNMENT ACCOUNTABILITY OFFICE'S (GAO) DRAFT REPORT ENTITLED: "MEDICARE PART B IMAGING SERVICES: RAPID SPENDING GROWTH AND SHIFT TO PHYSICIAN OFFICES INDICATE NEED FOR CMS TO CONSIDER ADDITIONAL MANAGEMENT PRACTICES" (GAO-08-452)**

The GAO examined the extent to which Medicare Part B spending on imaging services shifted to physicians' offices from hospital settings and how physicians' shares of their Medicare revenue from imaging services have changed. GAO analyzed claims data and also interviewed physician specialty groups and private health care payers and reviewed health services literature.

The GAO noted that private health care plans use the practice of privileging and profiling to manage their physicians' use of imaging services. Privileging entails the plan limiting its approval for ordering certain imaging services to physicians in certain specialties. Profiling entails a statistical analysis of medical claims data measuring an individual physician's use of services related to a desired benchmark.

Through the Deficit Reduction Act of 2005 (DRA), Congress and CMS acted to constrain spending on Part B imaging services. The DRA required that Medicare payment for imaging services under the Medicare physician fee schedule not exceed what Medicare pays for these services performed in hospital outpatient departments. This provision was effective for services furnished after January 1, 2007. In addition, effective January 1, 2006, we implemented a multiple procedure payment reduction on certain diagnostic imaging procedures paid under the physician fee schedule. When two or more procedures in the same family of codes are furnished for the same patient in a single session, payment for the technical component of the second and subsequent procedures is reduced by 25 percent.

The CMS has taken significant steps to address concerns over improper payments in the Medicare program and in the imaging services area. Through data analysis, our contractors determine which areas seem problematic and have high risk potential to the Medicare Trust Fund. The most egregious areas are selected for validation by probe review. A probe review is used to validate the hypothesis that such claims are billed in error. A random or stratified sample of generally 20-40 claims is reviewed. The results of the probe review aid the contractor in determining the nature and scope of these problem areas, and which problem areas warrant further action. Then the contractor prioritizes the problem areas and focuses on the ones with the largest vulnerabilities, given their limited resources. Contractors do this by developing strategies annually to focus their resources on those claims that pose the largest vulnerabilities to the Medicare Trust Fund. For example regarding imaging services, for 2007 and 2008, many of our contractors, after performing data analysis, have found imaging services to be vulnerabilities in their jurisdiction (relative to other services) and thus are performing ongoing medical review and giving education to the provider community. Our contractors will continue to include imaging services in their analysis and prioritization activities in the future.

**GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE U.S. GOVERNMENT ACCOUNTABILITY OFFICE'S (GAO) DRAFT REPORT ENTITLED: "MEDICARE PART B IMAGING SERVICES: RAPID SPENDING GROWTH AND SHIFT TO PHYSICIAN OFFICES INDICATE NEED FOR CMS TO CONSIDER ADDITIONAL MANAGEMENT PRACTICES" (GAO-08-452)**

**GAO Recommendation**

GAO recommends that CMS should examine the feasibility of expanding its payment safeguard mechanisms by adding more front-end approaches to managing imaging services, including using privileging and prior authorization.

**HHS Response**

The CMS would have to consider a more robust set of issues dealing with the advisability of prior authorization techniques that the GAO has recommended before considering their feasibility and the administrative burden that this would place on our contractors. The report relies on plans' experience with radiology benefit managers (RBMs) as self-reported to GAO by the RBMs. It does not appear that GAO conducted any independent review of the methodology or data used by plans to determine that the use of RBMs was successful or of the manner in which RBMs make their prior authorization determinations.

We are particularly concerned that the approval or disapproval determinations of RBMs could be based on proprietary systems, the use of which could be inconsistent with the public nature of the Medicare program. Further, the report does not indicate how the protocol of questions were developed or the extent to which such protocols deviate from the clinical guidelines of the physician professional societies. These are important questions in considering the use of private entities and their methods to make Medicare payment/non-payment determinations and something we would need to closely examine before we could consider adopting such a system. For example, Medicare may have a statutory and regulatory appeals infrastructure that is more favorable to Medicare beneficiaries than which exist for members of private health insurance plans. Services that are denied by an RBM, using a confidential proprietary system, could be overturned on appeal if a beneficiary or physician argue that a service they believe was medically appropriate was denied without an explanation of the basis for the denial. RBMs would not be considered an effective policy tool if a high proportion of imaging claims denied by RBMs are overturned on appeal. Similarly, the report might address the issue about how prior authorization might relate to post-payment review. Post-payment review could be nullified in a case where prior authorization was granted.

We appreciate the effort that went into this report and the opportunity to review and comment on these issues.

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# Appendix VI: GAO Contact and Staff Acknowledgments

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## GAO Contact

A. Bruce Steinwald, (202) 512-7114 or [steinwalda@gao.gov](mailto:steinwalda@gao.gov)

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## Acknowledgments

In addition to the contact name above, Jessica Farb and Thomas A. Walke, Assistant Directors; Todd Anderson; Iola D' Souza; Hannah Fein; Julian Klazkin; Emily Loriso; and Richard Lipinski made key contributions to this report.

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