

**GAO**

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

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September 2009

# MEDICARE

## Per Capita Method Can Be Used to Profile Physicians and Provide Feedback on Resource Use



**GAO**

Accountability \* Integrity \* Reliability

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Highlights of [GAO-09-802](#), a report to the Chairman, Subcommittee on Health, Committee on Ways and Means, House of Representatives

### Why GAO Did This Study

The Medicare Improvements for Patients and Providers Act of 2008 directed the Secretary of Health and Human Services to develop a program to give physicians confidential feedback on the Medicare resources used to provide care to Medicare beneficiaries. GAO was asked to evaluate the per capita methodology for profiling physicians—a method which measures a patient’s resource use over a fixed period of time and attributes that resource use to physicians—in order to assist the Centers for Medicare & Medicaid Services (CMS) with the development of a physician feedback approach. In response, this report examines (1) the extent to which physicians in selected specialties show stable practice patterns and how beneficiary utilization of services varies by physician resource use level; (2) factors to consider in developing feedback reports on physicians’ performance, including per capita resource use; and (3) the extent to which feedback reports may influence physician behavior. GAO focused on four medical specialties and four metropolitan areas chosen for their geographic diversity and range in average Medicare spending per beneficiary. To identify considerations for developing a physician feedback system, GAO reviewed the literature and interviewed officials from health plans and specialty societies. Further, GAO drew upon literature and interviews to develop an illustration of how per capita measures could be included in a physician feedback report.

[View GAO-09-802 or key components.](#)  
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## MEDICARE

### Per Capita Method Can Be Used to Profile Physicians and Provide Feedback on Resource Use

#### What GAO Found

Using 2005 and 2006 Medicare claims data and a per capita methodology, GAO found that specialist physicians showed considerable stability in resource use despite high patient turnover. This stability suggests that per capita resource use is a reasonable approach for profiling specialist physicians because it reflects distinct patterns of a physician’s resource use, not the particular population of beneficiaries seen by a physician in a given year. GAO also found that our per capita method can differentiate specialists’ patterns of resource use with respect to different types of services, such as institutional services, which were a major factor in beneficiaries’ resource use. In particular, patients of high resource use physicians used more institutional services than patients of low resource use physicians.

GAO identified four key considerations in developing feedback reports on physician performance (see table).

#### Key Considerations in Developing Physician Feedback Reports

General considerations	Examples of specific considerations
Report content	Types of measures, comparative benchmarks
Report design	Length, organization, graphics
Report dissemination	Which physicians should receive reports, frequency of reporting, hardcopy versus electronic dissemination
Transparency	Information about purpose, methods, data

Source: GAO.

To illustrate how per capita measures could be included in a physician feedback report, we developed a mock report containing three types of per capita measures.

Although the literature suggested that feedback alone has no more than a moderate influence on physicians’ behavior, the potential influence of feedback from CMS on Medicare costs may be greater, in part because of the relatively large share of physicians’ practice revenues that Medicare typically represents.

CMS reviewed a draft of this report and broadly agreed with our findings.

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## **Abbreviations**

CBO	Congressional Budget Office
CBSA	Core-Based Statistical Area
CMS	Centers for Medicare & Medicaid Services
FFS	fee-for-service
HCC	Hierarchical Condition Category
HHS	Department of Health and Human Services
MedPAC	Medicare Payment Advisory Commission
MIPPA	Medicare Improvements for Patients and Providers Act of 2008

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United States Government Accountability Office  
Washington, DC 20548

September 25, 2009

The Honorable Pete Stark  
Chairman  
Subcommittee on Health  
Committee on Ways and Means  
House of Representatives

Dear Mr. Chairman:

In recent years, evidence has mounted that the Medicare program is unsustainable in its present form.<sup>1</sup> Because of rising health care costs and the aging of baby boomers into eligibility for Medicare, future program spending is projected to consume an increasing share of the government's resources. In their 2009 annual report, the Medicare Trustees projected that Medicare expenditures, which reached \$468 billion in 2008, will increase in future years at a faster pace than the overall economy, rising from 3.2 percent of gross domestic product in 2008 to 11.4 percent by 2083.

Physicians play a central role in the generation of health care expenditures, through both the services they provide and the services they order, including hospital admissions, diagnostic tests, and referrals to other physicians. The evidence suggests that some of the spending for services provided and ordered by physicians may not be warranted. For example, the wide variation in Medicare spending for physician services—unrelated to beneficiary health status or outcomes—indicates that health needs alone do not determine spending.

Consistent with physicians' central role in providing and ordering services and their influence on the amount of spending for patient services, physician groups, insurers, and Medicare officials have turned to profiling as a possible tool to help identify and contain overuse of services and the resulting high expenditures. In profiling, the resource use of a physician's

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<sup>1</sup>Medicare is the federally financed health insurance program for persons aged 65 and over, certain individuals with disabilities, and individuals with end-stage renal disease. Medicare Part A covers hospital and other inpatient stays. Medicare Part B covers physician, outpatient hospital, home health, and other services. Medicare Parts A and B are known as original Medicare or Medicare fee-for-service (FFS).

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patients is compared to a benchmark.<sup>1</sup> In our previous report on profiling, *Medicare: Focus on Physician Practice Patterns Can Lead to Greater Program Efficiency*,<sup>2</sup> we profiled generalist physicians and found that in each of the 12 metropolitan areas we studied there were physicians who, relative to their peers in the same area, treated a disproportionate share of overly expensive patients. In that report we used a profiling methodology known as per capita, which measures per patient resource use for a defined population over a fixed period of time and attributes that resource use to physicians. We recommended that the Administrator of the Centers for Medicare & Medicaid Services (CMS) develop a profiling system to identify individual physicians with inefficient practice patterns and provide incentives for physicians to improve the efficiency of care they provide.<sup>3</sup> In our subsequent testimony on physician feedback to the Subcommittee on Health of the House Ways and Means Committee we stated that providing feedback to physicians on their practice patterns could be a promising step toward encouraging efficiency in Medicare.<sup>4</sup> The Medicare Payment Advisory Commission (MedPAC) has also recommended providing feedback to physicians on their resource use.<sup>5</sup> In its reports, MedPAC has explored an episode-based profiling methodology, which measures resource use for treating a particular episode of illness—for example, a stroke or heart attack—and attributes that resource use to physicians.

Following the issuance of our report and subsequent testimony, Congress passed the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA), which directed the Secretary of Health and Human Services

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<sup>1</sup>Physicians can be profiled both in terms of the resources used in providing care to their patients and in terms of the quality of that care. In this report, we focus on profiling physicians on their resource use, which can be measured in terms of utilization or expenditures.

<sup>2</sup>See GAO, *Medicare: Focus on Physician Practice Patterns Can Lead to Greater Program Efficiency*, [GAO-07-307](#) (Washington, D.C.: April 30, 2007), 22.

<sup>3</sup>The Centers for Medicare & Medicaid Services (CMS) is the agency within the Department of Health and Human Services (HHS) that oversees Medicare.

<sup>4</sup>See GAO, *Medicare: Providing Systematic Feedback to Physicians on their Practice Patterns Is a Promising Step Toward Encouraging Program Efficiency*, [GAO-07-862T](#) (May 10, 2007).

<sup>5</sup>The Medicare Payment Advisory Commission (MedPAC) is an independent congressional agency established by the Balanced Budget Act of 1997 to advise Congress on issues affecting the Medicare program.

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(HHS) to develop a program to provide physicians confidential feedback on the Medicare resources used to provide care to Medicare beneficiaries.<sup>6</sup> MIPPA gave HHS the flexibility to measure resource use on a per capita basis, an episode basis, or both. In response to this mandate, CMS is currently testing both profiling methodologies in its Physician Resource Use Measurement and Reporting Program. MIPPA also directed us to submit a report to Congress on CMS's physician feedback program by 2011.

In your letter of August 22, 2007, you pointed out that both the per capita and episode-based methods could be used to identify inefficient physicians, but noted that less is known about the per capita method. At that time, you asked us to evaluate the per capita method for profiling physicians in order to assist CMS with the development of a physician feedback approach for Medicare. This report explores the use of a per capita method to profile physicians based on their patients' level of resource use, and discusses the development and influence of feedback reports. Specifically, this report examines (1) the extent to which physicians in selected specialties show stable practice patterns and how beneficiary utilization of services varies by physician resource use level; (2) factors to consider in developing feedback reports on physicians' performance, including per capita resource use; and (3) the extent to which feedback reports may influence physician behavior.

We focused our analysis on four diverse specialties—a medical specialty (cardiology), a diagnostic specialty (diagnostic radiology), a primary care specialty (internal medicine), and a surgical specialty (orthopedic surgery); and four metropolitan areas—Miami, Fla.; Phoenix, Ariz.; Pittsburgh, Pa.; and Sacramento, Calif.<sup>7</sup> We chose these areas for their geographic diversity, range in average Medicare spending per beneficiary, and number of physicians in each of the four specialties. We limited our study to physicians who participate in Medicare fee-for-service (FFS). Our results are not generalizable to other geographic areas and specialties.

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<sup>6</sup>See Medicare Improvements for Patients and Providers Act of 2008 (MIPPA), Pub. L. No. 110-275, §131(c), 122 Stat. 2494, 2520-27.

<sup>7</sup>These areas refer to the following Core-Based Statistical Areas (CBSA), an umbrella term for micropolitan and metropolitan statistical areas: Miami-Fort Lauderdale-Pompano Beach, Fla.; Phoenix-Mesa-Scottsdale, Ariz.; Pittsburgh, Pa.; and Sacramento—Arden-Arcade—Roseville, Calif. For CBSA definitions, see <http://www.census.gov/population/www/metroareas/metroarea.html>.



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To measure beneficiaries' resource use, we first adjusted for beneficiaries' health conditions, because sick beneficiaries are expected to use more resources than healthy beneficiaries. Using Hierarchical Condition Category (HCC) and expenditure data obtained from CMS, we estimated a risk adjustment model that uses the same 70 HCCs as the model CMS uses to set managed care capitation rates. HCCs are a way of summarizing an individual's diagnoses into major medical conditions, such as vascular disease or severe head injury.<sup>8</sup> Given beneficiaries' HCCs during the year, we used our model to estimate Medicare's expected annual expenditures for services provided to the beneficiaries in our study. Based on these expected expenditures, we placed beneficiaries into 25 discrete risk categories. Within each risk category and metropolitan area, we ranked beneficiaries from 1 to 100 by their total annual Medicare FFS expenditures such that the average beneficiary in a given risk category and metropolitan area had a rank of 50.<sup>9</sup> We used this rank as our risk-adjusted measure of beneficiaries' resource use.

Our measure of physicians' resource use is derived from the resource use of their patients.<sup>10</sup> For all physicians in our study, we calculated the average rank of their patients. We then used this average to rank physicians within the same metropolitan area and specialty on a scale of 1 to 100. This measure reflects how expensive a physician's patients are compared to the patients of other physicians in the same specialty and area after adjusting for differences in patient health status.

To examine the stability of physicians' resource use from a year-to-year perspective, we analyzed data for 2005 and 2006.<sup>11</sup> We divided physicians' and beneficiaries' resource use into quintiles and examined which

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<sup>8</sup>Hierarchical Condition Categories (HCC) collapse the over 15,000 diagnosis codes into 189 clinically-meaningful condition categories which are additionally grouped into hierarchies of increasing severity. See app. I.

<sup>9</sup>We did not include Part D (drug) expenditures because not all beneficiaries are enrolled in a Medicare Part D prescription drug plan.

<sup>10</sup>Our measure of physicians' resource use therefore includes all resources used by their patients, including those ordered by other providers. Patients were assigned to a physician if they had at least one evaluation and management visit with the physician during the calendar year for cardiologists, internists, and orthopedic surgeons, or if they received any service from the physician for diagnostic radiologists. According to our definition of a physician's practice, a beneficiary could belong to the practice of multiple specialists in our study.

<sup>11</sup>These were the most recent data available when we began our study.

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physicians and beneficiaries stayed in the same resource use quintile from 2005 to 2006 and which ones did not.<sup>12</sup> We also examined the degree of turnover in the patients seen by physicians between 2005 and 2006. In addition, we used the physician quintiles to examine how beneficiary utilization of selected services in 2006 varied by physician resource use quintile.<sup>13</sup>

We concluded that the information on Medicare claims that we used in this report was sufficiently reliable for the purpose of our analysis, because it is a record of Medicare's payments to health care providers. We obtained beneficiaries' FFS expenditures from claims information, and we used data from CMS files containing enrollment and institutional status in order to determine whether beneficiaries were eligible for our study. CMS provided us with a file containing beneficiaries' HCCs, which we used to estimate their expected expenditures. We obtained physicians' specialties from Medicare physician files that CMS uses to administer the program and set payment rates. CMS and its contractors closely monitor these files, so they are generally considered reliable. In addition, we interviewed relevant CMS officials concerning the data and consulted data documentation maintained by CMS. We consider the data sufficiently reliable for our purposes.

To determine factors to consider in developing reports to provide feedback to physicians on their performance, including their per capita resource use, and the extent to which feedback reports may influence physician behavior, we reviewed selected literature and interviewed experts.<sup>14</sup> To identify relevant literature, we searched 31 databases, including MEDLINE and Science Citation Index, using terms such as "physician performance feedback," for journal articles and other documents published between January 1, 2000, and February 13, 2009. From reference lists in documents identified during that search, we identified additional documents that met our criteria. We selected for review three types of documents: (1) meta-analyses, reviews, or scans of the literature on the effectiveness of providing performance feedback to physicians; (2) evaluations of various efforts to provide performance

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<sup>12</sup>We divided the physicians into five ascending groups (quintiles) of nearly equal size based on the measure of their resource use.

<sup>13</sup>See app. I for further discussion of our methodology.

<sup>14</sup>See the bibliography.

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feedback to physicians; and (3) documents that provided guidance from experts on methods for providing performance feedback to physicians. In addition to reviewing selected literature, we conducted interviews with officials of four specialty societies to identify specialty-specific perspectives and concerns, and to solicit officials' comments on a mock feedback report we designed. We also conducted interviews with officials of the five health insurers with the highest revenues in 2007 about their experiences with feedback reports.<sup>15</sup>

There are several limitations to our findings. Our findings cannot be generalized to other areas or specialties. We also restricted our scope to individual physicians and did not analyze group practices. Most importantly, we did not pilot our mock report, which illustrates how per capita measures could be included in a physician feedback report, or test it by giving physicians feedback based on actual resource use. Consequently, we are unable to evaluate how helpful it would be to physicians and, particularly, whether it has potential for increasing physicians' efficiency.

We conducted our work from February 2008 to September 2009 in accordance with all sections of GAO's Quality Assurance Framework that are relevant to our objectives. The framework requires that we plan and perform the engagement to obtain sufficient and appropriate evidence to meet our stated objectives and to discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions.

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## Background

We, MedPAC, and the Congressional Budget Office (CBO) have all suggested that CMS profile physician resource use and provide feedback to physicians as a step toward improving the efficiency of care financed by Medicare. In July 2008, Congress passed MIPPA,<sup>16</sup> which directed the Secretary of HHS to establish a program by January 1, 2009, to provide physicians confidential feedback on the Medicare resources used to provide care to beneficiaries. MIPPA gave HHS the flexibility to measure

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<sup>15</sup>We interviewed officials of four specialty societies: the American Academy of Orthopaedic Surgeons, the American College of Cardiology, the American College of Physicians, and the American College of Radiology. We also interviewed officials of Aetna, Inc.; Cigna Corporation; Humana, Inc.; UnitedHealthGroup, Inc.; and WellPoint, Inc.

<sup>16</sup>See Pub. L. No. 110-275, §131(c).

resource use on a per capita basis, an episode basis, or both. In response to the MIPPA mandate, CMS is pursuing its Physician Resource Use Measurement and Reporting Program. (See table 1.)

**Table 1: Selected Events Preceding CMS Providing Physicians Feedback on Their Medicare Resource Use**

Mar. 2005	<b>MedPAC</b> , in its report to Congress, recommended that the Secretary of HHS should use Medicare claims data to measure fee-for-service physicians' resource use and share results with physicians confidentially to educate them about how they compare with aggregated peer performance. <sup>a</sup>
Jun. 2006	<b>MedPAC</b> , in its report to Congress, stated that it is important to use a per capita profiling methodology in conjunction with an episode-based profiling methodology in order to get a complete picture of resource use. <sup>b</sup>
Mar. 2007	<b>CBO</b> , in its testimony to the Committee on Finance, United States Senate, stated that physicians participating in fee-for-service Medicare could be required or encouraged to participate in a program that would provide physicians feedback on how their practice patterns compared to their peers as a step toward encouraging more efficient care. <sup>c</sup>
Apr. 2007	<b>GAO</b> , in its report to Congress, recommended that CMS develop a physician profiling system that included feedback and incentives as part of a package of reforms to improve the efficiency of care financed by Medicare. <sup>d</sup>
May 2007	<b>GAO</b> , in its testimony to the Subcommittee on Health, House Committee on Ways and Means, stated that providing feedback to physicians on their practice patterns could be a promising step toward encouraging efficiency in Medicare. <sup>e</sup>
Jul. 2008	<b>Congress</b> passed the Medicare Improvements for Patients and Providers Act of 2008, which mandated that the Secretary of HHS establish a program to provide physicians confidential feedback on the Medicare resources used to provide care to beneficiaries. <sup>f</sup>
Apr. 2008 to Present	<b>CMS</b> began a phased implementation of its Physician Resource Use Measurement and Reporting Program which, in Phase I, has disseminated approximately 310 Resource Use Reports to physicians in 13 areas. The program is exploring both per capita and episode-based methodologies. <sup>g</sup>

Source: GAO.

<sup>a</sup>MedPAC, *Report to the Congress: Medicare Payment Policy* (Washington, D.C.: March 2005), 142.

<sup>b</sup>MedPAC, *Report to the Congress: Increasing the Value of Medicare* (Washington, D.C.: June 2006), xvi.

<sup>c</sup>CBO, *Medicare's Payments to Physicians: Options for Changing the Sustainable Growth Rate* (Washington, D.C.: March 1, 2007), 16-17.

<sup>d</sup>GAO, *Medicare: Focus on Physician Practice Patterns Can Lead to Greater Program Efficiency*, [GAO-07-307](#) (Washington, D.C.: April 30, 2007), 22.

<sup>e</sup>GAO, *Medicare: Providing Systematic Feedback to Physicians on their Practice Patterns Is a Promising Step Toward Encouraging Physician Efficiency*, [GAO-07-862T](#) (Washington, D.C.: May 10, 2007).

<sup>f</sup>Medicare Improvements for Patients and Providers Act of 2008 (MIPPA), Pub. L. No. 110-275, §131(c), 122 Stat. 2494, 2520-25.

<sup>g</sup>Federal Register, vol. 74, Physician Resource Use Measurement and Reporting Program, no. 132 (Washington, D.C.: July 13, 2009), 33589-33591.

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## Key Decisions in Physician Profiling

When profiling physicians on their resource use, five key decisions must be made:

- *Which resource use measurement methodology to use.* There are two main profiling methodologies: per capita and episode-based. Using both types of measures of resource use may provide more meaningful results by more fully capturing the relevant characteristics of a physician's practice patterns.
- *How to account for differences in patient health status.* Accounting for differences in patient health status, a process sometimes referred to as risk-adjustment, is an important and challenging aspect of physician profiling. Because sicker patients are expected to use more health care resources than healthier patients, we believe the health status of patients must be taken into account to make meaningful comparisons among physicians. There are various risk-adjustment methods and the suitability of a given method will depend on characteristics of the physicians to be profiled and their patients.
- *How to attribute resource use to physicians.* Important attribution decisions include whether to assign a patient's resource use to the single physician who bears the greatest responsibility for the resource use, to all physicians who bore any responsibility, or to all physicians who met a given threshold of responsibility, such as providing a certain percentage of the expenditures or volume of services. A single attribution approach may not be applicable for all types of measures or for all types of physician specialties.
- *What benchmark(s) to use.* Physician profiling involves comparing physicians' resource use to a benchmark. There are differing opinions on what are the most appropriate and meaningful comparative benchmarks.
- *How to determine what is a sufficient sample size to ensure meaningful comparisons.* The feasibility of using resource use measures to compare physicians' performance depends, in part, on two factors: the availability of enough data on each physician to compute a resource use measure and a sufficient number of physicians to provide meaningful comparisons. It is important to calculate resource use measures only for physicians with sufficient sample sizes in order to address concerns that a physician's profile may be distorted by a few aberrant cases. There is no consensus on what sample size is adequate to ensure meaningful measures.

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## CMS's Resource Use Measurement and Reporting Program

Responding to the MIPPA mandate to establish a physician feedback program by January 1, 2009, CMS began in April 2008 to develop its program for reporting to physicians on their resource use. In the first phase of the program, CMS identified eight priority conditions and disseminated approximately 310 Resource Use Reports to physicians in selected specialties who practiced in one of 13 geographic areas. The reports generally included both per capita and episode-based resource use measures that were calculated according to five different attribution rules. The reports also contained multiple cost benchmarks relative to physicians in the same specialty and geographic area. In Phase II, CMS is proposing to expand the program by adding quality measures and reporting on groups of physicians as a mechanism for addressing small sample size issues.

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## Per Capita Profiling Method Shows Specialist Physicians' Practice Patterns Relatively Stable Over 2 Years; Patients of High Resource Use Physicians Used More Institutional Services Than Other Patients

Using a per capita profiling method, we found that from 2005 to 2006, specialist physicians showed considerable stability in their practice patterns, as measured by resource use—greater stability than their patients, despite high patient turnover. We also found that our per capita method can differentiate specialists' patterns of resource use with respect to different types of services, such as institutional services,<sup>17</sup> which were a major factor in beneficiaries' resource use. In particular, patients of high resource use physicians used more institutional services than patients of low resource use physicians.

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<sup>17</sup>For the purposes of this report, we defined institutional services as hospital inpatient and skilled nursing facility services.

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## Specialist Physicians' Resource Use More Stable Than Beneficiaries' Resource Use

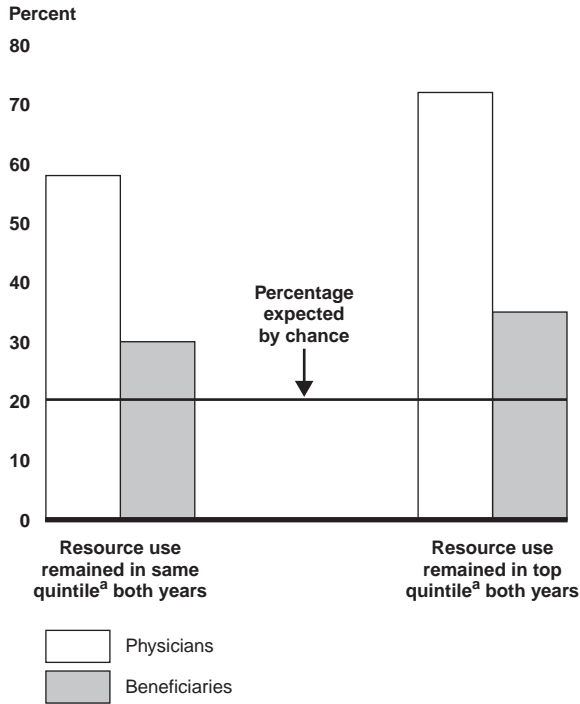
Using a per capita method to profile specialist physicians, we found that their practice patterns, as measured by the level of their resource use, was relatively stable over 2005 and 2006 by comparison with individual beneficiaries' resource use (see figure 1).<sup>18</sup> This is true despite the fact that our measure of physicians' resource use is derived from their patients' resource use and that the specific patients whom physicians see are not always the same from year to year. Among the physicians we studied, less than one-third of patients seen by study physicians in 2005 were also seen by the same physician in 2006. This stability suggests that per capita resource use is a reasonable approach for profiling physicians, because it reflects distinct patterns of a physician's resource use, not the particular population of beneficiaries seen by a physician in a given year.

We divided both physician and beneficiary resource use into five groups of approximately equal size (quintiles) and found that, on average across the four metropolitan areas and four specialties, 58 percent of physicians and 30 percent of beneficiaries were in the same quintile of resource use in 2005 and 2006. The pattern was even more pronounced for the top resource use quintile: 72 percent of physicians and 35 percent of beneficiaries remained in that quintile. If the level of physicians' and beneficiaries' resource use was purely random, only 20 percent would be expected to have remained in the same quintile.

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<sup>18</sup>We defined beneficiaries' resource use in terms of their resource use compared to that of other beneficiaries with similar health conditions. Physicians' resource use is derived from beneficiaries' resource use. It is defined as the average resource use of those Medicare beneficiaries in our study population whom the physician saw compared to the average resource use of other physicians' Medicare beneficiaries. To determine stability of beneficiaries' resource use, we identified beneficiaries who were in our study population in both 2005 and 2006. To determine stability of physicians' resource use, we identified physicians in the four specialties we studied who saw at least one of the Medicare beneficiaries in our 2005 study population and at least one beneficiary in our 2006 study population. We divided physicians and beneficiaries into quintiles according to their resource use. See app. I.

**Figure 1: Stability of Medicare Beneficiaries' and Specialist Physicians' Resource Use—Averaged Across Four Metropolitan Areas and Four Physician Specialties, 2005-2006**



Source: GAO analysis of Medicare claims data.

Note: The specialist physicians include cardiologists, diagnostic radiologists, internists, and orthopedic surgeons in Miami, Fla.; Phoenix, Ariz.; Pittsburgh, Pa.; and Sacramento, Calif.

<sup>a</sup>Beneficiaries and physicians are divided into five ascending groups of nearly equal size based on the level of their resource use.

We also examined the stability of physicians' resource use by specialty and found a similar pattern, although not to the same extent in all specialties. The average percentage of physicians who were in the same resource use quintile in 2005 and 2006 ranged from 48 percent for orthopedic surgeons to 60 percent for internists. Resource use in the top quintile was more stable and ranged from 69 percent for diagnostic radiologists to 74 percent for internists. (See table 2.)



**Table 2: Average Stability of Physicians’ Resource Use by Specialty—Averaged Across Four Metropolitan Areas, 2005-2006**

Physician Specialty	Average percentage remaining in same quintile <sup>a</sup>	Average percentage remaining in the top quintile <sup>a</sup>
Cardiology	59	71
Diagnostic radiology	58	69
Internal medicine	60	74
Orthopedic surgery	48	70

Source: GAO analysis of Medicare claims data.

Note: The four metropolitan areas are Miami, Fla.; Phoenix, Ariz.; Pittsburgh, Pa.; and Sacramento, Calif.

<sup>a</sup>Physicians are divided into five ascending groups of nearly equal size based on the level of their resource use.

In each of the four metropolitan areas, physicians showed greater stability in their resource use than individual beneficiaries, although the percentages varied. For example, the percentage of physicians remaining in the top quintile ranged from 68 percent in Phoenix to 76 percent in Miami. For beneficiaries, the percentage in the top quintile ranged from 31 percent in Phoenix to 39 percent in Miami. (See table 3.)

**Table 3: Average Stability of Physicians’ and Beneficiaries’ Resource Use by Metropolitan Area—2005-2006**

Metropolitan Area	Physicians <sup>a</sup>		Beneficiaries	
	Average percentage remaining in same quintile <sup>b</sup>	Average percentage remaining in the top quintile <sup>b</sup>	Average percentage remaining in same quintile <sup>b</sup>	Average percentage remaining in the top quintile <sup>b</sup>
Miami	62	76	31	39
Phoenix	56	68	29	31
Pittsburgh	52	70	30	32
Sacramento	58	71	30	32

Source: GAO analysis of Medicare claims data.

<sup>a</sup>Cardiologists, diagnostic radiologists, internists, and orthopedic surgeons.

<sup>b</sup>Beneficiaries and physicians are divided into five ascending groups of nearly equal size based on the level of their resource use.

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The greater stability of physicians' resource use compared to beneficiaries' resource use could be due to their individual practice styles, as well as to a range of other factors, such as participation in formal or informal referral networks. These networks have a range of providers, including other physicians, who treat their patients and refer them for treatment, testing, and admissions to hospitals.

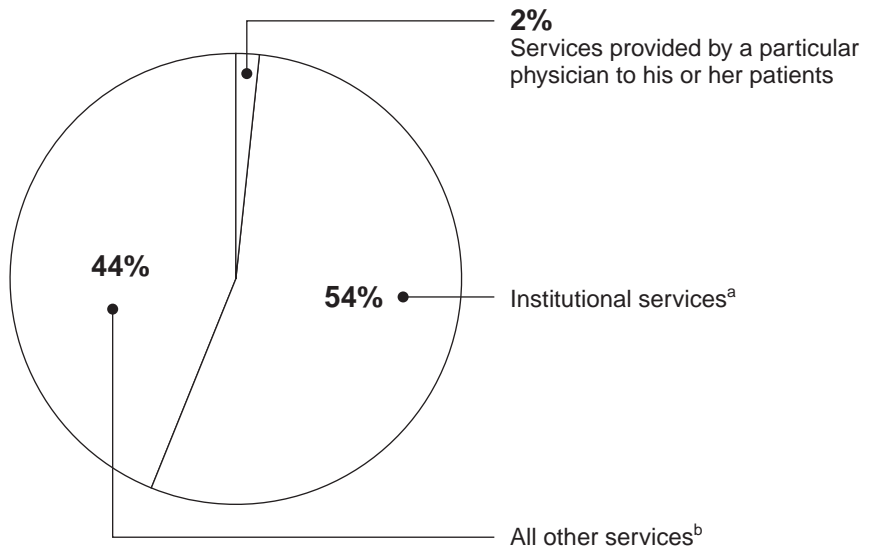
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### Beneficiary Use of Institutional Services Varies by Physician Resource Level

Beneficiaries seen by high resource use physicians generally were heavier users of institutional services than those seen by lower resource use physicians, and institutional services accounted for more than one-half of total patient expenditures. This pattern was consistent across three of the four specialties we studied, with orthopedic surgery being the exception.

Institutional services were the major driver of Medicare expenditures for beneficiaries in physicians' practices, accounting on average for 54 percent of expenditures. Services provided by a particular physician in our study directly to that physician's patients accounted for only 2 percent of total expenditures or about \$350 for each beneficiary in a physician's practice. All other services—those provided by other physicians, home health care, hospice care, outpatient services, and durable medical equipment—accounted for the remaining 44 percent of expenditures. (See fig. 2.)

**Figure 2: Share of Total Medicare Expenditures per Beneficiary for Services Provided by Physicians to their Patients, Institutional Services, and All Other Services—Practice Average Across Four Specialties in Four Metropolitan Areas, 2006**



Source: GAO analysis of CMS claims data.

Note: The percentages shown are the average share of Medicare expenditures for the beneficiaries in the practices of cardiologists, diagnostic radiologists, internists, and orthopedic surgeons in Miami, Fla.; Phoenix, Ariz.; Pittsburgh, Pa.; and Sacramento, Calif., with a minimum of 100 Medicare patients in their practice.

<sup>a</sup>Institutional services include inpatient hospital and skilled nursing care.

<sup>b</sup>Part B physician and supplier services (other than those provided directly by the physician), home health care, hospice care, outpatient hospital services, and durable medical equipment.

Expenditures for institutional services for a physician’s patients grew as the level of physician resource use increased. Dividing the level of physician resource use into quintiles, we examined the relationship of physicians’ resource use and expenditures for services provided to their patients. Average expenditures for institutional services increased more steeply by physician resource quintile than expenditures for all other services.<sup>19</sup>

<sup>19</sup>Increases in per beneficiary expenditures across the physician resource use quintiles were accompanied by an increase in the average risk score of beneficiaries for all the specialties. However, this tendency did not significantly affect our physician resource use measure, because the resource use of physicians in higher quintiles was higher than that of physicians in lower quintiles for all of the patients they saw, regardless of health status. See app. I.

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The four specialties all exhibited this pattern of increasing beneficiary expenditures for institutional services accompanying increasing physician resource use, although for orthopedic surgery the increase was small. The increase in average beneficiary expenditures for all other services that accompanied increasing physician resource use was similar for three of the four specialties and was steeper for internal medicine.

We also examined the average number of physicians seen by the Medicare beneficiaries we studied and found that it was positively associated with increasing physician resource use. Overall, the number of physicians seen increased from an average of about 13 physicians per beneficiary in the lowest quintile of resource use to more than 23 in the highest. The increase in the number of physicians seen was accompanied by an increase in average beneficiary expenditures for institutional services that was steeper than the rise in other services.

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## Research Literature, Health Insurers, and Specialists Identified Considerations in Developing Physician Feedback Reports on Resource Use

Through our review of selected literature and interviews with officials of health insurance companies, specialty societies, and profiling experts, we identified several key considerations in developing reports to provide feedback to physicians on their performance, including their per capita resource use. We also drew on information from these sources to develop an example of how per capita measures could be presented in a physician feedback report.

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## Key Considerations in Developing Physician Feedback Reports Include Content, Design, Dissemination Strategy, and Transparency

We identified four key considerations in developing reports to provide feedback to physicians (see table 4).

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**Table 4: Key Considerations in Developing Physician Feedback Reports**

<b>General considerations</b>	<b>Examples of specific considerations</b>
Report content	Types of measures, comparative benchmarks
Report design	Length, organization, graphics
Report dissemination	Which physicians should receive reports, frequency of reporting, hardcopy versus electronic dissemination
Transparency	Information about purpose, methods, data

Source: GAO analysis.

## Report Content

Our review of selected literature suggested that a physician feedback report should contain three basic elements: an explanation of the information contained in the report (which we will discuss in the context of transparency), measures describing the performance of the physician or physicians to whom the report is directed, and comparative benchmarks.

**Measures.** Both the selected literature we reviewed and the officials we interviewed supported including measures of quality along with measures of cost, and ensuring that measures are actionable by providing information that can help physicians improve their performance. The officials we interviewed were divided as to whether these measures should reflect physicians' performance at the individual level or the group level.

- **Quality measures.** All five of the insurers we contacted were profiling physicians in terms of quality and cost, and four of the five had adopted a model code for physician ranking programs that called for rankings to be based on quality as well as cost.<sup>20</sup> Most of the specialty society officials we interviewed also called for the inclusion of quality measures in physician feedback reports, and some cautioned that focusing solely on costs could create perverse incentives—for example, encouraging physicians to reduce inappropriately the level of care provided to patients. The lack of widely accepted, claims-based quality measures for some specialties has limited the number of specialties some insurers profile. For example, at the time of our interview, one insurer was profiling physicians in only one

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<sup>20</sup>The model code was developed in 2007 by the New York State Attorney General's office in consultation with medical societies, including the American Medical Association, and consumer groups. The model code was developed during the course of an investigation by the Attorney General's office into insurers' potentially deceptive steering of patients to the least expensive physicians under the guise of physician ranking programs. As of February 2009, the Attorney General's office had settled with eight insurers, instituting reforms designed to ensure that ranking programs are based on accurate and transparent measures.

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specialty (cardiology) while planning to begin profiling other specialties within a year.

- **Actionable measures.** According to one research report we reviewed, little research has been done to determine how the reporting of global scores—such as an overall per capita cost rank—influences physician behavior,<sup>21</sup> but experts on physician profiling and a broad array of stakeholders, including physicians and insurance company officials, agreed that performance data should be disaggregated into enough categories to enable physicians to identify practice patterns to change. According to some profiling experts, resource use reports must pinpoint physicians’ overuse and misuse of resources, and identify practices that add costs but do not improve desired outcomes. Similarly, specialty society officials we interviewed emphasized the importance of including measures that focus on areas in which the physician has control.
- **Individual versus group measures.** Another measurement consideration is whether physicians in group practices should be profiled as individuals or as a group. The insurers we contacted took varying approaches. In some cases, the approach was driven by contracting arrangements, with insurers constructing group profiles for physicians with whom they had group contracts. One insurance company official pointed out that profiling at the group level allows more physicians to be profiled, as it increases the data available to construct a profile. Another official advocated profiling at the individual level because he believes physicians are more interested in assessments of individual performance. Officials of the four specialty societies generally saw some merit to both approaches, but some underscored the difficulty of identifying group affiliations or noted that groups are not necessarily homogeneous enough for a group assessment to be appropriate.

**Comparative benchmarks.** One consideration addressed by multiple publications we reviewed was the kind of benchmark to which physicians’ performance should be compared. For example, a physician’s performance may be compared to (1) an evidence-based standard, (2) a standard based on professional judgment, such as the consensus standards endorsed by the National Quality Forum, or (3) to a statistical norm, such as the average for a physician’s peers locally or nationally.

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<sup>21</sup>Beckman, et al., “Current Approaches to Improve the Value of Care,” p. 9.

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Although studies we reviewed offered conflicting evidence as to whether including peer comparisons in physician feedback reports increases their effectiveness, some profiling experts and specialty society officials believe comparative information is useful and of interest to physicians. In the literature we reviewed, for example, one profiling expert suggested that such comparisons can motivate behavior change by taking advantage of physicians' desire to perform at least as well as their peers; another stated that performance statistics are not meaningful to physicians without peer comparisons.

A physician's peer group can be defined in various ways. According to one study, some organizations that provide performance feedback to physicians have found comparisons within specialty and locality most useful to and most frequently requested by physicians.<sup>22</sup> Representatives of some of these organizations said physicians find local information more relevant because it reflects the practice patterns of their geographic area. All five insurers we contacted compare physicians to others in the same market and specialty; one of the five also compares physicians to peers nationwide on some measures. In contrast, officials of all four specialty societies recommended comparisons at the national level, with officials of one society stating that there is no scientific basis for regional variations in practice patterns.<sup>23</sup> There was less agreement about whether physicians should be compared to others in their specialty or to a more narrowly defined group. Officials of one specialty society advocated comparisons at the subspecialty level in recognition of the variation in resource use patterns among subspecialists. Another official pointed out that such comparison groups could be difficult to define because physicians in some specialties tend to have multiple subspecialties. Because views differ on appropriate comparison groups, one hospital-owned healthcare alliance plans to incorporate in its physician reports a customizable feature that will allow users to select the peer comparison they wish to see.

Comparisons to physicians' own past performance (trend data) are commonly presented in feedback reports, and the majority of physicians surveyed in one study found these comparisons useful.

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<sup>22</sup>Teleki, et al., p.7.

<sup>23</sup>Officials of two specialty societies also recommended state or local comparisons.

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## Report Design

The selected literature we reviewed offered little hard evidence on how feedback reports should be designed to engage physicians' interest or to prove their comprehension of the material. However, researchers and profiling experts offered some comments and suggestions based either on their experience with clinical performance measurement or on an analysis of the literature on consumer behavior and its possible implications for physician reporting (see table 5).

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**Table 5: Comments and Suggestions for Designing Physician Feedback Reports**

Topic	Comments
Amount of material and report length	<ul style="list-style-type: none"><li>• Effective reports do not necessarily provide a high level of detail.</li><li>• Detailed supporting data can be made available in a separate drilldown section.</li><li>• Physician feedback reports can vary greatly in length depending on the number of topics covered and the level of detail.</li></ul>
Organization	<ul style="list-style-type: none"><li>• The organization of the report may be more important than its length.</li><li>• All high-level summary information should be in one place so that it's easy to absorb.</li><li>• Reports should move from gross measures to more refined.</li><li>• Spatial organization, through the use of headings and lists, is critical for helping readers find information.</li></ul>
Graphics	<ul style="list-style-type: none"><li>• Visual formats provide the best methods for data interpretation and are useful for highlighting the most important measures.</li><li>• Information can be conveyed visually in tables, graphs, and score cards.</li><li>• Tables may be better to show specific numeric values, while graphs may be better to display information for comparative purposes, because they facilitate the organization of material into meaningful groups.</li><li>• A score card or summary-rating format consolidates data even further than tables or graphs, using colors or symbols to help readers easily identify successes as well as areas for improvement.</li></ul>

Source: GAO analysis of selected literature.

The amount and combination of material that should be included in a single report is an important consideration. According to one publication that summarized a review of multiple feedback reports, some organizations issue separate reports on efficiency/cost and effectiveness/clinical quality, in part to avoid diluting the impact of either set of measures. Others believe a single report gives physicians a more complete picture of their performance.

Officials of the three insurers we contacted that routinely issued feedback reports to physicians said that their companies produced summary reports, typically one to two pages in length, containing high-level information, but also made more detailed information, such as patient-level data, available to physicians. One insurer's summary report consisted



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of one page of cost efficiency measures and one page of effectiveness measures. The cost efficiency page presented average cost per episode of care by service category for the physician and the physician's peer group, as well as the ratio of the two, in both tabular and graphic form. The effectiveness page presented process-of-care measures for selected conditions, including cardiovascular disease and asthma. Company officials said summary reports were limited to two pages to accommodate physicians' attention spans and that the two sets of measures were presented separately to discourage attempts to link the two. Specialty society officials agreed reports should be short—most proposed one to two pages—and strongly recommended that information be presented graphically to the extent possible. One official, noting that physicians are very visually oriented, recommended feedback reports consisting mainly of easily understood graphics.

The selected literature we reviewed, our interviews with specialty society officials, and existing physician feedback reports suggested reports can be kept short by segmenting some information into separate documents—for example, a cover letter that explains the report's purpose, a description of the profiling methodology, a set of frequently asked questions, and a list of definitions.

## Report Dissemination

Some key considerations with respect to report dissemination are which physicians should receive reports, how frequently to issue reports, and whether to issue reports in hardcopy or electronically.

**Which physicians should receive feedback reports.** One major decision is whether to issue reports to all physicians for whom performance measures can be calculated or only to a subset who fail to meet certain performance standards—a decision that may involve weighing reporting costs against potential impacts. None of the studies we reviewed directly addressed this issue, but all of the specialty society officials we interviewed advised sending reports to all or nearly all physicians, rather than just to poor performers. They gave several reasons: to provide positive recognition to physicians who are performing well; to avoid singling out certain physicians as poor performers, especially on the basis of excess costs over which they have little control; and to create opportunities for voluntary peer-to-peer learning among physicians who are at different points along the performance spectrum. Similarly, all three of the insurers that routinely issued feedback reports sent them to all physicians for whom they had performance measures.

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**Frequency of reporting.** According to one book we reviewed, organizations that provide feedback to physicians should do so more than once a year to give physicians an opportunity to improve their performance in a timely manner.<sup>24</sup> However, because of the time needed to gather sufficient data to identify trends and patterns of performance, many organizations provide feedback no more than twice a year. Of the two insurers that told us how frequently they issued feedback reports, one did so annually and the other at least every 6 months. Officials of the latter company said the frequency of their reporting was limited by the number of claims in their dataset and suggested that CMS would not face the same limitations.

**Hardcopy versus electronic dissemination.** Reports can be disseminated in hardcopy through various channels, such as the mail, or electronically, through e-mail or a Web site. One literature scan we reviewed cited certain advantages of electronic formats such as Web-based applications. Specifically, they allow users to organize information as they choose and are well suited to presenting data from the general to the specific, which facilitates information processing. Although this report noted some concerns about physicians' access to the Internet, according to a report based on a national survey of physicians in December 2002 and January 2003, almost all respondents said they had Internet access, and most said they considered it important for patient care.<sup>25</sup>

Of the three insurers that routinely issued feedback reports, two issued them electronically and one issued them in hardcopy. Officials of the latter company said that staff typically hand-delivered the reports to physicians during on-site visits in order to discuss the results.<sup>26</sup> Officials of most of the specialty societies we contacted did not advocate one dissemination mode over the other, but some noted that organizations that issue reports electronically must confront certain challenges, such as ensuring that security features do not make access difficult, addressing the lack of high-

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<sup>24</sup>Marder et al., p. 162.

<sup>25</sup>Bennett, Nancy L., Linda L. Casebeer, Robert E. Kristofco, Sheryl M. Strasser. "Physicians' Internet Information-Seeking Behavior." *The Journal of Continuing Education in the Health Professions*, Vol. 24 (2004), pp. 31-38.

<sup>26</sup>At the time of our interview, this insurer was profiling and providing feedback to physicians in only one specialty. However, officials said that the company would continue to hand-deliver results to all physicians even after it begins reporting to physicians in additional specialties.

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## Transparency

speed Internet service in some areas, and determining whether to send reports by e-mail or to instruct physicians to access them on the Internet.<sup>27</sup> One specialty society official recommended using both modes of dissemination to accommodate different preferences.

Both the selected literature we reviewed and our interviews with officials from insurance companies and specialty societies underscored the importance of ensuring transparency regarding the purpose of the report and the methodology and data used to construct performance measures.

**Purpose.** According to one literature scan, feedback reports should explicitly state their purpose—for example, to reduce costs, improve quality, or simply to provide information—and should highlight any items for which the physician will be held accountable.<sup>28</sup>

**Methodology.** Two important considerations are where to provide information about methodology—whether in the report itself or through some other mechanism, such as a Web page—and how much technical detail to provide. Some of the insurers we contacted provide information on-line about their profiling methodologies, including details about measures, attribution of care to physicians, risk adjustment, and statistical issues. In addition, some of the officials we interviewed said that company staff will meet with physicians to explain the profiling methodology, if requested. For example, officials of one company said that it has on staff four profiling experts, mostly nurses, in addition to about 20 medical directors who can answer physicians' questions.

Specialty society officials we interviewed highlighted a potential trade-off between providing enough information in the report to persuade physicians of the validity of the measures and keeping the report concise enough to maintain physicians' interest. All of the officials we interviewed agreed that physicians should have access to details about the methodology; some suggested this information might best be disseminated through a Web site. Explaining how the data are risk-adjusted to account

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<sup>27</sup>When disseminating information electronically, federal agencies, including CMS, must comply with requirements under Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. §794d), which requires that federal employees and members of the public who are individuals with disabilities have access to and use of the information that is comparable to the access to and use of the information by federal employees and members of the public who are not individuals with disabilities.

<sup>28</sup>Teleki, et al., pp. 5-6.

for differences in physicians' patient populations was cited by specialty society officials as particularly important.

**Data.** Another consideration is ensuring transparency with regard to the data used in profiling—making patient-level detail available so physicians can reconcile performance measures with their own information about their practices. All five of the health insurers we contacted provided opportunities for physicians to examine patient-level data and file appeals before results are made public, although their processes or policies for doing so varied (see table 6).

**Table 6: How the Nation's Five Largest Health Insurers Make Patient-Level Profiling Data Available to Physicians for Review and Appeal**

	Insurer A	Insurer B	Insurer C	Insurer D	Insurer E
Availability of patient-level data	Generally e-mailed upon request	Generally mailed upon request	Accessible on-line to each physician	Accessible on-line to each physician	Hand-delivered to each physician group during site visits
Window for review and appeal	90 days	45 days	60 days	45 days	45 days

Source: GAO analysis of information provided by insurers.

Officials of one of the two insurers that made detailed data available on-line said their company previously sent hardcopy reports to physicians, but learned from medical office managers that they would prefer an on-line format that could be manipulated to facilitate physician comparisons. Officials of the other insurer said that their company planned to make the data available in a manipulatable format soon. Most of the specialty society officials we interviewed agreed that patient-level data should be made available to physicians, but some predicted that few physicians would access them. Two interviewees suggested practice size would probably be a factor; one added that physicians in smaller groups would likely lack the resources and skills to analyze the data.

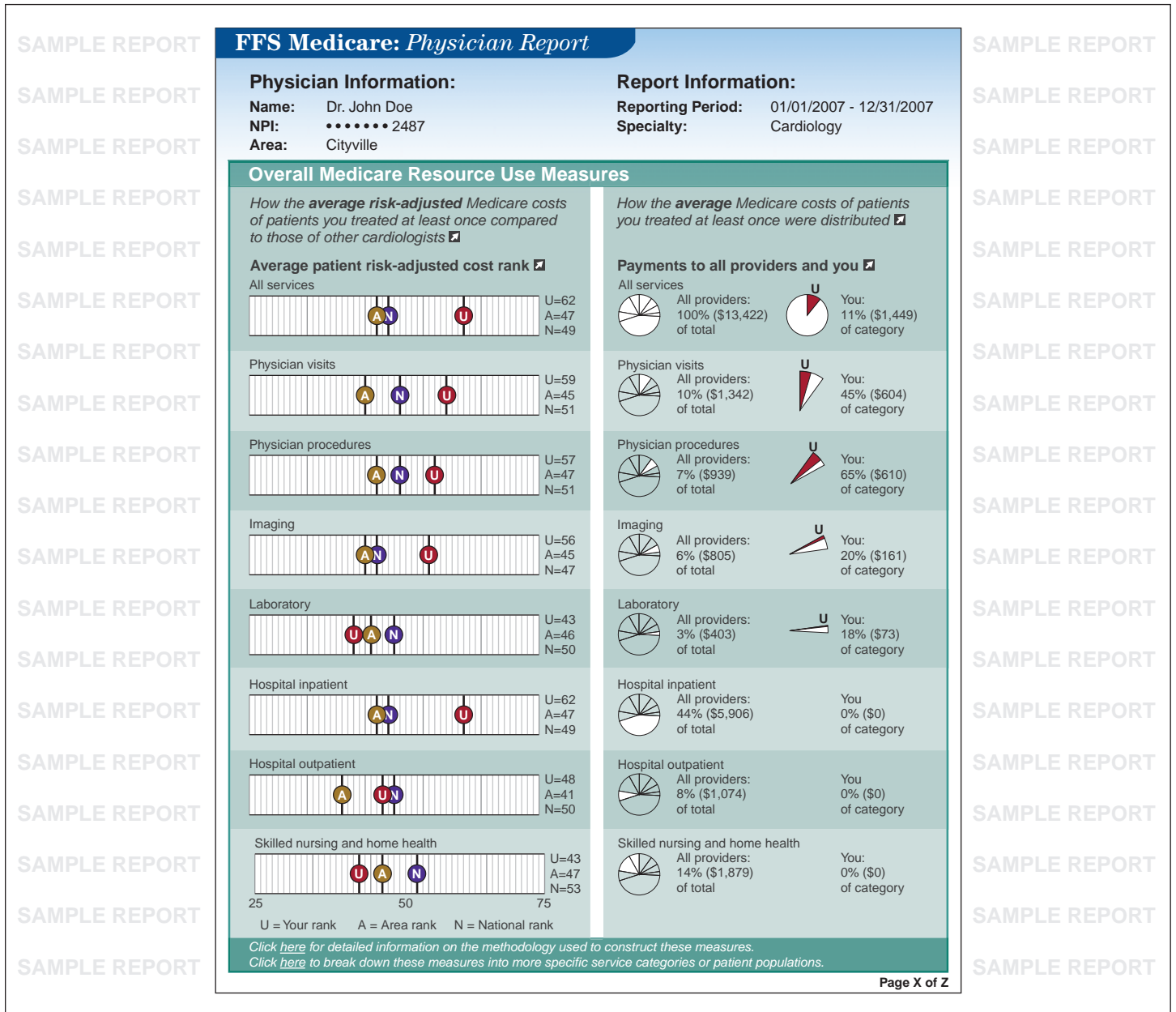
## Per Capita Measures Can Be Presented in a Physician Feedback Report

Drawing upon lessons culled from the literature and our interviews, we developed a mock report that illustrates how per capita measures could be included in a physician feedback report. Such a report could also include other measures such as quality measures and episode-based resource use measures. We included two types of per capita measures—risk-adjusted cost ranks and risk-adjusted utilization rates—each presented with local and national comparative benchmarks. To provide further context, we also included per capita measures showing how the average Medicare costs of

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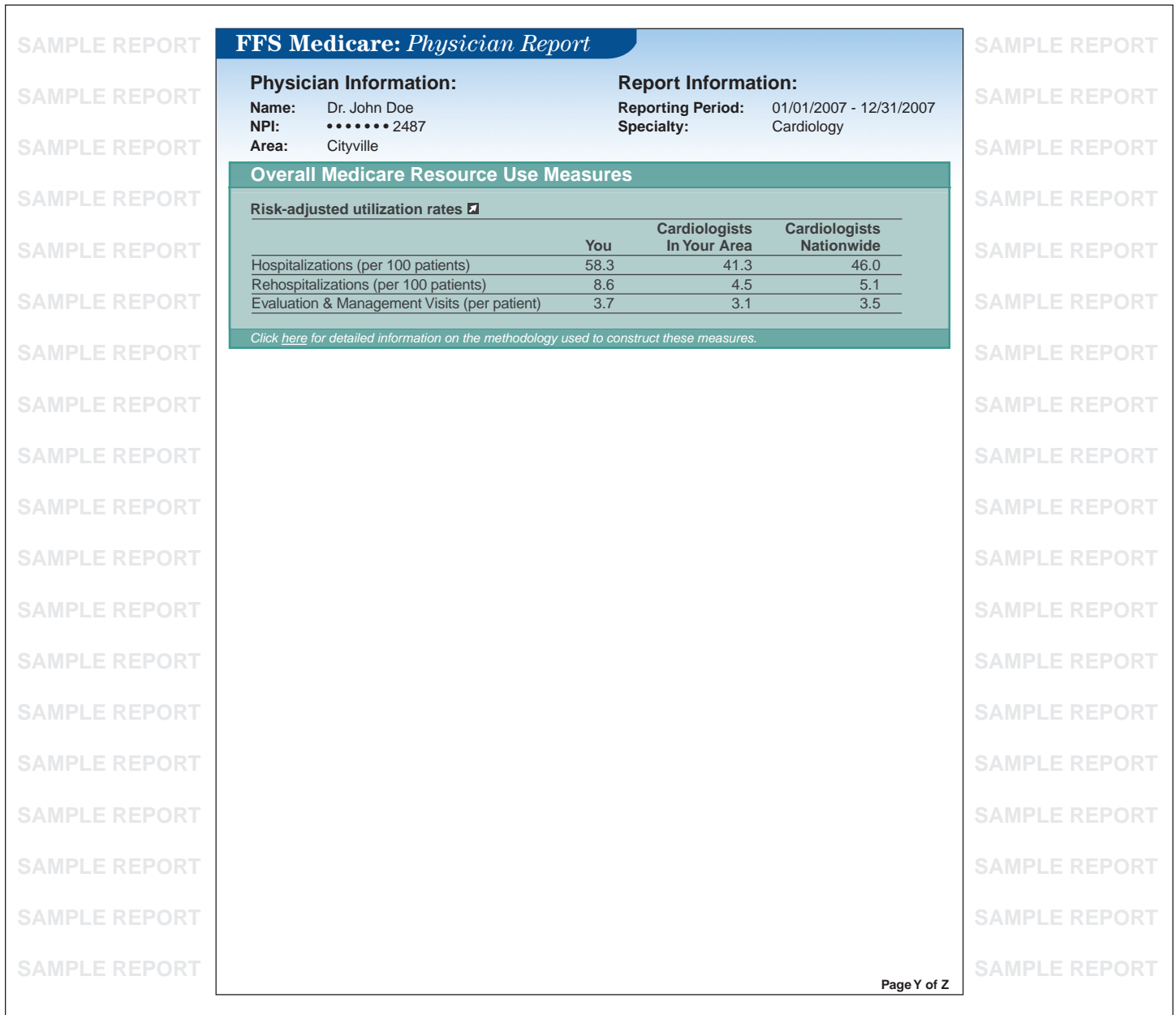
patients the physician treated at least once were distributed among service categories, and the percentage of those costs that were for services directly provided by the physician to whom the report is directed. We kept the mock report under two pages and included minimal text, while ensuring transparency by indicating the availability of methodology details and supporting data. To accommodate physicians' differing dissemination preferences, we designed the mock report to be available in both electronic and hardcopy formats. (See fig. 3.)

Figure 3: Mock Physician Feedback Report Illustrating Per Capita Measures



Source: GAO.

**Figure 3 (cont.): Mock Physician Feedback Report Illustrating Per Capita Measures**



Note: This figure is an illustration of how per capita measures could be included as part of a physician feedback report, which could include a cover letter, quality measures, and other resource use measures. All of the data presented in the figure are hypothetical.

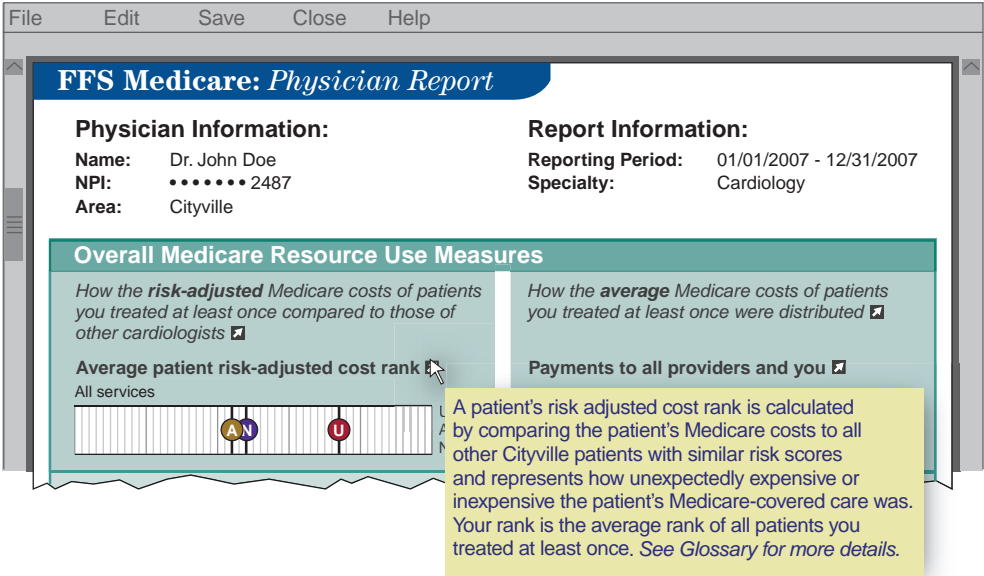
Specialty society officials who vetted a draft of the mock report made several recommendations. Some recommendations centered on taking advantage of electronic capabilities, such as adding hovers to define key terms (see fig. 4), creating interactive features to let physicians explore “what if” scenarios, and including links to educational materials and specialty guidelines. Officials also recommended adding information on pharmaceutical costs, a category we did not include because not all beneficiaries are enrolled in a Medicare Part D prescription drug plan.

**Figure 4: Example of a Hover in a Mock Physician Feedback Report**

*The electronic version of the feedback report could make use of interactive features.*

*For example, the report could use “hovers” to display a short definition of key terms in the document and a reference to a page with more information.*

*To meet requirements for federal agencies to make electronic information accessible to disabled individuals, the feedback report could show all hover definitions on the last page of the document, if it were printed.*



Source: GAO.

More generally, specialty society officials said that they particularly liked the graphs and charts in our mock report. One official added that our report was easier to understand than other reports he had seen and that he thought it would get physicians’ attention. Another official commented how the presented per capita measures could give physicians insight on the care their patients are receiving that they were not previously aware of—a perspective other cost measures could not provide. However, multiple officials said the measures as presented were too broad to be actionable and might not seem relevant to physicians, as most physicians feel responsible only for the costs of services they directly order or provide, not for the total cost of patients’ care. Two officials suggested



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that these per capita measures would have more value in health care systems that emphasized coordination of care.

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## Potential Influence of Feedback Regarding Medicare Costs on Physician Behavior Is Uncertain

Our review of available literature on the effectiveness of physician feedback suggests that feedback alone generally has no more than a moderate influence on physician behavior. However, the potential influence of feedback from CMS regarding Medicare costs is uncertain, and may be greater than that of feedback from other sources, because Medicare reimbursement typically represents a larger share of physicians' practice revenues than that from other insurers.

In general, studies examining the effect of feedback on physicians' behavior have found it to have a small to moderate effect.<sup>29</sup> Factors that appear to influence the effectiveness of feedback include its source, frequency, and intensity. For example, one review of the literature concluded that physicians were more likely to be influenced by reports from a source they expected to continue monitoring their performance. This review also found that repeated feedback over a period of several years may be more likely to get physicians' attention.<sup>30</sup> Another review reported that the intensity of the feedback appeared to influence its effectiveness. The review cited individual, written feedback containing information about costs or numbers of tests, but no personal incentives, as among the least intensive, and therefore likely to be among the least effective approaches.<sup>31</sup>

Consistent with the literature we reviewed, most of the insurance company officials we interviewed questioned whether providing performance feedback to physicians would have a significant impact on the physicians' behavior in the absence of other incentives. While all five insurers profiled physicians, none used the results solely to provide

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<sup>29</sup>These studies varied in terms of the type of feedback provided (verbal and/or written; directed to individuals or groups; delivered by senior colleagues, professional standards review organizations, or other sources), types of clinicians to whom the feedback was delivered (physicians, dentists, nurses, or other providers), frequency and duration of the feedback, the content, whether the feedback was combined with other interventions, and the outcomes studied.

<sup>30</sup>Veloski, p. 125.

<sup>31</sup>Jamtvedt, "Audit and Feedback," pp. 5 and 24.

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feedback.<sup>32</sup> Officials of four of the five insurance companies said that to affect physicians' behavior, profiling results must be made public, thus influencing patients' choice of physicians, or linked to monetary incentives, as in pay-for-performance arrangements. However, officials of one company disagreed, stating that feedback alone can affect physicians' behavior if the reports show how they rank against their peers and make clear what behavior they need to change to improve their efficiency. These officials also said that the impact of feedback could depend on the size of physicians' practices and whether they have the resources to review the reports and the management structure to affect changes.

Whether the experiences of private insurers or the lessons from the literature on the influence of feedback will hold in the case of the Medicare program is uncertain. A survey conducted in 2004-2005 found that, for most physicians, Medicare represented more than one-quarter of practice revenue, and for 17 percent of physicians, the proportion was more than one-half.<sup>33</sup> Because physicians typically contract with a dozen or more health insurance plans, few, if any, of these plans are likely to represent as large a share of physicians' practice revenue as Medicare. Hence, the impact of feedback from CMS might be greater than that from other sources. In addition, one profiling expert suggested that physicians might expect feedback from CMS to be only the first step in efforts to influence physicians' behavior—to be followed, for example, by public reporting of profiling results. This perspective comports with recommendations in our earlier report.<sup>34</sup> Two interviewees said that providing feedback on a confidential basis would be an appropriate first step. One said it would allow time to test the profiling methodology and gauge physicians' reactions; the other said it would provide an opportunity for physicians to vet the measures and identify any errors.

Most of the specialty society officials predicted that feedback from CMS would have a small to moderate effect on physician behavior, similar to that described in the literature we reviewed, but some officials offered

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<sup>32</sup>Two used the information to assign ratings to physicians in the provider directories made available to members, two used it to select physicians for high-performance networks, and one used it for both purposes.

<sup>33</sup>These data are weighted national estimates from the Community Tracking Study Physician Survey conducted by the Center for Studying Health System Change.

<sup>34</sup>See [GAO-07-307](#).

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suggestions for enhancing its effectiveness. Other suggestions can be drawn from the literature we reviewed. These suggestions included:

- providing advance notice of feedback reports (through presentations, letters, or other communications) to help ensure that physicians open and read the reports;
- working through credible intermediaries, such as medical societies or locally prominent physicians, to assure physicians that the feedback process is reasonable and legitimate;
- providing opportunities for physicians to discuss the reports through videoconferences, teleconferences, or on-line discussion groups; and
- offering in-person follow up, possibly drawing on the resources of the Medicare Quality Improvement Organizations.<sup>35</sup>

Involving physicians in the development of a feedback system may also enhance its effectiveness. One literature scan concluded that physician involvement in system design was vital for obtaining physician buy-in.<sup>36</sup> Information from insurers suggested that, although physicians may not always be involved in initial development of feedback systems, their feedback can prompt modifications. Some insurance officials we interviewed described an iterative process involving ongoing communication with physicians and continuous modification of reports and systems. For example, officials of one insurance company said that the company did not seek initial input from physicians—in the belief that they would not have been able to provide much input without a complete understanding of the data and methodology—but took into account physicians’ responses to earlier, less formal systems. Officials of other companies described various mechanisms for obtaining physicians’ perspectives, including formal physician advisory councils, regular meetings with officials of national medical societies, and town hall meetings with physicians at the local level.

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<sup>35</sup> Medicare Quality Improvement Organizations are private organizations that contract with CMS to monitor and improve the care delivered to Medicare beneficiaries in the 50 states, the territories, and the District of Columbia.

<sup>36</sup> Although another review of the literature concluded that physician involvement had little or no impact on the effectiveness of a system in changing physician behavior, the researchers acknowledged that this finding was unexpected and could be related to a lack of detail in the studies they reviewed about the level of physicians’ involvement.

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## Concluding Observations

Profiling physicians to improve efficiency is used by some private insurance companies and, at the direction of Congress, is being adopted by the Medicare program. We believe that a per capita methodology is a useful approach to profiling physicians on their practice efficiency and could be part of a feedback program that could also include quality measures and episode-based resource use measures.

Our findings are consistent with those of our previous report on physician profiling in which, through analysis of physician practice patterns, we determined that CMS could use profiling to improve the efficiency of Medicare. Despite a more diverse mix of physician specialties in our present analysis, and with certain exceptions noted in our findings, we found substantial consistency in certain patterns we observed across metropolitan areas and specialties. We also found consistency across time in that physicians who showed high resource use in one year tended to stay high in the subsequent year.

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## Agency and Professional Association Comments and Our Evaluation

We provided a draft of this report to the HHS for comment and received written comments from CMS, which are reprinted in appendix II. We also solicited comments on the draft report from representatives of the American Academy of Orthopaedic Surgeons (AAOS), the American College of Cardiology (ACC), the American College of Physicians, and the American College of Radiology. We received oral comments from the first two.

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## CMS Comments

Our draft report did not include any recommendations for CMS to respond to. CMS broadly agreed with each of our three findings:

- CMS agreed that the per capita methodology is a useful approach to measuring physicians' resource use and noted that per capita measurement is one of the cost of care measures included in CMS's Physician Resource Use Management and Reporting Program. CMS also agreed that the consistency of our per capita measure across years is an important finding and stated that the agency intends to examine measure consistency in the ongoing administration of its program.
- CMS found the attention in our report to considerations for developing a physician feedback system to be particularly helpful. CMS listed several examples of how its program already addresses many of these considerations and is in the process of addressing others. We agree with

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CMS that some of the approaches described in our report would require significant resources and recognize that CMS will need to investigate how to balance the trade-offs between different approaches in order to best leverage its resources.

- CMS agreed that physician feedback may have a moderate influence on physician behavior. CMS further stated its commitment to developing meaningful, actionable, and fair measurement tools for physician resource use that, along with quality measures, will provide a comprehensive assessment of performance. We continue to believe that providing physicians feedback on their performance could be a promising step toward encouraging greater efficiency in Medicare; however, we are still concerned that efforts to achieve greater efficiency that rely solely on physician feedback without financial or other incentives will be suboptimal.

CMS also provided technical comments, which we incorporated as appropriate.

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## AAOS and ACC comments

The representatives of AAOS and ACC raised no major issues with regard to the substance of the report. The AAOS representative said that the report captured well the key aspects of physician profiling and the key considerations in developing physician feedback reports. The ACC representatives endorsed the overall approach of a feedback report consisting of a high-level summary accompanied by additional sections with greater detail and a separate document that explains the methodology in detail. The representatives of both groups said that physicians should be provided feedback on both quality and resource use, but differed on whether they should be presented in the same report. Both groups also stressed that physicians should only be compared to physicians within their specialty or subspecialty.

Both the AAOS and the ACC representatives commented on the design of our mock report. Both said that the measures of physician resource use by type of service and the benchmark comparisons were easy to understand. They had difficulty, however, in understanding a related measure that shows the physician's share of payments by service category. We did not alter our mock report in response to these comments, but believe that the concerns they expressed should be taken into account by organizations designing physician feedback reports.

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The representatives of both groups stressed the importance of risk adjustment in the measurement of physician resource use and suggested that we include a fuller explanation of risk adjustment techniques in our report. We did not expand our explanation of such techniques because they are not the focus of this report; however, we acknowledge the important role played by risk adjustment techniques in constructing physician feedback reports on resource use.

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As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the Acting Administrator of CMS, committees, and others. The report will also be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions, 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 the report. GAO staff who made major contributions to this report are listed in appendix III.

Sincerely yours,

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: Methodology

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This appendix describes the per capita methodology that we used to measure beneficiaries' and physicians' Medicare fee-for-service (FFS) resource use. We focused our analysis on four diverse specialties: a medical specialty (cardiology), a diagnostic specialty (diagnostic radiology), a primary care specialty (internal medicine), and a surgical specialty (orthopedic surgery). We included diagnostic radiologists in our study because they are less amenable to episode grouping, the major alternative to per capita profiling of physicians. We limited our analysis to physicians in these specialties who practiced in one of four areas: Miami, Fla.; Phoenix, Ariz.; Pittsburgh, Pa.; and Sacramento, Calif.<sup>1</sup> We chose these areas for their geographic diversity, range in average Medicare spending per beneficiary, and number of physicians in each of the four specialties. Our results apply only to the four specialties in the four metropolitan areas we studied.

To conduct our analysis, we obtained 2005 and 2006 Centers for Medicare & Medicaid Services (CMS) data from the following sources: (1) Medicare claims files that include data on physician, durable medical equipment, skilled nursing, home health, hospice, and hospital inpatient and outpatient services; (2) Denominator File, a database that contains enrollment and entitlement status information for all Medicare beneficiaries in a given year; (3) Hierarchical Condition Category (HCC) files that summarize Medicare beneficiaries' diagnoses; (4) files summarizing the institutional status of beneficiaries; and (5) Unique Physician Identification Number Directory, which contains information on physicians' specialties.

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## Adjustment for Differences in Patient Health Status

In order to develop a resource use measure that accounts for differences in health status between beneficiaries, we developed a risk adjustment model that uses an individual's diagnoses during the year to estimate the total Medicare FFS expenditures expected for the individual in that year. As our inputs to the model, we used the same 70 HCCs as those in the model CMS uses to set managed care capitation rates.<sup>2</sup> HCCs are a way of

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<sup>1</sup>These areas refer to the following Core-Based Statistical Areas (CBSA), an umbrella term for micropolitan and metropolitan statistical areas: Miami-Fort Lauderdale-Pompano Beach, Fla.; Phoenix-Mesa-Scottsdale, Ariz.; Pittsburgh, Pa.; and Sacramento—Arden-Arcade—Roseville, Calif. For CBSA definitions, see <http://www.census.gov/population/www/metroareas/metroarea.html>.

<sup>2</sup>We also included one additional variable to represent beneficiaries who did not have any of the included 70 HCCs.

summarizing an individual's diagnoses into major medical conditions, such as vascular disease or severe head injury.<sup>3</sup> To estimate our model, we used HCC and expenditure data for 2005 and 2006 five percent national samples of Medicare FFS beneficiaries.<sup>4,5</sup>

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## Methodology Used to Determine Beneficiaries' Resource Use

For all Medicare FFS beneficiaries who received at least one service in 2005 or 2006 from a physician located in any of our four metropolitan areas and who also did not meet our exclusion criteria (see footnote 5), we used our risk adjustment model to estimate their total expected Medicare FFS expenditures. Based on their expected expenditures, we placed beneficiaries into 1 of 25 discrete risk categories.<sup>6</sup> The categories were ordered in terms of health status from healthiest (category 1) to sickest (category 25). Next, within each risk category and metropolitan area, we ranked beneficiaries from 1 to 100 by their total actual annual Medicare expenditures, such that the average beneficiary in a given risk category and metropolitan area had a rank of 50.<sup>7</sup> We used this rank as our risk-adjusted measure of beneficiary resource use.

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<sup>3</sup>Hierarchical Condition Categories (HCCs) collapse the over 15,000 diagnosis codes into 189 clinically meaningful condition categories which are additionally grouped into hierarchies of increasing severity. If a beneficiary's diagnoses correspond to more than one condition within a hierarchy, he or she is assigned only the most severe one.

<sup>4</sup>We derived our expenditure data from beneficiaries' Part A and Part B Medicare FFS claims. We did not include Part D claims because not all Medicare beneficiaries are enrolled in a Part D prescription drug plan. We made two adjustments to the data used to estimate the model: (1) we annualized the expenditures of beneficiaries who died during the year and (2) we capped total annual expenditures for all beneficiaries at \$100,000 in order to reduce the effect of beneficiaries with extreme values in the model's estimation.

<sup>5</sup>We excluded several types of beneficiaries: (1) those who were institutionalized for more than 3 consecutive months during the year, (2) those who were enrolled in a Medicare Advantage plan for any part of the year, (3) those who were newly enrolled in Medicare, and (4) those enrolled on the basis of having end-stage renal disease.

<sup>6</sup>We chose the break points for the risk categories based on beneficiaries' risk scores—the ratio of their predicted cost to the sample mean. The first 10 risk categories had intervals of 0.1, while the subsequent 15 had intervals ranging from 0.2 to 4. We initially specified 26 risk categories, but dropped the final one containing beneficiaries with risk scores exceeding 18.0 because it contained less than 120 beneficiaries in each year.

<sup>7</sup>We included expenditures from all claims submitted on the beneficiary's behalf, including claims from locations outside the four selected metropolitan areas and claims from all provider types (hospital inpatient, outpatient, physician, durable medical equipment, skilled nursing facility, home health, and hospice). We did not include Part D prescription drug costs because not all Medicare beneficiaries are enrolled in a Medicare Part D prescription drug plan.



To examine the stability of beneficiaries' resource use, we divided the 2005 and 2006 beneficiary populations into five ascending groups of nearly equal size (quintiles) based on the level of their resource use.<sup>8</sup> We then identified beneficiaries in each of the four metropolitan areas who saw a physician in their area in 2005 and again in 2006. We measured the stability of beneficiaries' resource use as the percentage of beneficiaries who remained in the same quintile in 2006 that they were in during 2005. In addition, we determined the percentage of beneficiaries who remained in the highest resource quintile.

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## Methodology Used to Determine and Compare Physicians' Resource Use

For the purposes of this study, we defined a physician's practice as all Medicare FFS beneficiaries who did not meet our exclusion criteria and who had at least one evaluation and management visit with the physician during the calendar year for cardiologists, internists, and orthopedic surgeons, or who received any service from the physician for diagnostic radiologists.<sup>9-10</sup> To ensure that a physician's resource use measure would not be overly influenced by a few patients with unusually high or low Medicare expenditures, we excluded physicians with small practices—those who treated fewer than 100 of the Medicare patients in our study during the year.<sup>11</sup> For all physicians, we calculated the average beneficiary resource use rank of the patients in their practices,<sup>12</sup> which ranged from a low of 26.0 to a high of 91.8 in 2006. Next, within each metropolitan area and specialty, we ranked physicians on the basis of this average from 1 to 100 such that the average measure of physician resource use was 50. We used this rank as our measure of physician resource use. This measure reflects how expensive a physician's patients are compared to the patients of other physicians in the same specialty and area after adjusting for

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<sup>8</sup>Each beneficiary resource use quintile includes 20 ranks such that the first quintile consists of beneficiaries with ranks 1-20 and the last quintile consists of beneficiaries with ranks 81-100.

<sup>9</sup>We applied this criterion for diagnostic radiologists because they typically do not have evaluation and management visits.

<sup>10</sup>According to our definition of a physician's practice, a beneficiary could belong to the practice of multiple specialists in our study.

<sup>11</sup>We excluded 28 percent of the physicians in the four specialties in 2005 and 29 percent in 2006 because they treated less than 100 Medicare patients a year. Our analyses included 5,890 physicians in 2005 and 5,828 in 2006.

<sup>12</sup>Our measure of physicians' resource use therefore includes all resources used by their patients, including those ordered by other providers.

differences in patient health status. For example, a cardiologist in Miami is only compared to other cardiologists in Miami.

To examine physicians' resource use, we divided the physicians into five ascending groups (quintiles) of nearly equal size based on the measure of their resource use described above.<sup>13</sup> In the same manner as we measured the stability of beneficiaries' resource use, we measured the stability of physicians' resource use by determining the percentage of them who remained in the same physician resource use quintile from 2005 to 2006. We also measured the degree of turnover in the patients seen by physicians by computing the percentage of patients seen in 2005 by each physician that were also seen by the same physician in 2006.

We examined utilization patterns by physician resource use quintile by decomposing the 2006 Medicare expenditures of physicians' patients into those for institutional services (inpatient hospital and skilled nursing care), those for services provided directly by the physician to his or her patients, and those for all other services—outpatient hospital, home health care, hospice care, durable medical equipment, and all other Part B services of Part B providers and suppliers. We also measured the number of physicians seen by a physicians' patients by physician resource use quintile.

Although our measure of a beneficiary's resource use is independent of the beneficiary's health status, there was an association between physician resource use and the mix of healthy and sick patients in physicians' practices—physicians who ranked high in terms of resource use also treated a larger proportion of beneficiaries who were in poor health than did physicians who ranked low in resource use. However, the resource use of all their patients was also consistently higher than that of low resource use physicians' patients regardless of patient health status. Figure 5 shows the average resource use of beneficiaries in five health status categories

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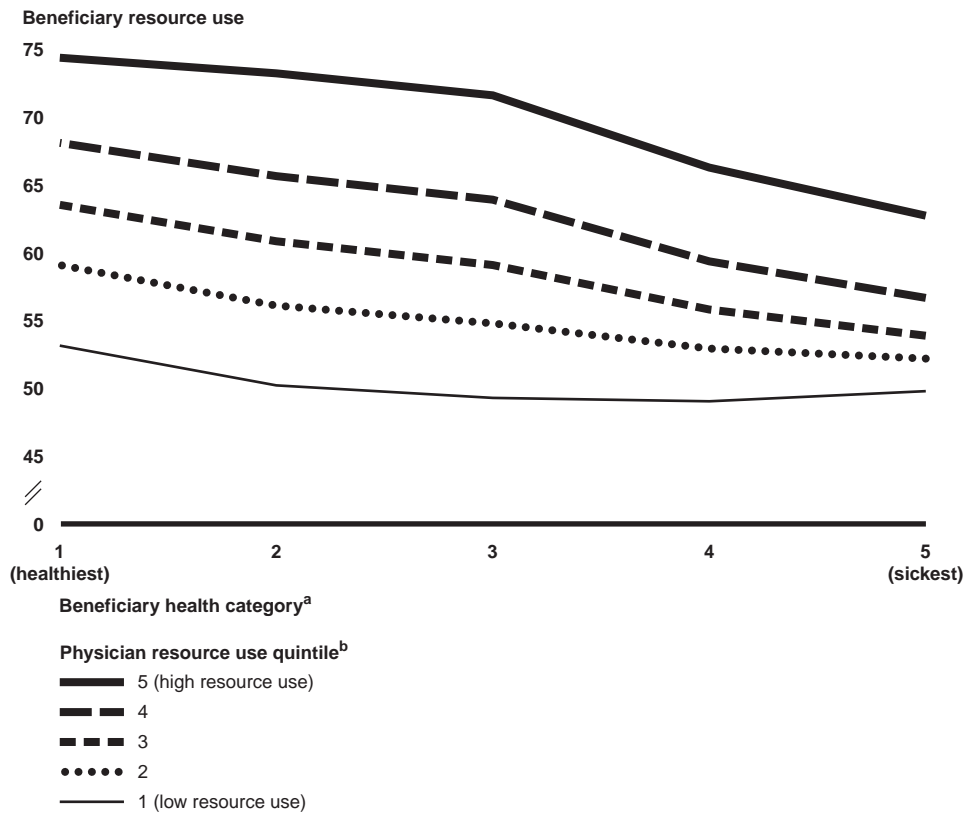
<sup>13</sup>Each physician resource use quintile includes 20 ranks such that the first quintile consists of physicians with ranks 1-20 and the last quintile consists of physicians with ranks 81-100.

across the five physician resource use quintiles.<sup>14</sup> For example, patients in the healthiest category who were treated by physicians in the highest resource use quintile had an average resource use rank of 74, whereas similarly healthy patients treated by physicians in the lowest quintile had average resource use rank of 53. This ordering of the differences in patient resource use by the level of physician resource use is repeated across all health categories. It indicates that physicians have consistent patterns of resource use with respect to all of their patients, regardless of their patients' health status.

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<sup>14</sup>The five health status categories collapse the 25 risk categories into five broader health status categories. Each health status category consists of 5 risk categories, which span the following ranges of risk scores (r):  $r \leq .5$ ,  $.5 < r \leq 1.0$ ,  $1.0 < r \leq 2.0$ ,  $2.0 < r \leq 5.0$ ,  $5.0 < r \leq 18.0$ . The first health category includes the healthiest beneficiaries and comprises, on average, 27 percent of the Medicare patients seen by the physicians in our study in 2006; the fifth includes the sickest beneficiaries and comprises 16 percent of their Medicare patients. The second, third, and fourth health categories comprise, respectively, 14, 18, and 25 percent of the physicians' Medicare patients.

**Figure 5: Beneficiary Resource Use by Health Category for Quintiles of Physician Resource Use—Four Specialties in Four Metropolitan Areas, 2006**



Source: GAO analysis of CMS claims data.

Note: Beneficiary resource use is averaged across the cardiologists, diagnostic radiologists, internists, and orthopedic surgeons in Miami, Fla.; Phoenix, Ariz.; Pittsburgh, Pa.; and Sacramento, Calif. who met our requirement for a minimum of 100 Medicare patients in their practice.

<sup>a</sup>Each health category consists of 5 risk categories, which span the following ranges of risk scores (r):  $r \leq .5$ ,  $.5 < r \leq 1.0$ ,  $1.0 < r \leq 2.0$ ,  $2.0 < r \leq 5.0$ ,  $5.0 < r \leq 18.0$ . The first health category includes the healthiest beneficiaries and comprises 43.8 percent of the study population; the fifth includes the sickest beneficiaries and comprises 5.5 percent of the study population. The second, third, and fourth health categories comprise, respectively, 17.3, 17.4, and 16.1 percent of the study population.

<sup>b</sup>Physicians are divided into five ascending groups of nearly equal size based on the level of their resource use, which is based on the average level of resource use of their patients.

The mix of healthy and sick patients in physicians’ practices did not affect the positive relationship we found between average institutional expenditures per beneficiary and physician resource use level. Within each beneficiary health category, the patients of high resource use physicians had average institutional expenditures that exceeded those of the patients

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of physicians with lower resource use. Similar analyses showed that patient mix did not affect (1) the positive relationship between physicians' resource use and the average number of physicians seen by their patients, (2) the positive relationship between physicians' resource use and expenditures for all other services provided their patients, and (3) the steeper rise in the use of institutional services by physicians' patients with increasing physician resource use as compared to the rise in the use of all other services.

# Appendix II: Comments from the Centers for Medicare & Medicaid Services



DEPARTMENT OF HEALTH & HUMAN SERVICES

OFFICE OF THE SECRETARY

Assistant Secretary for Legislation  
Washington, DC 20201

**SEP 11 2009**

A. Bruce Steinwald  
Director, Health Care  
U.S. Government Accountability Office  
441 G Street N.W.  
Washington, DC 20548

Dear Mr. Steinwald:

Enclosed are comments on the U.S. Government Accountability Office's (GAO) report entitled: "MEDICARE: Per Capita Method Can Be Used to Profile Physicians and Provide Feedback on Resource Use" (GAO-09-802).

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

Sincerely,

  
Andrea Palm  
Acting Assistant Secretary for Legislation

Enclosure

**Appendix II: Comments from the Centers for Medicare & Medicaid Services**



DEPARTMENT OF HEALTH & HUMAN SERVICES

Centers for Medicare & Medicaid Services

*Administrator*  
Washington, DC 20201

SEP 10 2009

**TO:** A. Bruce Steinwald  
Director, Health Care

**FROM:** *Charlene Frizzera*  
Charlene Frizzera  
Acting Administrator

**SUBJECT:** Government Accountability Office's Draft Report: "Per Capita Method Can Be Used to Profile Physicians and Provide Feedback on Resource Use" (GAO-09-802)

The Centers for Medicare & Medicaid Services (CMS) appreciates the opportunity to review and comment on the Government Accountability Office's (GAO) draft report entitled "Per Capita Method Can Be Used to Profile Physicians and Provide Feedback on Resource Use." We agree that, given the role of physicians in total Medicare spending, there are opportunities to increase the efficiency of the Medicare program by measuring and reporting on physician resource use. In addition, we found the attention in your report to considerations for developing a physician feedback system to be particularly helpful.

As GAO notes, CMS was given the authority to administer a Physician Resource Use Measurement and Reporting Program (the "program") by the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA). CMS has implemented a fully operational program in 13 selected geographic sites and has made many of the same conclusions that GAO includes in this report.

The GAO concludes that the "per capita profiling method shows specialist physicians' practice patterns are relatively stable over 2 years." Per capita measurement is one cost of care measure included in CMS' program for physicians who met a minimum threshold of at least 20 patients. Measurement consistency across years is an important finding, although CMS notes that the single touch attribution rule GAO used may inadvertently inflate the measure's consistency. CMS intends to also examine measure consistency in the ongoing administration of the program. GAO further concludes that feedback reports should include quality measures. CMS has included a regulatory proposal in the Calendar Year 2010 Physician Fee Schedule Proposed Rule (74 FR 33591) to include quality measures in the program. GAO also recommends that performance data should be disaggregated into categories. We have disaggregated cost data into several categories including inpatient, outpatient, home health, and skilled nursing facility services, among others. In the report, GAO acknowledges that feedback reports are useful at both the individual physician level and the physician group level. CMS has included a regulatory proposal (74 FR 33591) to include both individual and group level feedback in the program.

Page 2 – A. Bruce Steinwald

Regarding report dissemination, GAO's environmental scanning advised sending feedback reports to all physicians rather than just poor performers. To date, we have disseminated reports to all physicians in the 13 selected geographic sites that meet a minimum threshold of patients/episodes. Further, GAO recognized the need for both dissemination of reports in hard copy and electronically. To date, we have only disseminated hard copy reports, but CMS is actively pursuing electronic dissemination of reports. GAO concluded that the methodology used to compile the reports should be disseminated in a transparent fashion, such as a public posting on a web site. GAO also recognized that some private insurers have made significant investments in the operation of feedback programs; for example one company is utilizing a staff of 4 profiling experts and 20 medical directors to support physicians' questions about the feedback. We note that these insurers are dedicating many more resources per profiled physician than CMS currently has available to it. CMS is investigating the feasibility of these investments while noting that significant resources would likely be needed to fund some approaches.

Beyond general conclusions, GAO also identified the following key points:

1. Using both per capita and episode of care measures of resource use may provide meaningful results by capturing the relevant characteristics of a physician's practice pattern;
2. There are various risk adjustment methodologies, and the suitability of a given method will depend on characteristics of the physicians to be profiled and their patterns;
3. A single attribution approach may not be applicable for all types of measures or for all types of physician specialties;
4. There are differing opinions as to what are the most appropriate and meaningful comparative benchmarks; and
5. There is no consensus on what sample size is adequate to ensure meaningful measurement.

In summary, we applaud GAO's recognition of these five key areas in the ongoing management of physician resource use feedback programs. We agree with GAO's conclusion that physician resource use feedback reports have a moderate influence on physician behavior and the per capita methodology is a useful approach to measuring physicians in a feedback program that could also include episode-based resource use and quality measures. CMS is committed to developing meaningful, actionable, and fair measurement tools for physician resource use that, along with quality measures, will provide a comprehensive assessment of performance under a physician value-based purchasing program.



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# Appendix III: 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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## Staff Acknowledgments

In addition to the contact named above, Phyllis Thorburn, Assistant Director; Alison Binkowski; Nancy Fasciano; Richard Lipinski; Drew Long; Jessica Smith; Maya Tholandi; and Eric Wedum made key contributions to this report.

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