METHODOLOGY FOR THE 2011 INDIVIDUAL PHYSICIAN QUALITY AND RESOURCE USE REPORTS

I. Overview

A. What Are the 2011 Individual Physician Quality and Resource Use Reports?

The 2011 Individual Physician Quality and Resource Use Reports (QRURs) are confidential feedback reports provided to physicians participating in, and billing, the fee-for-service (FFS) Medicare program in calendar year 2011 who practiced in one of nine states: California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin. The reports contain information on the quality and cost of care provided to FFS Medicare beneficiaries whom these physicians treated in 2011.

The feedback reports are integral to efforts by the Centers for Medicare & Medicaid Services (CMS) to support value-based purchasing initiatives to enhance the quality and efficiency of health care services provided to Medicare beneficiaries (see box on the following page for more information). CMS has pursued a phased approach to physician feedback reporting as a way to expand understanding of policy issues related to measuring physician-driven costs of care and quality and implementation of the value-based payment modifier. In the current phase of the program, CMS continues to test some new design, content, and performance indicators, as well as previewing important aspects of the value-based payment modifier (VBM).

The VBM will be used to adjust Medicare physician fee schedule payments to individual physicians based on the quality and cost of care physicians and medical group practices deliver to Medicare beneficiaries. Application of the VBM will be phased in over a two-year period beginning in 2015, based on performance during calendar year 2013.

B. What Are the Goals of the QRUR?

A primary goal of these reports is to support physicians' efforts to provide high quality care to their Medicare FFS patients in an efficient and effective manner. A second goal is to display each report recipient's degree of involvement with all of their Medicare patients, based on claims submitted to Medicare. A third goal is to begin to provide physicians with quality-of-care and cost information that CMS expects to use in the 2012 QRUR and the VBM.

The Physician Feedback Program and the Value-Based Payment Modifier

To enhance the quality and efficiency of health care services provided to Medicare beneficiaries, the Centers for Medicare & Medicaid Services (CMS) is developing and implementing a set of value-based purchasing initiatives across many health care settings, including physician practices. To support these initiatives, CMS has been evaluating and selecting physician resource use and quality measures, conducting analyses to determine the best methods of comparing performance based on clinical quality and resource use, and talking with physicians and physician groups about both policy objectives and methodology. These efforts support the value-based payment modifier (VBM) through expanded physician feedback reports detailing physician quality and cost performance, and performance-based payment.

The Physician Feedback Program is responsible for implementing a budget-neutral payment system that will employ a VBM (Section 3007 of the 2010 Affordable Care Act). The VBM will be used to adjust Medicare physician fee schedule payments to individual physicians based on the comparative quality and cost of care delivered to Medicare beneficiaries. The Secretary will phase in the application of the VBM. In 2015, the value-based payment modifier will be calculated based on cost and quality data derived from services delivered in calendar year 2013. In 2015 and 2016, specific physicians and/or groups of physicians that the Secretary determines appropriate will see their FFS payments adjusted under the payment modifier. Beginning in 2017, the VBM will be applied to all physicians paid under the Medicare physician fee schedule.

The Physician Feedback Program continues to expand its phased approach to physician feedback reporting as a way to broaden understanding of policy issues related to measuring physician-driven costs of care and quality and move toward value-based reimbursement. In the first phase of the approach (in 2009), CMS distributed and tested approximately 300 reports that included individual physician-level cost measures. The Physician Feedback Program was expanded under Section 3003 of the 2010 Affordable Care Act, which required the Secretary of Health and Human Services to provide confidential information to physicians and groups of physicians about the quality of care furnished to Medicare beneficiaries compared to the cost of that care. In the second phase of the approach (in fall 2010), CMS distributed a larger number of reports, to both individual physicians (about 1,700) and medical group practices (36), and expanded these reports to include selected quality measures. In fall 2011, QRURs were sent to each of the medical group practices participating in the Group Practice Reporting Option of the Physician Quality Reporting System (PQRS) in 2010, followed by the dissemination in early 2012 of approximately 24,000 QRURs for physicians who practiced in Iowa, Kansas, Missouri, or Nebraska in 2010. In the current phase of the program (2012–2013), CMS is expanding distribution of QRURs to individual physicians who in 2011 practiced in one of nine states (California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin) and submitted Medicare fee-for-service claims for services provided as part of a medical group practice with 25 or more eligible professionals, as identified by a single Taxpayer Identification Number (TIN).

C. What Information Is Included in the QRURs?

The QRURs contain performance information on 28 quality indicators for preventive care, medication management, and eight separate condition categories such as chronic obstructive pulmonary disease (COPD) and cancer. Rates for these measures are calculated by CMS from Medicare administrative claims, reducing physician reporting burden. In addition, performance on PQRS measures is included in the QRURs for physicians who participated in this program through claims-based reporting, electronic health records, or registries. Although participants receive a separate report with PQRS measure results, the QRUR combines this information with other quality indicators and with resource use measures to provide a more complete picture of care provided to the Medicare FFS population. Moreover, a physician's performance on the CMS-calculated administrative claims–based and PQRS-reported quality indicators is compared with performance of all physicians receiving a QRUR (for the claims-based measures) or who participated in PQRS (for PQRS measures).

On the cost side, the physician's Medicare patients are grouped into different categories according to the degree of contact that the physician had with them. Risk-adjusted annual per capita (per patient) costs, which are also adjusted to remove geographic Medicare payment differences—that is, payment standardized—are then computed for each group of patients. Annual per patient costs also are reported for patients with specific chronic conditions such as diabetes. Each physician's annual per capita costs are then compared with the annual per capita costs of all other physicians of the same specialty who are receiving a 2011 QRUR.

This document offers an overview of the methodology employed to produce the statistics presented in the reports. Exhibit 1 displays a brief description of the pathway from physician eligibility for the 2011 QRUR to performance computation to peer comparisons.

D. How do the 2011 QRURs Differ from the 2010 QRURs?

In response to stakeholder feedback and as part of a continuing effort to enhance the usefulness and expand the reach of the QRURs, CMS has made the following changes to the QRURs for individual physicians for program year (PY) 2011:

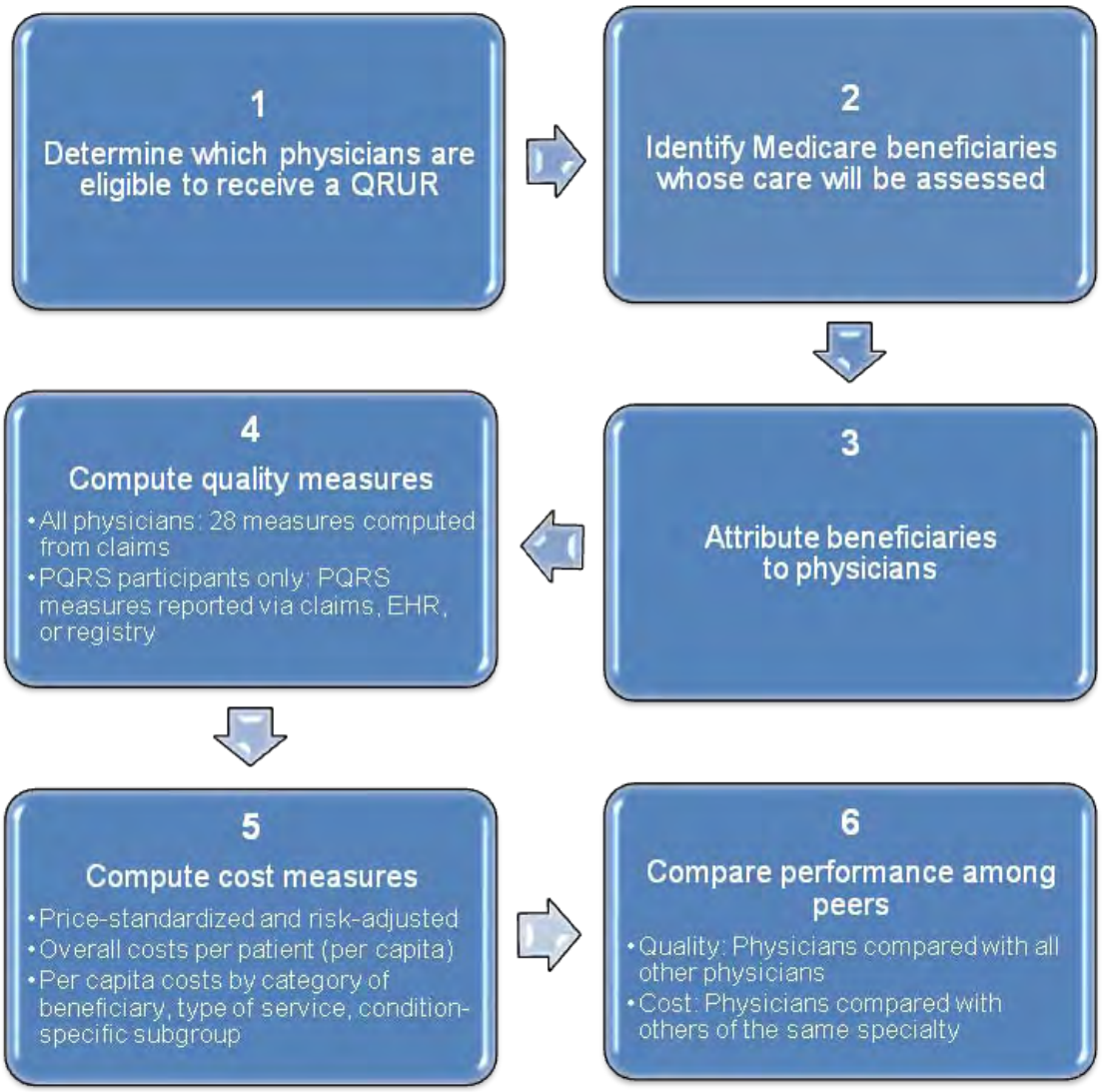
1. Different target population. Whereas the PY2010 QRURs were disseminated to physicians practicing in Iowa, Kansas, Missouri, and Nebraska, in PY2011, QRURs are being disseminated to physicians practicing in groups of 25 or more eligible professionals in California, Illinois, Iowa, Kansas, Michigan, Missouri, Minnesota, Nebraska, or Wisconsin.[1]
2. Update payment standardization algorithm. Beginning with PY2011, a CMS agency-wide approach to payment standardization is replacing the QRUR-specific algorithms used previously. This change is intended to result in a more uniform and

[1] A group is defined according to its Taxpayer Identification Number (TIN), and an eligible professional is someone who is a physician, practitioner (including physician assistant, nurse practitioner, clinical nurse specialist, certified registered nurse anesthetist, certified nurse-midwife, clinical social worker, clinical psychologist, or registered dietician/nutritional professional), a physical or occupational therapist or qualified speech-language pathologist, or a qualified audiologist.

transparent approach to payment standardization across agency initiatives. More information about the payment standardization algorithm is available at http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772057350.

3. Include summary of Physician Quality Reporting System (PQRS) performance. The revised Highlights page of the reports includes a summary of the report recipient's performance on PQRS measures if the recipient participated in PQRS as an individual eligible professional in 2011.
4. Include PQRS performance for registry-based and EHR-based reporting. Whereas the PY2010 QRURs only included PQRS performance data for physicians participating in PQRS via claims-based reporting, the PY2011 QRURs include PQRS performance data for all incentive-eligible physicians, regardless of the reporting mechanism(s) they elected.
5. Modify claims-based quality measures to match updated specifications. Several of the administrative claims–based quality measures have been revised by the measure developers over the past year, and the QRURs have been updated to reflect these changes. For one measure—Statin Therapy for Beneficiaries with Coronary Artery Disease (NQF # 0543)—these changes have impacted how the measure is displayed.
6. Provide detailed information on emergency services. In reporting detailed information on the cost of specific services used by attributed beneficiaries, the PY2011 QRURs separate out emergency services that do not result in an inpatient admission from other outpatient services, whereas previously these services were reported together as outpatient services.
7. Revise guidance for measures with a low number of cases. Based on analyses of the PY2010 QRURs, it was learned that the reliability of the measures included in the reports increased little from 20 to 30 cases. Consequently, report recipients are now advised to interpret their data with caution if based on fewer than 20 cases rather than 30, as previously.

Exhibit 1. Pathway from Physician Eligibility to Performance Assessment, 2011 Individual Physician Quality and Resource Use Reports (QRURs)



II. Which Medical Professionals Are Eligible to Receive a 2011 QRUR?

To be eligible to receive a 2011 QRUR, a physician—that is, a Doctor of Medicine or a Doctor of Osteopathic Medicine—must have indicated in CMS' Provider Enrollment, Chain, and Ownership System that their Medicare enrollment state was California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin and have practiced predominantly in one of those states in 2011.[2] A physician was considered to practice predominantly in a state if the physician billed more professional Medicare claims as a performing provider in that state than in any other state.

III. How Were Medicare Beneficiaries Attributed to Physicians?

A. Attribution

1. Quality Measures Submitted by the Physician to PQRS

For the PQRS quality measures, physicians participating in the program in 2011 self-identified Medicare beneficiaries as their patients by submitting to CMS quality data codes on the beneficiaries' claims.

2. CMS-Calculated Claims-Based Quality Measures

All Medicare beneficiaries for whom an eligible physician filed at least one professional claim in 2011 are included in the physician's Medicare patient panel. Consequently, the same beneficiary may be, and generally is, assigned to multiple physicians. Physicians who typically file very few or no claims under the Medicare physician fee schedule—such as those employed at rural health clinics or federally qualified health centers or who have reassigned their billing rights to a critical access hospital under Method II billing—will be attributed few or no beneficiaries; to the extent that such a physician is attributed a small number of beneficiaries, these beneficiaries will not necessarily reflect the physician's performance on all beneficiaries that the physician treated in 2011, but only those for whom the physician filed professional claims.

3. Cost Measures

All Medicare beneficiaries for whom an eligible physician filed at least one professional claim in 2011 are included in the physician's Medicare patient panel. For the cost measures, each Medicare beneficiary's relationship with each physician who treated the beneficiary is categorized into one of three buckets, based on the amount of contact the physician had with the beneficiary in 2011.

The physician directed the beneficiary's care. For these beneficiaries, the physician billed for 35 percent or more of the patient's office or other outpatient evaluation and management (E&M) visits. (Appendix A lists the specific E&M Current Procedural Terminology™ codes.)

[2] The Provider Enrollment, Chain, and Ownership System (PECOS) is the electronic system of records that Medicare uses to enroll and maintain information on providers.

The physician influenced the beneficiary's care. For these beneficiaries, the physician billed for fewer than 35 percent of the patient's outpatient E&M visits but for 20 percent or more of the patient's total professional costs.[3]

The physician contributed to the beneficiary's care. For these beneficiaries, the physician billed for fewer than 35 percent of the patient's outpatient E&M visits and for less than 20 percent of the patient's total professional costs.

As with the CMS-calculated claims-based quality measures, beneficiaries may be attributed to more than one physician, and physicians who typically file very few or no claims under the Medicare physician fee schedule will be attributed few or no beneficiaries.

B. Which Beneficiaries Are Not Included in QRUR Cost and Quality Measures?

Beneficiaries who were not enrolled in both Parts A and B of original FFS Medicare for all of 2011—including those who first became eligible for Medicare benefits during 2011, were enrolled in a Medicare Advantage program for part of the year, gained or lost Part A or Part B coverage in 2011, or died during the year—were not attributed to any physician for the purposes of computing claims-based quality or cost measures. Also excluded were beneficiaries who (1) were enrolled in FFS Medicare via the Railroad Retirement Board, (2) used Medicare hospice benefits during 2011, or (3) had any claims for which Medicare was not the primary payer during 2011. Beneficiaries whose costs could not be risk adjusted adequately (as described later) were also excluded when calculating cost measures.

Both individuals eligible for Medicare because of age (65 or older) and those younger than 65 who are eligible for Medicare benefits due to having end-stage renal disease (ESRD) or a qualifying disability (including amyotrophic lateral sclerosis) are included in the QRURs.

IV. How Is a Physician's Quality of Care Performance Measured?

Two sets of indicators of physician quality of care for Medicare beneficiaries are included in the 2011 QRURs: measures calculated by CMS that rely solely on Medicare administrative claims, and PQRS measures submitted to CMS by PQRS program participants.

A. CMS-calculated Claims-Based Quality Measures

Performance is displayed in the QRURs for up to 28 claims-based quality measures. A physician's QRUR shows the percentage of Medicare patients for whom the physician filed at least one professional claim in 2011 who received specific recommended clinical services, based on all Medicare claims from all physicians treating them. Because performance is reported even on measures for which the physician is attributed few applicable beneficiaries, the QRUR includes a caution that care should be exercised in making comparisons with peers in such cases.

[3] Professional costs include Medicare billings by physicians, non-physician practitioners, and certain medical suppliers.

CMS selected the claims-based quality measures via an internal multi-step process among the agency's Regional Medical Officers (who represent a variety of medical specialties) and other internal experts. This group thoroughly reviewed over 70 clinical claims-based National Quality Forum–endorsed measures and ultimately recommended 28 to include in the 2011 QRURs. The claims-based clinical measures for the 2011 reports are displayed in the Appendix B table at the end of this document. Additional information is available at http://www.cms.gov/physicianfeedbackprogram.

Claims-based quality measures were calculated solely from Medicare administrative claims submitted for medical services rendered and were not enhanced with additional clinical information. The measurement year—that is, the period during which services were delivered to patients—used for calculating these measures was January 1, 2011, through December 31, 2011; claims were available for a one-year look-back period to January 1, 2010, for measures requiring a look-back period. Only services that are recorded on claims, which include services that are reimbursed as part of a bundled payment but are required to be itemized on claims, are counted in computing quality measures. Recommended services that are not itemized on claims are not captured in the quality measurement process.

B. Physician Quality Reporting System Measures

In 2006, the President signed the Tax Relief and Health Care Act authorizing the establishment of PQRS, a voluntary system under which eligible health care professionals who successfully report quality-measurement data for services provided to Medicare beneficiaries are eligible to earn an incentive payment. In 2011, the incentive payment was equal to 1 percent of the eligible professional's estimated total allowed charges for covered Medicare Part B Physician Fee Schedule services or 1.5 percent of allowed charges if the professional satisfactorily reported program data through a maintenance of certification program. The measures included in the 2011 PQRS program address various aspects of care, such as prevention, chronic and acute care management, procedure-related care, resource utilization, and care coordination. The 2011 measure list and specifications can be found at http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/2011-Physician-Quality-Reporting-System-Items/CMS1254515.html.

For each physician participating in PQRS, the QRURs provide the number of patients or cases identified by the physician as eligible for inclusion in each measure reported, as well as the performance rate for that measure.[4] Performance rates for each measure are shown in the QRUR for all beneficiaries for whom the physician reported successfully. If the physician successfully participated in PQRS through different organizations, additional performance at the physician-organization level is also displayed in the QRUR.

[4] Physicians may report a given Physician Quality Reporting System measure by including certain quality data codes on Medicare claims (Current Procedural Terminology Category II or G codes required to compute the measure), through registries, or through electronic health records. Only measures reported via claims, electronic health records, or registries by physicians participating in the Physician Quality Reporting System as individuals, rather than as part of a group, are included in the 2011 QRURs.

Although all PQRS measures reported by a physician are displayed in the QRURs, the reports note that if the number of patients is small (fewer than 20), caution should be used in making comparisons with peers. Additionally, if fewer than 20 professionals participating in PQRS nationwide reported the measure, the comparison group performance rate is not displayed.

V. How is a Physician's Resource Use Measured?

A. Total Per Capita Cost Measures

The QRURs include several resource use measures based on payment-standardized and risk-adjusted per capita, or per patient, costs. Payment standardization and risk adjustment are employed to accommodate differences in costs between peers that result from circumstances beyond physicians' control. A physician's risk-adjusted per capita cost measure is formed by first computing the ratio of total costs (except hospice and Part D prescription drug costs) per beneficiary attributed to the physician to expected costs per attributed beneficiary, as determined by the risk adjustment algorithm. This ratio is then multiplied by the mean cost of all beneficiaries included in all QRURs to express the risk-adjusted cost in dollars. A risk-adjusted cost that is less than the mean beneficiary cost indicates a physician for whom actual (that is, unadjusted) costs were less than expected costs for the physician's attributed beneficiaries.

The cost measures use 2011 administrative claims data that include inpatient hospital, outpatient hospital, skilled nursing facility, home health, durable medical equipment (DME), and Medicare carrier (non-institutional provider) claims. All claims with a missing, zero, or negative payment amount are excluded from the measures. Costs associated with Medicare Part D (outpatient prescription drugs) and hospice services are not included.[5] To the extent that Medicare claims include such information, costs comprise payments to providers from Medicare, from beneficiaries (copayments and deductibles), and from third-party private payers.

In addition to measuring overall per capita costs for each physician's attributed patients, payment-standardized and risk-adjusted per capita costs are reported by type of service—such as E&M visits,[6] inpatient hospital facility services, and laboratory and other tests—and for beneficiaries with specific chronic conditions—namely, diabetes, coronary artery disease (CAD), COPD, and heart failure. The remainder of this section provides details on payment standardization methods, risk adjustment, and the computation of per capita costs for specific services and chronic condition subgroups. Additional details regarding payment standardization and risk adjustment are in Appendices C and D, respectively.

B. Payment Standardization

Geographic variation in Medicare payments to providers can reflect factors unrelated to the care provided to patients. Therefore, payments are standardized to enable valid comparisons of

[5] Part D (outpatient prescription drug) costs were excluded from the cost measure calculations because not all beneficiaries have Medicare Part D and some who do not have it instead may have creditable prescription drug coverage through other insurance sources or the retiree subsidy, for which Medicare does not have claims data.

[6] Note that E&M services included in the type-of-service tables include all E&M services, not only the office or other outpatient E&M services used to attribute beneficiaries to physicians.

costs for each physician to the average costs across all physicians, who may practice in locations or settings where reimbursement rates are higher or lower. Before any resource use measures are calculated for the QRUR, 2011 Medicare unit costs are standardized to equalize payments for each specific service provided in a given health care setting (for example, home health versus outpatient hospital), regardless of when and where it was provided, and regardless of differences in Medicare payment rates among the same class of providers (for example, prospective payment hospitals versus critical access hospitals). Unit costs refer to the total reimbursement paid to providers for services delivered to Medicare beneficiaries. These can include discrete services (such as physician office visits or consultations) or bundled services (such as hospital stays). For most types of medical services, Medicare adjusts payments to providers to reflect differences in local input prices (for example, wage rates and real estate costs).

The standardized payment methodology, which is described in further detail in Appendix C, eliminates adjustments made to national payment amounts to reflect differences in regional labor costs and practice expenses and payments not directly related to services rendered, such as indirect medical education payments to hospitals. Furthermore, it substitutes a national amount for services paid on the basis of state fee schedules and adjusts outlier payments for differences in area wages. However, it maintains differences in actual payments resulting from the choice of setting in which a service is provided, the choice of who provides the service, and the choice of whether to provide multiple services in the same encounter.

Additional details relating to the payment standardization algorithm are available at http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772057350.

C. Risk Adjustment

Risk adjustment (also known as case-mix adjustment) takes into account patient differences that can affect their medical costs, regardless of the care provided. Per capita cost measures for the QRUR are risk adjusted so physicians can be compared more fairly to their peers. The risk-adjusted costs of physicians attributed a disproportionate number of high-risk beneficiaries will be lower than the physicians' unadjusted costs because the high-risk beneficiaries' expected costs will exceed the average beneficiary cost across all physicians receiving QRURs; similarly, risk-adjusted costs will be higher than unadjusted costs for physicians that are attributed comparatively low-risk beneficiaries.

Costs are risk adjusted prospectively using prior year (2010) Hierarchical Condition Category (HCC) risk scores derived from the CMS-HCC risk adjustment model that Medicare uses to adjust payments to Medicare Advantage plans. The CMS-HCC risk adjustment model assigns International Classification of Diseases–9th Revision (ICD-9) diagnosis codes obtained

from Medicare claims to 70 hierarchical condition categories that have related disease characteristics and costs.[7] The model also incorporates sex, age, original reason for Medicare entitlement (either age or disability), and Medicaid entitlement. Each risk score summarizes in a single number each Medicare beneficiary's expected cost of care relative to other beneficiaries, given the beneficiary's demographic profile and medical history. Like the CMS-HCC model, the QRUR risk adjustment model is prospective—in the sense that it uses 2010 risk scores to predict 2011 costs—to ensure that the model measures the influence of health on treatment provided (costs incurred) rather than the reverse. Risk adjustment for the QRUR per capita cost measures also accounts for the presence of ESRD in 2010.

After the risk adjustment model has been estimated, it is used to compute the expected costs of the attributed beneficiaries. As noted earlier, a physician's observed costs per beneficiary are then divided by expected per capita costs per beneficiary and the ratio multiplied by the mean beneficiary cost among all beneficiaries. The result is the physician's per capita cost measure. Appendix D displays the 70 HCCs that CMS incorporates into its risk scores and provides additional detail on the steps for risk adjusting 2011 QRUR per capita cost measures.

D. Per Capita Costs by Categories of Beneficiaries (Patients)

As described in Section III, for the cost measures, every Medicare beneficiary attributed to an individual physician was assigned to one of three categories, based on the amount of care the particular physician provided to the beneficiary:

- Physicians are presumed to have "directed" care for beneficiaries for whom they billed at least 35 percent of the beneficiary's outpatient E&M services in 2011
- Physicians "influenced" care if they did not direct the beneficiary's care but accounted for at least 20 percent of the professional costs billed for that beneficiary in 2011
- Physicians "contributed" to care if they treated the beneficiary but neither directed nor influenced their care in 2011

A physician's risk-adjusted per capita cost measure for each category of care employs the risk adjustment model that is estimated for all beneficiaries described above to compute expected costs for only attributed beneficiaries in each of the three categories (for example, beneficiaries whose care the physician directed). The computation of the ratio of observed to expected costs likewise is limited to beneficiaries in the same category of care. This ratio is then multiplied by the mean total beneficiary cost among all beneficiaries to arrive at the physician's risk-adjusted per capita cost for that category of care.

[7] The HCC model uses diagnoses identified for a patient within a given year to predict health risks for the following years along with potential resource utilization. The model consists of cost groups, or diagnoses, that are grouped into the 70 HCCs. These are groups of similar diagnoses that CMS has deemed risk factors for patients. Each HCC has a specific weight and specific reimbursement tied to it from which a Medicare Advantage Contractor is paid.

The QRURs display detailed per capita cost information by beneficiary category only when at least 10 percent of all beneficiaries for whom the physician submitted claims or at least 10 percent of total professional costs billed by the physician are represented by that category of beneficiary. For example, if a physician were attributed 100 beneficiaries with $100,000 in 2011 medical costs and directed the care of 60 of these beneficiaries, 2011 per capita costs for directed beneficiaries would be displayed on the physician's QRUR (that is, the physician directed care for 60 percent of the Medicare beneficiaries she treated in 2011). Alternatively, if the physician were attributed 100 beneficiaries with $100,000 in costs and directed the care of only 5, but those 5 accounted for $15,000 percent of all attributed costs, again the 2011 per capita costs for directed beneficiaries would be displayed on the physician's QRUR. (That is, the physician directed care for only 5 percent of the beneficiaries she treated in 2011 but those 5 beneficiaries accounted for 15 percent of the total professional costs she billed for the 100 beneficiaries she treated.) However, if the physician were attributed 100 beneficiaries with $100,000 in costs and directed the care of 5, who accounted for only $8,000 of all attributed costs, then information on this per capita cost measure would not be displayed on the physician's QRUR.

For cost measures, as well as quality measures displayed in the QRURs, if the number of patients represented or the number of physicians in the peer group for the measure is small (fewer than 20), caution should be used in making comparisons with peers.

E. Per Capita Costs by Type of Service

For each category of beneficiary, the QRURs report per capita costs for all services combined and by detailed type of service (for example, E&M visits, inpatient hospital facility services, laboratory and other tests, and so on), all of which sum to the total. The goal of separating per capita costs into categories of services is to provide physicians with details on how the costs of delivering specific health care services to their Medicare patients compare with those of their peers. Note, however, that different categories of service can be complements or substitutes. For example, physicians providing more ambulatory preventive care may avoid some hospitalizations of their patients (service substitutes), leading to higher E&M costs but lower inpatient hospital costs compared with peers. On the other hand, increases in primary care services might also be associated with higher ancillary or supplemental services, such as diagnostic tests (service complements). Displaying costs by categories of services provides greater detail on where providers may be able to improve the efficiency of care. CMS chose service categories that (1) correspond to the organization of Medicare claims, and (2) capture distinct types of services that physicians may be able to influence either directly through their own practice patterns (for instance, E&M services) or indirectly through referral patterns or improved outpatient care (which can prevent certain types of hospitalizations). Appendix E displays how costs by categories of services were displayed in the 2011 individual physician QRURs for "directed care" patients. Appendix F provides more detail on how Medicare claims were categorized into one (and only one) service category displayed in the Appendix E table.

Per capita costs by type of service are derived by summing the total costs for a type of service for Medicare beneficiaries attributed to the physician under the beneficiary category (directed, influenced, or contributed) who used the service (the numerator). This sum is then divided by the total number of beneficiaries attributed to the physician in that category (the denominator), whether or not all attributed beneficiaries used the specific type of service.

Because total per capita costs are risk-adjusted, unadjusted costs for detailed services are scaled by the same factor used to transform unadjusted per capita costs for all services combined to adjusted costs. For example, suppose that risk adjustment results in an overall per capita cost for the physician that is 10 percent lower than the physician's unadjusted cost. Reported per capita costs for each detailed type of service then are computed by reducing the unadjusted per capita cost for each type of service by 10 percent.

As noted above, per capita costs for a given category of beneficiary are displayed only for physicians when at least 10 percent of all beneficiaries for whom the physician submitted claims or 10 percent of total professional costs billed by the physician are represented by that category of beneficiaries. The QRURs note that if the number of patients or physicians in the peer group for the measure is small (fewer than 20), caution should be used in making comparisons with peers.

F. Per Capita Costs for Condition-Specific Medicare Beneficiary Subgroups

In addition to reporting each physician's per capita costs for all beneficiaries attributed to the physician, the 2011 QRURs also display per capita costs for attributed beneficiaries with selected chronic health conditions: CAD, COPD, diabetes, or heart failure. Chronic health conditions are diseases or illnesses that are commonly expected to require ongoing monitoring to avoid loss of normal life functioning, and are not expected to improve or resolve without treatment. Per capita cost measures for these subgroups include all 2011 Medicare claims costs (except for hospice and Part D outpatient prescription drugs) and are not limited to costs associated with treating the condition itself. Additionally, the four selected chronic conditions are not mutually exclusive, because it is likely that Medicare beneficiaries have more than one of these chronic conditions.

For each subgroup of beneficiaries, a separate risk adjustment model is estimated, using the method described above. Payment-standardized and risk-adjusted per capita costs for beneficiaries with each of the conditions are then computed, according to the method described above.

Although all condition-specific per capita cost measures are displayed in the QRUR for which the physician has at least one attributed beneficiary with the chronic condition, the QRURs also note that if the number of patients is small (fewer than 20), caution should be used in making comparisons with peers.

VI. How Are Physician Peer Groups Formed for Comparing Performance?

A physician's own performance on a quality or cost measure displayed in that physician's QRUR is compared to the average of all physicians in a "peer group" to help the physician assess the quality or efficiency of care provided to his/her Medicare patients. Peer group comparisons also help control for differences in patient risk factors or regional factors that are not accounted for in the cost measures risk adjustment model.

For cost (but not quality) measures, a physician's performance is compared with the average costs of all physicians of the same medical specialty practicing in one of nine states (California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin).[8] Medical specialty was determined from a physician's 2011 professional claims billed to Medicare. As with practice state, the plurality of CMS specialty codes on all professional claims for which the physician was listed as the "performing provider" determined the physician's medical specialty for purposes of the 2011 QRURs. Appendix G table at the end of this document displays CMS specialty codes and designation of the specialty as a physician (eligible for a 2011 QRUR) or non-physician (not eligible for a 2011 QRUR).

Physician peer groups are broader for the quality measures than for the cost measures. The peer groups are defined as follows:

- For the claims-based quality measures, the peer group comprises all physicians practicing in one of nine states (California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin) who had at least one attributed beneficiary eligible for the specific quality measure.
- For PQRS quality measures, the peer group comprises all incentive-eligible PQRS participants nationwide who successfully reported the specific quality measure to CMS.
- For the total per capita cost measure comparison on the QRUR Performance Highlights page, the peer group comprises all physicians of the same medical specialty practicing in one of nine states (California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin).
- For per capita cost measures by level of care, the peer group comprises all physicians of the same medical specialty practicing in one of nine states (California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin) who provided that level of care (directed, influenced, or contributed) to one or more beneficiaries.
- For per capita costs by type of service for each beneficiary category, the peer group is identical to that for per capita cost measures by beneficiary category.
- For per capita cost measures for condition-specific subgroups, the peer group comprises all physicians of the same medical specialty practicing in one of nine states (California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, or Wisconsin) who treated one or more beneficiaries with the specified chronic condition.

A physician's own performance on a quality or cost measure is compared to the average (mean) performance across all physicians included in the peer group. Each peer group physician's performance included in the peer group mean is weighted by the number of his/her

[8] The physician's own performance on a cost measure is included in the peer group mean.

beneficiaries eligible for the measure, giving less weight in this benchmark to those with fewer cases.

Percentile distributions for per capita cost measures by beneficiary category are also displayed for the physician's peer group (report recipients of the same specialty) by ranking the peer group's performance on the measure from lowest to highest cost. A physician's own percentile ranking is shown, as well as the 10th, 50th, and 90th percentile-ranked physician's performance.

APPENDIX A

OFFICE AND OTHER OUTPATIENT E&M SERVICE CODES USED TO ATTRIBUTE MEDICARE BENEFICIARIES TO PHYSICIANS

Codes	Outpatient E&M Visits*
99201	New Patient, brief
99202	New Patient, limited
99203	New Patient, moderate
99204	New Patient, comprehensive
99205	New Patient, extensive
99211	Established Patient, brief
99212	Established Patient, limited
99213	Established Patient, moderate
99214	Established Patient, comprehensive
99215	Established Patient, extensive

* Labels are approximate. See American Medical Association Current Procedural Terminology™ for detailed definitions.

APPENDIX B

NARRATIVE SPECIFICATIONS FOR 28 CLAIMS-BASED QUALITY MEASURES

(Note that while there are 28 measure categories, there are 41 individual measures within these measure categories)

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Chronic Obstructive Pulmonary Disease (COPD)				
1	Pharmacotherapy Management of COPD Exacerbation** Percentage of chronic obstructive pulmonary disease (COPD) exacerbations for patients 40 years or older who had an acute inpatient discharge or emergency department encounter between 1/ 1–11/30 of the measurement year and were dispensed appropriate medications Two rates are calculated: Rate 1: Percentage of patients dispensed a systemic corticosteroid within 14 days of the event Rate 2: Percentage of patients dispensed a bronchodilator within 30 days of the event	0549	Administrative Claims	Numerator 1: Medicare beneficiaries dispensed a prescription for systemic corticosteroid on or 14 days after the Episode Date. Numerator 2: Medicare beneficiaries dispensed prescription for a bronchodilator on or 30 days after the Episode Date.	Applies to both rates: Medicare beneficiaries (a) 40 years or older as of 1/1/11, (b) had continuous Medicare Parts A, B, and D coverage from the Episode Date through 30 days after the Episode Date with no gaps in coverage (note that the patient must be enrolled on the episode date), and (c) during 1/1/11 through 11/30/11 had an acute inpatient discharge or an emergency department visit with a primary diagnosis of COPD. Note: The eligible population is based on acute inpatient discharges and emergency department visits, not on patients. Exclusions: None.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Chronic Obstructive Pulmonary Disease (COPD) (continued)				
2	Use of Spirometry Testing to Diagnose COPD Percentage of patients at least 40 years old who had a new diagnosis of, or newly active, chronic obstructive pulmonary disease (COPD) and who received appropriate spirometry testing to confirm the diagnosis	0577	Administrative Claims	Medicare beneficiaries with at least one claim or encounter with any HCPCS code for spirometry testing within up to 1.5 years (1/1/2010) before to 180 days after the Index Episode Start Date (IESD).	Medicare beneficiaries who were a) 42 years or older as of 12/31/11, b) had continuous coverage for Medicare Parts A and B from up to 1.5 years (to 1/1/2010) prior to the IESD through 180 days after the IESD, with at most one gap in coverage of up to one month in each 12-month period prior to the IESD or in the 6-month period after the IESD, for a maximum of two gaps, and was covered as of the IESD, c) had an outpatient, emergency department, or acute inpatient visit with any diagnosis of COPD between 7/1/10 and 6/30/11, and d) had no claims with a diagnosis of COPD in the 1.5 years prior to the IESD. Exclusions: None.
	Bone, Joint, and Muscle Disorders				
3	Osteoporosis Screening for Chronic Steroid Use** Percentage of patients 18 years or older on chronic steroids for at least 180 days in the past 9 months and who had a bone density evaluation or osteoporosis treatment	0614	Administrative Claims	Medicare beneficiaries who had a bone density evaluation or osteoporosis treatment between 1/1/10 and 12/31/11.	Medicare beneficiaries 18 years or older as of 12/31/11, with continuous Medicare Parts A, B, and D coverage between 1/1/10 and 12/31/11, who were on chronic steroids for at least 180 days between 4/1/11 and 12/31/11. Exclusions: Pregnant Medicare beneficiaries.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Bone, Joint, and Muscle Disorders (continued)				
4	Osteoporosis Management in Women ≥ 67 Who Had a Fracture Percentage of women 67 years or older who suffered a fracture and who had either a bone mineral density (BMD) test or prescription for a drug to treat or prevent osteoporosis in the 6 months following the date of fracture	0053	Administrative Claims	Medicare beneficiaries who were appropriately treated or tested for osteoporosis after the fracture, defined by any of the following: 1) BMD test on the Index Episode Start Date (IESD) or in the 180-day period after the IESD, or 2) BMD test during the inpatient stay for the fracture (applies only to fractures requiring hospitalization), or 3) dispensed prescription to treat osteoporosis on the IESD or in the 180-day period after the IESD	Medicare beneficiaries who were a) 67 years or older as of 12/31/11, b) had 12 months of continuous Medicare Parts A, B, and D coverage prior to the IESD through 6 months after the IESD, with no more than one gap in coverage of up to one month (and the patient must be enrolled on the IESD), and c) have a fracture during the 12-month Intake Period (7/1/10 to 6/30/11). Exclusion: Patients who had a BMD test or who received any osteoporosis treatment during the 365 days prior to the IESD.
5	Disease Modifying Antirheumatic Drug Therapy for Rheumatoid Arthritis** Percentage of patients 18 years or older diagnosed with rheumatoid arthritis who had at least one ambulatory prescription dispensed for a disease modifying antirheumatic drug (DMARD) during the measurement year	0054	Administrative Claims	Medicare beneficiaries who were dispensed at least one ambulatory prescription for a disease modifying antirheumatic drug in 2011.	Medicare beneficiaries 1) 18 years or older as of 12/31/11 and who had continuous Medicare Parts A, B, and D coverage with no more than a single one month gap in coverage in 2011 (and enrolled in December 2011), and 2) who had a diagnosis of rheumatoid arthritis between 1/1/11 and 11/30/11. Exclusions: Medicare beneficiaries who were pregnant in 2011 or who were diagnosed with HIV in 2010 or 2011.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Cancer				
6	Breast Cancer Surveillance for Women with a History of Breast Cancer** Percentage of female patients 18 years or older with a recent history of breast cancer treated with curative intent who had breast or chest wall surveillance in the past 12 months	0623	Administrative Claims	Female Medicare beneficiaries with a recent history of breast cancer treated with curative intent who had breast or chest wall surveillance (e.g., mammogram, MRI) between 1/1/11 and 12/31/11.	Female Medicare beneficiaries 18 years or older as of 12/31/11 with a recent history of breast cancer who have been treated with curative intent as defined by a combination of breast cancer diagnosis and treatment procedures between 1/1/10 and 12/31/10, who had continuous Medicare Parts A and B coverage between 1/1/11 and 12/31/11. Exclusions: Female Medicare beneficiaries who had a bilateral mastectomy or two unilateral mastectomy procedures without breast tissue reconstruction or bilateral breast implants between 1/1/10 and 12/31/11; or female Medicare beneficiaries who had evidence of metastatic disease.
7	PSA Monitoring for Men with Prostate Cancer** Percentage of males with definitively treated localized prostate cancer that have had at least one prostate-specific antigen (PSA) level monitoring in the past 12 months	0625	Administrative Claims	Male Medicare beneficiaries who had at least one PSA level monitoring between 1/1/11 and 12/31/11.	Male Medicare beneficiaries diagnosed with localized prostate cancer and received treatment with a curative intent between 1/1/10 and 12/31/10, and who had continuous Medicare Parts A and B coverage between 1/1/11 and 12/31/11. Exclusions: Male Medicare beneficiaries who received prostate cancer treatment between 1/1/11 and 12/31/11.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Diabetes				
8	Dilated Eye Exam for Beneficiaries ≤ 75 with Diabetes Percentage of patients with diabetes ages 18-75 years who received a dilated eye exam by an ophthalmologist or optometrist during the measurement year, or had a negative retinal exam (no evidence of retinopathy) by an eye care professional in the year prior to the measurement year	0055	Administrative Claims	Medicare beneficiaries who had at least one eye exam in 2011.	Medicare beneficiaries between ages 18 and 75 by 12/31/11, who had continuous Medicare Parts A and B coverage in 2011 with no more than a single month gap in coverage, and had type I or type II diabetes. Exclusions: Medicare beneficiaries with evidence of polycystic ovaries or with gestational or steroid induced diabetes during 2010 or 2011.
9	HbA1c Testing for Beneficiaries ≤ 75 with Diabetes Percentage of patients with diabetes ages 18-75 years receiving one or more hemoglobin A1c test(s) (HbA1c) in the measurement year	0057	Administrative Claims	Medicare beneficiaries who had at least HbA1c test in 2011.	Medicare beneficiaries between ages 18 and 75 by 12/31/11, who had continuous Medicare Parts A and B coverage in 2011 with no more than a single month gap in coverage, and had type I or type II diabetes. Exclusions: Medicare beneficiaries with evidence of polycystic ovaries or with gestational or steroid induced diabetes during 2010 or 2011.
10	Urine Protein Screening for Beneficiaries ≤ 75 with Diabetes Percentage of patients with diabetes ages 18-75 years with at least one nephropathy screening test during the measurement year or who had evidence of existing nephropathy	0062	Administrative Claims	Medicare beneficiaries who had medical attention for nephropathy in 2011 [nephropathy screening test or evidence of existing nephropathy (diagnosis of nephropathy or documentation of microalbuminuria or albuminuria) or visit to a nephrologist as identified by specialty-provider codes, or evidence of ACE inhibitor/ARB therapy].	Medicare beneficiaries between ages 18 and 75 by 12/31/11, who had continuous Medicare Parts A and B coverage in 2011 with no more than a single month gap in coverage, and had type I or type II diabetes. Exclusions: Medicare beneficiaries with evidence of polycystic ovaries or with gestational or steroid induced diabetes during 2010 or 2011.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Diabetes (continued)				
11	Lipid Profile for Beneficiaries ≤ 75 with Diabetes Percentage of patients with diabetes ages 18-75 years who had an LDL-C test performed during the measurement year	NCQA	Administrative Claims	Medicare beneficiaries who had at least one LDL-C screening test in 2011.	Medicare beneficiaries between ages 18 and 75 by 12/31/11, who had continuous Medicare Parts A and B coverage in 2011 with no more than a single month gap in coverage, and had type I or type II diabetes. Exclusions: Medicare beneficiaries with evidence of polycystic ovaries or with gestational or steroid induced diabetes during 2010 or 2011.
	Gynecology				
12	Appropriate Workup Prior to Endometrial Ablation Procedure** [Endometrial Sampling or Hysteroscopy with Biopsy Prior to Endometrial Ablation Procedure] Percentage of female who had an endometrial ablation procedure during the measurement year and who received endometrial sampling or hysteroscopy with biopsy during the year prior to the ablation procedure	0567	Administrative Claims	Female Medicare beneficiaries who received endometrial sampling or dilation and curettage or hysteroscopy or cervical dilation with biopsy on the index date or during the year prior to the index date; or who were diagnosed with disorder of the uterus or abnormal menstrual bleeding and received biopsy during the one year prior to the index date. The index date is the first instance of the endometrial ablation procedure between 1/1/11 and 12/31/11.	Female Medicare beneficiaries who had an endometrial ablation procedure between 1/1/11 and 12/31/11, and had continuous Medicare Parts A and B coverage for the 12-month period prior to the index date. Exclusions: Female Medicare beneficiaries who had an endometrial ablation procedure during the 12-month period prior to the index date.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Heart Conditions				
13	Statin Therapy for Beneficiaries with Coronary Artery Disease Percentage of individuals with coronary artery disease (CAD) over 18 years of age with proportion days covered (PDC) for statin therapy of at least 0.8 during the measurement period. (PDC = the days supply of medication divided by the number of days between the first prescription service date of and last day of the measurement period.)	0543	Administrative Claims	Individuals who have a PDC for statin medications of at least 0.8.	Individuals 18 years or older as of the end of the measurement period (12/31/11) with CAD and enrolled in a Part D plan, with no more than a one-month gap in Parts A, B, or D coverage during the measurement period (and enrolled in Part D in December 2011), and at least two claims for a statin during the measurement period. Exclusions: None.
14	Persistence of β-Blocker Treatment After Heart Attack** Percentage of patients 18 years or older who were hospitalized with a diagnosis of acute myocardial infarction (AMI) and who received persistent beta-blocker treatment for six months after discharge	0071	Administrative Claims	Medicare beneficiaries 18 years or older who filled at least 75% of the days' supply (≥135 days) of beta-blockers prescribed, within 180 days following a hospital discharge for AMI.	Medicare beneficiaries 18 years or older as of 12/31/2011, discharged alive from an acute inpatient setting with an AMI between 7/1/10 and 6/30/11, who had continuous Medicare Parts A, B, and D coverage from the discharge date through 180 days after discharge with no more than a single month gap in coverage. Exclusions: Medicare beneficiaries with a contraindication to beta-blocker therapy.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Heart Conditions (continued)				
15	Lipid Profile for Beneficiaries with Ischemic Vascular Disease Percentage of patients 18 years or older who were discharged alive for acute myocardial infarction (AMI), coronary artery bypass graft (CABG) or percutaneous coronary interventions (PCI) from January 1–November 1 of the year prior to the measurement year, or who had a diagnosis of ischemic vascular disease (IVD) in the measurement year and the year prior the measurement year, who had a complete lipid profile during the measurement year	0075	Administrative Claims	Medicare beneficiaries who had a complete lipid profile in 2011.	Medicare beneficiaries 18 years or older by 12/31/11, who had continuous Medicare Parts A and B coverage in 2011 with no more than a single month gap in coverage, and 1) were discharged alive for AMI, CABG, or PCI between 1/1/10 and 11/1/10, or 2) had a diagnosis of IVD in both 2010 and 2011. Exclusions: None.
Human Immunodeficiency Virus (HIV)					
16	Monitoring for Disease Activity for Beneficiaries with HIV** Percentage of patients diagnosed with HIV who received a CD4 count annually and an HIV RNA level laboratory test biannually to monitor for disease activity	0568	Administrative Claims	Medicare beneficiaries who received at least one CD4 count and at least two HIV RNA level laboratory tests between 1/1/11 and 12/31/11.	Medicare beneficiaries with a diagnosis of HIV-1 or HIV-2 between 1/1/10 and 12/31/11, who had continuous Medicare Parts A and B coverage between 1/1/11 and 12/31/11. Exclusions: None.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Mental Health				
17	Antidepressant Treatment for Depression Two rates are calculated: Rate 1: Effective Acute Phase Treatment [Acute Phase Treatment (at least 12 weeks)] Percentage of patients who were diagnosed with a new episode of depression and treated with antidepressant medication and who remained on an antidepressant medication treatment for at least 84 days (12 weeks) Rate 2: Effective Continuation Phase Treatment [Continuation Phase Treatment (at least 6 months)] Percentage of patients who were diagnosed with a new episode of depression and treated with antidepressant medication and who remained on an antidepressant medication treatment for at least 180 days (6 months)	0105	Administrative Claims	Numerator 1: Medicare beneficiaries who had at least 84 days of continuous treatment with anti-depressant medication during the 114 days following the Index Prescription Start Date (IPSD), with a gap in medication treatment up to a total of 30 days allowed. Numerator 2: Medicare beneficiaries who had at least 180 days of continuous treatment with anti-depressant medication during the 231 days that followed the Index Prescription Start Date (IPSD), with a gap in medication treatment up to a total of 51 days allowed.	Applies to both rates: Medicare beneficiaries 18 years or older as of 12/31/11, who were diagnosed with a new episode of major depression during the intake period (5/1/10 to 4/30/11) and who were treated with anti-depressant medication. (Beneficiary is not included if there is a diagnosis of major depression in the 120 days prior to the episode start date.) Beneficiary must have had continuous coverage for Medicare Parts A, B, and D for 120 days prior to the new episode through 245 days after the new episode with no more than a single month gap in coverage, and the beneficiary must have been enrolled during the month of the episode. Exclusions: None.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Mental Health (continued)				
18	Follow-Up After Hospitalization for Mental Illness Percentage of discharges for patients who were hospitalized for treatment of selected mental health disorders and who had an outpatient visit, an intensive outpatient encounter, or partial hospitalization with a mental health practitioner after discharge Two rates are calculated: Rate 1: Percentage of patients who received follow-up within 30 days of discharge Rate 2: Percentage of patients who received follow-up within 7 days of discharge	0576	Administrative Claims	Numerator 1: Medicare beneficiaries with an outpatient visit, intensive outpatient encounter or partial hospitalization with a mental health practitioner on or within 30 days of hospital discharge. Numerator 2: Medicare beneficiaries with an outpatient visit, intensive outpatient encounter or partial hospitalization with a mental health practitioner on or within 7 days of hospital discharge.	Applies to both rates: Medicare beneficiaries who were a) 6 years or older as of the date of discharge, b) had continuous Medicare Parts A and B coverage on the date of discharge through 30 days after discharge, with no gaps in coverage, and c) were discharged alive from an acute inpatient setting (including acute care psychiatric facilities) with a principal mental health diagnosis between 1/1/11 and 12/1/11. Note: The eligible population for this measure is based on discharges, not patients. Exclusions: None.
	Prevention				
19	Breast Cancer Screening for Women ≤ 69 Percentage of female patients ages 40-69 years who received a mammogram during the measurement year or in the prior year	0031	Administrative Claims	Medicare beneficiaries who had one or more mammograms during 2010 or 2011.	Female Medicare beneficiaries ages 42-69 years as of 12/31/11 with continuous Medicare Parts A and B coverage during 2010 and 2011 with no more than a single month gap in coverage. Exclusions: Female Medicare beneficiaries who had a bilateral mastectomy and for whom claims data do not indicate that a mammogram was performed. If claims for 2 separate mastectomies are found, the beneficiary is excluded. The bilateral mastectomy must have occurred by 12/31/11.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Medication Management				
20	Viral Load Testing for Beneficiaries with Antiviral Therapy for Hepatitis C** Percentage of patients 18 years or older with Hepatitis C (HCV) who began HCV antiviral therapy during the measurement year and had HCV viral load testing prior to initiation of antiviral therapy	0584	Administrative Claims	Medicare beneficiaries who had an HCV Viral Load test between 1/1/10 and the initiation of antiviral therapy in 2011.	Medicare beneficiaries 18 years or older as of 12/31/11, diagnosed with Hepatitis C in 2010, who started antiviral therapy between 1/1/11 and 12/31/11, and with Medicare Parts A and B coverage ≥ 89% of the time between 1/1/10 and 12/31/11. Exclusions: Medicare beneficiaries with an inpatient hospitalization between 1/1/10 and 12/31/11 prior to the initiation of antiviral therapy.
21	Lipid Profile for Beneficiaries Who Started Lipid-Lowering Medications Percentage of patients 18 years or older starting lipid-lowering medication during the measurement year who had a lipid panel checked within 3 months after starting drug therapy	0583	Administrative Claims	Medicare beneficiaries who had a serum lipid panel drawn within 90 days following the start of lipid-lowering therapy.	Medicare beneficiaries 18 years or older as of 12/31/11, who newly started on lipid-lowering medication between 1/1/11 and 10/02/11, who had continuous Medicare Parts A and B coverage for the 90 days following lipid onset date and continuous Part D coverage for the 180 days prior to the lipid onset date, and had continuous use of lipid-lowering medication for the 90 days following lipid onset date. Lipid onset date is defined as the earliest instance of a Medicare drug claim for lipid-lowering medication between 1/1/11 and 10/02/11. Exclusions: Medicare beneficiaries with a Medicare drug claim for a lipid-lowering medication in the 180 days prior to the lipid onset date, and beneficiaries who had an inpatient hospitalization from 0 to 90 days after the lipid onset date.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Medication Management (continued)				
22	Annual Monitoring for Beneficiaries on Persistent Medications** Percentage of patients 18 years or older who received at least 180 treatment days of ambulatory medication therapy for a select therapeutic agent in the measurement year and at least one therapeutic monitoring event for the therapeutic agent in the measurement year Five rates are calculated: Rate 1: Angiotensin converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARB) Rate 2: Digoxin Rate 3: Diuretics Rate 4: Anticonvulsants Rate 5: Total rate is equal to the sum of 4 previous numerators divided by sum of 4 previous denominators	0021	Administrative Claims	Numerator 1: Medicare beneficiaries who had at least one serum potassium and either serum creatinine or blood urea nitrogen test (or lab panel test) in 2011. Numerator 2: Medicare beneficiaries who had at least one serum potassium and either serum creatinine or blood urea nitrogen test (or lab panel test) in 2011. Numerator 3: Medicare beneficiaries who had at least one serum potassium and either serum creatinine or blood urea nitrogen test (or lab panel test) in 2011. Numerator 4: Medicare beneficiaries who had at least one drug serum concentration test for the prescribed drug in 2011. If a patient is on multiple anticonvulsants, then there must be evidence that the beneficiary received the appropriate test for each drug. Numerator 5: Sum of numerators for Rates 1-4.	Applies to all five rates: Medicare beneficiaries 18 years or older as of 12/31/11 who had continuous Medicare Parts A, B, and D coverage with no more than a single month gap in coverage in 2011. Persistence is defined as receiving a 180-day supply of medication in 2011. Denominator 1: Medicare beneficiaries who were on persistent ACE/ARB medications. Denominator 2: Medicare beneficiaries who were on persistent digoxin medications. Denominator 3: Medicare beneficiaries who were on persistent diuretic medications. Denominator 4: Medicare beneficiaries who were on persistent anticonvulsant medications. Denominator 5: Sum of denominators for Rates 1-4. Exclusions: Medicare beneficiaries who had an acute or non-acute hospital stay in 2011.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Medication Management (continued)				
23	Anticoagulation Treatment ≥ 3 Months after Deep Vein Thrombosis** Percentage of patients diagnosed with lower extremity deep vein thrombosis (DVT) who had at least 3 months of anticoagulation after the event, or patients showing compliance with anticoagulation therapy as indicated by a Home PT Monitoring device or multiple instances of prothrombin time testing over the 3-month period following the event	0581	Administrative Claims	Medicare beneficiaries who had at least 3 months of anticoagulation after being diagnosed with lower extremity DVT, or beneficiaries showing compliance with anticoagulation therapy as indicated by a Home PT Monitoring device or multiple instances of prothrombin time testing over the 3-month period following the diagnosis.	Medicare beneficiaries diagnosed with a lower extremity DVT between 1/1/11 and 9/30/11, who had continuous Medicare Parts A and B coverage from 7/1/10 through 12/31/11, and Medicare Part D coverage for at least 90 days following the DVT onset date. The onset of DVT is defined as the earliest instance of lower extremity DVT between 1/1/11 and 9/30/11. Exclusions: Medicare beneficiaries with contraindication to warfarin therapy between 7/1/10 and 12/31/11 (contraindications include: evidence of eye surgery, GI bleed, aortic dissection, cerebral aneurysm, pericarditis, bacterial endocarditis, pregnancy, bleeding diatheses, or head trauma); or who had an inferior vena cava (IVC) filter within 90 days after the onset of DVT.
24	Anticoagulation Treatment ≥ 3 Months after Pulmonary Embolism** Percentage of patients diagnosed with a pulmonary embolism (PE) who had at least 3 months of anticoagulation after the event, or patients showing compliance with anticoagulation therapy as indicated by a Home PT Monitoring device or multiple instances of prothrombin time testing over the 3-month period following the event	0593	Administrative Claims	Medicare beneficiaries who had at least 3 months of anticoagulation after being diagnosed with PE, or beneficiaries showing compliance with anticoagulation therapy as indicated by a Home PT Monitoring device or multiple instances of prothrombin time testing over the 3-month period following the diagnosis.	Medicare beneficiaries diagnosed with a PE between 01/01/11 and 09/30/11, who had continuous Medicare Part D coverage from onset date to 90 days thereafter, and who had continuous Medicare Parts A and B coverage from 7/1/10 through 12/31/11. PE onset date is defined as the earliest instance of a PE diagnosis between 1/1/11 and 9/30/11. Exclusions: Medicare beneficiaries with contraindication to warfarin therapy between 7/1/10 and 12/31/11 (contraindications include: evidence of neurologic surgery, eye surgery, GI bleed, aortic dissection, cerebral aneurysm, pericarditis, bacterial endocarditis, pregnancy, bleeding diatheses, or head trauma), or who had an inferior vena cava (IVC) filter within 90days after the onset of PE.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Medication Management (continued)				
25	INR Testing for Beneficiaries Taking Warfarin and Interacting Anti-Infective Medications** Percentage of episodes with an International Normalized Ratio (INR) test performed 3 to 7 days after a newly-started interacting anti-infective medication for individuals receiving warfarin	0556	Administrative Claims	Number of episodes for which Medicare beneficiaries prescribed warfarin had an INR test performed 3 to 7 days after the start date of an anti-infective medication.	Medicare beneficiaries 18 years or older, alive at the end of 2011, with no more than a single month gap in coverage for Medicare Parts A, B, and D, and who had at least two claims for warfarin with different service dates in 2011. The denominator value is the number of episodes for these beneficiaries with a newly-started interacting anti-infective medication that had overlapping days' supply of warfarin. Exclusions: Beneficiaries with a diagnosis of cancer and beneficiaries who are monitoring their INR at home.
26	Drugs to be Avoided for Beneficiaries ≥ 65 Two rates are calculated: Rate 1: Patients who receive at least one drug to be avoided Percentage of patients 65 years or older who received at least one high-risk medication in the measurement year Rate 2: Patients who receive at least two different drugs to be avoided Percentage of patients 65 years or older who received two or more different high-risk medications in the measurement year	0022	Administrative Claims	Numerator 1: Medicare beneficiaries with at least one prescription dispensed for any high-risk medication during 2011. Numerator 2: Medicare beneficiaries with at least two prescriptions dispensed for different high-risk medications during 2011.	Applies to both rates: Medicare beneficiaries who were a) 65 years or older as of 12/31/11, and b) had continuous Medicare Parts A, B, and D coverage in 2011 with no more than one gap in enrollment of up to one month. (Note: The patient must be covered as of 12/31/11.) Exclusions: None.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Medication Management (continued)				
27	Potentially Harmful Drug-Disease Interactions for Beneficiaries ≥ 65** Percentage of patients 65 years or older who have evidence of an underlying disease, condition or health concern and who were dispensed an ambulatory prescription for a contraindicated medication, concurrent with or after the diagnosis Four rates are calculated: Rate 1: Prescription for tricyclic antidepressants, antipsychotics or sleep agents for patients with a history of falls Rate 2: Prescription for tricyclic antidepressants or anticholinergic agents for patients with dementia Rate 3: Prescription for non-aspirin NSAIDs or Cox-2 Selective NSAIDs for patients with chronic renal failure (CRF) Rate 4: Total rate equal to sum of 3 previous numerators divided by sum of 3 previous denominators	NCQA	Administrative Claims	Numerator 1: Medicare beneficiaries dispensed an ambulatory prescription for a tricyclic antidepressant or an antipsychotic or sleep agent on or between the Index Episode Start Date (IESD) and 12/31/11. Numerator 2: Medicare beneficiaries dispensed an ambulatory prescription for a tricyclic antidepressant or anticholinergic agent on or between the IESD and 12/31/11. Numerator 3: Medicare beneficiaries dispensed an ambulatory prescription for an NSAID or Cox-2 selective NSAID on or between the IESD and 12/31/11. Numerator 4: Sum of numerators for Rates 1-3.	Applies to all four rates: Medicare beneficiaries who were a) 67 years or older as of 12/31/11, b) had continuous Medicare Parts A, B, and D coverage in 2011 and 2010, with no more than one gap in coverage of up to one month during each year (and the patient must be covered as of 12/31/11). Denominator 1: Had an accidental fall or hip fracture between 1/1/10 and 12/1/11. Rate 1 Exclusions: Medicare beneficiaries with a diagnosis of psychosis between 1/1/10 and 12/1/11. Denominator 2: Had a diagnosis of dementia or a dispensed dementia medication between 1/1/10 and 12/1/11. Rate 2 Exclusions: None. Denominator 3: Had a diagnosis of CRF between 1/1/10 and 12/1/11. Rate 3 Exclusions: None. Denominator 4: Sum of denominators for Rates 1-3.

	Measure Title and Description	NQF Measure Number or Measure Steward*	Source of Data	Numerator Statement	Denominator Statement
	Medication Management (continued)				
28	Lack of Monthly INR Monitoring for Beneficiaries on Warfarin Average percentage of 40-day intervals in which patients with claims for warfarin did not receive an International Normalized Ratio (INR) test during the measurement period	0555	Administrative Claims	Sum of the percentage of 40-day intervals without an INR test for each beneficiary in the denominator.	Medicare beneficiaries 18 years or older, alive at the end of 2011, with continuous Medicare Parts A, B, and D coverage in 2011 with no more than a single month gap in coverage, and who had warfarin claims for at least 40 days during 2011. Exclusions: Beneficiaries monitoring INR at home.

[a] The NQF-endorsed version of this measure, in addition to a lipid profile, requires LDL-C control < 100.

[b] http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/Elderly-High-Risk-Medications-DAE.pdf

*The National Quality Form (NQF) measure number is reported unless the measure is not NQF-endorsed, in which case the measure steward is reported.

** Denotes measures that will not be used in the value-based payment modifier for medical groups choosing this option.

APPENDIX C

PAYMENT STANDARDIZATION

Acumen, LLC, a CMS contractor, standardized payments for all 2011 Medicare claims. Mathematica merged these standardized payments with original Medicare claims by beneficiary identifier, provider identifier, and claim start and end dates, and supplemented with additional fields like processing date to resolve duplicate matches. This appendix summarizes the standardization method for each of the seven Medicare claim types (inpatient hospital, outpatient hospital, skilled nursing facility (SNF), home health agency, hospice, physician services, and DME. Full details of the payment standardization methodology are available at http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772057350.

Inpatient Hospital Claims

The standardized payment for a stay at an acute hospital, inpatient psychiatric facility, inpatient rehabilitation facility, or long-term care hospitals (with normal length of stay) is built as the sum of national base payment rates for labor, non-labor, and capital expenditures, multiplied by the stay's diagnosis-related group rate. Any outlier payments then are added in and adjusted for geographic differences using the hospital wage index. The standardization excludes graduate medical education, indirect medical education, and disproportionate share payments. Transfer stays and discharges to post-acute care facilities are standardized by applying a standardized per diem rate. Claims from Maryland hospitals are standardized by applying a hospital-specific factor to the actual payment, adding in the deductible and coinsurance, and then adjusting by the wage index. Critical access hospital (CAH) payments, long-term care hospital short-stay claim payments, and payments for other inpatient stays are standardized by adjusting the total payment for differences in area wages.

The online documentation referenced above provides additional details about the identification of short-stay transfers and post-acute care facility discharges, the identification of Maryland hospitals, and the identification of interim claims.

Skilled Nursing Facility Claims

The standardized procedure for SNF claims depends on the type of SNF claim, of which there are four types: prospective payment system SNF claims, CAH swing bed claims, SNF claims for beneficiaries without Part A coverage or who have exhausted Part A coverage, and claims for outpatient services provided by SNFs. For prospective payment system claims, the standardized payment is equal to the applicable per diem rate multiplied by the number of Medicare covered days. The applicable per diem rate for rehabilitation resource utilization groups (RUGs) is equal to the average nursing base rate multiplied by the RUG weight for that RUG plus the average rehabilitation base rate multiplied by the RUG therapy weight. For non-rehabilitation RUGs, the therapy portion of the rate is based on the average non-rehabilitation therapy rate. The base rates are the average of the urban and rural rates. If the RUG on the revenue center line cannot be matched to a RUG weight, then the standardized payment is equal to the actual payment with coinsurance added back in, adjusted for differences in area wages.

For CAH swing bed claims, the standardized payment is the actual payment with coinsurance added back in, adjusted for differences in area wages.

SNF claims for beneficiaries without Part A coverage or who have exhausted Part A coverage and claims for outpatient services provided by SNFs are standardized using the Healthcare Common Procedure Coding System (HCPCS) code on each revenue center line and standardizing like other Part B fee schedule claims by using the physician fee schedule, the clinical laboratory fee schedule, the ambulance fee schedule, and the durable medical equipment, prosthetics, orthotics, and supplies (DMEPOS) fee schedule, as applicable.

Home Health Agency Claims

The standardization method for home health claims depends on whether the claim type is designated as home health or outpatient, and, if the former, whether the claim is for a short episode. Home health claims for short episodes are standardized by adjusting the actual payment by the wage index associated with the labor share. For other home health claims, the standardized payment is built up from the base rate for each home health resource group and is multiplied by the applicable home health resource group weight and added to a supply amount, outlier payments adjusted by the labor-related wage rate, and any add-ons for prosthetics, DME, or oxygen that are present on the claim. For claims identified by their claim type as outpatient claims that are present in the home health file, the standardized payment is assigned to be equal to the actual payment amount.

Hospice Claims

The standardization of hospice claims depends on the value of the revenue center code for each line item. If the revenue center code is for services furnished to patients by a physician or nurse practitioner, then the standardized payment is equal to the actual payment amount for that line item. If the revenue center code for a line item indicates continuous home care, then the standardized payment is equal to the base rate for continuous home care for that year times the number of units divided by four (because units are reported in 15-minute increments). If the revenue center code indicates that the service is for routine home care, inpatient respite care, or general inpatient care, then the standardized payment is equal to the base rate for that type of care for that year multiplied by the number of units.

Outpatient Hospital Claims

The standardization method for an outpatient hospital claim depends on whether the service was provided in a Maryland hospital and whether claim is for a service paid on a reasonable cost or pass-through basis, under the Outpatient Prospective Payment System (OPPS), or under another fee schedule. These types of claims can be divided into five groups, each of which is standardized using a different method:

1. Revenue center lines for reasonable cost or pass-through services[9]
2. Revenue center lines with an ambulatory payment classification
3. Revenue center lines with status indicating services not paid under OPPS
4. Hospital outpatient services for CAHs
5. Claims for services furnished by Maryland hospitals

Revenue center lines for reasonable costs or pass-through services are standardized by using the actual payment and adding in the coinsurance and deductible amounts from the revenue center line. For revenue center lines with an ambulatory payment classification, the standardized payment is set equal to the OPPS schedule amount for the HCPCS code on the revenue line multiplied by the number of units on the revenue line, and adjusted for multiple procedures as indicated by the modifier on the revenue line item. If the service was paid under the OPPS fee schedule and has a status indicating a significant procedure subject to multiple-procedure discounting, the standardized payment is constructed by adjusting the actual payment by a coinsurance adjustment factor, adding in the deductible, and adjusting by the labor-related wage rate. If the service was paid under the OPPS fee schedule and has a status indicating ancillary services, the standardized payment is set to the actual payment amount plus any applicable cost sharing for that line. Revenue center lines not paid under OPPS are standardized by using the rates indicated on the various Part B fee schedules (physician, clinical laboratory, ambulance, DMEPOS). Hospital outpatient services from CAHs are standardized by using the actual payment on the claim plus any deductible and coinsurance, and then adjusting for differences in area wages. Standardized payments for services furnished by Maryland hospitals are derived by applying a hospital-year-specific factor to the actual paid claims amount, adding in the deductible amount, and adjusting for differences in area wages.

Although the CMS methodology available online standardizes all outpatient hospital claim outlier payments at the claim level, development of certain components of the QRUR requires outpatient hospital claims at the line-item level. Consequently, neither actual nor standardized outlier payments are adding on to the line-level standardized payments for outpatient hospital claims.

There are some additional services whose claims appear in the hospital outpatient file, for which the standardized amounts are calculated separately. These include the following:

1. Rural health clinics and federally qualified health centers, for which standardized payments are equal to actual payment amounts plus deductibles, adjusted for wage differences
2. Comprehensive outpatient rehabilitation facilities and outpatient rehabilitation facilities, for which standardized payments are calculated in the same way as for services paid under the physician fee schedule

[9] Reasonable cost or pass-through revenue center lines are identified by status indicators: F (corneal tissue acquisition, certain certified registered nurse anesthetist services, and hepatitis B vaccines), G (drug/biological pass-through), H (device or therapeutic radiopharmaceuticals pass-through), and L (influenza or pneumococcal pneumonia vaccines).

3. Community mental health centers, for which standardized payments are calculated in the same way as for services paid under the OPPS fee schedule
4. Renal dialysis facilities, for which the standardized payment is equal to the actual claim payment amount minus outlier payments and a wage-adjusted training payment (if applicable), plus deductible and coinsurance, all divided by the wage index; the result is added to the unadjusted training payment plus the outlier payment

Physician Services Claims

Payments for services included in the carrier claims file are standardized using various methods, depending on the type of service. These claims can be categorized into six broad areas:

1. Physician services, including all E&M; all procedures; all imaging; laboratory diagnostic tests paid under the physician fee schedule and non-laboratory diagnostic tests; chiropractic services; vision, hearing, and speech services; and other services
2. Anesthesia services
3. Ambulatory surgical center (ASC) services
4. Clinical laboratory services
5. Part B–covered drugs
6. Ambulance services

Standardized payments for the physician services are calculated by multiplying the annual conversion factor by the sum of the relevant work, transitioned practice expense, and malpractice relative value units. Adjustments are made for technical versus professional components, multiple procedures, co-surgeon and assistant surgeon deductions, non-physician-supplied services, facility versus non-facility settings, and number of units. These aspects of the claims are specified in modifier fields and place of service fields at the individual line item level of each claim.

Standardized payments for anesthesia services are calculated by multiplying the anesthesia conversion factor for the relevant year by the sum of the base units for the specified anesthesia HCPCS code and the units for that service on the line item (divided by 1,000). An additional multiple procedure discount or certified registered nurse anesthetist adjustment also may apply, as specified in the modifier field of the line item.

Standardized payments for ASC services are generally equal to the ASC fee schedule amount for the service provided multiplied by the number of units and adjusted for multiple procedures.

Standardized payments for clinical laboratory services are equal to the national limit amounts for specified services (as captured by HCPCS codes) multiplied by the number of units. If a HCPCS code has a national limit amount equal to 0, or if the code indicates an automated general profile, then the standardized amount is equal to the actual claim line payment amount plus the coinsurance and deductible for that claim line.

The standardized payment for Part B–covered drugs is equal to the actual claim line payment amount plus the coinsurance and deductible for that claim line.

Ambulance services are standardized using two methods. For claim lines for mileage, the standardized amount is equal to the actual claim line payment amount plus the coinsurance and deductible for that claim line. For all other ambulance services, the standardized amount is equal to the mean of the actual line amounts over all line items in the claims data set associated with the specific ambulance HCPCS code present on the claim line.

Durable Medical Equipment and Prosthetics, Orthotics, and Surgical Supplies Claims

In general, the standardized payment for durable medical equipment line items is equal to the ceiling of the DME fee schedule relevant for that service times an adjustment factor based on the modifier code for the service times the number of units. If the HCPCS code refers to a device that is for prosthetics, orthotics, or surgical supplies, then the standardized payment is equal to five-sixths times the DME fee schedule amount for that HCPCS code and modifier times the number of units.

APPENDIX D

RISK ADJUSTMENT

In computing per capita costs for the QRURs, cost data for each beneficiary are risk adjusted. The risk adjustment process involves several steps, beginning with preparing the data for risk adjustment at the beneficiary level and culminating with the computation of a physician–specific risk-adjusted per capita cost for attributed beneficiaries that serves as the basis for comparison among physicians.

1. Calculate each beneficiary's total 2011 costs. For each beneficiary attributed to a physician, sum the beneficiary's total payment-standardized 2011 Medicare claims costs (except for hospice and Part D outpatient prescription drugs).

2. Exclude beneficiaries with the low costs and modify high costs. Remove beneficiaries with total costs in the bottom 1 percent of the cost distribution of all beneficiaries attributed to all physicians (that is, the beneficiaries with the lowest costs) from further analysis.[10] To limit the influence of the highest-cost patients on the risk adjustment model, total costs for beneficiaries in the top 1 percent (highest costs) are replaced with the value of the 99th percentile of the distribution of total patient costs, a process known as Winsorization.

3. Exclude beneficiaries without a risk score. Because the HCC risk score is a fundamental component of the risk adjustment model, the small number of beneficiaries who lack either a 2010 community or a new enrollee risk score are dropped from the model. For beneficiaries with both a community and a new enrollee risk score, only the new enrollee risk score is used in the risk adjustment model.[11] Exhibit D.1 below displays the 70 HCCs that CMS uses in its model to produce HCC risk scores.

4. Compute expected beneficiary costs. To compute expected beneficiary costs, the 2011 Winsorized payment-standardized total costs of retained beneficiaries are regressed on the following independent variables:

   - 2010 HCC community risk score
   - 2010 HCC community risk score squared
   - 2010 HCC new enrollee risk score
   - 2010 HCC new enrollee risk score squared
   - 2010 indicator of end-stage renal disease

[10] All claims following payment standardization with a $0 payment amount are dropped from the analysis, so no beneficiary has a total 2011 payment-standardized cost equal to $0.

[11] There are separate CMS-HCC models for new enrollees (the New Enrollee Model) and established enrollees (the Community Model). The New Enrollee Model adjusts payments based on age, gender, and disability status, whereas the Community Model incorporates medical history.

Only one risk score—either the community score or the new enrollee score—is used for each beneficiary in the regression. If a beneficiary has only one score, that score is used and the other is given a value of zero in the regression. If a beneficiary has both scores, the new enrollee score is used. The regression yields a set of coefficients, one per independent variable; each coefficient measures the association between its corresponding independent variable and total beneficiary cost when the other independent variables are held constant.

5. Compute expected costs at the beneficiary level. For each beneficiary attributed to a given physician, use the coefficients from the estimated regression model to compute the beneficiary's expected costs, given the beneficiary's HCC risk score, type of score (community or new enrollee), and ESRD status.

6. Compute the ratio of observed to expected costs at the physician level. For each physician, sum the total Winsorized payment-standardized (but unadjusted) costs for all beneficiaries attributed to the physician, and divide that sum by the sum of expected costs computed for the same set of beneficiaries.

7. Compute risk-adjusted per capita costs. For each physician, multiply the ratio of observed to expected costs computed in the previous step by the mean Winsorized payment-standardized (but unadjusted) total cost among all beneficiaries included in the risk adjustment model.

Exhibit D.1. Hierarchical Condition Categories (HCCs) Included in the CMS-HCC Risk Adjustment Model

HCC Number and Brief Description of Disease/Condition	
HCC1 = HIV/AIDS	HCC75 = Coma, Brain Compression/Anoxic Damage
HCC2 = Septicemia/Shock	HCC77 = Respirator Dependence/Tracheostomy Status
HCC5 = Opportunistic Infections	HCC78 = Respiratory Arrest
HCC7 = Metastatic Cancer and Acute Leukemia	HCC79 = Cardio-Respiratory Failure and Shock
HCC8 = Lung, Upper Digestive Tract, and Other Severe Cancers	HCC80 = Congestive Heart Failure
HCC9 = Lymphatic, Head and Neck, Brain, and Other Major Cancers	HCC81 = Acute Myocardial Infarction
HCC10 = Breast, Prostate, Colorectal, and Other Cancers and Tumors	HCC82 = Unstable Angina and Other Acute Ischemic Heart Disease
HCC15 = Diabetes with Renal or Peripheral Circulatory Manifestation	HCC83 = Angina Pectoris/Old Myocardial Infarction
HCC16 = Diabetes with Neurologic or Other Specified Manifestation	HCC92 = Specified Heart Arrhythmias
HCC17 = Diabetes with Acute Complications	HCC95 = Cerebral Hemorrhage
HCC18 = Diabetes with Ophthalmologic or Unspecified Manifestation	HCC96 = Ischemic or Unspecified Stroke
HCC19 = Diabetes without Complication	HCC100 = Hemiplegia/Hemiparesis
HCC21 = Protein-Calorie Malnutrition	HCC101 = Cerebral Palsy and Other Paralytic Syndromes
HCC25 = End-Stage Liver Disease	HCC104 = Vascular Disease with Complications
HCC26 = Cirrhosis of Liver	HCC105 = Vascular Disease
HCC27 = Chronic Hepatitis	HCC107 = Cystic Fibrosis
HCC31 = Intestinal Obstruction/Perforation	HCC108 = Chronic Obstructive Pulmonary Disease
HCC32 = Pancreatic Disease	HCC111 = Aspiration and Specified Bacterial Pneumonias
HCC33 = Inflammatory Bowel Disease	HCC112 = Pneumococcal Pneumonia, Emphysema, Lung Abscess
HCC37 = Bone/Joint/Muscle Infections/Necrosis	HCC119 = Proliferative Diabetic Retinopathy and Vitreous Hemorrhage
HCC38 = Rheumatoid Arthritis and Inflammatory Connective Tissue Disease	HCC130 = Dialysis Status
HCC44 = Severe Hematological Disorders	HCC131 = Renal Failure
HCC45 = Disorders of Immunity	HCC132 = Nephritis
HCC51 = Drug/Alcohol Psychosis	HCC148 = Decubitus Ulcer of Skin
HCC52 = Drug/Alcohol Dependence	HCC149 = Chronic Ulcer of Skin, Except Decubitus
HCC54 = Schizophrenia	HCC150 = Extensive Third-Degree Burns
HCC55 = Major Depressive, Bipolar, and Paranoid Disorders	HCC154 = Severe Head Injury
HCC67 = Quadriplegia, Other Extensive Paralysis	HCC155 = Major Head Injury
HCC68 = Paraplegia	HCC157 = Vertebral Fractures Without Spinal Cord Injury
HCC69 = Spinal Cord Disorders/Injuries	HCC158 = Hip Fracture/Dislocation
HCC70 = Muscular Dystrophy	HCC161 = Traumatic Amputation
HCC71 = Polyneuropathy	HCC164 = Major Complications of Medical Care and Trauma
HCC72 = Multiple Sclerosis	HCC174 = Major Organ Transplant Status
HCC73 = Parkinson's and Huntington's Diseases	HCC176 = Artificial Openings for Feeding or Elimination
HCC74 = Seizure Disorders and Convulsions	HCC177 = Amputation Status, Lower Limb/Amputation Complications

APPENDIX E

SAMPLE DISPLAY OF PER CAPITA COSTS FOR SPECIFIC SERVICES

Service Category	Medicare Patients Whose Care You Directed			Average for Medicare Patients Whose Care Was Directed by [#] Physicians in Your Specialty in the Nine States			Amount by Which Your Medicare Patients' Per Capita Costs Were Higher (or Lower) than Average
	Your Medicare Patients Using Any Service in This Category		Total Risk-Adjusted Per Capita Costs	Medicare Patients Using Any Service in This Category		Total Risk-Adjusted Per Capita Costs	
	Number	Percentage		Number	Percentage		
All Services		100%	$		100%	$	$/($)
Evaluation and Management Services in All Non-Emergency Settings							
Provided by YOU for Your Patients		%	$		%	$	$/($)
Provided by OTHER Physicians Treating Your Patients							
Procedures in All Non-Emergency Settings							
Provided by YOU for Your Patients							
Provided by OTHER Physicians Treating Your Patients							
Hospital Services (Excluding Emergency Outpatient)							
All HospitalServices							
Inpatient Hospital Facility Services							
Outpatient Hospital Facility Services							
Emergency Services That Did Not Result in a Hospital Admission							
All Emergency Services							
Emergency Visits							
Procedures							
Laboratory and Other Tests							
Imaging Services							
Services in Non-Emergency Ambulatory Settings							
All Ancillary Services							
Laboratory and Other Tests							
Imaging Services							
Durable Medical Equipment							
Post-Acute Care Services							
All Post-Acute Services							
Skilled Nursing Facility							
Psychiatric, Rehabilitation, or Other Long-Term Facility							
Home Health							
Other Services							
All Other Services*							

Numbers are approximate due to rounding.

APPENDIX F

DETAILED DESCRIPTION OF CATEGORIES OF SERVICES METHOD

Each Medicare claim is categorized into one of the service categories displayed in the exhibit in Appendix E. Claim costs are included in a given service category based on the claim type, Berenson-Eggers Type of Service (BETOS) code, place of service, and/or provider type (Exhibit F.1). CMS assigns a BETOS code to each Health Care Procedure Coding System (HCPCS) code that may appear on a carrier or outpatient hospital claim. For example, BETOS code M1A (office visits – new) consists of the following E&M HCPCS codes: 99201, 99202, 99203, 99204, 99205, 99381, 99382, 99383, 99384, 99385, 99386, 99387, 99432, 0500F, G0101, G0245, G0248, and G0344. CMS developed the BETOS coding system primarily for analyzing the growth in Medicare expenditures. The coding system covers all HCPCS codes; assigns a HCPCS code to one and only one BETOS code; consists of readily understood clinical categories (as opposed to statistical or financial categories); consists of categories that permit objective assignment; is stable over time; and is relatively immune to minor changes in technology or practice patterns. BETOS code descriptions are listed in Exhibit F.2.

Exhibit F.1. Categorization Codes for Type of Service Categories

Category	Claim Type	Criteria for Including Claim (Line Item) in Category		
		BETOS Criterion	Place of Service Criterion	Specialty Criterion
Professional E&M Services	Carrier minus ambulatory surgical center (ASC) claims	All M codes	Carrier place of service not equal to 23 (emergency room)	Carrier specialty NOT in {45, 47, 49, 51-54, 58-61, 63, 69, 73-75, 87, 88} AND NOT beginning with A or B
Procedures	Carrier (minus ASC)	All P codes, except for P0	Carrier place of service not equal to 23	
Inpatient Hospital Facility Services	Inpatient	Not applicable	Provider number ends in {0001-0899} or {1300-1399]	Not applicable
Outpatient Hospital Facility Services	Outpatient, carrier (ASC only)	All M, P (except for P0), I, or T codes	Carrier place of service not equal to 23; outpatient revenue center code NOT in {0450-0459, 0981} (emergency room)	Carrier specialty = 49 (ASC)
Emergency Services: Emergency Visits	Outpatient, carrier (minus ASC)	All M codes	Carrier place of service = 23 or outpatient revenue center line code in {0450-0459, 0981}	Carrier specialty NOT in {45, 47, 49, 51-54, 58-61, 63, 69, 73-75, 87, 88} AND NOT beginning with A or B
Emergency Services: Procedures	Outpatient, carrier (minus ASC)	All P codes, except for P0		
Emergency Services: Laboratory and Other Tests	Outpatient, carrier (minus ASC)	All T codes		
Emergency Services: Imaging services	Outpatient, carrier (minus ASC)	All I codes		
Ancillary Services: Laboratory and Other Tests	Carrier (minus ASC)	All T codes	Carrier place of service not equal to 23	
Ancillary Services: Imaging Services	Carrier (minus ASC)	All I codes		
Ancillary Services: Durable Medical Equipment	DME	Not applicable	Not applicable	Not applicable
Post-Acute Services: Skilled Nursing Facility	Skilled nursing facility			
Post-Acute Services: Psychiatric, Rehabilitation, or Other Long-Term Facility	Inpatient		Provider number ends in {2000-2299, 3025-3099, 4000-4499} or its third position is in {M, R, S, T}	
Post-Acute Services: Home Health	Home health		Not applicable	
All Other Services	Remainder of total costs from claims files (excluding hospice and Part D)	Not applicable	Total costs associated with all claims and/or line items not identified in rows above	Not applicable

Exhibit F.2. 2010 BETOS Codes and Descriptions

Code	Description
	Evaluation and Management
M1A	Office visits – new
M1B	Office visits – established
M2A	Hospital visit – initial
M2B	Hospital visit – subsequent
M2C	Hospital visit – critical care
M3	Emergency room visit
M4A	Home visit
M4B	Nursing home visit
M5A	Specialist – pathology
M5B	Specialist – psychiatry
M5C	Specialist – ophthalmology
M5D	Specialist – other
M6	Consultations
	Procedures
P0	Anesthesia
P1A	Major procedure – breast
P1B	Major procedure – colectomy
P1C	Major procedure – cholecystectomy
P1D	Major procedure – turp
P1E	Major procedure – hysterectomy
P1F	Major procedure – explor/decompr/excisdisc
P1G	Major procedure – other
P2A	Major procedure, cardiovascular – CABG
P2B	Major procedure, cardiovascular – aneurysm repair
P2C	Major Procedure, cardiovascular – thromboendarterectomy
P2D	Major procedure, cardiovascular – coronary angioplasty (PTCA)
P2E	Major procedure, cardiovascular – pacemaker insertion
P2F	Major procedure, cardiovascular – other
P3A	Major procedure, orthopedic – hip fracture repair
P3B	Major procedure, orthopedic – hip replacement
P3C	Major procedure, orthopedic – knee replacement
P3D	Major procedure, orthopedic – other
P4A	Eye procedure – corneal transplant
P4B	Eye procedure – cataract removal/lens insertion
P4C	Eye procedure – retinal detachment
P4D	Eye procedure – treatment of retinal lesions
P4E	Eye procedure – other
P5A	Ambulatory procedures – skin
P5B	Ambulatory procedures – musculoskeletal
P5C	Ambulatory procedures – groin hernia repair
P5D	Ambulatory procedures – lithotripsy
P5E	Ambulatory procedures – other
P6A	Minor procedures – skin
P6B	Minor procedures – musculoskeletal
P6C	Minor procedures – other (Medicare fee schedule)
P6D	Minor procedures – other (non–Medicare fee schedule)
P7A	Oncology – radiation therapy
P7B	Oncology – other
P8A	Endoscopy – arthroscopy
P8B	Endoscopy – upper gastrointestinal
P8C	Endoscopy – sigmoidoscopy

Code	Description
P8D	Endoscopy – colonoscopy
P8E	Endoscopy – cystoscopy
P8F	Endoscopy – bronchoscopy
P8G	Endoscopy – laparoscopic cholecystectomy
P8H	Endoscopy – laryngoscopy
P8I	Endoscopy – Other
P9A	Dialysis services (Medicare Fee Schedule)
P9B	Dialysis services (Non–Medicare Fee Schedule)
	Imaging
I1A	Standard imaging – Chest
I1B	Standard imaging – Musculoskeletal
I1C	Standard imaging – Breast
I1D	Standard imaging – Contrast gastrointestinal
I1E	Standard imaging – nuclear medicine
I1F	Standard imaging – other
I2A	Advanced imaging – CAT/CT/CTA: brain/head/neck
I2B	Advanced imaging – CAT/CT/CTA: other
I2C	Advanced imaging – MRI/MRA: brain/head/neck
I2D	Advanced imaging – MRI/MRA: other
I3A	Echography/ultrasonography – eye
I3B	Echography/ultrasonography – abdomen/pelvis
I3C	Echography/ultrasonography – heart
I3D	Echography/ultrasonography – carotid arteries
I3E	Echography/ultrasonography – prostate, transrectal
I3F	Echography/ultrasonography – other
I4A	Imaging/procedure – heart including cardiac catheter
I4B	Imaging/procedure – other
	Tests
T1A	Lab tests – routine venipuncture (non–Medicare fee schedule)
T1B	Lab tests – automated general profiles
T1C	Lab tests – urinalysis
T1D	Lab tests – blood counts
T1E	Lab tests – glucose
T1F	Lab tests – bacterial cultures
T1G	Lab tests – other (Medicare fee schedule)
T1H	Lab tests – other (non–Medicare fee schedule)
T2A	Other tests – electrocardiograms
T2B	Other tests – cardiovascular stress tests
T2C	Other tests – EKG monitoring
T2D	Other tests – other
	Durable Medical Equipment
D1A	Medical/surgical supplies
D1B	Hospital beds
D1C	Oxygen and supplies
D1D	Wheelchairs
D1E	Other DME
D1F	Prosthetic/orthotic devices
D1G	Drugs administered through DME

Code	Description
	Other
O1A	Ambulance
O1B	Chiropractic
O1C	Enteral and parenteral
O1D	Chemotherapy
O1E	Other drugs
O1F	Hearing and speech services
O1G	Immunizations/vaccinations
	Exceptions/Unclassified
Y1	Other – Medicare fee schedule
Y2	Other – non–Medicare fee schedule
Z1	Local codes
Z2	Undefined codes

Source: Centers for Medicare & Medicaid Services Health Care Common Procedure Coding System, 2010

Note: For a crosswalk of HCPCS codes to BETOS codes, see **http:/www.cms.gov/HCPCSReleaseCodeSets/20_BETOS.asp** .

APPENDIX G

PHYSICIAN SPECIALTIES

The 2011 QRURs are distributed only to physicians, and not to all medical professionals. Whether a medical professional is a physician is determined based on the two-digit CMS specialty code that appears on most frequently on the professional's Medicare carrier claims. Prior to the development of the reports, CMS identified which specialties should be considered physicians, namely, doctors of medicine and doctors of osteopathic medicine. Exhibit G.1 identifies which specialties are considered physician specialties for the purposes of the QRURs.

Exhibit G.1. Physician Specialties

CMS Specialty Designation	CMS Specialty Code	Designated as a Physician Specialty
Addiction Medicine	79	Yes
All Other Suppliers	87	No
Allergy/Immunology	03	Yes
Ambulance Service Supplier	59	No
Ambulatory Surgical Center	49	No
Anesthesiologist Assistant	32	No
Anesthesiology	05	Yes
Audiologist	64	No
Cardiac Electrophysiology	21	Yes
Cardiac Surgery	78	Yes
Cardiology	06	Yes
Certified Clinical Nurse Specialist	89	No
Certified Nurse Midwife	42	No
Certified Registered Nurse Anesthesiologist	43	No
Chiropractor, Licensed	35	No
Clinical Laboratory	69	No
Clinical Psychologist	68	No
Clinical Psychologist (Billing Independently)	62	No
Colorectal Surgery	28	Yes
Critical Care (Intensivists)	81	Yes
Department Store	A7	No
Dermatology	07	Yes
Diagnostic Radiology	30	Yes
Emergency Medicine	93	Yes
Endocrinology	46	Yes
Family Practice	08	Yes
Gastroenterology	10	Yes
General Practice	01	Yes
General Surgery	02	Yes
Geriatric Medicine	38	Yes
Geriatric Psychiatry	27	Yes
Grocery Store	A8	No
Gynecologist/Oncologist	98	Yes
Hand Surgery	40	Yes
Hematology	82	Yes
Hematology/Oncology	83	Yes
Home Health Agency	A4	No
Hospice and Palliative Care	17	Yes
Hospital	A0	No
Independent Diagnostic Testing Facility	47	No

CMS Specialty Designation	CMS Specialty Code	Designated as a Physician Specialty
Individual Certified Orthotist	55	No
Individual Certified Prosthetist	56	No
Individual Certified Prosthetist-Orthotist	57	No
Infectious Disease	44	Yes
Intensive Cardiac Rehabilitation	31	Yes
Intermediate Care Nursing Facility	A2	No
Internal Medicine	11	Yes
Interventional Pain Management	09	Yes
Interventional Radiology	94	Yes
Licensed Clinical Social Worker	80	No
Mammography Screening Center	45	No
Mass Immunization Roster Biller	73	No
Maxillofacial Surgery	85	Yes
Medical Oncology	90	Yes
Medical Supply Company for DMERC	54	No
Medical Supply Company with Certified Orthotist	51	No
Medical Supply Company with Certified Prosthetist	52	No
Medical Supply Company with Certified Prosthetist-Orthotist	53	No
Medical Supply Company with Pedorthic Personnel	B3	No
Medical Supply Company with Registered Pharmacist	58	No
Medical Supply Company with Respiratory Therapist	A6	No
Nephrology	39	Yes
Neurology	13	Yes
Neuropsychiatry	86	Yes
Neurosurgery	14	Yes
Nuclear Medicine	36	Yes
Nurse Practitioner	50	No
Nursing Facility, Other	A3	No
Obstetrics/Gynecology	16	Yes
Occupational Therapist	67	No
Ocularist	B5	No
Ophthalmology	18	Yes
Optician	96	No
Optometrist	41	No
Oral Surgery	19	No
Orthopedic Surgery	20	Yes
Osteopathic Manipulative Therapy	12	Yes
Otolaryngology	04	Yes
Pain Management	72	Yes
Pathology	22	Yes
Pediatric Medicine	37	Yes

CMS Specialty Designation	CMS Specialty Code	Designated as a Physician Specialty
Pedorthic Personnel	B2	No
Peripheral Vascular Disease	76	Yes
Pharmacy	A5	No
Physical Medicine and Rehabilitation	25	Yes
Physical Therapist	65	No
Physician Assistant	97	No
Plastic and Reconstructive Surgery	24	Yes
Podiatry	48	No
Portable X-Ray Supplier	63	No
Preventive Medicine	84	Yes
Psychiatry	26	Yes
Public Health or Welfare Agencies	60	No
Pulmonary Disease	29	Yes
Radiation Oncology	92	Yes
Radiation Therapy Centers	74	No
Registered Dietician/Nutrition Professional	71	No
Rehabilitation Agency	B4	No
Rheumatology	66	Yes
Single or Multispecialty Clinic or Group Practice	70	Yes
Slide Preparation Facilities	75	No
Skilled Nursing Facility	A1	No
Speech Language Pathologists	15	No
Sports Medicine	23	Yes
Surgical Oncology	91	Yes
Thoracic Surgery	33	Yes
Unassigned	95	No
Unknown Physician	99	Yes
Unknown Supplier/Provider	88	No
Urology	34	Yes
Vascular Surgery	77	Yes
Voluntary Health or Charitable Agencies	61	No

Source: 2011 Source for CMS Specialty Code: Medicare Claims Processing Manual, Chapter 26 - Completing and Processing Form CMS-1500 Data Set (Rev. 2226, 5-20-11; Rev. 2261, 07-29-11; Rev. 2375, 12-22-11), 10.8.2 - Physician Specialty Codes, (Rev. 2098, Issued: 11-19-10, Effective Date: 04-01-11, Implementation Date: 04-04-11), 10.8.3 - Nonphysician Practitioner, Supplier, and Provider Specialty Codes, (Rev. 2248, Issued: 06-24-11, Effective: 04-01-11, Implementation: 04-04-11).

APPENDIX H
LIST OF ACRONYMS

ASC	ambulatory surgical center
BETOS	Berenson-Eggers Type of Service
CAD	coronary artery disease
CMS	Centers for Medicare & Medicaid Services
COPD	chronic obstructive pulmonary disease
DME	durable medical equipment
DMERC	durable medical equipment regional carrier
E&M	evaluation and management
ESRD	end-stage renal disease
FFS	(Medicare) fee-for-service
HCC	hierarchical condition category
HCPCS	Healthcare Common Procedure Coding System
ICD-9	International Classification of Diseases–9th Revision
PQRS	Physician Quality Reporting System
QRUR	quality and resource use report
VBM	value-based payment modifier