RISK ADJUSTMENT

Overview

The Value-Based Payment Modifier (Value Modifier) Program evaluates the performance of solo practitioners and groups, as identified by their Medicare Taxpayer Identification Number (TIN), on the quality and cost of care they provided to their Medicare Fee-for-Service (FFS) beneficiaries. The Centers for Medicare & Medicaid Services (CMS) makes this information available to TINs in confidential Quality and Resource Use Reports (QRURs). For TINs that qualify to have their Value Modifier calculated using CMS' quality-tiering methodology, CMS also uses these quality and cost measures to determine whether they will receive an upward or neutral payment adjustment to their Medicare Physician Fee Schedule (PFS) payments. The 2018 Value Modifier applies to Medicare PFS payments to physicians, physician assistants (PAs), nurse practitioners (NPs), clinical nurse specialists (CNSs), and certified registered nurse anesthetists (CRNAs). The risk adjustment policies described in this document are used to calculate all of the cost measures and some quality measures displayed in the 2016 QRURs and used to calculate the 2018 Value Modifier.

CMS uses risk adjustment to account for differences in beneficiary-level risk factors that can affect quality outcomes or medical costs, regardless of the care provided. The goal of risk adjustment is to enable more accurate comparisons across TINs that treat beneficiaries of varying clinical complexity, by removing differences in health and other risk factors that impact measured outcomes but are not under the TIN's control. Risk adjustment is used when calculating TINs' relative performance on the Per Capita Cost for All Attributed Beneficiaries, Per Capita Costs for Beneficiaries with Specific Conditions, Medicare Spending Per Beneficiary (MSPB), 30-day All-Cause Hospital Readmission, hospital admissions for Acute and Chronic Ambulatory Care-Sensitive Condition (ACSC) Composites, and the Consumer Assessment of Healthcare Providers & Systems (CAHPS) for Physician Quality Reporting System (PQRS) measures.

This Fact Sheet summarizes what risk adjustment is and how it is being implemented for the 2018 Value Modifier. More information on risk adjustment is available in the Measure Information Forms (referenced below) for the measures discussed in this Fact Sheet.

What is risk adjustment?

In the absence of risk adjustment, TINs treating a large number of beneficiaries with multiple chronic conditions, for example, could perform worse on certain quality and cost measures than TINs with relatively healthy beneficiaries due, at least in part, to differences in their beneficiary populations. Risk adjustment facilitates more accurate comparisons by accounting for differences in the clinical complexity of beneficiaries across TINs.

For the measures included in the 2016 QRURs and 2018 Value Modifier calculations, risk adjustment generally involves estimating a TIN's expected performance on each quality measure or their expected Medicare allowable charges on each cost measure, based on the clinical complexity of the TIN's beneficiaries. That estimate is then compared to the TIN's actual performance.[1] The essential component of these measures is a ratio of actual-to-expected performance, which is multiplied by a national average to produce a meaningful measure score:

$$Risk\ Adjusted\ Measure\ Score = \left(\frac{Actual\ Performance}{Expected\ Performance} \right) * National\ Average$$

A ratio that is greater than one indicates that the TIN performed worse than expected, given the TIN's attributed beneficiaries' clinical complexity, whereas a ratio that is less than one means that the TIN performed better than expected, given the TIN's attributed beneficiaries' clinical complexity. For example, a TIN treating clinically complex beneficiaries might have high per capita costs but much lower costs than would have been expected for beneficiaries of comparable complexity. On a risk-adjusted basis, this TIN would be considered a strong performer.

Measures included. The following measures are risk adjusted prior to their inclusion in the 2016 QRURs and 2018 Value Modifier calculations:

- 30-day All-Cause Hospital Readmission measure
- Hospital admissions for Acute and Chronic ACSC Composite measures
- Per Capita Costs for All Attributed Beneficiaries and Per Capita Costs for Beneficiaries with Specific Conditions measures[2]
- MSPB measure
- CAHPS for PQRS measures

Risk-adjustment process. Risk-adjustment methodologies vary depending on the nature of the measure of interest as well as the beneficiary-level and TIN-level characteristics that influence performance on the measure. While risk adjustment for most 2018 Value Modifier measures entails a comparison of actual performance to expected performance, its implementation differs from measure to measure. Specific approaches to risk adjustment for each measure are outlined briefly below.

- **30-day All-Cause Hospital Readmission measure:** The 30-day All-Cause Hospital Readmission measure calculates the percentage of qualifying hospital admissions that result in unplanned readmissions within 30 days of discharge. Risk adjustment accounts for beneficiary age, beneficiary clinical risk factors, and underlying risk of readmission for the

[1] There are two exceptions: the 30-day All-Cause Hospital Readmission measure, which is based on ratios of predicted-to-expected readmissions rather than actual-to-expected readmissions, and the CAHPS measures, which use a unique methodology described below.

[2] The four condition-specific per capita cost measures include the costs of beneficiaries with diabetes, chronic obstructive pulmonary disease, coronary artery disease, and heart failure.

TIN based on the specialty composition of the TIN. Separate models for five specialty cohorts (surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology) are used to calculate readmissions based on the TIN's predicted performance on readmissions and expected readmissions for each specialty cohort. (Predicted performance on readmissions is the number of readmissions predicted based on the TIN's own performance with its attributed beneficiaries.) For each group, a composite compares the TIN's predicted performance on readmissions to expected readmissions across the five specialty cohorts, weighted by the number of admissions in the specialty cohort. Refer to the 30-day All Cause Hospital Readmission Measure Information Form for more detailed information on this risk-adjustment methodology: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2016-ACR-MIF.pdf.

- **Hospital admissions for Acute and Chronic ACSC Composite measures:** Hospital admissions for Acute and Chronic ACSC Composite measures are calculated from individual components representing distinct conditions for which hospitalization is potentially avoidable with appropriate ambulatory care.[3] The individual components are risk adjusted for the age and sex of beneficiaries by comparing a TIN's actual rate of potentially avoidable hospitalizations for the given condition with the expected rate based on the age and sex distribution of the TIN's attributed beneficiaries and the experience of TINs nationwide with a similar beneficiary case mix. The risk-adjusted composite measures are weighted averages of the risk-adjusted individual components. Refer to the ACSC Measure Information Form for more detailed information on this risk-adjustment methodology: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2016-ACSC-MIF.pdf.

- **Per Capita Costs for All Attributed Beneficiaries and Per Capita Costs for Beneficiaries with Specific Conditions measures:** The per capita cost measures include all Medicare Part A and Part B costs for beneficiaries attributed to a TIN divided by the number of attributed beneficiaries. Expected per capita costs are calculated in two steps. First, a CMS Hierarchical Condition Categories (CMS-HCC) model generates a risk score for each beneficiary that summarizes each beneficiary's expected cost of care relative to other beneficiaries.[4] Separate CMS-HCC models exist for new enrollees and continuing enrollees. The new enrollee model accounts for each beneficiary's age, sex, disability status, original reason for Medicare entitlement (age or disability), and Medicaid eligibility and is used when a beneficiary has less than 12 months of medical history. The community model is used when a beneficiary has at least 12 months of medical history. The community model includes the same demographic information as the new enrollee model but it also accounts for clinical conditions as measured by Hierarchical Condition Categories (HCCs).[5] In the second step, expected beneficiary costs are calculated adjusting for outliers based on the beneficiary's risk score and whether the beneficiary has end-stage renal disease (ESRD). The risk-adjusted measure compares the TIN's actual per capita costs with its expected per

[3] The hospital admissions for Acute ACSC Composite measure components are bacterial pneumonia, dehydration, and urinary tract infection. The hospital admissions for Chronic ACSC Composite measure components are diabetes, chronic obstructive pulmonary disease/asthma, and heart failure.

[4] A risk score of 1.0 corresponds to average expected expenditure; higher risk scores are associated with higher expected expenditures.

[5] Table 1 lists the 79 HCCs included in the community CMS-HCC risk-adjustment model used for continuing beneficiaries.

capita costs. Refer to the Per Capita Costs for All Attributed Beneficiaries Measure Information Form for more detailed information on this risk-adjustment methodology: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2016-PCC-MIF.pdf.

- **MSPB measure:** The MSPB measure, which assesses total Part A and Part B costs immediately prior to, during, and for 30 days following a qualifying hospital stay, is risk adjusted by accounting for the age and severity of illness of beneficiaries. Severity of illness is measured using 79 HCC indicators derived from the beneficiary's claims during the 90 days before the start of the episode of care, recent long-term care status, ESRD status, and the Medicare Severity Diagnosis-Related Group (MS-DRG) code of the hospital admission. Expected episode spending is calculated through a statistical model based on beneficiary's age and severity of illness, using a separate model for episodes within each MS-DRG. The risk-adjusted measure serves as a comparison of a TIN's average standardized episode spending to its expected spending. Refer to the Medicare Spending Per Beneficiary Measure Information Form for more detailed information on this risk-adjustment methodology: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2016-MSPBM-MIF.pdf.

- **CAHPS for PQRS measures:** There are two major differences between the method used to risk adjust the measures discussed above and the method used to risk adjust CAHPS measures. First, instead of primarily using indicators of clinical severity to predict measure scores, CMS uses four self-reported characteristics including age, education, overall health and mental health as well as indicators for whether the beneficiary was dually eligible for Medicare and Medicaid, whether the beneficiary was eligible for a low-income subsidy, whether the survey was completed in an Asian language, and whether another person helped the respondent complete the survey to predict CAHPS measure scores. Second, instead of comparing an expected score to an actual score, CMS uses a regression to isolate the impact of each of these predictors from the impact the organization had on measure scores by including both the predictors and organizational indicators in the model. An organization's risk-adjusted measure score is the score that would be obtained for a given organization based on the results of the regression model if the average of the predictor variables for that organization were equal to the national average across all participating organizations. While the methodology used to risk adjust CAHPS measures is different from the others used in the QRUR, it has the same goal as the other risk adjustment methodologies of accounting for differences in beneficiary-level characteristics that can affect quality outcomes, independent of the care provided. For more information on risk adjustment of CAHPS measures, please see "Case-Mix Adjustment and Weighting" on page 53 of the *CAHPS for PQRS Survey Quality Assurance Guidelines:* http://www.pqrscahps.org/globalassets/pqrs-cahps/quality-assurance-guidelines/cahps-for-pqrs-survey-qag-v2-manual.pdf.

- **Other measures.** Measures reported via PQRS may be risk adjusted under the PQRS policies; however, these measures are presented in the 2016 QRURs as reported by the PQRS program, and are used in the Value Modifier calculation without additional risk adjustment. For comprehensive information on the risk adjustment policies of PQRS, please see the PQRS website: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/index.html?redirect=/PQRI/.

Table 1. HCCs included in the CMS-HCC risk-adjustment model[6]

HCC number and brief description of disease/condition	
HCC1 = HIV/AIDS	HCC82 = Respirator Dependence/Tracheostomy Status
HCC2 = Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock	HCC83 = Respiratory Arrest
HCC6 = Opportunistic Infections	HCC84 = Cardio-Respiratory Failure and Shock
HCC8 = Metastatic Cancer and Acute Leukemia	HCC85 = Congestive Heart Failure
HCC9 = Lung and Other Severe Cancers	HCC86 = Acute Myocardial Infarction
HCC10 = Lymphoma and Other Cancers	HCC87 = Unstable Angina and Other Acute Ischemic Heart Disease
HCC11 = Colorectal, Bladder, and Other Cancers	HCC88 = Angina Pectoris
HCC12 = Breast, Prostate, and Other Cancers and Tumors	HCC96 = Specified Heart Arrhythmias
HCC17 = Diabetes with Acute Complications	HCC99 = Cerebral Hemorrhage
HCC18 = Diabetes with Chronic Complications	HCC100 = Ischemic or Unspecified Stroke
HCC19 = Diabetes without Complication	HCC103 = Hemiplegia/Hemiparesis
HCC21 = Protein-Calorie Malnutrition	HCC104 = Monoplegia, Other Paralytic Syndromes
HCC22 = Morbid Obesity	HCC106 = Atherosclerosis of the Extremities with Ulceration or Gangrene
HCC23 = Other Significant Endocrine and Metabolic Disorders	HCC107 = Vascular Disease with Complications
HCC27 = End-Stage Liver Disease	HCC108 = Vascular Disease
HCC28 = Cirrhosis of Liver	HCC110 = Cystic Fibrosis
HCC29 = Chronic Hepatitis	HCC111 = Chronic Obstructive Pulmonary Disease
HCC33 = Intestinal Obstruction/Perforation	HCC112 = Fibrosis of Lung and Other Chronic Lung Disorders
HCC34 = Chronic Pancreatitis	HCC114 = Aspiration and Specified Bacterial Pneumonias
HCC35 = Inflammatory Bowel Disease	HCC115 = Pneumococcal Pneumonia, Empyema, Lung Abscess
HCC39 = Bone/Joint/Muscle Infections/Necrosis	HCC122 = Proliferative Diabetic Retinopathy and Vitreous Hemorrhage
HCC40 = Rheumatoid Arthritis and Inflammatory Connective Tissue Disease	HCC124 = Exudative Macular Degeneration
HCC46 = Severe Hematological Disorders	HCC134 = Dialysis Status
HCC47 = Disorders of Immunity	HCC135 = Acute Renal Failure
HCC48 = Coagulation Defects and Other Specified Hematological Disorders	HCC136 = Chronic Kidney Disease, Stage 5
HCC54 = Drug/Alcohol Psychosis	HCC137 = Chronic Kidney Disease, Severe (Stage 4)
HCC55 = Drug/Alcohol Dependence	HCC157 = Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone
HCC57 = Schizophrenia	HCC158 = Pressure Ulcer of Skin with Full Thickness Skin Loss
HCC58 = Major Depressive, Bipolar, and Paranoid Disorders	HCC161 = Chronic Ulcer of Skin, Except Pressure
HCC70 = Quadriplegia	HCC162 = Severe Skin Burn or Condition
HCC71 = Paraplegia	HCC166 = Severe Head Injury
HCC72 = Spinal Cord Disorders/Injuries	HCC167 = Major Head Injury
HCC73 = Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease	HCC169 = Vertebral Fractures without Spinal Cord Injury
HCC74 = Cerebral Palsy	HCC170 = Hip Fracture/Dislocation
HCC75 = Myasthenia Gravis/Myoneural Disorders, Inflammatory and Toxic Neuropathy	HCC173 = Traumatic Amputations and Complications
HCC76 = Muscular Dystrophy	HCC176 = Complications of Specified Implanted Device or Graft
HCC77 = Multiple Sclerosis	HCC186 = Major Organ Transplant or Replacement Status
HCC78 = Parkinson's and Huntington's Diseases	HCC188 = Artificial Openings for Feeding or Elimination
HCC79 = Seizure Disorders and Convulsions	HCC189 = Amputation Status, Lower Limb/Amputation Complications
HCC80 = Coma, Brain Compression/Anoxic Damage	

[6] This information can be found by navigating to 2015 Model Software [ZIP, 1MB] > CMS-HCC software V2213.L2.zip > V22H79L1.TXT at the following URL: https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors-Items/Risk2015.html?DLPage=1&DLEntries=10&DLSort=0&DLSortDir=descending.