

## **Merit-based Incentive Payment System (MIPS): Total Per Capita Cost (TPCC) Measure**

Measure Information Form  
2024 Performance Period

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# 1.0 Introduction

This document details the methodology for the Total Per Capita Cost (TPCC) measure. The methodology should be reviewed along with the Measure Codes List file, which contains the medical codes used in constructing the measure.

## 1.1 Measure Name

Total Per Capita Cost (TPCC)

## 1.2 Measure Description

The TPCC measures the overall cost of care delivered to a patient with a focus on the primary care they receive from their provider(s). The measure is a payment-standardized, risk-adjusted, and specialty-adjusted measure. The measure is attributed to clinicians, who are identified by their unique Taxpayer Identification Number and National Provider Identifier pair (TIN-NPI) and clinician groups, identified by their TIN number. The TPCC measure can be attributed at the TIN or TIN-NPI level. In all supplemental documentation, the term “cost” generally means the standardized<sup>1</sup> Medicare allowed amount.<sup>2</sup>

## 1.3 Measure Rationale

The TPCC measure is an important means of measuring Medicare spending, as health expenditures continue to increase in the United States. Total health care spending is estimated to have increased by 4.6% in 2017, reaching \$3.5 trillion.<sup>3</sup> Spending for Medicare, which is still predominantly paid on a fee-for-service (FFS) basis, grew by 3.6%, reaching \$672.1 billion. Spending on services for physicians and other health professionals totaled \$69.9 billion and accounted for 15% of Medicare FFS spending in 2016.<sup>4</sup> The TPCC measure specifically focuses on the importance of successful payment models for primary care management. Effective primary care management can support Medicare savings in a number of ways, including through improvements in the treatment of chronic conditions by obviating the need for high-cost hospital or emergency department services. More effective primary care management can also direct a greater proportion of patients to lower hospital costs for the inpatient services. Given the potential for decreasing spending through improvements in primary care delivery, the TPCC measure allows for a savings opportunity by capturing the broader healthcare costs influenced by primary care.

A TPCC measure was originally used in the Physician Value-Based Payment Modifier (VM) Program and reported in the annual Quality and Resource Use Reports (QRURs). With the introduction of the Quality Payment Program, a version of the TPCC measure was finalized with minor adaptations from VM and added to MIPS. The TPCC measure has undergone re-

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<sup>1</sup> Claim payments are standardized to account for differences in Medicare payments for the same service(s) across Medicare providers. Payment standardized costs remove the effect of differences in Medicare payment among health care providers that are the result of differences in regional health care provider expenses measured by hospital wage indexes and geographic price cost indexes (GPCIs) or other payment adjustments such as those for teaching hospitals. For more information, please refer to the “CMS Price (Payment) Standardization - Basics” and “CMS Part A and Part Price (Payment) Standardization - Detailed Methods” documents posted on the [CMS Price \(Payment\) Standardization Overview page \(https://resdac.org/articles/cms-price-payment-standardization-overview\)](https://resdac.org/articles/cms-price-payment-standardization-overview)

<sup>2</sup> Cost is defined by allowed amounts on Medicare claims data, which include both Medicare trust fund payments and any applicable beneficiary deductible and coinsurance amounts.

<sup>3</sup> “National Health Expenditure Projections, 2017-2026.” US Centers for Medicare & Medicaid Services, 2018.

<sup>4</sup> “Report to the Congress: Medicare Payment Policy.” MedPAC, 2018.

evaluation to address stakeholder feedback received from prior public comment periods and was finalized for 2020 MIPS performance period.

#### **1.4 Patient Exclusion Criteria**

Patients are excluded from the measure population if they meet any of the following conditions:

- They were not enrolled in both Medicare Part A and Part B for every month during the performance period, unless part year enrollment was the result of new enrollment or death.
- They were enrolled in a private Medicare health plan (e.g., a Medicare Advantage or a Medicare private FFS plan) for any month during the performance period.
- They resided outside the United States or its territories during any month of the performance period.
- They are covered by the Railroad Retirement Board.

#### **1.5 Measure Numerator**

The numerator for the measure is the sum of the risk-adjusted, payment-standardized, and specialty-adjusted Medicare Parts A and B costs across all beneficiary months attributed to a TIN or TIN-NPI during the performance period.

#### **1.6 Measure Denominator**

The denominator for the measure is the number of beneficiary months attributed to a TIN or TIN-NPI during the performance period.

#### **1.7 Data Sources**

The TPCC measure uses the following data sources:

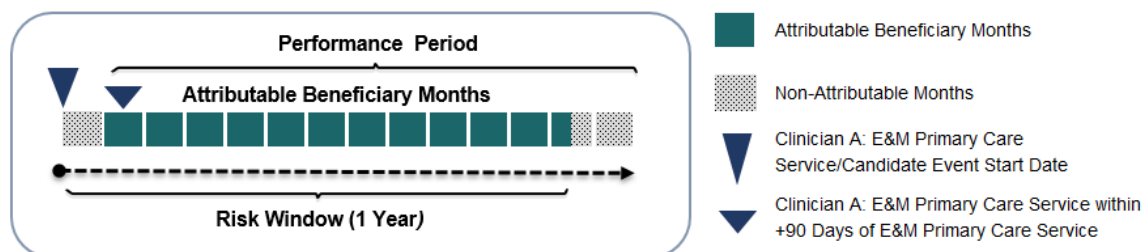
- Medicare Parts A and B claims data from the Common Working File (CWF)
- Enrollment Data Base (EDB)
- Common Medicare Environment (CME)
- Long Term Care Minimum Data Set (LTC MDS)

## 2.0 Methodology Steps

There are 2 parts to the TPCC measure calculation: attribution (Steps 1-4) and measure calculation (Steps 5-8). This section provides a brief summary of these processes, and Appendix A describes them in detail.

1. **Identify candidate events.** A candidate event identifies the start of a primary care relationship between a clinician and patient. A candidate event is defined using select evaluation and management (E/M) Current Procedural Terminology / Healthcare Common Procedure Coding System (CPT/HCPCS) codes for outpatient physician visit, termed E/M “primary care” service, paired with one or more additional service(s) indicative of general primary care that together trigger the opening of a risk window.
2. **Apply service category and specialty exclusions.** Clinicians are excluded from attribution if they meet the criteria for one or more service exclusions in the following categories: global surgery, anesthesia, therapeutic radiation, and chemotherapy. Clinicians are also excluded based on their Health Care Finance Administration (HCFA) Specialty designation, if they identify as one or more of the specialties in the specialty exclusion list.
3. **Construct risk windows.** The risk window begins on the date of the candidate event and continues until one year after that date. A patient’s costs are attributable to a clinician during months where the risk window and performance period overlap.
4. **Attribute months to TINs and TIN-NPIs.** After service category and specialty exclusions are applied, all costs occurring during the covered months are attributed to the remaining eligible TINs. For TIN-NPI attribution, only the TIN-NPI responsible for the majority share, or plurality, of candidate events provided to the patient within the TIN is attributed that patient’s costs for their respective candidate events.

Figure 1. TPCC Measure Framework



5. **Calculate payment-standardized monthly observed costs.** Monthly observed costs are payment standardized to account for differences in Medicare payments for the same service(s) across Medicare providers. All standardized cost from services starting in a beneficiary month are assigned.
6. **Calculate risk-adjusted monthly costs.** Risk adjustment accounts for patient-level risk factors that can affect medical costs, regardless of the care provided. After costs are risk-adjusted, winsorization is applied to reduce the effect of outliers.
7. **Apply specialty adjustment to risk-adjusted costs.** A specialty adjustment is applied to monthly risk-adjusted costs to account for the fact that costs vary across specialties and across TINs with varying specialty compositions.
8. **Calculate the measure score.** Calculate the average payment-standardized, risk-adjusted, and specialty-adjusted monthly costs across all beneficiary months in the performance period attributed to a TIN or TIN-NPI for the measure score.

## 3.0 Measure Specifications Quick Reference

This page provides a quick, at-a-glance reference for the TPCC measure specifications. The full list of codes and logic used to define each component can be found within the Measure Codes List file.

### **Candidate Event:** Which patients are included in the measure?

A candidate event is defined as a pair of services billed by the clinician to the patient within a short period of time. A candidate event marks the start of a primary care relationship between a patient and a clinician.

### **Risk Window:** When is a clinician responsible for the patient's costs?

Risk window is a year-long period that begins on the date of the candidate event.

### **Beneficiary Months Attribution:** How is the TPCC measure attributed?

The performance period is a static calendar year that is divided into 13 4-week blocks called beneficiary months. Beneficiary months that occur during a risk window and the performance period are counted towards a clinician's (or clinician group's) measure scores. These beneficiary months are attributed to the TIN billing the initial E/M "primary care" service. For TIN-NPI-level attribution, only the TIN-NPI responsible for the plurality (largest share) of candidate events provided to the patient within the TIN is attributed the beneficiary months.

### **Service Assignment:** Which services are included in the measure?

TPCC is an all-cost measure.

### **Risk Adjustors:** How does TPCC adjust for patient-level risk factors that can affect medical costs?

Patient risk score is calculated using CMS-ESRD V21 2022 models (Dialysis New Enrollee Model, Dialysis Continuing Enrollee Model, Community Functioning Graft Model, Institutional Functioning Graft Model, and New Enrollee Functioning Graft Model) and CMS-HCC V24 2022 models (New Enrollee Model, Community Model, Institutional Model).

Risk adjustors included in the CMS-HCC V24 and CMS-ESRD V21 risk adjustment models include the following:

- Patient comorbidities captured by 86 Hierarchical Condition Category (HCC) codes and 87 HCC codes in the CMS-HCC and CMS-ESRD risk adjustment models, respectively
- Total number of patient comorbidities captured by HCCs
- Interaction variables accounting for a range of patient comorbidities
- Patient gender
- Patient dual status
- Patient original reason for Medicare enrollment: age, disability and LTI status
- Patient dialysis/End-Stage Renal Disease (ESRD) status, kidney transplant and functioning graft duration

### **Exclusions:** Which populations are excluded from the measure?

- The patient has a primary payer other than Medicare for any month during the performance period.
- The patient was not enrolled in Medicare Parts A and B for every month during the performance period, unless part year enrollment was the result of new enrollment or death.
- The patient's date of birth is missing.
- The patient's death date occurred before the performance period.
- The patient resided outside the United States or its territories during any month of the performance period.
- The patient was covered by the Railroad Retirement Board.
- The clinician met the billing threshold for one or more of the following service category exclusions: global surgery, anesthesia, therapeutic radiation, and chemotherapy.
- The clinician identified as one or more of the specialties in the specialty exclusions list, based on their HCFA Specialty designation.

# Appendix A. Detailed Measure Calculation Methodology

This section describes the construction of the TPCC measure in more detail: Section A.1 outlines the construction and attribution of beneficiary months to clinicians and Section A.2 outlines measure calculation.

## A.1 Measure Attribution

This section outlines in detail the following steps in measure attribution:

- Step 1: Identify Candidate Events
- Step 2: Apply Service Category and Specialty Exclusions
- Step 3: Construct Risk Windows
- Step 4: Attribute Beneficiary Months to TINs and TIN-NPIs

### Step 1: Identify Candidate Events

A candidate event is used to indicate the start of a primary care relationship between a clinician and patient and is identified by the occurrence of 2 Part B Physician/Supplier (Carrier) claims with particular CPT/HCPCS services billed in close proximity. There are 2 different sets of CPT/HCPCS codes used: E/M “primary care” services and primary care services.

E/M “primary care” services are a specific set of evaluation and management codes for physician visits in the outpatient setting, physician office, nursing facility, or assisted living.<sup>5</sup>

Primary care services are a broader list of services related to routine primary care and generally fall into the following categories<sup>6</sup>:

- Durable Medical Equipment (DME) and Supplies
- Electrocardiogram
- Laboratory - Chemistry and Hematology
- Other Diagnostic Procedures (Interview, Evaluation, Consultation)
- Other Diagnostic Radiology and Related Techniques
- Prophylactic Vaccinations and Inoculations
- Routine Chest X-ray
- Clinical Labs<sup>7</sup>
- Preventive Services<sup>8</sup>

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<sup>5</sup> The TPCC Measure Codes List contains the list of evaluation and management “primary care” codes used in construction of a candidate event.

<sup>6</sup> The following primary care service categories are defined using the [Clinical Classifications Software \(CCS\)](https://www.hcup-us.ahrq.gov/toolsoftware/ccs10/ccs10.jsp) (<https://www.hcup-us.ahrq.gov/toolsoftware/ccs10/ccs10.jsp>) categories developed by the Agency for Healthcare Research and Quality (AHRQ): DME and supplies, Electrocardiogram, Laboratory - Chemistry and Hematology, Other diagnostic procedures (interview, evaluation, and consultation), other diagnostic radiology and related techniques, and Prophylactic vaccinations and inoculations.

<sup>7</sup> The Clinical Labs primary care service category is defined using a subset of services included in the [Clinical Laboratory Fee Schedule](https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ClinicalLabFeeSched/index) (<https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ClinicalLabFeeSched/index>).

<sup>8</sup> The Preventive Services primary care service category is defined using the set of services CMS considers to be part of the [primary care service benefit](https://www.cms.gov/Medicare/Prevention/PrevntionGenInfo/medicare-preventive-services/MPS-QuickReferenceChart-1.html) (<https://www.cms.gov/Medicare/Prevention/PrevntionGenInfo/medicare-preventive-services/MPS-QuickReferenceChart-1.html>).



To identify a candidate event, firstly, an initial E/M “primary care” service billed on Part B Physician/Supplier (Carrier) claim is identified. This E/M “primary care” service isn’t considered if it occurs during a patient’s stay at a Critical Access Hospital (CAH), Inpatient Facility, or Skilled Nursing Facility (SNF). Secondly, in addition to the initial E/M “primary care” service, at least one of the following services should be billed to confirm the candidate event:

- **From any TIN within +/- 3 days:** Another primary care service
- **From the same TIN within + 90 days:** A second E/M “primary care” service OR another primary care service

See the “E\_M\_Prim\_Care” and the “Prim\_Care\_Services” tabs of the TPCC Measure Codes List file for the list of the CPT/HCPCS codes that identify E/M “primary care” services and primary care services, respectively.

## **Step 2: Apply Service Category and Specialty Exclusions**

Once candidate events are identified, TIN-NPIs<sup>9</sup> can be attributed based on their involvement in the candidate event. The TIN-NPI responsible for a candidate event is found on the initial E/M “primary care” service claim of the candidate event. Some TIN-NPIs are excluded from attribution if they meet 1 of 2 types of exclusions: service category exclusions and specialty exclusions. Candidate events belonging to TIN-NPIs who meet any of these exclusions are removed from attribution and measure calculation for both the TIN-NPI and their respective TIN.

### **Step 2.1: Exclude Clinicians Based on Service Category Exclusions**

A TIN-NPI and their candidate events are removed from attribution if a clinician meets any of the following 4 service category thresholds:

- The TIN-NPI billed **10-day or 90-day global surgery** services during 15% or more of their candidate events.
- The TIN-NPI billed **anesthesia** services during 5% or more of their candidate events.
- The TIN-NPI billed **therapeutic radiation** services during 5% or more of their candidate events.
- The TIN-NPI billed **chemotherapy** services during 10% or more of their candidate events.

The steps to determine whether a TIN-NPI qualifies for the service category exclusion are as follows:

- Determine the total number of candidate events that are initiated by the TIN-NPI (see Step 1 above on how to identify candidate events).
- For each candidate event initiated by the TIN-NPI, determine if the TIN-NPI billed an exclusion service (from the list of global surgery, anesthesia, therapeutic radiation, or chemotherapy services) within +/-180 days of the initial E/M “primary care” service of the candidate event to the same patient.
- Sum up the number of the candidate events identified in the step above with the exclusion service of the same type (e.g., sum up the number of candidate events with the anesthesia services separately from the candidate events with the chemotherapy services), and determine the share of those candidate events out of the total number of candidate events.
  - If the share meets the threshold listed above (e.g., if more than 5% of the TIN-NPI’s candidate events have an anesthesia service billed within +/-180 days of

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<sup>9</sup> Only MIPS eligible clinicians can be attributed the TPCC measure. For more information on MIPS eligible clinicians, please see “About MIPS Participation” on the QPP website: <https://qpp.cms.gov/participation-lookup/about>



the initial E/M “primary care” service to the same patient), then the TIN-NPI meets the service category exclusion and thus all candidate events belonging to that TIN-NPI will be removed from attribution and measure calculation for both the TIN-NPI and their respective TIN.

The list of CPT/HCPCS codes used for each of the service exclusions can be found in the tabs of the TPCC Measure Codes List file labelled: “HCPCS\_Surgery,” “HCPCS\_Anesthesia,” “HCPCS\_Ther\_Rad,” and “HCPCS\_Chemo.”

### **Step 2.2: Exclude Clinicians Based on Specialty Exclusions**

After service category exclusions are applied, clinicians who would not reasonably be responsible for providing primary care are excluded from attribution of the TPCC measure. This exclusion aims to keep primary care specialists and internal medicine sub-specialists who frequently manage patients with chronic conditions falling in their areas of specialty. The excluded specialties list contains specialties that fall into the following broad categories:

- Surgical sub-specialties
- Non-physicians without chronic management of significant medical conditions
- Internal medicine sub-specialties with additional highly procedural sub-specialization
- Internal medicine specialties that practice primarily inpatient care without chronic care management
- Pediatricians who do not typically practice adult medicine

The list of HCFA Specialty codes that identify clinicians that are included or excluded from the measure attribution can be found in the “Eligible\_Clinicians” tab of the TPCC Measure Codes List.

As with service category exclusions described in Step 2.1, candidate events for clinicians in excluded specialties are removed from attribution and measure calculation for both the TIN-NPI and their respective TIN.

### **Step 3: Construct Risk Windows**

Candidate events that are not excluded initiate the opening of a risk window, a year-long period that begins on the date of the initial E/M “primary care” service of the candidate event. The performance period<sup>10</sup> is divided into 13 4-week blocks called beneficiary months. Beneficiary months during the risk window are considered attributable if they occur during the performance period. In the event that a risk window begins or ends with a partially covered month, only the portion during the risk window and the performance period is considered for attribution. Appendix B contains examples of overlapping risk windows initiated by one or multiple TINs for the same patient and explains how this overlap is addressed.

### **Step 4: Attribute Beneficiary Months to TINs and TIN-NPIs**

Beneficiary months for a single patient are attributed to a TIN or TIN-NPI according to the following steps:

- For attribution at the TIN level:
  - Identify the TIN billing the initial E/M “primary care” service claim of each candidate event.

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<sup>10</sup> The performance period is a pre-defined and static calendar year performance period.

- Determine beneficiary months that fall within the risk windows of the candidate events that were initiated by the TIN and overlap the performance period and attribute those beneficiary months to the TIN.
- For attribution at the TIN-NPI level:
  - Identify the TIN-NPI billing the initial E/M “primary care” service claim of each candidate events.
  - Determine beneficiary months that fall within the risk windows of the candidate events that were initiated by the TIN-NPI and that overlap the performance period.
  - Identify the TIN-NPI within an attributed TIN that is responsible for the plurality of candidate events provided to the patient. If 2 or more TIN-NPIs under a TIN provide the same proportion of candidate events to a patient, attribute the patient to the TIN-NPI that provided the earliest candidate event.
  - Attribute only the beneficiary months from candidate events that the TIN-NPI is responsible for initiating, which is not necessarily all candidate events attributed to the TIN for that patient.

All attributed beneficiary months for all beneficiaries are used for the measure calculation for each TIN and TIN-NPI.

## A.2 Measure Calculation

This section outlines the following steps in measure calculation:

- Step 5: Calculate Payment-Standardized Monthly Observed Costs
- Step 6: Risk-Adjust Monthly Costs
- Step 7: Specialty Adjust Monthly Costs
- Step 8: Calculate the TPCC Measure

### Step 5: Calculate Payment-Standardized Monthly Observed Costs

Monthly observed cost for attributed beneficiary months is the sum of all service costs billed for a particular patient during a beneficiary month. Monthly observed costs are standardized to account for differences in Medicare payments for the same service(s) across Medicare providers. Payment standardization accounts for differences in Medicare payment unrelated to the care provided, such as those from payment adjustments supporting larger Medicare program goals (e.g. indirect medical education add-on payments) or variation in regional healthcare expenses as measured by hospital wage indexes and geographic price cost indexes (GPCIs).<sup>11</sup> Standardized costs that occur during partially covered months are pro-rated, based on the portion of the month covered by the risk window.

### Step 6: Risk-Adjust Monthly Costs

Risk adjustment accounts for patient-level risk factors that can affect medical costs, regardless of the care provided. To ensure that the model measures the influence of health status (as measured by diagnoses) on the treatment provided (costs incurred) rather than capturing the influence of treatment on a patient’s health status, the risk adjustment model uses risk factors from the year prior to a beneficiary month. Separate CMS-HCC models exist for new enrollees, continuing enrollees, enrollees in long-term institutional settings, and enrollees with ESRD.

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<sup>11</sup> For more information, please refer to the “CMS Part A and Part B Price (Payment) Standardization - Basics” and “CMS Part A and Part B Price (Payment) Standardization - Detailed Methods” documents posted on the [CMS Price \(Payment\) Standardization Overview](https://www.resdac.org/articles/cms-price-payment-standardization-overview) page (<https://www.resdac.org/articles/cms-price-payment-standardization-overview>)

## Risk Adjustment Models

The CMS Hierarchical Condition Category Version 24 (CMS-HCC V24) 2022 Risk Adjustment models are used for beneficiaries without ESRD. Specifically,

- The new enrollee model is used for beneficiaries that have fewer than 12 months of Medicare medical history. The model accounts for each patient's age, sex, disability status, original reason for Medicare entitlement (age or disability), and Medicaid eligibility.
- The community model is used for beneficiaries that have at least 12 months of Medicare medical history. The model includes the same demographic information as the new enrollee model but also accounts for clinical conditions as measured by HCCs, and various interaction terms. The community model is further broken down as follows: non-dual aged, non-dual disabled, full-dual aged, full-dual disabled, partial-dual aged, and partial-dual disabled.
- The institutional model is used for beneficiaries who were in long-term institutional settings. The model includes demographic variables, clinical conditions as measured by HCCs, and various interaction terms.

The CMS-ESRD Version 21 (CMS-ESRD V21) 2022 Risk Adjustment models are used for ESRD beneficiaries receiving dialysis, transplant and beneficiaries with a functioning graft. Specifically,

- The dialysis new enrollee model is used for ESRD beneficiaries that have fewer than 12 months of Medicare medical history. The model accounts for each patient's age, sex, disability status, original reason for Medicare entitlement (age or disability), Medicaid eligibility, and ESRD.
- The dialysis continuing enrollee model is used for ESRD beneficiaries that have at least 12 months of Medicare medical history. The model includes the same demographic information as the new enrollee model but also accounts for clinical conditions as measured by HCCs.
- The functioning graft model, which is based on the model for the general population, excludes HCCs for kidney transplant status and dialysis status but accounts for the months after the transplant is received. Specifically, if a beneficiary receives a kidney transplant, the score is calculated using the transplant model for the month of the transplant and the two subsequent months, regardless of whether the beneficiary returns to dialysis status during that time period. The model is further broken down into the following:
  - The new enrollee for functioning graft model is used for beneficiaries that have fewer than 12 months of Medicare medical history. The model accounts for each patient's age, sex, disability status, original reason for Medicare entitlement (age or disability), Medicaid eligibility and duration of functioning graft.
  - The community for functioning graft model is used for beneficiaries that have at least 12 months of Medicare medical history. The model includes the same demographic information as the new enrollee model, but also accounts for clinical conditions as measured by HCCs, various interaction terms, and duration of functioning graft.
  - The institutional for functioning graft model is used for beneficiaries who were in long-term institutional settings. The model includes demographic variables, clinical conditions as measured by HCCs, various interaction terms, and duration of functioning graft.

The “HCC\_Risk\_Adjust” tab of the Measure Codes List file lists all variables included in the CMS-ESRD V21 and the CMS-HCC V24 risk adjustment models.

### Risk Score Calculation

The CMS-ESRD V21 and CMS-HCC V24 models generate a risk score for each patient that summarizes the patient’s expected cost of care relative to other beneficiaries. Risk scores for patients using the CMS-ESRD V21 models are normalized to be on a comparable scale with the HCC V24 risk scores.

- A risk score equal to one indicates risk associated with expenditures for the average patient nationwide.
- A risk score greater than one indicates above average risk.
- A risk score less than one indicates below average risk.

The risk-adjusted total for each covered month at the TIN or TIN-NPI level is calculated according to the following steps:

- **Calculate** CMS risk score for each beneficiary month using diagnostic data from the year prior to the month. This risk score is normalized by dividing by the average risk score for all beneficiary months.
- **Divide** observed costs for each beneficiary month by the normalized risk score to obtain risk-adjusted monthly costs.
- **Winsorize** risk-adjusted monthly costs at the 99<sup>th</sup> percentile by assigning the 99<sup>th</sup> percentile of monthly costs to all attributable beneficiary months with costs above the 99<sup>th</sup> percentile.
- **Normalize** monthly costs to account for differences in expected costs based on the number of clinician groups to which a patient is attributed in a given month.<sup>12</sup>

### Step 7: Specialty Adjust Monthly Costs

The specialty adjustment for the TPCC measure is a cost adjustment applied to account for the fact that costs vary across specialties and across TINs with varying specialty compositions. An example of the specialty adjustment calculation is available in Appendix D. The specialty adjustment at the TIN and TIN-NPI levels is calculated as follows:

1. Calculate the average risk-adjusted monthly cost for each TIN and TIN-NPI by averaging risk-adjusted monthly cost across all attributed beneficiary months.
2. Calculate the national specialty-specific expected cost for each specialty as the weighted average of TIN/TIN-NPI’s risk-adjusted monthly cost.
  - a. Define the weight for each TIN/TIN-NPI as the percentage of clinicians with that specialty multiplied by the total number of beneficiary months attributed to the TIN/TIN-NPI multiplied by the number of clinicians with that specialty.
  - b. There will only be one specialty designation for a TIN-NPI. Therefore, the percentage of clinicians with a specialty and number of clinicians with a specialty will always be equal to one.
3. Calculate the specialty-adjustment factor for each TIN or TIN-NPI as follows:
  - a. Multiply the national specialty-specific expected cost for each specialty by the respective specialty’s share of Part B payment within a TIN or TIN-NPI.
  - b. Sum the weighted share of national specialty-specific expected cost calculated in the previous step across all the specialties under a given TIN or TIN-NPI.

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<sup>12</sup> Specifically, monthly costs are divided by the cube root of the number of clinician groups (TINs) to which a patient is attributed for a month.

## Step 8: Calculate the TPCC Measure Score

Calculate final risk-adjusted, specialty-adjusted cost measure by dividing each TIN and TIN-NPI's average risk-adjusted monthly cost by their specialty-adjustment factor and multiply this ratio by the average non-risk-adjusted, winsorized observed cost across the total population of attributed beneficiary months.

The clinician-level or clinician group practice-level measure score for any attributed clinician (or clinician group practice) "j" can be represented mathematically as:

**Figure 2: TPCC Measure Score Formula**

$$\text{Measure Score}_j = \frac{\hat{Y}_{ij}}{Y_s} * \bar{Y}_{national}$$

where:

$i$	is the beneficiary month attributed to a clinician or clinician group practice
$j$	is the clinician or clinician group practice
$s$	is the TIN-NPI's specialty or TIN's specialty composition
$\hat{Y}_{ij}$	is the average winsorized, normalized risk-adjusted costs across all beneficiary months $i$ attributed to clinician (or clinician group practice) $j$
$Y_s$	is the specialty-adjustment factor for the attributed clinician (or clinician group practice) $j$
$\bar{Y}_{national}$	is the national average per capita cost (used to convert the ratio to a dollar amount)

**A lower measure** score indicates that the observed beneficiary month costs are lower than the expected costs for the care provided by the given specialist for the particular patients and beneficiary months included in the calculation.

**A higher measure** score indicates that the observed beneficiary month costs are higher than the expected costs for the care provided by the given specialist for the particular patients and beneficiary months included in the calculation.

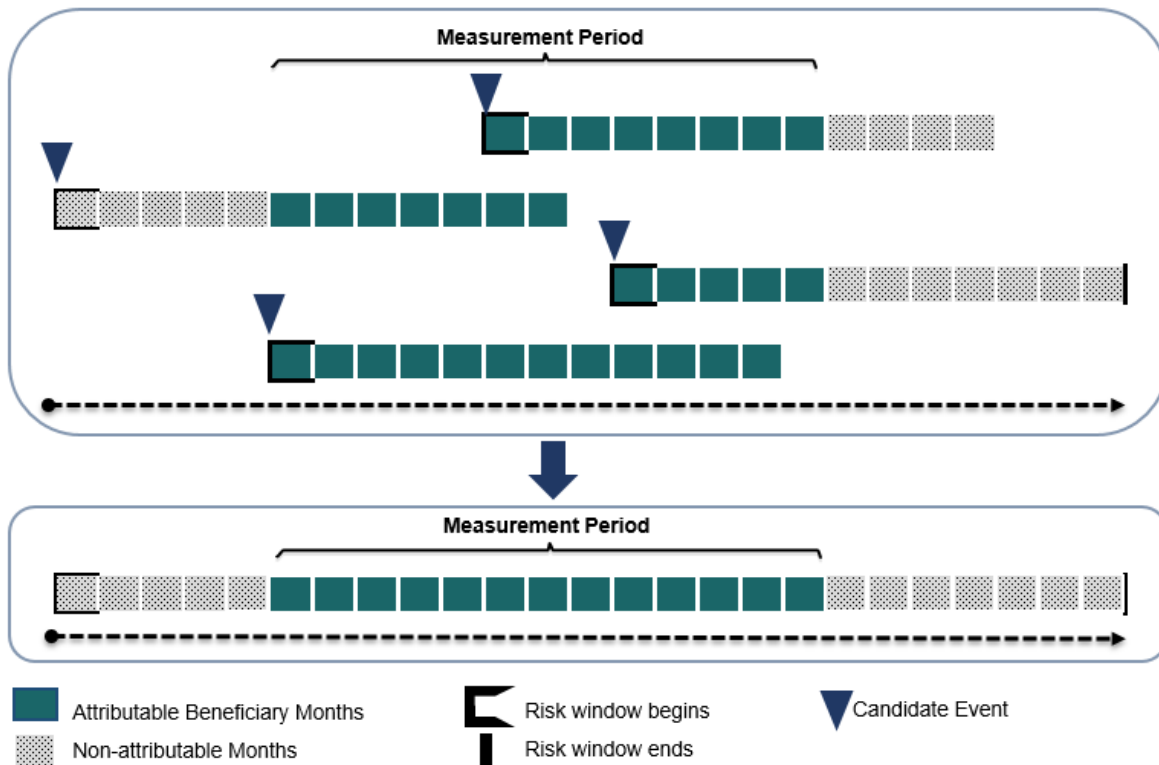
# Appendix B. Illustration of Overlapping Risk Windows Triggered by a TIN for the Same Patient

Due to the nature of primary care, it's possible for multiple risk windows to be initiated if one or several TINs see the patient multiple times during the year. This appendix provides further information on how potentially attributable beneficiary months are determined when the patient is seen by the TIN(s) multiple times before or during the performance period.<sup>13</sup>

## Overlapping Risk Windows Initiated by One TIN for the Same Patient

Figure B-1 below provides an example of the interactions of multiple risk windows initiated by the same TIN for one patient.

**Figure B-1. Diagram of overlapping risk windows initiated for the same patient under 1 TIN**



The first part of the diagram shows multiple candidate events between a TIN and a patient that trigger the opening of overlapping risk windows. For each risk window, the months that overlap with the performance period are attributable (indicated by a teal fill). The second part of the diagram shows the resulting collapsed months for which the TIN will be held accountable. In this example, all 13 beneficiary months in the performance period will be attributed to the TIN because together, the 5 risk windows cover the entirety of the performance period. Provided that the TIN-NPIs responsible for any of these candidate events don't meet the service category

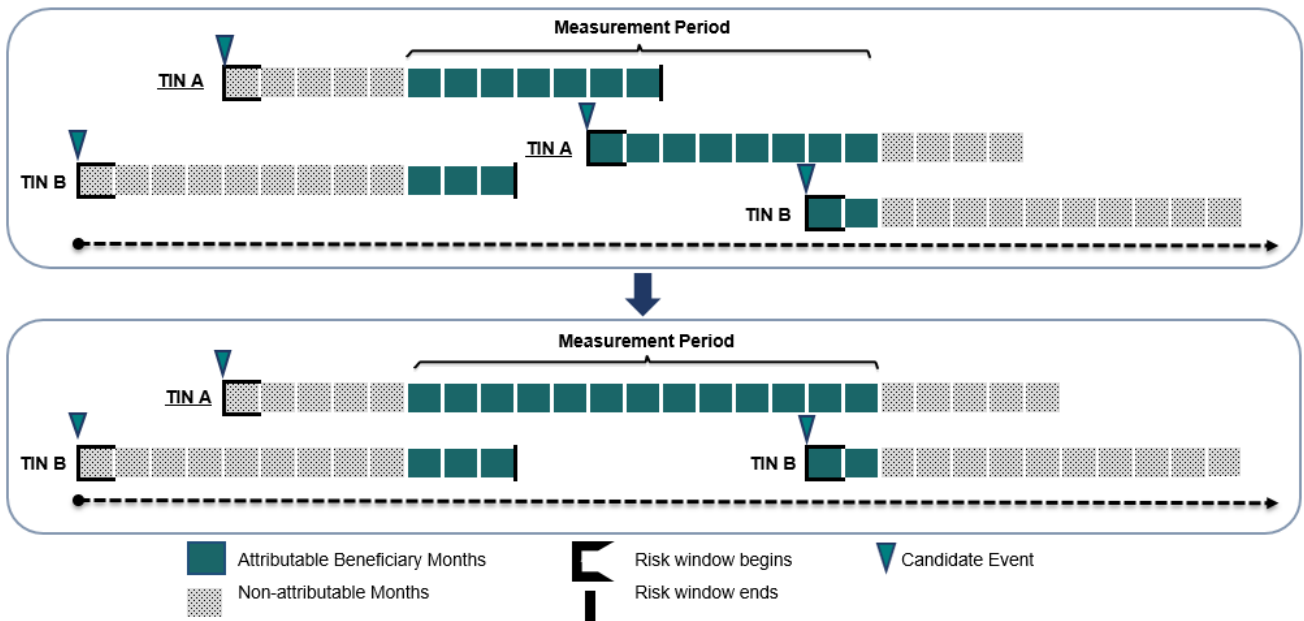
<sup>13</sup> The attributable months identified in figures B-1 and B-2 will only be attributed to the TIN provided that the TIN-NPI on the initial E/M "primary care" service of the candidate event doesn't meet the service category or specialty exclusions for this measure. If a TIN-NPI meets at least one of the service category or specialty exclusions, the candidate events and associated beneficiary months for which they're considered responsible are removed from both TIN and TIN-NPI attribution.

or specialty exclusions, the costs assigned to these 13 beneficiary months for this patient will be attributed to the TIN.

### Overlapping Risk Windows Initiated by Multiple TINs for the Same Patient

Figure B-2 below shows the interactions of multiple risk windows initiated by multiple TINs for one patient, illustrating multiple attribution.<sup>14</sup>

**Figure B-2. Diagram of overlapping risk window initiated by multiple TINs for the same patient**



The top part of the diagram shows multiple candidate events, each triggering the opening of a risk window. For each risk window, the months that overlap with the performance period are attributable and are represented by teal rectangles. The bottom part of the diagram shows how the beneficiary months will get attributed to different TINs, depending on the risk windows that they triggered.

In the example illustrated in figure B-2, all 13 beneficiary months in the performance period are attributable because together, the 4 risk windows cover the entirety of the performance period. Since different TINs initiated the risk windows, the beneficiary months will be attributed to the corresponding TINs in the following manner:

- TIN A initiated 2 overlapping risk windows for the patient.
  - Together these 2 risk windows overlap with each of the 13 beneficiary months in the performance period and, therefore, all of these 13 beneficiary months will be attributed to TIN A.
- TIN B initiated 2 non-overlapping risk windows that partially overlap with the performance period.
  - 3 beneficiary months from the first risk window and 2 beneficiary months from the second risk window overlapping the performance period will get attributed to TIN B.

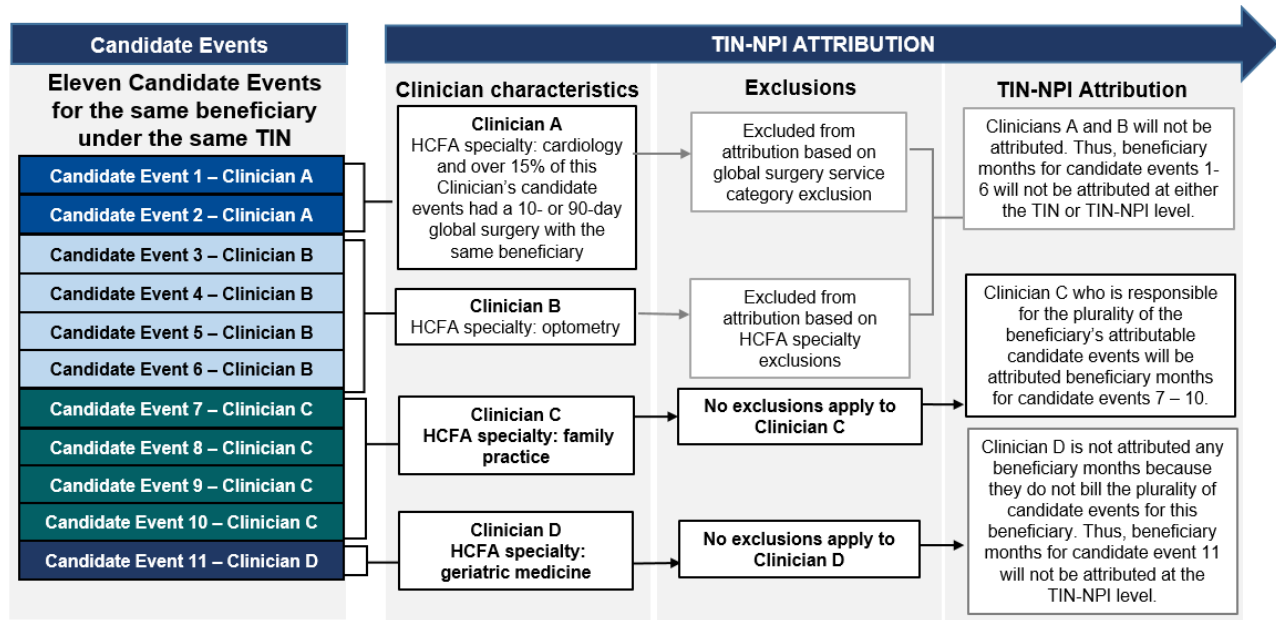
<sup>14</sup> Multiple attribution is intended to reflect the team-based nature of primary care, and allows attribution to reflect changes in a patient's primary care provider. Since the measure calculation compares each clinician's expected costs among their peers for patients with the same observable characteristics, rather than to a pre-defined standard, no costs are double-counted.



# Appendix C. Illustration of Attribution of Beneficiary Months for the TPCC Measure

This appendix provides further details and examples of attribution for the TPCC measure beneficiary months.

Figure C-1. Diagram of attribution of beneficiary months at the TIN-NPI level



In the example shown above, the stacked, colored boxes on the left represent 11 candidate events billed by 4 different clinicians (clinician A through D) practicing under the same TIN. The next set of boxes to the right of the colored boxes shows the specialties for each clinician and/or whether they billed any of the services that are part of the service category exclusions at the threshold needed to qualify for exclusion (10-day and 90-day global surgery, anesthesia, chemotherapy, and therapeutic radiation). The set of boxes to the far right shows which clinicians are excluded from attribution based on service category and/or specialty exclusions and which clinicians are included.

- Clinician A billed over 15% of 10-day or 90-day global surgery codes to his patients.
  - Clinician A is excluded from attribution based on the global surgery service category exclusion, and
  - Candidate events 1 and 2 are removed from both the TIN and TIN-NPI's measure calculation.
- Clinician B had an optometry HCFA specialty.
  - Clinician B has a HCFA specialty that is included in the list of specialties that are excluded from attribution, and
  - Candidate events 3 through 6 are removed from both the TIN and TIN-NPI's measure calculation.
- Clinician C didn't meet any of the service category exclusions and had a HCFA specialty for family practice which isn't one of the specialties excluded from the TPCC measure.
  - Clinician C is attributed beneficiary months overlapping the performance period and the risk windows initiated by candidate events 7 through 10.

- The resulting beneficiary months are included in both the TIN and TIN-NPI's measure calculation.
- Clinician D didn't meet any of the service category exclusions and had a HCFA specialty for geriatric medicine which isn't one of the specialties excluded from the TPCC measure.
  - Clinician D wasn't attributed any beneficiary months because they didn't bill the plurality of candidate events for this patient within the TIN.
  - Candidate event 11 will not be attributed at the TIN-NPI level, but will be attributed at the TIN level.

## Appendix D. Example of Specialty Adjustment

This appendix provides some further details and example of specialty adjustment. In this example numbers have been rounded to the nearest whole integer for simplicity. When calculating the measure for performance, no such rounding will occur.

- Suppose the entire population consists of 2 TINs (TIN A and TIN B) with 2 types of specialists under them, Family Practice and Internal Medicine. Table F below provides some additional information on the TINs' characteristics.

**Table D. TIN A and TIN B Characteristics**

TIN	Average Risk-Adjusted Monthly Cost	# of Beneficiary Months	# of Internal Medicine Clinicians	% of Internal Medicine Clinicians	% of TIN's Part B Physician/Supplier Cost by of Internal Medicine Clinicians	# Family Practice Clinicians	% of Family Practice Clinicians	% of TIN's Part B Physician/Supplier Cost by Family Practice Clinicians
A	\$1,000	110	10	20%	15%	40	80%	85%
B	\$800	122	48	75%	50%	16	25%	50%

- Calculate the national specialty-specific expected cost for each specialty
  - Calculate the national Internal Medicine expected cost as follows:

$$= \frac{110 * 10 * 20\%}{110 * 10 * 20\% + 122 * 48 * 75\%} * \$1,000 + \frac{122 * 48 * 75\%}{110 * 10 * 20\% + 122 * 48 * 75\%} * \$800$$

$$= \$48 + \$762 = \$810$$

- Calculate the national Family Practice expected cost as follows:

$$= \frac{110 * 40 * 80\%}{110 * 40 * 80\% + 122 * 16 * 25\%} * \$1,000 + \frac{122 * 16 * 25\%}{110 * 40 * 80\% + 122 * 16 * 25\%} * \$800$$

$$= \$878 + \$97 = \$975$$

- Calculate the specialty-adjustment factor for TIN A and TIN B as the weighted average of the national specialty-specific expected costs. The weight is the TIN's % of Part B Physician/Supplier payments for that specialty.
  - TIN A's specialty-adjustment factor is calculated as follows:  
 $(\$810 * 15\%) + (\$975 * 85\%) = \$950$
  - TIN B's specialty-adjustment factor is calculated as follows:  
 $(\$810 * 50\%) + (\$975 * 50\%) = \$893$
- For each TIN, calculate the TPCC measure score (assuming the national average cost is \$900):
  - TIN A's measure score is calculated as follows:  
 $((\$1,000 / \$950) * \$900 = \$947$
  - TIN B's measure score is calculated as follows:  
 $((\$800 / \$893) * \$900) = \$806$