Diabetes Measure

Cost Measure Methodology Appendices

October 2021

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1.0 Introduction

This document contains additional details on the measure construction framework for the Diabetes measure to better explain its more complicated elements. It is part of a set of documents that together contain the measure specifications:

- Cost Measure Methodology document, which describes the steps for constructing the measure;
- Cost Measure Methodology Appendices document (this document); and
- Measure Codes List file, which contains the medical codes used in the measure.

At a high-level, the chronic condition framework identifies the start of a clinician-patient relationship by looking for a clinician group billing either two outpatient services evaluation and management (E&M) codes or an outpatient services E&M code and a condition-specific service within 180 days of one another.

Once we see the start of a clinician-patient relationship, this opens up a year-long period where the clinician group is responsible for monitoring the patient's chronic condition care. That initial period can be extended by another year each time we see more clinically-related services that indicate an ongoing clinician-patient relationship. This ongoing care window is then divided into episodes, or segments of at least 1 year and no more than 2 years, so that a clinician can be assessed on the measure in a particular measurement period. Individual clinicians within these clinician groups also become responsible for a patient's care if they bill a certain amount of the group's claims and meet additional checks to ensure that they are appropriately attributed.

Similar to other episode-based cost measures, the chronic condition measures also use a variety of techniques to ensure fair comparisons between providers. First, the patient population is stratified into smaller, clinically similar cohorts to enable meaningful comparisons. For example, in this measure, patients with type 1 diabetes are only compared with other patients with type 1 diabetes, and the same for patients with type 2 diabetes. Second, the measure only includes costs for services that are clinically related to the condition. For example, this measure includes services related to diabetes care management and medications that are part of ongoing treatment, as well as acute exacerbations and complications. Third, unique groups of patients are excluded from episodes when it may be unfair to compare the costs of these patients to the whole cohort. Last, the measure accounts for patient factors through a robust risk adjustment model. In addition to a base model with 79 comorbidities, the model includes risk adjustors that have an empirical and conceptual relationship with expected cost for this specific condition.

The following appendices each cover an aspect of measure construction in more detail:

- Appendix A: Illustration of Trigger Event and Episode Construction
- Appendix B: Sub-Grouping Methodology
- Appendix C: Measure Construction and Calculation
- Appendix D: Attribution to Individual Clinicians

Appendix A. Illustration of Trigger Event and Episode Construction

This appendix provides a simplified[1] example of the Diabetes episode construction framework. Step 1 describes how to identify a patient receiving care for their diabetes, Step 2 illustrates how to determine the total length of care between a patient and a clinician group, and Step 3 describes how to construct a Diabetes episode.

Step 1. Identify the Patient Receiving Diabetes Care

In Figure A-1 below, a trigger event, identified by a pair of eligible services, determines the start or continuation of a clinician group's management of a patient's diabetes. A trigger event is identified by a pair of Part B Physician/Supplier claims billed by the same clinician group practice within 180 days of one another. These claims must also have an International Statistical Classification of Diseases and Related Health Problems 10th Revision Clinical Modification (ICD-10-CM) diagnosis code indicating either type 1 or type 2 diabetes to ensure that the care is relevant to the condition. This pair of services includes:

   i.   A trigger claim that is an outpatient services E&M code with a relevant diabetes diagnosis, and
   ii. A confirming claim that is either another outpatient services E&M code with a relevant diabetes diagnosis, or a condition-related Current Procedural Terminology/Healthcare Common Procedure Coding System (CPT/HCPCS) code with a relevant diabetes diagnosis.

A trigger event opens a one-year long attribution window from the point of the trigger claim. The attribution window defines a time period during which the patient's diabetes care will be monitored by a clinician group.

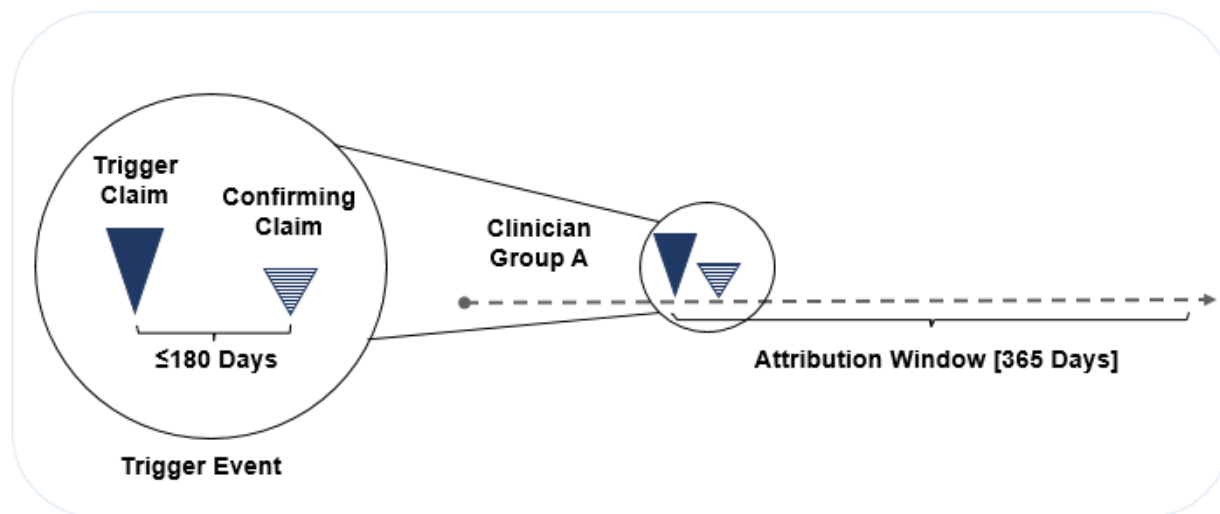**Figure A-1. Trigger Event & Attribution Window**

Figure A-1 illustrates a trigger event and the resulting attribution window for a patient with diabetes. For example, this figure could represent the following scenario: a patient is presenting

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[1] For more detailed examples of chronic condition episode construction, please refer to Appendix C.

to a new clinician. During these visits, the following claims were billed by the same clinician group practice:

- **Trigger claim:** For the initial visit, the clinician group bills CPT/HCPCS code 99204 (office/outpatient visit) and confirms the patient's type 1 diabetes diagnosis.
- **Confirming claim:** Following the initial visit, the patient returns to the same clinician group 20 days later to receive additional services. For this second visit, the clinician bills the condition-related CPT/HCPCS code G0108 (diabetes self-management training) for the patient's type 1 diabetes.[2]

Given that (i) the first claim was an outpatient services E&M code with a relevant diabetes diagnosis, (ii) the second claim was a condition-related CPT/HCPCS code with a relevant diabetes diagnosis, and (iii) the 2 services were billed within 180 days of one another by the same clinician group practice, these 2 claims constitute a trigger event that indicates the beginning or continuation of the clinician-patient relationship.

Step 2. Identify the Total Length of Care Between a Patient and a Clinician Group

After the patient receiving care for their diabetes and the clinician group responsible for that patient's care are identified, the total length of care between the patient and the clinician group is determined. Specifically, when there is evidence of a continuing clinician-patient relationship (indicated by reaffirming claims), the attribution window is extended.

Similar to a confirming claim, a reaffirming claim is either an outpatient services E&M code with a relevant diabetes diagnosis or a condition-related CPT/HCPCS code with a relevant diabetes diagnosis.[3] For example, a reaffirming claim could be CPT code 99212 (office/outpatient visit).[4]

As shown in Figure A-2 below:

- Reaffirming claim 1 occurs 6 months into attribution window 1 and extends that attribution window by 1 year (until the end of attribution window 2).
- Reaffirming claim 2 occurs 9 months into attribution window 2 and extends that attribution window by another year (until the end of attribution window 3).

Once all reaffirming claims are identified, the total period of time of the clinician-patient relationship is defined as the period covered by the attribution windows, beginning with the trigger claim and concluding 1 year after the final reaffirming claim. For this example, the total attribution window is 27 months long.

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[2] AMA CPT Code Description Licensing: Codes and descriptions included are from the Current Procedural Terminology (CPT®) Copyright 2017 American Medical Association. All rights reserved.
[3] While a trigger event requires two claims, a single reaffirming claim is needed to extend a clinician group's responsibility for managing a patient's chronic disease. This is because the Diabetes workgroup favored a less strict reaffirming algorithm, since they felt that once a clinician-patient relationship was established, a single reaffirming claim would be sufficient to extend the attribution window.
[4] AMA CPT Code Description Licensing.

Figure A-2. Reaffirming Claims & Total Attribution Window

Step 3: Define an Episode

After the total length of care between the clinician group and the patient is identified, it is divided into episodes to ensure that the clinician group or clinician(s) can be evaluated in different measurement periods.[5] Episodes are assessed in the measurement period in which they end and only include days not previously measured in preceding measurement periods.

In Figure A-3 below:

- Episode 1 is a portion of the total attribution window that starts on the day of the trigger claim and concludes at the end of the subsequent measurement period (December 31). Since episode 1 ends in measurement period 1, the associated costs will be measured in measurement period 1.
- Episode 2 is a one-year long portion of the total attribution window that starts at the beginning of measurement period 2 (January 1) and ends at the end of the measurement period (December 31). Since episode 2 ends in measurement period 2, the associated costs will be measured in measurement period 2.

Figure A-3. Episode Windows

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[5] A measurement period is a static year-long period (calendar year) in which a clinician or clinician group will be measured.
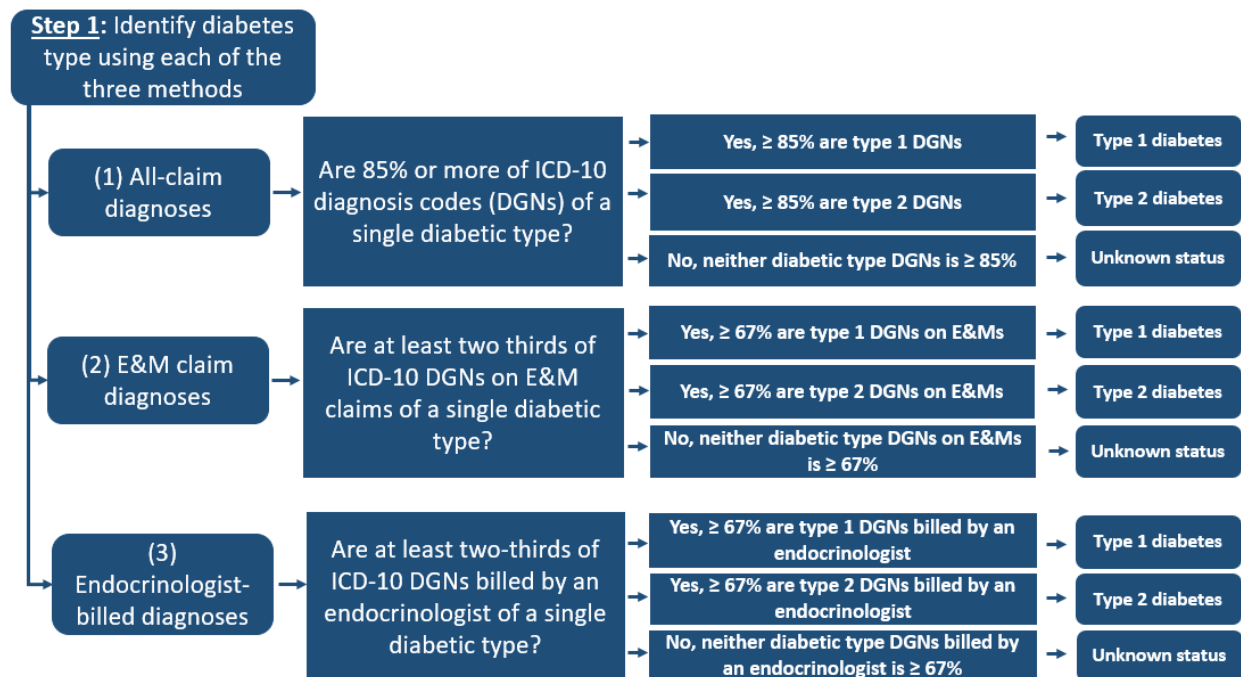
Appendix B. Sub-Grouping Methodology

This appendix describes the sub-group specifications to categorize patients into 2 sub-groups: Type 1 Diabetes and Type 2 Diabetes.

Sub-grouping is a technique that stratifies the patient cohort into exhaustive and mutually exclusive groups. This is done to improve the measure's ability to fairly compare patients, as the risk adjustment model is run separately for each sub-group; that is, it predicts expected cost among patients with a specific clinical condition. In general, sub-grouping is based on characteristics that have distinct effects on costs across all risk adjustors.

The Diabetes measure includes a robust claims-based methodology to identify patients with type 1 and type 2 diabetes diagnoses. The methodology combines results from 3 independent methods, informed by literature, testing, and expert clinician input, that focus on different claims-based markers of type 1 or type 2 diabetes found during the time period between the earliest episode start date and the latest episode end date for a particular measurement period. Combining these 3 methods (all-claim diagnoses, E&M claim diagnoses, and endocrinologist-billed diagnoses) provides greater confidence in the overall determination and reduces the chance of misclassification from using individual methods alone. Figures B-1 and B-2 illustrate the 2 steps for the sub-grouping methodology for the Diabetes measure: first, we apply a series of independent criteria, then we review the results across these criteria to assess the degree of agreement across them.

Step 1 identifies diabetes type using the 3 methods (all-claim diagnoses, E&M claim diagnoses, and endocrinologist-billed diagnoses), each of which classifies a patient as having type 1 diabetes, type 2 diabetes, or an unknown status.

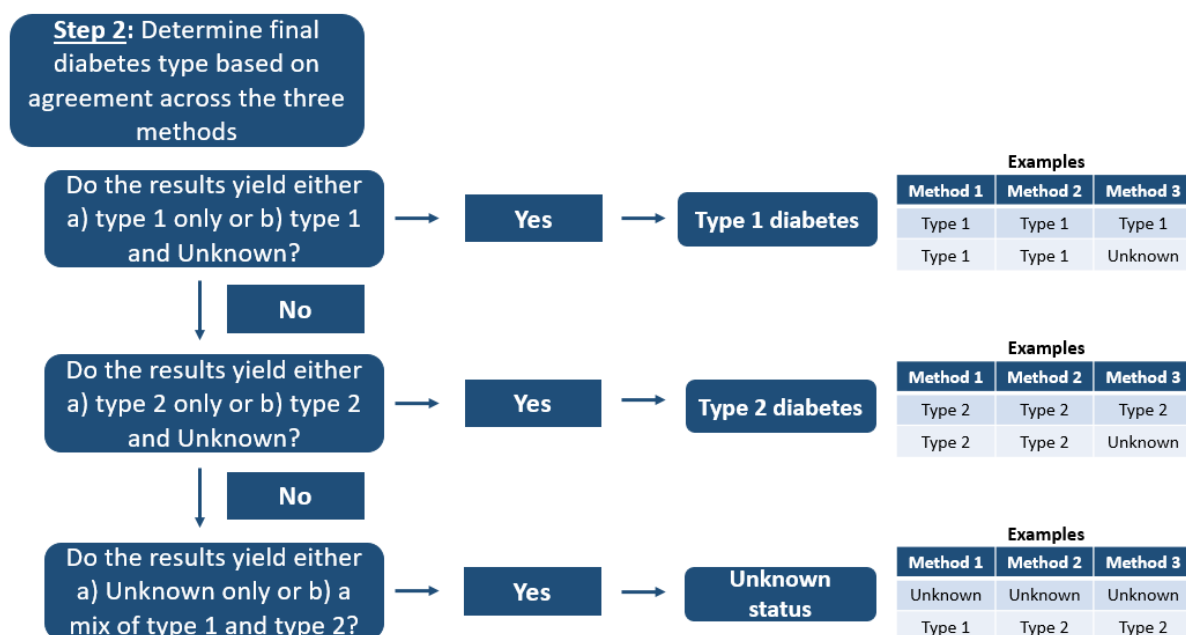**Figure B-1. Diabetes Sub-Grouping Methodology – Step 1**

For example:

- On all Medicare claims, a patient had 90% of their diabetic type diagnoses listed as type 2 diabetes ICD-10 diagnosis codes, which identifies a type 2 diabetes disease.
- On all E&M claims, the patient had 70% of their diabetic type diagnoses listed as type 2 diabetes ICD-10 diagnosis codes, which identifies a type 2 diabetes disease.
- Finally, on all endocrinologist-billed claims, the patient had 90% of their diabetic type diagnoses listed as type 2 diabetes ICD-10 diagnosis codes, which identifies a type 2 diabetes disease.

Step 2 determines a final diabetes type classification based on agreement across the 3 methods from Step 1.

Figure B-2. Diabetes Sub-Grouping Methodology – Step 2

Step 2: Determine final diabetes type based on agreement across the three methods

Do the results yield either a) type 1 only or b) type 1 and Unknown? → Yes → Type 1 diabetes

Examples		
Method 1	Method 2	Method 3
Type 1	Type 1	Type 1
Type 1	Type 1	Unknown

↓ No

Do the results yield either a) type 2 only or b) type 2 and Unknown? → Yes → Type 2 diabetes

Examples		
Method 1	Method 2	Method 3
Type 2	Type 2	Type 2
Type 2	Type 2	Unknown

↓ No

Do the results yield either a) Unknown only or b) a mix of type 1 and type 2? → Yes → Unknown status

Examples		
Method 1	Method 2	Method 3
Unknown	Unknown	Unknown
Type 1	Type 2	Type 2

Based on the example provided in Step 1, the 3 methods did not yield either a type 1 diabetes only or unknown result, but there was complete agreement across the 3 methods on a type 2 diabetes disease. Therefore, the patient would be placed into the Type 2 Diabetes sub-group.

Appendix C. Measure Construction and Calculation

This appendix provides additional details on how (i) an episode is constructed and attributed to a particular measurement period, (ii) how days are assigned to an episode, and (iii) how the measure score is calculated.

C.1 - Episode Construction Examples

The figures below provide examples of how episodes are constructed and attributed to a particular measurement period. Overall, an episode's window is defined based on:

- Whether the patient-clinician relationship during the measurement period was continuous; and
- The amount of claims data that has not been assessed in preceding measurement periods.
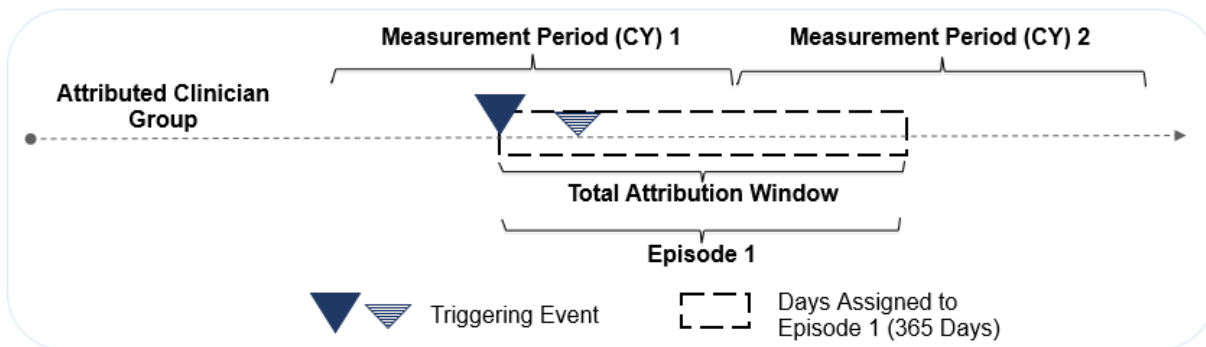
These examples also show how days are assigned to episodes. In each of these examples, we focus on episodes assessed in measurement period 2, which are used in sub-section C.2 to demonstrate how the measure score is calculated in a given measurement period. Assigned days are used as a weighting factor at the measure score calculation step, where the observed to expected ratio of each episode is weighted by the number of assigned days to that episode and then averaged over all episodes attributed to the clinician or clinician group. Therefore, to ensure fair comparison, longer episodes are given more weight during measure calculation than shorter episodes.

Episode Window 1. 365 Days; No Reaffirming Claims During the Total Attribution Window

Figure C-1 illustrates a Diabetes episode that is 365 days long. This episode begins during the first measurement period with a pair of triggering services that opens a one-year long attribution window that extends into the second measurement period. While a reaffirming service would have extended the relationship between the patient and the attributed clinician, the absence of a reaffirming claim ends this clinician-patient relationship after 365 days. Therefore, in this example, the length of the total attribution window and the episode are the same.

- **Measurement Period 1:** Costs will not be assessed during measurement period 1 because there was not a year's worth of claims data to assess during this measurement period.
- **Measurement Period 2:** Costs will be assessed during measurement period 2 because the episode ended in measurement period 2 and contained a year's worth of claims data that have not been previously assessed.
    - Since none of the days were previously assessed, all 365 days would be assigned to episode 1 and would be used as a weighting factor at the measure score calculation step.

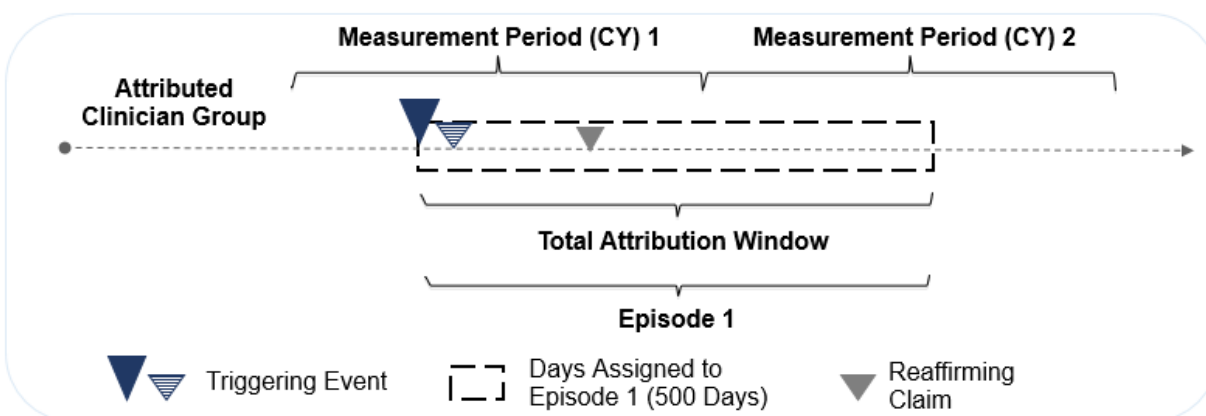**Figure C-1. Episode Window (365 Days; No Reaffirming Claims)**

Episode Window 2. 366 to 729 days; Reaffirming Claims During the Total Attribution Window

Figure C-2 illustrates a Diabetes episode that is longer than 365 days.[6] This episode begins during measurement period 1, contains 1 reaffirming claim 135 days into the attribution window that extends the initial attribution window by another 365 days, and ends 500 days after the trigger claim during measurement period 2.

- **Measurement Period 1:** Costs will not be assessed during measurement period 1 because of the absence of a year's worth of claims data to assess during this measurement period.
- **Measurement Period 2:** Costs will be assessed during measurement period 2 because the episode ended in measurement period 2 and contained a year's worth of claims data that have not been previously assessed.
  - o Since none of the days were previously assessed, all 500 days would be assigned to episode 1 and would be used as a weighting factor at the measure score calculation step.

Figure C-2. Episode Window (366 to 729 days; Reaffirming Claims)

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[6] Episodes can be up to 729 days long. At 730 days, the patient's episode would be split into 2 distinct 365-day long episodes because there would be a year's worth of claims data available in each episode.
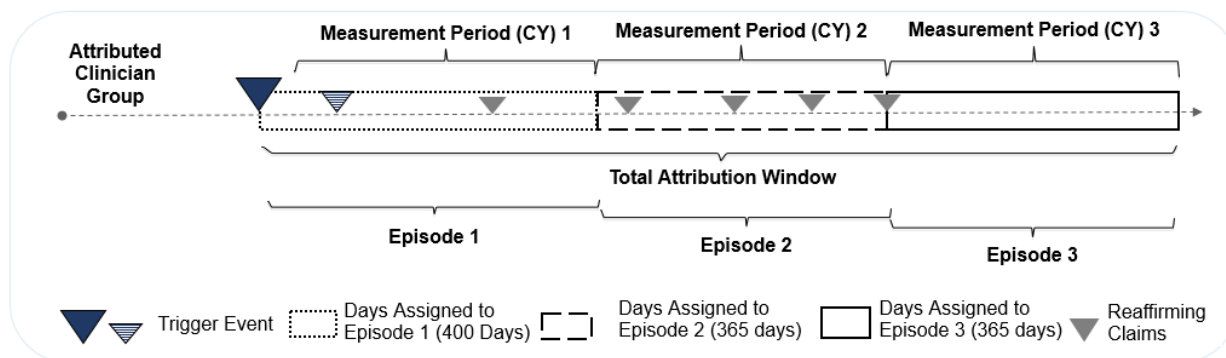
Episode Window 3. 365 days; Multi-year Total Attribution Window

Figure C-3 illustrates a long total attribution window that is at least two years in length with a Diabetes episode that is 365 days long, where sufficient claims data was assessed in the preceding measurement period.

The total attribution window begins with a pair of trigger services billed 35 days before measurement period 1, and ends approximately 38 months later, when the clinician-patient relationship ends during measurement period 3.

- **Measurement Period 1:** Episode 1 started on the day of the trigger claim and ended at the end of measurement period 1 (on December 31).
  - o Costs will be assessed during measurement period 1 because episode 1 ended in measurement period 1 and contained at least a year's worth of claims data that have not been previously assessed. Since none of the days were previously assessed, all 400 days would be assigned to episode 1.
- **Measurement Period 2:** Episode 2 started on January 1 of measurement period 2 and ended on December 31 of measurement period 2.
  - o Costs will be assessed during measurement period 2 because the episode ended in measurement period 2 and contained a year's worth of claims data that have not been previously assessed. Since none of the days were previously assessed, all 365 days would be assigned to episode 2.
- **Measurement Period 3:** Episode 3 started on January 1 of measurement period 3 and ended on December 31 of measurement period 3.
  - o Costs will be assessed during measurement period 3 because the episode ended in measurement period 3 and contained a year's worth of claims data that have not been previously assessed. Since none of the days were previously assessed, all 365 days would be assigned to episode 3.

Figure C-3. Episode Window (365 days; Multi-year Total Attribution Window)

Episode Window 4. 365 Days; Overlapping Episodes

Figure C-4 depicts how the remaining days of long total attribution windows are assessed when there are less than 365 days of claims data that has not been previously assessed.

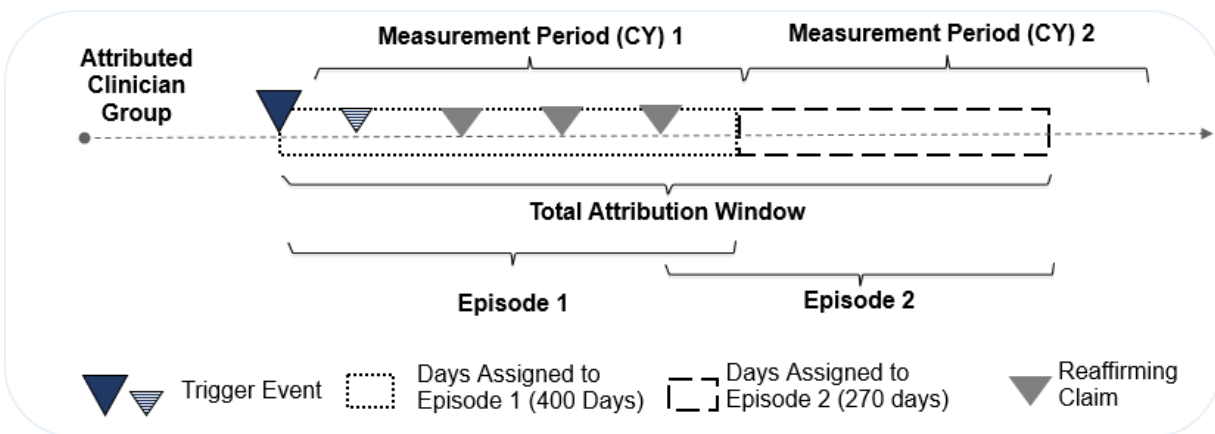In this example, the total attribution window begins with a pair of trigger services billed approximately 35 days before measurement period 1 and ends 670 days (approximately 22 months) later, when the clinician-patient relationship ends during measurement period 2.

- **Measurement Period 1:** For episode 1, costs will be assessed during measurement period 1 because episode 1 ended in measurement period 1 and contained at least a

year's worth of claims data that have not been previously assessed. Since none of the days were previously assessed, all 400 days would be assigned to episode 1.

- **Measurement Period 2:** For episode 2, there is not a year's worth of claims data between the end of episode 1 and the end of the total attribution window. Therefore, the start date of episode 2 is set as 365 days prior to the end of the total attribution window, and falls during episode 1.
  - o Since the costs during the days where episodes 1 and 2 overlap have already been assessed during measurement period 1, only the days occurring **after** the episode 1 end date will be assigned to episode 2 (270 days). These 270 days will be used as a weighting factor at the measure score calculation step.
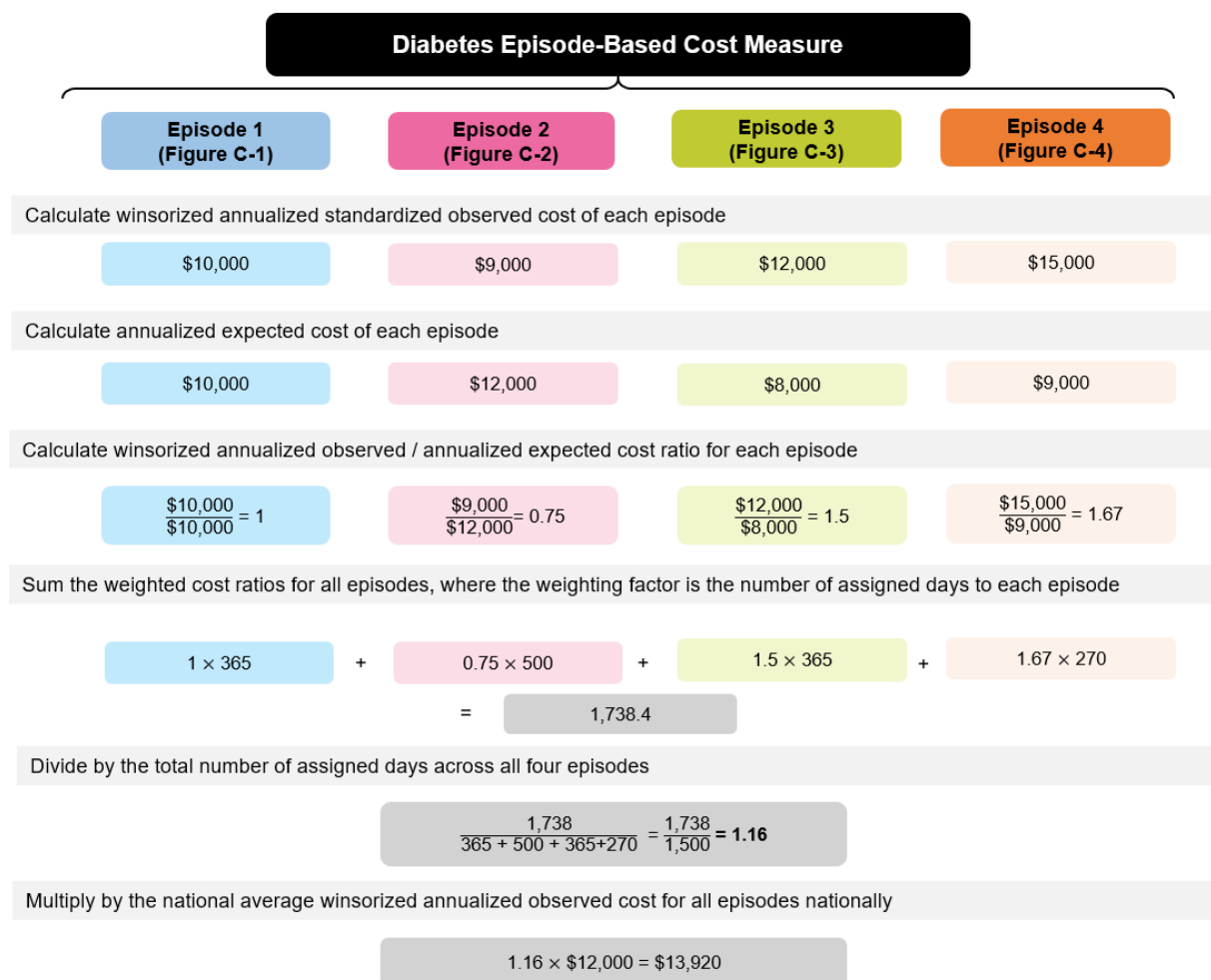
Figure C-4. Episode Window (365 Days; Overlapping Episodes)

C.2 - Measure Calculation Example for Measurement Period 2

Sub-section C.2 shows how the measure score is calculated during measurement period 2, using the examples illustrated in sub-section C.1. Figure C-5 below provides an illustrated example of measure calculation, using an example measure where the clinician group has only 4 attributed episodes for demonstration purposes.

Figure C-5. Diabetes Episode-Based Cost Measure Calculation Steps

Diabetes Episode-Based Cost Measure

| Episode 1 (Figure C-1) | Episode 2 (Figure C-2) | Episode 3 (Figure C-3) | Episode 4 (Figure C-4) |

Calculate winsorized annualized standardized observed cost of each episode

| $10,000 | $9,000 | $12,000 | $15,000 |

Calculate annualized expected cost of each episode

| $10,000 | $12,000 | $8,000 | $9,000 |

Calculate winsorized annualized observed / annualized expected cost ratio for each episode

$$\frac{\$10,000}{\$10,000} = 1 \qquad \frac{\$9,000}{\$12,000} = 0.75 \qquad \frac{\$12,000}{\$8,000} = 1.5 \qquad \frac{\$15,000}{\$9,000} = 1.67$$

Sum the weighted cost ratios for all episodes, where the weighting factor is the number of assigned days to each episode

$$1 \times 365 \quad + \quad 0.75 \times 500 \quad + \quad 1.5 \times 365 \quad + \quad 1.67 \times 270$$

$$= \quad 1,738.4$$

Divide by the total number of assigned days across all four episodes

$$\frac{1,738}{365 + 500 + 365 + 270} = \frac{1,738}{1,500} = 1.16$$

Multiply by the national average winsorized annualized observed cost for all episodes nationally

$$1.16 \times \$12,000 = \$13,920$$

Appendix D. Illustration of Attribution to Individual Clinicians (TIN-NPI)

This appendix provides a detailed illustration of the attribution methodology at the TIN and TIN-NPI levels.

Attribute TIN-NPI(s)

Once a Diabetes episode has been defined, it is attributed to the:

- TIN that billed the trigger services (trigger claim and confirming claim) for the total attribution window, and to the
- TIN-NPI(s) within the attributed TIN that billed at least 30% of outpatient services E&M codes with a relevant diabetes diagnosis and/or condition-related CPT/HCPCS codes with a relevant diabetes diagnosis on Part B Physician/Supplier claim lines during the episode.
- The measure's attribution methodology also imposes additional checks to ensure that TIN-NPIs are appropriately attributed. Specifically, TIN-NPIs that meet the 30% threshold must have:
  - Billed at least one outpatient services E&M code with a relevant diabetes diagnosis or condition-related CPT/HCPCS codes with a relevant diabetes diagnosis within 1 year prior to or on the episode start date; and
  - Billed at least 2 condition-related prescriptions at different time points to 2 different patients during the measurement period plus a one-year lookback period.

Figure D-1. TIN-NPI Attribution

* Clinician A also billed at least 2 condition-related prescriptions at different time points to 2 different patients
** Only services that occurred during the episode window are used to determine whether the clinician met the 30% threshold
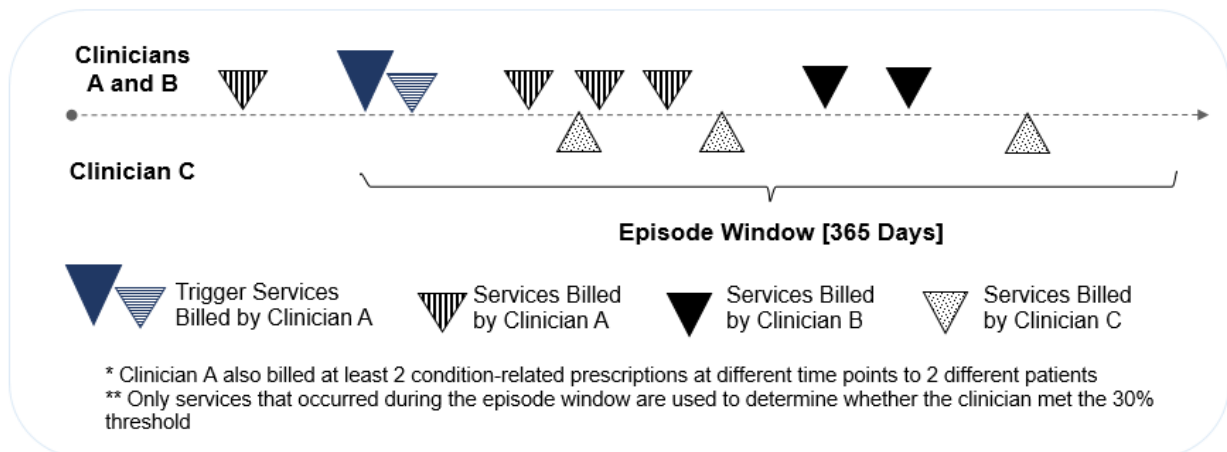
Figure D-1 illustrates a scenario in which 3 clinicians (A, B, and C) within an attributed clinician group (TIN 1) have billed services during a patient's episode window. Within the episode window, there are a total of 10 services billed across the 3 clinicians. Each of these services is uniquely marked depending on the clinician that billed the service. For simplicity, these services only include those billed as outpatient services E&M codes with a relevant diabetes diagnosis or condition-related CPT/HCPCS codes with a relevant diabetes diagnosis.

TIN level attribution: TIN 1 is attributed the episode because it billed the trigger services for the patient.

TIN-NPI level attribution: Clinician A bills 5 qualifying services (5/10, 50%), Clinician B bills 2 services (2/10, 20%), and Clinician C bills 3 services (3/10, 30%) during the episode window. Clinicians A and C met the 30% threshold, so they are considered for attribution. Clinician B did not meet the 30% threshold, so it is not considered for attribution.

- <u>Check 1</u>: Clinician A billed at least one outpatient services E&M code with a relevant diabetes diagnosis or condition-related CPT/HCPCS code with a relevant diabetes diagnosis within 1 year prior to or on the episode start date, so it is considered for attribution. Clinician C did not bill any such services, so Clinician C is not considered for attribution.
- <u>Check 2</u>: Clinician A also billed at least 2 condition-related prescriptions at different time points to 2 different patients during the measurement period plus a one-year lookback period. Therefore, Clinician A is considered for attribution.

Since only Clinician A met the 30% threshold and the two additional checks, it is attributed this episode.