Division of TennCare

Health Care Innovation Initiative

Detailed Business Requirement

Heart Valve Replacement or Repair (Valve) Episode

V10.0

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1 Introduction

1.1 VERSIONS AND REVISIONS

To keep track of the version of an episode used at any given time, a versioning system is employed:

- The versioning system is designed to discern between major and minor changes made to the DBR. Changes are reflected by the V0.0 design format.
- Major changes to the DBR will be reflected by an increase of 1.0. For example, V1.0 is the first version of the DBR. If a major change is made, version V2.0 will be released. Major changes include revisions to the algorithm, configuration file or significant content updates to the DBR.
- Minor changes to the DBR will be reflected by an increase of 0.1. For example, V1.0 is the first version of the DBR. If a minor change is made, version V1.1 will be released. Minor changes include revisions that do not impact the design or intent of the DBR (e.g., grammatical, formatting, etc).

Version	Date	Changes
V1.0	2013-10-11	■ First version
V1.1	2016-07-07	■ Minor update of DBR language and formatting
V1.2	2016-08-31	■ Updated Section 5.8: Included additional statement about position of complication codes for readmission quality metric
V1.3	2017-07-07	■ Updated Sections 2.3.6: Included age 18 years as a patient exclusion. ■ Configuration file: Added parameter value "18" to parameter description "Age Exclusion - Less Than (<) x Years Old" on Valve parameters sheet.
V1.4	2017-08-16	■ DBR: Updated section 2.3.6 to include DCS custody as a clinical exclusion. ■ DBR: Updated numbers in tables in sections 3.4.1 and 3.4.2 to ensure that the design dimension number aligned (e.g. Changed "6 – Perform risk adjustment" to 7 – Perform risk adjustment" in the table).

V2.0	2017-08-16	As part of the Episodes Design Feedback Session held on May 16, 2017: ■ Configuration file: Included CPT code 99024 for postoperative follow-up visit to the quality metric "Follow-up Visits."
V2.1	2018-8-23	■ DBR: Updated section 2.3.6 to include overlapping episodes as a business exclusion
V3.0	2018-08-10	■ DBR: Updated section 2.3.6 to include overlapping episodes as a business exclusion ■ DBR: Updated section 4.4 for adjusting pharmacy claims included in episode spend
V3.1	2019-04-30	■ DBR: Updated section 4.6 to remove the acute gastroenteritis episode from the overlapping exclusion hierarchy since this episode has an extended preview period for 2019.
V4.0	2019-12-13	As part of the Episodes Design Feedback Session held on May 21, 2019: ■ DBR: Updated section 4.7 to include episodes new to performance in 2020: acute gastroenteritis, acute kidney and ureter stones, and cystourethroscopy. ■ Configuration file: Add additional list of global exclusions that apply to all episodes. This list will exclude patients with rate, high-cost conditions, such as paralysis and coma. ■ DBR: Updated sections 2.3.8 and 5.8 and add informational quality metric (not tied to gain-sharing) for "Difference in MED/Day." ■ DBR: Updated sections 2.3.8 and 5.8 to remove the informational metric "Participation in a Qualified Clinical Data Registry (QCDR)."
V5.0	2020-12-18	As part of the Episodes Design Feedback Session held on May 20, 2020: ■ The Valve episode was moved to informational only reporting, beginning with the 2021 performance period. This means that providers will not be subject to gain sharing or risk sharing payments for this episode. Providers with this episode will receive quarterly episodes that will allow them to track cost and quality performance for informational purposes.

		■ DBR: Updated Sections 2.3.6, 3.4.1, 4.6, and the Glossary to reflect that episodes for which the quarterback is an FQHC or RHC are excluded. ■ Configuration file: Removed codes under the "Business – FQHC/RHC" subdimension since the exclusion now occurs at the quarterback level.
V5.1	2021-09-03	■ DBR: Updated section 2.3.6 to exclude episodes that have a diagnosis of COVID-19 or pneumonia due to COVID-19. ■ Configuration file: Add codes that define exclusion for COVID-19 and pneumonia due to COVID-19.
V6.0	2021-12-17	As part of the Episodes Design Feedback Session held on May 19, 2021: ■ DBR: An episode is excluded if the patient has a diagnosis related to COVID-19. ■ Configuration file: Removed invalidated codes and the addition of new or revised codes related to configuration file maintenance. ■ DBR: The 'Difference in Average MED/day' informational quality metric is updated to the percentage of valid episodes that have a difference in MED that is less than or equal to zero, as opposed to the average difference across all valid episodes.
V7.0	2022-12-29	As part of the Episodes Design Feedback Session held on May 11, 2022: ■ Configuration file: Removed invalidated codes and the addition of new or revised codes related to configuration file maintenance.
V8.0	2023-12-20	As part of the Episodes Design Feedback Session held on March 23, 2023: ■ Configuration file: Removal of invalidated codes and the addition of new or revised codes related to configuration file maintenance.
V9.0	2024-12-31	■ Configuration file and Summary reformatted for accessibility. As part of the Episodes Design Feedback Session held on March 28, 2024:

		■ Configuration file: Removal of invalidated codes and the addition of new or revised codes related to configuration file maintenance.
V10.0	2025-11-13	As part of the Episodes Design Feedback Session held on May 1, 2025: ■ Configuration file: Removal of invalidated codes and the addition of new or revised codes related to configuration file maintenance.

1.2 SCOPE OF THIS DOCUMENT

The Detailed Business Requirement (DBR) document serves as a guide to understand the definition of an episode.

Section 2 addresses the following questions:

- **Typical patient journey**: Which patient cases are addressed by the episode?
- **Sources of value**: At which points in the typical patient journey do providers have most potential to improve quality of care, outcomes, and cost-effectiveness?
- **Design dimensions**: What decisions underlie the design of the episode?
  - Identify episode triggers: What events trigger an episode?
  - Attribute episodes to providers: Which provider is primarily held accountable for the outcomes of an episode, i.e., Quarterback (QB) or Principal Accountable Provider (PAP)?
  - Determine the episode duration: What is the duration of the episode?
  - Identify claims included in episode spend: Which claims are included in or excluded from the episode spend?
  - Calculate non-risk-adjusted episode spend: How is the spend for an episode calculated?
  - Perform risk adjustment: What approach is taken to adjust episodes for risk factors that cannot be influenced by the Quarterback?
  - Identify excluded episodes: Which episodes are excluded from a Quarterback's average episode spend for the purposes of calculating any gain/risk sharing?

  - Determine quality metrics performance: Which quality metrics are employed to inform Quarterbacks about their quality of care?

Section 3 of the DBR explains the data flow of an episode. It addresses the following questions:

- **Input data**: What inputs does the episode algorithm require to build the episode?
- **Episode algorithm and detailed description**: What is the intent of the episode design that needs to be reflected in the code to produce the episode outputs?
- **Configuration file**: What parameters (e.g., number of days) and medical codes (e.g., diagnosis codes) need to be specified to define the episode?
- **Output tables**: What are the recommended outputs of an episode algorithm?

Section 4 contains general elements of the episode algorithm that must be used in conjunction with section 5, as section 5 contains the specific details for the episode described in this DBR. Sections 4 and 5 used in conjunction explain the intent of the episode design at a level of granularity that will allow an IT implementation team to create an algorithm that matches the episode design. They may also be helpful to the analytics team in their communication with the IT team over the course of quality controlling an episode. These address the following questions:

- What are the logical steps the episode algorithm needs to complete in order to produce the required outputs?
- What cases does the algorithm need to address?
- Are there exceptions to the overall logic and how are they handled?
- Which algorithm logic is the same across episodes, and which is specific to an episode?

The DBR document does not cover the following topics:

- Background on how episodes compare to the current payment system
- Clinical rationale for inclusions and exclusions
- Intermediate analyses used during design of the episode
- Meeting materials used during design of the episode
- Guidance on data collection/transformation/storage

- Guidance on the episode algorithm coding approach

2 Heart valve replacement or repair episode description

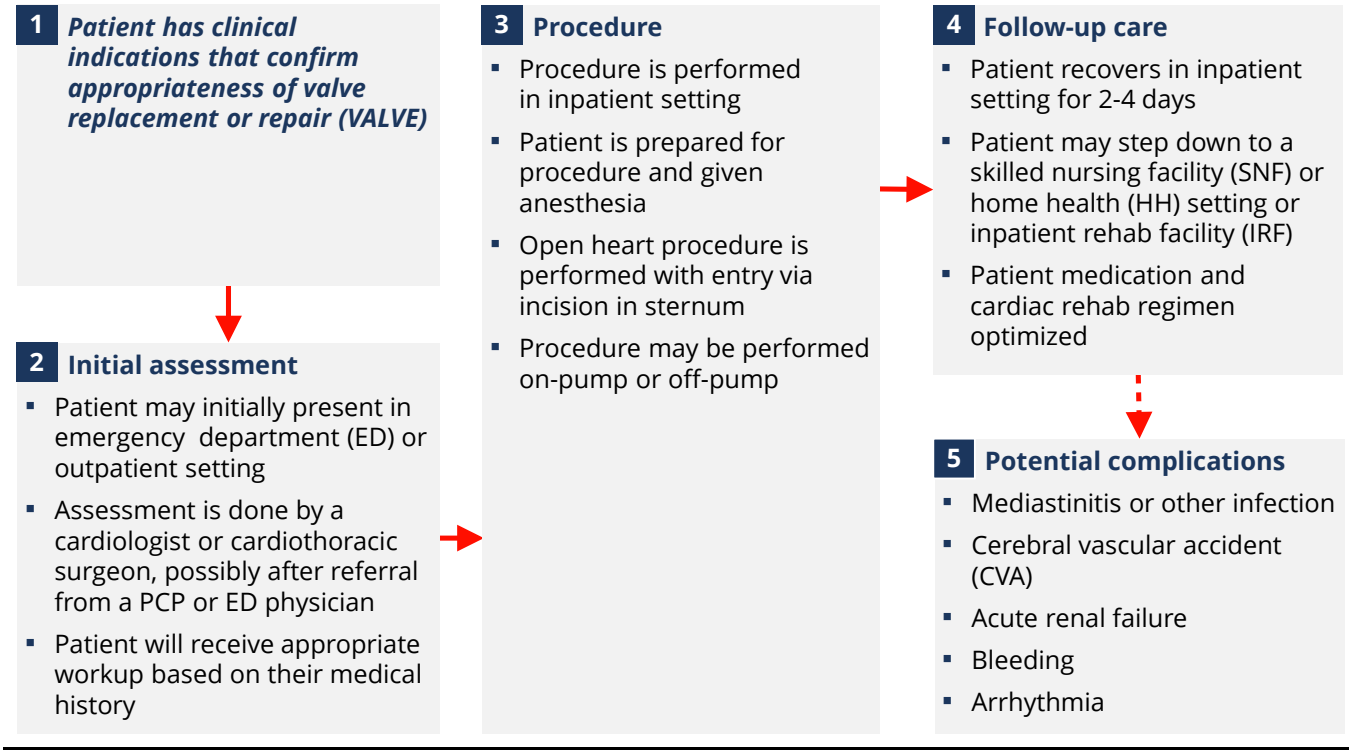
2.1 TYPICAL PATIENT JOURNEY

The episode described in this document pertains to patients who receive a heart valve replacement or repair. As depicted in Exhibit 1, the patient journey begins when a patient has clinical indications that confirm the appropriateness of a valve replacement or repair. The provider performs an initial assessment, and the valve replacement or repair is then performed. Specifically, the procedure may be:

- Performed in the context of an **acute ischemia-related admission**, where valve replacement and repair is performed following clinical stabilization during an admission for treatment of acute myocardial infarction; or
- Performed in the context of an **elective,** or **ambulatory, medical admission,** where the purpose of the index admission is a valve replacement and repair procedure

Anesthesia is provided to the patient, and the procedure is performed. The procedure may be performed on or off-pump at the discretion of the provider performing the procedure. A coronary artery bypass graft (CABG) procedure may or may not be performed concurrently depending on the patient's clinical presentation. After the procedure, the patient typically recovers in an inpatient setting, initially in an intensive care unit. In addition, the patient might step down to a skilled nursing facility, home health setting, or an inpatient rehabilitation facility. The medication and cardiac rehabilitation regimens of the patient are optimized following the procedure. Complications such as mediastinitis or other infections, cerebral vascular accidents, acute renal failure, bleeding, or arrhythmia might occur.

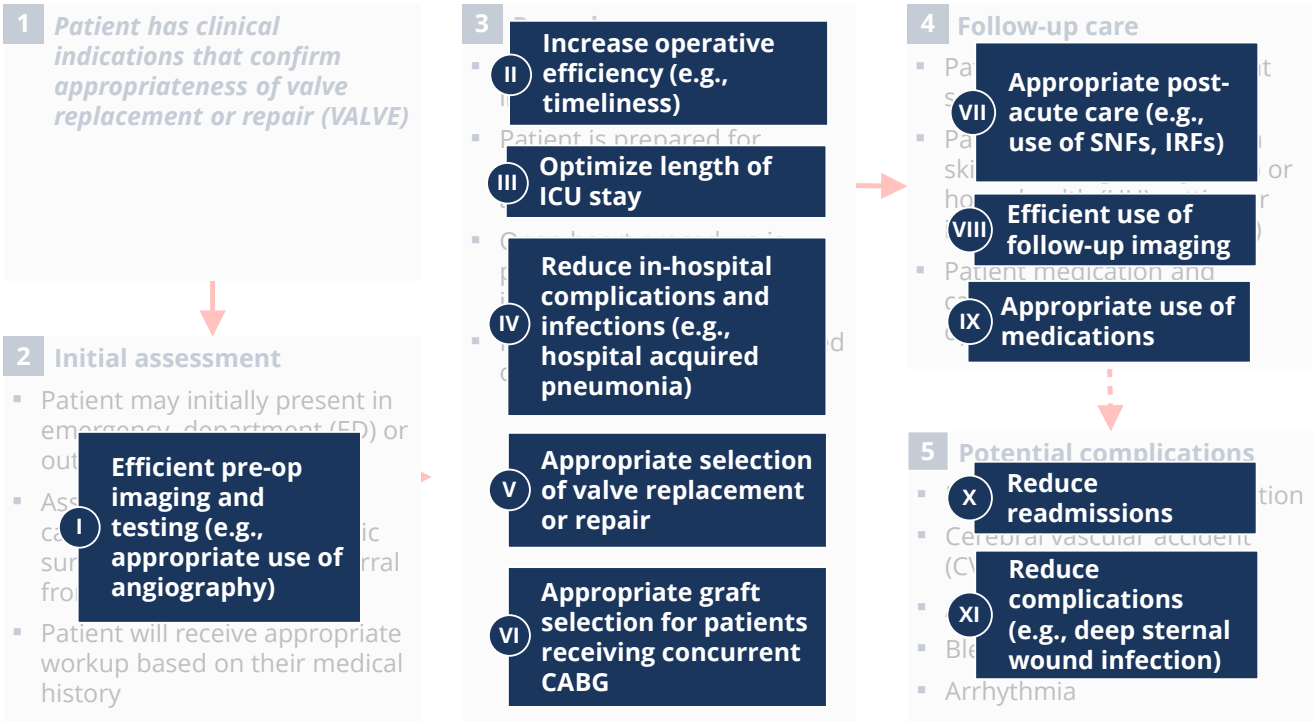
EXHIBIT 1 – TYPICAL PATIENT JOURNEY



2.2 SOURCES OF VALUE

In treating patients receiving a valve replacement or repair, providers have several opportunities to improve the quality and cost of care, as depicted in Exhibit 2. Important sources of value are increased operative efficiency and appropriate selection of valve replacement or repair, as well as the type of grafts for patients receiving concurrent CABG. Additionally, providers can select an appropriate length of stay for the procedure, while also reducing in-hospital complications and infections. Furthermore, providers can choose appropriate post-acute care, efficient follow-up imaging, and appropriate use of medications. Overall, the provider can bring about a reduction in readmissions and complications.

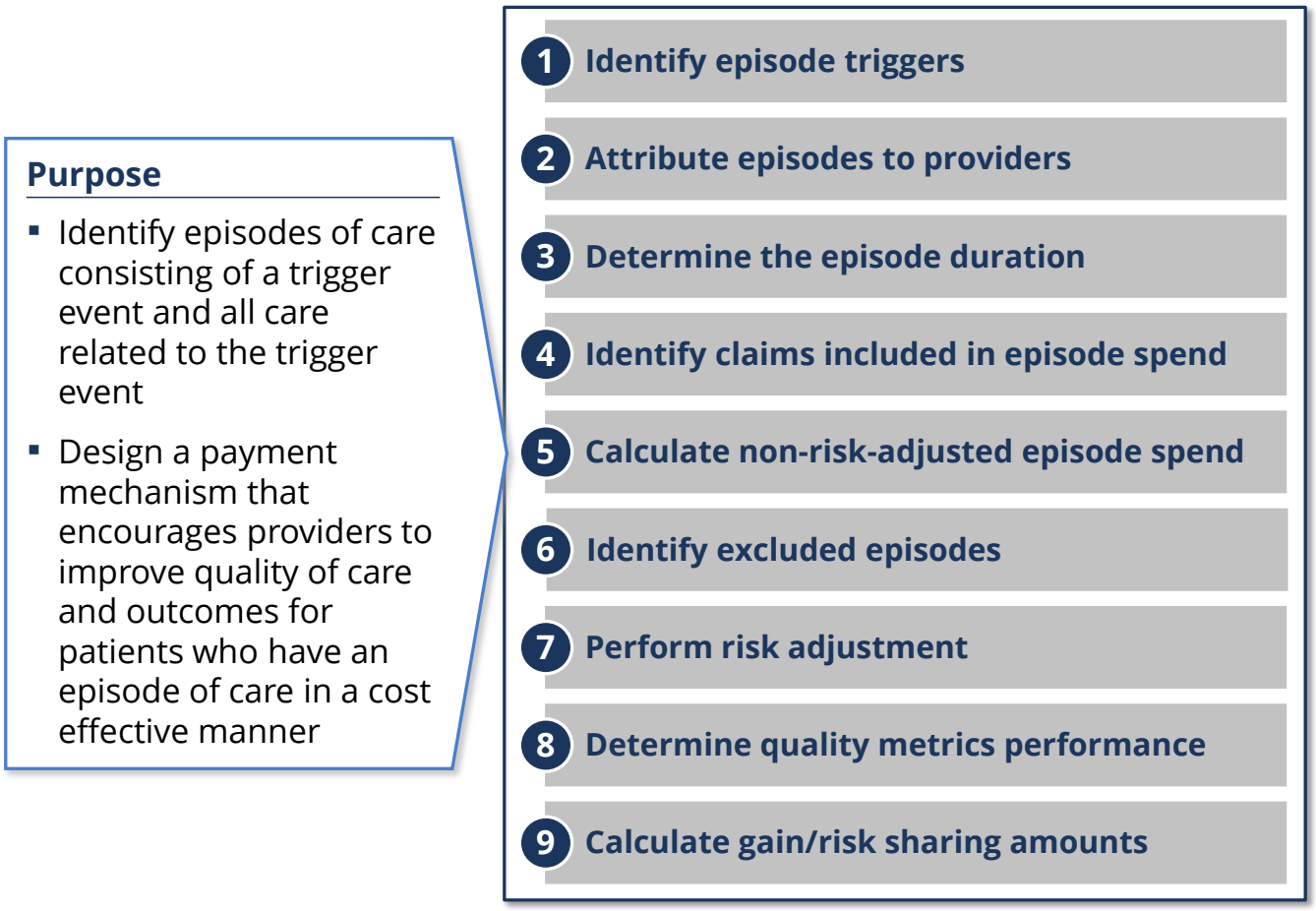
EXHIBIT 2 – SOURCES OF VALUE



2.3 DESIGN DIMENSIONS

Designing and building a heart valve replacement or repair episode comprises nine dimensions, as shown in Exhibit 3. Section 3 provides additional details on the episode data flow.

EXHIBIT 3 – DESIGN DIMENSIONS



2.3.1 Identify episode triggers

A potential trigger for a heart valve replacement or repair episode is a professional claim with a heart valve replacement or repair procedure code along with an associated facility claim with a diagnosis code related to the heart valve replacement or repair. The procedure takes place in an inpatient setting.

To avoid an overlap of heart valve replacement or repair episodes, no potential trigger can become an episode trigger during the clean period of a potential trigger for a given patient, i.e., a potential trigger is excluded for being in the clean period of any potential trigger. A chronological approach is taken, and the first potential trigger of a given period is identified as the earliest (i.e., the furthest in the past) episode trigger. The clean period starts the day after the episode trigger ends and extends for a time period that equals the duration of the pre-trigger window (maximum duration if a flexible pre-trigger window)

plus the duration of the post-trigger window. If there is no pre-trigger window, the clean period is the length of the post-trigger window.

2.3.2 Attribute episodes to providers

The Quarterback (also referred to as the Principal Accountable Provider, or PAP) is the provider deemed to be in the best position to influence the quality and cost of care for a patient during a heart valve replacement or repair – here, the facility where the heart valve replacement or repair was performed. The contracting entity or tax identification number of the facility where the heart valve replacement or repair is performed will be used to identify the Quarterback.

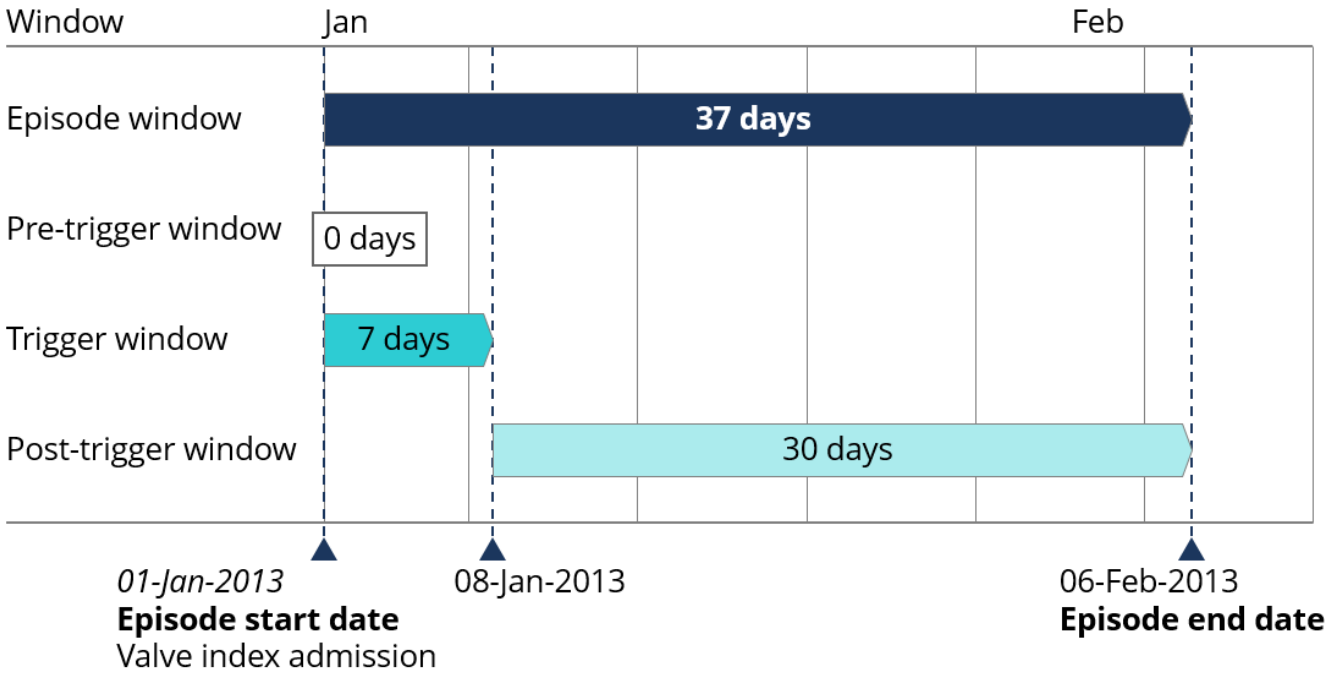
2.3.3 Determine the episode duration

The duration of the heart valve replacement or repair episode comprises the trigger window and the post-trigger window, as shown in Exhibit 4. Overall, the duration of the episode is referred to as the episode window.

- **Pre-trigger window:** This episode has no pre-trigger window.
- **Trigger window:** The trigger window spans the duration of the triggering visit or stay.
- **Post-trigger window:** The post-trigger window begins the day after the trigger window and extends for 30 days.

If a hospitalization begins on or before the 30th day of the post-trigger window and extends beyond the 30th day (i.e., is ongoing on the 31st day of the post-trigger window), then the post-trigger window is extended until discharge from the hospitalization. Extending the episode in this way may only occur once per episode window and does not lead to further extensions. See section 6 for the definition of hospitalization.

EXHIBIT 4 – EXAMPLE OF DETERMINING THE EPISODE DURATION



2.3.4 Identify claims included in episode spend

Episode spend is calculated on the basis of claims related to the heart valve replacement or repair. Claims or claim detail lines that are included in the calculation of the episode spend are referred to as included claims or included claim detail lines. The criteria to identify included claims or claim detail lines depend on the type of service they belong to, as well as the time window during which a claim occurs. The following types of service are included in the episode:

Pre-trigger window

This episode has no pre-trigger window.

Trigger window

For this episode, claims and claim detail lines assigned to the trigger window are included if they are also assigned to one of the following types of services:

All services: All inpatient, outpatient, professional, and pharmacy claims and claim detail lines assigned to the trigger window are included.

Post-trigger window

For this episode, claims and claim detail lines assigned to the post-trigger window are included if they are also assigned to one of the following types of services:

- **Specific care after discharge**: Outpatient, professional, inpatient, and long-term care claims with ICD-9 or ICD-10 diagnosis codes for specific care after discharge directly related to the heart valve replacement or repair (e.g., congestive heart failure) are included in the post-trigger window.
- **Specific anesthesia**: Outpatient and professional claim detail lines with CPT procedure codes for specific anesthesia related to the heart valve replacement or repair are included in the post-trigger window, as potential repeat or similar procedures may take place.
- **Specific evaluation and management visits**: Outpatient and professional claim detail lines with CPT procedure codes for specific E&M visits with a primary diagnosis related to the heart valve replacement or repair are included in the post-trigger window.
- **Specific imaging and testing**: Outpatient and professional claim detail lines with CPT procedure codes, and inpatient claims with ICD-9 or ICD-10 procedure codes, for specific imaging and testing related to the heart valve replacement or repair (e.g., electrocardiogram) are included in the post-trigger window.
- **Specific medications**: Pharmacy claims with HIC3 codes for specific medications related to the heart valve replacement or repair (e.g., pain medication) and treatment for complications related to the heart valve replacement or repair are included in the post-trigger window.
- **Specific pathology**: Outpatient and professional claim detail lines with CPT procedure codes for specific pathology related to the heart valve replacement or repair are included in the post-trigger window.
- **Specific surgical and medical procedures**: Outpatient and professional claim detail lines with CPT/HCPCS procedure codes, and inpatient claims with ICD-9 or ICD-10 procedure codes, for specific procedures (e.g., cardiac rehabilitation) related to the heart valve replacement or repair are included in the post-trigger window.

2.3.5 Calculate non-risk-adjusted episode spend

The episode spend is the amount that reflects the totality of all costs included in the episode. The episode spend reflects the paid amount plus patient cost share for included

claims. Since the totality of spend for included claims is not risk-adjusted, it is referred to as non-risk-adjusted episode spend.

2.3.6 Identify excluded episodes

Episode exclusions ensure that episodes are comparable to each other and allow fair comparisons between patient panels. After all exclusions that identify invalid episodes have been applied, a set of valid episodes remains. The valid episodes form the basis to assess the performance of Quarterbacks.

- **Business exclusions**
  - **Inconsistent enrollment:** An episode is excluded if there are gaps in the plan coverage of the patient during the episode window.
  - **Third-party liability:** An episode is excluded if an inpatient, outpatient, professional, pharmacy, or long term care claim that is assigned to the episode window (included or not included) is associated with a third-party liability amount.
  - **Dual eligibility:** An episode is excluded if a patient has dual coverage by Medicaid and Medicare at any time during the episode window.
  - **FQHC/RHC:** An episode for which the quarterback is an FQHC or RHC is excluded.
  - **No PAP ID:** An episode is excluded if it cannot be associated with a corresponding PAP ID.
  - **Incomplete episodes:** An episode is excluded if either:
    - The triggering professional claim spend is equal to 0.
    - It is within the bottom 2.5% of all episodes with the lowest non-risk-adjusted episode spend (not the risk-adjusted episode spend), without taking into account episodes where the triggering professional claim spend is less than or equal to (≤) 0. This threshold will be finalized at the same time as the gain and risk sharing threshold.
  - **Overlapping episodes:** An episode **may be** excluded if its included spend overlaps with another episode during their episode windows where the same Principal Accountable Provider is serving the same patient. The exclusion rule follows a set of conditions outlined in detail in Section 4.6.
- **Clinical exclusions**

- **Different care pathway:** An episode is excluded if the patient has one or more conditions that would lead to a different care pathway. Codes that indicate a different care pathway are searched for on inpatient, outpatient, and professional claims (included or not included) during a specified length of time, as detailed in the configuration file. Examples of conditions that would lead to different care pathway are:
  - COVID-19
  - Department of Children's Services (DCS) custody
  - Ischemia-related admission
  - Pre-existing endocarditis on admission
  - Pre-existing pneumonia on admission

  The detailed list of codes and time windows is given in the configuration file under "Clinical – (*condition for exclusion*)".

- **Patient exclusions**
  - **Age:** An episode is excluded if the patient is younger than 18 (<18) years or older than 64 (>64) years of age on the day of the triggering event. See section 6 for the definition of member age.
  - **Death:** An episode is excluded if the patient has a patient discharge status of "expired" on any inpatient or outpatient claim assigned to the episode window. The claim may be an included claim or not.
  - **Left Against Medical Advice:** An episode is excluded if a patient has a discharge status of "left against medical advice or discontinued care" on any inpatient or outpatient claim during the episode window. The claim may be an included claim or not.
- **High-cost outlier**
  - An episode is excluded if the risk-adjusted episode spend (not the non-risk-adjusted episode spend) is greater than the high outlier threshold. The high outlier threshold is set at three standard deviations above the average risk-adjusted episode spend for valid episodes. This threshold will be finalized at the same time as the gain and risk sharing thresholds. Because this exclusion uses the risk-adjusted episode spend, it is the only exclusion that takes place after the risk adjustment process.

2.3.7 Perform risk adjustment

Quarterbacks are compared based on their performance on quality metrics and based on the average spend for their episodes. Risk adjustment is one of the mechanisms used to achieve a fair comparison in episode spend across Quarterbacks.

Risk factors and risk coefficients are identified using a statistical model that tests for correlation between factors and episode cost. The estimated risk coefficients are used to calculate a risk score for each episode given the risk factors that are present for the episode. The non-risk-adjusted episode spend is adjusted by the risk score to arrive at the risk-adjusted episode spend.

The final risk adjustment methodology decisions will be made at the discretion of the payer after analyzing the data. Because each payer runs its own risk adjustment model based on cost and there are variations in the population covered by each payer, the risk factors may vary across payers.

2.3.8 Determine quality metrics performance

Quarterbacks receive information on quality metrics that allows them to assess their performance. The quality metrics are based on information contained in the claims filed for each patient, and some might be based on other information sources.

- **Quality metrics not tied to gain sharing** (i.e., included for information only):
  - Follow-up care within the post-trigger window: Percent of valid episodes where the patient receives relevant follow-up care within the post-trigger window (higher rate indicative of better performance).
  - Admission within the post-trigger window: Percent of valid episodes with an included admission or relevant observation care within the post-trigger window (lower rate indicative of better performance).
  - Major morbidity: Percent of valid episodes where the patient has a major morbidity, as defined in section 5.8, within the episode window (lower rate indicative of better performance).
  - Mortality: Percent of total episodes with patient mortality within the episode window (lower rate indicative of better performance).
  - Difference in Average MED/day: Percent of valid episodes where the average difference in morphine equivalent dose (MED)/day during the post-trigger opioid

window and the pre-trigger opioid window, across valid episodes, is less than or equal to zero (lower value indicative of better performance).

2.3.9 Calculate gain/risk sharing amounts

[Note: This section is not applicable to this episode.**]**

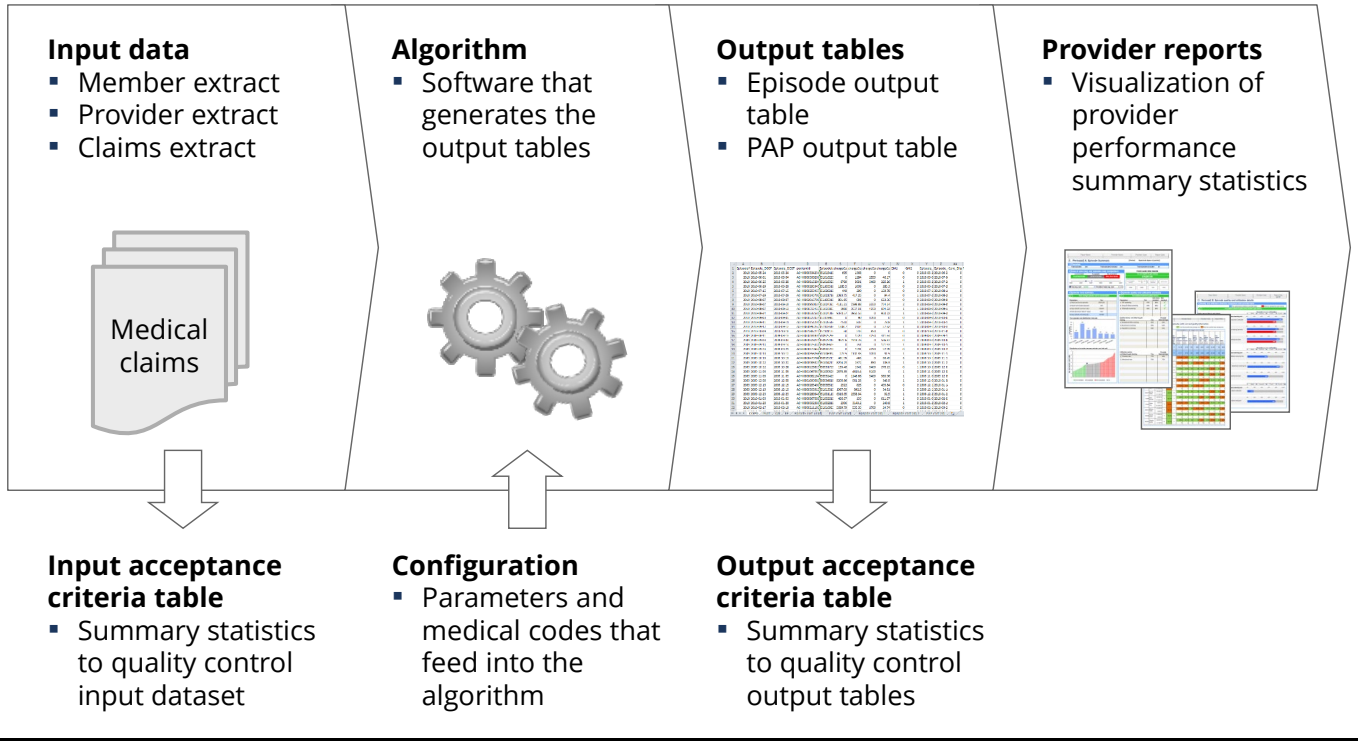
3 Episode data flow

The analytics underlying an episode-based payment model are performed by an episode algorithm. The algorithm takes an input dataset, transforms the data in accordance with the intent of the episode design, and produces a set of output tables (Exhibit 5). The output tables are used to create provider reports.

Several of the episode design dimensions require input parameters such as age ranges, and medical codes such as diagnosis, procedure, and medication codes to specify the intent of the episode. The parameters and medical codes are provided in the configuration file.

It is recommended that the episode data flow includes two elements for quality assurance: (1) An input summary table to assess the content and quality of the input dataset. (2) An output summary table to assess the content and quality of the output tables.

EXHIBIT 5 – EPISODE DATA FLOW



3.1 INPUT DATA

To build an episode, the following input data are needed:

- **Member Extract**: List of patients and their health insurance enrollment information.
- **Provider Extract**: List of participating providers and their addresses.
- **Claims Extract**: Institutional claims (UB-04 claim form), professional claims (CMS1500 claim form), and pharmacy claims (NCPDP claim form) at the patient level.

The table below lists the required input fields using the input data field names and a description of these. Sections 4 and 5 describe the use of each input field. In these sections, input fields are referred to by the "Source field name in DBR" and written in italics.

Table – Input data fields

Source field name in DBR	Description
Member Extract	
Member ID	Unique member identifier
Member Name	Member name
Eligibility Start Date	First date member is eligible for coverage by payer
Eligibility End Date	Last date member is eligible for coverage by payer
Date Of Birth	Member date of birth
Provider Extract	
Contracting Entity Name	Contracting entity name
Contracting Entity	Unique identifier of provider by contracting entity
Provider Name	Provider name
Provider ID	Unique identifier of provider
Claims Extract	
Internal Control Number	Unique claim identifier
Type Of Bill	Type of bill
Member ID	Unique member identifier
Billing Provider ID	Unique billing provider identifier
Detail Rendering Provider ID	Unique detail rendering provider identifier
Attending Provider NPI	Attending provider National Provider Identifier
Header From Date Of Service	Date on which service begins on claim header

Source field name in DBR	Description
Header To Date Of Service	Date on which service ends on claim header
Detail From Date Of Service	Date on which service begins on claim detail line
Detail To Date Of Service	Date on which service ends on claim detail line
Admission Date	Admission date
Patient Discharge Status	Patient discharge status
Header Diagnosis Code	All diagnosis codes on claim header
Header Surgical Procedure Code	All surgical procedure codes on claim header
Detail Procedure Code	Procedure code on claim detail line
All Modifiers	All procedure code modifiers on claim detail line
Place Of Service	Place of service
National Drug Code	National drug code
Header Paid Amount	Header paid amount
Detail Paid Amount	Detail paid amount
Header TPL Amount	Header third party liability amount
Detail TPL Amount	Detail third party liability amount
Revenue Code	Revenue code
Patient Cost Share	Patient cost share amount

The date range for the episode input data has to include claims which were submitted for services provided during the defined episode reporting period as well as for those which occurred during the 15 months preceding the reporting period. Claims from the 15 months preceding the reporting period are needed to allow for identification of risk factors and comorbidities as well as to provide sufficient input data to identify the episode start date for the first episodes that end during the reporting period.

The input data has to contain only unique and paid claims. It is the responsibility of each payer to apply appropriate methods to ensure that all claims in the input data are valid, de-duplicated, and paid. Payers should use denied claims for the purpose of determining quality metrics performance.

If the value of an input field from the Claims Extract that is required to build an episode is missing or invalid, then the corresponding claim is ignored when building the episode. For

example, a claim that would be a potential trigger, but is missing the Header From Date Of Service, cannot be a potential trigger.

3.2 EPISODE ALGORITHM AND DETAILED DESCRIPTION

The intent of the episode algorithm is detailed in the Episode agnostic algorithm logic (section 4) and heart valve replacement or repair episode detailed description (section 5) of the DBR. Section 4 contains general elements of the episode algorithm that must be used in conjunction with section 5, as section 5 contains the specific details for the episode described in this DBR.

3.3 CONFIGURATION FILE

The parameters and medical codes needed to define the episode are listed in the configuration file, which is provided as an attachment to the DBR. The file includes:

- **Parameters sheet:** Values for parameters used in the episode, for example the duration of the post-trigger window.
  - Episode: Name of episode, i.e., Heart Valve Replacement or Repair
  - Design Dimension: Episode design dimension, e.g., Determine the Episode Duration
  - Parameter Description: Description of the parameter, e.g., Duration Of Post-trigger Window
  - Parameter Value: Value of the parameter, e.g., 30
  - Parameter Unit of Measure: Unit of measure of the parameter, e.g., Days
- **Code sheet:** Medical codes used in the episode, such as trigger diagnosis or procedure codes, and codes to identify included claims. The columns contained in the code sheet are:
  - Episode: Name of episode, i.e., Heart Valve Replacement or Repair
  - Design Dimension: Episode design dimension, e.g., Identify Claims Included in Episode Spend
  - Subdimension: Grouping of codes used for a specific purpose within the design dimension, e.g., Anesthesia
  - Time Period: Time for which the code is relevant, e.g., During post-trigger window
  - Code Type: Code system to which the code belongs to, e.g., CPT

- Code Group: Code group level classification, e.g., Anesthesia
- Code Description: Code detailed description, e.g., Anesthesia for Sternal Debridement
- Code: Code number, e.g., 00550

Sections 4 and 5 of the DBR explain the intended use of the parameters and medical codes by the episode algorithm. References to medical codes in the configuration file are made using the name for the relevant design dimension subcategory (subdimension) in the code sheet of the configuration file. References to parameters in the configuration file are made using the name for the relevant design dimension in the parameters sheet of the configuration file.

The code sheet may contain CPT codes. CPT is a registered trademark of the American Medical Association (AMA). Vendor purchases one single CPT distribution license for the configuration file of each episode that is delivered to a recipient. If its recipient wishes to further distribute a configuration file, it is the recipient's responsibility to comply with AMA CPT license requirement.

3.4 OUTPUT TABLES

Using the input data tables and the configuration file, an episode algorithm creates two output tables: the episode output table and the Principal Accountable Provider (also referred to as PAP or Quarterback) output table. The Episode agnostic algorithm logic (section 4) and heart valve replacement or repair episode detailed description (section 5) describe the definition of each output field. In these sections output fields are referred to by the output field names provided in the tables below and are written in italics.

3.4.1 Episode output table

The episode output table contains the set of episodes identified by the algorithm and the characteristics of each episode. The table “Episode Output Table” below lists the required output fields.

Table – Episode Output Table

Design dimension	Output field name	Report template name
	Episode identification	

Design dimension	Output field name	Report template name
1 – Identify episode triggers	Facility Trigger Claim ID	N/A
1 – Identify episode triggers	Facility Trigger Claim Type	N/A
1 – Identify episode triggers	Professional Trigger Claim ID	N/A
1 – Identify episode triggers	Member ID	N/A
1 – Identify episode triggers	Member Name	Patient Name
1 – Identify episode triggers	Member Age	N/A
1 – Identify episode triggers	Associated Facility Claim ID	N/A
1 – Identify episode triggers	Associated Facility Claim Type	N/A
2 – Attribute episodes to providers	PAP ID	Provider Code
2 – Attribute episodes to providers	Rendering Provider ID	N/A
2 – Attribute episodes to providers	Rendering Provider Name	N/A
3 – Determine the episode duration	Episode Start Date	Episode Start Date
3 – Determine the episode duration	Episode End Date	Episode End Date

Design dimension	Output field name	Report template name
3 – Determine the episode duration	Pre-Trigger Window Start Date	N/A
3 – Determine the episode duration	Pre-Trigger Window End Date	N/A
3 – Determine the episode duration	Trigger Window Start Date	N/A
3 – Determine the episode duration	Trigger Window End Date	N/A
3 – Determine the episode duration	Post-trigger Window Start Date	N/A
3 – Determine the episode duration	Post-trigger Window End Date	N/A
4 – Identify claims included in episode spend	Count of Included Claims	# Claims
	Episode spend	
5 – Calculate non-risk-adjusted spend	Non-risk-adjusted Episode Spend	Non-adjusted cost
5 – Calculate non-risk-adjusted spend	By Pre-trigger Window	N/A
5 – Calculate non-risk-adjusted spend	By Trigger Window	N/A
5 – Calculate non-risk-adjusted spend	By Post-trigger Window	N/A
5 – Calculate non-risk-adjusted spend	By Inpatient facility	Inpatient facility

Design dimension	Output field name	Report template name
5 – Calculate non-risk-adjusted spend	By Emergency department or observation	Emergency department or observation
5 – Calculate non-risk-adjusted spend	By Outpatient facility	Outpatient facility
5 – Calculate non-risk-adjusted spend	By Inpatient professional	Inpatient professional
5 – Calculate non-risk-adjusted spend	By Outpatient laboratory	Outpatient laboratory
5 – Calculate non-risk-adjusted spend	By Outpatient radiology	Outpatient radiology
5 – Calculate non-risk-adjusted spend	By Outpatient professional	Outpatient professional
5 – Calculate non-risk-adjusted spend	By Other	Other
5 – Calculate non-risk-adjusted spend	By Pharmacy	Pharmacy
7 – Perform risk adjustment	Risk-adjusted Episode Spend	N/A
7 – Perform risk adjustment	Same breakdown as for Non-risk-adjusted Episode Spend	
7 – Perform risk adjustment	Risk Factor <risk factor number>	Episode risk factor
7 – Perform risk adjustment	Episode Risk Score	N/A
	Exclusions	

Design dimension	Output field name	Report template name
6 – Identify excluded episodes	Any Exclusion	N/A
6 – Identify excluded episodes	Exclusion Inconsistent Enrollment	Patient was not continuously enrolled during episode window
6 – Identify excluded episodes	Exclusion Third-party Liability	Patient has third-party liability charges
6 – Identify excluded episodes	Exclusion Dual Eligibility	Patient has dual coverage of primary medical services
6 – Identify excluded episodes	Exclusion FQHC/RHC	Episodes for which the quarterback is an FQHC or RHC are excluded.
6 – Identify excluded episodes	Exclusion No PAP ID	N/A
6 – Identify excluded episodes	Exclusion Incomplete Episode	Episode data was incomplete
6 – Identify excluded episodes	Exclusion Left Against Medical Advice	Patient has a discharge status of “left against medical advice”
6 – Identify excluded episodes	Exclusion Age	Patients >/< [XX]
6 – Identify excluded episodes	Exclusion Death	Patient died in the hospital during the episode
6 – Identify excluded episodes	Exclusion Different Care Pathway	Risk factor / co-morbidity reference found
6 – Identify excluded episodes	Exclusion High Outlier	Episode exceed the high cost outlier threshold

Design dimension	Output field name	Report template name
6 – Identify excluded episodes	Exclusion Overlapping Episode	Episode has specific overlaps with other episodes
	Quality metrics	
8 – Determine quality metrics performance	Quality Metric 1 Indicator	Follow-up care within the post-trigger window
8 – Determine quality metrics performance	Quality Metric 2 Indicator	Admission within the post-trigger window
8 – Determine quality metrics performance	Quality Metric 3 Indicator	Major morbidity
8 – Determine quality metrics performance	Quality Metric 4 Indicator	Mortality
8 – Determine quality metrics performance	Quality Metric 5 Indicator	Difference in Average MED/Day

3.4.2 PAP output table

The PAP output table contains information about each PAP and their episodes. The table below lists the required output fields.

Table – PAP Output Table

Design dimension	Output field name	Report Template Name
	PAP identification	
2 – Attribute episodes to providers	PAP ID	Provider Code

Design dimension	Output field name	Report Template Name
2 – Attribute episodes to providers	PAP Name	
2 – Attribute episodes to providers	National Provider Identifier	National Provider Identifier
2 – Attribute episodes to providers	Specialty	
2 – Attribute episodes to providers	Provider Billing ZIP Code	
	PAP spend	
5 – Calculate non-risk-adjusted spend	Average Non-risk-adjusted PAP Spend	Average episode cost (non-adjusted)
5 – Calculate non-risk-adjusted spend	By Inpatient facility	Inpatient facility
5 – Calculate non-risk-adjusted spend	By Emergency department or observation	Emergency department or observation
5 – Calculate non-risk-adjusted spend	By Outpatient facility	Outpatient facility
5 – Calculate non-risk-adjusted spend	By Inpatient professional	Inpatient professional
5 – Calculate non-risk-adjusted spend	By Outpatient laboratory	Outpatient laboratory

Design dimension	Output field name	Report Template Name
5 – Calculate non-risk-adjusted spend	By Outpatient radiology	Outpatient radiology
5 – Calculate non-risk-adjusted spend	By Outpatient professional	Outpatient professional
5 – Calculate non-risk-adjusted spend	By Other	Other
5 – Calculate non-risk-adjusted spend	By Pharmacy	Pharmacy
5 – Calculate non-risk-adjusted spend	By Pre-trigger window	
5 – Calculate non-risk-adjusted spend	By Trigger window	
5 – Calculate non-risk-adjusted spend	By Post-trigger window	
5 – Calculate non-risk-adjusted spend	Total Non-risk-adjusted PAP Spend	Total cost across episodes
6 – Perform risk adjustment	Average Risk-adjusted PAP Spend	Average episode cost (risk-adjusted)
6 – Perform risk adjustment	By Inpatient facility	Inpatient facility
6 – Perform risk adjustment	By Emergency department or observation	Emergency department or observation
6 – Perform risk adjustment	By Outpatient facility	Outpatient facility
6 – Perform risk adjustment	By Inpatient professional	Inpatient professional

Design dimension	Output field name	Report Template Name
6 – Perform risk adjustment	By Outpatient laboratory	Outpatient laboratory
6 – Perform risk adjustment	By Outpatient radiology	Outpatient radiology
6 – Perform risk adjustment	By Outpatient professional	Outpatient professional
6 – Perform risk adjustment	By Other	Other
6 – Perform risk adjustment	By Pharmacy	Pharmacy
6 – Perform risk adjustment	Total Risk-adjusted PAP Spend	N/A
	Quality metrics performance	
8 – Determine quality metrics performance	PAP Quality Metric 1 Indicator	Follow-up care within the post-trigger window
8 – Determine quality metrics performance	PAP Quality Metric 2 Indicator	Admission within the post-trigger window
8 – Determine quality metrics performance	PAP Quality Metric 3 Indicator	Major morbidity
8 – Determine quality metrics performance	PAP Quality Metric 4 Indicator	Mortality
8 – Determine quality metrics performance	PAP Quality Metric 5 Indicator	Difference in Average MED/Day
	Episode counts	

Design dimension	Output field name	Report Template Name
9 – Calculate gain/risk sharing amounts	Count Of Total Episodes Per PAP	Total episodes
9 – Calculate gain/risk sharing amounts	Count Of Valid Episodes Per PAP	Total episodes included
9 – Calculate gain/risk sharing amounts	Same breakdown as for Average Non-risk-adjusted PAP Spend	

4 Episode agnostic algorithm logic

The algorithm logic forms the basis to code an episode algorithm. Section 4 contains general elements of the episode algorithm that must be used in conjunction with section 5, as section 5 contains the specific details for the episode. Sections 4 and 5 used in conjunction explain the intent of the episode design at a level of granularity that will allow an IT implementation team to create an algorithm that matches the episode design.

4.1 IDENTIFY EPISODE TRIGGERS

The first design dimension of building an episode is to identify triggers.

Episode output fields created: *Facility Trigger Claim ID, Facility Trigger Claim Type, Professional Trigger Claim ID, Member ID, Member Age, Member Name, Associated Facility Claim ID, Associated Facility Claim Type*

As specified in section 5.1, the episode may be triggered by either a professional claim and an associated facility claim, or by a facility claim. The first step in identifying episode triggers is to identify potential triggers, then identifying which of the potential triggers become episode triggers based on clean period logic, and lastly to set the output fields.

4.1.1 Identify potential triggers

- **For episodes triggered by a professional claim and an associated facility claim:**

  A potential trigger is defined as a professional trigger claim and an associated facility (inpatient and/or outpatient dependent on the episode) claim for the same patient as identified by the same *Member ID*. Professional, inpatient, and outpatient claims are identified based on the input field *Claim Type* as defined in section 6.

  The professional trigger claim for the potential trigger must have all of the following conditions:

  – The claim has a procedure code for an episode-specific procedure in the input field *Detail Procedure Code* on one or more of its claim detail lines. The configuration file lists the episode-specific procedure codes under "Trigger Procedure".

  – At least one of the claim detail lines with an episode-specific procedure code does not contain a modifier for assistant surgeon, nurse, or discontinued procedure in

one of the input fields *All Modifiers*. The configuration file lists the modifiers under "Assistant Surgeon", "Nurse", and "Discontinued".

An associated inpatient claim must meet all of the following conditions:

- The claim has a *Header From Date Of Service* on or before the *Detail From Date Of Service* of the professional trigger claim detail line. It also has a *Header To Date Of Service* on or after the *Detail From Date of Service* of the professional trigger claim detail line.
- The claim has a confirmatory episode-specific diagnosis in the input field *Header Diagnosis Code*. The configuration file lists these diagnosis codes under "Associated Facility".

An associated outpatient claim must meet all of the following conditions:

- The claim's *Header From Date of Service* is within two days (i.e., as early as two days before or as late as two days after, inclusive) of the *Detail From Date of Service* of the professional trigger claim detail line.
- The claim has a confirmatory episode-specific diagnosis in the input field *Header Diagnosis Code*. The configuration file lists these diagnosis codes under "Associated Facility".

To address cases where a professional trigger claim detail line is associated with two or more inpatient or outpatient claims, the following hierarchy is used such that each professional trigger claim detail line is unambiguously associated with one inpatient or outpatient claim. Only the inpatient or outpatient claim that has the highest priority is associated with the potential trigger. The inpatient or outpatient claims that are lower in the hierarchy are treated like any other claims during a potential trigger, not like an associated inpatient or outpatient claim.

- An associated inpatient claim and one of the episode-specific ICD-9 or ICD-10 Px procedure codes that are listed in the configuration file under "Trigger Procedure" in the input field *Header Surgical Procedure Code* has highest priority.
- An associated inpatient claim without an episode-specific procedure code has second priority.
- An associated outpatient claim and one of the episode-specific CPT procedure codes that are listed in the configuration file under "Trigger Procedure" in the input field *Detail Procedure Code* of one of its claim detail lines has third priority.
- An associated outpatient claim without an episode-specific procedure code has fourth priority.

Throughout the hierarchy the following rules apply:

- At each step of the hierarchy, if two or more associated inpatient claims meet the required criteria, the inpatient claim with the earliest *Header From Date Of Service* is chosen. If two or more associated inpatient claims meet the required criteria and have the same *Header From Date Of Service*, the inpatient claim belonging to the hospitalization with the latest *Header To Date Of Service* is chosen. If the *Header To Date Of Service* is the same, the inpatient claim with the lower *Internal Control Number* is chosen.
- At each step of the hierarchy, if two or more associated outpatient claims meet the required criteria, the outpatient claim with the earliest minimum *Header From Date Of Service* is chosen. If two or more associated outpatient claims meet the required criteria and have the same minimum *Header From Date Of Service*, the claim with the greater duration is chosen. See section 6 for the definition of duration. If the duration is the same, the outpatient claim with the lower *Internal Control Number* is chosen.

The start date of a potential trigger is the earlier of the *Detail From Date Of Service* of the professional trigger claim detail line or the *Header From Date Of Service/Detail From Date Of Service* of the associated inpatient/outpatient claim. If the professional trigger claim detail line is associated with an inpatient claim, use the *Header From Date of Service*. If the professional trigger claim detail line is associated with an outpatient claim, use the *Detail From Date of Service*. The end date of a potential trigger is the later of the *Detail To Date Of Service* of the professional trigger claim detail line or the *Header To Date Of Service/Detail To Date of Service* of the associated inpatient/outpatient claim. If the professional trigger claim detail line is associated with an inpatient claim, use the *Header To Date of Service.* If the professional trigger claim detail line is associated with an outpatient claim, use the *Detail To Date of Service*.

A specific rule applies for potential triggers where the associated inpatient claim is part of a hospitalization consisting of two or more inpatient claims. See section 6 for the definition of hospitalization. If an associated inpatient claim is part of a hospitalization consisting of two or more inpatient claims, the potential trigger starts on the earlier of the *Detail From Date Of Service* of the professional trigger claim detail line or the *Header From Date Of Service* of the hospitalization that the associated inpatient claim is a part of. The potential trigger ends on the later of the *Detail To Date Of Service* of the professional trigger claim detail line or the *Header To Date Of Service* of the hospitalization of which the associated inpatient claim is a part.

- **For episodes triggered by a facility claim:**

  A potential trigger is defined as a facility trigger claim. A facility trigger claim can be either an inpatient claim or an outpatient claim that meets the conditions below. Inpatient and outpatient claims are identified based on the input field *Claim Type* as defined in section 6.

  The facility trigger claim must meet one of the following conditions:

  – The claim has, in the primary diagnosis field, an episode-specific trigger diagnosis code in the input field *Header Diagnosis Code*. The configuration file lists the episode-specific trigger diagnosis codes under "Trigger Diagnosis".

  – The claim has an episode-specific contingent trigger diagnosis code in the primary diagnosis field, as well as an episode-specific trigger diagnosis code in any of the non-primary diagnosis fields. The configuration file lists the contingent trigger diagnosis codes under "Contingent Trigger Diagnosis" and the trigger diagnosis codes under "Trigger Diagnosis".

  In addition, an outpatient claim must also meet the following condition to be a facility trigger claim:

  – The claim has an episode-specific trigger revenue code in the input field *Revenue Code*. The configuration file lists the trigger revenue codes under "Trigger Revenue".

  The start date of a potential trigger is the *Header From Date Of Service* of the facility trigger claim (if the trigger claim is an inpatient claim) or the earliest *Detail From Date Of Service* of the facility trigger detail lines (if the trigger claim is an outpatient claim). The end date of a potential trigger is the *Header To Date Of Service* of the facility trigger claim (if the trigger claim is an inpatient claim) or the latest *Detail To Date Of Service* of the facility trigger detail lines (if the trigger claim is an outpatient claim).

  A specific rule applies for potential triggers where the inpatient claim is part of a hospitalization consisting of two or more inpatient claims. See section 6 for the definition of hospitalization. If an inpatient claim is part of a hospitalization consisting of two or more inpatient claims, the potential trigger starts on the *Header From Date Of Service* of the hospitalization of which the trigger inpatient claim is a part. The potential trigger ends on the *Header To Date Of Service* of the hospitalization of which the inpatient trigger claim is a part.

4.1.2 Identify episode triggers based on clean period

For a potential trigger (potential professional trigger claim or potential facility trigger claim) to become an episode trigger, its start date cannot fall into the clean period of another potential trigger for the same patient. A chronological approach is taken, and the first potential trigger of a given patient is identified as the earliest (i.e., the furthest in the past) episode trigger. The clean period starts the day after the potential trigger end date and extends for the entirety of the post trigger window plus the number of days equal to the maximum time window allowed for the pre-trigger window (i.e. if fixed, the fixed length, if flexible, the maximum possible number of days). For example:

- If an episode has a flexible pre-trigger window that may be as long as 90 days, and a post-trigger window of 30 days, the clean period for this episode will be 120 days.
- However, if an episode has a fixed pre-trigger window of 30 days, and a post-trigger window of 30 days, the clean period for this episode will be 60 days.

The chronological process continues, and the next potential trigger for that patient that falls after the clean period (i.e., the furthest in the past but after the clean period) constitutes the second trigger.

This process of setting episode windows continues for each patient until the last episode window that ends during the input data date range is defined. The lengths of the pre-trigger and post-trigger windows are listed as parameters in the configuration file under "03 – Determine The Episode Duration".

If two or more potential triggers of the same patient overlap, i.e., the start date of one potential trigger falls between the start date and the end date (inclusive) of one or more other potential triggers of the same patient, then only one of the overlapping potential triggers is chosen as an episode trigger. The following hierarchy is applied to identify the one potential trigger out of two or more overlapping potential triggers that is assigned as episode trigger:

- **For episodes triggered by a professional claim and an associated facility claim:**
  - The potential trigger with the earliest start date has highest priority.
  - If there is a tie, the potential trigger with the latest end date is selected.
  - If there is still a tie, the potential trigger with the earliest *Detail From Date Of Service* for the professional trigger claim detail line with the episode-specific procedure is selected.

- If there is still a tie, the potential trigger with the lowest *Internal Control Number* on the professional trigger claim with the episode-specific procedure is selected.

- **For episodes triggered by a facility claim:**
  - A potential trigger with an inpatient facility trigger claim has highest priority and takes precedence over an outpatient facility trigger claim.
  - If two or more potential triggers with inpatient facility trigger claims overlap, the potential trigger with the earliest start date has highest priority. If there is a tie, the potential trigger with the latest end date is selected. If there is still a tie, the potential trigger with the lowest *Internal Control Number* on the inpatient trigger claim is chosen.
  - If two or more potential triggers with outpatient facility trigger claims overlap, the potential trigger with the earliest start date has highest priority. If there is a tie, the potential trigger with the latest end date is selected. If there is still a tie, the potential trigger with the lowest *Internal Control Number* on the outpatient trigger claim is chosen.

Apply clean period logic after the associated facility is assigned but before any episode-specific logic regarding the associated facility. For example, for the percutaneous coronary intervention (PCI) episodes, apply clean period logic before identifying an episode as acute or non-acute. This means that acute and non-acute potential triggers can disqualify each other as part of the clean period logic. See section 2.3.1 for guidance on the clean period.

4.1.3 Setting output fields

- **For episodes triggered by a professional claim and an associated facility claim:**

  The output field *Professional Trigger Claim ID* is set to the input field *Internal Control Number* of the professional claim that identifies the episode trigger. The output field *Associated Facility Claim ID* is the input field *Internal Control Number* of the associated facility claim that identifies the episode trigger. The output field *Associated Facility Claim Type* is the input field *Claim Type*, as defined in section 6, of that associated facility claim.

- **For episodes triggered by a facility claim:**

  The output field *Facility Trigger Claim ID* is set to the input field *Internal Control Number* of the episode trigger. The output field *Facility Trigger Claim Type* is the input field *Claim Type*, as defined in section 6, of the episode trigger.

For both episodes triggered by either a professional claim and an associated facility claim or a facility claim, the output field *Member ID* is set to the input field *Member ID* of the episode trigger. The output field *Member Name* is set to the input field *Member Name* from the Member Extract. The output field *Member Age* is set using the definition for Member Age provided in section 6.

Not all output fields are created for all episodes, e.g., the output field *Associated Facility Claim* is not set for episodes triggered by a facility claim.

4.2 ATTRIBUTE EPISODES TO PROVIDERS

The second design dimension in building an episode is to attribute each episode to a Principal Accountable Provider (also referred to as PAP or Quarterback).

Episode output field created: *PAP ID, PAP Name, Rendering Provider ID, Rendering Provider Name*

PAP output fields created: *PAP ID, PAP Name*

As specified in section 5.2, the PAP may be a clinician or a facility:

- **Clinician PAP:** If the PAP is the clinician who performed the procedure, the output field *PAP ID* is set using the input field *Contracting Entity* of the Provider Extract associated to the *Billing Provider ID* on the *Trigger Professional Claim ID*.
- **Facility PAP:** If the PAP is the facility where the procedure was performed, the output field *PAP ID* is set using the input field *Contracting Entity* of the Provider Extract associated to the *Billing Provider ID* on the *Trigger Facility Claim ID*.

The output field *Rendering Provider ID* is set differently depending on whether there is a clinician or facility PAP. If the PAP is a facility, it also differs based on being outpatient or inpatient.

- **Clinician PAP:** If the PAP is a clinician, the output field *Rendering Provider ID* is set using the input field *Detail Rendering Provider ID* of the professional trigger claim detail line that is used to set the *Trigger Professional Claim ID*. The output field *Rendering Provider Name* is added from the Provider Extract using the input field *Provider Name.* The output field *PAP Name* is added from the Provider Extract using the input field *Contracting Entity Name.*
- **Outpatient Facility PAP:** If the PAP is an outpatient facility, the output field *Rendering Provider ID* is set using the input field *Detail Rendering Provider ID* of the facility trigger

claim that is used to set the *Trigger Facility Claim ID*. The output field *Rendering Provider Name* is added from the Provider Extract using the input field *Provider Name*. The output field *PAP Name* is added from the Provider Extract using the input field *Contracting Entity Name*.

- **Inpatient Facility PAP:** If the PAP is an inpatient facility, the output field *Rending Provider ID* is set using the input field *Attending Provider NPI* of the facility trigger claim that is used to set the *Trigger Facility Claim ID*. The output field *Rendering Provider Name* is added from the Provider Extract using the input field *Provider Name*. The output field *PAP Name* is added from the Provider Extract using the input field *Contracting Entity Name.*

4.3 DETERMINE THE EPISODE DURATION

The third design dimension of building an episode is to define the duration of the episode.

Episode output fields created: *Pre-Trigger Window Start Date, Pre-Trigger Window End Date, Trigger Window Start Date*, *Trigger Window End Date, Post-Trigger Window Start Date, Post-Trigger Window End Date, Episode Start Date, Episode End Date*

The following time windows are of relevance in determining the episode duration:

- **Pre-trigger window:** As specified in section 5.3, the pre-trigger window may be flexible or fixed:
  - **Flexible pre-trigger window:** For episodes with a flexible pre-trigger window, the duration of the pre-trigger window is dependent on when the patient had his/her first interaction with the PAP within a specified number of days (x days) prior to the trigger.
    - If there are no professional claims with a *Header From Date of Service* between the x^{th} day prior (inclusive) and one (1) day before the *Trigger Window Start Date,* where the input field *Contracting Entity* of the associated *Billing Provider ID* on the claim is the same as the episode output field *PAP ID*, then the *Pre-Trigger Window Start Date* is left blank and the *Pre-Trigger Window End Date* is left blank, hence there is no pre-trigger window. See sections 4.2 and 5.2 for determining the output field *PAP ID*.
    - If there is only one professional claim with a *Header From Date of Service* between the x^{th} day prior (inclusive) and one (1) day before the *Trigger Window Start Date,* where the input field *Contracting Entity* associated to the *Billing Provider ID* on the

claim is the same as the episode output field *PAP ID,* then the *Pre-Trigger Window Start Date* is set to the *Header From Date of Service* of that claim.

- If there are two or more professional claims with a *Header From Date of Service* between the x^{th} day prior (inclusive) and one (1) day before the *Trigger Window Start Date,* where the input field *Contracting Entity* associated to the *Billing Provider ID* on the claim is the same as the episode output field *PAP ID,* then the *Pre-Trigger Window Start Date* is set to the earliest *Header From Date of Service* of those claims.

The maximum length of the flexible pre-trigger window (x days) is given as a parameter in the configuration file under "03 – Determine The Episode Duration"

– **Fixed pre-trigger window:** For episodes with a fixed pre-trigger window, the duration of the pre-trigger window is fixed at a specified number of days prior (inclusive) to one (1) day before the *Trigger Window Start Date.* The specific number of days is given as a parameter in the configuration file under "03 – Determine The Episode Duration". The output field *Pre-Trigger Window End Date* is set to one (1) day before the *Trigger Window Start Date*. The *Pre-Trigger Window Start Date* is also the *Episode Start Date.*

- **Trigger window**: The output fields *Trigger Window Start Date* and *Trigger Window End Date* are set using the episode trigger start and end dates, which are defined in section 4.1.
- **Post-trigger window:** The output field *Post-Trigger Window Start Date* is set to the day after the *Trigger Window End Date*. The output field *Post-trigger Window End Date* is set to the x^{th} day after the *Trigger Window End Date* (for a post-trigger window of x days duration). The value for the post-trigger window duration (x days) is provided as a parameter in the configuration file under "03 – Determine The Episode Duration". The duration for the post-trigger window is provided relative to the *Trigger Window End Date*. The *Post-trigger Window End Date* is also the *Episode End Date.*

  If a hospitalization is ongoing on the x^{th} day of the post-trigger window, the *Post-Trigger Window End Date* is set to the *Header End Date* of the hospitalization. A hospitalization is ongoing on the x^{th} day of the post-trigger window if the hospitalization has a *Header Start Date* during the first x days of the post-trigger window and a *Header End Date* beyond the first x days of the post-trigger window. If more than one hospitalization is ongoing on the x^{th} day of the post-trigger window, the latest *Header End Date* present on one of the hospitalizations sets the *Post-trigger Window End Date*. The extension of

the post-trigger window due to a hospitalization may not lead to further extensions, i.e., if the post-trigger window is set based on the *Header To Date Of Service* of a hospitalization and a different hospitalization starts during the extension of the post-trigger window and ends beyond it, the episode is not extended a second time. See section 6 for the definition of hospitalization.

The combined duration of the pre-trigger window, trigger window, and post-trigger window is the episode window. All time windows are inclusive of their first and last date. See section 6 for the definition of duration.

To determine which claims and claim detail lines occur during an episode the following assignment rules are used. In addition, specific rules apply to assign claims and claim detail lines to windows during the episode (the pre-trigger window, trigger window, post-trigger window, and hospitalizations):

- **Assignment to a window before the episode:**
  - Hospitalizations, all inpatient claims within them, and all claim detail lines of the inpatient claims are assigned to a window before the episode (e.g., 365 days to one day before the Episode Start Date, 90 days to one day before the Episode Start Date) if the *Header From Date Of Service* of the hospitalization occurs during the specified time window before the Episode Start Date.
  - Pharmacy claims and all their claim detail lines are assigned to a window before the episode if the *Header From Date Of Service* occurs during the specified time window before the Episode Start Date.
  - For the purpose of counting unique claims, outpatient and professional claims are assigned to the window before the episode if all their claim detail lines are assigned to the window before the episode. For the purpose of calculating spend, outpatient and professional claim detail lines are assigned to the window before the episode if the *Detail From Date Of Service* occurs during the specified time window before the Episode Start Date.
- **Assignment to the episode window:**
  - Hospitalizations and all inpatient claims within them are assigned to the episode window if the *Header From Date Of Service* occurs during the episode window.
  - Pharmacy claims are assigned to the episode window if both the *Header From Date Of Service* and the *Header To Date Of Service* occur during the episode window.

- For the purpose of counting unique claims, outpatient, professional, and long-term care claims are assigned to the episode window if at least one of their claim detail lines is assigned to the episode window. For the purpose of calculating spend, outpatient, professional, and long-term care claim detail lines are assigned to the episode window if both the *Detail From Date Of Service* and the *Detail To Date Of Service* occur during the episode window.

- **Assignment to the pre-trigger window**:
  - Hospitalizations and all inpatient claims within them are assigned to the pre-trigger window if the hospitalization is assigned to the episode window and also has a *Header From Date Of Service* during the pre-trigger window.
  - Pharmacy claims are assigned to the pre-trigger window if they are assigned to the episode window and also have a *Header From Date Of Servic*e during the pre-trigger window.
  - For the purpose of counting unique claims, outpatient, professional, and long-term care claims are assigned to the pre-trigger window if at least one of their claim detail lines is assigned to the pre-trigger window. For the purpose of calculating spend, outpatient, professional, and long-term claim detail lines are assigned to the pre-trigger window if they are assigned to the episode window and also have a *Detail From Date Of Service* during the pre-trigger window.
- **Assignment to the trigger window**:
  - Hospitalizations and all inpatient claims within them are assigned to the trigger window if the *Header From Date Of Service* of the hospitalization occurs during the trigger window.
  - Pharmacy claims are assigned to the trigger window if both the *Header From Date Of Service* and the *Header To Date Of Service* occur during the trigger window.
  - For the purpose of counting unique claims, outpatient and professional, and long-term care claims are assigned to the trigger window if all their claim detail lines are assigned to the trigger window. For the purpose of calculating spend, outpatient, professional, and long-term care claim detail lines are assigned to the trigger window if both the *Detail From Date Of Service* and the *Detail To Date Of Service* occur during the trigger window.
- **Assignment to the post-trigger window**:

- Hospitalizations and all inpatient claims are assigned to the post-trigger window if the hospitalization is assigned to the episode window and also has a *Header From Date Of Service* during the post-trigger window.
- Pharmacy claims are assigned to the post-trigger window if they are assigned to the episode window and also have a *Header To Date of Service* during the post-trigger window.
- For the purpose of counting unique claims, outpatient, professional, and long-term care claims are assigned to the post-trigger window if at least one of their claim detail lines is assigned to the post-trigger window. For the purpose of calculating spend, Outpatient, professional, and long-term care claim detail lines are assigned to the post-trigger window if they are assigned to the episode window and also have a *Detail To Date of Service* during the post-trigger window.

- **Assignment to hospitalizations**:
  - Outpatient and professional claims are assigned to a hospitalization if they are not assigned to the trigger window and all their claim detail lines are assigned to the hospitalization. Outpatient and professional claim detail lines are assigned to a hospitalization if the *Detail From Date Of Service* and the *Detail To Date Of Service* occur during the hospitalization.

4.4 IDENTIFY CLAIMS INCLUDED IN EPISODE SPEND

The fourth design dimension of building an episode is to identify which claims and claim detail lines are included in the calculation of episode spend. For short, such claims or claim detail lines are referred to as included claims or included claim detail lines.

Episode output fields created: *Count of Included Claims*

Different rules for the inclusion of claims and claim detail lines apply to claims and claim detail lines assigned to different types of services and windows. The breakdown for how to count included claims and claim detail lines by care category is defined in section 6. How different types of services are defined is detailed below. Which type of services are included in the episode, and in which window, are episode specific and detailed in section 5.4. See section 4.3 for how claim and claim detail lines are assigned to different windows during the episode.

The following rules for types of service apply:

- **Specific care after discharge:** Hospitalizations, outpatient, professional, and long-term care claims with ICD-9 or ICD-10 diagnosis codes for specific care after discharge in the input field *Header Diagnosis Code*. See the configuration file under "Care After Discharge" for the list of codes. The code needs to be in the primary diagnosis code field. A special rule applies whenever a hospitalization is included. All professional and outpatient claims assigned to an included hospitalization are included. See section 4.3 for how professional and outpatient claims are assigned to hospitalizations.
- **Specific anesthesia:** Outpatient and professional claim detail lines with CPT/HCPCS procedure codes for specific anesthesia in the input field *Detail Procedure Code*. See the configuration file under "Anesthesia" for the list of codes.
- **Specific evaluation and management visits:** Outpatient and professional claim detail lines with CPT/HCPCS procedure codes for specific E&M visits in the input field *Detail Procedure Code*. See the configuration file under "E&M Visits" for the list of codes. If only office visits to the PAP are included, the input field *Contracting Entity* associated to the *Billing Provider ID* of the claim for the office visit must match the *PAP ID* for the episode. To determine if this is the case see section 5.4. If only office visits with a related diagnosis code are included, there must be an episode-specific relevant ICD-9 diagnosis code in the primary diagnosis code field. See the configuration file under "Relevant Diagnosis" for the list of codes. To determine if this is the case see section 5.4.
- **Specific imaging and testing:** Inpatient claims, and outpatient and professional claim detail lines with ICD-9/CPT/HCPCS procedure codes for specific imaging and testing in the input field *Header Surgical Procedure* or *Detail Procedure Code*. See the configuration file under "Imaging and Testing" for the list of codes.
- **Specific medications:** Pharmacy claims with HIC3 codes for specific medications. See the configuration file under "Medications" for the list of codes.
    - **Note:** - If a pharmacy claim contains a medication that is a preferred brand or preferred generic as identified on the TennCare Preferred Drug List (PDL), the included spend of that medication for episodes will be set at $10. This adjustment will be made at the national drug code (NDC) level. If a pharmacy claim contains a medication that is not listed as a preferred brand or preferred generic on the PDL, there will be no adjustment to the included spend of that medication.

- **Specific pathology:** Outpatient and professional claim detail lines with CPT/HCPCS procedure codes for specific pathology in the input field *Detail Procedure Code*. See the configuration file under "Pathology" for the list of codes.
- **Specific surgical and medical procedures:** Inpatient claims, and outpatient and professional claim detail lines with ICD-9 or ICD-10/CPT/HCPCS procedure codes for specific procedures in the input field *Header Surgical Procedure* or *Detail Procedure Code*. See the configuration file under "Surgical and Medical Procedures" for the list of codes.

The output field *Count of Included Claims* is the total number of claims included in the episode. See section 6 for details on counts of claims by care category.

4.5 CALCULATE NON-RISK-ADJUSTED EPISODE SPEND

The fifth design dimension of building an episode is to calculate the non-risk-adjusted spend for each episode.

Episode output fields created: *Non-risk-adjusted Episode Spend*

PAP output fields created: *Average Non-risk-adjusted PAP Spend*, *Average Non-risk-adjusted PAP Spend by <Care Category X>, Average Non-risk-adjusted PAP Spend by <Window X>, Total Non-risk-adjusted PAP Spend*

The *Non-risk-adjusted Episode Spend* is defined as the sum of:

- The *Detail Paid Amount* for included claim detail lines for detail-paid claim types (e.g., outpatient and professional). If a claim detail line is included for two or more reasons (e.g., due to an included procedure), its *Detail Paid Amount* counts only once towards the *Non-risk-adjusted Episode Spend*.
- The *Header Paid Amount* for included claims for header-paid claim types (e.g., inpatient and pharmacy).
- The *Patient Cost Share* for included claims.

The output field *Non-risk-adjusted Episode Spend* is calculated overall, by window during the episode, and by reporting care category. See section 6 for the definition of the reporting care categories.

The fields *Average Non-risk-adjusted PAP Spend* and *Total Non-risk-adjusted PAP Spend* are added to the PAP output table. *Average Non-risk-adjusted PAP Spend* is calculated as the

average of the *Non-risk-adjusted Episode Spend* across valid episodes for a given *PAP ID*. *Total Non-risk-adjusted PAP Spend* is calculated as the sum of the *Non-risk-adjusted Episode Spend* across valid episodes for a given PAP. The output field *Average Non-risk-adjusted PAP Spend* is calculated overall and by reporting care category. See sections 4.2 and 5.2 for the identification of *PAP ID*s and section 4.6 and 5.6 for the definition of valid episodes. See section 6 for the definition of the reporting care categories.

4.6 IDENTIFY EXCLUDED EPISODES

The sixth design dimension of building an episode is to identify episodes that are excluded from the episode-based payment model.

Episode output fields created: *Any Exclusion, Exclusion Inconsistent Enrollment, Exclusion Third-party Liability, Exclusion Dual Eligibility, Exclusion FQHC/RHC, Exclusion No PAP ID, Exclusion Incomplete Episode, Exclusion Different Care Pathway, Exclusion Age, Exclusion Death, Exclusion Left Against Medical Advice, Exclusion High Outlier*

Each *Exclusion <name of exclusion>* output field indicates whether an episode is excluded for a given reason and therefore invalid for the purpose of the episode based payment model. If an episode is excluded for more than one reason each exclusion is indicated. The output field *Any Exclusion* indicates whether an episode contains any exclusion. Episodes may be excluded for business reasons, clinical reasons, patient reasons, or because they are high outliers.

Each of the following exclusions are applied to all episodes, except for the incomplete episode and high outlier exclusions. The incomplete episode exclusion is applied to episodes with non-zero triggering professional claim amounts. The high outlier episode exclusion is applied to episodes not containing any other exclusion.

After all exclusions have been applied, a set of valid episodes remains.

Business exclusions

- **Inconsistent enrollment**: An episode is excluded if the patient was not continuously enrolled in the plan during the episode window. Enrollment is verified using the *Eligibility Start Date* and *Eligibility End Date* from the Member Extract.

  A patient is considered continuously enrolled if the patient's *Eligibility Start Date* for the plan falls before or on (≤) the *Episode Start Date* and the *Eligibility End Date* for the plan falls on or after (≥) the *Episode End Date*. The output field *Member ID* of the episode

table is linked to the input field *Member ID* of the Member Extract to identify the enrollment information for each patient.

A patient may have multiple entries for *Eligibility Start Date* and *Eligibility End Date* for full enrollment in the plan and some of the dates may be overlapping. In such cases, continuous, non-overlapping records of a patient's enrollment are created before confirming whether the patient was continuously enrolled during an episode. If a patient has an *Eligibility Start Date* without a corresponding *Eligibility End Date* for the plan, enrollment is considered to be ongoing through the last date of the input data.

If a patient was not continuously enrolled in the plan before or after the episode window, but was continuously enrolled during the episode window, the episode is not excluded.

- **Third-party liability**: An episode is excluded if an inpatient, outpatient, professional, pharmacy, or long-term care claim that is assigned to the episode window is associated with a third-party liability amount. A claim is considered to be associated with a third-party liability amount if either the input field *Header TPL Amount* or any of the input fields *Detail TPL Amount* have a value greater than (>) zero. The claim with a positive TPL amount may or may not be included in the calculation of episode spend.

  If a patient has a claim associated with a third-party liability amount before or after the episode window, but not during the episode window, the episode is not excluded.

- **Dual eligibility**: An episode is excluded if the patient had dual coverage by Medicare and Medicaid during the episode window.

  If a patient had dual coverage before or after the episode window, but not during the episode window, the episode is not excluded.

- **Federally Qualified Health Center/Rural Health Clinic:**
  - **Exclude FQHCs and RHCs:** Episodes for which the quarterback is an FQHC or RHC are excluded. If the quarterback is included in the list of known FQHCs and RHCs, either freestanding or part of a larger group or health system, their episodes will be excluded.

- **No PAP ID:** An episode is excluded if the *PAP ID* cannot be identified.

- **Incomplete episodes**: An episode is excluded if either:
  - The triggering professional claim spend is less than or equal to 0.

- It is within the bottom 2.5% of all episodes with the lowest *Non-risk-adjusted Episode Spend* (not the *Risk-adjusted Episode Spend*), without taking into account episodes where the triggering professional claim spend is less than or equal to (≤) 0. This threshold will be finalized at the same time as the gain and risk sharing thresholds.

- **Overlapping episodes:** Two valid episodes are considered overlapping if the following four conditions are satisfied:
  - The included spend of one valid episode shares at least one claim detail line with the included spend of another valid episode, AND
  - Both episodes have the same Tax Identification Number in the field *Billing Provider ID* assigned to the quarterback, AND
  - Both episodes have the same *Member ID* for the patient, AND
  - Both episodes are listed in ***Table – Episode Hierarchy by Exclusion Condition***

  This exclusion is applied after business, clinical, patient and high-cost outlier exclusions have been applied.

  If there is an overlap between two episodes, priority is assigned to the higher-ranking episode. Rank is provided in ***Table – Episode Hierarchy by Exclusion Condition*** where 1 is the highest rank. Episode with the lower rank is excluded; episode with the higher rank is not excluded.

  If there is an overlap between three or more episodes, priority is assigned to the highest-ranking episode. All other episodes that are lower in the hierarchy will be excluded.

Table – Episode Hierarchy by Exclusion Condition

Episodes in 2020 Performance period	Episode Type Shortname	Rank
Perinatal	PERI	1
HIV	HIV	2
Valve Repair and Replacement	VALVE	3
Coronary Artery Bypass Graft (CABG)	CABG	4
Spinal Fusion	SPIFU	5

Episodes in 2020 Performance period	Episode Type Shortname	Rank
Total Joint Replacement (Hip & Knee)	TJR	6
Femur/pelvic fracture	HIPFRA	7
Non-acute Percutaneous Coronary Intervention (PCI)	PCI-N	8
Acute Percutaneous Coronary Intervention (PCI)	PCI-A	9
Bariatric surgery	BARI	10
Spinal decompression (without spinal fusion)	DCOMP	11
Hysterectomy	HYST	12
Outpatient and Non-Acute Inpatient Cholecystectomy	CHOLE	13
Appendectomy	APP	14
Hernia Repair	HERNIA	15
Knee Arthroscopy	KNARTH	16
Tonsillectomy	TNSL	17
Breast biopsy	BCBX	18
Screening and Surveillance Colonoscopy	COLO	19
Upper GI Endoscopy (Esophagogastroduodenoscopy (EGD))	EGD	20
Colposcopy	COLPO	21
Oppositional Defiant Disorder (ODD)	ODD	22
Attention Deficit and Hyperactivity Disorder (ADHD)	ADHD	23
Gastrointestinal (GI) Obstruction	GIOBS	24
Pancreatitis	PANC	25

Episodes in 2020 Performance period	Episode Type Shortname	Rank
Congestive Heart Failure (CHF) Acute Exacerbation	CHF	26
Diabetes Acute Exacerbation	DIAB	27
Urinary Tract Infection (UTI) – Inpatient	UTI-I	28
Gastrointestinal Hemorrhage (GIH)	GIH	29
Chronic Obstructive Pulmonary Disease (COPD) Acute Exacerbation	COPD	30
Acute Seizure	SEIZE	31
Pneumonia (PNA)	PNA	32
Bronchiolitis	BRONC	33
Pediatric Pneumonia	PEDPNM	34
Asthma Acute Exacerbation	ASTH	35
Cystourethroscopy	CYSTO	36
Acute Kidney & Ureter Stones	STONES	37
Acute Gastroenteritis	GASTRO	38
Back / Neck pain	BNP	39
Syncope	SYNC	40
Shoulder non-operative injuries	SHOUSP	41
Knee non-operative injuries	KNEESP	42
Ankle non-operative injuries	AKLSP	43
Wrist non-operative injuries	WRISP	44
Skin and Soft Tissue Infection	SSTI	45
Otitis media	OTITIS	46

Episodes in 2020 Performance period	Episode Type Shortname	Rank
Urinary Tract Infection (UTI) – Outpatient	UTI-O	47
Respiratory infection	RI	48

Clinical exclusions

- **Different Care Pathway**: An episode is excluded if the patient has a medical code that indicates a different care pathway during a specified time window on any inpatient, outpatient, or professional claim in the input field *Header Diagnosis Code* (any field), *Header Surgical Procedure Code*, or *Detail Procedure Code*. The detailed list of codes and time windows is given in the configuration file under "Clinical – (*condition for exclusion*)".

  The claims and claim detail lines that are searched for different care pathways do not have to be included claims or included claim detail lines. For example, if a patient lacked continuous eligibility during the year before the episode or during the episode window, codes for different care pathways are checked in the data available.

Patient exclusions

- **Age**: An episode is excluded if the member age does not fall into the valid age range or if it is invalid. The valid age range is listed as parameters in the configuration file under "06 – Identify Excluded Episodes". See section 6 for how member age is defined.
- **Death**: An episode is excluded if the patient has a *Patient Discharge Status* of "Expired" on any inpatient or outpatient claim assigned to the episode window. The claim may be an included claim or not. The values of the *Patient Discharge Status* used to identify whether the patient expired are listed in the configuration file under "Patient – Death".
- **Left against medical advice**: An episode is excluded if the patient has a *Patient Discharge Status* of "Left Against Medical Advice or Discontinued Care" on any inpatient or outpatient claim during the episode window. The claim may be an included claim or not. The value of the *Patient Discharge Status* used to identify whether the patient left against medical advice is listed in the configuration file under "Patient – LAMA".

High-cost outliers

- An episode is excluded if the *Risk-adjusted Episode Spend* (not the *Non-risk-adjusted Episode Spend*) is 3 standard deviations above (>) the mean *Risk-adjusted Episode Spend* of all episodes not otherwise excluded. Because this exclusion uses the risk-adjusted episode spend, it is the only exclusion that takes place after the risk adjustment process.

A hierarchy is used to present the exclusions in the provider report. See section 6 for the hierarchy of exclusions.

4.7 PERFORM RISK ADJUSTMENT

The seventh design dimension of building an episode is to risk-adjust the *Non-risk-adjusted Episode Spend* for risk factors that may contribute to higher episode spend given the characteristics of a patient and are outside of the PAP's control.

Episode output fields created: *Risk Factor (risk factor number), Episode Risk Score, Risk-adjusted Episode Spend*

PAP output fields created: *Average Risk-adjusted PAP Spend*, *Average Risk-adjusted PAP Spend by <Care Category X>, Total Risk-adjusted PAP Spend*

Risk adjustment first requires identification of the risk factors that affect each episode. Once risk factors have been determined, each payer calculates the *Episode Risk Score* and the *Risk-adjusted Episode Spend*. Each *Risk Factor (risk factor number)* output field indicates whether an episode's spend is risk-adjusted for a given risk factor.

The PAP output field *Average Risk-adjusted PAP Spend* is calculated as the average of the Risk-adjusted Episode Spend across valid episodes for each *PAP ID*. The *Total Risk-adjusted PAP Spend* is calculated as the sum of the *Risk-adjusted Episode Spend* across valid episodes for each *PAP ID*.

4.8 DETERMINE QUALITY METRICS PERFORMANCE

The eighth design dimension of building an episode is the calculation of the quality metrics and the identification of *PAP ID*s who pass the quality metrics performance requirement. Quality metrics are calculated by each payer on an aggregated basis across all episodes with the same *PAP ID*. Denied claims should be used in the calculation of quality metrics.

Episode output fields created: *Quality Metric (quality metric number) Indicator*

PAP output fields created: *PAP Quality Metric (quality metric number) Performance, Gain Sharing Quality Metric Pass*

The number of *Quality Metric Indicator* episode output fields and *PAP Quality Metric Performance* output fields will match the total number of quality metrics for each episode.

For most quality metrics the following logic applies. If there are any exceptions these will be detailed in section 5.8. The *Quality Metric (n) Indicator* marks episodes that complied with quality metric (n). The *PAP ID Quality Metric (n) Performance* is expressed as a percentage for each PAP based on the following ratio:

- Numerator: Number of valid episodes of the *PAP ID* with *Quality Metric (n) Indicator*
- Denominator: Number of valid episodes of the *PAP ID*

Section 5.8 will provide detail on what the *Quality Metric (n) Indicators* are for this episode.

There are two types of quality metrics: those tied to gain sharing and those that are informational (i.e., not tied to gain sharing). These may be calculated including valid or total episodes of the *PAP ID*. These details are specified in section 5.8.

The output field *Gain Sharing Quality Metric Pass* is set based on the performance of the *PAP ID* on the quality metrics that are tied to gain sharing. The output field *Gain Sharing Quality Metric Pass* indicates if the percentage of valid episodes of the *PAP ID* that comply with quality metrics tied to gain sharing met the required thresholds for gain sharing. Setting thresholds for the quality metrics is beyond the scope of this DBR, hence thresholds will be set and provided separately.

Note: The Heart Valve Replacement or Repair (Valve) episode is an informational episode. This means that providers will not be subject to gain sharing or risk sharing payments for this episode. Providers with this episode will receive an episodes report that will allow them to track cost and quality performance for informational purposes.

4.9 CALCULATE GAIN/RISK SHARING AMOUNTS

The ninth and final design dimension of building an episode is to calculate the gain or risk sharing amount for each *PAP ID*. Gain and risk sharing are calculated by each payer on an aggregated basis across all of *PAP ID's* episodes covered by that payer.

PAP output fields created: *Count Of Total Episodes Per PAP, Count Of Valid Episodes Per PAP, Gain/Risk Sharing Amount*, *PAP Sharing Level*

Gain and risk sharing amounts are calculated based on the episodes of each *PAP ID* that ended during the reporting period. To calculate the gain or risk sharing amount paid to/by each *PAP ID* the following pieces of information are used:

- Commendable threshold, acceptable threshold, and gain sharing limit threshold. Setting these thresholds is beyond the scope of this DBR. Number of episodes of each *PAP ID*: The output field *Count Of Total Episodes Per PAP ID* is defined as the number of total episodes of each *PAP ID* during the reporting period. The output field *Count Of Valid Episodes Per PAP ID* is defined as the number of valid episodes of each *PAP ID* during the reporting period. *Count Of Valid Episodes Per PAP ID* is calculated overall and by reporting care category. Episodes are counted separately by each payer.
- Performance of each *PAP ID* on quality metrics tied to gain sharing: Only *PAP ID*s that pass the quality metrics tied to gain sharing are eligible for gain sharing. Setting thresholds for the quality metrics is beyond the scope of this DBR. See section 4.8 for the calculation of the output field *Gain Sharing Quality Metric Pass,* which indicates whether a *PAP ID* passes the quality metrics tied to gain sharing.
- Gain share proportion and risk share proportion*:* The gain share proportion is set at 50% and the risk share proportion is set at 50%.

Gain sharing payment: A PAP identified by *PAP ID* receives a gain sharing payment if two criteria are met: (1) it passes the quality metrics tied to gain sharing, and (2) the *Average Risk-adjusted PAP ID Spend* is below (<) the *Commendable Threshold*. Two cases exist:

- If the *Average Risk-adjusted PAP ID Spend* is below (<) the *Commendable Threshold* and at or above (≥) the *Gain Sharing Limit Threshold*, the *Gain/Risk Sharing Amount* is:

  Gain Sharing Amount =

  ((*Commendable Threshold – Average Risk-adjusted PAP ID Spend*) * *Count of Valid Episodes Per PAP ID * 50%*)

- If the *Average Risk-adjusted PAP ID Spend* is below (<) the *Commendable Threshold* and below (<) the *Gain Sharing Limit Threshold*, the *Gain/Risk Sharing Amount* is:

  Gain Sharing Amount =

((*Commendable Threshold – Gain Sharing Limit Threshold*) * *Count of Valid Episodes Per PAP ID * 50%*)

Risk sharing payment: A PAP identified by *PAP ID* owes a risk-sharing payment if its *Average Risk-adjusted PAP ID Spend* is at or above (≥) the *Acceptable Threshold*. The risk-sharing payment applies irrespective of the performance of the *PAP ID* on the quality metrics. The *Risk Sharing Amount* is calculated as:

Risk Sharing Amount =

((*Average Risk-adjusted PAP ID Spend – Acceptable Threshold*) * *Count of Valid Episodes Per PAP ID * 50%*)

To summarize the cost performance of each *PAP ID* in the episode-based payment model, the output field *PAP ID Sharing Level* is set to

- "1" if *Average Risk-adjusted PAP ID Spend* < *Gain Sharing Limit Threshold*
- "2" if *Average Risk-adjusted PAP ID Spend* < *Commendable Threshold* and also ≥ *Gain Sharing Limit Threshold*
- "3" if *Average Risk-adjusted PAP ID Spend* < *Acceptable Threshold* and also ≥ *Commendable Threshold*
- "4" if *Average Risk-adjusted PAP ID Spend* ≥ *Acceptable Threshold*

Note: The Heart Valve Replacement or Repair (Valve) episode is an informational episode. This means that providers will not be subject to gain sharing or risk sharing payments for this episode. Providers with this episode will receive an episodes report that will allow them to track cost and quality performance for informational purposes.

5 Heart valve replacement or repair episode detailed description

This section provides heart valve replacement or repair episode-specific details for building the heart valve replacement or repair episode, and must be used in conjunction with section 4, as section 4 contains general elements of the episode algorithm. Sections 4 and 5 used in conjunction explain the intent of the episode design at a level of granularity that will allow an IT implementation team to create an algorithm that matches the episode design.

5.1 IDENTIFY EPISODE TRIGGERS

The heart valve replacement or repair episode is triggered by a professional claim and an associated facility claim as described in section 4.1.

5.2 ATTRIBUTE EPISODES TO PROVIDERS

This episode has a facility PAP and follows the process described in section 4.2.

5.3 DETERMINE THE EPISODE DURATION

For this episode there are three windows:

- **Pre-trigger window:** This episode has no pre-trigger window.
- **Trigger window**: Refer to section 4.3 for guidance.
- **Post-trigger window**: Refer to section 4.3 for guidance.

5.4 IDENTIFY CLAIMS INCLUDED IN EPISODE SPEND

For this episode services are included as defined in section 4.4, with the following specifications:

Pre-trigger window

This episode has no pre-trigger window.

Trigger window

For this episode, claims and claim detail lines assigned to the trigger window are included if they are also assigned to one of the following types of services:

All services: All inpatient, outpatient, professional, and pharmacy claims and claim detail lines assigned to the trigger window are included.

Post-trigger window

For this episode, claims and claim detail lines assigned to the post-trigger window are included if they are also assigned to one of the following types of services:

- **Specific care after discharge:** Refer to section 4.4 for guidance.
- **Specific anesthesia:** Refer to section 4.4 for guidance.
- **Specific evaluation and management visits:** This includes only office visits with a related diagnosis code. Refer to section 4.4 for guidance.
- **Specific imaging and testing:** Refer to section 4.4 for guidance.
- **Specific medications:** Refer to section 4.4 for guidance.
- **Specific pathology:** Refer to section 4.4 for guidance.
- **Specific surgical and medical procedures:** Refer to section 4.4 for guidance.

5.5 CALCULATE NON-RISK-ADJUSTED EPISODE SPEND

This episode follows the process described in section 4.5.

5.6 IDENTIFY EXCLUDED EPISODES

This episode follows the process described in section 4.6, with three exceptions:

- An episode is excluded if it is identified as an ischemia-related admission. To be identified as an ischemia-related admission, both of the following must occur:
  - The patient has an acute myocardial infarction (AMI) on admission, as identified by an AMI diagnosis code, in any diagnosis field, in the input field *Header Diagnosis Code* on the admitting facility claim. See the configuration file under "Clinical - AMI" for the list of codes.

  - The patient receives the heart valve replacement or repair procedure on day one or day two of the triggering admission, as identified by the triggering professional claim containing the triggering heart valve replacement or repair CPT code within two days of the *Header From Date of Service* of the triggering professional claim. See sections 4.1 and 5.1 for details on triggering heart valve replacement or repair procedures. There must not be catheterization prior to the triggering admission. Catheterization is identified by an outpatient or professional claim detail line with a catheterization CPT code in the input field *Detail Procedure Code*. See the configuration file under "Clinical - Catheterization" for the list of codes.

- An episode is excluded if the patient has pre-existing endocarditis on admission. Pre-existing endocarditis is identified by an endocarditis diagnosis code in the input field *Header Diagnosis Code* on the triggering professional claim. The endocarditis diagnosis code needs to be in the primary diagnosis code field. See the configuration file under "Clinical - Endocarditis" for the list of codes.
- An episode is excluded if the patient has pre-existing pneumonia on admission. Pre-existing pneumonia is identified by a pneumonia diagnosis code in the input field *Header Diagnosis Code* on the triggering professional claim. The pneumonia diagnosis code needs to be in the primary diagnosis code field. See the configuration file under "Clinical - Pneumonia" for the list of codes.

5.7 PERFORM RISK ADJUSTMENT

This episode follows the process described in section 4.7.

5.8 DETERMINE QUALITY METRICS PERFORMANCE

This episode has five informational (i.e., not tied to gain sharing) quality metrics. The quality metrics listed below follow the logic described in section 4.8.

Due to the complexity of the opioid morphine equivalent dose (MED) quality metrics, we define the following terms in advance so they can be referenced in multiple metrics:

- Opioid Pharmacy Claim: Opioid Pharmacy Claims are identified through *Generic Sequence Numbers* (GSNs) as specified in a separate opioid file. Pharmacy claims with an opioid GSN are identified by the presence of a NDC in the input field *National Drug Code* (NDC). To identify specific medications, the NDCs must be cross-walked to GSNs

because NDCs change over time. An updated crosswalk including current and historical NDCs must be used for each reporting period.

- Pre-trigger Opioid Window: The period prior to the *Trigger Window Start Date* for which the average morphine equivalent dose (MED) per day metric is calculated. For the valve repair and replacement episode, the Pre-trigger Opioid Window is the days 1-60 prior to the *Trigger Window Start Date*. Opioid Pharmacy Claims in this time period are identified by having a *Header From Date Of Service* in the Pre-trigger Opioid Window, inclusive of the first and last days of the Pre-trigger Opioid Window. The duration and timing of the Pre-trigger Opioid Window is specific to a given episode and therefore may not be the same across episodes. Further, the Pre-trigger Opioid window may or may not align with the windows in section 2.3.3.

- Post-trigger Opioid Window: The period after the *Trigger Window End Date* for which the average MED/day metric is calculated. For the valve repair and replacement episode, the post-trigger Opioid Window is the days 31-60 after the *Trigger Window End Date.* Opioid Pharmacy Claims in this time period are identified by having a *Header From Date Of Service* in the Post-trigger Opioid Window, inclusive of first and last days of the Post-trigger Opioid Window. The duration and timing of the Post-trigger Opioid Window is specific to a given episode and therefore may not be the same across episodes. Further, the Post-trigger Opioid window may or may not align with the windows in section 2.3.3.

Informational quality metrics (i.e., included for information only):

- **Follow-up care within the post-trigger window (Quality Metric 1– higher rate indicative of better performance):** Percent of valid episodes where the patient receives relevant follow-up care within the post-trigger window.
  - Quality Metric 1 Indicator: The episode has either:
    - A professional claim detail line assigned to the post-trigger window with a CPT code in the input field Detail Procedure Code, as listed in the configuration file under "Follow-Up Visits" and there must be, in any diagnosis field, an episode-specific relevant ICD-9 or ICD-10 diagnosis code in the input field Header Diagnosis Code as listed in the configuration file under "Relevant Diagnosis", OR
    - An inpatient or outpatient claim assigned to the trigger window with a patient discharge status code in the input field Patient Discharge Status and not listed in

the configuration file under “Discharge To Home”, “Hospitalization – Interim Billing”, “Hospitalization – Reserved”, or “Hospitalization – Transfer”.

- **Admission within the post-trigger window (Quality Metric 2– lower rate indicative of better performance):** Percent of valid episodes with a relevant admission or relevant observation care within the post-trigger window.
  - Quality Metric 2 Indicator: The episode has either:
    - A relevant admission assigned to the post-trigger window, which is identified by an inpatient claim for an admission. Only admissions with a relevant diagnosis code are included, and there must be, in any diagnosis field, an episode-specific relevant ICD-9 or ICD-10 diagnosis code in the input field Header Diagnosis Code, as listed in the configuration file under “Care After Discharge”.
    - Relevant observation care assigned to the post-trigger window, which is identified by an outpatient claim with a specified revenue code in the input field Revenue Code, as listed in the configuration file under “Observation Indicator”. Only observation visits with a relevant diagnosis code are included, and there must be, in any diagnosis field, an episode-specific relevant ICD-9 or ICD-10 diagnosis code in the input field Header Diagnosis Code, as listed in the configuration file under “Care After Discharge”.

  See the configuration file under “Care After Discharge” for the list of codes. The complication code can be in any position (i.e. does not need to be in the primary diagnosis code field).

- **Major morbidity (Quality Metric 3– lower rate indicative of better performance):** Percent of valid episodes where the patient has a major morbidity within the episode window.
  - Quality Metric 3 Indicator: The episode has either:
    - An inpatient, outpatient, or professional claim assigned to the episode window that contains, in any diagnosis field, a diagnosis code in the input field Header Diagnosis Code, as listed in the configuration file under “Major Morbidity”.
    - An inpatient, outpatient, or professional claim assigned to the episode window that contains an ICD-9 or ICD-10/CPT/HCPCS procedure code in the input field Header Surgical Procedure or Detail Procedure Code, as listed in the configuration file under “Major Morbidity”.

- **Mortality (Quality Metric 4– lower rate indicative of better performance):** Percent of total episodes with patient mortality within the episode window.
  - Quality Metric 4 Indicator: The episode has an occurrence of patient mortality within the episode window. Patient mortality is identified by an episode being excluded if the patient has a Patient Discharge Status of "Expired" on any inpatient or outpatient claim assigned to the episode window. The claim need not be included in episode spend. The values of the *Patient Discharge Status* used to identify whether the patient expired are listed in the configuration file under "Mortality".
  - *Quality metric 4* is expressed as a percentage for each Quarterback based on the following ratio:
    - Numerator: Number of total (valid and invalid) episodes with patient mortality within the episode window
    - Denominator: Number of total (valid and invalid) episodes

- **Difference in Average MED/day (Quality Metric 5 – lower value indicative of better performance):**
  - *Quality Metric Indicator 5* marks episodes where the difference between the average MED/day for the Post-trigger Opioid Window (minuend) and the average MED/day for the Pre-trigger Opioid Window (subtrahend*).*
  - The minuend represents the average MED/day for the Post-trigger Opioid Window. The calculation is determined in a series of steps:
    - First, Opioid Pharmacy Claims in the Post-trigger Opioid Window are identified as previously stated in the Post-trigger Opioid Window definition.
    - Second, the total MED is calculated for each individual Opioid Pharmacy Claim identified in the previous step. For each claim, the total MED is calculated based on the formula below:

      [Total MED] = [*Strength*] x [*MED conversion factor*] x [*Quantity*].

The *Strength* and *MED conversion factor* are retrieved from an external opioid GSN conversion table (details to be provided by state on how to access table) while the input field *Quantity* is identified on the Opioid Pharmacy Claim.

- Third, the average MED/day for the Post-Trigger Opioid Window is calculated by summing the total MED for each Opioid Pharmacy Claim in the Post-trigger Opioid Window and dividing by the number of days in the Post-trigger Opioid Window.

– The subtrahend represents the average MED/day for the Pre-trigger Opioid Window. The calculation is determined using the same methodology as that for the minuend except the Pre-trigger Opioid Window is used in place of the Post-trigger Opioid Window.

– Once both values are calculated the subtrahend is subtracted from the minuend.

– *PAP Quality Metric 5* is expressed as the number of valid episodes where the average difference in MED/day for each Quarterback is less than or equal to zero:

- Numerator: Number of valid episodes with Quality Metric Indicator 5 of the *PAP ID*.

- Denominator: Number of valid episodes of the *PAP ID*.

5.9 CALCULATE GAIN/RISK SHARING AMOUNTS

This episode follows the process described in section 4.9.

6 Glossary

- **Claim types:** Claim type is defined as follows:

Claim type	Claim form	Type of Bill	HCPCS
Long-term care	UB-04	21x, 66x, 89x	
Home Health	UB-04	32x, 33x, 34x	
Inpatient	UB-04	11x, 12x, 18x, 41x, 86x	
Outpatient	UB-04	13x, 14x, 22x, 23x, 71x-77x, 79x, 83x-85x	
Transportation[1]	CMS-1500		A0000 - A0999, G0240, G0241, P9603, P9604, Q0186, Q3017, Q3020, R0070, R0075, R0076, S0209, S0215, S9381, S9975, S9992, T2001 - T2007, T2049
DME[2]	CMS-1500		A4206 - B9999, C1000 - C9899, E0100 - E8002, G0025, J7341 - J7344, K0001 - K0899, P9044, Q0132, Q0160, Q0161, Q0182 - Q0188, Q0480 - Q0506, Q2004, Q3000 - Q3012, Q4001 - Q4051, Q4080, Q4100 - Q4116, Q9945 - Q9954, Q9958 - Q9968, S0155, S0196, S1001 - S1040, S3600, S4989, S5002, S5010 - S5025, S5160 - S5165, S5560 - S5571, S8002, S8003, S8060, S8095 - S8490, S8999, S9001, S9007, S9035, S9055, S9434, S9435, T1500, T1999, T2028, T2029, T2039, T2101, T4521 - T5999, V5336
Professional[3]	CMS-1500		
Pharmacy	NCPDP		

1. The entire claim is defined as transportation if one or more of the detail lines has one of these HCPCS codes.

2. The entire claim is defined as DME if one or more of the detail lines has one of these HCPCS codes.

3. Professional claims are defined as CMS-1500 claims not defined as transportation or DME.

- **Count of claims and claim detail lines by care category:** Based on the claim's care category, the claim count will either be at the claim level or at the claim detail level. Please note that total claim counts for an episode and summation of claim counts for all care categories will differ (summation of claim counts for all care categories is always going to be same or higher than claim counts for an episode) with this method. The breakdown is below.
  - Claim-specific care categories
    - Inpatient facility
    - Pharmacy
  - Claim detail line-specific care categories
    - Emergency department or observation
    - Outpatient facility
    - Inpatient professional
    - Outpatient laboratory
    - Outpatient radiology
    - Outpatient professional
    - Other
- **CPT:** Current Procedural Terminology
- **DBR:** Detailed Business Requirements
- **Duration of time windows:** The duration of a time window (e.g., the episode window, the trigger window), the duration of a claim or claim detail line, and the length of stay for inpatient stays is calculated as the last date minus the first date plus one (1). For example:
  - A trigger window with a *Trigger Window Start Date* of January 1, 2014 and a *Trigger Window End Date* of January 1, 2014 has a duration of one (1) day.

- A trigger window with a *Trigger Window Start Date* of January 1, 2014 and a *Trigger Window End Date* of January 3, 2014 has a duration of three (3) days.
- A claim with a *Header From Date Of Service* of January 1, 2014 and a *Header To Date of Service* of January 2, 2014 has a duration of two (2) days.

- **Episode window:** See sections 4.3 and 5.3.
- **Exclusion hierarchy**

Hierarchy	Exclusion name	Exclusion used in report
1	Age	Patient below or above age thresholds
2	Inconsistent enrollment	Patient was not continuously enrolled during episode window
3	Third-party liability	Patient has third-party liability charges
4	Dual eligibility	Patient has dual coverage of primary medical services
5	Left against medical advice	Patient has a discharge status of “left against medical status”
6	Death	Patient died in the hospital during episode
7	Incomplete episodes	Episode data was incomplete
8	FQHC/RHC	Episodes for which the quarterback is an FQHC or RHC are excluded.
9	High outlier	Episode exceeds the high outlier threshold
10	Invalid trigger location	Episode trigger occurred in non-qualified location
11	Risk factor / comorbidity	Risk factor / comorbidity reference found

12	Overlapping episodes	At least one claim detail line overlaps between two episodes in scope that have the same Quarterback Tax Identification Number and patient. Lower ranking episode is excluded

- **HIC3:** Hierarchical Ingredient Code at the third level based on the classification system by First Databank
- **Hospitalization:** A hospitalization is defined as all the inpatient claims a patient incurs while being continuously hospitalized in one or more inpatient facilities. A hospitalization may include more than one inpatient claim because the inpatient facility may file interim inpatient claims and/or because the patient may be transferred between two or more inpatient facilities. A hospitalization consisting of just one inpatient claim starts on the *Header From Date Of Service* and ends on the *Header To Date Of Service* of the inpatient claim. A hospitalization where two or more inpatient claims are linked together starts on the *Header From Date Of Service* of the first inpatient claim and ends on the *Header To Date Of Service* of the last inpatient claim in the hospitalization. Inpatient claims are linked together into one hospitalization consisting of two or more inpatient claims if any of the following conditions apply:
  - Interim billing or reserved/missing discharge status: An inpatient claim with a *Patient Discharge Status* that indicates interim billing (see the configuration file under "Hospitalization – Interim Billing" for the codes used), that is reserved (see the configuration file under "Hospitalization – Reserved" for the codes used), or that is missing is linked with a second inpatient claim into one hospitalization if either of the following conditions apply:
    - There is a second inpatient claim with a *Header From Date Of Service* on the same day as or the day after the *Header To Date Of Service* of the first inpatient claim
    - There is a second inpatient claim with an *Admission Date* on the same day as the *Admit Date* of the first inpatient claim and also a *Header From Date Of Service* on the same day as or within thirty (≤ 30) days after the *Header To Date Of Service* of the first inpatient claim
  - Transfer: An inpatient claim with a *Patient Discharge Status* indicating a transfer (see the configuration file under "Hospitalization – Transfer" for the codes used) is linked with a second inpatient claim into one hospitalization if there is a second inpatient

claim with a *Header From Date Of Service* on the same day as or the day after the *Header To Date Of Service* of the first inpatient claim.

  - If the second inpatient claim (and potentially third, fourth, etc.) also has a *Patient Discharge Status* indicating interim billing, reserved, missing, or transfer the hospitalization is extended further until an inpatient claim with a discharge status other than interim billing, reserved, missing, or transfer occurs, or until the inpatient claim that follows does not satisfy the required conditions. If any claim has a *Patient Discharge Status* indicating discharge to home (see the configuration file under "Hospitalization – Home" for the codes used), the hospitalization is terminated.

- **ICD-9:** International Classification of Diseases, Ninth Revision
- **ICD-10:** International Classification of Diseases, Tenth Revision
- **Member Age:** The output field *Member Age* reflects the patient's age in years at the episode trigger. *Member Age* is calculated as the difference in years between the start of the claim that is used to set the *Professional Trigger Claim ID* or *Facility Trigger Claim ID* and the date of birth of the patient. The start of the claim is determined using the input field *Header From Date Of Service* for inpatient claims and the earliest *Detail From Date Of Service* across all claim detail lines for outpatient and professional claims. The date of birth of the patient is identified by linking the *Member ID* of the patient in the episode output table to the *Member ID* of the patient in the Member Extract and looking up the date in the input field *Date of Birth*. *Member Age* is always rounded down to the full year. For example, if a patient is 20 years and 11-months old at the start of the episode, the *Member Age* is set to 20 years. If the *Date of Birth* is missing, greater than (>) 100 years, or less than (<) 0 years, then the output field *Member Age* is treated as invalid.
- **PAP:** Principal Accountable Provider
- **Post-trigger window:** See sections See sections 4.3 and 5.3
- **Pre-trigger window**: See sections See sections 4.3 and 5.3
- **Reporting care categories:** The reporting care categories used, in hierarchical order, are:

Bill Form	Reporting Care Category	Definition	Additional Comments

UB-04	Inpatient facility	Bill Types: 11X, 12X, 18X, 41X, 86X	To include all services provided during an inpatient facility stay including room and board, recovery room, operating room and other services.
UB-04	Emergency Department or Observation	Bill Types: 13X, 14X, 22X, 23X, 73X-77X, 79X, 83X-85X AND (Revenue code 045x, 0760, 0761, 0762, 0769 OR CPT 99281-99285, 99291-99293 OR Place of service = 23)	To include all services delivery in an Emergency Department or Observation Room setting including facility and professional services.
UB-04	Outpatient facility	Bill Types: 13X, 14X, 22X, 23X, 73X-77X, 79X, 83X-85X and NOT Emergency Department	To include all services delivered by a facility during an outpatient surgical encounter, including operating and recovery room and other services.
CMS-1500	Inpatient professional	Place of service = 21	To include services delivered by a professional provider during an inpatient hospital stay, including patient visits and consultations, surgery and diagnostic tests.

UB-04/CMS-1500	Outpatient laboratory	Place of service = 81 OR Revenue codes 030x OR CPT/HCPCS 80048-88399, G0306,G0307, G0431-G0434, G9143, P codes	To include all laboratory services on in an inpatient, outpatient or professional setting.
UB-04/CMS-1500	Outpatient radiology	Revenue code 035x, 061x, 040x, 032x OR CPT 70010-79999 or HCPCS C8906, C8903, C8907, C8904, C8908, C8905, S8042	To include all radiology services such as MRI, X-Ray, CT and PET scan performed in an inpatient, outpatient or professional setting.
CMS-1500	Outpatient professional	Any remaining, non-categorized CMS 1500 claims (excluding DME and transportation)	To include uncategorized professional claims such as evaluation and management, health screenings and specialists visits.
UB-04/CMS-1500	Other	Any remaining, non-categorized claims	To include DME, transportation, Home health and any remaining uncategorized claims.
NCPDP post adjudication 2.0	Pharmacy		To include any pharmacy claims billed under the pharmacy or medical benefit with a valid National Drug Code.

- **Total episodes:** All episodes, valid plus invalid
- **Trigger window:** See sections See sections 4.3 and 5.3
- **Valid episodes:** See sections 4.6 and 5.6