Health Care
Innovation Initiative

Detailed Business Requirement

Acute Percutaneous Coronary Intervention (PCI) Episode

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1 Introduction

1.1 SCOPE OF THIS DOCUMENT

The Detailed Business Requirements (DBR) document serves as a guide to understand the definition of an episode. Section 2 of the DBR addresses the following questions:

- **Typical patient journey**: Which patient cases are addressed by the episode?
- **Sources of value**: At which points in the 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?
  - Calculating gain and risk sharing: How are the gain and risk sharing amounts for Quarterbacks determined?

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**: What is the intent of the episode design that needs to be reflected in the code to produce the episode outputs?
- **Episode configuration**: What parameters (e.g., number of days) and medical codes (e.g., diagnosis codes) need to be specified to define the episode?
- **Outputs**: 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 Acute PCI episode description

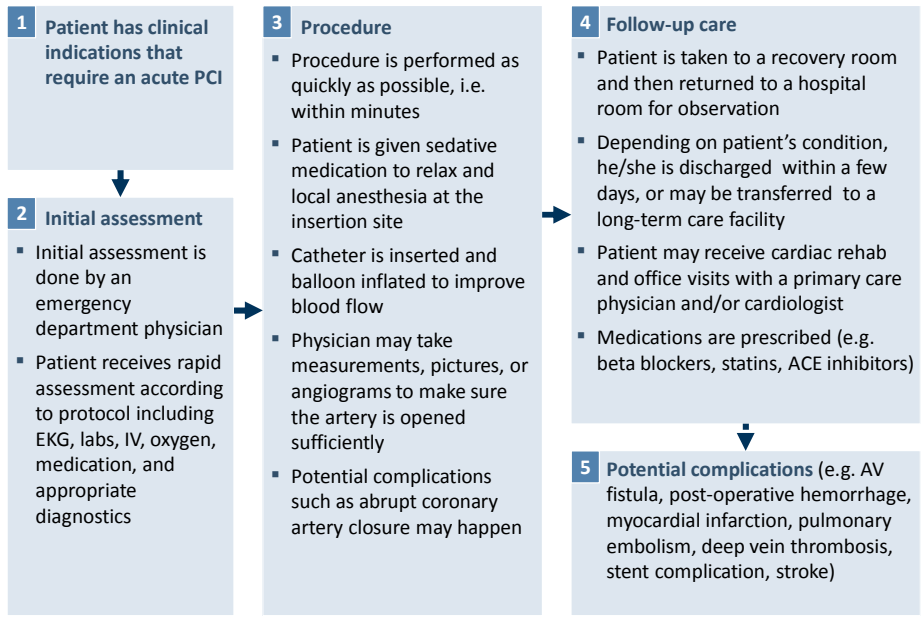
2.1 TYPICAL PATIENT JOURNEY

The episode described in this document pertains to patients who receive a Percutaneous Coronary Intervention (PCI) under acute circumstances. As depicted in EXHIBIT 1, an acute PCI episode typically starts with a visit to the emergency department. The patient usually receives a rapid assessment according to protocol, and the PCI procedure usually takes place as quickly as possible. In most cases, the patient is given anesthesia and the PCI is performed. During the procedure potential complications such as abrupt coronary artery closure may take place.

Once the procedure is finalized, the patient is normally taken to a recovery room and then returned to a hospital room for observation. Depending on the patient's condition, he/she may be discharged within a few days. The patient may receive cardiac rehabilitation and office visits with a primary care physician and/or cardiologist. Medications such as beta blockers, statins, and ACE inhibitors are typically prescribed.

Complications of the procedure may occur. These include AV fistula, post-operative hemorrhage, myocardial infarction, pulmonary embolism, deep vein thrombosis, stent complications, and stroke.

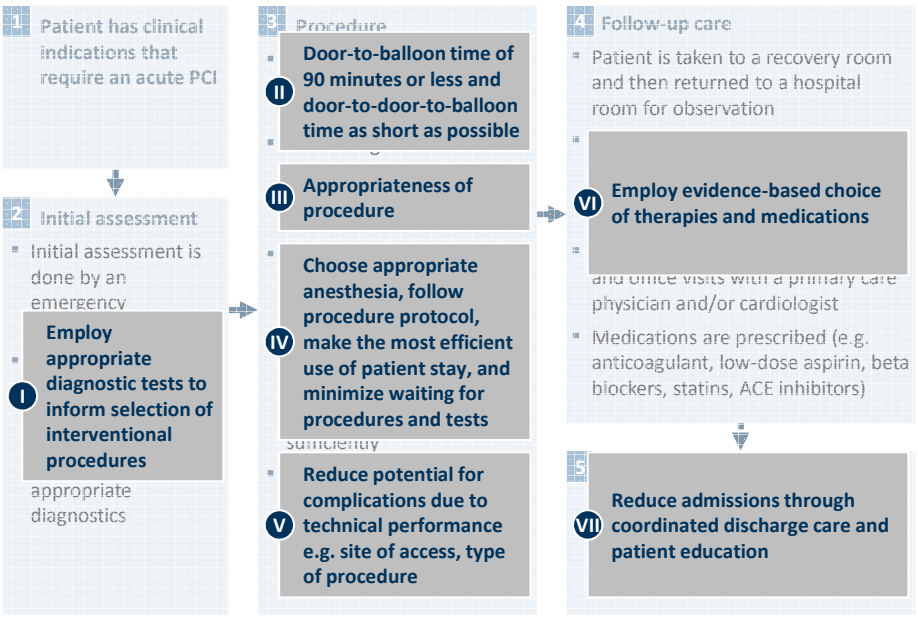
EXHIBIT 1 – TYPICAL PATIENT JOURNEY



2.2 SOURCES OF VALUE

In treating patients receiving PCI, providers have several opportunities to improve quality and reduce cost of care, as seen in Exhibit 2. Before the procedure, providers can employ the appropriate diagnostic tests to inform the selection of interventional procedures. They may also be able to choose the appropriate site of service, make the most efficient use of patient stay, and minimize waiting for procedures and tests. Facilities may be able to reduce the door-to-balloon time and door-to-door-to-balloon time. Providers can also reduce the potential for complications due to technical performance by selecting the appropriate site of access and type of procedure. After the procedure, providers can employ evidence-based choices of therapy and medications. In general, these practices along with coordinated discharge care and patient education could reduce the likelihood of avoidable admissions and complications, improving quality and cost of care for a PCI.

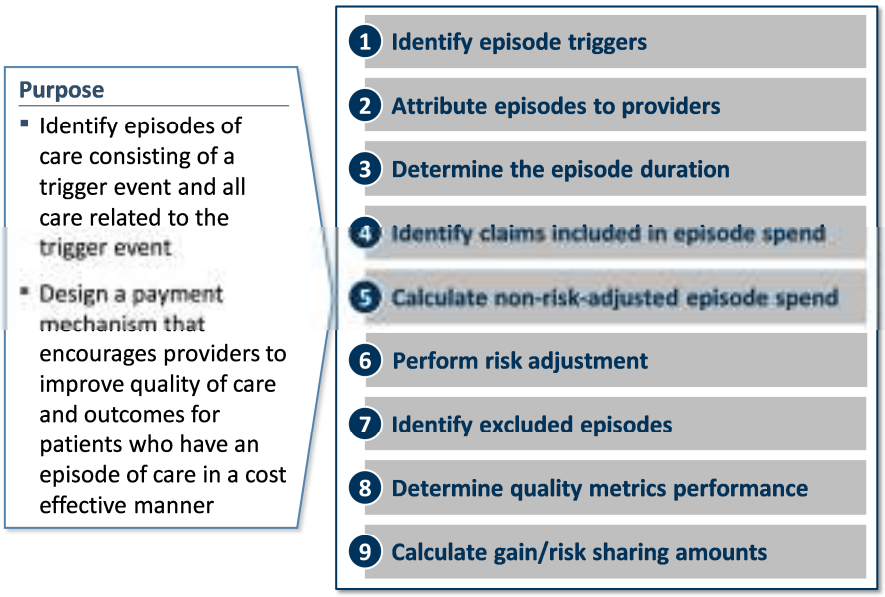
EXHIBIT 2 – SOURCES OF VALUE



2.3 DESIGN DIMENSIONS

Designing and building an episode comprises nine dimensions, as shown in Exhibit 3. Each dimension is associated with a set of data manipulations that convert the data inputs to the data outputs. Section 3 provides additional details on the episode data flow.

EXHIBIT 3 – DESIGN DIMENSIONS



2.3.1 Identify episode triggers

A potential trigger for an acute PCI episode is a PCI procedure with an associated facility claim. Potential triggers are identified based on a professional claim with a procedure code denoting a percutaneous coronary intervention, and an associated facility claim denoting a specific diagnosis relevant to PCI. To be considered an acute PCI, the patient must present at the emergency room, i.e., the associated facility must be an ED, or the professional claim must be associated with a hospitalization or an outpatient claim with a diagnosis of acute coronary syndrome: acute myocardial infarction or other acute/sub-acute ischemic heart disease. The configuration file lists the trigger procedure codes and confirming diagnosis codes under “Trigger Procedure” and “Associated Facility”. The codes used to identify the acute indicators are under “Acute Episode Indication – Acute Coronary Syndrome”.

A professional claim with a PCI procedure code but without an associated hospitalization or outpatient claim does not constitute a potential trigger and vice versa.

To avoid an overlap of 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 patient in a reporting 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 Principal Accountable Provider (also referred to as PAP or Quarterback) is the provider deemed to be in the best position to influence the quality and cost of care for a patient during an acute PCI – here, the facility where the PCI was performed. The contracting entity of the facility trigger claim will be used to identify the Quarterback.

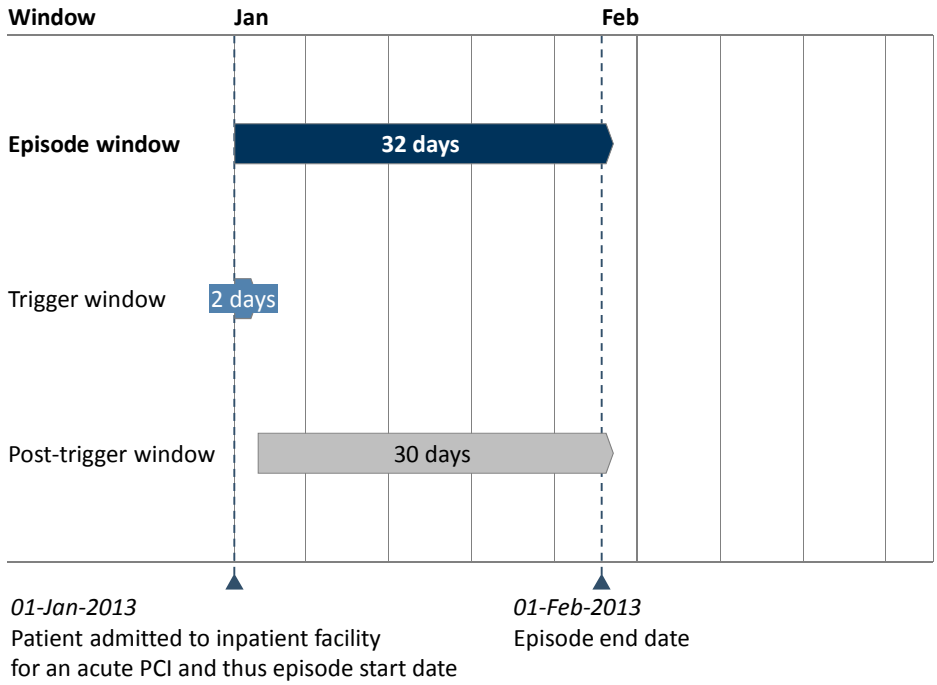
2.3.3 Determine the episode duration

The duration of the acute PCI episode comprises the trigger window and the post-trigger window. Overall, the duration of the episode is referred as the episode window.

- **Pre-trigger window**: There is no pre-trigger window.
- **Trigger window**: The trigger window begins on the day of the PCI (or admission if inpatient) and ends on the day of the PCI (or discharge if inpatient).
- **Post-trigger window**: The post-trigger window begins the day after the trigger window ends 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 30th 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 the glossary 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 directly related to the acute PCI. Claims that are included in the calculation of the episode spend are referred to as included claims. The criteria to identify included claims 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

There is 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:

- **Specific medications:** Pharmacy claims with HIC3 codes for medications related to the PCI (e.g., statins, ACE inhibitors) and treatment for complications related to the procedure are included in the trigger window.

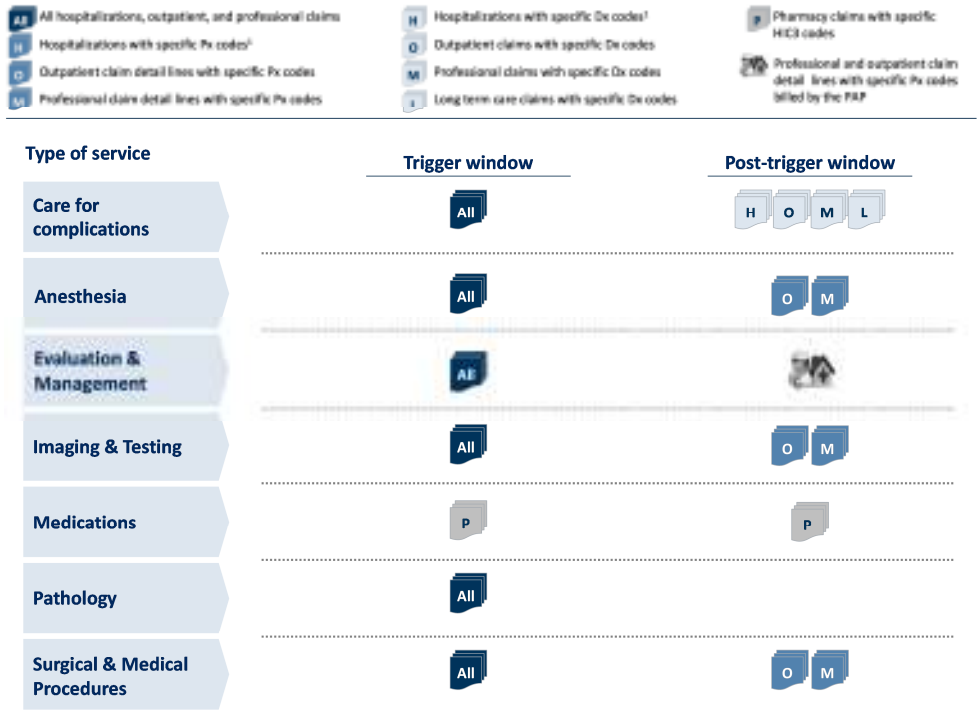
In addition, all hospitalization, outpatient, and professional claims and claim detail lines assigned to the trigger window are included.

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:

- **Care for specific complications:** Hospitalizations, outpatient, professional, and long-term care claims with CPT procedure codes / ICD-9 diagnosis codes for specific complications related to the PCI (e.g., AV fistula, deep vein thrombosis) are included in the post-trigger window.
- **Specific anesthesia:** Outpatient and professional claim detail lines with CPT procedure codes for specific anesthesia provided for the PCI are included in the post-trigger window.
- **Specific evaluation and management visits:** Outpatient and professional claim detail lines with CPT procedure codes for visits to the PAP are included in the post-trigger window.
- **Specific imaging and testing:** Outpatient and professional claim detail lines with specific CPT procedure codes for imaging and testing related to the PCI (e.g., electrocardiogram, complete blood count) are included in the post-trigger window.
- **Specific medications:** Pharmacy claims with HIC3 codes for medications related to the PCI (e.g., statins, ACE inhibitors) and treatment for complications directly related to the PCI are included in the post-trigger window.
- **Specific surgical and medical procedures:** Outpatient and professional claim detail lines with a specific CPT procedure code for PCI and PCI-related procedures (e.g., removal of coronary artery obstruction) are included in the post-trigger window.

EXHIBIT 5 – CLAIMS INCLUDED IN EPISODE SPEND



1 And all professional and outpatient claim detail lines assigned to the included hospitalization. See section 4.3 for guidance on episode duration.

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 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 the mechanism that episode-based payment models will use 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 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 significant risk factors may vary across payers.

2.3.7 Identify excluded episodes

Episode exclusions ensure that the remaining 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 PAPs.

- **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 third-party liability payments are present on any claim (included or not included) during the episode window.
  - **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 is excluded if the facility where the trigger procedure is performed is a Federally Qualified Health Center (FQHC) or a Rural Health Clinic (RHC).
  - **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 thresholds.
- **Clinical exclusions**:
  - **Different care pathway:** An episode is excluded if the patient has one or more of the conditions that would lead to a different care pathway during a specified time

window. The configuration file lists the codes and time windows to identify different care pathways under "Clinical – (*condition for exclusion*)". Codes that indicate a different care pathway are searched for on inpatient, outpatient, and professional claims and they have to be present during the episode window or during the episode window and 365 days before the trigger start date, as specified for each code in the configuration file. Examples of conditions that would lead to a different care pathway are:

- Arteritis
- Cancer under active management (active cancer)
- Cardiogenic shock
- Circulatory congenital anomalies
- Coma
- Coronary artery bypass grafting
- Cystic fibrosis
- End stage renal disease
- Valve congenital anomalies
- Multiple sclerosis
- Organ transplant
- Paralysis
- Parkinson's
- Sickle cell anemia

- **Patient exclusions**
  - **Age:** An episode is excluded if the patient is younger than 18 (<18) years of age or older than 64 (>64) years of age. See the glossary 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.

  - **Intensive care unit (ICU) care:** An episode is excluded if a patient has a revenue code for care in the intensive care unit 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.

2.3.8 Determine quality metrics performance

A Quarterback must pass all quality metrics tied to gain sharing to be eligible for gain sharing. Quarterbacks receive information on additional quality metrics that allow them to assess their performance but that does not affect their eligibility to participate in gain sharing. The quality metrics are based on information contained in the claims filed for each patient, and some are based on other information sources. Risk sharing is not dependent on the Quarterback meeting any quality metrics. Setting thresholds for the quality metrics is beyond the scope of this DBR hence thresholds will be set and provided separately.

- **Quality metric tied to gain sharing**:
  - Hospitalization in the post-trigger window: Percent of valid episodes with an included hospitalization in the post-trigger window (excluding hospitalizations for repeat PCI)

- **Quality metrics not tied to gain sharing** (i.e., included for information only):
  - Multiple-vessel PCI: Percent of valid episodes where the professional trigger claim involves multiple vessels (including multiple branches).
  - Staged PCI: Percent of valid episodes with a repeat PCI in the post-trigger window.

2.3.9 Calculate gain/risk sharing amounts

During the initial implementation phase the payer will send provider reports to PAPs to inform them about their performance in the episode-based payment model. At a future date, the reporting period timing will be established.

The performance of Quarterbacks in the episode-based payment model will be linked to payments at the end of the reporting period. The description below outlines the approach of linking Quarterbacks' performances to payments. Gain/risk sharing is determined based on the comparison of the average risk-adjusted episode spend of each Quarterback over the course of reporting period in a reporting period to three pre-determined thresholds. The thresholds and their meaning for gain or risk sharing are:

- **Acceptable threshold:** Quarterbacks with average risk-adjusted episode spend above the acceptable threshold owe a risk sharing payment.
- **Commendable threshold:** Quarterbacks with average risk-adjusted episode spend below the commendable threshold that meet the quality metrics tied to gain sharing receive a gain sharing payment.
- **Gain sharing limit threshold:** Quarterbacks with average risk-adjusted episode spend below the gain sharing limit threshold and that pass the quality metrics tied to gain sharing receive a gain sharing payment up to a specified limit.

Quarterbacks with average risk-adjusted episode spend between the acceptable and commendable thresholds neither owe a risk sharing payment nor receive a gain sharing payment.

The gain or risk sharing payment of each Quarterback is calculated based on episodes that ended during the reporting period. Quarterbacks receive reports about their performance in the episode-based payment model every quarter. Payments are made once a year. All Quarterbacks (not only those with valid episodes) receive a provider report.

The payers and providers share a portion of the losses/gains in the episode-based payment model. The calculation of the gain or risk sharing payment is as follows:

- **Risk sharing**: Quarterbacks who owe a risk sharing payment pay 50% of the difference between the acceptable threshold and the average risk-adjusted episode spend of the Quarterback, multiplied by the number of valid episodes of the PAP in the reporting period.

- **Gain sharing:**
  - **Quarterbacks below commendable and above gain sharing limit**: Quarterbacks receive 50% of the difference between the commendable threshold and the average risk-adjusted episode spend of the Quarterback, multiplied by the number of valid episodes of the Quarterback in the reporting period.
  - **Quarterbacks below the gain sharing limit**: Quarterbacks receive 50% of the difference between the commendable threshold and the gain sharing limit threshold, multiplied by the number of valid episodes of the Quarterback in the reporting period.

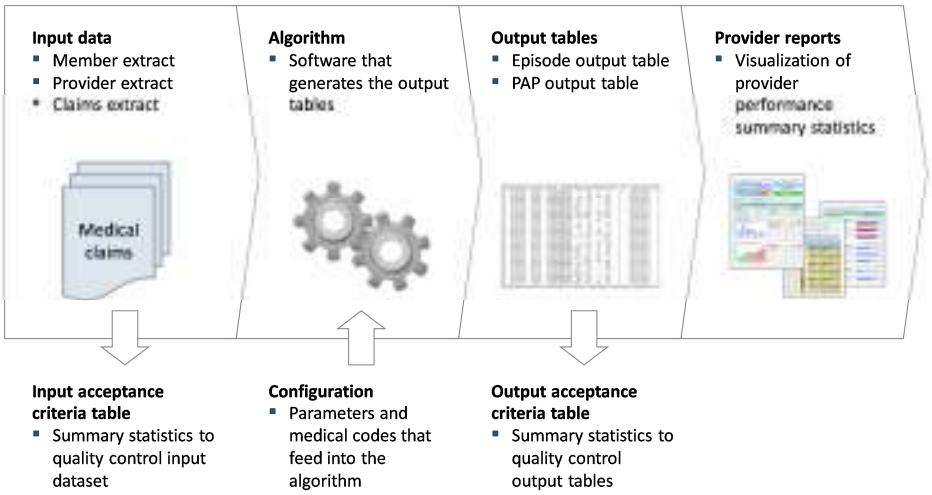
3 Episode data flow

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 6). 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 acceptance criteria table to assess the content and quality of the input dataset. (2) An output acceptance criteria table to assess the content and quality of the output tables.

EXHIBIT 6 – 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	
Tax ID Name	Tax ID name
Tax ID	Unique identifier of provider by tax group
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
Header From Date Of Service	Date on which service begins on claim header
Header To Date Of Service	Date on which service ends on claim header

Source field name in DBR	Description
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. Denied claims should be used in the calculation of quality metrics.

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.

For definitions of inpatient, outpatient, and professional see section 6.

3.2 EPISODE ALGORITHM AND DETAILED DESCRIPTION

The intent of the episode algorithm is detailed in the Episode agnostic algorithm logic (section 4) and Acute PCI 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., Acute PCI
  - 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., Acute PCI
  - Design Dimension: Episode design dimension, e.g., Determine Quality Metrics Performance
  - Subdimension: Grouping of codes used for a specific purpose within the design dimension, e.g., Multiple Vessel A
  - Time Period: Time for which the code is relevant, e.g., During Trigger Window
  - Code Type: Code system to which the code belongs to, e.g., CPT
  - Code Group: Code group level classification, e.g., Medicine

- Code Description: Code detailed description, e.g., Percutaneous transluminal coronary balloon angioplasty; single vessel
- Code: Code number, e.g., 92982

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 Acute PCI 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	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
3 – Determine the episode duration	Pre-Trigger Window Start Date	N/A
3 – Determine the episode duration	Pre-Trigger Window End Date	N/A

Design dimension	Output field name	Report template name
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
5 – Calculate non-risk-adjusted spend	By Emergency department or observation	Emergency department or observation
5 – Calculate non-risk-adjusted spend	By Outpatient surgery	Outpatient Facility

Design dimension	Output field name	Report template name
5 – Calculate non-risk-adjusted spend	By Inpatient professional	Inpatient professional
5 – Calculate non-risk-adjusted spend	By Laboratory	Outpatient laboratory
5 – Calculate non-risk-adjusted spend	By 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
6 – Perform risk adjustment	Risk-adjusted Episode Spend	N/A
6 – Perform risk adjustment	Same breakdown as for Non-risk-adjusted Episode Spend	
6 – Perform risk adjustment	Risk Factor <risk factor number>	Episode risk factor
6 – Perform risk adjustment	Episode Risk Score	N/A
	Exclusions	
7 – Identify excluded episodes	Any Exclusion	N/A
7 – Identify excluded episodes	Exclusion Inconsistent Enrollment	Patient was not continuously enrolled during episode window

Design dimension	Output field name	Report template name
7 – Identify excluded episodes	Exclusion Third-party Liability	Patient has third-party liability charges
7 – Identify excluded episodes	Exclusion Dual Eligibility	Patient has dual coverage of primary medical services
7 – Identify excluded episodes	Exclusion FQHC/RHC	Episode trigger occurred in a Federally Qualified Health Center (FQHC) or a Rural Health Clinic (RHC)
7 – Identify excluded episodes	Exclusion No PAP ID	N/A
7 – Identify excluded episodes	Exclusion Incomplete Episode	Episode data was incomplete
7 – Identify excluded episodes	Exclusion Left Against Medical Advice	Patient has a discharge status of “left against medical advice”
7 – Identify excluded episodes	Exclusion Age	Patients >/< [XX]
7 – Identify excluded episodes	Exclusion Death	Patient died in the hospital during the episode
7 – Identify excluded episodes	Exclusion Different Care Pathway	Risk factor / co-morbidity reference found
7 – Identify excluded episodes	Exclusion High Outlier	Episode exceed the high cost outlier threshold
	Quality metrics	
8 – Determine quality metrics performance	Quality Metric 1 Indicator	Hospitalization in the post-trigger window

Design dimension	Output field name	Report template name
8 – Determine quality metrics performance	Quality Metric 2 Indicator	Multiple-vessel PCI
8 – Determine quality metrics performance	Quality Metric 3 Indicator	Staged PCI

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
2 – Attribute episodes to providers	PAP Name	
2 – Attribute episodes to providers	National Provider Identifier	National Provider Index
2 – Attribute episodes to providers	Specialty	
2 – Attribute episodes to providers	Provider Billing ZIP Code	
	PAP spend	

Design dimension	Output field name	Report Template Name
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 surgery	Outpatient Facility
5 – Calculate non-risk-adjusted spend	By Inpatient professional	Inpatient professional
5 – Calculate non-risk-adjusted spend	By Laboratory	Outpatient laboratory
5 – Calculate non-risk-adjusted spend	By 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 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

Design dimension	Output field name	Report Template Name
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 surgery	Outpatient Facility
6 – Perform risk adjustment	By Inpatient professional	Inpatient professional
6 – Perform risk adjustment	By Laboratory	Outpatient laboratory
6 – Perform risk adjustment	By 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	PAP Quality Metric 1	Hospitalization in the post-

Design dimension	Output field name	Report Template Name
metrics performance	Performance	trigger window
8 – Determine quality metrics performance	PAP Quality Metric 2 Performance	Multiple-vessel PCI
8 – Determine quality metrics performance	PAP Quality Metric 3 Performance	Staged PCI
	PAP performance	
8 – Determine quality metrics performance	Gain Sharing Quality Metric Pass	N/A
9 – Calculate gain/risk sharing amounts	Gain/Risk Sharing Amount	Total gain / risk share
9 – Calculate gain/risk sharing amounts	PAP Sharing Level	Share factor
	Episode counts	
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: *Trigger Claim ID, Member ID, Member Age, Member Name, Associated Facility Claim ID, Associated Facility Claim Type*

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 the glossary.

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 earliest *Detail 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 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 *Detail From Date Of Service* is chosen. If two or more associated outpatient claims meet the required criteria and have the same minimum *Detail From Date Of Service*, the claim with the greater duration is chosen. See the glossary 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* of the associated inpatient claim (if the professional trigger claim detail line is associated with an inpatient claim) or the minimum *Detail From Date Of Service* of the associated outpatient claim (if the professional trigger claim detail line is associated with an outpatient claim). 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* of the associated inpatient claim (if the professional trigger claim detail line is associated with an inpatient claim) or the maximum *Detail To Date Of Service* of the associated outpatient claim (if the professional trigger claim detail line is associated with an outpatient claim).

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 the Glossary (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 that the associated inpatient claim is a part of.

For a potential trigger to become an episode trigger its start date cannot fall into the clean period of an already defined episode trigger for the same patient. A chronological approach is taken, and the first potential trigger of a given patient in a reporting period 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 "02 - 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:

  - 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.

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.

The output field *Trigger Claim ID* is set to the input field *Internal Control Number* of the professional trigger claim that identifies the episode trigger. The output field *Member ID* is set to the input field *Member ID* of the professional trigger claim that identifies 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. 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 the glossary, of that associated 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 physician or a facility:

- **Physician PAP:** If the PAP is the physician who performed the procedure, the output field *PAP ID* is set using the input field *Tax ID* of the Provider Extract associated to the *Billing Provider ID* on *Trigger 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 *Tax ID* of the Provider Extract associated to the *Billing Provider ID* on the *Associated Facility Claim ID*.

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 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 *Tax ID Name.*

The episode output table and PAP output table are linked to the Provider Extract using the output field *PAP ID* and the input field *Tax ID* of the Provider Extract.

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 xth day prior (inclusive) and one (1) day before the *Trigger Window Start Date,* where the input field *Tax ID* 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 xth day prior (inclusive) and one (1) day before the *Trigger Window Start Date,* where the input field *Tax ID* 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 xth day prior (inclusive) and one (1) day before the *Trigger Window Start Date,* where the input field *Tax ID* 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 “02 - 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 "02 - 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 xth 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 "02 - 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 xth 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 xth 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 xth 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, 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 the episode window:**
  - Hospitalizations and all inpatient claims within them are assigned to the episode window if the *Header From Date Of Service* occur 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.
  - 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. 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.
  - 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. 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.
  - Outpatient, professional, and long-term care claims are assigned to the trigger window if all their claim detail lines are assigned to the trigger window. 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.
  - 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. 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. How different types of services are defined is detailed below. Which type of services that are included in the episode, and in which window, is 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.

Types of services:

- **Care for specific complications:** Hospitalizations, outpatient, professional, and long-term care claims with ICD-9 diagnosis codes for specific complications in the input field *Header Diagnosis Code*. See the configuration file under "Complications" for the list of codes to include. For hospitalizations, the complication 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 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 procedure codes for visits in the input field *Detail Procedure Code*. See the configuration file under "E&M Visits" for the codes.

  If the PAP is a physician, include professional claim detail ines with relevant E&M codes if the PAP *Tax ID* matches the professional trigger claim *Tax ID*, and include outpatient facility claim detail lines with relevant E&M codes as long as a trigger diagnosis code is on the claim.

  If the PAP is a facility, include professional claim detail lines with relevant E&M codes as long as a trigger diagnosis code is on the claim, and include outpatient facility claim detail lines with relevant E&M codes as long as a trigger diagnosis code is on the claim.
- **Specific imaging and testing:** Outpatient and professional claim detail lines with specific CPT procedure codes for imaging and testing. See the configuration file under "Imaging And Testing" for the list of codes.
- **Specific medications:** Pharmacy claims with HIC3 codes for relevant medications. See the configuration file under "Medications" for the list of codes.
- **Specific pathology:** Outpatient and professional claim detail lines with relevant CPT procedure codes for pathology. See the configuration file under "Pathology" for the list of codes.

- **Specific surgical and medical procedures:** Outpatient, and professional claim detail lines with a specific CPT 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.

4.5 CALCULATE NON-RISK-ADJUSTED 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> Trigger Window, 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 PERFORM RISK ADJUSTMENT

The sixth 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*.

4.7 IDENTIFY EXCLUDED EPISODES

The seventh 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, or pharmacy 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:** An episode is excluded if either of the *Trigger Claim ID* or the *Associated Facility Claim ID* is a Federally Qualified Health Center (FQHC) or Rural Health Clinic (RHC). For *Trigger Claim ID*, an episode is excluded if the *Place of Service* has a code listed in the configuration file under "Business – FQHC/RHC". For *Associated Facility Claim ID*, an episode is excluded if the *Type of Bill* has a code listed in the configuration file under "Business – FQHC/RHC".
- **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 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.

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 - 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".
- **Intensive care unit (ICU) care:** An episode is excluded if the patient has a *Revenue Code* for the "Intensive Care" on any inpatient or outpatient claim during the episode window. The claim may be an included claim or not. The values of the *Revenue Code* used to identify whether the patient was in the intensive care unit are listed in the configuration file under "Patient – ICU".

High 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.

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

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.

4.9 CALCULATE GAIN/RISK SHARING AMOUNTS

This episode follows the process described in section 2.3.9.

5 Acute PCI episode detailed description

This section provides acute PCI episode-specific details for building the acute PCI episode, and must be used in conjunction with section 4, as section 4 will provide the elements that are common across all procedure episodes. 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

For the acute PCI episode the trigger is determined as described in section 4.1 with one exception:

- To be considered an acute PCI episode, the potential trigger must meet at least one of the following conditions:
  - The associated facility claim has a diagnosis code of acute coronary syndrome in the input field *Header Diagnosis Code Primary* or *Header Diagnosis Code Secondary*. The acute coronary syndrome codes are listed in the configuration file under "Acute Episode Indication – Acute coronary syndrome"
  - The associated facility claim has a revenue code of emergency department in the input field *Revenue Code*. The emergency department revenue codes are listed in the configuration file under "Acute Episode Indication – Emergency Department".

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 two windows:

- **Pre-trigger window:** This episode does not have a 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:

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:

- **Specific medications:** Refer to section 4.4 for guidance.

In addition, all hospitalization, outpatient, and professional 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:

- **Care for specific complications:** Refer to section 4.4 for guidance.
- **Specific anesthesia:** Refer to section 4.4 for guidance.
- **Specific evaluation and management visits:** This includes only visits to providers identified by the episode's *PAP ID.* 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 surgical and medical procedures:** Refer to section 4.4 for guidance.

5.5 CALCULATE NON-RISK-ADJUSTED SPEND

This episode follows the process described in section 4.5.

5.6 PERFORM RISK ADJUSTMENT

This episode follows the process described in section 4.6.

5.7 IDENTIFY EXCLUDED EPISODES

This episode follows the process described in section 4.7.

5.8 DETERMINE QUALITY METRICS PERFORMANCE

This episode has one quality metric that is tied to gain sharing and two informational (i.e., not tied to gain sharing) quality metrics. The quality metrics listed below follow the logic described in section 4.8.

Quality metrics tied to gain sharing

- **Hospitalization in the post-trigger window (*Quality Metric 1*):** Percent of valid episodes with an included hospitalization in the post-trigger window (excluding hospitalizations for repeat PCI).
  - *Quality Metric 1 Indicator:* The episode has an included hospitalization in the post-trigger window where none of the inpatient claims of the hospitalization have a *Header Surgical Procedure Code* listed in the configuration file under "Trigger Procedures".

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

- **Multiple-vessel PCI (*Quality Metric 2*):** Percent of valid episodes where the triggering PCI involves multiple vessels (including multiple branches).
  - *Quality Metric 2 Indicator:* The episode has professional trigger claim i.e. *Trigger Claim ID* that involves multiple vessels. The *Trigger Claim ID* is considered to involve multiple vessels if one or both of the following conditions apply:
    - The *Trigger Claim ID* contains two or more detail lines with a CPT code listed in the configuration file under “Multiple Vessels A” in the input field *Detail Procedure Code*.
    - The *Trigger Claim ID* contains at least one claim detail line with a CPT code listed in the configuration file under “Multiple Vessels B” in the input field *Detail Procedure Code*.
- **Staged PCI (*Quality Metric 3*):** Percent of valid episodes with a repeat PCI in the post-trigger window.

– *Quality Metric 3 Indicator:* The episode has a potential trigger in the post-trigger window i.e. the potential trigger start date and end date occur between the *Post-trigger Window Start Date* and *Post-trigger Window End Date*. See section 4.1 for the definition of potential trigger. For this quality metric the acuity of the potential trigger is not relevant (i.e. the repeat PCI may be acute or non-acute).

5.9 CALCULATE GAIN/RISK SHARING AMOUNTS

This episode follows the process described in section 2.3.9.

6 Glossary

- **Claim types:** Claim types are based on the input field *Type of Bill*. Their definitions are as follows:

Claim type	Claim form	Type of bill
Inpatient	UB-04	11x, 12x, 18x, 41x, 86x
Long-term care	UB-04	21x, 66x, 89x
Outpatient	UB-04	13x, 14x, 22x, 23x, 71x-77x, 79x, 83x-85x
Pharmacy	NCPDP	All NDC
Professional	CMS-1500	All ICD-9 Dx, CPT, and HCPCS

- **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	Episode trigger occurred in a Federally Qualified Health Center (FQHC) or Rural Health Clinic (RHC)
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

- **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.

- **ICD-9:** International Classification of Diseases, Ninth 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 *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	To include all services delivered by a facility during an outpatient surgical encounter, including

		Department	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.
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.
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 4.7 and 5.7