3M™ Ambulatory Potententially Preventable Complications (AM-PPC) Classification System

Methodology Overview

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Chapter 1: Development of the 3M™ Ambulatory Potentially Preventable Complications (AM-PPC) Classification System

This manual describes the clinician-specified 3M™ Ambulatory Potentially Preventable Complications (AM-PPC) classification system, a clinically based classification system that uses sequenced billing or coded clinical data to identify complications of care following routine ambulatory procedures. The output of the AM-PPC Classification System can be used to compute ambulatory procedure complication rates across ambulatory care settings. Higher than expected complication rates may indicate opportunities to improve the quality of care at both the time of the initial ambulatory procedure and in the post-procedural management of patients.

Introduction

The delivery of complex acute care services, both procedural and medical, has been migrating from inpatient hospital-based settings to hospital outpatient departments (HOPD), ambulatory surgery centers (ASC), and physician office settings with increasing frequency.[1,2] The potential to establish smaller care delivery units embedded within wider geographies enables care to be delivered more locally and at a lower cost. Ambulatory care delivery enables patients to recover in the comfort of their homes and may facilitate a quicker recovery. A degree of unease over the speed of change and a concern for patient safety leaves some reticent about this shift in site of care.

The AM-PPC methodology is designed to provide comparative rates of complication exclusively for elective procedures. As a result, we exclude procedures performed in hospital emergency departments. Providers have time and the opportunity to decide when it is appropriate to treat patients and in which setting. Thus, when comparing relative rates of complication by procedure type, risk adjustment is intentionally limited, primarily, to the nature of the procedure rather than the potential for patient complexity. Patients should be determined by the provider as being sufficiently stable to tolerate the elective procedure on an outpatient basis. While not all complications of care are preventable, high rates of specified potentially preventable complications following procedures can be indicative of quality-of-care issues that can be addressed.

The AM-PPC methodology classifies procedures identified through codes reported using the Healthcare Common Procedure Coding System (HCPCS) level I and (CPT®) level II. HCPCS codes reported for encounters are classified hierarchically to provide a Procedure Sub-Group (PSG) for each encounter where one is identified. The majority of encounters in ambulatory care settings do not involve invasive elective procedures. AM-PPC classifies invasive procedures performed in

in Hospital Outpatient Provider Departments (HOPD), Critical Access Hospitals (CAH), Ambulatory Surgical Centers (ASC), and physician offices. PSG classification does not vary across settings.

The AM-PPC methodology identifies complications of care that follow an ambulatory procedural encounter. Significant complications of care attributable to a procedure resulting in subsequent emergency room, hospitalization and office visits are within the scope of AM-PPC but, generally, intra-operative complications are out of AM-PPC scope. AM-PPC focus is directed towards longitudinal patterns of adverse outcomes, e.g., infection and adverse reaction in the post-procedure period.

Each PSG defined within the AM-PPC methodology is attributed to a subset of potentially related complications of care that are monitored within a pre-set post-procedure Event Window. Complications of care identified in subsequent health system encounters are reported to the end-user and, where applicable, identified as meeting the specific criteria for being “potentially” preventable. Individual complications may be excluded from being counted as potentially preventable when they are not considered to be a likely result of the specified PSG or fall outside a complication timing window indicating that they are unlikely to have resulted from the procedure (e.g., a UTI or a wound infection reported on the day after the procedure).

Any logic that involves a longitudinal review of the trajectory of ambulatory care following an initial procedure must account for the likelihood that multiple events occur within the window and those may, in turn, be associated with other providers. The AM-PPC methodology, therefore, contains a detailed logic with rules to account for the interaction of multiple events and providers to attribute a final identified complication of care back to an initial PSG within the logic of a linked "event chain” output of results. An event chain links together for reporting various elements drawn from sequential encounters, e.g., an initial procedure, a subsequent ambulatory encounter within a fixed time interval, a hospital admission with a fixed interval, a reported complication made upon a subsequent encounter, all referenced within a common identifier called an Event Chain.

The definitions manual provides a detailed description of PSG identification, PSG hierarchies, AM-PPC complication group identification, relationship logic between PSG and AM-PPC complication groups, longitudinal event relationships (event chain logic) and the logic surrounding the subset of intra-operative complications that result in hospital admission (Type 4 Complications).

Background

With the turn of the new millennium payers, providers, and other industry stakeholders have increased their interest in both the quality and cost of hospital care. They have argued that quality of care can and should be measured. Additionally, they have argued that poor quality was not simply harmful to patients but a major driver of increased cost due to the expenditures related to complications of care. To address these concerns, the Centers for Medicare & Medicaid Services (CMS) established the Hospital Inpatient Reporting Quality program in 2003 which applies significant penalties for hospitals shown to deliver lower-quality care in the domains of patient safety, hospital-associated infections/complications, and mortality. This

move to address low quality of care as both a patient-specific and health system cost burden is not confined to the U.S.

Tracking quality of care in the ambulatory setting lags that of care delivered in the inpatient hospital setting for a variety of reasons. While the patient journey within a hospital setting can be clearly tracked through documentation in a single electronic medical record system (EMR), once discharged, this continuity is disrupted by a change in care to an ambulatory setting if the care is delivered outside of the hospital's EMR. Tracking procedures performed in an outpatient setting is even more complex due to the need to transfer information between disparate electronic medical records systems and settings (i.e., needs to integrate HOPD, ED, Inpatient, ASC, and physician office encounters). The complexity of tracking patients across a multitude of ambulatory settings and encounters is on top of the complexity that arises due to the need to differentiate between procedures that identify a complication of care and those that cause them. In response to similar considerations of differentiating causation from identification the Present on Admission (POA) identification field was introduced by CMS (October 1, 2007). The POA field is used to identify admissions in which complications may be attributed to hospital care processes from those where admission serves the objective of treating them. No equivalent reporting mechanism exists for ambulatory care claims.

With the increasing shift away from hospital inpatient care towards ambulatory care, AM-PPC logic was developed to address the existing gap in assessing the quality of outpatient care. Specifically, the AM-PPC logic was developed to promote patient safety by health care providers, payers, governments, patient safety and quality improvement organizations and efforts. Additionally, the AM-PPC logic aims to provide clinicians with actionable data as part of the standard outputs. All encounters for a given patient are chain-linked by specific logic, with procedures and significant events identified and returned for review. The detailed logic of chain creation, attribution, and event identification is given in the detailed sections of the definitions manual.

The system expressly recognizes that some procedures have higher risks. Therefore, when electing to use an ambulatory setting for elective procedures the provider should take into account the complexity and the stability of patients at the time of the procedure. The quality of the provider's judgment and decision-making process are thereby factored into the accountability for adverse outcomes.

In closing, the development team would like to specifically encourage feedback from end-users on how to improve the AM-PPC methodology. We hope and expect the methodology to evolve with useful feedback and insights.

References

1. Morris DE, Anderson DG. Why ambulatory care trends offer revenue growth potential. HFMA Leadership. Published 2019. Accessed January 7, 2022. https://www.bdcadvisors.com/wp-content/uploads/2019/05/0519_LEAD_Morris.pdf
2. Hollenbeck BK, Dunn RL, Suskind AM, Strope SA, Zhang Y, Hollingsworth JM. Ambulatory Surgery Centers and Their Intended Effects on Outpatient Surgery. Health Serv Res. 2015;50(5):1491-1507. doi:10.1111/1475-6773.12278

Definitions

This section contains the definitions of key terms and acronyms that are used throughout the AM-PPC logic.

Event

An event is a unique encounter in which a procedure, physician evaluation or other service is conducted. Outpatient hospital claims may have multiple events differentiated by line-item service date. Emergency department encounters and Inpatient hospitalizations are treated as single events regardless of the indicated duration or days upon which individual services are provided.

Event Status

Each event that meets the retainment criteria is evaluated for classification by means of assigning an Event Status. The Event Status classification is used as the primary source in understanding how the AM-PPC classification system evaluated each event within the analysis.

Procedure Subgroup (PSG)

Procedure Sub-Groups (PSGs) classify clinically meaningful sets of primarily invasive and elective procedures that are performed in the ambulatory care setting into procedure groups. All ambulatory encounters are reviewed to identify procedure codes (HCPCS/CPT) that assigned to a PSG and, where appropriate, apply a classification hierarchy to select a single mutually exclusive procedure group (PSG) to best classify the encounter. PSGs intend to describe the principal reason for an ambulatory encounter with consistent expectations of subsequent complications.

At-Risk Events (OA, O1-O4)

Ambulatory at-risk events (OA, O1-O3) are encounters that contain procedures in which a mutually exclusive PSG has been assigned and is at-risk of being followed by a complication and starting an AM-PPC Event Chain. Ambulatory at-risk procedure events are always initially classified as OA and may be reclassified as at-risk but with an identified and chained (Event Chain) complication event. The reclassified Event Status value coordinates with the complication event that was identified (e.g., OA is reclassified as O1 due to an identified C1, which is a Type 1 ED Complication).

Inpatient at-risk events (O4) are inpatient admissions that have an ambulatory procedure encounter preceding the admission date and that also contain a complication indicated as present on admission (POA). The reason for evaluating inpatient admissions for ambulatory initiated procedures is due to the 3-day or 72-hour payment rule. This rule requires hospitals to consolidate the related ambulatory procedures/services rendered to a patient within 3 days/72

hours, within the inpatient admission. Since all information needed to identify a complication of care event following an ambulatory procedure is within a single event, no event chain logic is required. Instead, all inpatient events eligible for analysis are reviewed and may be classified as a Type 4 Complication event (O4) if a PSG and credible complication is identified.

The following Event Status classifications are used to identify at-risk events:

- OA - At-risk procedure with no subsequent complication
- O1 - At-risk procedure with subsequent Type 1 (ED) Complication
- O2 - At-risk procedure with subsequent Type 2 (IP) Complication
- O3 - At-risk procedure with subsequent Type 3 (OP) Complication
- O4 - At-risk procedure within an IP admission and identifying a Type 4 Complication

Excluded At-Risk Events (EO, E1-E4)

Ambulatory at-risk procedure events (OA) may be reclassified as excluded due to encountering a subsequent event with an exclusion condition within the Event Window. When evaluating the relationship with an initial procedure encounter and the events that follow that encounter, the AM-PPC logic must exclude subsequent complications that are not credibly related (e.g., Abdominal bleed is not related to an eye surgery performed 2 weeks prior) or that present prior to the day in which they are expected to occur (e.g., sepsis on same day as procedure). Additionally, the AM-PPC logic is built upon recency and evaluating events in the sequence in which they occur. This means that when an initial ambulatory procedure encounter is followed by a second ambulatory procedure encounter, with no complication identified between the two encounters, then the logic excludes the initial procedure encounter from further evaluating (EO).

Inpatient at-risk procedure events may be classified as excluded if the complication related to the procedure (PSG) does not meet the designated timing requirements (e.g., pneumonia day after procedure).

The following Event Status classifications are used to identify excluded at-risk events:

- EO – Excluded at-risk procedure due to subsequent ambulatory procedure event
- E1 – Excluded at-risk procedure due to timing with subsequent Type 1 (ED) Complication
- E2 – Excluded at-risk procedure due to timing with subsequent Type 2 (IP) Complication
- E3 – Excluded at-risk procedure due to timing with subsequent Type 3 (OP) Complication
- E4 – Excluded at-risk procedure due to timing within an inpatient admission Type 4 (IP)

"Other" Ambulatory Event (OO)

An "Other" ambulatory event (OO) is an ambulatory encounter that contain a complication diagnosis of interest for complication analysis only. These encounters are retained specifically for capturing a revisit encounter where a complication is identified, known as Type 3 complication events (C3), when occurring within the Event Window and following an ambulatory

procedure. When "Other" ambulatory events (OO) occur outside the Event Windows of an ambulatory procedure (OA) or they occur within the Event Window, but the event chain analysis has ended prior to evaluating the "Other" ambulatory event, then the Event Status classification remains as OO.

Exclusion Events (EE)

Ambulatory procedure encounters in which one or more procedures present is defined on the exclusion procedure list will prevent the encounter from being considered at-risk and starting an event chain. Exclusion events (EE) are not considered to be potentially preventable due to the procedures being intrinsically clinically complex, not elective, or infrequently performed within the ambulatory setting. Preventability is difficult to assess hence excluded from starting an AM-PPC event chain. Exclusion events are however included within the event chain analysis to identify subsequent complication events (C3) or to end an event chain when a complication is not found between two ambulatory procedures performed on different days.

Unresolved Hierarchy Event (UH)

Ambulatory procedure encounters that are unable to result in a single PSG assignment because of conflicts not considered in the PSG Classification Hierarchy. Events that result in an unresolved hierarchy are uncommon and unlikely combinations of procedures that prevent an ambulatory encounter from being considered at-risk and that are excluded from starting an event chain. Unresolved hierarchy events (UH) are however included within the event chain analysis to identify subsequent complication events (C3) or to end an event chain when a complication is not found between the two ambulatory procedures performed on different days.

Event Unused (EU)

Ambulatory encounters that do not affect the AM-PPC logic are classified as unused events. Unused events (EU) do not contain either a complication diagnosis or a procedure code relevant to a PSG or the exclusion procedure list. Unused events are identified and reported on output individually and are ignored within the AM-PPCs analysis.

Event Terminated (ET)

Ambulatory encounters in which a procedure intended to be performed was instead terminated (discontinued) prior to the administration of anesthesia (HCPCS modifier 73). Terminated events (ET) are identified and reported on output individually and are ignored within the AM-PPCs analysis.

Complication Events (C1-C3)

Complication events are subsequent emergency department (ED) visits, inpatient (IP) admissions, or ambulatory revisits where a related complication (AM-PPC) is observed within an Event Window and following an at-risk ambulatory procedure (OA). This means that an initial ambulatory procedure was performed, and a complication of care associated with the procedure was found within the designated Event Window and within one of these three treatment settings. Each of these care settings are differentiated into their own classification type when found to be related and linked (Event Chain) to an initial at-risk procedure.

- **C1:** Type 1 Complication - An emergency department (ED) visit with a complication (AM-PPC) that is clinically related to and that presents within the Event Window (e.g., 30 days) of an ambulatory procedure that is at-risk.
- **C2:** Type 2 Complication - An inpatient admission (IP) with a complication (AM-PPC) that is clinically related to and that presents within the Event Window (e.g., 30 days) of an ambulatory procedure that is at-risk.
- **C3:** Type 3 Complication - An ambulatory encounter (OP) with a complication (AM-PPC) that is clinically related to and that presents within the Event Window (e.g., 30 days) of an ambulatory procedure that is at-risk.
- **CH:** Type 3 Complication with Hospitalization – An ambulatory encounter (OP) with a credible complication (AM-PPC) related to an ambulatory procedure (at-risk) but a Hospitalization with a credible complication (Type 1 or 2 Complication) was found on the same day and takes precedence.

Non-Events (NE, NI)

An inpatient (IP) admission or emergency department (ED) visit that falls outside the Event Window of an at-risk event, falls within the Event Window but does not contain a related complication, or the event chain analysis has ended before evaluating the IP or ED event.

- **NE:** ED non-event - Emergency Department visit with no related complications
- **NI:** IP non-event - Inpatient admission with no related complications present on admission

Rejected Events

Rejected events are identified up front in the processing logic and reported on output individually and are ignored within the AM-PPCs event chain analysis. AM-PPCs must identify any encounters that overlap on the same day so that inappropriate billing circumstances (e.g., duplicate claims) do not affect the AM-PPC event chain logic. Additionally, when evaluating both physician and facility encounters overlapping on the same day, the logic prioritizes facility encounters over physician encounters.

The following Event Status classifications are used to identify rejected events:

- **RM:** ED visit rejected due to being on same day as Inpatient admission
- **RO:** Ambulatory encounter rejected due to being on same day as another ambulatory encounter with same provider id (duplicate)
- **RA:** Professional ambulatory encounter rejected due to being on same day as a facility ambulatory encounter
- **RF:** All ambulatory encounters rejected on same day, due to identifying multiple facility ambulatory encounters with different provider ids
- **RP:** All professional ambulatory encounters rejected on same day, due to different provider ids and no facility ambulatory encounter.

Duplicate Events

The AM-PPC event chain logic allows multiple inpatient admissions found on the same day for the same patient to be included within its analysis. However, when the logic finds two Type 2 Complications or two Type 4 Complications for the same patient on the same day, the logic will reclassify one as a Duplicate Event. This ensures that only a single inpatient event is counted within the AM-PPC rates.

The following Event Status classifications are used to identify duplicate events:

- **D2:** Duplicate Type 2 Complication
- **D4:** Duplicate Type 4 Complication

Event Window

An Event Window is the duration of time (15 or 30 days) in days that is used to link subsequent events to an initial ambulatory procedure. The AM-PPC methodology provides a 30-day Event Window duration at default and is customizable, by using an option, to adjust to a 15-day Event Window.

Event Chain

An Event Chain is a sequence of subsequent events that are related to and that impact the evaluation of an ambulatory procedure at-risk (OA). An Event Chain always begins with evaluating an at-risk procedure (OA) and based on the sequence of subsequent events found within the Event Window, the initial at-risk procedure may be reclassified (e.g., OA is adjusted to O1 if a Type 1 Complication event (ED) is found within the Event Window). Event Chains are identified using an Event Chain ID that is unique to each patient.

There are additional fields related to an Event Chain, and these are the chain position and chain age range fields. The Even Chain position indicates in what sequence did the events evaluated occur (e.g., OA event – position1, ED event – position 2, etc.) The chain age range field and the

valid values detailed below are calculated based on the patients age and can be used in applying risk adjustments or to support other research and reporting.

Valid Values:

A - 0 to 7 days
B - 8 to 28 days
C - 29 to 365 days
D - 1 to 4 years
E - 5 to 17 years
F - 18 to 44 years
G - 45 to 64 years
H - 65 to 74 years
I - 75 to 84 years
J - 85+ years

AM-PPCs

Ambulatory Potentially Preventable Complications (AM-PPCs) identify harmful events (e.g., accidental laceration) or negative outcomes (e.g., sepsis) that develop or are discovered after an elective ambulatory procedure was performed and may result from processes of care than from natural progression of an underlying illness and are therefore potentially preventable. As with Inpatient PPC logic, the AM PPC logic defines a wide range of potentially preventable complications and should be understood as a rate comparison, where high rates of complications relative to a benchmark serve as a trigger for review (or basis for performance improvement incentive) but there is no a priori expectation of avoiding all complications, even under the very best standards of care.

AM-PPC Rates

The output from the AM-PPC logic is used to compute AM-PPC rates for individual facilities, physicians, or regions by computing the ratio of the number of AM-PPC chains reporting complications (sum of O1 + O2) divided by the total procedures “At-Risk” (sum of O1 + O2 + OA). Type 3 (O3) and Type 4 (O4) Complications are reported for quality control and monitoring. End users may wish to compare (and potentially include) Type 3 (O3) and Type 4 (O4) Complication rates within comparative analysis, by including O3 + O4 in both the numerator and denominator. Norms are provided that exclude Type O3 and O4 complications with a focus upon higher severity complications reported in the emergency department or at time of hospital admission.

AM-PPC rates are computed at the procedure Sub-Group (PSG) level. The expected rate is drawn from a suitable reference benchmark using Indirect Rate Standardization by PSG group. Observed rates are calculated directly from the AM-PPC outputs. Higher than expected complication rates (worse performance) may indicate opportunities to improve the quality of care for procedures being performed on an ambulatory basis.

Chapter 2: Overview of AM-PPC clinical logic

This section provides an overview of the AM-PPC logic. The logic can be divided into five phases:

Phase 1: Identify Non-Events and Rejected Events

Identifies all ambulatory encounters, emergency department visits, and inpatient admissions that meet the event identification criteria for analysis. The ambulatory events are then reviewed to identify non-events, such as unused and terminated events. All events are then assigned event dates, so that a credible timeline of events can be established and rejected events identified and excluded from analysis.

Phase 2: Determine Preliminary Classification of Ambulatory Events

Ambulatory events are reviewed by assigning PSGs, identifying exclusion and non-event procedures, and applying the PSG Classification Hierarchy to select a single mutually exclusive PSG. A preliminary Event Status Classification is assigned to the ambulatory events to determine the ambulatory procedure events that are at-risk.

Phase 3: Identify Event Chains with AM-PPCs and Determine Final Classification of Ambulatory Procedures

Sets the Event Window analysis period for ambulatory procedures that are classified as "at-risk" (OA). Subsequent events found within the Event Window are reviewed sequentially for complications (AM-PPCs) and establishing Event Chains, which will be used to determine the final classification of the ambulatory procedures.

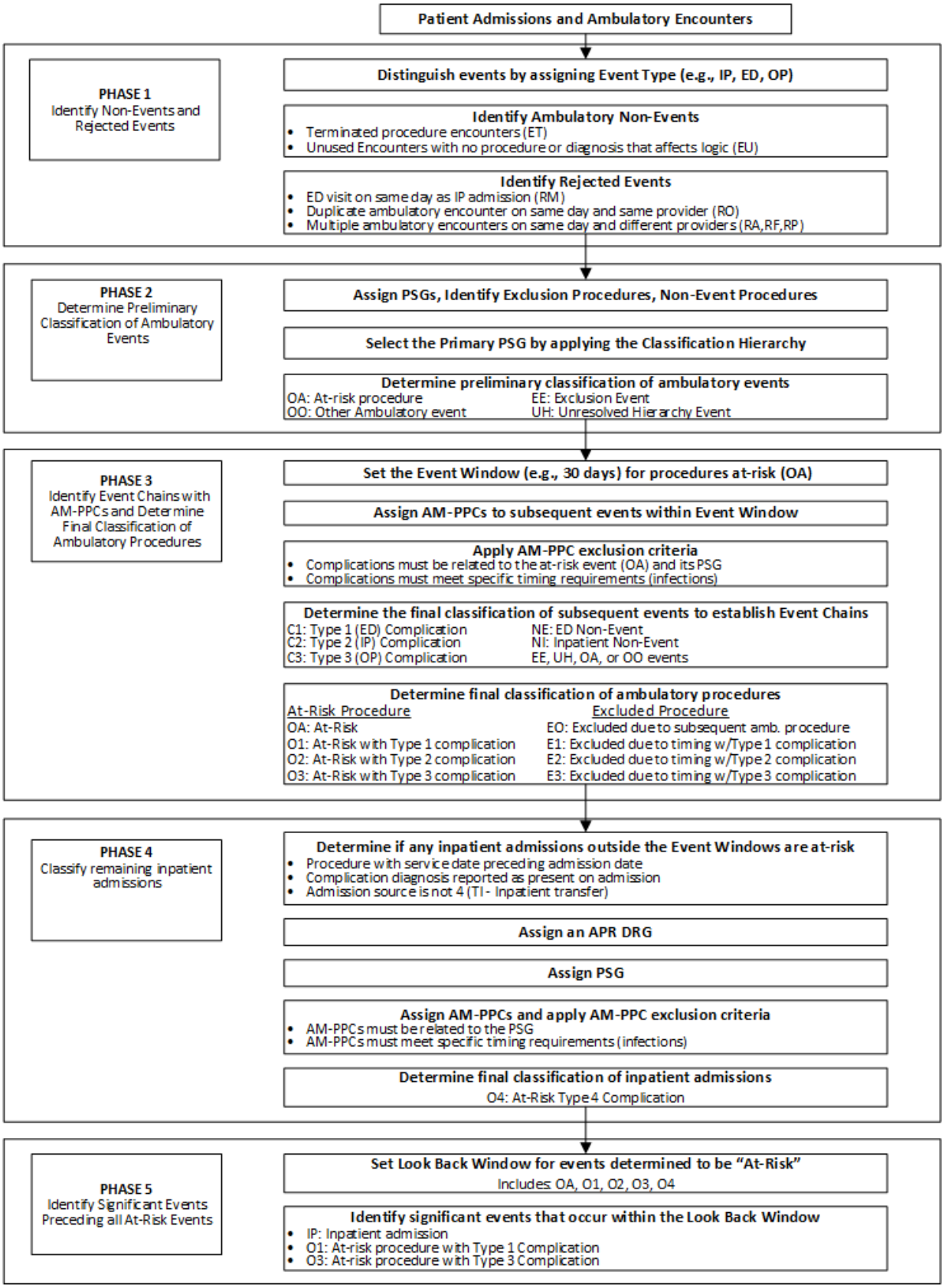
Phase 4: Classify Remaining Inpatient Admissions

Classifies the remaining inpatient admissions found outside the Event Windows, to determine if any contain a preceding at-risk ambulatory procedure which resulted in complications indicated as present on admission.

Phase 5: Identify Significant Events Preceding At-Risk Procedures

Sets the Lookback Window analysis period to determine if any significant events occurred prior to an ambulatory procedure that is classified as "at-risk."

The following figure illustrates the five-phase logic process:


Patient Admissions and Ambulatory Encounters
PHASE 1
Identify Non-Events and Rejected Events
Distinguish events by assigning Event Type (e.g., IP, ED, OP)
Identify Ambulatory Non-Events
• Terminated procedure encounters (ET)
• Unused Encounters with no procedure or diagnosis that affects logic (EU)
Identify Rejected Events
• ED visit on same day as IP admission (RM)
• Duplicate ambulatory encounter on same day and same provider (RO)
• Multiple ambulatory encounters on same day and different providers (RA,RF,RP)
PHASE 2
Determine Preliminary Classification of Ambulatory Events
Assign PSGs, Identify Exclusion Procedures, Non-Event Procedures
Select the Primary PSG by applying the Classification Hierarchy
Determine preliminary classification of ambulatory events
OA: At-risk procedure
OO: Other Ambulatory event
EE: Exclusion Event
UH: Unresolved Hierarchy Event
PHASE 3
Identify Event Chains with AM-PPCs and Determine Final Classification of Ambulatory Procedures
Set the Event Window (e.g., 30 days) for procedures at-risk (OA)
Assign AM-PPCs to subsequent events within Event Window
Apply AM-PPC exclusion criteria
• Complications must be related to the at-risk event (OA) and its PSG
• Complications must meet specific timing requirements (infections)
Determine the final classification of subsequent events to establish Event Chains
C1: Type 1 (ED) Complication
C2: Type 2 (IP) Complication
C3: Type 3 (OP) Complication
NE: ED Non-Event
NI: Inpatient Non-Event
EE, UH, OA, or OO events
Determine final classification of ambulatory procedures
At-Risk Procedure
OA: At-Risk
O1: At-Risk with Type 1 complication
O2: At-Risk with Type 2 complication
O3: At-Risk with Type 3 complication
Excluded Procedure
EO: Excluded due to subsequent amb. procedure
E1: Excluded due to timing w/Type 1 complication
E2: Excluded due to timing w/Type 2 complication
E3: Excluded due to timing w/Type 3 complication
PHASE 4
Classify remaining inpatient admissions
Determine if any inpatient admissions outside the Event Windows are at-risk
• Procedure with service date preceding admission date
• Complication diagnosis reported as present on admission
• Admission source is not 4 (TI - Inpatient transfer)
Assign an APR DRG
Assign PSG
Assign AM-PPCs and apply AM-PPC exclusion criteria
• AM-PPCs must be related to the PSG
• AM-PPCs must meet specific timing requirements (infections)
Determine final classification of inpatient admissions
O4: At-Risk Type 4 Complication
PHASE 5
Identify Significant Events Preceding all At-Risk Events
Set Look Back Window for events determined to be "At-Risk"
Includes: OA, O1, O2, O3, O4
Identify significant events that occur within the Look Back Window
• IP: Inpatient admission
• O1: At-risk procedure with Type 1 Complication
• O3: At-risk procedure with Type 3 Complication

Phase I - Identify Non-Events and Rejected Events

Phase I begins with retaining all inpatient admissions, emergency department visits, and ambulatory encounters that meet the event identification criteria. An event record, with a value indicating which type of event was identified, is established so that the AM-PPCs can apply its logic across the various types of encounters included in its analysis. Once all events are identified, the ambulatory events are reviewed first to identify non-events. All events are then sequenced in timeline order, so that multiple events occurring on the same day can be screened for rejected events.

Event identification

Each inpatient admission, emergency department visit, and ambulatory encounter are retained for event analysis with an assigned event type based on the Bill Type, Bill Type and Revenue Code, or Place of Service value code. AM-PPC logic evaluates both facility and physician encounters and relies on these primary identification values, typically found in standard billings data or claim formats (837I/837P), to identify events and apply its sequential event chain logic.

Inpatient Events

Inpatient admissions are recognized and retained as an IP event type when the facility bill type is 011x. Inpatient events are treated as a single event within the logic and are assigned an Event Date, Complication Date, and Admission Date all based upon the reported "Start Date." The Discharge Date is assigned based on the reported "End Date."

Bill Type	Bill Type Description	Event Type
011x	Hospital Inpatient (Part A)	IP

Emergency Department Events

Emergency department (ED) encounters are recognized and retained as an ED event type when the facility bill type is 013x or 085x with a line reporting any of the following ED revenue codes: 0450, 0451, 0452, or 0459. ED events are treated as a single event within the logic, regardless of there being multiple days' worth of services rendered. Each ED event is assigned an Event Date and Complication Date based upon the reported "Start Date."

Bill Type	Bill Type Description	Event Type
013x w revenue codes 0450, 0451, 0452, 0459	Hospital Outpatient - Emergency Department	ED
085x w revenue codes 0450, 0451, 0452, 0459	Critical Access Hospital - Emergency Department	ED

Ambulatory Events

Ambulatory encounters are recognized and retained as an ambulatory event type when the facility bill type is 013x, 083x, 085x or when the professional place of service value code is 11, 19, 20, 22, or 24 (with or without modifier SG). Since ambulatory events are the focal point of AM-PPCs, ambulatory events have different event types assigned based on which ambulatory setting treated a patient. Although ambulatory events are assigned different event type indicators, all ambulatory events follow the same logic paths. So, when ambulatory events are described throughout the logic specifications it inherently refers to all ambulatory event types.

Outpatient claims may contain more than one date worth of ambulatory services due to consolidating billing, and when this is identified, the AM-PPC logic may treat each service date as separate and individual events versus all days treated as a single event. The logic will only treat each service date as individualized events if there is a procedure present on the claim that is eligible for PSG assignment or the Exclusion Procedure list. This means that a single outpatient claim could initiate more than one event record because of a procedure eligible for AM-PPC analysis and more than one date worth of services being provided. When this occurs, the first event record is assigned an Event Date based on the claim "Start Date" and may also be assigned a Complication Date based on the claim "Start Date" if a complication diagnosis is also present. All subsequent event records initiated from a single outpatient claim are assigned an Event Date based upon the line-level service date of the procedures. If an outpatient claim does not meet the criteria for initiating multiple event records, then it is treated as a single event and is assigned an Event Date based on the claim "Start Date." A Complication Date is also assigned based on the claim "Start Date" if a complication diagnosis is present.

Bill Type	Bill Type Description	Event Type
013x	Hospital Outpatient	OP
083x	Ambulatory Surgery Center - Facility	ASCF
085x	Critical Access Hospital	CAH

Place of Service	Place of Service Description	Event Type
11	Physician Office	PO
19	Off Campus - Outpatient Hospital	OC
20	Urgent Care Facility	UC
22	On Campus - Outpatient Hospital	OC
24	Ambulatory Surgical Center - Professional	ASCP
24 with HCPCS Modifier SG	Ambulatory Surgical Center - Facility	ASCF

Identify Ambulatory Non-Events

Ambulatory encounters that do not contain either a HCPCS/CPT procedure or ICD-10-CM diagnosis relevant to the Procedure Sub-Groups (PSGs), Exclusion Procedure list, or Complication Groups (AM-PPCs), are classified as unused events (EU). Events classified as "Unused" are treated as nonevents by being reported individually and ignored by the AM-PPC event chain logic. The reason for ignoring these events from further analysis is because there is nothing of significance that would impact the evaluation of an ambulatory procedure resulting in a potentially preventable complication. The most common example of an unused event is an ancillary laboratory claim.

Additionally, ambulatory encounters in which a procedure was scheduled to be performed but was terminated/discontinued prior to the administration of anesthesia (HCPCS modifier 73), are classified as terminated events (ET). Events classified "terminated" are also treated as non-events by being reported individually and ignored by the AM-PPC event chain logic. The reason for ignoring ambulatory events that contain a terminated procedure circumstance is because the procedure was never performed and therefore should not be subsequently measured for complications.

Identify Rejected Events

All events included in analysis are sequenced in timeline order based on the assigned Event Date. The logic then screens for multiple events occurring on the same day, to identify and exclude Rejected Events from analysis. Rejected events may be inappropriate billing circumstances (e.g., duplicate claims) that if left in analysis it could affect the event chain analysis. Additionally, when evaluating both physician and facility encounters overlapping on the same day, the logic prioritizes facility encounters over professional encounters. This is necessary, as only a single ambulatory encounter occurring on a given service date is selected and used within the AM-PPC event chain logic, to identify subsequent complications. All rejected events are treated as non-events by being reported individually and ignored by the AM-PPC event chain logic.

The following circumstances will be identified as a rejected event:

- **RM** - ED visit rejected due to being on same day as inpatient admission
- **RO** - Ambulatory encounter rejected due to being on same day as another ambulatory encounter with same provider ID (duplicate)
- **RA** - Professional ambulatory encounter rejected due to being on same day as a facility ambulatory encounter
- **RF** - All ambulatory encounters rejected on same day, due to identifying multiple facility ambulatory encounters with different provider IDs
- **RP** - All professional ambulatory encounters rejected on same day, due to different provider IDs and no facility ambulatory encounter.

Phase II - Determine preliminary classification of ambulatory events

To determine the preliminary classification of ambulatory events, the logic first identifies any exclusion and non-event procedures and then assigns PSGs. The PSG classification hierarchy is then applied to result in a single PSG assignment, which will be used in determining the preliminary classification of ambulatory events.

Identify exclusion and non-event procedures

Exclusion Procedures

Ambulatory encounters reporting HCPCS/CPT procedures that are defined on the exclusion procedure list are flagged individually and will cause the encounter to be classified as excluded. Exclusion procedures are not considered to be potentially preventable as preventability is difficult to assess due to being clinically complex, infrequently performed in the ambulatory setting, or the procedure has an outlier complication rate for a Procedure Sub-Group (PSG). The most common example of an exclusion procedure is a procedure that is often performed on an inpatient basis, in which there is no frequency nor support for inclusion into a PSG. It is important to note that exceptions are made for certain procedures showing a trend in frequency of being performed in an ambulatory setting, such as total knee and hip arthroplasty. Additionally, an exclusion procedure may also be a procedure that is not considered elective, such as emergency dialysis.

Non-Event Procedures

Ambulatory encounters reporting HCPCS/CPT procedures that are defined on the Non-Event procedure list are flagged individually for reference purposes only. Non-Event procedure codes are ignored by AM-PPC logic, as they have no impact on the determination and classification of a particular PSG. Procedures found to have little or no preventable complications are also considered non-event procedures. The intention of flagging non-event procedures is to indicate that there was a procedure performed but that the procedure was not identified with a PSG for evaluation. The most common example of a non-event procedure is an addon procedure, as these procedures must always be done in conjunction with a primary procedure.

Assign PSGs

Procedure Sub-Groups (PSGs) classify clinically meaningful sets of primarily invasive and elective procedures into procedure groups and intend to describe the principal reason for an ambulatory encounter, with consistent expectations of subsequent complications. All ambulatory encounters are reviewed to assign a PSG to eligible HCPCS/CPT procedure codes. Multiple PSGs may be assigned, and when this occurs, the PSG Classification Hierarchy is applied to select a single mutually exclusive PSG that best classifies the encounter. However, the Classification Hierarchy is limited to evaluating procedures that are often expected to be performed together.

This means that some ambulatory encounters may not result in a single mutually exclusive PSG assignment due to uncommon or unlikely procedures being performed (Unresolved Hierarchy).

Within reviewing the rate of complication across PSGs it was found that certain PSGs had variation in rates when the patients' principal diagnosis was cancer. For this reason, certain PSGs will output a disease Cohort Group of "Oncology" to allow end-users to stratify this risk factor. Review the Cohort PSGs section for the PSGs eligible for calculating a cohort group and refer to the Cohort Group section for the list of diagnosis codes eligible for assigning the "Oncology" cohort, when coded as principal and a Cohort PSG is used to classify the encounter.

Classify the ambulatory events

Each ambulatory event for a patient is preliminarily classified to one of the following four different Event Status classification types: At-Risk (OA), Unresolved Hierarchy (UH), Exclusion Event (EE), or Other (OO).

At-risk event (OA)

Ambulatory procedure encounters that resulted in the assignment of a single mutually exclusive PSG are assigned an Event Status classification of OA, indicating at-risk. At-risk events are ambulatory procedure encounters which are subsequently measured for potentially preventable complications. This means that at-risk events (OA) always start the AM-PPC event chain analysis and may undergo an Event Status re-classification based on the events that occur following the procedure.

Unresolved hierarchy event (UH)

Ambulatory procedure encounters that did not result in the assignment of a single PSG due to PSG conflicts not considered in the PSG Classification Hierarchy. Unresolved hierarchy events are ambulatory procedure encounters in which the procedures performed in conjunction with one another are observed infrequently and therefore are excluded from being subsequently measured for potentially preventable complications. Unresolved hierarchy events are utilized in the AM-PPC event chain analysis to identify complications following an initial at-risk procedure (OA) event. This is considered, as it is possible to have more unlikely procedures performed due to a patient experiencing a subsequent complication from an initial ambulatory procedure. However, when an unresolved hierarchy event does occur after an initial at-risk procedure in which no complication is discovered between the two procedure encounters, then the AM-PPC event chain analysis ends.

Exclusion event (EE)

Ambulatory encounters that contain an exclusion procedure are assigned an Event Status classification of EE, indicating exclusion event. Exclusion events are ambulatory procedure encounters in which one or more of the procedures performed excludes the encounter from being subsequently measured for potentially preventable complications. Exclusion events are utilized in the AM-PPC event chain analysis to identify complications following an initial at-risk procedure (OA) event. This is considered, as it is possible to have a more complicated procedure performed due to a patient experiencing a subsequent complication from an initial ambulatory

procedure. When an exclusion event does occur after an at-risk event in which no complication is discovered between the two procedure encounters, then the AM-PPC event chain analysis ends.

"Other" ambulatory event (OO)

Ambulatory encounters that were retained because of a complication diagnosis only are assigned an Event Status of OO, indicating "Other" ambulatory event (OO). "Other" ambulatory encounters are included within the AM-PPC event chain analysis to capture complications following an initial at-risk procedure (OA) event. When an "Other" ambulatory event does occur after an at-risk event, but the complication reported is not considered related (qualifying) to the PSG for the initial at-risk procedure event, then the event chain analysis will continue by reviewing subsequent events for complications.

Phase III - Identify event chains with AM-PPCs to determine final classification of ambulatory procedures

Once at-risk events (OA) are identified in Phase II, the logic first sets the Event Window analysis period, and then reviews each subsequent inpatient admission, emergency department visit, or ambulatory encounter for AM-PPCs and final classification. The classification of subsequent encounters, observed sequentially, within the Event Window will be used to establish event chains and determine the final classification of the ambulatory procedure initially at-risk.

Set the event window

Once ambulatory procedure encounters that are "at-risk" (OA) are identified, the Event Window analysis period is set so that subsequent events occurring in timeline sequence within the defined analysis period can be reviewed for complications (AMPPCs). At-risk procedure events (OA) always begin the event chain logic process by setting the Event Window. The Event Window is calculated from the Event Date (day 1) of the at-risk procedure (OA) through to the end of the 30th day. So, for example, an at-risk procedure (OA) with Event Date of Jan 1, 2021, would include within its Event Window, events up to and including an event date of Jan 30, 2021.

At default, the AM-PPC logic selects a 30-day event window, as data shows it is a better range that is more informative for identifying complications. Users have the option to set a 15-day event window, if preferred.

Assign AM-PPCs

AM-PPCs are assigned to the first event within the Event Window, so that the exclusion criteria can then be applied and used to determine the final Event Status Classification for the first subsequent event. Based on the classification of the first subsequent event, the event chain analysis may continue, and when it does, the subsequent events occurring in sequence within the Event Window will also have AM-PPCs assigned and the exclusion criteria applied, to classify

the subsequent events. This will occur until the logic has either identified an eligible complication event or an exclusion event, both of which will end the event chain analysis and AM-PPC evaluation.

The AM-PPC assignment criteria are based on:

- A complication diagnosis being reported and indicated as Present on Admission (POA) for a subsequent inpatient admission.
- A complication diagnosis being reported on a subsequent emergency department visit (ED) or ambulatory encounter.

More than one AM-PPC group may be assigned if there is more than one complication diagnosis eligible for assignment to different AM-PPC groups.

The AM-PPC logic requires the diagnosis to be present on admission for inpatient admissions, as this is a principal value used in capturing complications that led to an inpatient admission. The inpatient 3M™ Potentially Preventable Complications Classification System captures complications that occur within an inpatient hospital stay, so complications cannot be POA. This is one of the key differences between the inpatient PPC methodology and the ambulatory AM-PPC methodology. The Present on Admission (POA) indicator is a required value for inpatient diagnosis reporting, but for outpatient diagnosis reporting the POA indicator is not used nor required. Due to this, it is assumed that conditions that develop during an ambulatory encounter or emergency department visit, are considered POA. This means that the logic does not use the POA field to assign AM-PPCs to a reported complication diagnosis on any ED visit or ambulatory encounter.

AM-PPCs at default treats blank/invalid, W (undetermined), and U (undetermined) POA indictors as present on admission for an inpatient admission. Users can choose to adjust their own POA settings for AM-PPC processing by adjusting two user options, which will distinguish how to treat W and U POA values as well as blanks/invalid POA values.

Apply AM-PPC Exclusion Criteria

Once AM-PPCs are assigned to the eligible subsequent event, the exclusion criteria is applied to exclude complications that cannot credibly be related or attributed to an initial ambulatory procedure that is “at-risk” (OA). The exclusion criteria include applying the qualifying exclusion logic to exclude complications that are not related to the initial procedure and applying the laterality exclusion logic, if necessary, to exclude complications reported on a subsequently planned procedure.

Qualifying Exclusion logic

Prior to classifying a subsequent event as a complication event, observed complications (AM-PPCs) must be related to the PSG associated with the at-risk event (OA). AM-PPCs on the subsequent event that are not qualifying for the PSG are flagged as excluded and will not count toward identifying a complication event. This means that the AM-PPC methodology ensures each procedure group has a defined relationship with the complication groups (AM-PPCs). This is

necessary as it is important within a longitudinal analysis to only credibly consider complications that are expected to occur following a particular ambulatory procedure.

For example, if an initial at-risk event with PSG 1 (Shoulder and Elbow Arthroscopy) is followed by an ED event with AM-PPC 18 Major GI Complications & Bleeding, the AM-PPC logic will exclude AM-PPC 18 as it is not considered qualifying/related to PSG 1.

Laterality Exclusion logic

There may be circumstances where a complication is reported on a subsequent ambulatory procedure encounter that is also "at-risk" (OA followed by OA with AM-PPC), and most often when this occurs the related complication identified takes precedence within the logic. However, it may be common practice to schedule two separate planned procedures to correct a complication observed on both sides of the body, rather than performing both procedures on the same day. The physician usually schedules two elective procedures within a short period to reduce the risk of a patient developing a complication. This was observed most often within ophthalmology practice, which is a predominant outpatient service line. Due to this observation, the logic applies the laterality exclusion criteria to exclude all AM-PPCs if both procedure encounters are assigned a PSG eligible for the laterality logic and the procedures performed on separate days were on different sides.

For example, cataract extraction with insertion of an intraocular lens of the left eye (day 1) is followed by an intraocular lens procedure on the right eye (day 7) with qualifying AM-PPC 102 assigned, due to a lens displacement complication. Before considering the lens displacement on day 7 a complication associated with the cataract surgery on day 1, the AM-PPC logic determines the laterality (L = left; R= right; B= bilateral) of both procedure encounters to ensure there is no conflict. Laterality is determined based on the presence of an anatomical HCPCS (LT, RT, or 50) modifiers appended to the procedures for a given encounter. Since the initial cataract surgery was performed on the left side (LT modifier) and the subsequent event is a surgery performed on the right side (RT modifier), there is a conflict in laterality between the two procedure events. This conflict causes all AM-PPC groups to be excluded. When no conflict exists then the AM-PPCs groups are not excluded and instead are used in classifying a complication event. In this example described, it is likely a complication occurred from a previous cataract surgery on the right side and left side but if the lens displacement complication is late and occurs outside the 30-day Event Window, it falls outside the criteria of the AM-PPC analysis.

Determine the classification of the subsequent event and establish event chains

After the subsequent event(s) are reviewed for AM-PPC assignment and the AM-PPC exclusion criteria has been applied, the final Event Status Classification of the subsequent event(s) is determined. The classification is based on the identification of a credible complication (AM-PPC) and what event type (IP, ED, OP) is being evaluated. This means that each subsequent emergency department visit, inpatient admission, and ambulatory encounter is distinguished separately in its classification, as it is beneficial to distinguish between these different levels of treatment settings. In addition, once the subsequent event is classified it its linked to the initial ambulatory procedure "at-risk" by means of an Event Chain. Event Chains are identified using an Event Chain ID that is unique to Each Chain found for a given patient. An Event Chain can be

described as the sequence of subsequent events that are found to be related to and that impact the evaluation of an ambulatory procedure that is initially “at-risk.”

AM-PPCs uses event chain logic to not only link subsequent encounters to an initial ambulatory procedure “at-risk” but it uses the classification of the subsequent events occurring in timeline sequence to determine what shall occur next within the event chain analysis. This means that depending on what occurs after an ambulatory procedure (e.g., inpatient admission) the event chain analysis may end, causing no more events to be reviewed within the Event Window for complications, or the event chain analysis will continue, and subsequent events are reviewed for complications. This section provides details on the classification of the subsequent events depending on when they occur within the Event Window and how each may impact the event chain analysis and classification of the initial procedure at-risk.

Emergency Department Event Classification (C1 or NE)

When an emergency department (ED) encounter is the first event following an ambulatory procedure “at-risk” or the event chain analysis has not ended, the ED encounter is classified as either a Type 1 Complication Event (C1) or an ED Non-Event (NE). The classification depends on the identification of a credible complication (AM-PPC) after assigning AM-PPCs and applying the AM-PPC exclusion logic. When a credible complication is identified within the ED encounter the Event Status Classification is set to C1, indicating Type 1 Complication Event. The identification of a Complication Event will end the event chain analysis, meaning that no more events within the Event Window are reviewed for complications. The Type 1 Complication identified will be used in reclassifying the initial ambulatory procedure that is “at-risk."

If, however, no credible complication was identified within the ED encounter being evaluated or the Event Chain analysis has ended prior to reaching the ED encounter, the ED encounter is assigned an Event Status Classification of NE, indicating ED Non-Event. ED non-events will not end the event chain analysis when encountered, instead, the ED encounter remains linked within the Event Chain and the next event within the Event Window is reviewed for complications that may relate to the ambulatory procedure “at-risk.”

It is important to note that all emergency department encounters occurring within an Event Window will be linked within the Event Chain of an initial ambulatory procedure at-risk, for informational purposes. This occurs regardless of the classification of the ED encounter or the AM-PPCs Event Chain analysis ending due to an event encountered earlier in the Event Window.

Inpatient Event Classification (C2, NI)

When an inpatient admission is the first event following an ambulatory procedure “at-risk” or the event chain analysis has not ended, the inpatient admission is classified as either a Type 2 Complication Event (C2) or an Inpatient Non-Event (NI). The classification depends on the identification of a credible complication (AM-PPC) after assigning AM-PPCs and applying the AM-PPC exclusion logic. When a credible complication (POA) is identified on the inpatient admission the Event Status Classification is set to C2, indicating Type 2 Complication Event. The identification of a Complication Event will end the event chain analysis, meaning that no more events within the Event Window are reviewed for complications. The Type 2 Complication identified will be used in reclassifying the initial ambulatory procedure that is “at-risk.”

If, however, no credible complication was identified within the inpatient admission being evaluated or the Event Chain analysis has ended prior to reaching the inpatient admission, the admission is assigned an Event Status Classification of NI, indicating Inpatient Non-Event. Inpatient Non-Events will cause the Event Chain analysis to end when it is encountered. The reason for ending the Event Chain analysis is because once an inpatient admission has occurred without the identification of a credible complication before or within the inpatient admission (POA), then the inpatient admission takes precedence within the logic and the care rendered within and after the Inpatient admission is outside the scope of ambulatory related quality metrics.

It is important to note that all inpatient admissions occurring within an Event Window will be linked within the Event Chain of an initial ambulatory procedure at-risk, for informational purposes. This occurs regardless of the classification of the inpatient admission or the AM-PPCs Event Chain analysis ending due to an event encountered earlier in the Event Window.

Ambulatory Event Reclassification (C3, CH)

When a subsequent ambulatory encounter (OO, OA, EE, UH) is the first event following an ambulatory procedure "at-risk." it may be reclassified as a Type 3 Complication Event (C3) or Type 3 Complication with Hospitalization (CH). The classification depends on the identification of a credible complication (AM-PPC) after assigning AM-PPCs and applying the AM-PPC exclusion logic. When a credible complication is identified within the subsequent ambulatory encounter the Event Status Classification is set to C3, indicating Type 3 Complication Event. Prior to ending the event chain analysis, the logic will evaluate any ED visit or inpatient admission event found on the same day for complications. If the ED visit or inpatient admission identify a credible complication and are classified as a Complication Event (C1 or C2) then these higher intensity treatment settings take precedence within the logic by being selected as the most significant event eligible for ending the event chain analysis and reclassifying both the initial ambulatory procedure that is 'at-risk' and the Type 3 Complication. In this scenario, the Type 3 Complication is reclassified from C3 to CH (Type 3 Complication with Hospitalization) and remains linked within the event chain. The Type 1 or Type 2 Complication occurring on the same day will be used in reclassifying the ambulatory procedure that is at-risk. If, however, no Type 1 or Type 2 Complication occurs on the same day as a Type 3 Complication, then the logic selects the Type 3 Complication as the most significant event and will be used in reclassifying the ambulatory procedure "at-risk" and ending the event chain analysis.

When no credible complication was identified within the subsequent ambulatory encounter being evaluated or the Event Chain analysis has ended prior to reaching the encounter, then no reclassification of the subsequent ambulatory event is applicable. The subsequent ambulatory encounter and its remaining Event Status Classification will be used to determine what shall occur next within the event chain analysis. If the subsequent ambulatory event being evaluated has a remaining Event Status Classification of OO (Other ambulatory event) then the Event Chain analysis will not end. Instead, the OO event remains linked within the Event Chain and the next eligible event is reviewed for complications that may relate to the initial ambulatory procedure that is still "at-risk" (OA). If, however, the subsequent ambulatory event being evaluated has a remaining Event Status classification of OA (at-risk) and no credible complication, the event chain continues but the subsequent ambulatory procedure at-risk will take over the analysis. In the instance an at-risk event is followed by another at-risk event (OA followed by OA), without a

credible complication identified between the two encounters, the initial ambulatory procedure event is reclassified as excluded (EO) and instead of ending the event chain analysis, the subsequent ambulatory procedure event that is still "at-risk" (OA) continues the event chain by restarting the Event Window analysis to look for complications that follow it. Subsequent events following the second ambulatory procedure "at-risk" (OA) are reviewed for complications. Lastly, if the subsequent ambulatory event being evaluated has a remaining Event Status Classification of EE (exclusion event) or UH (unresolved hierarchy), then the initial ambulatory procedure is reclassified as excluded (EO) and the event chain analysis ends, due to the subsequent ambulatory procedure event (EE or UH). The reason for ending the event chain when encountering an EE or UH ambulatory event without a credible complication is because an ambulatory procedure that is at-risk is followed by another procedure that is excluded from being analyzed for complications that follow them.

Apply timing exclusion logic

If a Complication Event has been identified (C1, C2, C3), an analysis is performed to determine if there was sufficient time between the procedure and the subsequently identified Complication Event (C1, C2, C3). This analysis utilizes the complication exclusion timeline, which is used in determining a credible timeline for when expected complications are most likely to occur after a procedure is performed. This means that each AM-PPC group has defined day criteria that must be met to not be excluded.

To apply this, the AM-PPC logic compares the Complication Date of the Complication Event (C1-3) against the Event Date of the ambulatory procedure at-risk (OA), to determine how many days are between the two events. Any complication (AM-PPC) that did not satisfy the required day criteria is excluded. The reason for excluding complications that present prior to the date in which they are expected to occur is because it's possible the infection was already active or could have been related to a prior event, in which the presenting complication cannot credibly be associated with the ambulatory procedure encounter being evaluated. For example, Septicemia & Severe Infections from a surgical incision would not be expected to present until after post-op day 2, if it does surface the day after the procedure, it is unlikely to be related to the procedure and more likely attributable to a previous encounter, therefore it is excluded. However, Post-Hemorrhagic & Other Acute Anemia is a complication that could present on the same day or any day following the ambulatory procedure, as this kind of complication requires no incubation period to present itself.

Determine final classification of ambulatory procedures

Once a Complication Event (C1, C2, C3) or a subsequent ambulatory procedure event with no complication (OA, EE, UH) is identified within an Event Chain, the initial ambulatory procedure "at-risk" is eligible for being reclassified as an at-risk procedure with subsequent complication or excluded procedure.

The identification of a subsequent Complication Event (C1, C2, C3) within an Event Chain reclassifies the initial ambulatory procedure "at-risk" based upon the Complication Type and the complications meeting the timing requirements. For example, if a subsequent ED encounter is

classified as a Type 1 Complication (C1) with at least one or more AM-PPCs meeting the timing requirements, then the initial ambulatory procedure is reclassified from OA to O1, indicating at-risk procedure event with subsequent Type 1 Complication. If, however, the subsequent ED encounter is classified as a Type 1 Complication (C1) and no AM-PPCs meet timing requirements, then the initial ambulatory procedure is reclassified from OA to E1, indicating excluded at-risk procedure due to timing with subsequent Type 1 Complication.

The following Event Status Classifications are used to reclassify an initial ambulatory procedure "at-risk" to at-risk with subsequent complication, when a subsequent Complication Event (C1, C2, C3) meeting timing requirements is identified within an Event Chain:

- O1 – At-risk procedure with subsequent Type 1 (ED) Complication
- O2 – At-risk procedure with subsequent Type 2 (IP) Complication
- O3 – At-risk procedure with subsequent Type 3 (OP) Complication

The following Event Status Classifications are used to reclassify an initial ambulatory procedure "at-risk" to be excluded, when a subsequent Complication Event (C1, C2, C3) not meeting the timing requirements is identified within an Event Chain:

- E1 – Excluded at-risk procedure due to timing with subsequent Type 1 (ED) Complication
- E2 – Excluded at-risk procedure due to timing with subsequent Type 2 (IP) Complication
- E3 – Excluded at-risk procedure due to timing with subsequent Type 3 (OP) Complication

The following Event Status Classification is used to reclassify an initial ambulatory procedure "at-risk" to be excluded, when a subsequent ambulatory procedure with final Event Status of OA, EE, or UH is identified within an Event Chain:

- EO – Excluded at-risk procedure due to subsequent ambulatory procedure

If no subsequent encounter eligible for reclassifying the initial ambulatory procedure was found within the Event Window, there is no adjustment in Event Status Classification. The ambulatory procedure will remain at-risk (OA) with no identified AM-PPCs.

The following table includes examples of the event chain logic and how subsequent events occurring within an Event Window are used in reclassifying the ambulatory events.

Pt	Event Type: PSG and AM-PPCs	Event Date	Initial Event Status	Final Event Status	Comments
1	**OP event:** PSG 66 Thrombectomy	09/17	OA	O1	**O1: At-risk procedure with subsequent Type 1 (ED) Complication**
	ED event: AM-PPC 40 Hemorrhage & Hematoma	09/20	C1	C1	The initial ambulatory procedure is followed by an ED visit with a related complication that meets timing requirements. The ED visit is classified as a Type 1 Complication which reclassifies ambulatory procedure from OA to O1.

Pt	Event Type: PSG and AM-PPCs	Event Date	Initial Event Status	Final Event Status	Comments
2	**OP event:** PSG 94 Upper Genitourinary Stent and Guidewire Procedure **ED event:** AM-PPC 34 Moderate Infections	09/17 09/17	OA C1	E1 C1	**E1: Excluded procedure due to timing with Type 1 (ED) Complication** The initial ambulatory procedure is followed by an ED visit with a related complication on the same day. The ED visit is classified as a Type 1 Complication, but the complication does not meet timing requirements (requires 3 days). The ambulatory procedure is reclassified from OA to E1.
3	**OP event:** PSG 65 Intravascular vena cava filter (IVCF) Procedure **IP event:** Unrelated admission, no AM-PPC **OP event:** PSG 65 Intravascular Vena Cava Filter (IVCF) Procedure **ED event:** 16 Venous Thrombosis	12/22 12/27 01/15 01/24	OA NI OA C1	OA NI O1 C1	**OA: At-risk procedure with no subsequent complication** and **O1: At-risk procedure with subsequent Type 1 (ED) Complication** The initial ambulatory procedure is followed by an inpatient admission with no related complications. The inpatient admission is classified an IP Non-Event and ends the Event Chain, with the initial ambulatory procedure remaining at-risk (OA). A subsequent ambulatory procedure is identified but the Event Chain for the initial ambulatory procedure ended, therefore, a new Event Chain is established. A subsequent ED visit with a related complication that meets timing requirements is identified and then classified as a Type 1 Complication. The subsequent ambulatory procedure is reclassified from OA to O1.
4	**OP event:** PSG 60 Dialysis Shunt Procedure **IP event:** AM-PPC 35 Septicemia and Severe Infections	06/05 06/20	OA C2	O2 C2	**O2: At-risk procedure with subsequent Type 2 (IP) Complication** The initial ambulatory procedure is followed by an IP admission with a related complication. The inpatient admission is classified as a Type 2 Complication (C2) and meets the timing requirements, this reclassifies the ambulatory procedure from OA to O2.
5	**OP event:** PSG 68 Bronchoscopy **IP event:** AM-PPC 5 Pneumonia & Lung Infections	06/05 06/06	OA C2	E2 C2	**E2: Excluded procedure due to timing with Type 2 (IP) Complication** The initial ambulatory procedure is followed by an inpatient admission with a related complication. The inpatient admission is classified as a Type 1 Complication, but the complication does not meet timing requirements (requires 3 days). The ambulatory procedure is reclassified from OA to E2.

Pt	Event Type: PSG and AM-PPCs	Event Date	Initial Event Status	Final Event Status	Comments
6	**OP event:** PSG 11 Hip Arthroplasty **ED event:** Presented for pain, no AM-PPC **IP event:** AM-PPC 128 Musculoskeletal -Mechanical Complication of Device, Implant, and Graft	04/15 04/26 05/02	OA NE C2	O2 NE C2	**O2: At-risk procedure with subsequent Type 2 (IP) Complication** The initial ambulatory procedure is followed by an ED visit where no complication was identified. The ED is classified as an ED Non-Event (NE) and the event chain continues. An IP admission is found subsequently with a related complication. The inpatient admission is classified as a Type 2 Complication (C2) and meets the timing requirements, this reclassifies the ambulatory procedure from OA to O2.
7	**OP event:** PSG 42 Laparoscopic Cholecystectomy **OP event:** AM-PPC 126 Cardiac – Mechanical Complication or Device, Implant, or Graft	09/10 09/27	OA OO	OA OO	**OA: At-risk procedure with no subsequent complication** The initial ambulatory procedure is followed by a subsequent ambulatory event reported a complication but none that are related. The subsequent ambulatory event remains classified as an OO (Other) and the event chain does not end but there are no further events within the Event Window to review. The initial ambulatory procedure is not reclassified, instead, it remains at-risk (OA).
8	**OP event:** PSG 94 Upper GU Stent & Guidewire Procedure **OP event:** AM-PPC 65 Urinary Tract Infection and PSG 94 Upper GU Stent & Guidewire Procedure	03/03 03/07	OA OA	O3 C3	**O3: At-risk procedure with subsequent Type 3 (OP) Complication** The initial ambulatory procedure is followed by a subsequent ambulatory procedure where a complication related to the initial procedure was also identified. The subsequent ambulatory procedure is reclassified from OA to C3, indicating Type 3 Complication. The complication surfaced within the Type 3 Complication event meets the timing requirements (requires 2 days), this reclassified the initial ambulatory procedure from OA to O3.
9	**OP event:** PSG 41 Mastectomy **OP event:** AM-PPC 34 Septicemia and Severe Infections	11/04 11/05	OA OO	E3 C3	**E3: Excluded procedure due to timing with Type 3 (OP) Complication** The initial ambulatory procedure is followed by a subsequent ambulatory encounter where a complication related to the initial procedure was also identified. The subsequent ambulatory encounter is reclassified from OO to C3, indicating Type 3 Complication. The complication surfaced within the Type 3 Complication event does not meet the timing requirements (requires 3 days). The initial ambulatory procedure is reclassified from OA to E3.

Pt	Event Type: PSG and AM-PPCs	Event Date	Initial Event Status	Final Event Status	Comments
10	**OP event:** PSG 34 Facial and ENT Procedure **OP event:** PSG 80 Laparoscopic Procedures with Insertion or Revision of Intraperitoneal Catheter **IP event:** AM-PPC 120 GI & Hepatobiliary -Mechanical Complication of Device, Implant, or Graft	12/18 12/30 01/19	OA OA C2	EO O2 C2	**O2: At-risk procedure with subsequent Type 2 (IP) Complication** The initial ambulatory procedure is followed by a subsequent ambulatory procedure event (OA) where no complication was identified. The subsequent ambulatory procedure excludes the initial procedure, by reclassifying it from OA to EO. The Event Chain continues by resetting the Event Window to look for complications following the second ambulatory procedure, that is still at-risk. A subsequent inpatient admission with related complication is identified, classifying the inpatient admission as a Type 2 Complication (C2). The complication surfaced within the Type 2 Complication event meets the timing requirements and the ambulatory procedure being evaluated is reclassified from OA to O2.

Phase IV - Classify remaining inpatient events

Once all ambulatory procedure events are assigned a final Event Status Classification, the inpatient admissions remaining outside the Event Windows are reviewed for final Event Status Classification. The intention of reviewing these remaining inpatient admissions is to identify ambulatory initiated procedures that resulted in hospital admission with complications of care indicated as present on admission.

Identify potential type 4 complications

Up to this point, Event Chain logic has been used to link subsequent events to an initial ambulatory procedure, to identify AM-PPCs. However, due to the 3-day or 72-hour payment rule, the AM-PPC logic evaluates inpatient admissions found outside the Event Windows to identify ambulatory-initiated procedures that resulted in hospital admission with complications indicated as present on admission (POA). The 3-day payment rule requires hospitals to consolidate related ambulatory procedures/services rendered to a patient within 3 days/72 hrs. of an inpatient admission onto a single inpatient admission claim. Since all information needed to identify a complication of care event following an ambulatory procedure is within a single event, no event chain logic is required. Instead, all inpatient admissions meeting the criteria for Type 4 Complication analysis are reviewed for final Event Status Classification.

Any inpatient admissions occurring outside the Event Windows of an ambulatory procedure and meeting the following criteria are preliminary classified as a “Potential” Type 4 Complication (P4):

- ICD-10-PCS procedure code with Service Date prior to Admission Date
- Complication diagnosis indicated as present on admission (POA)
- Admission Source is not 4 (inpatient transfer)

Inpatient admissions where the admission source value is 4 are classified as Inpatient Transfers (TI) and are excluded from further analysis. All Other inpatient admissions that do not meet the "Potential" Type 4 Complication criteria are classified as an Inpatient Non-Event (NI).

Assign an APR DRG

Each inpatient admission classified as a "Potential" Type 4 Complication (P4) will have an adjustment to its Event Date, based upon the date of the earliest procedure performed. Once the Event Date is adjusted, the inpatient admission is grouped through APR DRG, using all the diagnosis codes and just the procedures originating on the adjusted Event Date. The All Patient Refined Diagnosis Related Group (APR DRG) methodology assigns patients to one mutually exclusive base APR DRG that is determined either by the principal diagnosis or, for surgical patients, the most extensive surgical procedure performed in an operating room. The base APR DRG assignment represents the underlying reason for the hospital admission.

Assign PSGs

Inpatient admissions that are assigned a valid DRG, by APR DRG, are reviewed to assign a PSG. AM-PPCs utilizes APR DRG and its hierarchal clinical classification system to benchmark to a single mutually exclusive Procedure Sub-Group (PSG), when applicable. It is important to note that AM-PPCs and its Procedure Sub-Groups (PSGs) are limited to classifying invasive and elective ambulatory-initiated procedure encounters, for this reason, only certain DRGs or DRGs and procedure combinations are targeted for assigning a PSG.

The following criteria is used in assigned a PSG to an eligible inpatient admission:

- A target surgical APR DRG is assigned.
- A target surgical APR DRG is assigned, and one or more target ICD-10-PCS procedure codes is reported on the reset Event Date.
- Any Medical APR DRG is assigned, and one or more target ICD-10-PCS procedure codes is reported on the reset Event Date.

Using the criteria above, inpatient admissions may be assigned a single PSG based upon the return of a target APR DRG. Other times, a target APR DRG may be applicable for multiple PSGs and in this instance the procedure codes are assigned a PSG at the procedure level. Similarly, because some procedures contained in PSGs are classified as "Medical" within APR DRGs, certain procedures are eligible for PSG assignment based upon the return of any Medical DRG. When using procedures to assign a PSG, like how PSGs are assigned for ambulatory encounters, multiple PSGs may be assigned, and when this occurs, the PSG Classification Hierarchy is applied to select a single mutually exclusive PSG that best classifies the encounter.

Assign AM-PPCs and apply AM-PPC exclusion logic

Inpatient admissions that resulted in the assignment of a single mutually exclusion PSG are then reviewed for AM-PPC assignment. AM-PPCs are assigned based on a complication diagnosis being identified as present on admission (POA). After assigning AM-PPCs, the qualifying exclusion criteria is applied to exclude complications (AM-PPCs) that are not related (qualifying) to the PSG chosen for analysis. When a related complication is identified, the timing exclusion criteria is then applied to exclude complications that cannot credibly be attributed to the ambulatory-initiated procedure.

To apply this, the AM-PPC logic compares the Complication Date against the reset Event Date, to determine how many days are between the date of the initial procedure (provided at least 1 day prior to admission) and the date in which the patient was admitted. Any complications (AM-PPC) that did not satisfy the required day criteria is excluded. The reason for excluding complications that present prior to the date in which they are expected to occur is because it's possible the infection was already active or could have been related to a prior event, in which the presenting complication cannot credibly be associated with the ambulatory initiated procedure being evaluated.

Determine final classification of inpatient events

Inpatient admissions that resulted in the assignment of a single mutually exclusive PSG and a credible and attributable AM-PPC are assigned a final Event Status Classification of O4, indicating at-risk procedure with Type 4 (IP) Complication. Inpatient admissions with a single mutually exclusive PSG and related complications but none that meet the timing requirements, are assigned a final Event Status Classification of E4, indicating excluded Type 4 Complication, due to timing.

Inpatient admissions that did not result in the assignment of a PSG nor identify any related complications (AM-PPCs) are ineligible for reclassification. The inpatient admission remains classified as a "potential" Type 4 Complication (P4) for informational purposes but is excluded from considering as "at-risk." This means that inpatient admissions that remain classified as "P4" are excluded from the AM-PPC rates. Because of this, the logic adjusts the Event Date back to the initial Admission Date.

Prior to ending Type 4 Complication analysis, the logic identifies and excludes any duplicate Type 4 Complication (O4) events found for the same patient on the same Event Date. If more than one Type 4 Complication (O4) event is found for the same patient and same Event Date, the logic selects the first sequenced O4 event and adjusts the final Event Status classification from O4 to D4, indicating Duplicate Type 4 Complication.

Phase V - Identify significant events preceding at-risk events

The last step phase and step within the AM-PPC logic is to identify if any significant events preceded an at-risk ambulatory procedure.

Set the Lookback Window

Up until this point, the AM-PPC logic has utilized an Event Window that looks forward. The last phase of AM-PPC logic applies a Lookback Window of 30-days, using the procedures event date, to identify and report if any significant events occurred before an at-risk ambulatory procedure.

The following at-risk ambulatory procedure events are eligible for setting the Lookback Window analysis:

- OA - At-risk procedure with no subsequent complication
- O1 - At-risk procedure with subsequent Type 1 (ED) Complication
- O2 - At-risk procedure with subsequent Type 2 (IP) Complication
- O3 - At-risk procedure with subsequent Type 3 (OP) Complication
- O4 - At-risk procedure within an IP admission identifying a Type 4 (IP) Complication

Report Lookback Events

Lookback events intend to alert users of significant events that occurred before an at-risk procedure, as this may influence the determination of an ambulatory-initiated complication of care event. If one or more of the following events occur within the lookback window, then they will be returned back to the end-user to investigate or make informed decisions:

- IP - Hospital Admission with discharge date within the Lookback Window
- O1 - Previous at-risk event with Type 1 Complication (O1)
- O3 - Previous at-risk event with Type 3 Complication (O3)

Chapter 3: List of Procedure Subgroups (PSGs)

The following is a list of each Procedure Sub-Group (PSG) with a specification of their Service Lines, Sub-Service Lines, and Service Categories.

PSG	PSG Description	Service Line	Service Line Description	Sub-Service Line	Sub-Service Line Description	Service Category	Service Category Description
1	Shoulder and Elbow Arthroscopy Procedures	10	Orthopedic Surgery	10.5	Shoulder and Elbow Surgery	2	Surgery
2	Hand and Wrist Arthroscopy Procedures	10	Orthopedic Surgery	10.2	Hand and Wrist Surgery	2	Surgery
3	Knee Arthroscopy Procedures	10	Orthopedic Surgery	10.4	Knee Surgery	2	Surgery
4	Hip Arthroscopy Procedures	10	Orthopedic Surgery	10.3	Hip Surgery	2	Surgery
5	Ankle Arthroscopy Procedures	10	Orthopedic Surgery	10.1	Foot and Ankle Surgery	2	Surgery
6	Foot Arthroscopy Procedures	10	Orthopedic Surgery	10.1	Foot and Ankle Surgery	2	Surgery
7	Shoulder and Elbow Arthroplasty Procedures	10	Orthopedic Surgery	10.5	Shoulder and Elbow Surgery	2	Surgery
9	Shoulder and Elbow Arthroplasty Revision Procedures	10	Orthopedic Surgery	10.5	Shoulder and Elbow Surgery	2	Surgery
10	Hand and Wrist Arthroplasty Procedures	10	Orthopedic Surgery	10.2	Hand and Wrist Surgery	2	Surgery
11	Hip Arthroplasty Procedures	10	Orthopedic Surgery	10.3	Hip Surgery	2	Surgery
12	Hip Arthroplasty Revision Procedures	10	Orthopedic Surgery	10.3	Hip Surgery	2	Surgery
13	Knee Arthroplasty Procedures	10	Orthopedic Surgery	10.4	Knee Surgery	2	Surgery
14	Knee Arthroplasty Revision Procedures	10	Orthopedic Surgery	10.4	Knee Surgery	2	Surgery
15	Foot and Ankle Arthroplasty Procedures	10	Orthopedic Surgery	10.6	Thoracic Surgery	2	Surgery
16	Cervical Spine Fusion Procedures	13	Spine Surgery	13.1	Spine Surgery	2	Surgery
17	Cervical Spine Procedures	13	Spine Surgery	13.1	Spine Surgery	2	Surgery
18	Scalenus Procedures	10	Orthopedic Surgery	2.1	Cardiothoracic Surgery	2	Surgery
19	Lumbar and Sacral Spine Fusion Procedures	13	Spine Surgery	13.1	Spine Surgery	2	Surgery
20	Lumbar and Sacral Spine Procedures	13	Spine Surgery	13.1	Spine Surgery	2	Surgery

PSG	PSG Description	Service Line	Service Line Description	Sub-Service Line	Sub-Service Line Description	Service Category	Service Category Description
21	Thoracic Spine Fusion Procedures	13	Spine Surgery	13.1	Spine Surgery	2	Surgery
22	Thoracic Spine Procedures	13	Spine Surgery	13.1	Spine Surgery	2	Surgery
23	Open Hand and Wrist Procedures	7	Hand and Wrist Surgery	7.1	Hand and Wrist Surgery	2	Surgery
24	Open Shoulder Procedures	10	Orthopedic Surgery	10.5	Shoulder and Elbow Surgery	2	Surgery
25	Open Elbow Procedures	10	Orthopedic Surgery	10.5	Shoulder and Elbow Surgery	2	Surgery
26	Foot (Mid/Fore) Procedures	10	Orthopedic Surgery	10.1	Foot and Ankle Surgery	2	Surgery
27	Foot (Hind/Ankle) and Lower Leg Procedures	10	Orthopedic Surgery	10.1	Foot and Ankle Surgery	2	Surgery
28	Open Knee Fracture Repair and Ligament Procedures	10	Orthopedic Surgery	10.4	Knee Surgery	2	Surgery
29	Other Knee and Soft Tissue Procedures	10	Orthopedic Surgery	10.4	Knee Surgery	2	Surgery
30	Open Hip Fracture Repair and Other Bone Procedures	10	Orthopedic Surgery	10.3	Hip Surgery	2	Surgery
31	Hip Extra-Articular and Soft Tissue Procedures	10	Orthopedic Surgery	10.3	Hip Surgery	2	Surgery
32	Open Hip Intra-Articular Procedures	10	Orthopedic Surgery	10.3	Hip Surgery	2	Surgery
34	Facial and ENT Procedures	3	Facial and Ear, Nose, Throat Surgery	3.1	Facial and Ear, Nose, Throat Surgery	2	Surgery
39	Breast Biopsy and Localization Procedures	5	General Surgery	5.3	Breast Surgery	2	Surgery
40	Mastectomy Procedures	5	General Surgery	5.3	Breast Surgery	2	Surgery
41	Breast Procedures	5	General Surgery	5.3	Breast Surgery	2	Surgery
42	Laparoscopic Cholecystectomy Procedures	5	General Surgery	5.1	Abdominal Surgery	2	Surgery
43	Male Genital System Procedures	14	Urology	14.3	Urological Surgery	2	Surgery
44	Female Genital System Procedures	14	Urology	14.2	Urogynecology	2	Surgery
45	Ventral Hernia Procedures	5	General Surgery	5.1	Abdominal Surgery	2	Surgery
46	Complicated Ventral Hernia Procedures	5	General Surgery	5.1	Abdominal Surgery	2	Surgery
47	Pediatric Hernia Procedures	16	Pediatric General	16.1	Abdominal Surgery	2	Surgery
48	Inguinal and Hydrocele Hernia Procedures	5	General Surgery	5.1	Abdominal Surgery	2	Surgery

PSG	PSG Description	Service Line	Service Line Description	Sub-Service Line	Sub-Service Line Description	Service Category	Service Category Description
49	Thoracoscopy	2	Cardiothoracic Surgery	2.1	Cardiothoracic Surgery	2	Surgery
50	Hysteroscopy	6	Gynecology	6.1	Gynecology	1	Medical
51	Right Heart Catheterization Procedures	1	Cardiology	1.2	Interventional Cardiology	1	Medical
52	Left and Combined Heart Catheterization Procedures	1	Cardiology	1.2	Interventional Cardiology	1	Medical
53	Coronary Angiography Procedures	1	Cardiology	1.2	Interventional Cardiology	1	Medical
54	Intracardiac Valve Procedures	1	Cardiology	1.2	Interventional Cardiology	1	Medical
55	Pacemaker/AICD Procedures	1	Cardiology	1.1	Electrophysiology	1	Medical
56	Percutaneous Transluminal Coronary Angioplasty (PTCA)	1	Cardiology	1.2	Interventional Cardiology	1	Medical
57	Peripheral Vascular Access Procedures	8	Interventional Radiology	8.1	Interventional Radiology	3	Radiology
58	Peripheral Vascular Access - Tunneled and PICC	8	Interventional Radiology	8.1	Interventional Radiology	3	Radiology
60	Dialysis Shunt Procedures	8	Interventional Radiology	8.1	Interventional Radiology	3	Radiology
61	Peripheral Vascular Access - Tunneled and PICC w Pump or Port	8	Interventional Radiology	8.1	Interventional Radiology	3	Radiology
63	Peripheral Vascular - Percutaneous Transluminal Angioplasty	15	Vascular Surgery	15.2	Cardiology	2	Surgery
64	Peripheral Vascular - Ligation and Occlusion	15	Vascular Surgery	15.1	Vascular Surgery	2	Surgery
65	Peripheral Vascular - Intravascular vena cava filter (IVCF)	8	Interventional Radiology	8.1	Interventional Radiology	3	Radiology
66	Peripheral Vascular - Thrombectomy	8	Interventional Radiology	8.1	Interventional Radiology	3	Radiology
67	Varicose Vein Procedures	15	Vascular Surgery	15.1	Vascular Surgery	2	Surgery
68	Bronchoscopy	12	Pulmonology	12.1	Pulmonology	1	Medical
69	Bronchoscopy with Endobronchial Ultrasound	12	Pulmonology	12.1	Pulmonology	1	Medical
70	Upper Gastrointestinal Endoscopy Procedures	4	Gastroenterology	4.1	Gastroenterology	1	Medical
74	Upper Airway Endoscopy Procedures	12	Pulmonology	12.1	Pulmonology	1	Medical

PSG	PSG Description	Service Line	Service Line Description	Sub-Service Line	Sub-Service Line Description	Service Category	Service Category Description
75	Upper Airway Endoscopy Procedures with Intervention	12	Pulmonology	12.1	Pulmonology	1	Medical
78	Laparoscopic and Other Abdominal Procedures	5	General Surgery	5.6	Minimally Invasive Surgery	2	Surgery
80	Laparoscopic Procedures with Insertion or Revision of Intraperitoneal Catheter	5	General Surgery	5.6	Minimally Invasive Surgery	2	Surgery
81	Laparoscopic Appendix Procedures	5	General Surgery	5.6	Minimally Invasive Surgery	2	Surgery
82	Laparoscopic Bariatric Procedures	5	General Surgery	5.2	Bariatric Surgery	2	Surgery
83	Laparoscopic Bowel Procedures	5	General Surgery	5.4	Colorectal Surgery	2	Surgery
84	Colonoscopy Screening Procedures	4	Gastroenterology	4.1	Gastroenterology	1	Medical
85	Lower Gastrointestinal Endoscopy Procedures	4	Gastroenterology	4.1	Gastroenterology	1	Medical
86	ERCP & Endoscopic Biliary tract Procedures	4	Gastroenterology	4.1	Gastroenterology	1	Medical
87	Hepatobiliary Procedures	5	General Surgery	5.5	Hepatobiliary Surgery	2	Surgery
90	Extracorporeal Shock Wave Lithotripsy	14	Urology	14.1	Urology - Minimally invasive	2	Surgery
91	Lower Genitourinary Procedures	14	Urology	14.3	Urological Surgery	2	Surgery
93	Upper Genitourinary Procedures	14	Urology	14.3	Urological Surgery	2	Surgery
94	Upper Genitourinary Stent and Guidewire Procedures	14	Urology	14.3	Urological Surgery	2	Surgery
95	Upper Genitourinary Catheter (Percutaneous) Procedures	8	Interventional Radiology	8.3	Urology - General	3	Radiology
99	Spine Injection Procedures	11	Pain Management	11.1	Spine	1	Medical
101	Prostate Biopsy Procedures	14	Urology	14.3	Urological Surgery	2	Surgery
103	Routine Cataract Procedures	9	Ophthalmology Surgery	9.1	Anterior Segment Eye Surgery	4	Opthalmology
104	Complex Cataract Procedures	9	Ophthalmology Surgery	9.1	Anterior Segment Eye Surgery	4	Opthalmology
105	Intraocular Lens Procedures	9	Ophthalmology Surgery	9.1	Anterior Segment Eye Surgery	4	Opthalmology
106	Corneal and Other Anterior Surface Eye Procedures	9	Ophthalmology Surgery	9.1	Anterior Segment Eye Surgery	4	Opthalmology

PSG	PSG Description	Service Line	Service Line Description	Sub-Service Line	Sub-Service Line Description	Service Category	Service Category Description
107	Corneal Tissue Transplant Procedures	9	Ophthalmology Surgery	9.1	Anterior Segment Eye Surgery	4	Opthalmology
108	Anterior Chamber Eye Procedures	9	Ophthalmology Surgery	9.1	Anterior Segment Eye Surgery	4	Opthalmology
109	Intravitreal, Retinal, and Other Posterior Chamber Eye Procedures	9	Ophthalmology Surgery	9.3	Posterior Segment Eye Surgery	4	Opthalmology
110	Ocular Implant and Orbital Reconstructive Procedures	9	Ophthalmology Surgery	9.2	Oculoplastic Eye Surgery	4	Opthalmology
111	Strabismus and Extraocular Muscle Procedures	9	Ophthalmology Surgery	9.4	Strabismus Eye Surgery	4	Opthalmology
112	Eyelid, Lacrimal, and Conjunctival Procedures	9	Ophthalmology Surgery	9.2	Oculoplastic Eye Surgery	4	Opthalmology
115	Cochlear Device and Other Auditory Device Implant Procedures	3	Facial and Ear, Nose, Throat Surgery	3.1	Facial and Ear, Nose, Throat Surgery	2	Surgery
142	Anal and Rectal Procedures	5	General Surgery	5.4	Colorectal Surgery	2	Surgery
181	Circumcision	14	Urology	14.3	Urological Surgery	2	Surgery

Chapter 4: List of Ambulatory Potentially Preventable Complications (AM-PPC) Groups

This section lists the 3M Ambulatory Potentially Preventable Complications (AM-PPC) Groups used in identifying ambulatory complications.

AM-PPC Group	AM-PPC Group Description
5	Pneumonia and Other Lung Infections
6	Aspiration Pneumonia
7	Pulmonary Embolism
8	Other Pulmonary and Chest Complications
16	Venous Thrombosis
18	Gastrointestinal and Peritoneal Complications or Significant Bleeding
23	Genitourinary Complications except UTI
27	Post-Hemorrhagic and Other Acute Anemia
34	Moderate Infections
35	Septicemia and Severe Infections
37	Post-Procedural Infection and Deep Wound Disruption
40	Other Hemorrhage & Hematoma
48	Other Complications of Medical/Surgical Care
50	Mechanical Complication of Device, Implant and Graft
53	Infection, Inflammation and Clotting Complications of PV Catheters and Infusions
54	Central Venous Catheter-Related Blood Stream Infection
65	Urinary Tract Infection
100	Complication without Mention of Misadventure during the procedure
101	Post-Procedural Infections of Eye and Adnexa
102	Post-Procedural Complications of Eye and Adnexa

AM-PPC Group	AM-PPC Group Description
110	Pulmonary/Cardiovascular - Hemorrhage & Hematoma
112	Genitourinary/Abdominal - Hemorrhage & Hematoma
114	Musculoskeletal - Hemorrhage & Hematoma
120	Gastrointestinal & Hepatobiliary - Mechanical Complication of Device, Implant, or Graft
121	Genitourinary & Hepatobiliary - Infection, Inflammation and Other Complications of Devices, Implants or Grafts
122	Genitourinary - Mechanical Complication of Device, Implant, or Graft
123	Vascular - Mechanical Complication of Device, Implant or Graft
124	Vascular - Infection, Inflammation and Other Complications of Devices, Implants or Grafts
125	Cardiac - Infection, Inflammation and Other Complications of Devices, Implants or Grafts
126	Cardiac - Mechanical Complication of Device, Implant or Graft
127	Musculoskeletal - Infection, Inflammation and Other Complications of Devices, Implants or Grafts
128	Musculoskeletal - Mechanical Complication of Device, Implant or Graft
129	Malfunction, Reaction, or Complication of Otolaryngologic Device or Procedure
130	Breast - Mechanical Complication of Device, Implant and Graft
135	Septic Arthritis and Other Musculoskeletal Infections