Detailed Methods of the 2015 Supplemental Quality and Resource Use Reports (QRURs)

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1 INTRODUCTION

This document details the methodology for the 2015 Supplemental Quality and Resource Use Reports (QRURs) distributed by the Centers for Medicare & Medicaid Services (CMS). The 2015 Supplemental QRURs are confidential feedback reports provided to medical group practices or solo practices, as identified by their Medicare-enrolled tax identification number (TIN),[1] with information on the cost to Medicare for their Medicare fee-for-service (FFS) patients based on episodes of care ("episodes"). Episodes are defined as the set of services provided to treat, manage, diagnose, and follow up on a clinical condition or treatment. The 2015 Supplemental QRURs reflect performance on episodes that end in a calendar year 2015 performance period.

A primary goal of the 2015 Supplemental QRURs is to provide actionable and transparent information that can help TINs gauge and improve the efficiency of medical care provided to patients who have certain medical conditions or who are undergoing certain treatments. The use of episode groupers is part of Medicare's shift from a system that rewards volume of service to one that rewards efficient, effective care and reduces delivery system fragmentation. Practitioners can use episode-based information to aid with their efforts to identify ways to provide more efficient care. The reports are therefore designed to assist TINs in identifying opportunities for coordination and efficiency improvements. To achieve this goal, the 2015 Supplemental QRURs provide information on TINs' health care service utilization and costs to Medicare during episodes for common conditions and procedures. The 2015 Supplemental QRURs include episodes comprising a range of medical situations including acute hospital admissions and major treatment procedures. In the 2015 Supplemental QRURs and all supporting documentation, the term "cost" denotes the cost to Medicare from FFS paid claims. Section 1.1 below provides an additional description of the purpose of the Supplemental QRURs, and Section 1.2 lists the episodes included in the reports.

1.1 Overview of the 2015 Supplemental QRURs

CMS is constructing and reporting episodes of care in response to the mandate in Section 3003 of the Affordable Care Act (ACA) of 2010 and Section 131 of the Medicare Improvements for Patients and Providers Act (MIPPA) of 2008 that the Secretary of the Department of Health and Human Services (HHS) develop an episode grouper to improve care efficiency and quality and provide confidential reports for providers, respectively.[2] The episode grouping algorithms applied in the 2015 Supplemental QRURs are designed for use in the Medicare population.

[1] The phrase "TIN" is used throughout this document to refer to medical group practices or solo practices.
[2] Patient Protection and Affordable Care Act, Pub. L. No. 111-148, § 3003, 124 Stat. 366 (2010) and Medicare Improvements for Patients and Providers Act, Pub. L. No. 110-275, § 131, 122 Stat. 2494 (2008).

Relative to the 2014 Supplemental QRURs, the 2015 Supplemental QRURs use updated episode construction methodologies and reporting structures.

The episode information in the 2015 Supplemental QRURs is not used in calculating the Medicare Value-Based Payment Modifier (VM). The 2015 Supplemental QRURs are for informational purposes only and complement the per capita cost and quality information provided in the 2015 QRURs.[3] The 2015 QRURs and Supplemental QRURs are distributed to TINs that billed Medicare for covered services in 2015 and had at least one eligible case attributed to them (e.g., episode). One-page reports are delivered to all TINs that did not have at least one episode attributed to them. CMS intends for the 2015 Supplemental QRURs to prompt feedback from TINs receiving the reports on the episode grouping methods, which will aid in future episode grouper developments. Providers can submit written comments and suggestions on the Supplemental QRURs by sending an email to pvhelpdesk@cms.hhs.gov.

1.2 Episodes Included in the 2015 Supplemental QRURs

The 2015 Supplemental QRURs provide information on 23 major episode types that include an additional 44 episode subtypes, resulting in 67 total reported episode types. The 67 reported episode types represent acute conditions and procedures that are costly and prevalent in the Medicare FFS population. Acute condition episodes include all the care provided for the treatment of a condition, such as the initial and follow-up care for an acute myocardial infarction. Procedural episodes include the care associated with a specific treatment, such as a coronary artery bypass graft surgery, as well as related follow-up care. For some major episode types, the reports also include episode subtypes to provide additional clinical detail and to improve the actionability of the reports. Clinicians were involved in identifying and determining subtypes for each major episode type. Subtypes were constructed primarily for two reasons:

(1) to create homogenous patient cohorts with similar expected resource use; and

(2) to provide clinically-meaningful results for reporting in the Supplemental QRURs.

The *Episode Definition (2015)* files posted in the Downloads section of this CMS webpage list codes used to distinguish episode subtypes.[4]

Two methods are used to construct the 67 episode types reported in the 2015 Supplemental QRURs: Method A is used for 29 episode types, and Method B is used for 38 episode types. The methods were developed by two groups at CMS working to design episode

[3] All documentation describing the 2015 QRURs are located on this CMS webpage (https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/2015-QRUR.html).

[4] The webpage URL is https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Episode-Costs-and-Medicare-Episode-Grouper.html.

grouping algorithms for provider profiling. Method A was developed by the Center for Medicare and Medicaid Innovation (CMMI) to fulfill requirements of the ACA. Method B was developed by the Center for Medicare (CM) to complement those efforts, leverage cost measure frameworks used in value-based purchasing initiatives, and provide a more robust measure set in the Supplemental QRURs. Earlier versions of both methods were used to create the episodes reported in the 2012 and 2014 Supplemental QRURs.[5] Both methods implement clinical logic that uses Medicare administrative claims to open episodes and distribute payments for medical services to one or more episodes during a specific length of time. Some differences exist between the methods, and the methods are described in more detail in Section 2. Table 1 below lists each major condition episode type and subtype, and Table 2 lists each major procedural episode type and subtype. Both tables also specify the method used to produce the episode.

Table 1: Condition Major Episode Types and Subtypes

#	**Condition Episode Name *(Subtypes listed in italics)***	**Method**
1	Acute Myocardial Infarction (AMI) (All)	A
2	*AMI NSTEMI without Percutaneous Coronary Intervention (PCI) / Coronary Artery Bypass Graft (CABG)*	A
3	*AMI NSTEMI with PCI*	A
4	*AMI NSTEMI with CABG*	A
5	*AMI STEMI without PCI / CABG*	A
6	*AMI STEMI with PCI*	A
7	*AMI STEMI with CABG*	A
8	Asthma/Chronic Obstructive Pulmonary Disease (COPD), Acute Exacerbation	A
9	Atrial Fibrillation (AFib)/Flutter, Acute Exacerbation	A
10	Cellulitis (All)	B
11	*Cellulitis in Diabetics*	B
12	*Cellulitis in Patients with Wound, Non-Diabetic*	B
13	*Cellulitis in Obese Patients, Non-Diabetic without Wound*	B
14	*Cellulitis in All Other Patients*	B
15	Gastrointestinal (GI) Hemorrhage (All)	B
16	*GI Hemorrhage, Upper and Lower*	B
17	*GI Hemorrhage, Upper*	B
18	*GI Hemorrhage, Lower*	B
19	*GI Hemorrhage, Undefined*	B
20	Heart Failure, Acute Exacerbation	A
21	Ischemic Stroke	A
22	Kidney and Urinary Tract Infection (UTI)	B
23	Pneumonia, Inpatient (IP)-Based	A

[5] Documentation on earlier years of the Supplemental QRURs can be found on this CMS Supplemental QRURs archive webpage (https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Archives-Previous-Supplemental-QRURs.html).

Table 2: Procedural Major Episode Types and Subtypes

#	Procedural Episode Name *(Subtypes listed in italics)*	Method
24	Aortic Aneurysm Procedure (All)	B
25	*Abdominal Aortic Aneurysm Procedure*	B
26	*Thoracic Aortic Aneurysm Procedure*	B
27	Open Heart Valve Surgery (All)	A
28	*Both Aortic and Mitral Valve Surgery*	A
29	*Aortic or Mitral Valve Surgery*	A
30	*Pulmonary or Tricuspid Valve Surgery*	A
31	Cholecystectomy and Common Duct Exploration (All)	B
32	*Cholecystectomy*	B
33	*Surgical Biliary Tract Procedure*	B
34	Colonoscopy (All)	B
35	*Colonoscopy with Invasive Procedure*	B
36	*Colonoscopy without Invasive Procedure*	B
37	Coronary Artery Bypass Graft (CABG)	A
38	*CABG with AMI*	A
39	*CABG without AMI*	A
40	Hip/Femur Fracture or Dislocation Treatment, IP-Based	A
41	Hip Replacement or Repair (All)	B
42	*Hip Arthroplasty*	B
43	*Hip Arthroscopy and Hip Joint Repair*	B
44	Knee Arthroplasty	B
45	Knee Joint Repair (All)	B
46	*Meniscus Repair*	B
47	*Knee Ligament Repair*	B
48	Lens and Cataract Procedures (All)	B
49	*Cataract Surgery*	B
50	*Discission*	B
51	*Intraocular Lens (IOL) Removal/Repositioning or Secondary IOL Insertion*	B
52	Mastectomy for Breast Cancer (All)	A
53	*Lumpectomy or Partial Mastectomy without Reconstruction*	A
54	*Lumpectomy or Partial Mastectomy with Reconstruction*	A
55	*Simple or Modified Radical Mastectomy without Reconstruction*	A
56	*Simple or Modified Radical Mastectomy with Reconstruction*	A
57	*Subcutaneous Mastectomy*	A
58	Percutaneous Coronary Intervention (PCI) (All)	A
59	*PCI, IP-Based*	A
60	*PCI, OP-Based*	A
61	Spinal Fusion (All)	B
62	*Anterior Fusion – Single*	B
63	*Anterior Fusion – Two Levels*	B
64	*Posterior/Posterior-lateral Approach Fusion – Single*	B
65	*Posterior/Posterior-lateral Approach Fusion – Two or Three Levels*	B
66	*Combined Fusions*	B
67	Transurethral Resection of the Prostate (TURP) for Benign Prostatic Hyperplasia	B

Section 2 of this document describes how episodes are constructed, and Section 3 specifies how episodes are produced for the 2015 Supplemental QRURs. Sections 4 and 5 explain how episode costs are aggregated and attributed to medical group practices, respectively. Section 6 describes the information and specifications included in each exhibit and drill down table. Finally, Section 7 describes the methodological and structural differences between the 2015 Supplemental QRURs and the 2014 Supplemental QRURs.[6]

[6] See Appendix A for a list of acronyms used in this document.

2 CONSTRUCTING EPISODES

Episodes are constructed using three steps: (1) open the episode; (2) group services to the episode; and (3) close the episode. These three construction steps define an episode using a combination of logic rules and medical billing codes specific to each episode type.

(1) **Open** (also referred to as "triggering"): episodes are opened when specific billing codes on a claim indicate the presence of the episode condition/procedure;

(2) **Group**: services are grouped to the episode according to clinical logic that defines relatedness based on service and/or diagnosis codes on the claims; and

(3) **Close**: episodes are closed after a specified length of time based on the typical course of care provided for a given episode type or as a result of patient death.

These three steps use Medicare claims data to identify services that meet the specifications for defining the episode.[7] Each step makes use of the service and/or diagnosis codes present on Medicare claims or temporal characteristics, such as time from the trigger event.[8] The remainder of this section describes each construction step in turn and then describes the impact of the transition to ICD-10 codes on episode construction. As noted above, full specifications for each episode type can be found in the *Episode Definition (2015)* files posted in the Downloads section of this CMS webpage.[9]

2.1 Open Episodes

Episodes in the 2015 Supplemental QRURs are opened, or triggered, based on the occurrence of a trigger event. A trigger event is identified by certain procedure or diagnosis codes on specific service types, such as an IP stay or an office visit. The specific medical codes that identify a trigger event, also known as "trigger codes," are codes on certain types of claims which initiate an episode and indicate the presence of the given condition or procedure for a particular episode.

Condition trigger events are generally identified using the occurrence of an International Classification of Diseases (ICD) diagnosis code on an IP claim or an evaluation and management (E&M) service code on a PB claim concurrent with an IP stay with specific Medicare Severity Diagnosis Related Group (MS-DRG) codes.[10] Some condition episodes have additional logic,

[7] Parts A and B Medicare claims data include the seven claim types: inpatient (IP) hospital facility, outpatient (OP) hospital facility, physician/supplier Part B (PB), skilled nursing facility (SNF), home health (HH), hospice (HS), and durable medical equipment (DME). Table C.1 in Appendix C provides a summary of each claim type.
[8] Method B also applies a cost threshold criterion (≥ 0.5% of costs for that service category) and does not group services below this threshold.
[9] The webpage URL is https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Episode-Costs-and-Medicare-Episode-Grouper.html.
[10] Section 2.4 discusses how episode specifications account for the presence of ICD-9 on claims billed before October 1, 2015 and ICD-10 codes on claims billed after October 1, 2015.

such as the requirement of two separate occurrences of the trigger code to improve the likelihood that the patient has the medical condition. This rule is used because one diagnostic code could be used for evaluating whether a patient has a medical condition, whereas two claims with the same diagnosis make it more likely that the patient actually has the condition. Procedural episodes are opened by the occurrence of the procedure, identified by the presence of procedure codes, such as Current Procedural Terminology (CPT) codes, ICD procedure codes, Healthcare Common Procedure Coding System (HCPCS) codes, or MS-DRG codes. Triggering codes are listed in the "Trigger_Codes" tab of the *Episode Definition (2015)* files specific to each episode type.[11]

Once a trigger event is identified, Method A and B grouping algorithms apply episode opening rules to determine when an episode begins. These opening rules are specific for each episode type, to capture any related services occurring before the triggering medical event. For example, some procedural episodes that are based on surgeries examine and group services in the days prior to the surgery to capture diagnostic testing and procedures and prior visits with the surgeon.

2.2 Group Services to Episodes

Once an episode is opened, the grouping algorithms identify and aggregate the related services provided for the management, treatment, or evaluation of the medical condition during the episode window specific to the episode type. Grouping rules identify clinically-vetted and relevant service, procedural, or diagnostic codes on claims starting during the episode and aggregate those claims to the related open episode. Specifically, for each method, clinical reviewers evaluated medical codes used on claims data to determine if they were relevant services that should be grouped to a given episode.[12]

There are a number of similarities between the grouping algorithms used by Methods A and B. In both cases, the algorithm may vary by claim type or setting because the information available on a claim/line can differ by setting. In general, types of services deemed relevant by the clinicians for each method include: treatments (e.g., thrombolysis for AMI); care for typical signs and symptoms of the episode condition (e.g., pain control for chest pain during AMI); complications of the condition itself or its usual treatments (e.g., stroke for Atrial Fibrillation); diagnostic tests (e.g., echocardiogram for AMI); and post-acute care (e.g., home health care for oxygen use after an inpatient stay for pneumonia). In addition, in both cases, if a service is

[11] Method B only triggers procedural episodes with the highest-cost HCPCS code billed on the trigger date.
[12] Method A first groups medical claims/services into subunits of "interventions" that include clinically related, complementary services. An intervention represents a particular clinical service provided to the patient along with all related costs, such as facility and professional costs, associated with the service. The remainder of this report refers to analysis of claims for simplicity, but Method A's grouping algorithm performs all analysis on interventions.

associated with more than one episode type, the full cost to Medicare of the service will be assigned to all associated episodes. Including the full cost to Medicare of a service in more than one episode holds each provider accountable for the clinically-related services provided for the patient's episode. While these similarities exist between the two methods' grouping algorithms, there are also several differences. The remainder of this section discusses each method's grouping algorithm in turn.

2.2.1 Method A

Method A's assignment of services to episodes is based on rules governing the interaction between clinically-reviewed sets of diagnosis codes and procedure codes as well as the interactions between episodes. The Method A Design Report is available for download from this CMS webpage.[13] First, for each episode type, codes are specified based on their probable clinical relevance to an episode. Second, if more than one episode is open at a time, Method A uses a hierarchical set of rules uses these code sets to determine to which episode a claim/line is most closely related. Finally, entire episodes can be clinically related and associated to each other. The remainder of this section discusses each step in turn.

For each episode type, clinicians specified codes based on the probable clinical relevance of the code to the condition or treatment. Clinicians determined clinical relevance based on plausible relationships between the code and episode type, and considered historical data, possible comorbidities, and other possible clinical scenarios. These codes are used with a hierarchy, described below, to assign services to an episode. The first set of codes is trigger codes, which define the episode. Trigger codes are so strongly related to the episode that they indicate the presence of the procedure or condition and can trigger an episode. For condition episodes, trigger codes are ICD diagnosis codes. For procedural episodes, trigger codes are procedure codes such as ICD procedure, CPT, or HCPCS. The second set of codes is called "relevant services," which are more general procedures that may be have potential clinical benefit to a particular episode but may also be relevant to other episodes, such as diagnostic testing and imaging. Finally, the third set of codes is called "relevant diagnoses," which are signs, symptoms, and other diagnoses related to the episode condition or procedure. Method A only examines the principal diagnosis on a given claim/line to determine if it is "relevant." Table 3 summarizes these code sets. The code set for each episode type can be found in the "Grouping_Codes" tab of the *Episode Definition (2015)* files specific to each episode type.

[13] The webpage URL is https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/EGM-Design-Report.pdf.

Table 3: Method A Code Sets Descriptions and Examples

Code Set	Description	Example of Code in Code Set for Acute Heart Failure Episode
Trigger codes	Definitive of episode	Acute diastolic heart failure diagnosis
Relevant services	Procedures that may have clinical benefit	Chest X-ray procedure
Relevant diagnoses	Signs, symptoms, and other diagnoses related to the episode	Syncope and collapse diagnosis

If multiple episodes of different types are open at the same time, a hierarchy determines to which episode a patient's claim/line should be assigned. The hierarchy considers the service type, procedure code, and/or diagnosis code. The hierarchy accounts for the fact that patients, especially in the Medicare population, may have multiple illnesses or treatments occurring simultaneously. As discussed above, if a claim/line is equally associated to two or more episodes according to the hierarchy, it will be assigned to multiple episodes. The full cost of a claim/line will be counted in each episode to which it is assigned.[14] In addition, certain sets of services are treated as units and grouped together according to the hierarchy; for example, SNF claims occurring within 30 days after an inpatient hospital stay are assigned to the same episode as the preceding inpatient hospital stay. The hierarchy is presented in Table 4 below, which shows the hierarchy organized by claim type and specifies which episode type the claim/line will be assigned.

Table 4: Method A Grouping Hierarchy

Service Type	Criteria	Group to Episode Type	
		Procedural	Condition
IP	1) Any procedure is a trigger for procedural episode	X	-
	2) Principal diagnosis is a trigger for condition episode	-	X
	3) Principal diagnosis is relevant, or principal diagnosis is a trigger for a condition episode related to the open condition episode, or principal diagnosis is a trigger for condition episode a procedural episode treats	X	X
E&M	1) Principal diagnosis is a trigger for condition episode or condition episode a procedural episode treats	X	X
	2) Any diagnosis is relevant	-	X

[14] The option to assign the full cost of a claim/line to each episode was chosen specifically for the 2015 Supplemental QRURs. Method A can be configured differently, for example, to apportion the cost of a claim/line to more than one episode with equal shares.

Service Type	Criteria	Group to Episode Type	
		Procedural	Condition
All Other PB and DME	1) Procedure is a trigger for procedural episode	X	-
	2) Procedure is specific and principal diagnosis is a trigger for condition episode a procedural episode treats	X	X
	3) Procedure is specific and principal diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	-	X
	4) Procedure is specific	X	X
	5) Procedure is relevant and principal diagnosis is a trigger for condition episode	-	X
	6) Procedure is relevant and principal diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	-	X
	7) Principal diagnosis is a trigger for condition episode or condition episode a procedural episode treats	X	X
All Other OP	1) Procedure is a trigger for procedural episode	X	-
	2) Procedure is specific and any diagnosis is a trigger for a condition episode or a condition episode a procedural episode treats	X	X
	3) Procedure is specific and any diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	X	X
	4) Procedure is specific	X	X
	5) Procedure is relevant and principal diagnosis is a trigger for condition episode	-	X
	6) Procedure is relevant and principal diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	-	X
	7) Procedure is relevant and secondary diagnosis is a trigger for condition episode	-	X
	8) Procedure is relevant and secondary diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	-	X
HH not occurring within 20 days after an IP stay, Hospice, and SNF not occurring within 30 days after an IP stay	1) Procedure is a trigger for procedural episode	X	-
	2) Procedure is specific and any diagnosis is a trigger for a condition episode or a condition episode a procedural episode treats	X	X
	3) Procedure is specific and any diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	X	X
	4) Procedure is relevant and any diagnosis is a trigger for condition episode	-	X
	5) Procedure is relevant and any diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	-	X
	6) Principal diagnosis is a trigger for condition episode or condition episode a procedural episode treats	X	X
	7) Principal diagnosis is relevant, or a trigger for a condition episode related to an open condition episode	X	X

Method A builds episodes using the approach described above and also allows episodes to be associated and linked to other episodes. An episode can be associated with another episode for two reasons: i) when a procedure is performed for the treatment of a condition, and ii) when a procedure or condition episode is considered as aftereffects or secondary results of a condition.[15] For example, a patient may have a PCI as treatment for AMI. Both the PCI episode and the AMI episode will be built using episode's code sets, with services assigned according to the hierarchy. The entire cost of the PCI, including all the services assigned directly to it, will also be assigned indirectly (by association) to the AMI episode (but without double-counting any costs). For the 2015 Supplemental QRURs, both episodes are reported and attributed separately to hold each managing provider accountable for their care and its outcomes. In this example, the PCI will be reported and attributed to the performing physician independently of the AMI, which will also include the costs of the PCI and be attributed to the physician group practice or solo practitioner managing the care of the patient during the inpatient hospital stay.[16] The *Episode Definition (2015)* files posted on this CMS webpage specify which episodes can be associated to each other.[17]

2.2.2 Method B

The assignment of services to episodes for Method B distinguishes two categories of medical care:

(i) "*treatment services*" which are services directly attributable to the provider managing the patient's condition as well as ancillary services complementing the services of the managing provider, and

(ii) *"clinically associated services*" which include those services not defined as treatment but that are clinically related to the episode (e.g., routine follow-up as well as services linked to the occurrence of adverse outcomes fully or partially influenced by the quality of care delivered during treatment).

The remainder of this section discusses the definition of treatment services and clinically associated services in further detail.

Treatment services represent the care directly under the control of the provider managing the episode and are automatically grouped to the episode.[18] Broadly, Method B classifies

[15] Method A calls the second association "sequela episodes." Specifically, sequela episodes are complications or following episodes associated with a primary episode.
[16] Detail about how episodes are attributed to providers can be found in Section 5.
[17] The webpage URL is https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Episode-Costs-and-Medicare-Episode-Grouper.html.
[18] "Treatment" services and "clinically associated services" are reported in the 2015 Supplemental QRURs and are defined in Section 6.4.

services as treatment if they are performed by the provider managing the patient's condition or are ancillary services complementing the services of the managing provider. For condition episodes, the following two types of services are considered treatment: (i) all services occurring during the trigger IP stay; and (ii) physician services provided by the managing provider(s) in the three days prior to the episode trigger event. For procedural episodes, the following two types of services are considered treatment: (i) all services occurring on the day of the procedure (or all services during the IP stay if the trigger procedure is performed in the IP setting); and (ii) all services in a fixed period before and after the trigger event on days the patient is treated by the managing provider.[19] The treatment services window described in (ii) varies for each episode type.

Clinically associated services include those services not defined as treatment but that are clinically related to the episode. To determine which services should be grouped as clinically associated for Method B, clinicians systematically reviewed categories of services delivered during an episode window and assigned rules that specify which services to include in the episode and under which circumstances. The pool of services considered for clinical review consisted of all high-cost, frequent services that occurred in the episode window and were delivered to anyone in the Medicare population who experienced an episode. As mentioned above, services grouped as clinically associated included medical procedures for routine care of an episode and those services that are potentially preventable with high-quality initial management of the episode illness.

Clinicians determined the best grouping rule for use with each individual relevant service according to its clinical context. The set of potential grouping rules that could be selected are listed in Table 5. SNF claims were not evaluated by clinicians but rather were included when linked to an IP stay grouped to the episode. The complete grouping logic for each episode can be found in the *Episode Definition (2015)* file specific to that episode type.

[19] Empirical research was performed on services that were provided on days on which the patient saw the managing provider of the episode. The majority of services were (i) provided by the managing provider and (ii) related to the episode. Few services on those days were delivered by other providers. As a result, the pool of services that were reviewed by clinicians were focused on potential clinically associated services and not services designated as treatment services for the episode.

Table 5: Method B Service Grouping Options for Clinically Associated Services

Grouping Rule	Description
1. Always Group Service	The service is grouped to the episode when occurring in the clinically associated services period.
2. Group if Service is Newly Occurring[20]	The service, when occurring in the clinically associated services period, is grouped to the episode if the service is newly apparent in the patient's claims history after the episode begins.
3. Group Service with Diagnosis	The service, when occurring in the clinically associated services period, is grouped to the episode when occurring with the specified diagnosis on the claim.
4.Group Service with Diagnosis if Service is Newly Occurring	The service, when occurring in the clinically associated services period, is grouped to the episode when occurring with the specified diagnosis on the claim and the service is newly apparent in the patient's claims history after the episode begins.
5. Group if Diagnosis is Newly Occurring	The service, when occurring in the clinically associated services period, is grouped to the episode if the specified diagnosis on the claim is newly apparent in the patient's claims history after the episode begins.
6. Group if Service or Diagnosis is Newly Occurring	The service, when occurring in the clinically associated services period, is grouped to the episode if the service *or* specified diagnosis on the claim is newly apparent in the patient's claims history after the episode begins.
7. Group if Service and Diagnosis are Newly Occurring	The service, when occurring in the clinically associated services period, is grouped to the episode if the service *and* specified diagnosis on the claim are newly apparent in the patient's claims history after the episode begins.

Clinicians reviewed and determined whether services should be grouped based on the services alone or only when the services appeared on claims with specific procedural or diagnosis information. To provide an example of grouping clinically associated services, clinicians chose to group a hospital admission for skin ulcers as clinically associated for the Cellulitis episode. In other words, clinicians determined that a hospitalization for skin ulcers was clinically associated with the initial Cellulitis hospitalization. To group this service, clinicians determined that all IP services with the MS-DRG for skin ulcers should be grouped to the episode under the first grouping rule "always group service." Therefore, an IP claim with a MS-DRG for skin ulcers was grouped as a clinically associated service to the cellulitis episode, regardless of any other diagnosis or procedure information on the claim. As another example, in the OP setting, clinicians determined that an evaluation and management (E&M) service for "established patient office or other outpatient visit, typically 25 minutes" (CPT 99213) was clinically associated with the episode and should only be grouped based on supporting

[20] The terms "newly occurring" or "newly apparent" are defined as not occurring in the patient's claim history in the 90 days prior to the episode trigger.

information on the claim, such as diagnosis information. As a result, clinicians reviewed a list of all diagnoses occurring with this service and determined that the service should be grouped to the episode under the third grouping rule "group service with diagnosis." In other words, the E&M service must have a primary diagnosis for "cellulitis and abscess of leg, except foot" (ICD-9 diagnosis 682.6) or for "cellulitis and abscess of unspecified site" (ICD-9 diagnosis 682.9) to be grouped to the Cellulitis episode.

Method B examines services in the context of each episode independently. A service is either clinically associated with a given episode or not, regardless of other episodes the patient may be experiencing. Episodes also do not interact with each other. If a service is associated with more than one episode type, the full cost of the service will be assigned to all associated episodes. For example, a hospital readmission could be grouped to one episode while also triggering another episode. Thus, if a beneficiary with a Hip Replacement episode is readmitted to a hospital for cellulitis that resulted as a complication of the hip replacement, the readmission will be grouped to the Hip Replacement episode as well as trigger a Cellulitis episode. The full cost of the hospital readmission will be grouped to the Hip Replacement episode and to the Cellulitis episode.

2.3 Close Episodes

The final step in episode construction to end the episode. Method A and B grouping algorithms both utilize a fixed window of time after a trigger event to scan for related claims to assign to the episode.[21] This time window, or episode length, was selected for each episode type based on the typical course of medical care provided for that episode type. The clinical reviewers discussed and validated these episode lengths during the episode development process. The episode length for each episode type is listed on the "Overview" tab of the *Episode Definition (2015)* files specific to each episode type.

2.4 Transition to ICD-10

Effective October 1, 2015, all providers transitioned to the 10th Revision of the International Classification of Diseases (ICD-10) medical code set for identifying diagnosis in all settings and IP hospital procedures on claims. Both Method A and Method B were updated to include ICD-10 codes in episode definitions. The update process used CMS's General Equivalency Mappings (GEMs) to provide an initial crosswalk of codes between the original ICD-9 episode definitions and the potential ICD-10 codes. In cases where the GEM provided multiple ICD-10 codes for a given ICD-9 code, clinicians chose the most appropriate ICD-10

[21] For certain condition episodes, Method A allows episodes to be combined with other closely related episodes. When episodes are combined, the resulting episode takes the longest episode window between the episodes.

code for each ICD-9 code that was included in an episode definition. After clinical review, the updated episode definitions underwent testing to ensure that the transition did not negatively impact the episode construction algorithm. The final mapping from ICD-9 to ICD-10 is not a definitive crosswalk between the two code sets. For example, when selecting which ICD-9 code to map an ICD-10 code to, clinicians sometimes needed to choose which of two episode types the ICD-10 code would trigger. The selected ICD-10 codes for each episode type are available for review in the *Episode Definitions (2015)* file on this CMS webpage.[22] These ICD-10 codes were then used when constructing any episodes with dates spanning October 1st, 2015 to December 31st, 2015. The CMS GEMs are available for download and review at this CMS webpage.[23, 24]

[22] The webpage URL is https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Episode-Costs-and-Medicare-Episode-Grouper.html.
[23] If Method A and Method B episodes are used for data that only contains ICD-10 code, the episode definitions will need to be re-defined for ICD-10, as the created crosswalk alone is not adequate.
[24] The webpage URL is https://www.cms.gov/medicare/coding/icd10/2015-icd-10-cm-and-gems.html.

3 PRODUCING EPISODES

To ensure that the 2015 Supplemental QRURs report comparable episodes, episodes for certain beneficiaries and certain individual episodes are excluded from reporting. Section 3.1 describes how episodes are restricted based on the Medicare beneficiary's characteristics to ensure that all episodes capture the full cost of the patient's treatment. Section 3.2 details how certain episodes are excluded from the reports to make episodes more comparable across patients and providers.

3.1 Beneficiary Exclusions

To ensure that the 2015 Supplemental QRURs assess TINs based on Medicare payments for services provided to beneficiaries whose Medicare benefits are comparable, some episodes are excluded from reporting based on characteristics of the Medicare FFS beneficiaries. The same beneficiary exclusions are applied for both methods of episode construction. The 2015 Supplemental QRURs exclude episodes for beneficiaries who meet either of the following criteria from the 90 days prior to the trigger date of their episode through the end of their episode:

- Beneficiary is not continuously enrolled in both Medicare Parts A and B, or is enrolled in Part C.
- Beneficiary is receiving Medicare-covered services for which Medicare was not the primary payer.[25]

These beneficiaries are excluded because they may receive services (e.g., covered under Part C or a payer other than Medicare) that cannot be captured through FFS claims data. If these beneficiaries were included, the providers treating them might incorrectly appear to incur lower costs.

3.2 Episode Exclusions

The 2015 Supplemental QRURs exclude certain individual instances of episodes in the reported episode types to improve episode homogeneity. Excluded episodes are clinically invalid or have extremely low or extremely high costs unrelated to the course of care. Furthermore, to separate episodes into report years, only episodes that end in 2015 are included

[25] Whether a patient is receiving services for which Medicare is not the primary payer is determined using both the Medicare's Enrollment Database (EDB) and Medicare FFS claims data.

in the 2015 Supplemental QRURs.[26] The following lists episodes that are excluded for both Method A and Method B:

- Episodes triggered in a non-acute inpatient prospective payment system (IPPS) hospital;
- Episodes with the episode end date not falling in 2015;
- Episodes where the beneficiary dies before the trigger date of the episode;
- Episodes with a same day IP transfer on the trigger date;[27] and
- Procedural episodes that are not attributed to any TIN.[28]

Each grouping method also has some additional episode exclusions that are unique and based on the grouping algorithm used.[29] The following lists additional episode exclusions used only for Method A. There are some exclusions that were only made for specific episode types, and a full list of these exclusions is displayed in the relevant *Episode Definitions (2015*) file.

- Episodes that do not group their triggering claim;
- Episodes that are triggered by a zero cost claim;
- Episodes that are zero total cost;
- Episodes that do not group an IP stay that has a trigger code for the episode and is concurrent with the episode's trigger date;
- Episodes that group chemotherapy or cancer radiation services;
- Episodes with a sub-category or an MS-DRG on the triggering IP claim not recommended for reporting;[30]
- Episodes with sequela episodes that have no end date, such as chronic condition episodes;[31]

[26] For Method A episodes, the greater of episode end date and trigger date + 90 days is used. This restriction accounts for episodes that end prematurely due to the beneficiary dying during the episode.
[27] Method B episodes only have this restriction applied to condition episode types.
[28] Since procedural episodes are attributed only if the procedure is performed, procedural episodes that were not attributed are considered incomplete since the procedure may not have taken place. On the other hand, condition episodes are attributed if a TIN billed at least 30 percent of IP E&M visits during the episode's trigger event. Condition episodes that were not attributed are still considered complete and are included in risk adjustment and aggregate national statistics. See Section 5.1 for more information about attribution to TIN(s).
[29] The episode exclusions for Method A and B were determined at the direction of CMMI and CM, respectively.
[30] Certain episodes that were still under development were stratified into specific sub-categories and were excluded from the 2015 Supplemental QRURs.
[31] Sequelae episodes are complications or following episodes associated with a primary episode.

- Procedural episode combinations that make up less than 5% of episodes within the episode type;
- Procedural episodes marked as bilateral;[32] and
- Condition episodes treated by excluded procedural episodes.

The following lists episode exclusions used only for Method B.

- Episodes where the beneficiary has missing date of birth;
- Condition episodes where the admission date for the index hospitalization is the same as the admission date of another inpatient stay;
- Procedural episodes where the trigger CPT/HCPCS code is not the highest-cost PB service billed for the beneficiary on that date;[33]
- Procedural episodes where a CPT/HCPCS code determined to be clinically similar to the trigger CPT/HCPCS code was billed in the 90 days prior to the trigger and was the highest-cost PB service delivered on that day to the beneficiary.[34]

[32] Procedural episodes marked as bilateral contain services for both sides of the body (e.g., a Hip Fracture episode with a repair done on the left hip and a screening performed on the right hip).
[33] Codes indicating anesthesia or ASC facility charges are excluded when determining the highest-cost service.
[34] "Clinically similar" is defined as a CPT/HCPCS code that falls into the same Clinical Classifications Software (CCS) Services and Procedure Category as the trigger CPT/HCPCS code.

4 AGGREGATING EPISODE COSTS

The 2015 Supplemental QRURs present the average payment-standardized, risk-adjusted cost to Medicare for episodes attributed to a TIN. Episode costs are payment-standardized to remove the effects of geographic variation in Medicare payment policy and other payments that support larger Medicare program goals. Episode costs are also risk-adjusted to account for patient case-mix within each major episode type. The risk adjustment approach used is similar to the approach used for the existing Medicare Spending per Beneficiary (MSPB) Measure (National Quality Forum (NQF) #2158) with some adjustments to accommodate the episode construct.[35] The five steps to calculate a TIN's average payment-standardized, risk-adjusted episode amount for the 2015 Supplemental QRURs are:

(1) standardize claim payments;

(2) calculate standardized episode costs to Medicare;

(3) winsorize observed standardized episode costs to Medicare;

(4) calculate predicted standardized episode costs to Medicare; and

(5) calculate risk-adjusted standardized episode costs to Medicare.

The following sections describe these steps in turn.

4.1 Step 1: Standardize Claim Payments

In the first step, claim payments are standardized to eliminate geographic differences in rates paid within Medicare payment systems. All payment data shown in the 2015 Supplemental QRURs reflect allowed amounts, which include both Medicare trust fund payments and beneficiary deductible and coinsurance. Payments are standardized to eliminate geographic differences and special program payments unrelated to resource use, such as disproportionate share hospital (DSH) payments, except where explicitly noted. Payment standardization assigns a standardized allowed amount for each service to facilitate comparison across providers. For an overview of payment standardization, please see the *Basics of Payment Standardization* document available through this QualityNet webpage.[36] For a detailed description of the methodology applied to each setting, please see the *CMS Price Standardization Methodology* document that is also available through the QualityNet webpage.

[35] More information on the MSPB Measure methodology can be found on this QualityNet webpage (http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1228772053996).

[36] The webpage URL is http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772057350.

4.2 Step 2: Calculate Standardized Episode Costs

Next, standardized episode costs to Medicare are calculated before performing risk adjustment. For each episode, standardized episode cost to Medicare is the sum of all standardized Medicare claims payments for grouped services. All grouped services are determined by the episode construction methodologies described in Section 2.2 and occur during the episode window.

4.3 Step 3: Winsorize Observed Standardized Episode Costs

In the third step, extremely high-cost and low-cost standardized episode costs are winsorized (i.e., "top coded"/"bottom coded") to limit the influence of outliers on the calculation of risk-adjusted costs. Winsorization is a statistical transformation that limits extreme values in data to reduce the effect of possibly misleading outliers. Within each episode type, episodes with observed payment-standardized cost below the 1st percentile and above the 99th percentile of all episodes of that type nationally are assigned the value of the 1st and 99th percentile, respectively.

4.4 Step 4: Calculate Predicted Standardized Episode Costs

The fourth step uses a multiple linear regression model to predict the relationship between the independent variables and the top or bottom coded standardized episode cost from Step 3. The cost prediction approach, also referred to as risk adjustment, is designed to align with the approach used to calculate CMS' existing MSPB Measure, which is part of CMS' Hospital Value-Based Purchasing (VBP) Program.[37] The MSPB and Supplemental QRUR risk adjustment models broadly follow the 22nd version of the CMS hierarchical condition category (HCC) risk adjustment methodology (CMS-HCC V12), which is derived from Medicare Part A and B claims and is used in the Medicare Advantage (MA) program. The risk adjustment model calculates predicted payment-standardized costs based on patient health and non-health explanatory variables using an ordinary least squares (OLS) model estimated separately for each major episode type.[38]

The predicted cost of an episode is estimated using information available from 90 days before the start of the episode for Method A episodes and the trigger date of the episode for

[37] QualityNet, "MSPB Measure Information Form" (Revised June 2015), https://qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772057350.

[38] CMS, "Evaluation of the CMS-HCC Risk Adjustment Model" (March 2011), http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/downloads/Evaluation_Risk_Adj_Model_2011.pdf. The model software and mappings can be found on this CMS webpage (http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors.html).

Method B episodes. Method B episodes do not include any pre-treatment services (i.e., occurring before the trigger date) that are grouped to the episode in the risk adjustment model. Table 6 summarizes the explanatory variables used in the risk adjustment model, the time period in which data is collected to define the variable, and the type of episodes the variable is relevant to. See Appendix B for a full list of the independent variables used in the risk adjustment model.

Table 6: Risk Adjustment Explanatory Variables

Variable Type	Variable Description	Time Period	Applicable Episodes
Age	Age as a categorical variable	Age as of episode start†	All episodes
Case Mix	Indicators for 79 HCCs and 11 HCC interactions and one indicator for receiving End Stage Renal Disease (ESRD) benefits	90 days prior to episode start	All episodes
Enrollment Status	One indicator for qualification for Medicare through disability	Original patient enrollment	All episodes
Long-Term Care	Indicator for whether patient recently required at least 90 days of continuous care in a long-term care facility	90 days prior to episode start	All episodes
Severity	Indicator of MS-DRG of triggering IP admission	Initial IP admission	All episodes
Emergency Room*	Indicator for the patient entering care through the emergency room	Initial IP admission	Certain episodes
Open/Endovascular*	Indicator for type of trigger surgery performed	Trigger procedure	Aortic Aneurysm Procedure
Laterality*	Indicator for having a procedure performed on both sides of the body within the episode window	Trigger through 90 days following the trigger	Certain episodes
Subtype*	Indicator for different clinical situations that may be outside the provider's control and that are not already accounted for by the case mix and severity indicators	Method A: Episode start through episode end Method B: Episode start through episode trigger	Certain episodes
Procedural Combinations*	Indicator for major procedure episodes combined with minor procedure episodes	Episode start through episode end	Certain episodes

†Episode start is defined as the date that the episode was triggered, or opened.

*The Emergency Room, Open/Endovascular, Laterality, and Subtype, and Procedural Combination variables are included in the risk adjustment regression as a categorical interaction variable.

The last five variables listed in Table 6 – subtype, emergency room, open/endovascular, laterality, and procedural combinations – only apply to certain episode types and are not part of the MSPB risk adjustment method. Interaction indicators between these three variables are used in the risk adjustment regression. The subtype factor is applicable for episode types that have

subtypes, and the rationale for reporting subtypes to account for the various patient condition groups within an episode type was discussed in Section 1.2. The emergency room factor is applicable for the Aortic Aneurysm Procedure and Cholecystectomy and Common Duct Exploration episode types. For those two episode types, the model accounts for whether the triggering IP hospitalization was emergent (initiated through an emergency room visit) or planned (not initiated through the emergency room) to account for the fact that emergent cases are clinically distinct from planned hospitalizations and have different expected episode costs. The open/endovascular indicator is applied to the Aortic Aneurysm Procedure episode type since the type of procedure can have substantial impact on Medicare costs related to the procedure. The laterality factor is applicable for the Hip Replacement or Repair, Knee Arthroplasty, and Lens and Cataract Procedures episode types to account for instances when the provider performed the procedure on both sides of the body. An episode is classified as bilateral if the procedure is performed on both sides on the same day or if the procedure is performed on each side on separate days within a 90-day period. The procedural combinations factor apply to the following Method A episode types:[39]

- CABG,
- Hip/Femur Fracture or Dislocation Treatment, IP-Based,
- Mastectomy,
- Open Heart Valve Surgery, and
- PCI.

4.5 Step 5: Calculate Risk-Adjusted Standardized Episode Costs to Medicare

The fifth step calculates the final risk-adjusted standardized episode cost to Medicare for each TIN. For a given TIN and episode type, risk-adjusted standardized episode cost is calculated as the average of the ratios of each episode's observed costs (Step 3) to its expected costs (Step 4), multiplied by the national average observed episode cost. Equation 1.1 displays this basic formula to calculate risk-adjusted standardized episode cost to Medicare.

[39] These episode types combine with at least one of the Method A limited episode types of cardiac catheterization, hip replacement, lumpectomy, or pacemaker.

(1.1)

$$Risk\text{-}adjusted\ Cost = Average\left(\frac{Observed\ Episode\ Cost}{Expected\ Episode\ Cost}\right) * National\ Average\ Observed\ Episode\ Cost$$

Mathematically, the average risk-adjusted standardized cost for episodes of type *k* attributed to TIN *j* is provided in Equation 1.2.[40]

$$Risk\text{-}adjusted\ Cost_{jk} = \left(\frac{1}{n_{jk}}\sum_{i\in\{I_{jk}\}}\frac{Y_{ijk}^{T}}{\hat{Y}_{ijk}}\right) * \left(\frac{1}{n_{k}}\sum_{i\in\{I_{k}\}}Y_{ik}^{T}\right)$$

(1.2)

where

Y_{ijk}^{T} = standardized payment for episode *i* at TIN *j* for episode type *k* after winsorization (*T*), obtained in Step 3,

$\hat{Y}_{ijk}$ = payment for episode *i* at TIN *j* for episode type *k*, using the predicted values from Step 4,

Y_{ik}^{T} = standardized payment for episode *i* of episode type *k* after winsorization (*T*), obtained in Step 3, across all episodes,

n_{jk} = number of episodes at TIN *j* for episode type *k*,

n_{k} = total number of episodes nationally of episode type *k*,

$i \in \{I_{jk}\}$ = all episodes *i* in the set of episodes attributed to TIN *j* that are of episode type *k*, and

$i \in \{I_{k}\}$ = all episodes *i* in the set of episodes that are of episode type *k*.

[40] The national episode-level risk-adjusted standardized costs, as shown in Exhibits 1 and 2, can be calculated using Equation 1.2 by treating all episodes as coming from the same TIN. The TIN-specific episode-level risk-adjusted standardized costs can be calculated and reported at the major episode type and subtype, as described in Section 6.1.

5 ATTRIBUTING EPISODES

The 2015 Supplemental QRURs attribute responsibility for each episode to one or more TINs and identify one or more lead eligible professionals (EPs) within the attributed TIN. All episodes attributed to a TIN are included in the TIN's 2015 Supplemental QRUR. The first step in attributing episodes in the 2015 Supplemental QRURs is to identify the TIN(s) most responsible for the care and management of the episode, based on specific criteria for each episode type. Because each TIN receives their own unique 2015 Supplemental QRUR, this step determines which episodes will be included in a TIN's report. The second step is to identify lead EP(s) within the attributed TIN(s) that are most responsible for each attributed episode for informational purposes. Table 7 presents the methodology for attribution to TIN(s) and identification of lead EP(s) for acute condition and procedural episode types.[41]

Table 7: Attribution to TIN(s) and Lead EP(s) Identification Methodology

Episode Type	TIN(s) Attribution	Lead EP(s) Identified within Attributed TIN
Acute Condition	TIN(s) billing at least 30% of IP E&M visits during trigger event	Top three EPs with highest number of IP E&M visits during trigger event
Procedural	TIN(s) listed on trigger physician claims concurrent with trigger event	Performing EP(s) on trigger physician claims concurrent with trigger event

Section 5.1 discusses how episode are attributed to one or more TIN(s). Section 5.2 details how one or more lead EPs for each episode are identified for informational purposes.

5.1 Attribution to TIN(s)

The 2015 Supplemental QRURs attribute acute condition episodes to one or more TINs based on IP E&M visits and procedural episodes based on the performance of the procedure (e.g., billing the trigger procedure code). The attribution rules, which vary by episode type, are based on clinical logic and provider feedback on attribution rules used in the 2011, 2012, and 2014 Supplemental QRURs. The following sections provide more detail on attribution of episodes for acute condition and procedural episode types.

5.1.1 Acute Condition Episodes

Acute condition episodes are attributed to all TINs that bill at least 30 percent of the number of IP E&M visits during the initial treatment, or "trigger event," that opened the

[41] National-level statistics on attribution are detailed in the "How to Interpret Your 2015 Supplemental QRUR" National Provider Call (NPC) Addendum, available under the Download section on this CMS Episode Grouper webpage (https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Episode-Costs-and-Medicare-Episode-Grouper.html).

episode.[42] The trigger event is defined as either the triggering IP claim or the IP stay that is concurrent with a triggering E&M claim. Inpatient (IP) E&M visits during the episode's trigger event represent services directly related to the management of the beneficiary's acute condition episode. Medical group practices and solo practices that bill at least 30 percent of IP E&M visits are therefore likely to have been responsible for the oversight of care for the beneficiary during the episode. It is possible for more than one TIN to be attributed a single episode using this rule. If an acute condition episode has no IP E&M claims during the episode, then that episode is not attributed to any TIN.

5.1.2 Procedural Episodes

Procedural episodes are typically attributed to all the TINs that bill a PB claim during the trigger event with a CPT code that triggers the episode.[43] Episodes are not attributed to a TIN, however, if the health care professional responsible for the claim bills with a modifier identifying him or herself as an anesthesiologist, nurse practitioner, registered nurse, physician assistant, or other professional type who is not likely to be the primary individual managing the patient's care. TINs are also excluded from attribution if the health care professional bills with modifiers indicating that their role in patient care was limited to pre-operative or post-operative treatment or if they indicate that they are an assistant surgeon and no other main surgeon billing the procedure is identified in the data. Details on modifier codes used to determine attribution rules are located in Appendix E. For inpatient procedural episodes constructed using Method A, the trigger event is defined as the IP stay that triggered the episode or the IP stay that was concurrent with the PB claim that triggered the episode. For outpatient procedural episodes constructed using Method A, the trigger event is defined as the day of the triggering claim. For procedural episodes constructed using Method B, the trigger event is defined as the day of the triggering PB claim. Any PB claim or line during the trigger event with the episode's triggering procedure code is used for attribution.

5.2 Identification of Lead Eligible Professional(s)

For informational purposes only, the 2015 Supplemental QRURs identify one or more lead EPs within each attributed TIN using a methodology similar to the one used for attribution. We provide this additional information to inform on coordination of care. The lead EPs are included in Exhibit 3 and the drill down tables. For the purpose of this report, EPs are defined as physicians, practitioners, and therapists that are eligible to participate in the Physician Quality Reporting System (PQRS). These include Medicare physicians (e.g., doctors of medicine,

[42] See Appendix D for the list of IP E&M codes used to identify IP E&M visits.
[43] Attribution is based on positive-cost claims (IP E&M claims for acute condition episodes and PB claims for procedural episodes). Positive-cost claims are defined as claims with positive standardized allowed amounts.

osteopathy), practitioners (e.g., physician assistants, nurse practitioners), and therapists (e.g., physical therapists, occupational therapists, and qualified speech-language pathologists) who are paid for treating Medicare FFS beneficiaries.[44] EPs are identified using their National Provider Identifier (NPI). Episodes are assigned to one or more lead EPs based on one of the following two criteria:

(1) EP(s) billing the highest number of IP E&M visits during the trigger event; or

(2) EP(s) performing the trigger procedure.

Acute condition episodes identify lead EP(s) using the first criterion, while procedural episodes use the second criterion. Clinical specialty is not taken into account when determining the lead EP(s). The following sections provide more detail on identifying the lead EP(s) for acute condition and procedural episode types.

5.2.1 Acute Condition Episodes

The lead EP(s) of an acute condition episode are identified as the three EPs within the TIN who bill the highest number of IP E&M visits during the trigger event. The reports list multiple EPs for acute condition episodes to show which EPs are most involved in the course of care for the beneficiary. If multiple EPs bill the same number of IP E&M visits, resulting in more than three lead EPs, then all of those EPs are reported as lead EPs for that episode.

5.2.2 Procedural Episodes

The lead EP(s) for a procedural episode are identified as the physician(s) billing the PB claim for the procedure concurrently with the trigger event. Multiple lead EPs may be identified if more than one physician bills the PB claim (e.g., co-surgeons or a main surgeon and an assistant surgeon). If no main surgeon bills a PB claim with a trigger code, or if there is no concurrent PB claim with a trigger code, then the episode is excluded and no lead EP is identified for that episode.

[44] A list of EPs and additional information on EPs can be found on this CMS PQRS webpage (http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/How_To_Get_Started.html).

6 SUMMARIZING EPISODE INFORMATION IN REPORTS

The 2015 Supplemental QRURs report on group-level statistics and beneficiary-level data for the episodes of care attributed to each TIN. The reports have four exhibits and three drill down tables, which begin with high-level summary information and then provide increasingly detailed information, eventually showing information about individual episodes. The reports display the following information:

- **Exhibit 1** graphically summarizes the TIN's episode costs relative to the national average for all episode types for comparison purposes;
- **Exhibit 2** shows the number, frequency, and cost for all episode types and compares those statistics to the national average;
- **Exhibit 3** provides more in-depth information about episodes of a given type, including costs broken down by episode components and service categories and the highest average-billing providers;
- **Exhibit 4** shows detailed cost and utilization statistics for episodes of a given type; and
- **Drill Down Tables 1, 2, and 3** show individual episode level data for all episodes of a given type.

In addition, the reports contain three appendices showing definitions, as follows:

- **Appendix 1** provides definitions for terms used in the 2015 Supplemental QRURs;
- **Appendix 2** lists the service category definitions used for service categories displayed in Exhibits 3 and 4; and
- **Appendix 3** shows the service category definitions used for service categories displayed in the drill down tables.

The following sections detail the information used in each exhibit and drill down table in turn.

6.1 Exhibit 1: Summary of All Episodes

Exhibit 1 graphically depicts the percent difference between a TIN's average risk-adjusted cost to Medicare and national average risk-adjusted cost to Medicare for each episode type for comparison purposes. This percentage is calculated separately for each episode subtype.[45] If no episodes of a specific type are attributed to a TIN, then Exhibit 1 will not display that episode type. Risk-adjusted cost information is reported at both the major type and

[45] A description of episode subtypes and the list of major episode type and subtypes can be found in Section 1.2.

subtype level. The risk adjustment methodology is described in depth in Section 4 of this document. When risk-adjusted cost is calculated at the subtype level, all episodes *i* within *k* must belong to the same subtype.[46] When it is calculated at the major type level, all episodes *i* within *k* can belong to any subtype within the same major type.

Exhibit 1 compares a TIN's performance to a national average. The national average includes all Medicare FFS beneficiaries who met the enrollment criteria and had attributable episodes (approximately 5.3 million beneficiaries during calendar year 2015). Specifically, the national average is calculated based on the average payment-standardized, risk-adjusted costs to Medicare for each episode type.

6.2 Exhibit 2: Frequency and Cost to Medicare for All Episode Types

Exhibit 2 shows the number, frequency, and cost to Medicare of all episode types attributed to a TIN and compares those statistics to the national average. Exhibit 2 provides information at the episode subtype level, such as the count of episodes for and frequency of each subtype, and provides the underlying data used in the graphical depictions in Exhibit 1. All costs to Medicare shown in Exhibit 2 are payment-standardized, risk-adjusted costs, as described in Section 6.1.

6.3 Exhibit 3: Episode Summary

Exhibit 3 shows the risk score, costs to Medicare broken down by episode components and service categories (e.g., IP hospital and post-acute care services), and the top five billing IP or OP hospitals, skilled nursing facilities, home health agencies, and eligible professionals within and outside of the TIN for a given episode type. To improve the clarity and actionability of the reports, a separate version of Exhibit 3 is created for each major episode type and subtype. There are four sections of Exhibit 3 to allow the TIN to examine the costs to Medicare from a specific episode type, and the following discusses each section in turn.

6.3.1 Exhibit 3.A: Your Episode Summary

Exhibit 3.A presents summary information about cost to Medicare for all episodes attributed to the TIN that are of the same episode type. This exhibit shows both non-risk-adjusted and risk-adjusted average episode costs to Medicare. In addition, Exhibit 3.A shows the average beneficiary risk score percentile as a relative measure of the beneficiary's predicted health care spending based on the risk adjustment model described above. This number is calculated as the average episode risk score percentile for all the episodes attributed to the TIN.

[46] The variables *i* and *k* are defined in Equation 1.2 in Section 4.5.

A higher risk score percentile indicates that on average, beneficiaries were predicted to have relatively higher costs to Medicare than average for this episode type or subtype.

6.3.2 Exhibit 3.B: Average Cost to Medicare for Episode Components

Exhibit 3.B provides the average non-risk-adjusted, payment standardized cost to Medicare of each episode component for the TIN and for the national average. The two components of an episode are "treatment" and "clinically associated services". Treatment services comprise the medical care occurring during the initial care directly related to managing the illness, and clinically associated services are all of an episode's services not classified as treatment services. Costs to Medicare are displayed in the "treatment" category if the service is provided on a day in the episode window where the managing provider for the episode treats the patient. The treatment definition can include costs from before the trigger date of the episode. Costs to Medicare are displayed in the "clinically associated services" category if they are clinically relevant services on days in the episode in which the managing provider did not provide care for the patient.

6.3.3 Exhibit 3.C: Average Cost for Select Service Categories in Episode

Exhibit 3.C presents the average non-risk-adjusted, payment standardized cost of select service categories for the TIN and for the national average. In addition to providing total episode cost information, Exhibit 3.C breaks out cost to Medicare for services provided in an IP hospital setting first for the trigger IP stay and then for IP stays and services, including IP allowed amounts from Critical Access Hospitals (CAHs) and Inpatient Rehabilitation Facilities (IRFs). The exhibit also provides the cost of physician services during hospitalization, outpatient evaluation and management (E&M) services, major procedures, and the cost for post-acute care (e.g., SNF and HH). Service category costs are provided as non-risk-adjusted costs for two reasons: (i) TINs can identify what services contribute the most to their total average cost to Medicare based on non-risk-adjusted costs and determine appropriate next steps and (ii) risk adjustment is done at the episode type level rather than at the service category/claim level. The service category definitions follow Medicare FFS payment schedules and can be identified from Medicare claims, and the service category breakdowns match the major service categories reported in the 2015 QRURs. Appendix 2 in the reports and Appendix C in this document define each service category and the units used to calculate utilization in Exhibit 3 and Exhibit 4.

6.3.4 Exhibit 3.D: Top Five Highest Average-Billing Providers Treating Episode

Exhibit 3.D lists the top five billing hospitals, skilled nursing facilities (SNFs), home health agencies (HHAs), and eligible professionals (EPs) within and outside of the TIN that are involved in the care of the attributed episode. The top five billing hospitals, SNFs, and HHAs overall are listed based on the cumulative cost to Medicare of all episodes attributed to the TIN.

The top five EPs are listed for each major episode type based on the cumulative cost to Medicare of all attributed episodes within that episode type. If there is only one EP billing outside the TIN for an episode type, the EP's name is suppressed for privacy reasons and denoted with an asterisk (*). This particular use of an asterisk is not noted on the report itself. Blank cells in Exhibit 3.D indicate that a TIN has fewer than five total hospitals, SNFs, HHAs, or EPs within or outside a TIN treating their attributed episodes.

The top five billing hospitals are identified from the sum of IP claims reported in the IP hospital and post-acute care service categories (i.e., IP hospital trigger, IP hospital readmission, and IP rehabilitation or long term care hospital) and outpatient hospital claims.[47] The hospital names are obtained from the provider of services (POS) files.[48] To identify SNFs, the top five billing facilities are selected from the sum of all costs from SNF and OP claims (type of bill 022x and 023x) reported in the skilled nursing service category. To identify the top five billing HHAs, all costs from HH and OP claims (type of bill 033x and 034x) are used.

Exhibit 3.D differentiates the top hospitals, SNFs, and HHAs billing inside versus outside the TIN. All facilities are identified based on the criteria applied to identify costs billed, ordered, or referred by the TIN, which is detailed in Appendix C. Since multiple services can be billed to Medicare during a hospital, SNF, or HHA stay, it is possible for a facility to be listed in the top five billing facility both inside and outside the TIN. For example, an EP from the attributed TIN and another from an outside group could bill PB claims for separate services during the same high-cost IP hospital stay; thus, the hospital would be listed as a top billing hospital inside and outside the TIN.

Exhibit 3.D also breaks down cost to Medicare based on claims billed by providers and facilities inside and outside the TIN.[49] Costs to Medicare from all claims grouped to the episode are classified into those billed, ordered, or referred by the TIN and those facility costs or other costs to Medicare billed or ordered outside the TIN.[50] Appendix C details the identification of costs billed, ordered, or referred by the TIN. All costs not included based on this criteria are identified as costs billed or ordered outside the TIN.

[47] Outpatient hospital claims are restricted to providers reported in the inpatient hospital trigger, inpatient hospital readmission, and inpatient rehabilitation or long term care hospital service categories.
[48] More information on the POS file is available on this CMS webpage (https://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/NonIdentifiableDataFiles/ProviderofServicesFile.html).
[49] To protect privacy, the name of the highest-billing EP outside of the TIN is suppressed if there is only one EP billing outside of the TIN, as noted earlier in this section.
[50] Facility designations are based on the provider of service (POS) files.

6.4 Exhibit 4: Episode Type Service Category Cost to Medicare Breakdown

Exhibit 4 summarizes the cost to Medicare, by service category, of episodes of a given episode type attributed to the TIN for the entire episode, the treatment component, and clinically associated services component of the episode. All costs are payment-standardized but not risk-adjusted, as explained in Section 6.3.3. Exhibit 4 also presents the average percentage of episodes receiving the service and average utilization by service categories (e.g., inpatient hospital facility services and post-acute care). Service categories are discussed in more detail in Section 6.3.3, and a complete list of service categories is available in Appendix C. In Exhibit 4, some service categories have very low average payment-standardized, non-risk-adjusted costs for a given episode. Thus, the percent difference between the national average and a group's average may appear high even though the absolute difference is small.

A separate version of Exhibit 4 is created for each individual episode type and subtype. Exhibit 4.A provides the service category cost breakdown for the entire episode type. Exhibit 4.B and 4.C show the service category cost breakdown for the treatment and clinically associated services components of the episode, respectively. The treatment and clinically associated services components are discussed in more detail in Section 6.3.2 of this document.

Some data may not appear in Exhibits 4.A, 4.B, and 4.C based on episodes attributed to the TIN. A blank cell appears in the "% Cost Difference" column if there is no national cost to Medicare for that service category. In addition, in the columns titled "Avg. Utilization – Your TIN" and "Avg. Utilization – National" under episodes attributed to the TIN and episodes nationally, an "N/A" occurs for the "All Services", "Outpatient Evaluation and Management Services, Procedures, and Therapy (excluding emergency department)", "Ancillary Services", "Hospital Inpatient Services", "Emergency Room Services", "Post-Acute Services", and "All Other Services" categories because the columns are not relevant at the cumulative service level.

6.5 Drill Down Tables

The drill down tables provide information for each individual episode attributed to the TIN, including the episode type, episode risk-adjusted and non-risk-adjusted cost to Medicare, the beneficiary's risk score, the episode start date, and physician and non-physician costs to Medicare by service category. The information provided in the drill down tables supplement the episode-level information provided in Exhibits 1 through 4. These tables are intended to increase the actionability of reports and provide beneficiary-specific information. Every episode that is attributed to the TIN is included in the drill down tables for that TIN's report. The drill down tables are created for each individual episode type and subtype.

6.5.1 Drill Down Table 1: Episode-Level Summary Information

Drill Down Table 1 provides an overview of each individual episode to assist the TIN in identifying specific episodes, lead EP(s), or hospital or post-acute care providers that treated the episode. Table 1 includes the beneficiary's risk score, summary information about the lead EP(s) and the number of E&M visits and Medicare Physician Fee Schedule (PFS) costs during the episode. In addition, the table lists the first two providers, hospitals, SNFs, and HH Agencies that provided care for the beneficiary. Beneficiaries are identified in the reports through their Health Insurance Claim (HIC) number. The top three billing EPs within the TIN are identified as lead EPs in Drill Down Table 1, as described in Section 5.2. The specialty listed for each EP is the specialty that had the highest physician fee schedule (PFS) cost billed by the EP on all PB claims during the performance period. A blank cell may appear in the columns for hospital, SNFs, or HHAs billing first and second if none of the respective facilities is billing first or second within the group or outside the group.

Drill Down Table 1, as well as Drill Down Table 2 and Table 3, presents a beneficiary risk score for each episode. The "Risk-Adjusted Cost Percentile" in Drill Down Table 1 is calculated by comparing the ratio of the beneficiary's observed episode cost to Medicare, as calculated in Step 3 detailed in Section 4, and the beneficiary's predicted episode cost to Medicare, as calculated in Step 4 detailed in Section 4, to the ratios for all episode of the same subtype nationally. The beneficiary's episode "Risk Score Percentile", shown in all drill down tables, is calculated by comparing the episode predicted cost to Medicare using the risk adjustment model described in calculated in Step 4, using the risk adjustment model, to the predicted cost for all episodes of the same subtype nationally. A higher risk score percentile indicates that on average, the beneficiary was predicted to have relatively higher costs to Medicare for the given episode type or subtype.

Drill Down Table 1 reports physician costs to Medicare and number of E&M visits billed during the episode. The physician costs reported are actual Medicare PFS payment amounts based on services used during the entire episode window.[51] Medical group practices and solo practices can compare the cost information to their own records since the actual Medicare payment amounts are shown and neither condition nor procedural episodes are attributed using PFS costs. The number of E&M visits reported include all E&M visits performed during the episode. Providing the number of all E&M visits is also for informational purposes only since only condition episodes are attributed using IP E&M claims.[52]

[51] Costs are classified as PFS costs based on the HCPCS on the PB claim.
[52] Additional information on the attribution methodology can be found in Section 5.

6.5.2 Drill Down Table 2: Breakdown of Physician Costs to Medicare Billed By Your TIN and Other TINs

Drill Down Table 2 provides detailed information on physician costs to Medicare billed by the TIN and other TINs for episodes of this type that were attributed to the TIN. All costs to Medicare are actual Medicare payment amounts (non-payment-standardized and non-risk adjusted) to allow TINs to compare these data to their own records. The criteria for billing within or outside a TIN is described in Section 6.3.4 and detailed in Appendix C. The definitions of the service categories shown in Drill Down Table 2 are detailed in Appendix 3 of the reports and Appendix C of this document, and some cost categories may have $0 cost paid to Medicare.

6.5.3 Drill Down Table 3: Breakdown of Non-Physician Costs to Medicare

Drill Down Table 3 provides detailed information on non-physician costs to Medicare for episodes of this type that were attributed to the TIN. Just as in Drill Down Table 2, all costs are actual Medicare payment amounts (non-payment standardized and non-risk adjusted). The definitions of the service categories shown in Drill Down Table 3 are detailed in Appendix 3 of the reports and Appendix C of this document, and some cost categories may have $0 cost paid to Medicare.

7 ENHANCEMENTS TO THE 2015 SUPPLEMENTAL QRURS

In response to stakeholder feedback, and as part of a continuing effort to enhance the usefulness and expand the comprehensiveness of the Supplemental QRURs, CMS incorporated changes to the episodes included, the methodology, and the report structure for the 2015 Supplemental QRURs. This section lists changes between the 2015 Supplemental QRURs and the 2014 Supplemental QRURs. The improvements made to the episodes reported and the report structure are listed in the following sections. Section 7.1 outlines the refinements made to the episode types reported, and Section 7.2 detail the improvements made to producing episodes, aggregating episode costs, and attributing episodes. Section 7.3 summarizes the changes made to the report structure to improve readability and actionability of the 2015 Supplemental QRURs.

7.1 Change in Episodes Reported

The 2015 Supplemental QRURs do not include three major episode types that were reported on in the 2014 Supplemental QRURs. These major episode types were built from Method A and underwent additional development that was not completed in time to be reported in the 2015 Supplemental QRURs. The removed episode types are:

- Carotid Endarterectomy,
- Pacemaker, and
- Prostatectomy for Prostate Cancer.

The 2015 Supplemental QRURs also modified the episode subtypes for some major episode types that were reported in the 2014 Supplemental QRURs. The updated subtypes allow providers to view more information and monitor performance on more clinically similar episode types. These changes are:

- AMI now has an additional three subtypes created by adding a distinction for ST elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (NSTEMI) on the subtypes reported in the 2014 Supplemental QRURs;
- Open Heart Valve Surgery now has an additional "Pulmonary or Tricuspid Valve Surgery" subtype;
- CABG now has "CABG with AMI" and "CABG without AMI" subtypes;
- Mastectomy for Breast Cancer now has an additional "Subcutaneous Mastectomy" subtype; and
- Spinal Fusion subtypes have been updated to "Anterior Fusion – Single," "Anterior Fusion – Two Levels," "Posterior/Posterior-lateral Approach Fusion – Single," "Posterior/Posterior-lateral Approach Fusion – Two or Three Levels," and "Combined Fusions."

7.2 Refinements to Methodology

The 2015 Supplemental QRURs include several refinements to the attribution, risk adjustment, and data exclusion methodology to ensure all episodes reported are clinically homogenous and have comparable expected resource use. The following outlines the specific changes made:

- **Refined the risk adjustment model**: The risk adjustment model in the 2015 Supplemental QRURs includes additional variables and the following methodology changes. The HCC model used is now Version 22, while the 2014 reports used HCC Version 12. One additional variable is now included in the modified MSPB risk adjustment model for some episode types, an indicator for procedural episode combinations in Method A episode types. The model will continue to undergo modifications in future reports based on feedback and additional analysis.
- **Refined attribution logic for procedural episodes**: Procedural episodes can no longer be attributed to only an assistant surgeon when no main surgeon bills a PB claim with a trigger code for the episode. In the 2014 Supplemental QRURs, Method A episodes could be attributed solely to an assistant surgeon. This update aligns Method A with Method B and improves the accuracy of the attribution methodology by not holding assistant surgeons solely accountable for the cost to Medicare of the procedural episode.
- **Included costs to Medicare from sequela episodes**: Episodes constructed using Method A now include costs from sequela episodes that were excluded in the 2014 Supplemental QRURs. Sequela episodes are complications or following episodes associated with a primary episode. The version of Method A used for the 2015 Supplemental QRURs has updated methodology for sequela episodes that is now appropriate for reporting. However, as mentioned in Section 3.2, episodes with sequela episodes that have no end date are excluded from reporting.
- **Updated episode exclusion logic**: The 2015 Supplemental QRURs have updated episode exclusion criteria as compared to the 2014 Supplemental QRURs. Episode exclusions were updated to cover both Method A and Method B, as well as the removal of some episode exclusions that no longer applied. Episode exclusions are discussed in more detail in Section 3.2. The updated exclusion criteria was implemented to ensure that episodes used for reporting are clinically homogenous.

7.3 Changes to Report Structure

The 2015 Supplemental QRURs exhibits and drill down tables were updated to improve the clarity and actionability of the reports. The following includes specific changes to the reports:

- **Added Appendix 1, Appendix 2, and Appendix 3**: The three additional appendices in the reports present definitions for common terms and definitions for the service categories reported in Exhibits 3, 4, and the drill down tables.
- **Updated terminology in the report**: The 2015 reports now use the phrase "cost to Medicare" where appropriate. This update allows for TINs receiving the reports to more clearly understand what the term "cost" refers to. For example, this change clarifies that "costs" are not limited to costs to the provider performing the service. In addition, the 2015 reports use "Clinically Associated Services" to replace the term "indirect services" that was used in the 2014 Supplemental QRURs.

APPENDIX A: LIST OF ACRONYMS

Table A.1 provides a list of commonly used acronyms in the 2015 Supplemental QRURs and the supplementary documentation.

Table A.1 List of Acronyms

Acronym	Description
ACA	Affordable Care Act
ACS	Acute Coronary Syndrome
AFib	Atrial Fibrillation
AMI	Acute Myocardial Infarction
BETOS	Berenson-Eggers Type of Service
CABG	Coronary Artery Bypass Graft Surgery
CM	Center for Medicare
CMS	Centers for Medicare & Medicaid Services
CMMI	Center for Medicare & Medicaid Innovation
COPD	Chronic Obstructive Pulmonary Disease
CPT	Current Procedural Terminology
CPT-4	Current Procedural Terminology Version 4
DME	Durable Medical Equipment
DRG	Diagnosis-Related Group
DSH	Disproportionate Share Hospital
EDB	Enrollment Database
E&M	Evaluation and Management
EP	Eligible Professionals
ER	Emergency Room
ESRD	End Stage Renal Disease
FFS	Fee-for-Service
GI	Gastrointestinal
HCC	Hierarchical Condition Categories
HCPCS	Healthcare Common Procedure Coding System
HH	Home Health
HHA	Home Health Agency
HHS	Department of Health and Human Services
HIC	Health Insurance Claim
HS	Hospice
ICD-9	International Classification of Diseases, Ninth Revision
ICD-10	International Classification of Diseases, Tenth Revision
IOL	Intraocular Lens
IP	Inpatient Hospital

Acronym	Description
IPPS	Inpatient Prospective Payment System
MDC	Major Diagnostic Category
MS-DRG	Medicare-Severity Diagnosis-Related Group
MSPB	Medicare Spending per Beneficiary
NPI	National Provider Identifier
NQF	National Quality Forum
NSTEMI	Non-ST-elevation Myocardial Infarction
OP	Outpatient Hospital
OLS	Ordinary Least Squares
PB	Physician/Supplier Part B Claims
PCI	Percutaneous Coronary Intervention
PFS	Physician Fee Schedule
POS	Provider Of Service File
PQRS	Physician Quality Reporting System
QRUR	Quality Resource Use Report
SNF	Skilled Nursing Facility
STEMI	ST-elevation Myocardial Infarction
TIN	Tax Identification Number
TURP	Transurethral Resection of the Prostate
UTI	Urinary Tract Infection
VM	Value-based Payment Modifier
VBP	Value-based Purchasing

APPENDIX B: RISK ADJUSTMENT VARIABLES

As discussed in Section 4, both Method A and Method B use a risk adjustment methodology with explanatory variables. This appendix lists in turn the specific age, case-mix measures (or HCCs), enrollment status, long-term care, interaction term, and episode indicator variables used in the risk-adjustment model.

Table B.1: Age Variables

Age Range	Description Label
0-34	Age between 0 and 34 years old
35-44	Age between 35 and 44 years old
45-54	Age between 45 and 54 years old
55-59	Age between 55 and 59 years old
60-64	Age between 60 and 64 years old
65-69	Age between 65 and 69 years old (reference category)[53]
70-74	Age between 70 and 74 years old
75-79	Age between 75 and 79 years old
80-84	Age between 80 and 84 years old
85-89	Age between 85 and 89 years old
90-94	Age between 90 and 94 years old
95+	Age greater than or equal to 95 years old

Table B.2: Case Mix Measures

Indicator Variable	Description Label
HCC1	HIV/AIDS
HCC2	Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock
HCC6	Opportunistic Infections
HCC8	Metastatic Cancer and Acute Leukemia
HCC9	Lung and Other Severe Cancers
HCC10	Lymphoma and Other Cancers
HCC11	Colorectal, Bladder, and Other Cancers
HCC12	Breast, Prostate, and Other Cancers and Tumors
HCC17	Diabetes with Acute Complications
HCC18	Diabetes with Chronic Complications
HCC19	Diabetes without Complication
HCC21	Protein-Calorie Malnutrition
HCC22	Morbid Obesity
HCC23	Other Significant Endocrine and Metabolic Disorders
HCC27	End-Stage Liver Disease
HCC28	Cirrhosis of Liver
HCC29	Chronic Hepatitis

[53] The 65-69 age indicator variable serves as the reference category and is omitted from the regression.

Indicator Variable	Description Label
HCC33	Intestinal Obstruction/Perforation
HCC34	Chronic Pancreatitis
HCC35	Inflammatory Bowel Disease
HCC39	Bone/Joint/Muscle Infections/Necrosis
HCC40	Rheumatoid Arthritis and Inflammatory Connective Tissue Disease
HCC46	Severe Hematological Disorders
HCC47	Disorders of Immunity
HCC48	Coagulation Defects and Other Specified Hematological Disorders
HCC54	Drug/Alcohol Psychosis
HCC55	Drug/Alcohol Dependence
HCC57	Schizophrenia
HCC58	Major Depressive, Bipolar, and Paranoid Disorders
HCC70	Quadriplegia
HCC71	Paraplegia
HCC72	Spinal Cord Disorders/Injuries
HCC73	Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease
HCC74	Cerebral Palsy
HCC75	Myasthenia Gravis/Myoneural Disorders, Inflammatory and Toxic Neuropathy
HCC76	Muscular Dystrophy
HCC77	Multiple Sclerosis
HCC78	Parkinson's and Huntington's Diseases
HCC79	Seizure Disorders and Convulsions
HCC80	Coma, Brain Compression/Anoxic Damage
HCC82	Respirator Dependence/Tracheostomy Status
HCC83	Respiratory Arrest
HCC84	Cardio-Respiratory Failure and Shock
HCC85	Congestive Heart Failure
HCC86	Acute Myocardial Infarction
HCC87	Unstable Angina and Other Acute Ischemic Heart Disease
HCC88	Angina Pectoris
HCC96	Specified Heart Arrhythmias
HCC99	Cerebral Hemorrhage
HCC100	Ischemic or Unspecified Stroke
HCC103	Hemiplegia/Hemiparesis
HCC104	Monoplegia, Other Paralytic Syndromes
HCC106	Atherosclerosis of the Extremities with Ulceration or Gangrene
HCC107	Vascular Disease with Complications
HCC108	Vascular Disease
HCC110	Cystic Fibrosis
HCC111	Chronic Obstructive Pulmonary Disease
HCC112	Fibrosis of Lung and Other Chronic Lung Disorders
HCC114	Aspiration and Specified Bacterial Pneumonias
HCC115	Pneumococcal Pneumonia, Empyema, Lung Abscess
HCC122	Proliferative Diabetic Retinopathy and Vitreous Hemorrhage

Indicator Variable	Description Label
HCC124	Exudative Macular Degeneration
HCC134	Dialysis Status
HCC135	Acute Renal Failure
HCC136	Chronic Kidney Disease, Stage 5
HCC137	Chronic Kidney Disease, Severe (Stage 4)
HCC157	Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone
HCC158	Pressure Ulcer of Skin with Full Thickness Skin Loss
HCC161	Chronic Ulcer of Skin, Except Pressure
HCC162	Severe Skin Burn or Condition
HCC166	Severe Head Injury
HCC167	Major Head Injury
HCC169	Vertebral Fractures without Spinal Cord Injury
HCC170	Hip Fracture/Dislocation
HCC173	Traumatic Amputations and Complications
HCC176	Complications of Specified Implanted Device or Graft
HCC186	Major Organ Transplant or Replacement Status
HCC188	Artificial Openings for Feeding or Elimination
HCC189	Amputation Status, Lower Limb/Amputation Complications
DISABLED_HCC6	Disabled, Opportunistic Infections
DISABLED_HCC34	Disabled, Chronic Pancreatitis
DISABLED_HCC46	Disabled, Severe Hematological Disorders
DISABLED_HCC54	Disabled, Drug/Alcohol Psychosis
DISABLED_HCC55	Disabled, Drug/Alcohol Dependence
DISABLED_HCC110	Disabled, Cystic Fibrosis
DISABLED_HCC176	Disabled, Complications of Specified Implanted Device or Graft
SEPSIS_CARD_RESP_FAIL	Sepsis*Cardiorespiratory Failure and Shock
CANCER_IMMUNE	Cancer*Immune Disorders
DIABETES_CHF	Diabetes*Congestive Heart Failure
CHF_COPD	Congestive Heart Failure*Chronic Obstructive Pulmonary Disease
DISABLED_HCC6	Disabled, Opportunistic Infections
DISABLED_HCC34	Disabled, Chronic Pancreatitis

Table B.3: Enrollment Status Variables

Indicator Variable	Description Label
ORIGDS	Originally Disabled
ESRD	End-Stage Renal Disease

Table B.4: Long-Term Care, Severity, and Interaction Variables

Indicator Variable	Description Label
LTC_Indicator	Long-Term Care
MS-DRG[54]	For a complete list of all MS-DRGs, see here (https://www.cms.gov/acuteinpatientpps/downloads/FY_12_NPRM_Table_5.zip).
ER_LAT_SUB[55]	Categorical interaction indicator between the episode subtype, whether the patient enters care through the emergency room, and the laterality of the procedure
OPEN_ENDO_FLAG	Indicator for Aortic Aneurysm Procedure's type of trigger surgery performed
COMB_CATH_FLAG	Combined with Cardiac Catheterization
COMB_HIP_FLAG	Combined with Hip Replacement
COMB_LUMP_FLAG	Combined with Lumpectomy
COMB_PACE_FLAG	Combined with Pacemaker

[54] This variable applies to episodes that started in IP only. For the AMI episode only, AMIs with PCI or CABG may use the DRG of a later hospitalization for the PCI/CABG, if the initial hospitalization was for the AMI only.
[55] The Emergency Room variable applies to the Aortic Aneurysm Repair, CABG, Carotid Endarterectomy, Cholecystectomy and Common Duct Exploration, Hip Fracture, Open Valve Procedure, Pacemaker, and PCI episode types. The Laterality variable applies to the Cholecystectomy and Common Duct Exploration, Hip Replacement, Knee Arthroplasty, and Lens and Cataract Procedure episode types. The Subtype variable only applies to episodes with subtypes, as detailed in Table 1 and Table 2.

APPENDIX C: SERVICE CATEGORY DEFINITIONS

This appendix details how the 2015 Supplemental QRURs define each service category reported in Exhibit 3, Exhibit 4, and the drill down Tables. These definitions are also available in Appendix 1 and Appendix 2 in the reports. Table C.1 summarizes each claim type. Table C.2 provides a crosswalk to how each service was identified from each claim type for Exhibit 3 and Exhibit 4. Table C.3 provides a crosswalk to how each service was identified from each claim type for the drill down Tables. Table C.4 defines how services were determined to be billed, ordered, or referred by the TIN.

Table C.1: Medicare Claim Setting and Abbreviations

Claim Setting	Claim Setting Abbreviation	Medicare FFS Program	Service Type
Inpatient	IP	Part A	Services provided in inpatient hospital facilities
Outpatient	OP	Part B	Services provided in outpatient hospital facilities
Physician/Supplier	PB	Part B	Services provided by non-institutional physician/suppliers
Skilled Nursing	SNF	Part A	Rehabilitation and nursing services
Home Health	HH	Part A and B	Services administered in beneficiaries' home; may include therapy and social services
Hospice	HS	Part A	Hospice services include physician services, nursing visits, medical social services, and counseling
Durable Medical Equipment	DM	Part B	Durable medical equipment, such as wheelchairs and oxygen tanks

Table C.2: Exhibits 3 and 4 – Service Category Definitions

Service Category	Claim Type	Criteria for Including Claim (Line Item) in Category		
		BETOS	Place of Service/Provider Number Criterion	Additional Criterion
Outpatient Evaluation and Management Services, Procedures, and Therapy (excluding emergency department)	OP, PB	All M Codes, P1, P2, P3, P4, P5, P6, P7, P8	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	No GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill type 22, 23, 33, 34, or 72 (SNF, HH and dialysis). Eligible professional or facility for PB claims.
Outpatient Evaluation and Management Services, Procedures, and Therapy (excluding emergency department)	OP, PB	Not P0, P9, O1A, O1D, O1E, or D1G	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	Has a GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill type 22, 23, 33, 34, or 72 (SNF, HH and dialysis).
Ancillary Services	OP, PB	All T codes, All I codes	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	No GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill type 22, 23, 33, 34, or 72 (SNF, HH and dialysis).
Ancillary Services	DM	All codes except O1D (chemotherapy), O1E and D1G (drugs)	-	-
Hospital Inpatient Services	IP	-	Provider number has 00-08 in third and fourth position (Acute hospitals) or has 3rd and 4th digit = "13" (Critical Access Hospitals) or has 3rd and 4th digits of 40 - 44 or has 3rd digit of M or S (psychiatric hospitals and psychiatric distinct part units).	-
Hospital Inpatient Services	PB	Not P0-P9, O1A, O1D, O1E, or D1G	If between from_dt and thru_dt (exclusive) of IP claim, no place of service restriction. If on from_dt or thru_dt of IP claim, then place of service must be 21 or 51.	Eligible professional.

Service Category	Claim Type	Criteria for Including Claim (Line Item) in Category		
		BETOS	Place of Service/Provider Number Criterion	Additional Criterion
Emergency Services That Did Not Result in a Hospital Admission	OP, PB	All M, P, T, and I Codes	Outpatient revenue center line code is 0450-0459 or 0981, or PB claim occurring with place of service=23.	Type of Bill NOT 72x (Dialysis). Eligible professional for PB claims.
Post-Acute Services	HH, OP	-	-	For OP, Type of Bill must be 33x or 34x, BETOS is not P0, P9, O1A, O1D, O1E, or D1G. Revenue Center line code is NOT 0450-0459 or 0981.
Post-Acute Services	SNF, OP	-	-	For OP, Type of Bill must be 22x or 23x. BETOS is not P0, P9, O1A, O1D, O1E, or D1G. Revenue Center line code is NOT 0450-0459 or 0981.
Post-Acute Services	IP	-	Provider number ends in 2000-2299 or 3025-3099, or its third position is either R or T.	-
Hospice Care	HS	-	-	-
All Other Services	OP, PB	O1A	-	For OP, type of bill is NOT 72x (dialysis).
All Other Services	OP, PB, DM	O1D, O1E, D1G	-	For OP, type of bill is NOT 72x (dialysis).
All Other Services	OP, PB	P9	For OP, also count Type of Bill equal to 72x.	-
All Other Services	OP, PB	P0	-	For OP, type of bill is NOT 72x (dialysis).
All Other Services	All Parts A and B claim types	-	-	All remaining costs from all Parts A and B claim types.

Table C.3: Drill Down Tables - Service Category Definitions

Drilldown Categories		Claim Type	Criteria for Including Claim (Line Item) in Category		
PB	Non-PB		BETOS	Place of Service Criterion	Additional Criterion
E&M Services	Outpatient Hospital Services - E&M Services	OP, PB	All M Codes	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	No GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill Type 22,23,33,34, or 72 (SNF, HH and dialysis). Eligible professional or facility for PB claims.
Major Procedures	Outpatient Hospital Services - Major Procedures	OP, PB	P1, P2, P3, P7	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	No GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill Type 22,23,33,34, or 72 (SNF, HH and dialysis). Eligible professional or facility for PB claims.
Ambulatory/Minor Procedures	Outpatient Hospital Services - Ambulatory/Minor Procedures	OP, PB	P4, P5, P6, P8	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	No GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill Type 22,23,33,34, or 72 (SNF, HH and dialysis). Eligible professional or facility for PB claims.
All Other Services	Outpatient Hospital Services - Outpatient PT/ OT/ SLP	OP, PB	Not P0, P9, O1A, O1D, O1E, or D1G	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	Has a GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT in 0450-0459 or 0981 (emergency department). OP cannot have Bill Type 22,23,33,34, or 72 (SNF, HH and dialysis)
Lab/ Pathology/ Other Tests	Other Services - All Other Services Not Otherwise Classified	OP, PB	All T codes	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	No GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill Type 22,23,33,34, or 72 (SNF, HH and dialysis).
Imaging	Other Services - All Other Services Not Otherwise Classified	OP, PB	All I codes	Place of Service not equal to 23 (emergency department), and not concurrent to IP Stay (not under service category '02').	No GN, GO, or GP modifier (outpatient therapy). Revenue Center line code is NOT 0450-0459 or 0981 (emergency department). OP cannot have Bill Type 22,23,33,34, or 72 (SNF, HH and dialysis).

Drilldown Categories		Claim Type	Criteria for Including Claim (Line Item) in Category		
PB	Non-PB		BETOS	Place of Service Criterion	Additional Criterion
-None-	Other Services - DME/Supplies	DM	All codes except O1D (chemotherapy), O1E and D1G (drugs)	-	-
-None-	Inpatient Hospital Services - Trigger	IP	-	Provider number has 00-08 in third and fourth position (Acute hospitals) or has 3rd and 4th digit = "13" (Critical Access Hospitals) or has 3rd and 4th digits of 40 - 44 or has 3rd digit of M or S (psychiatric hospitals and psychiatric distinct part units).	Acute or psychiatric inpatient hospitalization that triggered the episode.
-None-	Inpatient Hospital Services - Non-Trigger	IP	-	Provider number has 00-08 in third and fourth position (Acute hospitals) or has 3rd and 4th digit = "13" (Critical Access Hospitals) or has 3rd and 4th digits of 40 - 44 or has 3rd digit of M or S (psychiatric hospitals and psychiatric distinct part units).	Any acute or psychiatric inpatient hospitalization other than the one that triggered the episode.
Service During Hospitalization	-None-	PB	Not P0-P9, O1A, O1D, O1E, or D1G	If between from_dt and thru_dt (exclusive) of IP claim, no place of service restriction. If on from_dt or thru_dt of IP claim, then place of service must be 21 or 51.	Eligible professional.
Emergency Services That Did Not Result in Hospitalization	Emergency Services That Did Not Result in Hospitalization - E&M Services	OP, PB	All M Codes	Outpatient revenue center line code is 0450-0459 or 0981, or PB claim occurring with place of service=23.	Type of Bill NOT 72x (Dialysis). Eligible professional for PB claims.

Drilldown Categories		Claim Type	Criteria for Including Claim (Line Item) in Category		
PB	Non-PB		BETOS	Place of Service Criterion	Additional Criterion
Emergency Services That Did Not Result in Hospitalization	Emergency Services That Did Not Result in Hospitalization - Procedures	OP, PB	All P Codes	Outpatient revenue center line code is 0450-0459 or 0981, or PB claim occurring with place of service=23.	Type of Bill NOT 72x (Dialysis). Eligible professional for PB claims.
Emergency Services That Did Not Result in Hospitalization	Emergency Services That Did Not Result in Hospitalization - Lab/ Pathology/ Other Tests	OP, PB	All T codes	Outpatient revenue center line code is 0450-0459 or 0981, or PB claim occurring with place of service=23.	Type of Bill NOT 72x (Dialysis).
Emergency Services That Did Not Result in Hospitalization	Emergency Services That Did Not Result in Hospitalization - Imaging	OP, PB	All I codes	Outpatient revenue center line code is 0450-0459 or 0981, or PB claim occurring with place of service=23.	Type of Bill NOT 72x (Dialysis).
-None-	Post-Acute Care - Home Health	HH, OP	-	-	For OP, Type of Bill must be 33x or 34x, BETOS is not P0, P9, O1A, O1D, O1E, or D1G. Revenue Center line code is NOT 0450-0459 or 0981.
-None-	Post-Acute Care - Skilled Nursing Facility	SNF, OP	-	-	For OP, Type of Bill must be 22x or 23x, BETOS is not P0, P9, O1A, O1D, O1E or D1G. Revenue Center line code is NOT 0450-0459 or 0981.
-None-	Post-Acute Care - Inpatient Rehabilitation or Long Term Care Hospital	IP	-	Provider number ends in 2000-2299, or 3025-3099, or its third position is either R or T.	-
-None-	Hospice Care - Hospice	HS	-	-	-
All Other Services	Other Services - All Other Services Not Otherwise Classified	OP, PB	O1A	-	For OP, type of bill is NOT 72x (dialysis).

Drilldown Categories		Claim Type	Criteria for Including Claim (Line Item) in Category		
PB	Non-PB		BETOS	Place of Service Criterion	Additional Criterion
Part B Covered Drugs	Other Services - All Other Services Not Otherwise Classified	OP, PB, DM	O1D, O1E, D1G	-	For OP, type of bill is NOT 72x (dialysis).
All Other Services	Other Services - All Other Services Not Otherwise Classified	OP, PB	P9	For OP, also count Type of Bill equal to 72x.	-
Anesthesia Services	Other Services - Anesthesia Services	OP, PB	P0	-	For OP, type of bill is NOT 72x (dialysis).
All Other Services	Other Services - All Other Services Not Otherwise Classified	All Parts A and B claim types	-	-	All remaining costs from all Parts A and B claim types.

Table C.4: Services Billed, Ordered, or Referred by the TIN

Service Category	Billed, Ordered, or Referred by the TIN
Outpatient Evaluation and Management Services, Procedures, and Therapy (excluding emergency department)	OP: The attending NPI or other NPI is part of your TIN PB: Your TIN bills the PB claim
Ancillary Services	OP: The attending NPI or other NPI is part of your TIN PB: Your TIN bills the PB claim
Hospital Inpatient Services	Your TIN bills any PB claim during the IP stay
Emergency Services That Did Not Result in a Hospital Admission	OP: The attending NPI or other NPI is part of your TIN PB: Your TIN bills the PB claim
Post-Acute Services	HH: Your TIN bills a Certification or Care Plan Oversight PB claim for the HH stay or the attending NPI is part of your TIN OP: The attending NPI is part of your TIN
Hospice Care	An NPI under your TIN is the attending NPI
All Other Services	OP with HCPCS codes in BETOS 01A: The attending NPI or other NPI is part of your TIN PB with HCPCS codes in BETOS 01A: Your TIN bills the PB claim
All Other Services	OP: The attending NPI or other NPI is part of your TIN PB: Your TIN bills the PB claim DM: An NPI under your TIN is the ordering NPI
All Other Services	IP: An NPI under your TIN is the attending NPI OP: The attending NPI or other NPI is part of your TIN PB: Your TIN bills the PB claim DM: An NPI under your TIN is the ordering NPI

APPENDIX D: EVALUATION AND MANAGEMENT (E&M) CODES

As discussed in Section 5, condition episodes are attributed to all TINs billing at least 30% of IP E&M visits. IP E&M visits are identified using CPT-4 codes listed in Table D.1.

Table D.1: Inpatient E&M Codes

CPT Codes	Description
99221	Initial Hospital Care, Per Day, For The Evaluation And Management Of A Patient, Which Requires These 3 Key Components: A Detailed Or Comprehensive History; A Detailed Or Comprehensive Examination; And Medical Decision Making That Is Straightforward Or Of Low Complexity.
99222	Initial Hospital Care, Per Day, For The Evaluation And Management Of A Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of Moderate Complexity.
99223	Initial Hospital Care, Per Day, For The Evaluation And Management Of A Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of High Complexity.
99231	Subsequent Hospital Care, Per Day, For The Evaluation And Management Of A Patient, Which Requires At Least 2 Of These 3 Key Components: A Problem Focused Interval History; A Problem Focused Examination; Medical Decision Making That Is Straightforward Or Of Low Complexity.
99232	Subsequent Hospital Care, Per Day, For The Evaluation And Management Of A Patient, Which Requires At Least 2 Of These 3 Key Components: An Expanded Problem Focused Interval History; An Expanded Problem Focused Examination; Medical Decision Making Of Moderate Complexity.
99233	Subsequent Hospital Care, Per Day, For The Evaluation And Management Of A Patient, Which Requires At Least 2 Of These 3 Key Components: A Detailed Interval History; A Detailed Examination; Medical Decision Making Of High Complexity.
99238	Hospital Discharge Day Management; 30 Minutes Or Less
99239	Hospital Discharge Day Management; More Than 30 Minutes
99234	Observation Or Inpatient Hospital Care, For The Evaluation And Management Of A Patient Including Admission And Discharge On The Same Date, Which Requires These 3 Key Components: A Detailed Or Comprehensive History; A Detailed Or Comprehensive Examination; and Medical Decision Making That Is Straightforward Or Of Low Complexity.
99235	Observation Or Inpatient Hospital Care, For The Evaluation And Management Of A Patient Including Admission And Discharge On The Same Date, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of Moderate Complexity.
99236	Observation Or Inpatient Hospital Care, For The Evaluation And Management Of A Patient Including Admission And Discharge On The Same Date, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of High Complexity.

CPT Codes	Description
99291	Critical Care, Evaluation And Management Of The Critically Ill Or Critically Injured Patient; First 30-74 Minutes

APPENDIX E: MODIFIER CODES FOR ATTRIBUTION

As discussed in Section 5, procedural episodes are typically attributed to all the TINs that bill a PB claim during the trigger event with a CPT code that triggers the episode.[56] Episodes are not attributed to a TIN, however, if the health care professional responsible for the claim bills with a modifier identifying him or herself as an anesthesiologist, nurse practitioner, registered nurse, physician assistant, or other professional type who is not likely to be the primary individual managing the patient's care. TINs are also excluded from attribution if the health care professional bills with modifiers indicating that their role in patient care was limited to pre-operative or post-operative treatment or if they indicate that they are an assistant surgeon and no other main surgeon billing the procedure is identified in the data. Modifier codes that are excluded when determining attribution or that identify an assistant surgeon are listed in Table E.1.

Table E.1: Procedural Attribution Modifier Code Definitions

Modifier Code	Definition	Rule
AA	Anesthesia services performed personally by anesthesiologist	Exclude claim when determining attribution
AS	Physician assistant, nurse practitioner, or clinical nurse specialist services for assistant at surgery	Identify surgeon as assistant
GF	Services rendered in a CAH by a nurse practitioner (NP), clinical nurse specialist (CNS), certified registered nurse (CRN) or physician assistant (PA)	Exclude claim when determining attribution
HL	Intern	Exclude claim when determining attribution
QX	CRNA service: with medical direction by a physician	Exclude claim when determining attribution
QZ	CRNA service: without medical direction by a physician	Exclude claim when determining attribution
55	Postoperative management only	Exclude claim when determining attribution
56	Preoperative management only	Exclude claim when determining attribution
80	Assistant surgeon	Identify surgeon as assistant
81	Minimum assistant surgeon	Identify surgeon as assistant
82	Assistant surgeon (when qualified resident surgeon not available)	Identify surgeon as assistant

[56] Attribution is based on positive-cost claims (IP E&M claims for acute condition episodes and PB claims for procedural episodes). Positive-cost claims are defined as claims with positive standardized allowed amounts.