Detailed Methods of the 2014 Supplemental Quality and Resource Use Reports (QRURs)

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1 INTRODUCTION

This document details the methodology for the 2014 Supplemental Quality and Resource Use Reports (QRURs) distributed by the Centers for Medicare & Medicaid Services (CMS). The 2014 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 of care 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 2014 Supplemental QRURs reflect performance on episodes during a calendar year 2014 performance period.

A primary goal of the 2014 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 reports are therefore designed to assist TINs in identifying opportunities for coordination and efficiency improvements. To achieve this goal, the 2014 Supplemental QRURs provide information on TINs' health care service utilization and costs for during treatment episodes for common conditions and procedures. The 2014 Supplemental QRURs include episodes comprising a range of medical situations including acute hospital admissions and major treatment procedures. In the 2014 Supplemental QRURs and all supporting documentation, the terms "cost," "spending," and "resource use" are used interchangeably, and all denote Medicare 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 2014 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 2014 Supplemental QRURs are specially designed for constructing episodes of care in the Medicare population. Relative to the 2012 Supplemental QRURs, the 2014 Supplemental QRURs report on additional episodes and use updated episode construction

[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).

methodology and reporting structures. In upcoming years, the episodes and reports will continue to be improved and refined, based on experience and stakeholder feedback.

The episode information in the 2014 Supplemental QRURs is not used in calculating the Medicare Value-Based Payment Modifier (VM). The 2014 Supplemental QRURs are for informational purposes only and complement the per capita cost and quality information provided in the 2014 QRURs.[3] The 2014 QRURs and Supplemental QRURs are distributed to TINs that billed Medicare for covered services in 2014 and had at least one episode attributed to them. One page reports were delivered to all TINs that did not have at least one episodes attributed to them. CMS intends for the 2014 Supplemental QRURs to prompt feedback from TINs receiving the reports on the episode grouping methods, which will aid in future episode grouper developments.

1.2 Episodes Included in the 2014 Supplemental QRURs

The 2014 Supplemental QRURs provide information on 26 major episode types and an additional 38 episode subtypes, resulting in 64 total reported episode types. The 64 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 (2014)* files posted in the Downloads section of this CMS webpage list codes used to distinguish episode subtypes.

Two methods are used to construct the 64 episode types reported in the 2014 Supplemental QRURs: Method A is used for 28 episode types, and Method B is used for 36 episode types. The methods were developed by two groups at CMS working to design episode 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 base purchasing initiatives, and provide a more robust measure set in

[3] All documentation describing the 2014 QRURs is located on this CMS webpage.

the Supplemental QRURs. Earlier versions of both methods were used to create the episodes reported in the 2012 Supplemental QRURs.[4] Both methods implement clinical logic to open episodes and distribute payments for medical services, as obtained from Medicare administrative claims, 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 later in this section. 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 without Percutaneous Coronary Intervention (PCI) / Coronary Artery Bypass Graft (CABG)*	A
3	*AMI with PCI*	A
4	*AMI with CABG*	A
5	Asthma/Chronic Obstructive Pulmonary Disease (COPD), Acute Exacerbation	A
6	Atrial Fibrillation (AFib)/Flutter, Acute Exacerbation	A
7	Cellulitis (All)	B
8	*Cellulitis in Diabetics*	B
9	*Cellulitis in Patients with Wound, Non-Diabetic*	B
10	*Cellulitis in Obese Patients, Non-Diabetic without Wound*	B
11	*Cellulitis in All Other Patients*	B
12	Gastrointestinal (GI) Hemorrhage (All)	B
13	*GI Hemorrhage, Upper and Lower*	B
14	*GI Hemorrhage, Upper*	B
15	*GI Hemorrhage, Lower*	B
16	*GI Hemorrhage, Undefined*	B
17	Heart Failure, Acute Exacerbation	A
18	Ischemic Stroke	A
19	Kidney and Urinary Tract Infection (UTI)	B
20	Pneumonia, Inpatient (IP)-Based	A

Table 2: Procedural Major Episode Types and Subtypes

#	**Procedural Episode Name *(Subtypes listed in italics)***	**Method**
21	Aortic Aneurysm Procedure (All)	B
22	*Abdominal Aortic Aneurysm Procedure*	B
23	*Thoracic Aortic Aneurysm Procedure*	B
24	Aortic/Mitral Valve Surgery (All)	A
25	*Both Aortic and Mitral Valve Surgery*	A
26	*Aortic or Mitral Valve Surgery*	A
27	Carotid Endarterectomy	A
28	Cholecystectomy and Common Duct Exploration (All)	B
29	*Cholecystectomy*	B
30	*Surgical Biliary Tract Procedure*	B
31	Colonoscopy (All)	B

[4] See the *2012 Supplemental QRUR Detailed Methods* document found in the Downloads section of this CMS Episode Grouper webpage.

#	Procedural Episode Name *(Subtypes listed in italics)*	Method
32	*Colonoscopy with Invasive Procedure*	B
33	*Colonoscopy without Invasive Procedure*	B
34	Coronary Artery Bypass Graft (CABG)	A
35	Hip/Femur Fracture or Dislocation Treatment, IP-Based	A
36	Hip Replacement or Repair (All)	B
37	*Hip Arthroplasty*	B
38	*Hip Arthroscopy and Hip Joint Repair*	B
39	Knee Arthroplasty	B
40	Knee Joint Repair (All)	B
41	*Meniscus Repair*	B
42	*Knee Ligament Repair*	B
43	Lens and Cataract Procedures (All)	B
44	*Cataract Surgery*	B
45	*Discission*	B
46	*Intraocular Lens (IOL) Removal/Repositioning or Secondary IOL Insertion*	B
47	Mastectomy for Breast Cancer (All)	A
48	*Lumpectomy or Partial Mastectomy without Reconstruction*	A
49	*Lumpectomy or Partial Mastectomy with Reconstruction*	A
50	*Simple or Modified Radical Mastectomy without Reconstruction*	A
51	*Simple or Modified Radical Mastectomy with Reconstruction*	A
52	Pacemaker (All)	A
53	*Pacemaker Placement, IP-Based*	A
54	*Pacemaker Placement, Outpatient (OP)-Based*	A
55	*Pulse Generator Replacement*	A
56	Percutaneous Coronary Intervention (PCI) (All)	A
57	*PCI, IP-Based*	A
58	*PCI, OP-Based*	A
59	Prostatectomy for Prostate Cancer	A
60	Spinal Fusion (All)	B
61	*Lumbar and/or Thoracic Spinal Fusion*	B
62	*Cervical Spinal Fusion*	B
63	*Long-Segment Spinal Fusion for Deformity*	B
64	Transurethral Resection of the Prostate (TURP) for Benign Prostatic Hyperplasia	B

The remainder of this detailed methodology proceeds as follows. Section 2 describes episode construction, and Section 3 specifies how episodes are produced for the 2014 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 2014 Supplemental QRURs and the 2012 Supplemental QRURs.[5]

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

2 CONSTRUCTING EPISODES

Episodes are constructed by developing definitions specific to each episode condition or procedure for three steps: (1) opening the episode; (2) grouping services to the episode; and (3) closing the episode. These three construction steps define an episode using a combination of logic rules and medical billing codes specific to each episode.

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

(2) **Grouping**: 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) **Closing**: 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.[6] Episode construction rules are typically based on the service and/or diagnosis codes present on Medicare claims but can also be based on temporal associations, such as time from the trigger event.[7] Clinical logic is applied to determine the relevance of the service to the episode. The remainder of this section describes each construction step in turn. As noted above, full specifications for each episode type can be found in the *Episode Definition (2014)* files posted in the Downloads section of this CMS webpage.

2.1 Opening Episodes

Episodes in the 2014 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 reflect strong evidence of a beneficiary having a particular condition or treatment.

Condition trigger events are generally the occurrence of an International Classification of Diseases, 9th Revision (ICD-9) diagnosis codes, such as on an evaluation and management (E&M) service, or a Medicare Severity Diagnosis Related Group (MS-DRG) code on an IP stay. Some condition episodes have additional logic, such as the requirement of two separate occurrences of the trigger code to improve the likelihood that the patient has the medical condition, since 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

[6] 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.
[7] Method B also applies a cost threshold criterion (≥ 0.5% of costs for that service category) and does not group services below this threshold.

actually has the condition. Procedural episodes are opened by the occurrence of the procedure, identified by the presence of one or more procedure codes, such as Current Procedural Terminology (CPT) codes, ICD-9 procedure codes, Healthcare Common Procedure Coding System (HCPCS) codes, or MS-DRG codes. Both Method A and B grouping algorithms also apply start date logic, 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. Triggering codes are listed in the "Trigger_Codes" tab of the *Episode Definition (2014)* files specific to each episode type.

2.2 Grouping Services

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.[8]

There are a number of similarities between the grouping algorithms used by Method 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 associated with more than one episode type, the full cost of the service will be assigned to all associated episodes. Including the full cost of a service in more than one episode holds each provider accountable for the clinically-related services provided for the patient's episode without double-counting those costs. 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.

[8] 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.

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. 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, a hierarchy 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. Clinical relevance is determined based on the relation of the code to the condition or treatment episode, while taking into consideration historical data, possible comorbidities, or other possible clinical scenarios. These codes are used with a hierarchy, described below, to assign services to an episode. The first set of codes are trigger codes, which define the episode; in other words, these 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-9 diagnosis codes; for procedural episodes, trigger codes are procedure codes such as ICD-9 procedure, MS-DRG, or HCPCS. The second set of codes are called "relevant services," which are more general procedures, such as diagnostic testing and imaging, that may be have potential clinical benefit to a particular episode but may also be relevant to other episodes. Finally, the third set of codes are 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 (2014)* files specific to each episode type.

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, and its full cost will be counted in each episode to which it is assigned.[9] 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 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) Principal diagnosis is relevant	X	X
All Other PB and DME	1) Procedure is a trigger for procedural episode	X	-
	2) Procedure is relevant and principal diagnosis is a trigger for condition episode a procedural episode treats	X	-
	3) Procedure is relevant and principal diagnosis is relevant	X	-
	4) Procedure is relevant	X	-
	5) Procedure is relevant and principal diagnosis is a trigger for condition episode	-	X
	6) Procedure is relevant and principal diagnosis is relevant	-	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 relevant and any diagnosis is a trigger for condition episode a procedural episode treats	X	-
	3) Procedure is relevant and any diagnosis is relevant	X	-
	4) Procedure is relevant	X	-
	5) Procedure is relevant and principal diagnosis is a trigger for condition episode	-	X
	6) Procedure is relevant and principal diagnosis is relevant	-	X
	7) Procedure is relevant and secondary diagnosis is a trigger for condition episode	-	X
	8) Procedure is relevant and secondary diagnosis is relevant	-	X

[9] The option to assign the full cost of a claim/line to each episode was chosen specifically for the 2014 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
HH not occurring within 20 days after an IP stay and Hospice	1) Procedure is a trigger for procedural episode	X	-
	2) Procedure is relevant and any diagnosis is a trigger for condition episode a procedural episode treats	X	-
	3) Procedure is relevant and any diagnosis is relevant	X	-
	4) Procedure is relevant and any diagnosis is a trigger for condition episode	-	X
	5) Procedure is relevant and any diagnosis is relevant	-	X
	6) Principal diagnosis is a trigger for condition episode or condition episode a procedural episode treats	X	X
	7) Principal diagnosis is relevant	X	X
SNF not occurring within 30 days after an IP stay	1) Principal diagnosis is a trigger for condition episode or condition episode a procedural episode treats	X	X
	2) Principal diagnosis is relevant	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 when a procedure is performed for the treatment of a condition. 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 purposes of the 2014 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 surgeon 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.[10] The *Episode Definition (2014)* files posted on this CMS webpage specify which episodes can be associated to each other.

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

[10] Detail about how episodes are attributed to providers can be found in Section 5.

(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).[11]

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

Treatment services represent the care directly related to the provider managing the episode and are automatically grouped to the episode.[12] Broadly, Method B classifies 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.[13]

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. Additionally, as with Method A, SNF claims were included when linked and

[11] The 2014 Supplemental QRURs uses the term "indirect" services to refer to clinically associated services.
[12] "Treatment" and "indirect" services are reported in the 2014 Supplemental QRURs and are defined in Section 6.4.
[13] 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.

grouped to the same episodes as the SNF-qualifying IP stay, per Medicare payment policy. The complete grouping logic for each episode can be found in the *Episode Definition (2014)* file specific to that episode type.

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 episode window.
2. Group if Service is Newly Occurring[14]	The service, when occurring in the episode window, 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 episode window, 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 episode window, 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 episode window, 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 episode window, 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 episode window, 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 had the option to review and determine 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

[14] 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 Closing Episodes

The final step in episode construction is ending the episode. The grouping algorithms for both methods utilize a fixed window of time after a trigger event to scan for related claims to assign to the episode.[15] 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 (2014)* files specific to each episode type.

[15] 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. For example, Method A creates two types of pneumonia episodes, one that is IP-based and another that is OP-based, but only the IP-based episode type is reported in the Supplemental QRURs. If a beneficiary first has a Pneumonia, IP-Based episode and then a Pneumonia, OP-Based episode, the resulting episode will be reported as Pneumonia, IP-Based. The resulting episode window will be from the start of the IP-Based episode to the end of the OP-Based episode.

3 PRODUCING EPISODES

To produce comparable episodes for the 2014 Supplemental QRURs, certain beneficiaries and certain individual episodes are excluded from reporting. Section 3.1 describes how the pool of Medicare beneficiaries is restricted 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 2014 Supplemental QRURs assess TINs based on Medicare payments for services provided to beneficiaries whose Medicare benefits are comparable, some Medicare FFS beneficiaries are excluded from the grouping algorithm. The same beneficiary exclusions are applied for both methods of episode construction. The 2014 Supplemental QRURs exclude 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 enrolled in Part C.
- Beneficiary is receiving Medicare-covered services for which Medicare was not the primary payer.[16]

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. The 2014 Supplemental QRURs differ from the 2012 Supplemental QRURs by not excluding beneficiaries who died during the episode. This change is discussed in Section 7.

3.2 Episode Exclusions

The 2014 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 2014 are included in the 2014 Supplemental QRURs. The following lists episodes that are excluded for both Method A and Method B:

[16] 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.

- Episodes triggered in a non-acute inpatient prospective payment system (IPPS) hospital; and
- Procedural episodes that are not attributed to any TIN.[17]

Each grouping method also has some additional episode exclusions that are unique and based on the grouping algorithm used.[18] 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 (2014*) 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 with a sub-category or an MS-DRG on the triggering IP claim not recommended for reporting;[19]
- Episodes with sequela episodes associated;[20]
- Episodes with a same day IP transfer on the trigger date;
- Procedural episodes combined with other procedural episodes;
- Procedural episodes, other than Mastectomy, Pacemaker, or PCI episode types, that are done outside of an inpatient setting;
- Condition episodes with a lookback period of more than 3 days; and
- Condition episodes treated by excluded procedural episodes.

The following lists additional episode exclusions used only for Method B:

- Condition episodes with a same day IP transfer on the trigger date; and
- Procedural episodes where there was no main surgeon billing the triggering procedure.

[17] 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).
[18] The episode exclusions for Method A and B were determined at the direction of CMMI and CM, respectively.
[19] Certain episodes that were still under development were stratified into specific sub-categories and were excluded from the 2014 Supplemental QRURs.
[20] Sequelae episodes are complications or following episodes associated with a primary episode. Removing episodes with associated sequelae decreases cost variation and allows for reporting on clinically homogeneous episodes.

4 AGGREGATING EPISODE COSTS

The 2014 Supplemental QRURs present the average payment-standardized, risk-adjusted cost 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.[21] The five steps to calculate a TIN's average payment-standardized, risk-adjusted episode amount for the 2014 Supplemental QRURs are:

(1) standardize claim payments;

(2) calculate standardized episode costs;

(3) truncate observed standardized episode costs;

(4) calculate predicted standardized episode costs; and

(5) calculate risk-adjusted standardized episode costs.

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 2014 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. 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.

4.2 Step 2: Calculate Standardized Episode Costs

Next, standardized episode costs are calculated before performing risk-adjustment. For each episode, standardized episode cost is the sum of all standardized Medicare claims payments

[21] More information on the MSPB Measure methodology can be found on this QualityNet webpage

for grouped services. All grouped services are determined by the episode construction methodology described in Section 2.2 and occur during the episode window.

4.3 Step 3: Truncate Observed Standardized Episode Costs

In the third step, extremely high-cost and low-cost standardized episode costs are truncated to limit the influence of outliers on the calculation of risk-adjusted costs. In this documentation, "truncate" is equivalent to "Winsorize." 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 predicts the relationship between the independent variables and the truncated standardized episode cost from Step 3 using a multiple linear regression model. 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.[22] The MSPB and Supplemental QRUR risk adjustment model broadly follows the 12th version of the CMS hierarchical condition category (HCC) risk adjustment methodology (CMS-HCC V12). 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.[23] One difference between the MSPB prediction model and Supplemental QRUR prediction model is the level at which costs are estimated. The MSPB method estimates the model separately for all episodes within each major diagnostic category (MDC), whereas the Supplemental QRUR method estimates the model separately for all episodes within each episode type. In addition, the Supplemental QRUR method uses additional risk adjustment explanatory variables which are not relevant for the MSPB method.

The predicted cost of an episode is estimated using information available from 90 days before the start of the episode. 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

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

[23] 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.

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 70 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
Laterality*	Indicator for having a procedure performed on both sides of the body within the episode window	Episode start through episode end	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	Episode start through episode end	Certain episodes

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

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

The last three variables listed in Table 6 – subtype, emergency room, and laterality – 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 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 during the episode window.

4.5 Step 5: Calculate Risk-Adjusted Standardized Episode Costs

The fifth step calculates the final risk-adjusted standardized episode cost 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.

$$Risk\text{-}adjusted\ Cost = Average\left(\frac{Observed\ Episode\ Cost}{Expected\ Episode\ Cost}\right) * \ National\ Average\ Observed\ Episode\ Cost \quad (1.1)$$

Mathematically, the average risk-adjusted standardized cost for episodes of type k attributed to TIN j is provided in Equation 1.2.[24]

$$Risk\text{-}adjusted\ Cost_{jk} = \left(\frac{1}{n_{jk}}\sum_{i\in\{I_{jk}\}}\frac{Y_{ijk}^{T}}{\hat{Y}_{ijk}}\right) * \left(\frac{1}{n_{k}}\sum_{i\in\{I_{k}\}}Y_{ik}^{T}\right) \quad (1.2)$$

where

Y_{ijk}^{T} = standardized payment for episode i at TIN j for episode type k after truncation (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 truncation (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,

[24] 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.

$i \in \{I_{jk}\}$ = 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*.

5 ATTRIBUTING EPISODES

The 2014 Supplemental QRURs attribute responsibility for each episode to one or more TINs and identify multiple lead EPs within the attributed TIN. All episodes attributed to a TIN are included in the TIN's 2014 Supplemental QRUR. The first step in attributing episodes in the 2014 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 2014 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.[25]

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 physician claims concurrent with trigger event	Performing EP(s) on physician claims concurrent with trigger event

Section 5.1 discusses how episode are attributed to one or more TINs. 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 2014 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. The attribution rules, which vary by episode type, are based on clinical logic and provider feedback on attribution rules used in the 2011 and 2012 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 IP E&M visits during the initial treatment, or "trigger event," that opened the episode.[26] Inpatient (IP)

[25] National-level statistics on attribution are detailed in the "How to Interpret Your 2014 Supplemental QRUR" National Provider Call (NPC) Addendum, available under the Download section on this CMS Episode Grouper webpage.

[26] See Appendix D for the list of IP E&M codes used to identify IP E&M visits.

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 attributed to all TINs that bill a PB claim with a trigger code during the trigger event of the episode.[27] For inpatient procedural episodes, the trigger event is defined as the IP stay that triggered the episode plus the day before the admission to the IP hospital. For outpatient procedural episodes constructed using Method A, the trigger event is defined as the day of the triggering claim plus the day before and two days after the trigger date. For outpatient procedural episodes constructed using Method B, the trigger event is defined as only the day of the triggering claim. Any PB claim or line during the trigger event with the episode's triggering procedure code is used for attribution. If more than one TIN bills the surgical claim during the trigger event, the episode is attributed to each of the TINs. If co-surgeons bill the surgical claim, the episode is attributed to each surgeon's TIN. If only an assistant surgeon bills the surgical claim, the episode is attributed to the assistant surgeon's TIN. If an episode does not have a concurrent PB claim with a trigger code for the episode, then that episode is not attributed to any TIN.

5.2 Identification of Lead Eligible Professional(s)

For informational purposes only, the 2014 Supplemental QRURs identify one or more lead EPs within each attributed TIN using a similar methodology as used for attribution. The lead EP(s) are identified to foster coordination of care improvements and are included in Exhibit 3 and the drill down tables. For the purpose of this report, EPs are defined as those 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, osteopathy), practitioners (e.g., physician assistants, nurse practitioners), and therapists (i.e., physical therapists, occupational therapists, and qualified speech-language pathologists) who are paid for treating Medicare FFS beneficiaries.[28] 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

[27] 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.
[28] A list of EPs and additional information on EPs can be found on this CMS PQRS webpage.

(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).[29] 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 top 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). If no main surgeon is listed on the PB claim, then the lead EP is identified as the assistant surgeon.[30] If there is no concurrent PB claim, then no lead EP is identified for that episode.

[29] This is in contrast with the methodology used in the 2012 Supplemental QRURs. More information can be found in Section 7.

[30] Assistant surgeons are identified as billing the surgery with CPT-4 modifiers 80, 81, 82, or AS. As mentioned in Section 3.2, episodes created using Method B were excluded if no main surgeon was listed on the PB claim.

6 SUMMARIZING EPISODE INFORMATION IN REPORTS

The 2014 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.

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 provides a graphical depiction of the percent difference between a TIN's average risk-adjusted cost and national average risk-adjusted cost for each episode type for comparison purposes. This percentage is calculated separately for each episode subtype.[31] 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 sub-type level. The risk adjustment methodology is described in depth in Section 4. When risk-adjusted cost is calculated at the subtype level, all episodes *i* within *k* must belong to the same subtype.[32] 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

[31] A description of episode subtypes and the list of major episode type and subtypes can be found in Section 1.2.
[32] The variables *i* and *k* are defined in Equation 1.2 in Section 4.5.

episodes (approximately 5.6 million beneficiaries during calendar year 2014). Specifically, the national average is calculated based on the average payment-standardized, risk-adjusted costs of each episode type.

6.2 Exhibit 2: Episode Frequency and Cost

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

Some data in Exhibit 2 may appear blank or suppressed. In the columns titled "Average Utilization" and "% Beneficiaries Receiving Service" under episodes attributed to the TIN and episodes nationally, an "n/a" occurs for the "All Services" category because the columns are not relevant at the cumulative service level. For all columns, a blank cell appears if the TIN does not have any episodes in the episode type.

6.3 Exhibit 3: Episode Summary

Exhibit 3 shows the risk score, costs 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 cost performance of 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 cost information about 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. 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. A higher risk score percentile indicates that on average, beneficiaries were predicted to have relatively higher costs than average for this episode type or subtype.

6.3.2 Exhibit 3.B: Average Cost for Episode Components

Exhibit 3.B provides the average non-risk-adjusted, payment standardized cost of each episode component for the TIN and for the national average. The two components of an episode are "treatment" and "indirect" services.[33] Treatment services comprise the medical care occurring during the initial care directly related to managing the illness, and indirect services are all services not classified as treatment services. Costs 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 are displayed in the "indirect" 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. This information provided in Exhibit 3.C includes cost of services provided in the inpatient (IP) hospital setting for IP stays that triggered the episode and for all other IP stays. 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 cost for two reasons: (i) TINs can identify what services contribute the most to their total average cost 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 2014 QRURs. Appendix C defines each service category and the units used to calculate utilization in Exhibit 3, Exhibit 4, and Drill Down Table 3.

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 of all episodes attributed to the TIN. The top five EPs are listed for each major episode type based on the cumulative cost of all attributed episodes within that episode type. If there is only one EP billing outside the TIN for an episode type, the

[33] As mentioned in Section 2.2.2, the 2014 Supplemental QRURs use the term "indirect" services to refer to Method B's categorization of clinically associated services.

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.[34] The hospital names are obtained from the provider of services (POS) files.[35] 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 data based on claims billed by providers and facilities inside and outside the TIN.[36] Costs 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 billed or ordered outside the TIN.[37] 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.

6.4 Exhibit 4: Episode Service Category Cost Breakdown

Exhibit 4 summarizes the cost performance, by service category, of episodes of a given episode type attributed to the TIN for the entire episode and for the treatment and indirect components 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

[34] 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.
[35] More information on the POS file is available on this CMS webpage.
[36] 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.
[37] Facility designations are based on the provider of service (POS) files.

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 indirect component of the episode, respectively. The treatment and indirect components are discussed in more detail in Section 6.3.2.

Some data may not appear in Exhibit 4 based on episodes attributed to the TIN. A blank cell appears in the "% Difference" column if there is no national cost for that service category. In addition, in the columns titled "Average Utilization – Your TIN" and "Average 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, the beneficiary's risk score, the episode start date, and physician and non-physician costs 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. The drill down tables are created for each individual episode type and subtype.

6.5.1 Drill Down Table 1: Episode-Level 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, and lists the 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, present 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, as calculated in Step 3 detailed in Section 4, and the beneficiary's predicted episode cost, 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 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 for the given episode type or subtype.

Drill Down Table 1 reports physician costs 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.[38] 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.[39]

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

Drill Down Table 2 provides detailed information on physician costs billed by the TIN and other TINs for episodes of this type that were attributed to the TIN. All costs 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 C, and some cost categories may have $0 cost paid.

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

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

Drill Down Table 3 provides detailed information on non-physician costs 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 C, and some cost categories may have $0 cost paid.

7 ENHANCEMENTS TO THE 2014 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 the changes to the episodes included, the methodology, and the report structure for the 2014 Supplemental QRURs. The 2014 Supplemental QRURs are compared to the 2012 Supplemental QRURs since there the 2013 Supplemental QRURs were not released. The 2013 Supplemental QRURs were not produced to align the Supplemental QRUR reporting cycle with the QRUR reporting cycle. 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 2014 Supplemental QRURs.

7.1 Expansion of Episodes Reported

The 2014 Supplemental QRURs include 14 new major episode types that were not reported on in the 2012 Supplemental QRURs. The additional major episode types are built from either Method A or Method B. The new episode types reported are:

- Aortic Aneurysm Procedure,
- Aortic/Mitral Valve Surgery,
- Atrial Fibrillation/Flutter, Acute Exacerbation,
- Carotid Endarterectomy,
- Cholecystectomy and Common Duct Exploration,
- Colonoscopy,
- Heart Failure, Acute Exacerbation,
- Hip/Femur Fracture or Dislocation Treatment, IP-based,
- Ischemic Stroke,
- Knee Joint Repair,
- Unilateral Lens and Cataract Procedures,[40]
- Mastectomy for Breast Cancer,
- Pneumonia, IP-Based, and
- TURP for Benign Prostatic Hyperplasia.

The 2012 Supplemental QRURs reported on some additional episode types, particularly chronic condition episodes, which are not included in the 2014 Supplemental QRURs due to high

[40] The 2012 Supplemental QRURs reported only on bilateral lens and cataract procedures.

variation in episode cost. This variability was largely due to how the episode types are constructed and not physician choice, which made the episode types unsuitable for public reporting. The episode types no longer reported are Chronic Atrial Fibrillation/Flutter, Chronic Congestive Heart Failure, Chronic Asthma/COPD, and Ischemic Heart Disease. Additionally, the "Acute Coronary Syndrome" episode is now named "Acute Myocardial Infarction".

The 2014 Supplemental QRURs also modified the episode subtypes for some major episode types that were reported in the 2012 Supplemental QRURs. These changes are:

- Pneumonia now has no subtypes and only pneumonia in the inpatient setting is reported;
- CABG no longer has the "CABG without ACS" sub-type;
- PCI no longer has the "PCI without ACS" sub-type; and
- PCI now has "PCI, IP-Based" and "PCI, OP-Based" as sub-types.

7.2 Refinements to Methodology

The 2014 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:

- **Changed attribution methodology for condition episode types**: The 2014 Supplemental QRURs attribute condition episodes to all TINs that bill at least 30 percent of IP E&M claims during the trigger event. The 2012 Supplemental QRURs attributed condition episodes to the single TIN that had a plurality of IP E&M claims during the trigger event. This change allows for multiple attribution of episodes and better reflects which TINs were responsible for the beneficiary's care.
- **Changed methodology for identifying lead EP(s) for condition episode types**: The 2014 Supplemental QRURs identify the top three EPs billing the highest number of IP E&Ms during the trigger event for the condition episode. In contrast, the 2012 Supplemental QRURs identified a single lead EP for condition episodes as the EP that billed the highest percentage of IP E&M claims during the trigger event. This change allows multiple lead EPs to be identified and presents more actionable information to TINs about their episodes.
- **Refined the risk adjustment model**: The risk adjustment model in the 2014 Supplemental QRURs includes additional variables and the following methodology changes. To promote consistency, Method A and B episodes are risk-adjusted using the same risk adjustment model detailed in Section 4. Three additional variables are

now included in the modified MSPB risk adjustment model for some episode types: an MS-DRG indicator, an emergency admissions indicator, and a laterality indicator for procedures. Finally, expected costs are not truncated in the 2014 reports as they were in the 2012 reports. The model will continue to undergo modifications in future reports based on feedback and additional analysis.

- **Updated beneficiary exclusion logic**: The 2014 Supplemental QRURs exclude beneficiaries who were not continuously enrolled in both Part A and Part B for the 90 days before an episode start date to the end of the episode. The 2012 Supplemental QRURs excluded beneficiaries who were not continuously enrolled in both Medicare Part A and Part B for the entire performance period. By including beneficiaries who were not enrolled in Medicare Part A and Part B for the whole performance period, the 2014 Supplemental QRURs have a higher overall episode count without negatively affecting the data used for risk adjustment.
- **Updated claim exclusion logic**: The 2014 Supplemental QRURs allow ambulance claims to be eligible for grouping. The 2012 Supplemental QRURs excluded ambulance claims from use in the grouping algorithm of Method A.
- **Updated episode exclusion logic**: The 2014 Supplemental QRURs have more episode exclusion criteria than the 2012 Supplemental QRURs. Additional episode exclusions were added for both Method A and Method B and are discussed in more detail in Section 3.2. The new exclusion criteria was implemented to ensure that episodes used for reporting are clinically homogenous.
- **Included episodes for beneficiaries who died during the episode**: The 2014 Supplemental QRURs include beneficiaries regardless of whether they died during an episode or the performance period. The 2012 Supplemental QRURs excluded episodes for beneficiaries who died during the episode. Including episodes ending in patient death allows for a higher overall episode count for reporting and allows providers to examine more clinically complex cases.

7.3 Changes to Report Structure

The 2014 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:

- **Increased the number of TINs that receive the reports**: The 2014 Supplemental QRURs are made available to all TINs with at least one attributed episode. In contrast, the 2012 Supplemental QRURs were made available only to TINs with 100

or more EPs. Thus, the 2014 Supplemental QRURs are made available to 63,733 TINs, while the 2012 reports were made available to the 1,236 TINs.

- **Updated Exhibit 1 to only show a cost difference graph**: Exhibit 1 is a graphical overview of all episode types in the 2014 reports. Information included in Exhibit 1 in the 2012 reports is now split across Exhibit 1 and Exhibit 2.
- **Updated Exhibit 2 to only show episode frequency and cost**: The 2014 reports simplify Exhibit 2 to make the information presented clearer. Specific service category information that was in Exhibit 2 in the 2012 reports is now available in Exhibit 4.
- **Changed Exhibit 3, Exhibit 4, and the drill down Tables to be specific to episode type**: The 2014 reports present information specific to episode types. This makes the exhibits and overall report size smaller to increase readability.
- **Updated Exhibit 4**: Exhibit 4 displays service category cost and utilization in the 2014 reports. The "Top 5 Highest Average-Billing Providers" table that was in Exhibit 4 of the 2012 reports is now available in Exhibit 3.

APPENDIX A: LIST OF ACRONYMS

Table A.1 provides a list of commonly used acronyms in the 2014 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
IOL	Intraocular Lens
IP	Inpatient Hospital
IPPS	Inpatient Prospective Payment System

Acronym	Description
MDC	Major Diagnostic Category
MS-DRG	Medicare-Severity Diagnosis-Related Group
MSPB	Medicare Spending per Beneficiary
NPI	National Provider Identifier
NQF	National Quality Forum
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
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)[41]
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/Shock
HCC5	Opportunistic Infections
HCC7	Metastatic Cancer and Acute Leukemia
HCC8	Lung, Upper Digestive, and Other Severe Cancers
HCC9	Lymphatic, Head and Neck, Brain, and Other Cancers
HCC10	Breast, Prostate, Colorectal, and Other Cancers and Tumors
HCC15	Diabetes with Renal or Peripheral Circulatory Manifestation
HCC16	Diabetes with Neurologic or Other Specified Manifestation
HCC17	Diabetes with Acute Complications
HCC18	Diabetes with Ophthalmologic or Unspecified Manifestation
HCC19	Diabetes without Complication
HCC21	Protein-Calorie Malnutrition
HCC25	End-Stage Liver Disease
HCC26	Cirrhosis of Liver
HCC27	Chronic Hepatitis
HCC31	Intestinal Obstruction/Perforation

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

Indicator Variable	Description Label
HCC32	Pancreatic Disease
HCC33	Inflammatory Bowel Disease
HCC37	Bone/Joint/Muscle Infections/Necrosis
HCC38	Rheumatoid Arthritis and Inflammatory Connective Tissue Disease
HCC44	Severe Hematological Disorders
HCC45	Disorders of Immunity
HCC51	Drug/Alcohol Psychosis
HCC52	Drug/Alcohol Dependence
HCC54	Schizophrenia
HCC55	Major Depressive, Bipolar, and Paranoid Disorders
HCC67	Quadriplegia, Other Extensive Paralysis
HCC68	Paraplegia
HCC69	Spinal Cord Disorders/Injuries
HCC70	Muscular Dystrophy
HCC71	Polyneuropathy
HCC72	Multiple Sclerosis
HCC73	Parkinson's and Huntington's Diseases
HCC74	Seizure Disorders and Convulsions
HCC75	Coma, Brain Compression/Anoxic Damage
HCC77	Respirator Dependence/Tracheostomy Status
HCC78	Respiratory Arrest
HCC79	Cardio-Respiratory Failure and Shock
HCC80	Congestive Heart Failure
HCC81	Acute Myocardial Infarction
HCC82	Unstable Angina and Other Acute Ischemic Heart Disease
HCC83	Angina Pectoris/Old Myocardial Infraction
HCC92	Specified Heart Arrhythmias
HCC95	Cerebral Hemorrhage
HCC96	Ischemic or Unspecified Stroke
HCC100	Hemiplegia/Hemiparesis
HCC101	Cerebral Palsy and Other Paralytic Syndromes
HCC104	Vascular Disease with Complications
HCC105	Vascular Disease
HCC107	Cystic Fibrosis
HCC108	Chronic Obstructive Pulmonary Disease
HCC111	Aspiration and Specified Bacterial Pneumonias
HCC112	Pneumococcal Pneumonia, Empyema, Lung Abscess
HCC119	Proliferative Diabetic Retinopathy and Vitreous Hemorrhage
HCC130	Dialysis Status
HCC131	Renal Failure
HCC132	Nephritis
HCC148	Decubitus Ulcer of Skin
HCC149	Chronic Ulcer of Skin, Except Decubitus
HCC150	Extensive Third-Degree Burns
HCC154	Severe Head Injury

Indicator Variable	Description Label
HCC155	Major Head Injury
HCC157	Vertebral Fractures without Spinal Cord Injury
HCC158	Hip Fracture/Dislocation
HCC161	Traumatic Amputations
HCC164	Major Complications of Medical Care and Trauma
HCC174	Major Organ Transplant Status
HCC176	Artificial Openings for Feeding or Elimination
HCC177	Amputation Status, Lower Limb/Amputation Complications
DM_CHF	Diabetes Mellitus*Congestive Heart Failure
DM_CVD	Diabetes Mellitus*Cerebrovascular Disease
CHF_COPD	Congestive Heart Failure*Chronic Obstructive Pulmonary Disease
COPD_CVD_CAD	Chronic Obstructive Pulmonary Disease*Cerebrovascular Disease*Coronary Artery Disease
RF_CHF	Renal Failure*Congestive Heart Failure
RF_CHF_DM	Renal Failure*Congestive Heart Failure*Diabetes Mellitus
D_HCC5	Currently Disabled, Opportunistic Infections
D_HCC44	Currently Disabled, Severe Hematological Disorders
D_HCC51	Currently Disabled, Drug/Alcohol Psychosis
D_HCC52	Currently Disabled, Drug/Alcohol Dependence
D_HCC107	Currently Disabled, Cystic Fibrosis

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[42]	For a complete list of all MS-DRGs, see here.
ER_LAT_SUB[43]	Categorical interaction indicator between the episode sub-type, whether the patient enters care through the emergency room, and the laterality of the procedure

[42] 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.
[43] 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 2014 Supplemental QRURs define each service category reported in Exhibit 3, Exhibit 4, and the drill down Tables. 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.
99291	Critical Care, Evaluation And Management Of The Critically Ill Or Critically Injured Patient; First 30-74 Minutes