Detailed Methods of the 2012 Medical Group Practice Supplemental Quality and Resource Use Reports (QRURs)

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1 OVERVIEW OF THE 2012 SUPPLEMENTAL QRURS

This document details the methodology for the Program Year (PY) 2012 Supplemental Quality and Resource Use Reports (QRURs). This first section provides an overview of the Supplemental QRURs. Section 2 describes episode construction, and Section 3 specifies how episodes are produced for the 2012 Supplemental QRURs. Sections 4 and 5 explain how episode costs are aggregated and attributed to medical group practices. Finally, Section 6 describes the information included in the reports and the specifications that define the reported data.

1.1 Introduction

The 2012 Supplemental QRURs are confidential feedback reports provided to medical group practices with information on the management of their Medicare fee-for-service (FFS) patients based on episodes of care ("episodes"). The 2012 Supplemental QRURs are for informational purposes only and complement the per capita cost and quality information provided in the 2012 QRURs.[1] The episode information in the 2012 Supplemental QRURs is not used in calculating the Medicare Physician Fee Schedule Value-based Payment Modifier (VM). The 2012 QRURs and Supplemental QRURs are distributed to medical group practices that billed Medicare for covered services in 2012 and participated in the Medicare Physician Quality Reporting System (PQRS) via the Group Practice Reporting Option (GPRO) web-based interface. The 2012 Supplemental QRURs are made available to groups with 100 or more eligible professionals.[2]

The Centers for Medicare & Medicaid Services (CMS) is constructing episodes of care in response to the mandate in Section 3003 of the Affordable Care Act (ACA) of 2010 that the Secretary of the Department of Health and Human Services (HHS) develop an episode grouper to improve care efficiency and quality.[3] Episodes are defined as the set of services provided to treat, manage, diagnose, and follow up on (including post-acute care) a clinical condition. Research funded by CMS has found commercially available off-the-shelf grouping software to be inadequate for Medicare usage because of the lack of transparency in the existing software as well as the high levels of co-morbidities, mortality rates, and health service utilization among Medicare beneficiaries. Therefore, the episode grouping algorithms applied in the 2012 Supplemental QRURs are specially designed for constructing episodes of care in the Medicare population. A preliminary grouping algorithm was employed for a small number of episodes in

[1] A detailed description of the 2012 QRURs is available on this CMS webpage.
[2] Medical group practices may not to participate in multiple accountable care organizations (ACOs) and may not participate in more than one of the following initiatives in program year (PY) 2012: the Medicare Shared Savings Program (MSSP), the Pioneer Accountable Care Organization (ACO) Model, or the Comprehensive Primary Care Initiative (CPCI).
[3] Patient Protection and Affordable Care Act, Pub. L. No. 111-148, § 3003, 124 Stat. 366 (2010).

the 2011 Supplemental QRURs, and the 2012 Supplemental QRURs report the same episodes as well as additional episodes, using updated methodologies. Episodes will be refined in upcoming years as they are developed, tested, and improved with future versions.

1.2 Goals of Episode Cost Reporting

A primary goal of the 2012 Supplemental QRURs is to provide actionable and transparent information that can support medical group practices in efforts to gauge and improve the efficiency of medical care provided to patients with certain medical conditions. The reports are designed to assist medical group practices in identifying opportunities for coordination and efficiency improvements. To achieve this goal, the 2012 Supplemental QRURs provide information on medical group practices' health care service utilization and costs for common episodes.[4] Episodes include the costs of services occurring across settings, over a defined period of time, which encompass the relevant diagnosis, treatment, and aftercare (including post-acute care) for a clinical condition. The 2012 Supplemental QRURs include episodes comprising a range of medical situations including acute hospital events, major treatment procedures, and chronic conditions. CMS intends for the 2012 Supplemental QRURs to prompt feedback on the episode grouping methods, which will aid in future episode grouper developments.

[4] In this document and in the 2012 Supplemental QRURs, the terms "cost," "spending," and "resource use" are used interchangeably, and all denote Medicare FFS paid claims. "Group costs" refer to services/costs during an attributed episode that are provided or ordered by eligible professionals (EPs) billing Medicare under a single Tax Identification Number (TIN).

2 CONSTRUCTING EPISODES OF CARE

The 2012 Supplemental QRURs provide information on 26 medical events or conditions (episodes) that are costly and prevalent in the Medicare FFS population. Episodes can be condition-based, including acute and chronic conditions, or can be procedure-based. Acute conditions are expected to be discrete and short in duration, such as the care for an acute myocardial infarction, and chronic conditions are assumed to persist and not resolve until death or definitive treatment (e.g., chronic obstructive pulmonary disease). Procedure-based episodes are also expected to be discrete events and include treatments such as coronary artery bypass graft surgery.

Two methods are used to construct the 26 episodes reported in the 2012 Supplemental QRURs: Method A is used for 20 episodes, and Method B is used for 6 episodes. Method A was developed by the Center for Medicare and Medicaid Innovation (CMMI) (under contract HHSM-500-2011-00012I, HHSM-500-T0008). A prototype of Method A was employed for select episodes in the 2011 Supplemental QRURs. Method B was developed by CMS in partnership with Acumen, LLC ("Acumen") under contract to support the Hospital Value-Based Purchasing (VBP) Program (contract number GS-10F-0133S, HHSM-500-2011-00098G) and is discussed in the FY 2015 Inpatient Prospective Payment System (IPPS) Proposed Rule.[5] Section 2.1 lists the episodes constructed using each method and included in the 2012 Supplemental QRURs.

Both methods implement clinical logic to parse claims information to open and allocate medical services to one or more episodes during a specific length of time, although some methodological differences exist. Method A uses varying rules to open episodes. Method A uses the principal diagnosis on inpatient (IP) claims to open acute condition episodes. To open chronic condition episodes, Method A requires either two evaluation and management (E&M) claims with a trigger diagnosis code occurring within a certain time frame or a single claim with a trigger diagnosis code and a specific service code. Method A opens procedural episodes using the Diagnosis-Related Group (DRG) in an IP setting, with the exception of bilateral cataract surgery, which is an outpatient procedure and is opened using the trigger code occurring in any Part B claim type. Method A groups clinically related services occurring during the episode period by allocating them to episodes based on: (i) service alone (if specific enough), (ii) diagnosis alone, or (iii) services along with diagnoses on the same claims. Method A aggregates claims to the episodes based on relevant service and diagnostic codes on any type of claim

[5] The FY 2015 IPPS Proposed Rule titled "Medicare Program; Hospital IPPS for Acute Care Hospitals and the Long Term Care Hospital Prospective Payment System and Proposed Fiscal Year 2015 Rates; Quality Reporting Requirements for Specific Providers; Reasonable Compensation Equivalents for Physician Services in Excluded Teaching Hospitals; Provider Administrative Appeals and Judicial Review; Enforcement Provisions for Organ Transplant Centers; and Electronic Health Record (EHR) Incentive Program" can be found on this CMS webpage.

(setting non-specific) and includes any services that are complementary to specific services (e.g., IV contrast to CT scan with contrast). Method A also applies varying closing rules to end an episode period based on the episode type.

Method B uses similar but distinct rules to open episodes and assign clinically-relevant services. Method B triggers acute condition episodes using the DRG on the IP claim and triggers procedural episodes using the DRG on the IP claim in conjunction with service codes. Method B groups clinically related services by allocating them to episodes first based on service, either alone or in combination with the diagnoses on the claims, similar to (i) and (iii) above, but not based on diagnosis alone. Method B first assesses medical events occurring in the post-trigger event (downstream) period (such as ER visits, readmissions to the hospital, post-acute care service setting stays, major outpatient procedures often occurring in hospitals) and uses the information on the claims to group the set of services to that entire "medical event". Method B also applies a cost threshold before determining the relatedness of claims to the condition so that only services responsible for a minimum threshold of costs are grouped. Method B adopts the similar episode time period as the Medicare Spending Per Beneficiary (MSPB) episode (e.g., all episodes end 30 days after trigger hospital discharge). There are additional differences in the way the methods consider the combination of services and diagnoses, as described in Section 2.2.

2.1 Episodes Reported in the 2012 Supplemental QRURs

The 26 episodes reported in the 2012 Supplemental QRURs include condition and procedural episode types. Condition episodes can further be categorized into chronic condition episodes, which represent care for a patient's ongoing disease, and acute condition episodes, which are characterized by a shorter duration and may be a severe exacerbation of a chronic condition. The reports include several versions of some episode conditions (i.e., "subtypes") based on acuity or other clinical detail. Table 1 lists each condition and procedural episode subtype as well as the method used to produce the episode.

Table 1: Episodes and Their Subtypes Reported in the 2012 Supplemental QRURs

Episode Name (Subtypes Indented)[6]	**Episode Type**	**Method**
1. Acute chronic obstructive pulmonary disease (COPD)/asthma, inpatient exacerbation	Acute condition	A
2. Acute coronary syndrome (ACS) (*all*) 3. ACS with coronary artery bypass graft (CABG) 4. ACS with percutaneous coronary intervention (PCI) 5. ACS without PCI or CABG	Acute condition	A
6. Cellulitis	Acute condition	B

[6] The 2012 Supplemental QRURs first list all condition episodes alphabetically and then list all procedural episodes alphabetically. For clarity, this document lists all acute condition episodes alphabetically, then lists chronic condition episodes alphabetically, and finally lists procedural episodes alphabetically.

Table 1 (cont.): Episodes and Their Subtypes Reported in the 2012 Supplemental QRURs

Episode Name (Subtypes Indented)[6]	**Episode Type**	**Method**
7. Gastrointestinal (GI) hemorrhage	Acute condition	B
8. Kidney/urinary tract infection	Acute condition	B
9. Pneumonia (*all*) 10. Pneumonia without inpatient hospitalization 11. Pneumonia with inpatient hospitalization	Acute condition	A
12. Chronic atrial fibrillation/flutter	Chronic condition	A
13. Chronic congestive heart failure (CHF)	Chronic condition	A
14. COPD/asthma	Chronic condition	A
15. Ischemic heart disease (IHD) (*all*) 16. IHD without ACS 17. IHD with ACS	Chronic condition	A
18. Bilateral cataract removal with lens implant[7]	Procedural	A
19. CABG (*all*) 20. CABG without ACS	Procedural	A
21. Hip replacement/revision	Procedural	B
22. Knee replacement/revision	Procedural	B
23. Lumbar spine fusion/refusion	Procedural	B
24. PCI (*all*) 25. PCI without ACS	Procedural	A
26. Permanent pacemaker system replacement/insertion	Procedural	A

2.2 Components of Episode Construction

Episodes are constructed by developing definitions 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 "business rules" and medical billing codes specific to each episode. Descriptions of each step are as follows:

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

(3) **Closing**: episodes are closed, typically after a specified length of time appropriate for the condition acuity or as a result of patient death in the case of chronic, life-long conditions.

These three steps use Medicare claims data to identify services that meet the specifications for defining the episode.[8] Episode construction rules are typically based on the diagnosis or service codes present on Medicare claims but can also be based on temporal

[7] Bilateral cataract removal with lens implant episodes include both procedures done on the same day or on different days. Almost all (97.6 percent) of the bilateral cataract removal with lens implant episodes were performed on different days.

[8] Parts A and B Medicare claims data include the seven claim types: inpatient (IP) hospital facility, outpatient (OP) hospital facility, carrier or physician/supplier Part B (PB), skilled nursing facility (SNF), home health (HH), hospice (HS), and durable medical equipment (DME). Table E.1 in Appendix E provides a summary of each claim type.

associations, such as time from the trigger event.[9] Clinical logic is applied to determine the relevance of the service to the episode. Method A and B use International Classification of Diseases Ninth Revision (ICD-9) diagnosis and procedure, Medicare-Severity Diagnosis-Related Group (MS-DRG or DRG), Current Procedural Terminology Version 4 (CPT-4), Healthcare Common Procedure Coding System (HCPCS), Ambulatory Payment Classification (APC), and Revenue Center codes recorded on medical claims to construct episodes.[10] Table 2 describes the information and the clinical logic that Methods A and B use in each step of the episode construction process.[11]

Table 2: Information Used Along with Clinical Logic for Each Step of Episode Construction by Methods A and B

Construction Step	Method A	Method B
Opening (Triggering)	**Acute conditions*:** (a) principal ICD-9 diagnosis code on inpatient (IP) claim, or (b) ICD-9 diagnosis code on evaluation and management (E&M) claim **Chronic conditions**:** (a) ICD-9 diagnosis code on E&M claim, or (b) ICD-9 diagnosis and specific CPT-4 code in any claim setting **Procedures***:** (a) DRG on IP claim, or (b) CPT-4 code on OP claim; or (c) CPT-4 code in any claim setting	**Acute conditions*:** DRG on IP claims **Procedures***:** combination of (a) surgical DRG on IP claim, and (b) ICD-9 procedure code on IP claim, and (c) surgical CPT-4 code on carrier claim (PB) during IP stay
Grouping Services	**For all episode types according to indicated claim type:** *IP claims:* (a) DRG on IP claim, or (b) ICD-9 procedure code on IP claim, or (c) principal ICD-9 diagnosis code on IP claim *E&M claims:* principal ICD-9 diagnosis code *Non-E&M carrier claims (also known as Physician/Supplier Part B claims (PB)), durable medical equipment (DM), and hospice (HS) claims:* (a) CPT-4 code, or (b) principal ICD-9 diagnosis code, or (b) CPT-4 and principal ICD-9 diagnosis code *Non-E&M outpatient (OP) claims:* (a) CPT-4 code, or (b) CPT-4 and ICD-9 diagnosis code *Skilled nursing facility (SNF) claims:* (a) if following an acute IP stay within 30 days, group to the same episode as the IP stay, or (b) if not occurring within 30 days of an acute IP stay, use CPT-4 and/or ICD-9 diagnosis code *Home health (HH) claims:* (a) if following an acute IP stay within 20 days, group to same episode as IP stay, or (b) if not occurring within 20 days of an acute IP stay, use CPT-4 and/or ICD-9 diagnosis code	**For all episode types according to indicated service categorizations:** *IP claims:* (a) DRG alone, or (b) DRG in combination with principal ICD-9 diagnosis code, or (c) DRG with ICD-9 procedure code on IP claim *Emergency room (ER) claims:* ICD-9 diagnosis code on ER E&M claims *Major outpatient procedures:* (a) APC code alone, or (b) APC with ICD-9 diagnosis code *Other Part B and carrier claims:* (a) CPT-4 code alone, or (b) CPT-4 with ICD-9 diagnosis code *SNF claims:* if linked to a qualifying IP stay that is also the trigger event *HH claims:* (a) home health service type (identified by Revenue Center code) or, (b) service type and principal ICD-9 diagnosis code

[9] Method B applies a cost threshold criterion (≥ 0.5% of costs for that service category) and does not group services below this threshold.
[10] CPT is a registered trademark of the American Medical Association. More information about the CPT coding system can be found on this AMA webpage.
[11] All clinical logic codes specifying the clinically related DRGs, APCs, ICD-9 diagnosis, ICD-9 procedure, CPT-4 or Revenue Center codes for each episode can be found on this CMS webpage.

Table 2 (cont.): Information Used Along with Clinical Logic for Each Step of Episode Construction by Methods A and B

Construction Step	Method A	Method B
Closing	**Acute conditions*:** 30 or 60 day period after trigger event **Chronic conditions**:** death **Procedures***:** 90 days fixed period after trigger event or hospital discharge	**Acute conditions* and procedures***:** 30 days fixed period after trigger hospital discharge

Note: Acute condition episodes (marked with "*") include acute COPD/asthma, ACS, cellulitis, GI hemorrhage, kidney/urinary tract infection, and pneumonia. Chronic condition episodes (marked with "**") include chronic atrial fibrillation/flutter, chronic CHF, COPD/asthma, and IHD. Procedural episodes (marked with "***") include bilateral cataract surgery, CABG, hip replacement/revision, knee replacement/revision, lumbar spine fusion/refusion, PCI, and permanent pacemaker system.

2.2.1 Triggering Episodes

Episodes in the 2012 Supplemental QRURs are opened, or triggered, when a triggering rule is satisfied in the claims data. Opening an episode involves the identification of claim(s) that have the exact procedure, diagnosis, or service type that meets the rule for starting the episode. The specific medical codes, 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. Clinical reviewers examined and approved each of the diagnosis or service codes used as triggers for each episode.[12]

Opening logic for acute condition episodes requires that the trigger code be on an IP claim. Method A examines the principal diagnosis on the IP claim to trigger acute condition episodes. Acute condition episodes constructed by Method A include ACS, acute COPD/asthma, and pneumonia. To capture all possible pneumonia episodes, Method A can also trigger a pneumonia episode with the presence of two E&M visits. Method B uses the DRG on the IP claim to trigger acute condition episodes; acute condition episodes constructed by Method B include cellulitis, GI hemorrhage, and kidney/urinary tract infection.

Opening chronic condition episodes requires that either two E&M claims within a certain time frame each has a trigger diagnosis code or a single claim has a trigger diagnosis code with a specific service code.[13] Chronic condition episodes include chronic atrial fibrillation/flutter, chronic CHF, COPD/asthma, and IHD; all chronic condition episodes are constructed using

[12] The list of trigger codes for each episode type can be found on this CMS webpage.
[13] Chronic episodes can also be initiated by an IP claim with a trigger diagnosis in the principal position; however, these episodes are only included in the 2012 Supplemental QRURs if triggered in a period ending before 2012. Because the 2012 Supplemental QRURs calculate costs for chronic episodes by summing costs during periods ending in 2012 (see Section 2.2.3), the costs from the trigger IP stay are not part of the reported episode costs.

Method A. The first opening logic rule requires that two separate E&M claims must have the episode trigger code. This requirement improves 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 the condition is actually present in the patient. Furthermore, if the triggering E&M claim is performed in a setting other than the physician office (i.e., if it appears in a claim type other than carrier claims), then the trigger diagnosis code must be in the principal position on the claim or line item to provide confirmation that the condition was the primary reason for the E&M visit. The E&M visits must be separated by at least 30 days, but no more than 450 days, to avoid beginning an episode of care before diagnostic testing and evaluation is complete. Method A uses 450 days because annual follow-up visits for chronic conditions can often occur in the 13th or 14th month.

Opening procedural episodes requires a DRG code on an IP claim and/or a service code. Procedural episodes constructed using Method A include bilateral cataract surgery with lens implant, CABG, PCI, and permanent pacemaker system replacement/insertion. Procedural episodes constructed using Method B include hip replacement/revision, knee replacement/revision, and lumbar spine fusion/refusion. With the exception of bilateral cataract surgery episodes, procedural episodes constructed using Method A or B are triggered by the DRG in an IP setting. Since bilateral cataract removal with lens implants is an outpatient procedure, Method A opens the episode when the trigger service (CPT-4) code is found in any Part B claim type. Procedural episodes constructed using Method B additionally require an ICD-9 procedure code on the trigger IP claim as well as the presence of a surgical CPT-4 code on a carrier claim during the IP stay.

The grouping algorithms also apply episode-specific start date logic to capture any related services occurring before the triggering medical event. For example, each IHD episode is set to begin 30 days before the trigger start date. If the IHD episode is triggered by two E&M claims, each with trigger diagnosis codes, then the condition starts 30 days before the earliest E&M claim. Procedural episodes, such as hip replacement/revision, begin three days prior to the triggering hospital admission to capture diagnostic testing and procedures leading up to the surgery. Table 3 below defines the criteria used to construct episodes by each episode type.

Table 3: Episode Trigger Rules

Episode Name	Episode Type	Method	Trigger Rule	Start Date Logic
1. Acute COPD/asthma, inpatient exacerbation	Acute condition	A	• IP hospital admission with a trigger principal ICD-9 diagnosis code	Admission to trigger IP hospital stay
2. ACS (*all*) 3. ACS with CABG 4. ACS with PCI 5. ACS without PCI or CABG	Acute condition	A	• IP hospital admission with a trigger principal ICD-9 diagnosis code	Admission to trigger IP hospital stay
6. Cellulitis	Acute condition	B	• IP hospital admission with a trigger DRG code	3 days before admission to trigger IP hospital stay
7. GI hemorrhage	Acute condition	B	• IP hospital admission with a trigger DRG code	3 days before admission to trigger IP hospital stay
8. Kidney/urinary tract infection	Acute condition	B	• IP hospital admission with a trigger DRG code	3 days before admission to trigger IP hospital stay
9. Pneumonia (*all*) 10. Pneumonia without IP hospitalization 11. Pneumonia with IP hospitalization	Acute condition	A	• Non-PB E&M visit with a trigger principal ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 1 day but no more than 30 days apart; or • PB E&M visit with a trigger ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 1 day but no more than 30 days apart; or • IP hospital admission with a trigger principal ICD-9 diagnosis code	14 days before first trigger E&M visit start date or admission to trigger IP hospital stay[14]
12. Chronic atrial fibrillation/flutter	Chronic condition	A	• Non-PB E&M visit with a trigger principal ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • PB E&M visit with a trigger ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • Service in any setting with a trigger ICD-9 diagnosis code and with a CPT-4 code that is specific	30 days before first E&M visit start date or trigger service date

[14] Pneumonia episodes begin 14 days before the trigger start date to include potential services related to upper respiratory tract infections that progress to pneumonia.

Table 3 (cont.): Episode Trigger Rules

Episode Name	Episode Type	Method	Trigger Rule	Start Date Logic
13. Chronic CHF	Chronic condition	A	• Non-PB E&M visit with a trigger principal ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • PB E&M visit with a trigger ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • Service in any setting with a trigger ICD-9 diagnosis code and with a CPT-4 code that is specific	30 days before first E&M visit start date or trigger service date
14. COPD/asthma	Chronic condition	A	• Non-PB E&M visit with a trigger principal ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • PB E&M visit with a trigger ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • Service in any setting with a trigger code ICD-9 diagnosis and with a CPT-4 code that is specific	30 days before first E&M visit start date or trigger service date
15. IHD (*all*) 16. IHD without ACS 17. IHD with ACS	Chronic condition	A	• Non-PB E&M visit with a trigger principal ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • PB E&M visit with a trigger ICD-9 diagnosis code followed by an E&M visit with a trigger ICD-9 diagnosis code at least 30 days but no more than 450 days apart; or • Service in any setting with a trigger ICD-9 diagnosis code and with a CPT-4 code that is specific	30 days before first E&M visit start date or trigger service date
18. Bilateral cataract removal with lens implant	Procedural	A	• Two services within 90 days of one another in any setting with a trigger CPT-4 procedure code, one having left eye modifier and one having right eye modifier; or • One service in any setting with a trigger CPT-4 procedure code having modifier indicating both eyes	3 days before first trigger service date
19. CABG (*all*) 20. CABG without ACS	Procedural	A	• IP hospital admission with a trigger DRG code	3 days before admission to trigger IP hospital stay
21. Hip replacement/revision	Procedural	B	• IP hospital admission with a trigger DRG and trigger ICD-9 procedure code, and concurrent surgical CPT-4 code on carrier claim	3 days before admission to trigger IP hospital stay

Table 3 (cont.): Episode Trigger Rules

Episode Name	Episode Type	Method	Trigger Rule	Start Date Logic
22. Knee replacement/revision	Procedural	B	• IP hospital admission with a trigger DRG and trigger ICD-9 procedure code, and concurrent surgical CPT-4 code on carrier claim	3 days before admission to trigger IP hospital stay
23. Lumbar spine fusion/refusion	Procedural	B	• IP hospital admission with a trigger DRG and trigger ICD-9 procedure code, and concurrent surgical CPT-4 code on carrier claim	3 days before admission to trigger IP hospital stay
24. PCI (*all*) 25. PCI without ACS	Procedural	A	• OP hospital admission with a trigger CPT-4 or a trigger HCPCS code; or • IP hospital admission with a trigger DRG code	3 days before admission to trigger hospital stay
26. Permanent pacemaker system replacement/insertion	Procedural	A	• OP hospital admission with a trigger CPT-4 or a trigger HCPCS code; or • IP hospital admission with a trigger DRG code	3 days before admission to trigger hospital stay

2.2.2 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. Grouping rules identify clinically-vetted and relevant service, procedural, or diagnostic codes on claims starting during the episode in valid claim settings and aggregate those claims to the related open episode. The classification of services into episodes can be complex for numerous reasons: for example, patients may have multiple concurrent conditions or procedures; some services may be provided for the care of more than one condition; co-morbid conditions do not behave independently of each other; and claims data, which are used to identify services billed to Medicare, do not always link services to the treatment of an individual diagnosis. The aim of both Method A and B is to group only clinically related services associated with an episode condition; however, the approach to achieving this result may vary.

Clinical reviewers evaluated medical codes used on claims data for each method to identify grouped claims for each episode.[15] The types of services that were generally deemed by the clinicians to be relevant to an episode include:

- treatments (e.g., thrombolysis for ACS);

[15] Method A first groups medical claims/services into subunits of "interventions" with 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.

- care for typical signs and symptoms of the episode condition (e.g., pain control for chest pain during ACS);
- complications of the condition itself or its usual treatments (e.g., stroke for atrial fibrillation);
- diagnostic tests (e.g., echocardiogram for ACS); or
- post-acute care (e.g., home health care for oxygen use after inpatient pneumonia).

Methods A and B each use pre-defined rules for grouping services to open episodes. The grouping rules used by Method A or B are based on:

(1) Service only (used by both Methods A and B): Groups services based on the procedure alone regardless of other (i.e., diagnostic) information (used for services that are sufficiently specific to a given clinical condition to be grouped to the episode).

(2) Service-diagnosis pair (used by both Methods A and B): Groups services if paired with a clinically-vetted relevant diagnosis or procedure code on the same claim (used for services that may be relevant to multiple conditions and therefore require a confirmation of a related diagnosis; for example, an outpatient emergency room procedure grouped based on presence of a relevant diagnosis).

(3) Diagnosis only (used only by Method A): Groups services provided with a highly specific relevant diagnosis on the claim regardless of service or procedure provided (used for clinically-vetted diagnoses that are sufficient alone to be grouped to the episode; for example, an IP claim grouped based on the presence of a relevant diagnosis in the principal position on the claim).

(4) Service-procedure pair (used only by Method B): Groups services only if paired with a clinically-vetted relevant procedure code on the same claim (used for services that may be relevant to multiple conditions and therefore require a confirmation of a related procedure; for example, an IP service grouped based on DRG along with an ICD-9 procedure code).

Method B applies additional logic which allows rules 1, 2, and 4 to require that the service, diagnosis, or procedure under consideration be newly occurring (i.e., incident) in the patient's claims history for at least 90 days prior to the episode start date (e.g., dialysis services occurring after an acute kidney infection would need to be first initiated during the episode window and not provided for at least 90 days prior to the start of the kidney infection to be grouped).

Finally, Method A and B use different approaches to link post-acute care to preceding, related IP stays. Method A groups SNF as well as sub-acute IP stays that follow an acute IP hospital stay within 30 days. If the SNF's preceding IP stay is not grouped to an episode, Method A still considers the SNF service as eligible for grouping based on the diagnoses on the claim. In contrast, Method B groups SNF services to the same episode as the qualifying IP stay as indicated on the SNF claim. Method B does not allow a SNF service to be grouped if the qualifying IP stay is not grouped to an episode (i.e., Method B does not allow grouping of SNF

claims based on diagnostic information alone). Method A groups HH claims if they start within 20 days of discharge of an episode's trigger hospital admission. If the HH claims start after 20 days or if there is no IP admission preceding the HH claim, Method A groups the HH claims according to grouping rules 1, 2 and 3 above. Method B treats HH services the same as other services and groups them according to the six types of home health service categories using rules 1, 2 and 4 above including the incident qualifier (i.e., newly occurring in patient's claims history) to the grouping rule.[16]

In cases where medical care may have been relevant to more than one open episode, the grouping algorithms could assign a service and its corresponding cost to multiple open episodes. For example, a patient's chest x-ray may be relevant to more than one open episode (e.g., radiologic chest examination is relevant to ACS, COPD, chronic CHF, and pneumonia). In this case, both Method A and B would group the full cost of the x-ray to all open episodes.[17]

2.2.3 Closing Episodes

The final step in episode construction is ending the episode. The grouping algorithms for both methods primarily utilize a fixed window of time after a trigger event to scan for related claims to assign to the episode. This time window, or episode length, was selected for each condition based on the typical course of medical care provided for a given episode type (i.e., acute, chronic, or procedural). The clinical reviewers discussed and validated these episode lengths during the episode clinical development process.

Acute condition and procedural episodes are characterized by defined start and end dates, while chronic condition episodes most often do not have an identifiable end date. In the case of acute condition episodes, closing logic determine when an episode ends and when a new instance of that same condition can begin. Except in unusual circumstances, acute condition episodes end 30 days after discharge from the trigger IP hospital stay.[18] Chronic condition episodes represent care for an ongoing, underlying disease and therefore do not have a defined end date but end only upon the death of the patient. To divide ongoing chronic episodes into discrete time periods

[16] Method A groups HH services according to the following 3-digit revenue center codes: i) physical therapy (042x), ii) occupational therapy (043x), iii) speech language pathology (044x), iv) skilled nursing (055x), v) home health aide (057x), and vi) medical social services (056x).

[17] Specifically, Method A determines the relative strength of the relationship between a service and an episode to determine to which episode a service is most highly related; if there are multiple equally strong relationships, the service is assigned to all relevant episodes. Method B assigns services to all relevant episodes based on the grouping rules described in rules 1, 2, and 4 above.

[18] For pneumonia episodes, Method A specifies a clear period during which direct services would be expected if pneumonia was still being treated. If 60 days pass without observing additional services for pneumonia, it may be inferred that the underlying acute condition of pneumonia was resolved and the episode can be closed. If another pneumonia episode is triggered within 60 days of a previous pneumonia episode triggering, the length of the first pneumonia is extended, up to a maximum of 90 days, because it is assumed that the two "episodes" actually represent a single, continuous case of pneumonia.

for the purposes of episode reporting, the 2012 Supplemental QRURs calculate total costs for chronic episodes as costs only from periods (i.e., quarters beginning with the trigger date) ending in 2012. Procedural episodes end 30 or 90 days after discharge from the trigger IP hospital stay. The 2012 Supplemental QRURs report on acute condition and procedural episodes that end in PY 2012; as a result, some acute condition and procedural episodes that started at the end of PY 2011 are included in the episode cost calculations. Table 4 defines the episode closing rules for each episode type.

Table 4: Episode Closing Rules

Episode Name	Episode Type	Method	Closing Rule
1. Acute COPD/asthma, inpatient exacerbation	Acute condition	A	30 days after discharge from trigger IP hospital stay
2. ACS (*all*) 3. ACS with CABG 4. ACS with PCI 5. ACS without PCI or CABG	Acute condition	A	30 days after discharge from trigger IP hospital stay
6. Cellulitis	Acute condition	B	30 days after discharge from trigger IP hospital stay
7. GI hemorrhage	Acute condition	B	30 days after discharge from trigger IP hospital stay
8. Kidney/urinary tract infection	Acute condition	B	30 days after discharge from trigger IP hospital stay
9. Pneumonia (*all*) 10. Pneumonia without IP hospitalization 11. Pneumonia with IP hospitalization	Acute condition	A	60 days after first trigger E&M visit or discharge from trigger IP hospital stay
12. Chronic atrial fibrillation/flutter	Chronic condition	A	End of period of performance or change in patient eligibility
13. Chronic CHF	Chronic condition	A	End of period of performance or change in patient eligibility
14. COPD/asthma	Chronic condition	A	End of period of performance or change in patient eligibility
15. IHD (*all*) 16. IHD without ACS 17. IHD with ACS	Chronic condition	A	End of period of performance or change in patient eligibility
18. Bilateral cataract removal with lens implant	Procedural	A	90 days after first trigger service date
19. CABG (*all*) 20. CABG without ACS	Procedural	A	90 days after discharge from trigger IP hospital stay
21. Hip replacement/revision	Procedural	B	30 days after discharge from trigger IP hospital stay
22. Knee replacement/revision	Procedural	B	30 days after discharge from trigger IP hospital stay
23. Lumbar spine fusion/refusion	Procedural	B	30 days after discharge from trigger IP hospital stay
24. PCI (*all*) 25. PCI without ACS	Procedural	A	90 days after discharge from trigger hospital stay
26. Permanent pacemaker system replacement/insertion	Procedural	A	90 days after discharge from trigger hospital stay

3 PRODUCING EPISODES FOR THE 2012 SUPPLEMENTAL QRURS

To produce episodes for the 2012 Supplemental QRURs, the grouping algorithms processed a subset of Medicare FFS claims. The reports present episode-based cost measures for beneficiaries with an episode of care ending in PY 2012.[19,20] Section 3.1 describes how Medicare beneficiaries and claims are restricted to ensure that the episodes capture the full cost of the patient's health. Section 3.2 details how certain episodes constructed by Method A and B are excluded from the reports. Finally, Section 3.3 further specifies the episodes included in the 2012 Supplemental QRURs.

3.1 Exclusions Applied to Beneficiaries and Claims

To ensure that the 2012 Supplemental QRURs assess medical group practices based on beneficiaries who fully represent Medicare payments, some Medicare FFS beneficiaries enrolled in Medicare Parts A and B are excluded from the grouping algorithm. The two grouping methods use slightly different beneficiary and episode exclusion criteria because the methods were developed separately. To align with the 2012 QRURs for medical group practices, Method A excludes beneficiaries who are:

- not continuously enrolled in both Parts A and B while alive in 2012; or
- receiving Medicare-covered services for which Medicare was not the primary payer in 2012.[21]

In addition, Method A excludes beneficiaries with a missing gender or date of birth because these characteristics are used in Method A's risk adjustment model.

Method B applies the same exclusion methodology used to calculate the Hospital VBP Program's Medicare Spending per Beneficiary (MSPB) measure and excludes beneficiaries who are:

- receiving Medicare-covered services for which Medicare was not the primary payer during the episode window;
- not continuously enrolled in both Parts A and B in the 90 days prior to and during the episode window; or
- missing date of birth.[22]

[19] Chronic episodes could be up to a year in length and could renew each year. Thus, the Supplemental QRURs include chronic episodes with a period ending in 2012.
[20] Beneficiaries are identified in the reports through their Health Insurance Claim (HIC) number. The reports include the beneficiary's full current HIC without equating the Beneficiary Identification Code.
[21] The 2012 QRURs also excluded beneficiaries who resided outside of the United States, its territories, and its possessions for any month in 2012. These beneficiaries are included in the 2012 Supplemental QRURs, though they are unlikely to be attributed. In addition, the 2012 QRURs excluded beneficiaries with zero Medicare allowed charges; the 2012 Supplemental QRURs apply this exclusion to episodes instead.

In addition, some claims are excluded from the grouping algorithms to allow episodes to accurately reflect the resource use of medical group practices. Both grouping algorithms exclude ambulance costs because physicians do not have a role in managing ambulance costs. Specifically, Method A excludes all ambulance claims from the grouping algorithm, and Method B excludes any ambulance claims that occurred outside of the IP trigger stay.[23] Both methods also prevent claims from triggering an episode in the rare cases when a patient death date precedes the date of the trigger event due to data coding error.[24] Method B also excludes all hospice claims from the grouping algorithm because hospice care is not clinically relevant to the acute condition and elective surgical episodes constructed by Method B. Moreover, Method B excludes IP claims from triggering an episode that had:

- data coding errors including missing date of birth;
- standardized payments less than or equal to $0;
- involved a transfer beneficiary; or
- CMS certification number indicated a non-inpatient prospective payment system (IPPS) or non-subsection(d) hospital.[25]

3.2 Episode Exclusions

The 2012 Supplemental QRURs only include eligible episodes, which are defined as episodes that can be attributed to a medical group practice and are clinically valid.[26] Appendix B specifies which episodes are eligible for attribution based on the criteria described later in Section 5. In addition, the following lists clinically invalid episodes that are excluded from Method A and B:

- Episodes that do not end (or have a period ending, for chronic episodes) in 2012;
- Episodes for beneficiaries that are excluded from the 2012 Supplemental QRURs (per Section 3.1);

[22] The MSPB measure as implemented in 2012 also excludes beneficiaries enrolled in Medicare through the Railroad Retirement Board; however, beginning in 2016, the MSPB measure will not exclude these beneficiaries (78 FR 50495).
[23] The service categories reported in the 2012 Supplemental QRURs define ambulance claims using HCPCS codes in Berenson-Eggers Type of Service (BETOS) 01A. However, when excluding ambulance claims outside of the inpatient trigger stay, Method B defines ambulance claims using all HCPCS A Codes.
[24] Sometimes the death date in the Medicare enrollment files is inconsistent with the death date on the beneficiary's claim.
[25] Non-IPPS hospitals include cancer hospitals, veterans' hospitals, federal hospitals, emergency hospitals, hospitals in Maryland, and hospitals located outside the 50 states and DC. Episodes triggered in a non-IPPS hospital are excluded from Method B to align with the MSPB measure, which, as part of the Hospital VBP Program, only applies to IPPS hospitals.
[26] Attributable episodes are episodes that can be attributed to a medical group practice based on the attribution rules listed in Section 5.1, and is not limited to the 1,236 medical group practices that will be receiving the 2012 Supplemental QRURs.

- All episodes triggered by a $0 payment-standardized non-E&M claim;
- Chronic condition episodes triggered during an IP stay at the beginning of the performance period (PY 2012);
- Acute inpatient condition episodes triggered during an IP stay and the IP claim was not grouped to the acute episode;
- Procedural episodes triggered during an IP stay that do not have the trigger claim grouped; and
- Bilateral cataract removal with lens implant episodes triggered in the IP setting.

All episodes that remain are used by the grouping algorithms to produce the episode-based cost measures reported in the 2012 Supplemental QRURs.

3.3 Episode Stratifications

The 2012 Supplemental QRURs apply specific stratifications for the 26 reported episodes. The 26 episodes included in the reports reflect common medical conditions and procedures in the Medicare FFS population. The reports include several stratifications (i.e., subtypes) for the major medical conditions and procedures, referred to as "major episode types," based on their acuity or composition. For example, IHD with ACS is listed as a unique episode type because it reflects an acute exacerbation of IHD in a beneficiary. Table 5 defines each episode subtype reported in the 2012 Supplemental QRURs. All eligible episodes refer to all episodes that remain within the episode type after the exclusion criteria, as described in Sections 3.1 and 3.2, are applied.

Table 5: 2012 Supplemental QRUR Episode Stratifications

Episode Name	Episode Type	Method	Definition
1. Acute COPD/asthma, inpatient exacerbation	Acute condition	A	All eligible episodes
2. ACS (all)	Acute condition	A	All eligible episodes
3. ACS with CABG	Acute condition	A	Episodes with CABG ICD-9 procedure trigger code on the ACS trigger IP claim
4. ACS with PCI	Acute condition	A	Episodes with PCI ICD-9 procedure trigger code on the ACS trigger IP claim and no CABG ICD-9 procedure trigger codes on the ACS trigger IP claim
5. ACS without PCI or CABG	Acute condition	A	Episodes without any CABG or PCI ICD-9 procedure trigger code on the ACS trigger IP claim
6. Cellulitis	Acute condition	B	All eligible episodes
7. GI hemorrhage	Acute condition	B	All eligible episodes
8. Kidney/urinary tract infection	Acute condition	B	All eligible episodes

Table 5 (cont.): 2012 Supplemental QRUR Episode Stratifications

Episode Name	Episode Type	Method	Definition
9. Pneumonia (all)	Acute condition	A	All eligible episodes
10. Pneumonia without IP hospitalization	Acute condition	A	Episodes with no IP claims grouped to episode
11. Pneumonia with IP hospitalization	Acute condition	A	Episodes with at least one IP claim grouped to episode
12. Chronic atrial fibrillation/flutter	Chronic condition	A	All eligible episodes
13. Chronic CHF	Chronic condition	A	All eligible episodes
14. COPD/asthma	Chronic condition	A	All eligible episodes
15. IHD (all)	Chronic condition	A	All eligible episodes
16. IHD without ACS	Chronic condition	A	IHD without any ACS episode's IP trigger grouped during episode quarter in performance period
17. IHD with ACS	Chronic condition	A	IHD with any ACS episode's IP trigger grouped during episode quarter in performance period
18. Bilateral cataract removal with lens implant	Procedural	A	Bilateral cataract removal with lens implant episodes are defined as surgery with lens implantation on both eyes within 90 days of each other. This is identified with the modifier code 50 or the left eye modifier code "LT" and the right eye modifier code "RT".
19. CABG (all)	Procedural	A	All eligible episodes
20. CABG without ACS	Procedural	A	CABG without an ACS ICD-9 principal diagnosis trigger code on the CABG trigger IP claim
21. Hip replacement/revision	Procedural	B	All eligible episodes
22. Knee replacement/revision	Procedural	B	All eligible episodes
23. Lumbar spine fusion/refusion	Procedural	B	All eligible episodes
24. PCI (all)	Procedural	A	All eligible episodes
25. PCI without ACS	Procedural	A	PCI without an ACS ICD-9 diagnosis principal trigger code on the PCI trigger IP claim; and any PCI triggered in an outpatient setting
26. Permanent pacemaker system replacement/insertion	Procedural	A	All eligible episodes

4 AGGREGATING EPISODE COSTS

The 2012 Supplemental QRURs document episode costs for all services associated with the treatment of a particular procedure or condition (i.e., grouped services). The episode cost is the sum of the payments for all grouped services, as determined by the episode construction methodology described in Section 2.2, which occur during the episode window. Episode costs are payment-standardized to remove the effects of geographic variation and are risk-adjusted to account for differences in patient characteristics that may affect cost. Payment standardization and risk adjustment are described in the following two sections.

4.1 Standardizing Payments

Payments are standardized to eliminate geographic differences in rates paid within Medicare payment systems. All payment data shown in the 2012 Supplemental QRURs reflect allowed charges, which include both Medicare trust fund payments and beneficiary deductible and coinsurance. Payment standardization assigns a standard payment for each service so that the price Medicare paid for a service is identical across all geographic regions. This analysis, in essence, removes regional variation in Medicare payment rules to determine a base payment rate for each service. In addition, expenditure calculations remove the payments that are paid to support larger Medicare program goals, such as Indirect Medical Education (IME) and Disproportionate Share Hospital (DSH) payments added to IP claim types. A detailed description of the payment standardization methodology is available through the QualityNet webpage.[27]

4.2 Risk Adjustment

The 2012 Supplemental QRURs present the average risk-adjusted cost for episodes attributed to a medical group practice. Methods A and B apply similar but separate risk adjustment models to account for patient case-mix within each major episode type. The risk adjustment model developed for Method A predicts episode costs based on previous work on episode grouping. Method B uses the same risk adjustment approach as the existing MSPB measure to predict episode costs, adding some minor adjustments to accommodate the episode construct. Section 4.2.1 first presents the basic steps of calculating risk-adjusted costs for presentation in the 2012 Supplemental QRURs; these basic steps are followed to calculate risk-adjusted costs for both Methods A and B. Methods A and B only differ in their prediction of

[27] The payment standardization methodology can be found on this QualityNet webpage.

episode costs, which is discussed in detail in Section 4.2.2 and 4.2.3, respectively. Finally, Section 4.2.4 discusses the calculation of risk scores presented in the reports.

4.2.1 Calculation of Risk-Adjusted Costs

The following steps and equations outline the calculation of a medical group practice's average risk-adjusted amount for an episode type to report in the 2012 Supplemental QRURs. All cost figures used in the risk adjustment model are payment-standardized. Methods A and B differ in their prediction of episode payments in the second step below. The five steps include:

(1) **Truncate payment-standardized high-cost episodes:** Within each episode type, episodes with observed payment-standardized cost above the 99th percentile of all episodes nationally are assigned the value of the 99th percentile to limit the influence of outliers on the calculation of risk-adjusted costs.[28,29]

(2) **Calculate predicted episode payments**: The second step predicts payments for each episode using the truncated episode costs from Step 1. This step estimates the relationship between the independent variables and standardized episode cost using Method A or Method B's mathematical model, depending on the episode, which is described in further detail in the following sections.

(3) **Truncate predicted episode payments:** When risk adjustment is performed on a large number of variables, the model can estimate negative predicted values as a result of outlier episode costs. To remove the outlier predicted values, this step reassigns the predicted values calculated from Step 2 that are below the 0.5th percentile the value of the 0.5th percentile.

(4) **Renormalize predicted episode payments:** To ensure that the average risk-adjusted episode cost is the same before and after truncation (Steps 1 and 3), all truncated predicted episode costs are renormalized. Renormalization occurs by multiplying each truncated predicted episode cost by the ratio of the sum of truncated predicted costs from Step 3 and the sum of truncated actual costs from Step 1.

(5) **Calculate the final average risk-adjusted episode payment:** The final risk-adjusted cost for an episode type is calculated for each medical group practice. The calculation consists of multiplying the national average of actual costs from Step 1 by the ratio of the sum of all truncated actual costs from Step 1 to the sum of renormalized predicted costs from Step 4.

Mathematically, the average risk-adjusted cost for episodes of type *k* attributed to medical group practice *j* are provided in Equation 1.1:[30]

[28] 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 spurious outliers.
[29] Method B truncates costs for an entire episode, while Method A truncates costs for each cost component estimated in risk adjustment (see Section 4.2.2).
[30] Episode-level risk-adjusted payments can be calculated as in Equation 1.1 by treating all episodes as coming from the same medical group practice.

$$Risk\ \ Adjusted\ Cost_{jk} = \frac{\frac{1}{n_{jk}} \sum_{i \in \{I_{jk}\}} Y_{ijk}^{T}}{\frac{1}{n_{jk}} \sum_{i \in \{I_{jk}\}} \hat{Y}_{ijk}^{R}} \left(\frac{1}{n_k} \sum_{i \in \{I_k\}} Y_{ik}^{T} \right)$$

(1.1)

where

Y_{ijk}^{T} = standardized payment for episode *i* at medical group practice *j* for episode type *k* after truncation (*T*), obtained in Step 1,

$\hat{Y}_{ijk}^{R}$ = payment for episode *i* at medical group practice *j* for episode type *k*, using the renormalized predicted values from the regression (*R*), obtained in Step 4,

Y_{ik}^{T} = standardized payment for episode *i* of episode type *k* after truncation (*T*), obtained in Step 1, across all episodes,

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

n_k = total number of episodes nationally of episode type *k*,

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

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

The following sections detail the approach to predicting episode costs (Step 2) for each method.

4.2.2 Method A's Calculation of Predicted Episode Payments

Method A's prediction of episode costs (Step 2) relies on a two-stage approach.[31] Method A categorizes services in an episode into three components, and payment-standardized costs for each component are predicted separately and combined to produce a final predicted episode cost. The three cost components include:

[31] The two-step approach was developed in: Duan, Naihua, Willard G. Manning, Carl N. Morris, and Joseph P. Newhouse. "A comparison of alternative models for the demand for medical care." *Journal of Business & Economic Statistics* 1, no. 2 (1983): 115-126.

(1) Services directly assigned to the episode (such as a trigger IP claim to a PCI episode);

(2) Services indirectly assigned through condition-treatment associations (such as the costs of a PCI episode that is part of an ACS episode); and

(3) Services indirectly assigned through complication associations (such as the costs of an ACS episode that is part of an IHD episode).

For each of the three cost components, Method A performs two steps to calculate predicted episode costs.[32] The two-part model consists of two distinct regressions: a logistic model to estimate the likelihood of a cost component having positive expected costs, and a linear model of the conditional expected costs of the cost component, given that it is positive.[33]

First, the initial stage uses the patient's health status and non-health explanatory variables with a logistic regression to estimate the likelihood of the cost component (direct, indirect, or complication) in each period having positive costs. While an entire episode will not be zero-cost, one or more of the three types of services may have no costs during a period. In addition, using the shorter window of the episode period instead of the entire episode helps to account for potentially higher costs cost at the outset of the episode due to diagnostic services or greater intensity of early phases of treatment. Method A first estimates the following probability for each cost component *c* for episode *i* using a logistic regression:

$$\rho_{cik}^{+} = P(Y_{cik} > 0) \big| H_i, X_i) \tag{1.2}$$

where

$P(Y_{cik}>0)$ = the probability of cost component *c* having positive costs for episode *i* of episode type *k*

Y_{cik} = total costs in the period of cost component *c* for episode *i* of episode type *k*

H_i = health status explanatory variables for the beneficiary in episode *i*

X_i = non-health beneficiary explanatory variables for the beneficiary in episode *i*

[32] Method A estimates costs for each cost component after truncating costs *for that component* at the 99th percentile.
[33] The two-part model avoids the distortions in linear OLS modeling that can occur when a sizeable percentage of the observations have the same depending value (i.e., zero costs).

Table 6 shows the health (*H*) and non-health (*X*) explanatory variables in Method A's cost prediction.[34,35]

Table 6: Method A Explanatory Variables

Type of Variable	Variable	Variable Description
Health[36]	Severity	Indicators for 54 Condition Categories (CCs)[37,38] Indicators for 58 typical conditions Indicators for 81 complications
Health	Long-Term Care	*None*
Health	Case Mix Indicator	*None*
Non-health	Age	Age as a continuous variable
Non-health	Gender	Indicator for gender
Non-health	Enrollment	Indicator for recent Medicare enrollee

Next, the second stage of the regression estimates payments to the cost component using an ordinary least squares (OLS) model for only those cost components with positive costs, for cost component *c* for episode *i* of episode type *k*:

$$\hat{Y}^{+}_{cik} = E(Y_{cik} \mid Y_{cik} > 0, H_i, X_i) \tag{1.3}$$

The predicted cost component of the episode is thus calculated as the product of the likelihood of being positive times the conditional expected cost. Predicted costs for a component can be represented mathematically as follows:

$$\hat{Y}_{cik} = \rho^{+}_{cik} \cdot \hat{Y}^{+}_{cik} \tag{1.4}$$

Finally, the predicted cost components for each of the three cost components of an episode *i* of episode type *k* are summed to determine the final total predicted cost for the episode.

[34] Method A calculates the predicted cost of an episode using information available 180 days before the start of the episode for acute condition and procedural episodes and the start of each period for chronic condition episodes. Using information available at the start of the episode precludes risk-adjusted costs from being affected by changes in treatment patterns during an episode. Information about the beneficiary known at the start of the episode, however, will become less and less relevant to the episode the longer the episode is open. Since the chronic condition episodes constructed by Method A could last an indefinite period of time, they are risk-adjusted each quarter using updated information from the 180 days before the start of the period.

[35] Procedure indicators that are included in the 2011 Supplemental QRUR's risk adjustment model are not included in Method A's 2012 risk adjustment model.

[36] The full set of health status variables can be found on this CMS webpage.

[37] CMS's Condition Categories (CCs) or Hierarchical Condition Categories (HCCs) are the building blocks for risk-adjustment in several CMS programs. More information about the CMS CCs and HCCs can be found on this CMS webpage.

[38] To prevent collinearity, Method A uses only fifty-four CCs. None of the diagnosis codes used to generate these fifty-four CCs overlap with the diagnosis codes used to build the severity indicators.

$$\hat{Y}_{ik} = \sum_{c} \hat{Y}_{cik} \tag{1.5}$$

4.2.3 Method B's Calculation of Predicted Episode Payments

Method B's cost prediction approach (Step 2) is designed to align with CMS's existing MSPB measure, which is part of CMS's Hospital VBP Program. The MSPB and Method B models follow the CMS HCC risk adjustment methodology and calculate predicted payment-standardized costs based on patient health and non-health explanatory variables using a single ordinary least squares (OLS) model estimated separately for each episode type. The single difference between the MSPB prediction model and Method B's 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 Method B estimates the model for all episodes within each episode type. Therefore, predicted costs for episode *i* of episode type *k* can be expressed as:

$$\hat{Y}_{ik} = E(Y_{ik} | H_i, X_i) \tag{1.6}$$

The health (*H*) and non-health (*X*) explanatory variables in Method B's cost prediction are shown in Table 7.[39] To calculate predicted costs, Method B defines the health and non-health explanatory variables used in both stages of the regression differently than Method A.

Table 7: Method B Explanatory Variables

Type of Variable	Variable	Variable Description
Health[40]	Severity	Indicators for 70 HCCs and 11 HCC interactions
Health	Long-Term Care	Indicator for whether patient recently required care in a long-term care facility
Health	Case Mix Indicator	Indicator of MS-DRG of admission
Non-health	Age	Age in 12 categorical buckets
Non-health	Gender	*None*
Non-health	Enrollment	Indicator for qualification for Medicare through End Stage Renal Disease (ESRD) Indicator for qualification for Medicare through disability

[39] Method B calculates the predicted cost of an episode using information available 90 days before the start of the episode for acute condition and procedural episodes, including the MS-DRG of the triggering inpatient stay.
[40] The full set of health status variables can be found on this CMS webpage.

4.2.4 Risk Scores

The 2012 Supplemental QRURs provide beneficiary risk score percentiles in the Drill Down Tables as a relative measure of the beneficiary's predicted health care spending based on the risk adjustment model described above. The beneficiary's risk score percentile nationally is calculated by comparing the beneficiary's predicted cost, as calculated in Step 2 shown in Section 4.2.1, using the appropriate risk adjustment model, to the predicted cost for all episodes of the same subtype nationally. A higher risk score percentile indicates that based on his or her risk factors, the beneficiary was predicted to have relatively high health care costs for the episode compared to other episodes of the same subtype nationally.

5 ATTRIBUTING EPISODES AND BENCHMARKING MEDICAL GROUP PRACTICES

The 2012 Supplemental QRURs attribute responsibility for each episode to one or more medical group practices and identify an apparent lead eligible professional (EP) within the attributed medical group practice.[41] A medical group practice is represented by a single tax identification number (TIN) under which all EPs in the group bill for Medicare services. All episodes attributed to a medical group practice are included in the group's 2012 Supplemental QRUR.[42] The first step in attributing episodes in the 2012 Supplemental QRURs is to identify a medical group practice most responsible for the care and management of the episode, based on specific criteria for each episode type. Attributing episodes to medical group practices is discussed in Section 5.1. Next, the reports identify an apparent lead EP for each episode for informational purposes only, detailed in Section 5.2. Finally, the 2012 Supplemental QRURs compare the performance of each medical group practice to a national benchmark, discussed in Section 5.3.

5.1 Attribution to Medical Group Practice

The 2012 Supplemental QRURs attribute episodes to a medical practice group determined to be responsible for managing the beneficiary's treatment for a single condition or procedure, based on attribution rules. The attribution rules, which vary by episode type, are based on clinical logic and feedback from medical group practices that are attributed episodes in the 2011 Supplemental QRURs. An episode is assigned to a medical group practice based on one of the following three criteria:

(1) plurality of positive-cost outpatient E&M visits during the episode;

(2) plurality of positive-cost IP hospital E&M visits during the trigger event; or

(3) performance of specific procedures.

Acute and chronic condition episodes are attributed by the first or second criterion, while procedural episodes are attributed using the third criterion. Acute condition episodes are generally attributed to the medical group practice that saw the beneficiary for a plurality of IP E&M visits.[43] For acute inpatient condition episodes, E&M visits during the episode trigger event represent a set of services directly related to the management of the beneficiary's hospital-

[41] Certain patients are not eligible to be included in the 2012 Supplemental QRURs. Section 3.1 presents the exclusion criteria.

[42] Note that the 2012 Supplemental QRUR Drill Down Tables show claims of attributed episodes.

[43] Pneumonia triggered in IP (acute inpatient condition) is attributed according the plurality of inpatient hospital E&M visits, while pneumonia triggered in an outpatient setting (acute outpatient condition) is based on the plurality of outpatient E&M visits. In both cases, if the episode does not have any IP or outpatient E&M visits, attribution is based on the plurality of all E&M visits.

based episode. Chronic condition episodes are attributed to the medical group practice that saw the beneficiary for a plurality of outpatient E&M visits during the episode because they are most likely to have responsibility for the services rendered during the episode. Chronic condition episodes are attributed using outpatient E&M visits instead of IP E&M visits to avoid attributing the care for the entire underlying chronic condition to providers that treated an acute inpatient exacerbation. For both acute and chronic conditions, if the episode does not have any IP or outpatient E&M visits, respectively, the episode is attributed based on the plurality of all E&M visits. Procedural episodes are attributed to all medical group practices billing the surgery claim during the trigger event. The following sections provide more detail on attribution to medical group practice. Table 8 presents a high-level summary of the attribution rules for each episode type.

Table 8: Summary of Medical Group Practice Attribution Methodology

Episode Type	Medical Group Practice Restrictions	Medical Group Practice Attribution Criteria
Acute condition*	(1) Minimum 20% of IP hospital management E&M visits during trigger event (2) If no IP E&M visits, minimum 20% of all E&M visits during trigger event	(1) Plurality of IP E&M visits during trigger event (2) If no IP E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of PFS costs during trigger event
Chronic condition**	(1) Minimum 20% of outpatient E&M visits during episode (2) If no outpatient E&M visits, minimum 20% of all E&M visits during episode	(1) Plurality of outpatient E&M visits during episode (2) If no outpatient E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode during episode
Procedural***	(1) Must bill procedure code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event

Note: Acute condition episodes (marked with an "*") include acute COPD/asthma, ACS, cellulitis, GI hemorrhage, kidney/urinary tract infection, and pneumonia. Chronic condition episodes (marked with an "**") include chronic atrial fibrillation/flutter, chronic CHF, COPD/asthma, and IHD. Procedural episodes (marked with an "***") include bilateral cataract surgery, CABG, hip replacement/revision, knee replacement/revision, lumbar spine fusion/refusion, PCI, and permanent pacemaker system.

5.1.1 Acute Condition Episodes

Acute inpatient condition episodes are attributed to the medical group practice with the plurality of IP hospital management E&M visits during the trigger IP stay. Acute inpatient condition episodes include, by major episode type:

- acute COPD/asthma;
- ACS;
- cellulitis;

- GI hemorrhage;
- kidney/urinary tract infection; and
- pneumonia triggered in IP.[44]

Since acute inpatient condition episodes are triggered in an IP setting, E&M visits during the trigger event represent a set of services directly related to the management of the beneficiary's hospital-based episode. The attributed medical group practice is required to bill at least 20 percent of IP E&M visits; if no medical group practice meets this minimum threshold, the episode is not attributed. In addition, if multiple medical group practices are tied for the plurality of IP E&M visits, the episode is attributed to the group billing the largest share of PFS costs during the trigger IP stay. If an ACS, acute COPD/asthma, or pneumonia episode triggered in the IP setting does not have any IP E&M visits during the episode, attribution is performed based on any E&M visits (as long as the attributed medical group practice billed at least 20 percent of all E&M visits). Appendix C presents the CPT-4 codes that define an IP E&M visit.

Acute outpatient condition episodes are attributed to the medical group practice with the plurality of outpatient E&M visits during the episode. The only acute outpatient episode reported in the 2012 Supplemental QRURs is pneumonia triggered in an outpatient setting. A similar rule was applied to pneumonia triggered in an outpatient setting when the episode did not have any outpatient E&M visits during the episode. The methodology used to identify outpatient E&M visits matches the methodology used for attributing chronic condition episodes, which is described in next section.

5.1.2 Chronic Condition Episodes

Chronic condition episodes are attributed to the medical group practice with the greatest share of outpatient E&M visits. Chronic condition episodes include, by major episode type:

- chronic atrial fibrillation/flutter;
- chronic CHF;
- COPD/asthma; and
- IHD.

The attributed medical group practice is required to bill at least 20 percent of outpatient E&M visits. If no medical group practice meets this minimum threshold, the episode is not attributed. If multiple medical group practices hold the same share of outpatient E&M visits, the group practice billing the highest share of PFS costs during the episode is chosen. Outpatient E&M

[44] Pneumonia can be of the acute medical type (triggered in IP) or of a less acute nature (not triggered in IP). Thus, pneumonia episodes are attributed differently depending on the trigger.

visits are identified using the E&M codes shown in Appendix C. In addition, outpatient E&M visits are counted using the revenue center codes, listed in Appendix C, when appearing on Rural Health Clinics (RHCs).[45] If a chronic condition episode does not have any outpatient E&M visits during the episode, attribution is performed based on any E&M visits (again, as long as the attributed medical group practice bills at least 20 percent of the E&M visits).

5.1.3 Procedural Episodes

Procedural episodes are attributed to the medical group practice of the physician who performed the procedure that opened the episode. Procedural episodes include, by major episode type:

- bilateral cataract removal with lens implant;
- CABG;
- hip replacement/revision;
- knee replacement/revision;
- lumbar spine fusion/refusion;
- PCI; and
- permanent pacemaker system replacement/insertion.

Hip replacement/revision, knee replacement/revision, lumbar spine fusion/refusion, and CABG episodes are attributed to the performing physician based on the physician claim concurrent with the IP trigger event or stay. PCI and permanent pacemaker system replacement/insertion episodes are attributed to the physician claim concurrent with the IP or OP trigger event. Bilateral cataract removal with lens implant is an outpatient procedure and is attributed based on the trigger surgical CPT-4 code on the triggering physician claim. If there are multiple medical group practices billing the surgical claim during the trigger event (e.g., co-surgeons from different TINs), all performing physicians (and their medical group practice) are considered equally responsible. As a result, the procedural episode is attributed to each of the medical group practices. Section 5.2 specifies the identification of the performing physician (i.e., the apparent lead EP) for procedural episodes. Eligible performing physicians are EPs with a physician specialty. In addition, procedural episodes performed by assistant surgeons are excluded.[46] Table 9 details the rules to attribute episodes to a medical group practice. If none of the rules in Table 9 are met, or if multiple groups are tied after all of the rules, the episode is not attributed to any group.

[45] Rural Health Clinics are identified by OP bill type 71.
[46] Assistant surgeons are identified as billing the surgery with CPT-4 modifiers 80, 81, 82, and AS.

Table 9: Detailed Medical Group Practice Attribution Methodology

Episode Name	Episode Type	Method	Medical Group Practice Restrictions	Medical Group Practice Attribution Criteria
1. Acute COPD/asthma, inpatient exacerbation	Acute condition	A	(1) Minimum 20% of IP hospital management E&M visits during trigger event (2) If no IP E&M visits, minimum 20% of all E&M visits during trigger event	(1) Plurality of IP E&M visits during trigger event (2) If no IP E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of PFS costs during trigger event
2. ACS (*all*) 3. ACS with CABG 4. ACS with PCI 5. ACS without PCI or CABG	Acute condition	A	(1) Minimum 20% of IP hospital management E&M visits during trigger event (2) If no IP E&M visits, minimum 20% of all E&M visits during trigger event	(1) Plurality of IP E&M visits during trigger event (2) If no IP E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of PFS costs during trigger event
6. Cellulitis	Acute condition	B	(1) Minimum 20% of IP hospital management E&M visits during trigger event	(1) Plurality of IP E&M visits during trigger event (2) If tied, plurality of PFS costs from those E&M visits
7. GI hemorrhage	Acute condition	B	(1) Minimum 20% of IP hospital management E&M visits during trigger event	(1) Plurality of IP E&M visits during trigger event (2) If tied, plurality of PFS costs from those E&M visits
8. Kidney/urinary tract infection	Acute condition	B	(1) Minimum 20% of IP hospital management E&M visits during trigger event	(1) Plurality of IP E&M visits during trigger event (2) If tied, plurality of PFS costs from those E&M visits
9. Pneumonia (*all*) 10. Pneumonia without IP hospitalization 11. Pneumonia with IP hospitalization	Acute condition	A	(1) For pneumonia triggered in an outpatient setting, minimum 20% of outpatient E&M visits during episode (2) For pneumonia triggered in IP, minimum 20% of IP hospital management E&M visits during trigger event (3) If no outpatient or IP E&M, minimum 20% of all E&M visits during episode (restrict to trigger event for pneumonia triggered in IP)	(1) For pneumonia triggered in an outpatient setting, plurality of outpatient E&M visits during episode (2) For pneumonia triggered in IP, plurality of IP E&M visits during trigger event (3) In both cases, if no outpatient or IP E&M, plurality of any E&M visits during episode (restrict to trigger event for pneumonia triggered in IP) (4) If tied, plurality of PFS costs during episode (restrict to trigger event for pneumonia triggered in IP)

Table 9 (cont.): Detailed Medical Group Practice Attribution Methodology

Episode Name	Episode Type	Method	Medical Group Practice Restrictions	Medical Group Practice Attribution Criteria
12. Chronic atrial fibrillation/flutter	Chronic condition	A	(1) Minimum 20% of outpatient E&M visits during episode (2) If no outpatient E&M visits, minimum 20% of all E&M visits during episode	(1) Plurality of outpatient E&M visits during episode (2) If no outpatient E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
13. Chronic CHF	Chronic condition	A	(1) Minimum 20% of outpatient E&M visits during episode (2) If no outpatient E&M visits, minimum 20% of all E&M visits during episode	(1) Plurality of outpatient E&M visits during episode (2) If no outpatient E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
14. COPD/asthma	Chronic condition	A	(1) Minimum 20% of outpatient E&M visits during episode (2) If no outpatient E&M visits, minimum 20% of all E&M visits during episode	(1) Plurality of outpatient E&M visits during episode (2) If no outpatient E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
15. IHD (*all*) 16. IHD without ACS 17. IHD with ACS	Chronic condition	A	(1) Minimum 20% of outpatient E&M visits during episode (2) If no outpatient E&M visits, minimum 20% of all E&M visits during episode	(1) Plurality of outpatient E&M visits during episode (2) If no outpatient E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
18. Bilateral cataract removal with lens implant	Procedural	A	(1) Bills CPT-4 or HCPCS code that is a trigger for the surgery	(1) All medical group practices billing the surgical claim during the trigger event
19. CABG (*all*) 20. CABG without ACS	Procedural	A	(1) Bills CPT-4 or HCPCS code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event
21. Hip replacement/revision	Procedural	B	(1) Bills HCPCS code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event
22. Knee replacement/revision	Procedural	B	(1) Bills HCPCS code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event
23. Lumbar spine fusion/refusion	Procedural	B	(1) Bills HCPCS code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event
24. PCI (*all*) 25. PCI without ACS	Procedural	A	(1) Bills CPT-4 or HCPCS code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event
26. Permanent pacemaker system replacement/insertion	Procedural	A	(1) Bills CPT-4 or HCPCS code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event

5.2 Identification of Apparent Lead Eligible Professional

The 2012 Supplemental QRURs identified an apparent lead EP for all episodes using a similar methodology as applied to attribute the episode to a medical group practice. The apparent lead EPs are identified to foster coordination of care improvements and are included in the Drill Down Tables and Exhibit 4 for informational purposes only. CMS defines EPs to be those paid under or paid based on the Medicare Physician Fee Schedule (PFS). 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.[47] EPs are identified using their National Provider Identifier (NPI). Table 10 summarizes the methodology used to identify an apparent lead EP for informational purposes.

Table 10: Summary of Identification of Apparent Lead Eligible Professional (EP)

Episode Type	Apparent Lead EP Identification Criteria
Acute condition*	(1) Plurality of IP E&M visits during trigger event (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of PFS costs
Chronic condition**	(1) Plurality of outpatient E&M visits during episode (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
Procedural***	(1) Billing on physician (PB) claim with trigger surgical CPT-4 code during trigger event (2) If multiple EPs bill to the same TIN, plurality of PFS costs on the trigger PB claim (3) If tied in PFS costs, choose one EP[48]

Note: Acute condition episodes (marked with "*") include acute COPD/asthma, ACS, cellulitis, GI hemorrhage, kidney/urinary tract infection, and pneumonia. Chronic condition episodes (marked with "**") include chronic atrial fibrillation/flutter, chronic CHF, COPD/asthma, and IHD. Procedural episodes (marked with "***") include bilateral cataract surgery, CABG, hip replacement/revision, knee replacement/revision, lumbar spine fusion/refusion, PCI, and permanent pacemaker system.

Only clinically appropriate specialties are eligible to be identified as an apparent lead EP. For example, while a general practitioner was qualified to be the lead EP for a pneumonia episode, he or she is not considered for identification as a lead EP for a PCI without ACS episode because PCI is a procedure normally performed by a physician specialist. The EPs'

[47] More information on EPs can be found on this CMS PQRS webpage.

[48] If multiple EPs within the same TIN both bill for the surgery, only one EP is reported in the 2012 Supplemental QRURs due to space constraints and to enable sorting of the Drill Down Tables. In these cases, the two EPs, usually billing as co-surgeons, are equally involved in the care and receive the same payment from Medicare. Instead of excluding these episodes, one EP is chosen randomly to be displayed in the report.

specialty designations are based on their carrier claims.[49] Of the clinically appropriate specialty EPs, the 2012 Supplemental QRURs identified an apparent lead EP differently for each episode type. Appendix D details the EP specialties that are considered to be clinically appropriate as an apparent lead EP for acute and chronic condition episodes and the physician specialty codes considered for procedural episodes. In both tables, a "Y" is used to denote that the specialty code was eligible to be assigned as an apparent lead EP for the specific episode type.

5.2.1 Acute Condition Episodes

The apparent lead EP of an acute condition episode is identified using the same methodology as episode attribution to a medical group practice. For acute inpatient condition episodes (i.e., acute COPD/asthma, ACS, cellulitis, GI hemorrhage, kidney/urinary tract infection, and pneumonia triggered in IP), the apparent lead EP is identified as the EP billing the largest share of positive-cost IP E&M or all E&M visits within the attributed medical group practice (depending on how the medical group practice was attributed the episode). For acute outpatient condition episodes (i.e., pneumonia triggered in outpatient setting), the apparent lead EP is the EP billing the largest share of positive-cost outpatient or all E&M visits within the attributed medical group practice. If multiple EPs bill the same share of E&M visits, the EP billing the largest share of PFS costs during the trigger IP stay is chosen.

5.2.2 Chronic Condition Episodes

The criterion to identify an apparent lead EP for chronic condition episodes mirrors the methodology to attribute the episode to a medical group practice. The apparent lead EP for a chronic condition episode (i.e., chronic atrial fibrillation/flutter, chronic CHF, COPD/asthma, and IHD) is the EP who holds the largest share of positive-cost outpatient E&M visits within the attributed medical group practice. If the chronic condition episode does not have any positive-cost outpatient E&M visits, the apparent lead EP is the EP who holds the largest share of any positive-cost E&M visits within the attributed medical group practice. If two EPs hold the same highest share of outpatient E&M visits, the EP billing the plurality of PFS costs during the episode is chosen.

5.2.3 Procedural Episodes

The apparent lead EP for a procedural episode is identified as the physician billing the carrier claim for the procedure concurrently with the trigger event. Carrier claims with a modifier indicating that the claim was billed by an assistant surgeon are excluded from

[49] Specialty is determined based on the performing NPI on PB claims billed by EPs grouped to the episode. For the rare cases in which an EP bills under more than one specialty during an episode, the first clinically appropriate specialty that is listed on the claim is used.

consideration for attribution.[50] If multiple EPs bill the procedure from the same medical group practice (e.g., co-surgeons), the apparent lead EP is the EP with the largest share of PFS costs on the carrier claim that is concurrent with the trigger event. Procedural episodes (i.e., bilateral cataract removal with lens implant, CABG, hip replacement/revision, knee replacement/revision, lumbar spine fusion/refusion, PCI, permanent pacemaker system replacement/insertion) are eligible to be attributed to physician specialties only.[51]

Table 11 presents the detailed identification of apparent lead EP methodology for all episodes. If multiple EPs are tied after the steps in Table 11, only one EP is chosen to be presented in the reports. Though multiple EPs may be equally involved in the patient's care, the Supplemental QRURs currently only accommodate the listing of a single apparent lead EP.

Table 11: Detailed Identification of Apparent Lead Eligible Professional (EP) Methodology

Episode Name	Episode Type	Method	Apparent Lead EP (NPI) Identification Criteria
1. Acute COPD/asthma, inpatient exacerbation	Acute condition	A	(1) Plurality of IP E&M visits during trigger event (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of PFS costs during trigger event
2. ACS (*all*) 3. ACS with CABG 4. ACS with PCI 5. ACS without PCI or CABG	Acute condition	A	(1) Plurality of IP E&M visits during trigger event (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of PFS costs during trigger event
6. Cellulitis	Acute condition	B	(1) Plurality of IP E&M visits during trigger event (2) If tied, plurality of PFS costs from those E&M visits
7. GI hemorrhage	Acute condition	B	(1) Plurality of IP E&M visits during trigger event (2) If tied, plurality of PFS costs from those E&M visits
8. Kidney/urinary tract infection	Acute condition	B	(1) Plurality of IP E&M visits during trigger event (2) If tied, plurality of PFS costs from those E&M visits
9. Pneumonia (*all*) 10. Pneumonia without IP hospitalization 11. Pneumonia with IP hospitalization	Acute condition	A	(1) For pneumonia triggered in an outpatient setting, plurality of outpatient E&M visits during episode (2) For pneumonia triggered in IP, plurality of IP E&M visits during trigger event (3) If TIN is attributed based on any E&M visits, plurality of any E&M visits during episode (restrict to trigger event for pneumonia triggered in IP) (4) If tied, plurality of PFS costs during episode (restrict to trigger event for pneumonia triggered in IP)

[50] Assistant surgeons are identified as billing the surgery with CPT-4 modifiers 80, 81, 82, and AS.
[51] Physician specialties are defined in the Section 10.8.2 of Chapter 26 of the Medicare Claims Processing Manual found at: http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/clm104c26.pdf. All physician specialty codes are listed in Table D.2 of Appendix D.

Table 11 (cont.): Detailed Identification of Apparent Lead Eligible Professional (EP) Methodology

Episode Name	Episode Type	Method	Apparent Lead EP (NPI) Identification Criteria
12. Chronic atrial fibrillation/flutter	Chronic condition	A	(1) Plurality of outpatient E&M visits during episode (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
13. Chronic CHF	Chronic condition	A	(1) Plurality of outpatient E&M visits during episode (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
14. COPD/asthma	Chronic condition	A	(1) Plurality of outpatient E&M visits during episode (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
15. IHD (*all*) 16. IHD without ACS 17. IHD with ACS	Chronic condition	A	(1) Plurality of outpatient E&M visits during episode (2) If TIN is attributed based on any E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
18. Bilateral cataract removal with lens implant	Procedural	A	(1) Billing of PB claim with trigger surgical CPT-4 during trigger event (2) If multiple NPIs bill to the same TIN, assign to the NPI with the largest share of PFS costs during trigger event
19. CABG (*all*) 20. CABG without ACS	Procedural	A	(1) Billing of PB claim with relevant surgical CPT-4 during IP trigger event (2) If multiple NPIs bill to the same TIN, assign to the NPI with the largest share of PFS costs on the PB claim during the IP stay
21. Hip replacement/revision	Procedural	B	(1) Billing of PB claim with relevant surgical CPT-4 during IP trigger event (2) If multiple NPIs bill to the same TIN, assign to the NPI with the largest share of PFS costs during the IP stay
22. Knee replacement/revision	Procedural	B	(1) Billing of PB claim with relevant surgical CPT-4 during IP trigger event (2) If multiple NPIs bill to the same TIN, assign to the NPI with the largest share of PFS costs during the IP stay
23. Lumbar spine fusion/refusion	Procedural	B	(1) Billing of PB claim with relevant surgical CPT-4 during IP trigger event (2) If multiple NPIs bill to the same TIN, assign to the NPI with the largest share of PFS costs during the IP stay
24. PCI (*all*) 25. PCI without ACS	Procedural	A	(1) Billing of PB claim with relevant surgical CPT-4 during IP/OP trigger event (2) If multiple NPIs bill to the same TIN, assign to the NPI with the largest share of PFS costs on the PB claim during trigger event
26. Permanent pacemaker system replacement/insertion	Procedural	A	(1) Billing of PB claim with relevant surgical CPT-4 during IP/OP trigger event (2) If multiple NPIs bill to the same TIN, assign to the NPI with the largest share of PFS costs on the PB claim during trigger event

5.3 Benchmarking Medical Group Performance

To help evaluate a medical group practice's relative performance, the 2012 Supplemental QRURs provide national episode results. Medicare FFS beneficiaries who met the enrollment criteria and had attributable episodes specified in Section 3 are used to construct national benchmarks (approximately 8.8 million beneficiaries during PY 2012).[52] Methods A and B build episodes for these beneficiaries using the beneficiaries' claims data. The average payment-standardized, non-risk-adjusted and average risk-adjusted costs of each episode type constructed from this sample of beneficiaries form the episode type's nationwide benchmarks presented in the 2012 Supplemental QRURs.

[52] For the 2011 Supplemental QRURs, the national sample is constructed from a nationwide random sample selected from eligible beneficiaries. See Section 6.4 for more information about the difference between the 2011 and 2012 Supplemental QRURs.

6 INFORMATION INCLUDED IN THE REPORTS

The 2012 Supplemental QRURs report on group level statistics and beneficiary level data for the episodes of care attributed to each medical group practice. The reports first present the total number, average cost, and national benchmark for each episode type for comparison purposes (Exhibit 1). Second, the reports provide episode costs by service categories (e.g., IP hospital and post-acute care services), allowing group practices to evaluate the drivers of their episode costs (Exhibit 2). Third, the reports list the top five billing hospitals, skilled nursing facilities, home health agencies, and eligible professionals within and outside of the medical group practice to support the actionability of the reports and to encourage care coordination (Exhibit 4). Finally, the reports provide information at the individual episode level, such as the episode type, the episode start date, and the beneficiary's risk score (Drill Down Tables).

There are multiple areas in a medical group practice's 2012 Supplemental QRURs where data may be not applicable (marked with an "n/a"), suppressed (denoted with an asterisk (*)), or reported as blank. The following details when an "n/a," asterisk, or blank cell would appear in the 2012 Supplemental QRURs and how medical group practices should interpret each section:

- **Exhibit 1**: Percent Cost Difference from National Average for Your Group's Attributed Episodes
    - In the columns titled "Your Group's Subtype Frequency" and "National Subtype Frequency," an "n/a" appears for all major episode types that are not further stratified (i.e., into subtypes) in the reports. A blank cell, in contrast, indicates that the medical group practice does not have any episodes of a particular type or subtype.
    - In the columns titled "Your Group's Average Risk-Adjusted Cost" and "National Average Risk-Adjusted Cost," a blank cell appears when the medical group practice has zero episodes of the major episode type. A blank cell appears in the column titled "Your Group's Average Risk-Adjusted Cost" when the medical group practice is attributed episodes in the major episode type but does not have any of a particular subtype.
- **Exhibit 2**: Service Category Breakdown for Your Group's Attributed Episodes
    - In the columns titled "Average Utilization" and "% Beneficiaries Receiving Service" under episodes attributed to the medical group practice 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 indicates that the medical group practice does not have any episodes in the major episode type.
- **Exhibit 3**
    - Exhibit 3 reports as a blank section that is reserved for future use.

- **Exhibit 4:** Top Five Billing Hospitals, SNFs, HHAs, and EPs Within and Outside Your Medical Group Practice Treating Episode
    - A blank cell appears if there are fewer than five total hospitals, SNFs, HHAs, or EPs within or outside a medical group practice treating their attributed episodes.
    - An asterisk (*) indicates that the medical group practice has only one EP outside the medical group treating the specific episode type. The name of the EP is excluded to protect the EP's privacy. This particular use of an asterisk is not noted on the report itself.
- **Drill Down Tables**
    - In Table 1, an asterisk (*) appears in the column titled "Apparent Lead EP" to indicate that no apparent lead EP within the TIN was attributed the episode.
    - In Table 2 and 3, 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.
    - In Table 3, an asterisk (*) in the column titled "Top Billing EP Outside Your Medical Group Practice Treating Episode" indicates that only one EP was billing outside of the group, and the EP's name is suppressed for privacy reasons.

The following sections detail how the reports define each service category, classify costs inside and outside of the medical group practice, identify the highest-billing entities for each episode type, and define the utilization metrics. The last section summarizes how the 2012 Supplemental QRURs differ from the 2011 Supplemental QRURs.

6.1 Service Categories

The 2012 Supplemental QRURs stratify episode costs by service categories in Exhibit 2 and in the Drill Down Tables. These service categories follow Medicare FFS payment schedules and can be identified from Medicare claims. The service categories also match the major service categories reported in the 2012 QRURs. Service costs are provided as non-risk-adjusted cost for two reasons: first, so that medical group practices can identify what services are driving up their total average cost based on non-risk-adjusted costs and determine appropriate next steps; and second, because risk adjustment is done at the whole episode level rather than at the service category/claim level. Average utilization is also presented for each service category.

In Exhibit 2 and Drill Down Tables 2 and 3, costs are reported for all services performed for each major medical condition or procedure.[53] Exhibit 2 also presents average payment-standardized non-risk-adjusted costs for all services within each major episode and reports the

[53] Exhibit 2 does not report on individual stratifications of each episode. For example, Exhibit 2 reports on "All ACS," which encompasses services reported for ACS, ACS without PCI/CABG, ACS with PCI, and ACS with CABG.

percent difference in average payment-standardized non-risk-adjusted costs from the national average.[54] The percentage of all costs ordered by other groups for the episode is calculated from the Medicare claims and is included for informational purposes.

In Drill Down Table 1, PFS costs are reported based on services used to attribute the episode to the medical group practice. Because procedural episodes are attributed based on the surgical claim during the trigger event, PFS costs and number of E&M visits are presented for informational purposes only and report on all services and E&M visits billed by the medical group practice for the entire episode. Appendix E defines each service category and the units used to calculate utilization in Exhibit 2 and the Drill Down Tables.

6.2 Services Billed, Ordered, or Referred by the Medical Group Practice

The 2012 Supplemental QRURs report data in Exhibit 2, Exhibit 4, and the Drill Down Tables based on claims billed by providers and facilities inside and outside the medical group practice.[55] Costs from all claims grouped to the episode are classified into those billed, ordered, or referred by the medical group practice and those facility costs or other costs billed or ordered outside the medical group practice.[56] Appendix F details the identification of costs billed, ordered, or referred by the medical group practice; all costs not included based on this criteria are identified as costs billed or ordered outside the medical group practice.

6.3 Top Billing Hospitals, Skilled Nursing Facilities, Home Health Agencies, and Eligible Professionals

Exhibit 4 reports the top five billing hospitals, skilled nursing facilities (SNFs), and home health agencies (HHAs) billing within and outside the medical group practice, based on the service categories defined in Section 6.1, as well as the top five billing EPs. 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.[57] The hospital names are obtained from the provider of service (POS) files. 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

[54] In Exhibit 2, 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.
[55] To protect privacy, the name of the highest-billing EP outside of the medical group practice is suppressed if there is only one EP billing outside of the medical group practice.
[56] Facility designations are based on the provider of service (POS) files.
[57] 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.

nursing service category. To identify the top five billing HHAs, all costs from HH and OP claims (type of bill 034x) are used.

Exhibit 4 differentiates the top hospitals, SNFs, and HHAs billing inside versus outside the medical group practice. All facilities are identified based on the criteria applied to identify costs billed, ordered, or referred by the medical group, which is detailed in Appendix F. Since multiple services can be billed to Medicare during a hospital, SNF, or HHA stay, it is common for a facility to be listed in the top five billing facility both inside and outside the medical group practice. For example, an EP from the attributed medical group practice and another from an outside group could bill carrier 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 medical group practice.

For each major episode type, Exhibit 4 reports the total number of EPs that treat the episodes attributed to the medical group practice, including EPs that bill outside the medical group practice. The top five billing EPs are identified based on the performing NPI on PB claims billed by the medical group practice and are distinguished independently of the identification of apparent lead EP. Specialties for the top five billing EPs are not restricted to those that are eligible for apparent lead EP (listed in Appendix D). The specialty listed for each EP listed in Exhibit 4 was determined using the most frequently appearing specialty billed by the EP on all PB claims during the performance period. In some cases, an EP may bill to more than one medical group practice and his or her name may be listed as a top billing EP inside and outside the medical group practice.

6.4 Comparison of the 2012 Supplemental QRURs to the 2011 Supplemental QRURs

The 2012 Supplemental QRURs have incorporated the following changes to add new episodes and improve the actionability and drill down capability of the reports:

- **Add 14 episodes, some using a new methodology**: As discussed above, the 2012 Supplemental QRURs report on 26 common medical conditions and procedures, while the 2011 Supplemental QRURs reported episodes for 12 common conditions and procedures. The major episode types included in the 2011 Supplemental QRURs were pneumonia, acute myocardial infarction (AMI), coronary artery disease (CAD), percutaneous coronary intervention (PCI), and coronary artery bypass graft surgery (CABG).[58] Note that the IHD and ACS episodes included in the 2012 Supplemental

[58] The complete list of episodes reported in the 2011 Supplemental QRUR include: pneumonia; pneumonia without inpatient hospitalization; pneumonia with inpatient hospitalization; acute myocardial infarction (AMI); AMI without PCI or CABG; AMI with PCI; AMI with CABG; coronary artery disease (CAD); CAD without AMI; CAD with AMI; PCI without AMI; and CABG without AMI.

QRURs are comparable to the CAD and AMI episodes used in the 2011 Supplemental QRURs, respectively.

- **Increase the number of medical group practices that receive the reports:** The 2012 Supplemental QRURs are available to 1,236 large medical group practices, while the 2011 reports were made available to 54 large medical group practices.
- **Examine eligible beneficiaries**: Method A allows episodes to be triggered for beneficiaries who transfer between short-term acute IP hospitals during the trigger IP stay. Attribution of these episodes is based on the IP hospital in which the trigger code occurred. On the other hand, Method B excludes episodes for patients who transfer between short-term acute IP hospitals during the trigger IP stay. This exclusion maintains consistency with the MSPB measure.
- **Calculate national benchmark based on all beneficiaries attributed in PY 2012:** The 2012 Supplemental QRURs use all beneficiaries that met the enrollment criteria and had attributable episodes in the calculation of the national benchmark, which included approximately 8.8 million beneficiaries (see Section 5.3). In contrast, the 2011 Supplemental QRURs' national benchmarks were constructed from a nationwide random sample selected from eligible beneficiaries, and included over 547,000 beneficiaries. By including all eligible beneficiaries, the national benchmark includes a larger sample for comparative purposes and risk adjustment.
- **Provide more clinically meaningful service categories**: The service categories in the 2012 Supplemental QRURs have been revised to be more clinically meaningful in response to feedback from medical group practices that received the 2011 Supplemental QRURs and to align with the service categories used in the 2012 QRURs. The Supplemental QRURs now report on: (i) inpatient hospital services; (ii) post-acute care; (iii) outpatient hospital and physician office services; (iv) emergency room services; (v) ancillary services in all non-inpatient settings; (vi) hospice care; and (vii) other services. Section 6.1 and Appendix E provide the complete list of service categories and specifications used for the 2012 Supplemental QRURs. These service categories match the major service categories used in the 2012 QRURs.
- **Report utilization and payment-standardized, non-risk-adjusted cost of service categories:** The 2012 Supplemental QRURs present the utilization and non-risk-adjusted cost of different service categories for episodes attributed to the medical group practice, instead of reporting the share of total costs and percent of episodes with any service use in each category. The Drill Down Tables also include costs of each service category billed, ordered, or referred by EPs within and outside the medical group practice.
- **Highlight top five billing EPs and facilities:** Exhibit 4 includes the top billing facility and EPs within and outside the medical group practice to assist medical group practices in identifying outliers in their own care delivery and other high cost groups.
- **Increase Drill Down capabilities**:
    - **Provide additional beneficiary information:** The Drill Down Tables include beneficiary-specific information (gender and date of birth) to allow medical group practices to match the reported information with their record system.

- **Display actual costs:** Drill Down Table 1 presents actual (non-risk-adjusted and non-payment-standardized) PFS costs to help medical group practices to match against their own records. Note that the tie-breaking rules in attribution are based on payment-standardized PFS costs.
- **Present metrics used in attribution rules:** The Drill Down Tables include total E&M visits, and E&M visits and percentage billed by the medical group practice so the group can verify how condition episodes are attributed to them. Note that procedural episodes are attributed based on the procedure claim billed during the trigger event.

- **Refine risk adjustment model:** The risk adjustment model was refined from the risk adjustment model in the 2011 Supplemental QRURs. The model will continue to undergo modifications in future reports based on feedback and additional analysis.

APPENDIX A: LIST OF ACRONYMNS

Table A.1 provides a list of commonly used acronyms in 2012 Supplemental QRURs and supplementary documentation.

Table A.1: List of Acronyms

Acronym	Description
ACA	Affordable Care Act
ACS	Acute Coronary Syndrome
ACO	Accountable Care Organizations
APC	Ambulatory Payment Classification
BETOS	Berenson-Eggers Type of Service
CABG	Coronary Artery Bypass Graft Surgery
CC	Condition Categories
CHF	Congestive Heart Failure
CMS	Centers for Medicare & Medicaid Services
CMMI	Center for Medicare & Medicaid Innovation
COPD	Chronic Obstructive Pulmonary Disease
CPCI	Comprehensive Primary Care Initiative
CPT-4	Current Procedural Terminology Version 4
DRG	Diagnosis-Related Group
DSH	Disproportionate Share Hospital
E&M	Evaluation and Management
EGM V2	Episode Grouper for Medicare, Version 2
EP	Eligible Professionals
ER	Emergency Room
ESRD	End Stage Renal Disease
FFS	Fee-for-Service
GI	Gastrointestinal
GPRO	Group Practice Reporting Option
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
IHD	Ischemic Heart Disease
IME	Indirect Medical Education
IP	Inpatient Hospital
IPPS	Inpatient Prospective Payment System
MS-DRG	Medicare-Severity Diagnosis-Related Group
MSPB	Medicare Spending per Beneficiary
MSSP	Medicare Shared Savings Program
MTUS	Miles/Times/Units/Services
NPI	National Provider Identifier
OP	Outpatient Hospital
OLS	Ordinary Least Squares

Table A.1 (cont.): List of Acronyms

Acronym	Description
PB	Carrier claims (also known as the Physician/Supplier Part B claims)
PCI	Percutaneous Coronary Intervention
PFS	Physician Fee Schedule
POS	Provider Of Service File
PQRS	Physician Quality Reporting System
PY	Program Year
QRUR	Quality Resource Use Report
SNF	Skilled Nursing Facility
TIN	Tax Identification Number
VM	Value-based Payment Modifier
VBP	Value-based Purchasing

APPENDIX B: DEFINING EPISODES VALID FOR ATTRIBUTION

As discussed in Section 3.2, only certain episodes meet the criteria to be attributed to a medical group practice using the attribution methodology presented in Section 5, and the 2012 Supplemental QRURs exclude episodes that cannot be attributed. The remainder of this appendix defines the episodes that can be attributed to a medical group practice, by episode type. These restrictions are applied in hierarchical order; if an episode does not meet a stated attribution criterion for its episode type, the next criterion is tested. If the episode meets no criteria, the episode is excluded from the reports. Each of the following restrictions is applied only to claims grouped to the episode.

1. **Acute inpatient condition episodes** (i.e., acute COPD/asthma, ACS, cellulitis, GI hemorrhage, kidney/urinary tract infection, and pneumonia triggered in IP[59]) must:
   - 1.1. have exactly one medical group practice that bills the plurality of IP E&M visits (and holds at least 20 percent of IP E&M visits) and bills the plurality of PFS costs during the trigger event; or
   - 1.2. have exactly one medical group practice that bills the plurality of non-IP E&M visits (and holds at least 20 percent of non-IP E&M visits) and bills the plurality of PFS costs during the trigger event.
2. **Acute outpatient condition episodes** (i.e., pneumonia triggered in outpatient setting) must**:**
   - 2.1. have exactly one medical group practice that bills the plurality of outpatient E&M visits (and holds at least 20 percent of outpatient E&M visits) and bills the plurality of PFS costs during the episode; or
   - 2.2. have exactly one medical group practice that bills the plurality of non-outpatient E&M visits (and holds at least 20 percent of non-outpatient E&M visits) and bills the plurality of PFS costs during the episode.
3. **Chronic condition episodes** (i.e., chronic atrial fibrillation/flutter, chronic CHF, COPD/asthma, and IHD) must:
   - 3.1. have exactly one medical group practice that bills the plurality of outpatient E&M visits (and holds at least 20 percent of outpatient E&M visits) and bills the plurality of PFS costs during the episode; or
   - 3.2. have exactly one medical group practice that bills the plurality of non-outpatient E&M visits (and holds at least 20 percent of non-outpatient E&M visits) and bills the plurality of PFS costs during the episode.
4. **Procedural episodes** (i.e., bilateral cataract removal with lens implant, CABG, hip replacement/revision, knee replacement/revision, lumbar spine fusion/refusion, PCI, permanent pacemaker system replacement/insertion) must:

[59] Pneumonia can be of the acute medical type (triggered in IP) or of a less acute nature (not triggered in IP). As described in detail in Section 5.1.1, pneumonia episodes are attributed differently depending on the trigger location.

4.1. have at least one positive-cost PB claim for the surgery billed concurrently with the trigger claim by a physician or non-assistant surgeon.[60]

[60] Assistant surgeons are identified as billing with CPT-4 modifiers 80, 81, 82, and AS on the surgical claim.

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

As discussed in Section 5.1, condition episodes are attributed to the medical group practice with the greatest share of IP or outpatient E&M visits. IP E&M visits are identified using CPT-4 codes listed in Table C.1; outpatient E&M visits are identified using the E&M codes shown in Table C.2. Outpatient E&M visits are restricted to PB and OP claims from Method 2 Critical Access Hospitals (CAH) (type of bill 085x, revenue center codes 096x, 097x, 098x), Federally Qualified Health Centers (FQHCs) (type of bill 077x), Rural Health Clinics (RHC) (type of bill 071x), and Electing Teaching Amendment Hospitals (ETA) (type of bill 013x, restricted to provider numbers 050040, 490106, 490109, 140124, 330127, 490135, 330202, 330204, 330231, 330234, 050276, 050373, 330385, 330396). In addition, outpatient E&M visits are counted using the revenue center codes listed in Table C.3, when appearing on Rural Health Clinics (RHCs) (OP type of bill 071x).

Table C.1: Inpatient Evaluation and Management (E&M) Current Procedural Terminology Version 4 (CPT-4) Codes

CPT-4 Code	Code Description
99218	Initial Observation 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…
99219	Initial Observation 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.
99220	Initial Observation 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.
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…
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.
99224	Subsequent Observation Care, Per Day, For The Evaluation And Management Of A Patient, Which Requires At Least 2 Of These 3 Key Components: Problem Focused Interval History; Problem Focused Examination; Medical Decision Making That Is…
99225	Subsequent Observation 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…
99226	Subsequent Observation 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.
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…

Table C.1 (cont.): Inpatient Evaluation and Management (E&M) Current Procedural Terminology Version 4 (CPT-4) Codes

CPT-4 Code	Code Description
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…
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.
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…
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 …
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 …
99238	Hospital Discharge Day Management; 30 Minutes Or Less
99239	Hospital Discharge Day Management; More Than 30 Minutes
99291	Critical Care, Evaluation And Management Of The Critically Ill Or Critically Injured Patient; First 30-74 Minutes
99292	Critical Care, Evaluation And Management Of The Critically Ill Or Critically Injured Patient; Each Additional 30 Minutes (List Separately In Addition To Code For Primary Service)

Table C.2: Outpatient Evaluation and Management (E&M) Current Procedural Terminology Version 4 (CPT-4) Codes

CPT-4 Code	Description
99201	Office Or Other Outpatient Visit For The Evaluation and Management (E&M) Of A New Patient, Which Requires These 3 Key Components: A Problem Focused History; A Problem Focused Examination; Straightforward Medical Decision Making.
99202	Office Or Other Outpatient Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: An Expanded Problem Focused History; An Expanded Problem Focused Examination; Straightforward Medical Decision Making.
99203	Office Or Other Outpatient Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Detailed History; A Detailed Examination; Medical Decision Making Of Low Complexity.
99204	Office Or Other Outpatient Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; Medical Decision Making Of Moderate Complexity.
99205	Office Or Other Outpatient Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; Medical Decision Making Of High Complexity.
99211	Office Or Other Outpatient Visit For The E&M Of An Established Patient, That May Not Require The Presence Of A Physician. Usually, The Presenting Problem(S) Are Minimal. Typically, 5 Minutes Are Spent Performing Or
99212	Office Or Other Outpatient Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Problem Focused History; A Problem Focused Examination; Straightforward Decision Making.
99213	Office Or Other Outpatient Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: An Expanded Problem Focused History; An Expanded Problem Focused Examination; Decision Making.
99214	Office Or Other Outpatient Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Detailed History; A Detailed Examination; Medical Decision Making Of Moderate Complexity.
99215	Office Or Other Outpatient Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Comprehensive History; A Comprehensive Examination; Medical Decision Making Of High Complexity.
99304	Initial Nursing Facility Care, Per Day, For The E&M 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 S…
99305	Initial Nursing Facility Care, Per Day, For The E&M Of A Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of Moderate Complexity.

Table C.2 (cont.): Outpatient Evaluation and Management (E&M) Current Procedural Terminology Version 4 (CPT-4) Codes

CPT-4 Code	Description
99306	Initial Nursing Facility Care, Per Day, For The E&M Of A Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of High Complexity.
99307	Subsequent Nursing Facility Care, Per Day, For The E&M Of A Patient, Which Requires At Least 2 Of These 3 Key Components: A Problem Focused Interval History; A Problem Focused Examination; Straightforward Medical Decision Making.
99308	Subsequent Nursing Facility Care, Per Day, For The E&M 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.
99309	Subsequent Nursing Facility Care, Per Day, For The E&M Of A Patient, Which Requires At Least 2 Of These 3 Key Components: A Detailed Interval History; A Detailed Examination; Medical Decision Making Of Moderate Complexity
99310	Subsequent Nursing Facility Care, Per Day, For The E&M Of A Patient, Which Requires At Least 2 Of These 3 Key Components: A Comprehensive Interval History; A Comprehensive Examination; Medical Decision Making Of High Complexity.
99315	Nursing Facility Discharge Day Management; 30 Minutes Or Less
99316	Nursing Facility Discharge Day Management; More Than 30 Minutes
99318	E&M Of A Patient Involving An Annual Nursing Facility Assessment, Which Requires These 3 Key Components: A Detailed Interval History; A Comprehensive Examination; And Medical Decision Making That Is Of Low To Moderate Complexity.
99324	Domiciliary Or Rest Home Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Problem Focused History; A Problem Focused Examination; And Straightforward Medical Decision Making.
99325	Domiciliary Or Rest Home Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Problem Focused History; A Problem Focused Examination; And Straightforward Medical Decision Making.
99326	Domiciliary Or Rest Home Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Problem Focused History; A Problem Focused Examination; And Straightforward Medical Decision Making.
99327	Domiciliary Or Rest Home Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of Moderate Complexity.
99328	Domiciliary Or Rest Home Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of High Complexity.
99334	Domiciliary Or Rest Home Visit For The E&M Of An Established Patient, Which Requires At Least Two Of These Three Key Components: An Expanded Problem Focused Interval History; An Expanded Problem Focused Examination.
99335	Domiciliary Or Rest Home Visit For The E&M Of An Established Patient, Which Requires At Least Two Of These Three Key Components: An Expanded Problem Focused Interval History; An Expanded Problem Focused Examination.
99336	Domiciliary Or Rest Home Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Detailed Interval History; A Detailed Examination; Medical Decision Making Of Moderate Complexity.
99337	Domiciliary Or Rest Home Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Detailed Interval History; A Detailed Examination; Medical Decision Making Of Moderate Complexity.
99339	Individual Physician Supervision Of A Patient (Patient Not Present) In Home, Domiciliary Or Rest Home (Eg, Assisted Living Facility) Requiring Complex And Multidisciplinary Care Modalities Involving Regular Physician Development And/Or Revi…
99340	Individual Physician Supervision Of A Patient (Patient Not Present) In Home, Domiciliary Or Rest Home (Eg, Assisted Living Facility) Requiring Complex And Multidisciplinary Care Modalities Involving Regular Physician Development And/Or Revi…
99341	Individual Physician Supervision Of A Patient (Patient Not Present) In Home, Domiciliary Or Rest Home (Eg, Assisted Living Facility) Requiring Complex And Multidisciplinary Care Modalities Involving Regular Physician Development And/Or Revi
99342	Individual Physician Supervision Of A Patient (Patient Not Present) In Home, Domiciliary Or Rest Home (Eg, Assisted Living Facility) Requiring Complex And Multidisciplinary Care Modalities Involving Regular Physician Development And/Or Revi…
99343	Individual Physician Supervision Of A Patient (Patient Not Present) In Home, Domiciliary Or Rest Home (Eg, Assisted Living Facility) Requiring Complex And Multidisciplinary Care Modalities Involving Regular Physician Development And/Or Revi…

Table C.2 (cont.): Outpatient Evaluation and Management (E&M) Current Procedural Terminology Version 4 (CPT-4) Codes

CPT-4 Code	Description
99344	Individual Physician Supervision Of A Patient (Patient Not Present) In Home, Domiciliary Or Rest Home (Eg, Assisted Living Facility) Requiring Complex And Multidisciplinary Care Modalities Involving Regular Physician Development And/Or Revi
99345	Home Visit For The E&M Of A New Patient, Which Requires These 3 Key Components: A Comprehensive History; A Comprehensive Examination; And Medical Decision Making Of High Complexity.
99347	Home Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Problem Focused Interval History; A Problem Focused Examination; Straightforward Medical Decision Making.
99348	Home Visit For The E&M Of An Established 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 Lo…
99349	Home Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Detailed Interval History; A Detailed Examination; Medical Decision Making Of Moderate Complexity.
99350	Home Visit For The E&M Of An Established Patient, Which Requires At Least 2 Of These 3 Key Components: A Comprehensive Interval History; A Comprehensive Examination; Medical Decision Making Of Moderate To High Complexity.
G0402	Initial Preventive Physical Examination; Face-To-Face Visit, Services Limited To New Beneficiary During The First 12 Months Of Medicare Enrollment
G0438	Annual Wellness Visit; Includes A Personalized Prevention Plan Of Service (Pps), Initial Visit
G0439	Annual Wellness Visit, Includes A Personalized Prevention Plan Of Service (Pps), Subsequent Visit

Table C.3: Outpatient Evaluation and Management (E&M) Revenue Center Codes for Rural Health Clinics (RHCs)

Revenue Center Code	Code Description
0521	Free-standing clinic-Clinic visit by a member to RHC
0522	Free-standing clinic-Home visit by RHC/FQHC practitioner
0524	Free-standing clinic - visit by RHC/FQHC practitioner to a member in a covered Part A stay at the SNF
0525	Free-standing clinic - visit by RHC/FQHC practitioner to a member in a SNF (not in a covered Part A stay) or NF or ICF MR or other residential facility

APPENDIX D: ELIGIBLE SPECIALTIES FOR IDENTIFICATION OF APPARENT LEAD EP

Table D.1 details the eligible professional (EP) specialties that are considered to be clinically appropriate as an apparent lead EP for acute and chronic condition episodes. Table D.2 lists the physician specialty codes considered for procedural episodes. In both tables, a "Y" is used to denote that the specialty code is eligible to be assigned as an apparent lead EP for the specific episode type.

Table D.1: Eligible Specialties for Apparent Lead Eligible Professional (EP), Acute and Chronic Condition Episodes

Specialty Code	Specialty Label	ACS	Cellulitis	Chronic atrial fibrillation/ flutter	Chronic CHF	COPD/asthma	Acute COPD/asthma	GI hemorrhage	IHD	Kidney/ urinary tract infection	Pneumonia
01	General Practice	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
02	General Surgery		Y					Y		Y	
03	Allergy/Immunology					Y	Y				
04	Otolaryngology										
05	Anesthesiology										
06	Cardiology	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
07	Dermatology										
08	Family Practice	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
09	Interventional Pain Management										
10	Gastroenterology	Y	Y		Y	Y	Y	Y	Y	Y	Y
11	Internal Medicine	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
12	Osteopathic Manipulative Therapy									Y	
13	Neurology			Y						Y	
14	Neurosurgery										
15	Speech Language Pathologists										
16	Obstetrics/Gynecology									Y	
17	Hospice and Palliative Care					Y				Y	Y
18	Ophthalmology										
19	Oral Surgery (Dentists Only)										
20	Orthopedic Surgery		Y								
21	Cardiac Electrophysiology	Y		Y	Y				Y		
22	Pathology										
23	Sports Medicine										
24	Plastic and Reconstructive Surgery										
25	Physical Medicine and Rehabilitation	Y		Y	Y	Y	Y		Y		Y
26	Psychiatry										
27	Geriatric Psychiatry										
28	Colorectal Surgery (Formerly Proctology)							Y			
29	Pulmonary Disease	Y	Y	Y	Y	Y	Y	Y	Y		Y
30	Diagnostic Radiology										
32	Anesthesiologist Assistant										
33	Thoracic Surgery	Y									
34	Urology									Y	
35	Chiropractor, Licensed										
36	Nuclear Medicine										
37	Pediatric Medicine										

Table D.1 (cont.): Eligible Specialties for Apparent Lead Eligible Professional (EP), Acute and Chronic Condition Episodes

Specialty Code	Specialty Label	ACS	Cellulitis	Chronic atrial fibrillation/ flutter	Chronic CHF	COPD/asthma	Acute COPD/asthma	GI hemorrhage	IHD	Kidney/ urinary tract infection	Pneumonia
38	Geriatric Medicine	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39	Nephrology	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40	Hand Surgery										
41	Optometrist										
42	Certified Nurse Midwife										
43	Certified Registered Nurse Anesthesiologist										
44	Infectious Disease	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46	Endocrinology		Y		Y	Y	Y	Y	Y	Y	Y
48	Podiatry										
50	Nurse Practitioner	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
62	Clinical Psychologist (Billing Independently)										
64	Audiologist (Billing Independently)										
65	Physical Therapist (Private Practice)										
66	Rheumatology		Y		Y	Y	Y		Y	Y	Y
67	Occupational Therapist (Private Practice)										
68	Clinical Psychologist										
70	Single or Multispecialty Clinic or Group Practice										
71	Registered Dietician/Nutrition Professional										
72	Pain Management										
76	Peripheral Vascular Disease										
77	Vascular Surgery		Y								
78	Cardiac Surgery	Y									
79	Addiction Medicine										
80	Licensed Clinical Social Worker										
81	Critical Care (Intensivists)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
82	Hematology									Y	
83	Hematology/Oncology		Y		Y	Y	Y	Y	Y	Y	Y
84	Preventive Medicine										
85	Maxillofacial Surgery										
86	Neuropsychiatry										
89	Certified Clinical Nurse Specialist										
90	Medical Oncology		Y				Y	Y		Y	Y
91	Surgical Oncology										
92	Radiation Oncology										
93	Emergency Medicine		Y					Y		Y	
94	Interventional Radiology										
97	Physician Assistant	Y		Y	Y	Y	Y	Y	Y	Y	Y
98	Gynecologist/Oncologist									Y	
99	Unknown Physician										
C0	Sleep Medicine										

Table D.2: Eligible Specialties for Apparent Lead Eligible Professional (EP), Procedural Episodes

Specialty Code	Physician Specialty Label	Bilateral cataract surgery	CABG	Hip replacement/ revision	Knee replacement/ revision	Lumbar spine fusion/refusion	PCI	Permanent pacemaker system
01	General Practice							
02	General Surgery							
03	Allergy/Immunology							
04	Otolaryngology							
05	Anesthesiology							
06	Cardiology						Y	Y
07	Dermatology							
08	Family Practice							
09	Interventional Pain Management							
10	Gastroenterology							
11	Internal Medicine							
12	Osteopathic Manipulative Therapy							
13	Neurology							
14	Neurosurgery					Y		
16	Obstetrics/Gynecology							
17	Hospice and Palliative Care							
18	Ophthalmology	Y						
19	Oral Surgery (Dentists Only)							
20	Orthopedic Surgery			Y	Y	Y		
21	Cardiac Electrophysiology							Y
22	Pathology							
23	Sports Medicine							
24	Plastic and Reconstructive Surgery							
25	Physical Medicine and Rehabilitation							
26	Psychiatry							
27	Geriatric Psychiatry							
28	Colorectal Surgery (Formerly Proctology)							
29	Pulmonary Disease							
30	Diagnostic Radiology							
33	Thoracic Surgery		Y					
34	Urology							
35	Chiropractor, Licensed							
36	Nuclear Medicine							
37	Pediatric Medicine							
38	Geriatric Medicine							
39	Nephrology							
40	Hand Surgery							
41	Optometrist							
44	Infectious Disease							
46	Endocrinology							
48	Podiatry							
66	Rheumatology							
70	Single or Multispecialty Clinic or Group Practice							
72	Pain Management							
76	Peripheral Vascular Disease							
77	Vascular Surgery							
78	Cardiac Surgery		Y				Y	
79	Addiction Medicine							

Table D.2 (cont.): Eligible Specialties for Apparent Lead Eligible Professional (EP), Procedural Episodes

Specialty Code	Physician Specialty Label	Bilateral cataract surgery	CABG	Hip replacement/ revision	Knee replacement/ revision	Lumbar spine fusion/refusion	PCI	Permanent pacemaker system
81	Critical Care (Intensivists)							
82	Hematology							
83	Hematology/Oncology							
84	Preventive Medicine							
85	Maxillofacial Surgery							
86	Neuropsychiatry							
90	Medical Oncology							
91	Surgical Oncology							
92	Radiation Oncology							
93	Emergency Medicine							
94	Interventional Radiology							
98	Gynecologist/Oncologist							
99	Unknown Physician							
C0	Sleep Medicine							

APPENDIX E: SERVICE CATEGORIES

This appendix details how the 2012 Supplemental QRURs define each service category reported in Exhibit 2 and the Drill Down Tables. Table E.1 summarizes each claim type, and Table E.2 provides a crosswalk to how each service was identified from each claim type. Appendix A in the 2012 Supplemental QRURs also provides the same information as Table E.2.

Table E.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
Carrier	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 E.2: Specifications for Service Categories

Service Category		Claim Type	Criteria for Including Claim (Line Item) in Category			
			BETOS	Place of Service Criterion	Provider Number Criterion	Additional Criterion
Inpatient Hospital	Inpatient Hospital: Trigger	IP			Provider number has 0 in third position (Acute hospitals) or has 3rd and 4th digit = "13" (Critical Access Hospitals) or has 3rd and 4th digits in [40 - 44] or has 3rd digit in ("M",S") (psychiatric hospitals and psychiatric distinct part units)	Acute or psychiatric inpatient hospitalization that triggered the episode
Inpatient Hospital	Inpatient Hospital: Readmission	IP			Provider number has 0 in third position (Acute hospitals) or has 3rd and 4th digit = "13" (Critical Access Hospitals) or has 3rd and 4th digits in [40 - 44] or has 3rd digit in ("M",S") (psychiatric hospitals and psychiatric distinct part units)	Any acute or psychiatric inpatient hospitalization other than the one that triggered the episode
Inpatient Hospital	Physician Services During Hospitalization	PB		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, 22 , 23, 51		

Table E.2 (cont.): Specifications for Service Categories

Service Category		Claim Type	Criteria for Including Claim (Line Item) in Category			
			BETOS	Place of Service Criterion	Provider Number Criterion	Additional Criterion
Post-Acute Care	Home Health	HH, OP		For OP, Type of Bill must be 34x		
Post-Acute Care	Skilled Nursing	SNF, OP		For OP, Type of Bill must be 22x or 23x		
Post-Acute Care	Inpatient Rehabilitation or Long Term Care Hospital	IP			Provider number ends in {2000-2299, 3025-3099} or its third position is in {R, T}	
Outpatient Hospital and Physician Office Services	Outpatient PT/OT/SLP Therapy	OP, PB				Codes listed in http://www.cms.gov/Medicare/Billing/TherapyServices/
Outpatient Hospital and Physician Office Services	Dialysis	OP, PB	P9	For OP, Type of Bill must be 72x		Must not be counted in any categories above
Outpatient Hospital and Physician Office Services	Evaluation & Management Services	OP, PB	All M Codes			Must not be counted in any categories above
Outpatient Hospital and Physician Office Services	Major Procedures and Anesthesia	OP, PB	P0, P1, P2, P3, P7			Must not be counted in any categories above
Outpatient Hospital and Physician Office Services	Ambulatory/ Minor Procedures	OP, PB	P4, P5, P6, P8			Must not be counted in any categories above
Emergency Room Services	Evaluation & Management Services	OP, PB		Outpatient revenue center line code in {0450-0459, 0981}, or PB claim occurring during such an OP claim and place of service=23		HCPCS 99281-99285 and G0380-G0384
Emergency Room Services	Procedures	OP, PB		Outpatient revenue center line code in {0450-0459, 0981}, or PB claim occurring during such an OP claim and place of service=23		All remaining emergency room service costs not counted in other categories

Table E.2 (cont.): Specifications for Service Categories

Service Category		Claim Type	Criteria for Including Claim (Line Item) in Category			
			BETOS	Place of Service Criterion	Provider Number Criterion	Additional Criterion
Emergency Room Services	Lab/ Pathology/ Other Tests	OP, PB	All T codes	Outpatient revenue center line code in {0450-0459, 0981}, or PB claim occurring during such an OP claim and place of service=23		
Emergency Room Services	Imaging	OP, PB	All I codes	Outpatient revenue center line code in {0450-0459, 0981}, or PB claim occurring during such an OP claim and place of service=23		
Ancillary Services in All Non-Inpatient Settings	Lab/ Pathology/ Other Tests	OP, PB	All T codes			Must not be counted in any categories above
Ancillary Services in All Non-Inpatient Settings	Imaging	OP, PB	All I codes			Must not be counted in any categories above
Ancillary Services in All Non-Inpatient Settings	Durable Medical Equipment/ Supplies	DM	All codes except O1D (chemotherapy) , O1E and D1G (drugs)			Must not be counted in any categories above
Hospice Care	Hospice[61]	HS				
Other Services	Ambulance[62]	OP, PB	O1A			
Other Services	Chemo. And Part B Drugs	OP, PB, DM	O1D, O1E, D1G			
Other Services	All Other Services	All Parts A and B claim types				All remaining costs from all Parts A and B claim types

[61] Method B excludes all hospice claims from the grouping algorithm because hospice care is not clinically relevant to the episodes constructed by Method B.
[62] Method A excludes all ambulance claims from the grouping algorithm, and Method B excludes all ambulance claims occurring outside of the trigger inpatient stay.

In addition, Exhibit 2 provides average utilization rates of each service category for all episodes and for each episode type. Table E.3 presents the unit of utilization for calculating the average utilization rates for the service categories.

Table E.3: Service Category Utilization Units

Service Category		Unit of Utilization	Criteria for Including Claim (Line Item) in Category
Inpatient Hospital Facility Services	Inpatient Hospital: Trigger	Days	
Inpatient Hospital Facility Services	Inpatient Hospital: Readmission	Days	
Inpatient Hospital Facility Services	Physician Services During Hospitalization	Services	Sum of Miles/Times/Units/Services (MTUS) count on PB claims[63]
Post-Acute Care	Home Health	Visits	Sum of HCPCS G codes
Post-Acute Care	Skilled Nursing	Days	Sum of UTIL_DAY
Post-Acute Care	Inpatient Rehabilitation or Long Term Care Hospital	Days	
Outpatient Hospital and Physician Office Services	Outpatient PT/OT/SLP Therapy	Visits	Sum of MTUS count for therapy line items
Outpatient Hospital and Physician Office Services	Dialysis	Services	Count of dialysis line items
Outpatient Hospital and Physician Office Services	Evaluation & Management Services	Visits	Sum of MTUS count
Outpatient Hospital and Physician Office Services	Major Procedures and Anesthesia	Services	Sum of MTUS count
Outpatient Hospital and Physician Office Services	Ambulatory/Minor Procedures	Services	Sum of MTUS count
Emergency Room Services	Evaluation & Management Services	Visits	Sum of MTUS count
Emergency Room Services	Procedures	Services	Sum of MTUS count
Emergency Room Services	Lab/ Pathology/ Other Tests	Tests	Sum of MTUS count
Emergency Room Services	Imaging	Imaging services	Sum of MTUS count
Ancillary Services in All Non-Inpatient Settings	Lab/ Pathology/ Other Tests	Tests	Sum of MTUS count
Ancillary Services in All Non-Inpatient Settings	Imaging	Imaging services	Sum of MTUS count
Ancillary Services in All Non-Inpatient Settings	Durable Medical Equipment/Supplies	DME/supplies	Sum of DME count
Hospice Care	Hospice	Claims	
Other Services	Ambulance	Services	Sum of HCPCS codes in BETOS 01A
Other Services	Chemo. And Part B Drugs	Units	Sum of line items
Other Services	All Other Services	*None*	Count of claims

[63] PB claims record the number of services provided in the Miles/Times/Units/Services (MTUS) line item.

APPENDIX F: COSTS BILLED, ORDERED, OR REFERRED BY THE MEDICAL GROUP PRACTICE

Medicare Part A and B claim settings are used to calculate the costs billed, ordered, or referred by the medical group practice. Table F.1 details the methodology used to identify costs. All costs not included based on the criteria listed below are identified as costs billed or ordered outside the medical group practice. In Exhibit 4 and the Drill Down Tables, it is possible for a facility and EP to be listed as within and outside the medical group practice. Since multiple services can be billed to Medicare during a hospital, SNF, or HHA stay, a facility can be listed as the facility inside and outside the medical group practice. For example, an EP from the attributed medical group practice and another from an outside group could bill PB claims for separate services during the same IP hospital stay; thus, the hospital would be listed as a hospital both inside and outside the medical group practice. In addition, as described in Section 6.2, an EP may bill to more than one medical group practice and their names may be listed as a top billing EP inside and outside the medical group practice in Exhibit 4.

Table F.1: Identification of Costs Billed, Ordered, or Referred by the Medical Group Practice

Service Category		Claim Type	Billed, Ordered, or Referred by the Medical Group Practice
Inpatient Hospital Facility Services	Inpatient Hospital: Trigger	IP	Your group's TIN bills any PB claim during the IP stay
Inpatient Hospital Facility Services	Inpatient Hospital: Readmission	IP	Your group's TIN bills any PB claim during the IP stay
Inpatient Hospital Facility Services	Physician Services During Hospitalization	PB	Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Post-Acute Care	Home Health	HH, OP	HH: Your group's TIN bills a Certification or Care Plan Oversight PB claim for the HH stay OP: The attending NPI or other NPI is part of your TIN
Post-Acute Care	Skilled Nursing	SNF, OP	SNF: The attending NPI or other NPI is part of your TIN; or an NPI in your TIN billed any E&M services during the SNF stay OP: The attending NPI or other NPI is part of your TIN; or an NPI in your TIN billed any E&M services during the OP claim
Post-Acute Care	Inpatient Rehabilitation or Long Term Care Hospital	IP	The attending NPI or other NPI is part of your TIN; or an NPI in your TIN billed any E&M services during the IP stay
Outpatient Hospital and Physician Office Services	Outpatient PT/OT/SLP Therapy	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim

Table F.1 (cont.): Identification of Costs Billed, Ordered, or Referred by the Medical Group Practice

Service Category		Claim Type	Billed, Ordered, or Referred by the Medical Group Practice
Outpatient Hospital and Physician Office Services	Dialysis	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Outpatient Hospital and Physician Office Services	Evaluation & Management Services	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Outpatient Hospital and Physician Office Services	Major Procedures and Anesthesia	OP, PB	OP: The attending NPI or other NPI or operating NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Outpatient Hospital and Physician Office Services	Ambulatory/Minor Procedures	OP, PB	OP: The attending NPI or other NPI or operating NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Emergency Room Services	Evaluation & Management Services	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Emergency Room Services	Procedures	OP, PB	OP: The attending NPI or other NPI or operating NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Emergency Room Services	Lab/ Pathology/ Other Tests	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Emergency Room Services	Imaging	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Ancillary Services in All Non-Inpatient Settings	Lab/ Pathology/ Other Tests	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Ancillary Services in All Non-Inpatient Settings	Imaging	OP, PB	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Ancillary Services in All Non-Inpatient Settings	Durable Medical Equipment/ Supplies	DM	An NPI under your group's TIN is the ordering NPI
Hospice Care	Hospice	HS	An NPI under your group's TIN is the attending NPI

Table F.1 (cont.): Identification of Costs Billed, Ordered, or Referred by the Medical Group Practice

Service Category		Claim Type	Billed, Ordered, or Referred by the Medical Group Practice
Other Services	Ambulance	OP, PB	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: You group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim
Other Services	Chemo. And Part B Drugs	OP, PB, DM	OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim DM: An NPI under your group's TIN is the ordering NPI
Other Services	All Other Services	IP, OP, PB, DM	IP: An NPI under your group's TIN is the attending NPI OP: The attending NPI or other NPI is part of your TIN PB: Your group's TIN bills the PB claim; or an NPI under your group's TIN is the referring NPI on the PB claim DM: An NPI under your group's TIN is the ordering NPI