3M™ Patient-focused Episodes (PFE) Classification System

Methodology Overview

Software version 2.0 February 2021

 GRP-304 Revised on February 2021

Table of Contents

Overview of 3M™ Patient-focused Episodes (PFE) Classification System

The 3M™ Patient Focused Episode (PFE) Classification System consists of two distinct models: the Event-based model which consists of two episodes types and the Cohort model which consists of four episodes types.

- Event-based model
  - Inpatient episode
  - Outpatient episode
- Cohort Episodes
  - Acute Disease Cohort episode
  - Chronic Disease Cohort episode
  - Pregnancy episode
  - Population episode

These six types of episode definitions work together to provide a flexible and easy to understand definition of episodes of care that can be used for profiling and payment. PFEs are built from concepts that are already widely used and accepted.

The conventional approach to defining episodes is to focus on the services related to a single disease rather than to focus on the patient as a whole. Focusing on services related to a particular disease requires isolating those services that were delivered for the treatment of the disease (e.g., all service related to the treatment of diabetes) as opposed to the services delivered to treat other comorbid diseases. While the identification of services related to a disease for a relatively healthy individual can be done with a reasonable degree of accuracy (e.g., fractured femur without any chronic disease), such episodes of care constitute a small proportion of healthcare expenditures.

Because the high-utilizing population is characterized by multiple co-morbid conditions, it is extremely difficult to accurately attribute specific services to individual diseases. For example, for a patient who has congestive heart failure, diabetes, and renal failure, and is hospitalized for a complication of the diabetes, there is considerable uncertainty in identifying precisely which services are related to the diabetes care rather than to the care of the heart failure or renal failure (e.g., a post-hospitalization emergency room visit for syncope could be related to the heart failure rather than diabetes). Further, since co-morbid diseases interact and do not behave independently of each other, any attempt to isolate only those services that relate to a specific disease will not and cannot be accurate for patients with multiple co-morbid conditions. This is important since these are precisely the patients who account for the majority of spending.

As a result, the definition of an episode needs to be patient-focused rather than disease-centered. In other words, the focus of the episode needs to be on the total services provided to a patient and not limited to the services associated with a specific disease. Because

a patient-focused episode encompasses all services rendered to a patient during an episode, an episode classification methodology must include a recognition of the patient's overall burden of illnesses. The resultant patient focused episode classification methodology can then be used for a variety of purposes including physician profiling, local area profiling, and payment.

A key function of any episode profiling or payment system is to be able to establish an expected level of resource use during an episode. This allows actual and expected values to be established and used for profiling comparisons or establishing payment levels. As a result, the underlying episode clinical model and the process of establishing the expected level of resource use during an episode are inextricably intertwined and need to be addressed simultaneously by the PFE grouper.

Overall design principles

There were six basic design principles that guided the design of the PFE grouper.

1. **Patient focused.** The episode clinical model should focus on an enrollee's total burden of illness. This is in contrast to disease-centered clinical models that attempt to subdivide an enrollee into separate disease processes.
2. **Uniform categorical clinical model.** The episode definitions should be expressed as a categorical clinical model. A categorical clinical model is structured as a mutually exclusive and exhaustive set of clinical categories that differentiate enrollees based on their total burden of illness. The underlying categorical clinical model should be applicable to all types of episodes creating a uniform and stable clinical language. In addition, the episode clinical model should remain unchanged across all potential configurations of episodes (window lengths, resources included, etc.).
3. **Re-use well-established systems.** PFEs are based on the 3M™ All Patient Refined Diagnosis Related Groups (APR DRG) Classification System, 3M™ Enhanced Ambulatory Patient Group (EAPG) System, and 3M™ Clinical Risk Groups (CRG) Classification System. Thus, providers will be working with concepts which are already widely used. In addition, as these components have been used for years, these methodologies have proven to be effective for their intended purpose.
4. **Independent relative weights.** For each potential configuration of episodes (window lengths, resources included, etc.), a separate set of relative weights that predict the level of resource use in the episode must be computed. More important, this should be based upon a consistent episode clinical model. That is, the independent calculation of the episode relative weights allows the episode clinical model to remain stable—providing a consistent, uniform clinical language while the relative weights can change to reflect different episode configurations.
5. **Empirical payment weights.** The relative weights should be empirically derived and reflect the historical actual expenditures associated with the care typically being delivered during an episode. As a result, the relative weights reflect performance levels that are actually being achieved by providers.

6. **Outlier identification specific to the patient's condition.** In a profiling context, outliers are enrollees whose resource use is substantially above or below the expected level for an episode. Exclusion of outliers from profiles can prevent misleading results from being included the profiles. This implies a statistical method for identifying outlier cases. In contrast, in a payment context, outliers are expensive cases that can lead to large payment losses. Thus, in a payment context, outliers are essentially a stop-loss mechanism that provide financial protection from excessive loss due to a single case. The definition of an episode should include the specification of an outlier threshold.

   Based on these principles, the patient focused episode grouper was developed as a categorical clinical model that allows empirically derived relative weights and outlier thresholds to be independently established for each episode. This design essentially mirrors the principles that underlie the successful Medicare Inpatient Prospective Payment System (IPPS). IPPS is a bundled payment system that uses a patient-centered, categorical clinical model (Diagnosis Related Groups or DRGs) to establish empirically derived prices and outlier thresholds. The purpose of any bundled payment system like IPPS or episodes is to give hospitals and physicians a financial incentive to provide higher quality care more efficiently. In IPPS, DRGs defined groups of clinically similar patients, thereby creating a language that linked the clinical and financial aspects of care. The language of DRGs provided hospital administrators and physicians a meaningful basis for evaluating not only the processes of care but also the associated financial impact. The simple categorical nature of DRGs was critical to the creation of a powerful transparent and clinically precise communications tool that was essential to the ultimate success of IPPS. Based on the IPPS experience, the core principle underlying the development of PFEs is to use a categorical clinical model as the basis of the definition of an episode.

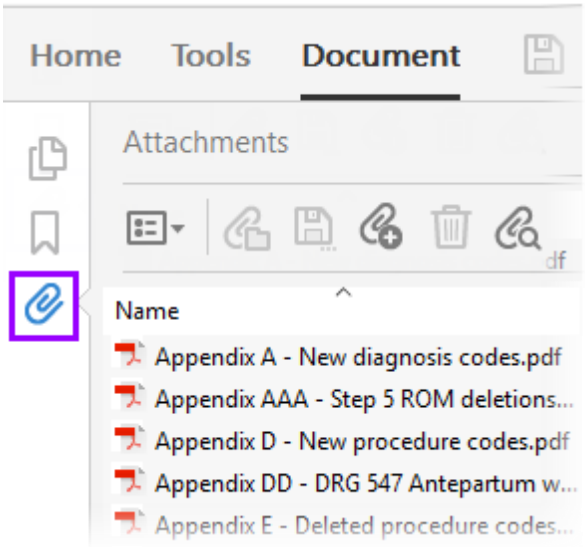
Types of episodes

Episodes of care have potential applicability to a wide range of initiatives from physician profiling to payment bundles around a hospitalization. Examples of potential episodes could include a 30 day episode for all post acute care services following a hospitalization for coronary bypass surgery and a 180 day episode for all enrollees who had diabetes at the beginning of the year. One of the objectives of the development of PFEs was to create an episode grouper that had the flexibility to be applicable to a wide range of conditions. In order to achieve the desired flexibility, it was necessary to have PFEs address three distinct types of episodes. For a full list of episodes refer to the file attached to this pdf.

To access the list

1. Open the Attachments pane by clicking the paper clip icon within your PDF viewing software (example below).

This pane is typically located on the left side of the window.



If you do not see the paper clip icon it is most likely because your web browser does not display the Attachments pane when you view a PDF online. The workaround is to download and save this document to your local system, then browse to the saved file and open it locally using your own PDF viewing software.

2. Find the appropriate file listed in the Attachments pane then double-click to open it.

Event-based episodes

An event-based episode grouper creates episodes around a specific healthcare event such as a hospitalization. Event-based episodes are only initiated when a significant healthcare event occurs. An event-based episode encompasses a predefined period of time referred to as the episode window (e.g., 30 days). In an event-based episode model an enrollee would be described by a series of non-overlapping event-based episodes interspersed with periods of time in which the enrollee was not assigned to an episode. The services delivered and outcomes achieved could be compared for enrollees in each type of event-based episode. Further, a single payment could be made for all services delivered during the event-based episode.

Cohort episodes

Event-based episodes focus on the period of time around an acute event identified by significant healthcare encounter. This is useful, but it is also useful to be able to examine the cost and rates of various events for enrollees with specific chronic illness over time. Most chronic illnesses require an ongoing series of encounters for the treatment of the chronic illness. As a result, chronic illnesses cannot be resolved in a set period of time. Thus, it is often impossible to ascertain when a chronic illness begins (the initial onset of the illness) and the chronic illness

may only be resolved by death. Thus, there is no clear point in time at which the chronic disease episode is initiated or ended.

The chronic disease cohort episodes allow all enrollees with a history of specific chronic diseases to be identified and evaluated over an extended period of time (e.g., 180 days). The chronic disease cohort does not attempt to isolate the services associated with the chronic disease but instead focuses on the entire resource needs for all enrollees who have a specific chronic disease. The starting point for a chronic disease cohort episode would be an arbitrary point in time such as the beginning of the year and all chronic disease cohorts would be initiated at the same point in time. Membership in a chronic disease cohort is based on the claims history of the enrollee prior to the start date of the disease cohort. The progression of some chronic diseases may result in a major acute manifestation (stroke in a patient with underlying cerebrovascular disease). Therefore, acute disease cohorts are also created as subgroups for major acute manifestations of a chronic disease. Since enrollees can have multiple chronic diseases, the same enrollee can be assigned to multiple disease cohort episodes (e.g., the same enrollee can be in both the heart failure and diabetes cohort). The services delivered and outcomes achieved could be compared for enrollees in each type of disease cohort episode. Because all of an enrollee's conditions can be combined into a single CRG (see below), enrollees in a chronic disease cohort with very different combinations of comorbidities can be compared to each other.

Population episodes

Cohort episodes are restricted to enrollees who have a history of significant chronic disease. Population episodes include all enrollees in a population including healthy enrollees who may not have had any chronic diseases or significant healthcare events. Like chronic disease cohort episodes, the starting point for a population episode would be an arbitrary point in time such as the beginning of the year and all enrollees would have the same point of initiation. The population episode would allow all enrollees to be evaluated over an extended period of time (e.g., one year). The services delivered and outcomes achieved could be compared for enrollees in the population.

Depending on an enrollee's burden of illness and services delivered, the enrollee may be assigned to none, one, or multiple event-based episodes during a year (though only one at any point in time); none, one, or multiple disease cohort episodes; but will always be assigned to one population episode. For example, a healthy enrollee with no chronic diseases whose only contact with the healthcare system was for a minor upper respiratory infection would have no event-based episodes assigned, no chronic disease episodes assigned, and just have the population episode assigned. In contrast, an enrollee with multiple chronic diseases and many significant contacts with the healthcare system (hospitalizations, outpatient surgery, etc.) would have multiple event-based episodes assigned, multiple chronic disease cohort episodes assigned, and a population episode assigned. The multiple episodic views of the enrollee provide great flexibility and facilitate a wide range of profiling and payment alternatives.

The PFE model for event-based episodes

There are five components of an event-based patient-centered episode.

Episode trigger. The event (i.e., hospitalization, ambulatory surgery, or outpatient medical visit) that precipitates the episode.

Episode acuity. The acuteness of the patient's conditions at the time of the episode trigger. Patient acuity is applicable only to hospital episodes and is measured using the severity levels of the patient during the hospitalization.

Episode window. The number of days pre-trigger event and post-trigger event that are encompassed by the episode.

Episode service scope. The services included in the episode (e.g., physician office visits, skilled nursing facilities, etc.).

Chronic disease burden. The extent of the patient's co-morbid chronic diseases at the beginning of the episode. This is measured using a collapsed version of Clinical Risk Groups (CRGs).

The definition of the individual event-based episodes is comprised of a combination of the trigger event, acuity and chronic illness burden of the enrollee. These three components make up the underlying clinical model for event-based episodes.

The underlying clinical model

The event-based episode grouper was constructed as a two-tier categorical clinical model. The first tier identifies the events that initiate each type of episode. As noted earlier, one of the objectives for the episode development was reuse, to the extent possible, of the 3M™ All Patient Refined Diagnosis Related Group (APR DRG) Classification System and the 3M™ Enhanced Ambulatory Patient Groups (EAPG) System, which are widely used. This has the advantage that providers are already familiar with parts of the episode grouper. The first tier of the clinical model uses APR DRGs and EAPGs to categorize inpatient and outpatient episodes, respectively. The second tier risk adjusts each episode for the enrollee's chronic illness burden using Clinical Risk Groups (CRGs).

Base episodes

Enrollees will be assigned to an event-based episode whenever a significant healthcare event occurs. A significant healthcare event has the following attributes:

- Care is required for an extended period of time following the significant healthcare event that initiated the episode.

- The care necessary to resolve the immediate reason for the healthcare event or to stabilize the individual may reasonably be assumed to be time-limited although the underlying problem may not be resolved.
- Significant resources are required during the episode.
- Enrollees assigned to the episode have (or, based on clinical judgment, should have) a predictable pattern of resource use.
- The provider responsible for care delivery during the healthcare event that triggered the episode is (or could be) clearly defined.
- Effective coordinated care during the episode can improve patient outcomes.

Based on these attributes, a hospitalization would be a significant healthcare event while an outpatient visit for a minor upper respiratory infection would not. During any period of time (e.g., a year) an enrollee may not have any significant healthcare events (e.g., the enrollee's only healthcare encounter was for a minor upper respiratory infection) and therefore, would not have any event-based episodes assigned. Only specific subsets of hospitalizations, outpatient procedures, and acute medical visits were included as events in the patient-centered episode model.

Identifying hospital episode trigger events using APR DRGs

APR DRGs (All Patient Refined Diagnosis Related Groups) are composed of a base APR DRG (e.g., heart failure) which is further subdivided into four severity levels based on the presence of complications and comorbidities. The identification of hospital episodes used the base APR DRGs as a starting point. In addition to the criteria listed above, each APR DRG was also evaluated in terms of its volume of cases and the relative costliness of the care post-discharge. Some surgical procedures, particularly minor eye and ENT procedures, were not included because there is little direct follow-up care needed as a result of the hospitalization. APR DRGs such as such multiple trauma, extensive burns, and myeloproliferative and poorly differentiated neoplasms were excluded because their post discharge pattern of care is difficult to predict. All high volume medical APR DRGs such as CHF, COPD, pneumonia, AMI, and renal failure and all high volume surgical APR DRGs such as knee replacement, hip replacement, PTCA, and coronary bypass were included.

Although APR DRGs are effective for predicting inpatient resource utilization, they were sometimes judged to be too heterogeneous to be directly used as the basis for defining post-discharge care. For example, the craniotomy base APR DRGs contains patients who had the craniotomy for a malignancy and patients who had the craniotomy for a non-ruptured cerebral aneurysm. These two subgroups of craniotomy patients would be expected to have very different post-discharge patterns of resource use. Some surgical APR DRGs contained a diverse group of surgical procedures that would be expected to have different post-discharge recovery periods. For example, the base APR DRG that includes hysterectomies contains both open abdominal hysterectomies and laparoscopic hysterectomies. As a result some of the APR DRGs had be further subdivided based the patient's principal diagnosis or the precise procedure performed. For the purpose of predicting post discharge resource use, some APR DRGs were differentiated by attributes that would not be expected to significantly influence the

post-discharge resource use. For example, APR DRG 228 Inguinal, Femoral & Umbilical Hernia Procedures was divided into laparoscopic Abdominal Wall Hernia Repair and Open Procedures for Inguinal and Femoral Hernia Repair.

Acuity levels were assigned to each hospital episode based on the severity levels in the APR DRGs. Each base APR DRG is divided into four severity of illness levels (minor, moderate, major, and extreme). Each of the hospital episodes were subdivided into two acuity levels that comprised patients with minor or moderate severity and patients with major or extreme severity. APR DRGs are discussed more fully in the summary of the APR DRG Classification System.

Identifying outpatient procedure trigger events for episodes

The identification of outpatient procedure episode trigger events is based on EAPGs (Enhanced Ambulatory Patient Groups). Outpatient claims can span multiple days and can have multiple services on the same day. The standard EAPG logic partitions outpatient services into separate days and assigns the individual outpatient services to an EAPG. Each EAPG is assigned to one of four categories comprised of significant procedure, ancillary service, incidental services, and medical visit indicator. The significant procedure EAPGs are used to identify outpatient procedure episodes. When there are multiple significant procedures, the EAPG logic identifies the dominant (most resource intensive) significant procedure. The dominant significant procedure as identified by the EAPG logic is used as the basis of identifying and initiating outpatient procedure episodes. The significant procedure EAPGs were reviewed primarily from the perspective of identifying those procedures for which there was a reasonable expectation that substantive follow-up care would be required. Seventy three significant procedure EAPGs were designated as procedures that would initiate an outpatient procedure episode (e.g., radiation therapy delivery for cancer patients or Level II arthroscopy including procedures: Arthroscopy, shoulder, surgical; with rotator cuff repair or repair of slab lesion). The encounter that initiates an outpatient procedure episode can occur in a physician office, same day surgery unit, hospital outpatient department, clinic or hospital emergency room. Services delivered by hospital outpatient departments, same day surgery units, clinics and physician offices can all be uniquely identified using information from the site of service, revenue code or bill type fields on the standard claim forms. EAPGs are discussed more fully in the summary of the Enhanced Ambulatory Patient Grouping (EAPG) System.

Medical visit as a trigger event for outpatient acute disease episodes

Outpatient encounters for chronic diseases are in general a part of an ongoing series of encounters for the treatment of the chronic disease. As such the care necessary to resolve the reason for the healthcare event is not time-limited and therefore does not meet the criteria to be considered a trigger event for an event-based episode. Chronic diseases are addressed in the disease cohort episodes in which a specified time period is used as the basis of the episode instead of a specific healthcare encounter. Event-based outpatient medical episodes were therefore limited to acute medical problems. EAPGs (Enhanced Ambulatory Patient Groups) were used to identify encounters that were eligible to be considered a medical visit episode. Any

encounter that did not have a significant procedure EAPG assigned but had the medical visit indicator EAPG assigned was eligible to be a medical visit episode.

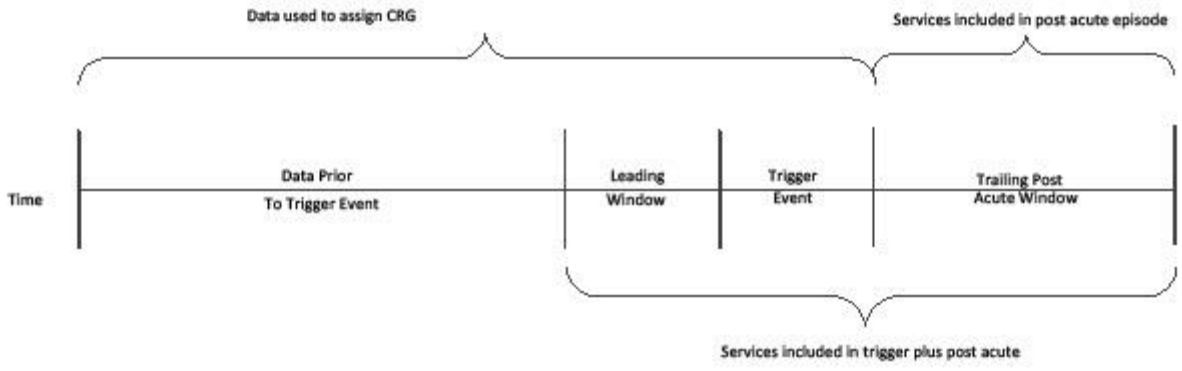
In EAPGs, the medical visit indicator specifies that there was an encounter that required contact with a healthcare professional such as a physician for evaluation and treatment. Medical visit indicator EAPGs are primarily composed of the CPT® Evaluation and Management codes. The presence of the medical visit indicator differentiates medical encounters from encounters in which only ancillary services are delivered.

Acute medical visit episodes were created primarily from the perspective of identifying those acute encounters for which there was a reasonable expectation that substantive follow-up care would be required (e.g., pneumonia). Serious acute diseases that would always require hospitalization (e.g., stroke, AMI) were not used as trigger events to create acute medical visit episodes. Nine acute medical visit episodes were created. The encounter that initiates an acute medical visit episode can occur in a physician office, hospital outpatient department, clinic, or hospital emergency room. Services delivered by hospital outpatient departments, clinics, physician offices and hospital emergency rooms can all be uniquely identified using information from the site of service, revenue code, or bill type fields on the standard claim forms.

Risk adjusting episodes for an enrollee's chronic illness burden

Each event-based episode in the first tier is assigned one of the risk adjustment categories based on an enrollee's total burden of illness from their claims history from the prior year or, at minimum for new enrollees, from the information available from the event. The categories are based on an aggregation of the Clinical Risk Groups (CRGs). CRGs are a categorical clinical model that classifies patients based on their chronic illness burden. At the highest level of aggregation, CRGs categorizes patients into nine health statuses and up to six severity of illness levels. CRGs are discussed more fully in the summary of the CRG Classification System.

As illustrated in the following figure, the CRG is assigned using the diagnoses and procedures present during the trigger event plus any diagnoses and procedures that occurred prior to the date of the trigger event. The prior data used to assign the CRG can be one year, six months, 90 days or none at the users option. None means to only assign the CRG based on the data during the trigger event. The resources that are included in the post acute period are those resources that were delivered during the episode window starting on the day following the trigger event.



CRGs are a summary of the disease burden of an enrollee. The combination of the event-based episode (based on All Patient Refined Diagnosis Related Groups or Enhanced Ambulatory Patient Groups), the acuity level for inpatient episodes (based on the APR DRG severity level) and the CRG categories define the unique episodes and are referred to as Patient Focused Episodes (PFE). In the context of the event-based episodes, the CRG categories will differentiate enrollees in a base episode in terms of their need for post acute care services. In a payment context, the CRG categories would represent payment levels within the base episode.

Event-based hierarchy

In event-based episodes, enrollees will be assigned to an event-based episode whenever a significant healthcare event occurs. In addition, an enrollee may have multiple non-overlapping event-based episodes assigned. In an event-based, patient-centered episode model, there are three types of encounters that can initiate an episode:

- Hospitalization
- Outpatient procedure
- Medical visit for significant acute disease

The following healthcare events are examples of services that do not initiate an event-based episode:

- Admission to a skilled nursing facility
- Home health visit
- Hospice care
- Ancillary service
- Provision of durable medical equipment

An admission to a skilled nursing facility, hospice care, a home health visit, ancillary services, and provision of durable medical equipment are never initiated in isolation. They are always ordered as part of an overall care plan and are a continuation of care. As such they do not provide a meaningful basis for initiation of an event episode. Although admission to a skilled nursing facility, a home health visit, ancillary services, and provision of durable medical equipment cannot initiate an episode, they can be part of the resources included in event episodes initiated by a hospitalization, an outpatient procedure or an acute medical visit. For example, a stay in a skilled nursing facility following a hospitalization could be part of the episode initiated by the hospitalization.

An enrollee will only be assigned to one and only one event-based episode at any point in time. Because significant healthcare events can overlap, it is necessary to create an episode event hierarchy in order to handle overlapping multiple episodes. The three types of healthcare events that can initiate an episode are organized into the following episode event hierarchy:

- Hospitalization
- Significant procedure
- Medical treatment of a significant acute disease

If an event lower in the episode event hierarchy occurs during the episode window of an episode higher in the hierarchy, then a new episode based on the event lower in the hierarchy is not initiated and the event lower in the hierarchy is included in the episode for the event higher in the hierarchy. For example, physician office visits for wound debridement following a hospital discharge for cellulitis would be part of the hospitalization episode.

In addition to the event-based episode hierarchy, episode initiation and termination rules were developed.

Hospital-based episode initiation and termination

A hospitalization that is assigned to one of the All Patient Refined Diagnosis Related Groups (APR DRGs) used to initiate an episode will initiate an episode except under the following circumstances:

- The enrollee was discharged from the hospital against medical advice. Because the hospital care was not completed, it is not possible to accurately predict the resources that would be necessary during the post discharge period.
- The enrollee was transferred to another acute care hospital. The transferring hospitalization would not initiate an episode but the hospitalization receiving the transfer could initiate an episode.
- The enrollee dies during the hospitalization.
- The hospitalization occurs during the episode window of a prior hospitalization and the hospitalization is clinically related to the prior hospitalization that initiated the episode. Note that an all cause readmission policy is provided as an option. If the all cause readmission option is selected then any subsequent hospitalizations during the episode window will not initiate a new episode and will be included in the episode for the prior admission.

The discharge status on the standard hospital claim is used to identify enrollees who are discharged against medical advice, transferred to another acute care hospital, or who died in the hospital. Dates of service on the standard claim form are used to determine if a subsequent hospitalization is within the episode window of a prior hospitalization. As a policy option, all readmissions can be considered related the prior hospitalization (all cause) and included with the hospitalization the initiated the episode. Alternatively, unrelated readmissions can be identified and will terminate the episode initiated by the prior hospitalization. Whether a readmission is related or unrelated to a prior admission is determined using the 3M™ Potentially Preventable Readmission (PPR) Classification System. If an unrelated readmission occurred during an episode based on the PPRs, the original episode is terminated and a new episode could be initiated. PPRs are discussed more fully in the summary of the PPR Classification System.

A hospital episode will terminate under the following circumstances:

- The end of the episode window is reached.
- A clinically unrelated readmission occurs within the episode window.
- The enrollee dies within the episode window.

Outpatient episode initiation and termination

An outpatient procedure or acute medical visit that is used to initiate an episode will do so except under the following circumstances:

- The outpatient procedure or acute medical visit occurs during the episode window of a prior hospitalization.
- The acute medical visit occurs during the episode window of a prior visit for a significant procedure.
- The outpatient procedure or acute medical visit occurs during a time period in which the enrollee is receiving care in a skilled nursing or extended care facility.
- The enrollee dies the during the trigger event.

Dates of service on the standard claim form are used to determine if a subsequent outpatient procedure or acute medical visit is within the episode window of a prior outpatient procedure or acute medical visit.

An outpatient procedure or acute medical visit episode will terminate under the following circumstances:

- The end of the episode window is reached.
- A hospitalization occurs within the episode window.
- An outpatient procedure occurs within the episode window for an acute medical visit or outpatient procedure that triggered the episode.

For outpatient procedures or acute medical visits, no attempt is made to determine if a subsequent outpatient procedure or acute medical visit is clinically related to the outpatient procedure or acute medical visit that triggered the episode.

Terminated episodes which were initiated by an outpatient procedure and which are truncated due to events such as hospitalization or patient death may be discarded or maintained in the analysis data at the user's option.

Acute or chronic disease cohort episodes

The disease cohort episodes contain all enrollees who have a specific disease. The disease cohort episodes are assigned relative to a point in time selected by the user (e.g., the beginning of the year). Membership in a disease cohort is based on the claims history of the enrollee prior to the start date of the disease cohort.

The Clinical Risk Grouping (CRG) assignment is based on all of the diseases that the enrollee currently has or has had in their claims history. One of the outputs from the CRG software is a list of all of an enrollee's diseases expressed in terms of 557 Episode Diagnostic Categories (EDC) and Diagnostic Sub Groups (DSG). The EDCs and DSGs are used as the basis for defining the categories of diagnoses used in the disease cohort episodes. Based on the diseases present (EDCs), an enrollee may be assigned to one or more disease cohorts. Most disease cohorts are

based on chronic diseases. However, some major acute events associated with an underlying chronic disease were also included as a separate disease cohort. Enrollees who have a stroke also have underlying cerebrovascular disease. Both a stroke and cerebrovascular disease cohort are created. The chronic disease cohort for cerebrovascular disease has an initiation date specified by the user. However, the acute episode cohort for stroke has an initiation date of the date on which the stroke occurred.

This allows users to profile all patients with cerebrovascular disease over an extended period of time as well as profile all patients during an extended period of time following a stroke. While the acute episode cohorts are similar to the event-based episodes for the same acute disease, an acute episode cohort is not subject to all the initiation and termination rules of an event-based episode. The acute episode cohort allows an extended period of time following the acute event to be profiled and not terminated because of the occurrence of other events.

Pregnancy cohorts are also identified for patients based on the presence of a Pregnancy EDC. The pregnancy cohort is terminated by the occurrence of a delivery or pregnancy termination. Thus, pregnancy cohorts can vary in length.

Population episodes

The population episode is essentially the same as a disease episode cohort except that membership in the cohort is not restricted to enrollees with a specific disease. It provides a means of including an entire population of enrollees.

Comparing enrollees within an episode

For maximum utility under a variety of circumstances, the PFE grouper performs three basic functions.

Episode classification. Based on his/her claims history, each enrollee is assigned to the applicable event-based episodes, disease cohort episodes and a population episode.

Episode accumulator. Based on the episode window selected (the pre-determined time following the trigger event, e.g., 90 days) and the resource categories to be included in the episode, the expenditures reported in the historical claims data are accumulated for the applicable event-based episodes for each enrollee, disease cohort episodes for each enrollee and the population episode for each enrollee. Note that individuals can have more than one event-based episode and more than one disease cohort, but can have only one population episode. The accumulator reports the actual expenditures in the user's data.

Episode estimator. Based on the episode windows selected and the resource categories to be included in the episode, relative weights are computed for all event-based episodes, disease cohort episodes and the population episode applicable to the enrollee. These relative weights provide a measure of the expected relative costliness of the enrollee compared to all other enrollees in each of the episodes assigned to the enrollee and can be used as the basis for comparing the actual expenditures in the user's data to an expected expenditure level. The

episode accumulator creates a financial summary for each enrollee for each type of episode facilitating a consistent comparison of the user's (e.g., a physician group) financial performance within each type of episode. The relative weight from the episode estimator provides a measure of the *expected* relative costliness of the enrollee compared to all other enrollees in the episode. This is critical because it allows providers to respond constructively to the financial incentives created by bundling at various levels. The concept of relative weights was inherent to the success of Medicare's IPPS.

The accumulator summarizes the financial data for each enrollee to conform to the selected episode configuration and the estimator provides a relative weight that predicts the relative level of resources that conforms to the selected episode configuration. The relative weights for the three types of episodes have the following interpretations:

- The relative weight for an event-based episode is a risk adjusted measure of the expected relative costliness of the enrollee's total disease burden compared to all other enrollees *in that event-based episode*.
- The relative weight for a disease cohort episode is a measure of the expected relative costliness of the enrollee's total disease burden compared to all other enrollees *who have that disease*.
- The relative weight for the population episode is a severity adjusted measure of the expected relative costliness of the enrollee's total disease burden compared to all other enrollees *in the population*.

Because the relative weights are computed relative to different subsets of enrollees, the relative weights for the event-based episodes, disease cohort episodes and population episode assigned to the same enrollee will all have different values.

For a disease cohort episode, the estimator provides a relative weight that predicts the expected relative costliness of the enrollee during the period of time following the initiation date of the cohort. Because the enrollee history prior to the start of the cohort is used to assign the CRG, the estimator relative weight is *predicting* future resource use. This is a prospective application of the disease cohort episodes. Alternatively, the disease cohort episodes can be used in a retrospective mode. The conceptual difference between the prospective and retrospective application of the disease cohort episodes is the data used to describe resource use. The prospective mode uses the CRG assigned based on the data prior to the start of the episode. For the retrospective mode, the data used to assign the Clinical Risk Group (CRG) is based on the data during the period following the initiation of the episode. In the retrospective mode, the estimator relative weights explains concurrent resource use because the disease progression of the enrollee (new diagnoses that develop during the episode window) is being included in the CRG assignment. Like a disease episode cohort, a population episode can be used in prospective or retrospective mode.

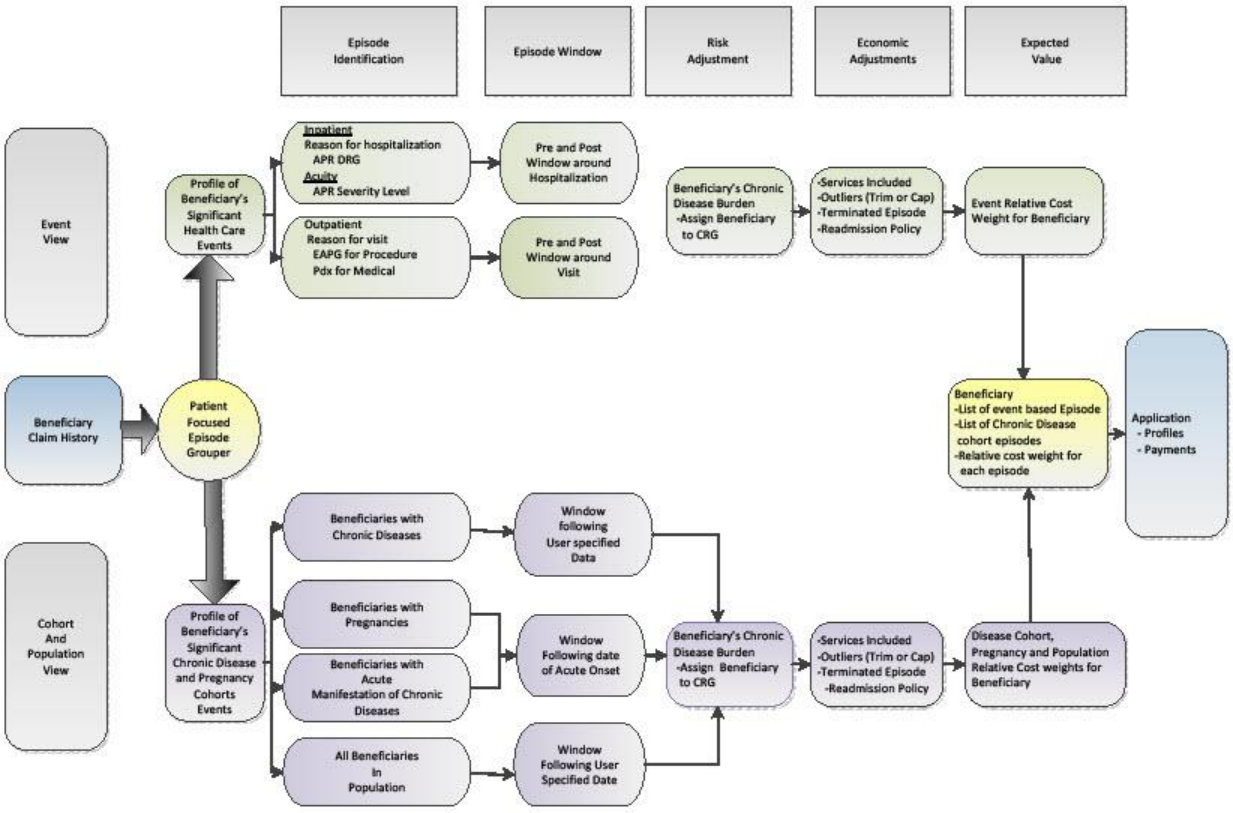
Constructing the episode

The PFE grouper provides the user with great flexibility in specifying the parameters for the construction of the episode.

- For event-based episodes the pre-event window can be set at 0, 1, 3, or 7 days and the post-event window can be set at 7, 15, 30, 60, or 90 days.
- The episode window for the chronic disease cohort and population episodes can be set at 90, 180, or 365 days.
- The episode window for the acute manifestation of a chronic disease cohort episodes can be set at 15, 30, 60, or 90 days.
- Different event-based episode leading and trailing window lengths can be selected for inpatient medical, inpatient surgical, outpatient medical, and outpatient surgical.
- Many services can be included in the episode such as inpatient hospital facility, hospice facility, SNF, extended care facility, outpatient hospital facility, outpatient ER facility, outpatient surgery facility, home health, professional ancillary other, professional inpatient, professional outpatient, professional extended care, professional office, retail pharmacy, outpatient professional pharmacy, outpatient professional DME, outpatient professional laboratory, and outpatient professional radiology.
- Outlier cases can be flagged to be included, excluded, capped, or trimmed.
- Adjustments for truncated episodes (e.g., an incomplete episode due to death) can optionally be applied.

In essence, the PFE grouper allows the user to define episodes across a wide variety of configurations. It should be noted that PFE grouper only allows fixed episode windows (e.g., 30 days post acute following a hospitalization). For patients with chronic diseases the idea that there is an end to an episode that can be determined based on the services delivered to an enrollee is at best arbitrary given the difficulty in linking individual services to specific chronic diseases. Any attempt to establish an empirically determined end point to the episode was viewed as, at best, arbitrary. Further, allowing the length of the episodes across enrollees in the same episode to vary would add considerable complexity to the episode definition as well as increase the variability in service use within the episode. Having uniform episode lengths for each episode simplified the system and made it more readily understood.

The above parameters were set to allow episodes to be constructed over a wide variety of configurations. The overall functioning of the PFE grouper is summarized in the following figure.



PFEs as a communication tool

The ultimate objective of the use of episodes for profiling or payment is to motivate behavioral change that leads to lower costs, better care coordination, and better quality. Providers will be better able to achieve these objectives if the episodes are expressed in a clinically meaningful manner that communicates actionable information in a form and at a level of detail sufficient to achieve sustainable behavior changes. The Diagnosis Related Groups (DRGs) were much more than just a pricing mechanism. DRGs defined groups of clinically similar patients, creating a transparent and clinically precise language that was comprehensive (all clinical areas were covered) with a uniform and consistent structure that linked the clinical and financial aspects of care. The importance of the communication value of DRGs cannot be overemphasized. The language of DRGs provided hospital administrators and physicians a meaningful basis for evaluating both the processes of care and the associated financial impact. The simple categorical nature of DRGs was critical to the creation of a powerful, transparent, and clinically precise communications tool.

The design of the PFEs adheres to the fundamental lessons learned from the DRG-based IPPS. The use of Clinical Risk Groups (CRGs) to differentiate enrollees based on their overall chronic illness burden within each episode provides the basis of a transparent, and clinically precise communications tool that will provide a meaningful basis for evaluating the processes of care and the associated financial impact of post-acute care practice patterns.

PFE case study

The PFE approach can be illustrated by examining the PFE software output for a specific case for a 73 year old male. The PFEs were run for 2010 using a seven day pre-window and a 30 day post-window for event episodes and a 365-day retrospective window for the chronic disease cohort episodes and population episode and a 90-day window for the acute disease cohorts. As summarized in "Event-based episodes for case study," this enrollee would have four event-based episodes created in 2010. The column labeled RRE is the relative resource estimate for the enrollee for the episode.

Prior history

This 73 year old man has a history of type II diabetes discovered at age 56, treated with oral hypoglycemics, plus bronchospastic COPD, peripheral vascular disease with intermittent claudication, and congestive heart failure that had required hospitalization in November 2009, manifesting currently as moderate exertional dyspnea. He had the onset of persistent atrial fibrillation 3 years before that was treated with a beta blocker for rate control and Coumadin for anticoagulation. He also had episodes of bronchitis and bronchospasm requiring treatment with antibiotics and oral steroids on an outpatient basis twice in the past 2 years, most recently in February.

Healthcare events in 2010

He made monthly visits to the clinical laboratory for monitoring of his anticoagulation. His cardiologist's nurse would call him with the results and instruct him to make any changes in the Coumadin dose that might be needed.

He made his regular 6-month office visit to his pulmonologist in January, where he also had spirometry performed in the office. In February he made an office visit to his primary care physician, who performed a physical exam, ordered blood work, and renewed his medications.

In early March he saw his primary care physician for painless hematuria and was referred to a urologist who he saw him the next day. Two days later he underwent a renal protocol CT scan, which revealed a bladder lesion. Three days later he had an outpatient cystoscopy with fulguration of a bladder lesion. Two weeks later he had a follow-up visit with the urologist and required no further treatment.

He made another follow-up visit to his primary care physician in mid-April, complaining of pain in his left heel that was worse with weight bearing. His physician noted a 3 cm stage III ulcer on his

heel and referred him to a podiatrist, who treated him conservatively and saw him at 2-week intervals until the ulcer resolved 6 weeks later.

In June he noted the new onset of anterior chest heaviness with his usually well tolerated walk up a moderate incline near his home, which progressed over a 2 week period to chest pain with minimal exertion. He went to his cardiologist who ordered an outpatient cardiac exercise thallium imaging study that showed a moderately large area of reversible ischemia of the anterior cardiac wall. Because of the positive stress test, two days later he underwent a cardiac catheterization that showed a high grade stenosis of the diagonal branch of the left anterior descending (LAD) artery, as well as an estimated 70-75% stenosis of the proximal LAD. During the same procedure, he had two drug-eluting stents placed sequentially in the diagonal artery, and one drug-eluting stent placed in the LAD. He was admitted to the inpatient unit for observation immediately after the procedure, and was discharged without evident problems the following day.

He made an office visit to his primary care physician 7 days after discharge from his stent procedure and another office visit to his cardiologist 10 days after discharge. He continued to have monthly monitoring for his anticoagulation, supervised by his cardiologist's nurse.

He did well without chest pain or other problems until September, when he developed a productive cough, shortness of breath and a low grade fever. He went to the ER and was found to have right lower lobe pneumonia, as well as an exacerbation of his bronchospastic chronic lung disease, with moderately decreased oxygen saturation at 90%. He was hospitalized but continued to deteriorate rapidly, requiring endotracheal intubation and mechanical ventilation in the Medical Intensive Care Unit. He improved rapidly with intravenous antibiotics and intravenous steroids, and was weaned from the ventilator on hospital day 4. He was moved from the ICU and switched to oral antibiotics and steroids on hospital day 6. He tolerated the change to oral medications well, and was discharged 5 days later (11-day hospitalization) to a rehabilitation facility to regain strength and improve his ability to ambulate, which had deteriorated severely during his hospitalization. He was discharged to home 10 days later, after he had improved his ambulation with physical therapy, and with a walker, which he needed for gait stability. A visiting nurse then made 2 home visits at weekly intervals, and the nursing agency provided a home health aide for 2 hours a day for 2 weeks.

He was feeling considerably stronger when he returned to see his primary care physician 7 days after discharge. The physician continued his baseline medical regimen. In late September he visited his cardiologist again, who performed an examination and an ECG, and told him to continue his current regimen.

In November he fell and suffered an abrasion of the medial aspect of his right ankle. Five days later, although the abrasion had appeared to be healing initially, he noted swelling, redness, and pain in the area surrounding the medial malleolus. He went to his local emergency room, where he was found to have a temperature of 101, and was diagnosed as having cellulitis in the ankle area. He refused hospital admission and was treated with oral antibiotics and sent him home, but came back to the ER the following day and again two days later for monitoring. A visiting nurse made home visits 2 days later and again 1 week later to change his dressing and check the progress of wound healing. The erythema and swelling resolved within several days, and he had no complications from the infection.

By the time he saw his primary care physician again 3 weeks after his Emergency Department visit, his cellulitis had resolved completely.

Cystourethroscopy in March. The outpatient therapeutic episode for the cystourethroscopy comprises a total of 38 days: the seven days preceding the procedure, the day of the procedure and the 30 days following the procedure. The services included in the cystourethroscopy episode are the physician visit for hematuria, urologist consult, renal protocol CT scan, cystoscopy with fulguration of a bladder polyp and the follow-up visit with the urologist. At the initiation of the episode the enrollee was assigned to CRG status 7 (three or more dominant chronic diseases) and severity level 3. The enrollee's history includes three dominant chronic conditions—CHF, COPD, and diabetes, causing his assignment to status 7. Based on his CRG assignment, he would be expected to use 97 percent as many resources during this episode as compared to all other enrollees who have a cystourethroscopy episode

PTCA in June. The inpatient episode for the PTCA would encompass 39 days: the seven days preceding the procedure, the two day hospitalization and the 30 days following the procedure. The services included in the PTCA episode are initial cardiologist visit, cardiac exercise thallium imaging study, outpatient cardiac catheterization and PTCA, inpatient stay, primary care physician visit and follow-up cardiologist visit. At the initiation of the PTCA episode the enrollee was still assigned to CRG status 7 (three or more dominant chronic diseases) and severity level 3. Based on his CRG assignment, he would be expected to use 1.06 times as many resources during the PTCA episode as compared to all other enrollees who have an inpatient PTCA episode.

Cellulitis in November. The outpatient episode for cellulitis would encompass 38 days: the seven days preceding the procedure, the day of the initial visit and the 30 days following the visit. The services included in the cellulitis episode are the initial and subsequent ER visits, the visiting nurse home visits and the visit to his primary care physician. At the initiation of the cellulitis episode the enrollee remained assigned to CRG status 7 (three or more dominant chronic diseases) and severity level 5. Based on his CRG assignment, he would be expected to use 1.59 times as many resources during the outpatient cellulitis episode as compared to all other enrollees who have an outpatient cellulitis episode.

It should be noted that his visits to his primary care physician for the foot ulcer did not initiate an event-based episode. This visit is viewed as a progression of his underlying diabetes and as such does not initiate a new event-based episode. However, it does contribute to the enrollee's severity level assignment. In this example none of the event-based episodes overlap. If any of the episodes had overlapped, the event-based hierarchy and starting and stopping rules would have been used to truncate some of the overlapping episodes so that the enrollee would never be assigned to more than one event-based episode at any point in time.

Table 1.

Episode type	Episode ID	Episode name	Inpat acuity	CRG status	CRG severity	RRE	Start date	End date	Duration
Outpatient procedure	1640	Level II Bladder and Kidney Proc		7	3	0.97	03/25/10	05/01/10	38
Inpatient procedure	1751	PTCA with or w/o Stent w/o AMI	1	7	3	1.06	6/27/10	08/04/10	39
Inpatient medical	1331	Respiratory infections w/o Ventilator Support >96 hours	1	7	5	0.89	08/09/10	09/25/10	48
Outpatient medical	7320	Cellulitis		7	5	1.43	11/04/10	11/10/10	38

The following table contains the disease cohorts and population cohort or this patient. Because this patient is in Clinical Risk Group (CRG) status 7 (three or more dominant chronic diseases) and at severity level 5, he would be expected to have utilized 2.98 times as many resources as the average enrollee. The enrollee is assigned to eight chronic disease cohorts and one acute disease cohort. The disease cohorts allow all patients with a specific disease to be identified and compared to all other enrollees with that disease over an extended period of time (e.g., one year) encompassing all resources delivered during the time period. For example, this enrollee is expected to require 1.74 times the resources during the year as compared to all other enrollees who have COPD. Compared to all other enrollees with atherosclerosis this enrollee is expected to require 1.97 times the resources. The lower relative weight for enrollees with COPD relative to enrollees with atherosclerosis means that enrollees with COPD on average tend to be sicker than those enrollees with atherosclerosis and therefore, the relative weight for this enrollee is lower because he is being compared to enrollees with COPD who have on average have a greater burden of chronic illness than enrollees with atherosclerosis. This patient also has one acute disease cohort for pneumonia. This event-based episode for pneumonia compared the enrollee to all other enrollees who were hospitalized for pneumonia. The disease cohort for pneumonia compares the enrollee to all other enrollees with pneumonia irrespective of whether they were hospitalized. Enrollees in the disease cohort for pneumonia could be compared in terms of their hospitalization rate or the rates of other types of resources. Relative to all patients with pneumonia, during the 90 days following the onset of pneumonia, the enrollee is expected to require 1.03 times as many resources compared to other patients with pneumonia.

Table 2. Disease cohorts for case study

Episode Type	Episode ID	Episode Name	CRG Status	CRG Severity	RRE	Start Date	End Date	Duration
Population	3000	Population	7	4	2.12	01/01/10	12/31/10	365
Chronic Disease	1330	Chronic Obs. Pulmonary Disease and Bronchiectasis	7	4	1.21	01/01/10	12/31/10	365
Chronic Disease	1790	Congestive Heart Failure	7	4	0.75	01/01/10	12/31/10	365
Chronic Disease	4240	Diabetes	7	4	1.45	01/01/10	12/31/10	365
Chronic Disease	6980	Neoplasm of Uncertain Behavior	7	4	1.80	01/01/10	12/31/10	365
Chronic Disease	2370	Major Chronic Disorders of Arteries & Veins	7	4	1.13	01/01/10	12/31/10	365
Chronic Disease	1830	Angina & Ischemic Heart Disease	7	4	1.23	01/01/10	12/31/10	365
Chronic Disease	1910	Coronary Atheroschlerosis	7	4	1.41	01/01/10	12/31/10	365
Acute Disease	1540	Pneumonia NOS	7	4	1.03	08/16/10	11/13/10	90
Chronic Disease	0170	Gait Abnormalities	7	4	1.22	01/01/10	12/31/10	365

Summary

The design of the PFE methodology has many advantages:

1. The event-based use of an event hierarchy so that a enrollee is assigned to one and only one event-based episode at any point in time. This greatly simplifies any event-based development of episode profiling and payment systems.
2. The PFEs are patient-centered and encompass all of a patient's comorbidities.

3. The services delivered during an episode may be associated with the condition that precipitated the episode or service associated with the treatment of the enrollee's comorbidities. With PFEs there is no need to segregate the resources associated with comorbidities from the resources associated with the condition that precipitated the episode.
4. The PFE patient-centered model encompasses the entire resource needs of an enrollee. A patient-centered approach greatly simplifies the administration of an episode profiling or payment system because it eliminates the complexity associated with attempting to determine which of the myriad of post-event services are related to the specific reason for the episode. Indeed, one of the prime reasons for the success of IPPS was that it was patient-centered and did not need to implement complex diagnosis based exclusions. In IPPS, the Diagnosis Related Group (DRG) payment represents payment in full for the entire resource needs of the patient (based on the national average resource use). The DRGs take into account any complications or comorbidities eliminating the need for any services to be excluded from the DRG payment amount and paid separately. Thus, in IPPS there is no attempt to decide whether an MRI or a particular procedure is directly related to the reason for hospitalization. All services are included because the DRGs are a patient-centered system that takes into account the entire resource needs of the patient. A critical issue that the PFEs resolve is the allocation of service use (and cost) for individuals with multiple chronic diseases. Since these are the enrollees who are responsible for the majority of spending, this is a fundamental issue.
5. The PFEs support an event-based view of episodes and a chronic disease cohort view of episodes. This provides great flexibility in terms of being able to address a wide range of applications.
6. The key components of PFEs—Clinical Risk Groups (CRGs), All Patient Refined Diagnosis Related Groups (APR DRGs), Enhanced Ambulatory Patient Groups (EAPGs) and Potentially Preventable Readmissions (PPRs)—are extensively used in the industry. As a result, significant familiarity with these classification methodologies already exists.
7. The PFE model is a straightforward extension of the IPPS design and can be readily implemented.
8. The episode categories identified form a reasonably comprehensive list of all event-based and disease cohort-based episodes including 243 inpatient event-based episodes, 74 event-based outpatient procedure episodes, nine event-based outpatient medical episodes and 120 chronic disease cohort episodes. While other episodes may be added in the future, the PFEs as configured encompass the vast majority of plausible episodes.
9. Risk adjustment is an inherent part of the PFEs. A categorical clinical model provides an inherent method of risk adjustment. There is no need for a separate risk adjustment system. The distribution of enrollees across the different clinical categories (CRGs) provides risk adjustment as a by-product of the assignment of enrollees to the individual CRGs, just as the assignment of patients to DRGs directly risk adjusts IPPS payments.
10. The inclusion of an outlier threshold ensures that extreme cases do not distort profiles or cause large payment losses.

11. PFEs support disease cohort episodes. This addresses a limitation that would otherwise exist for event-based episodes. Event-based episodes give providers an incentive to provide services within the episode efficiently, but do not provide an incentive to reduce the number of event-based episodes. In order to provide a means of addressing this issue, PFEs also include disease cohort episodes, pregnancy episodes, and population-based episode. The cohort and population episodes provide a means of comparing the rates at which potentially preventable services occur. For example, the hospitalization rates within a whole population or for enrollees with a specific disease (e.g., diabetes) can be compared on a risk adjusted basis using the disease cohort and population episodes.
12. PFEs create an effective communications tool. The ultimate objective of the use of episodes for profiling or payment is to motivate behavioral change that leads to lower costs, better care coordination and better quality. Providers will be better able to achieve these objectives if the episodes are expressed in a clinically meaningful manner that communicates actionable information in a form and at a level of detail sufficient to achieve sustainable behavior changes. This is the core lesson from the DRG-based IPPS. The use of CRGs to differentiate enrollees based on their overall chronic illness burden within each episode provides the basis of a transparent and clinically precise communications tool that will provide a meaningful basis for evaluating the processes of care and the associated financial impact of care practice patterns.
13. The PFE estimator component provides a risk adjusted relative weight that can be the basis for establishing the target episode payments or a single, prospectively-determined bundled payment. The availability of the accumulator and estimator functions in the PFE software provide a uniform and consistent approach to establishing reasonable episode payment targets and prospective bundled episode payment levels.
14. The PFE grouper has been designed for maximum flexibility. Predefined options have been established for many of the episode parameters (window length, etc) making it straightforward to construct episodes tailored to specific needs.

The PFEs as constructed form a comprehensive definition of episodes that can be applied to the complete cross-section of profiling and payment applications.

Event identification assignment

Each event created from claims data will be given an event type. The first step in determining the event(s) and their event types is to determine the claim type of each claim. Claim type will qualify for one of the following:

- Pharmacy (D)
- Facility (F)
- Professional (P)

Facility Event Types

To determine the event type of facility claims, we first determine from the billing type indicator if the claim is classified as Outpatient Hospital Facility (FO) or Outpatient Surgery Facility (FS). If it is not, then the billing type indicator is evaluated to determine the event type (page 29). The following event types originate from inpatient claims in this way: Inpatient Hospital Facility (FI), Extended Care Facility (FX), Hospice Facility (FH), Skilled Nursing Facility (FN), and Home Health (HH). If the claim's type is Facility and there is an unknown billing type indicator, then the claim will have an event type of Facility Unknown (FM).

If the claim type is Inpatient Hospital Facility (FI) there is additional logic applied if there was a transfer. There are two situations when this additional logic is applied and the claims are combined into a single FI event:

- When two inpatient claims exist where the second claim's admission date is the same day
- When an inpatient claim is one day later than the previous inpatient claim's discharge date and there is also a transfer disposition status (page 36)

If the billing type indicator of the claim is Outpatient Hospital Facility (FO), or Outpatient Surgery Facility (FS) each line of the claim is evaluated separately, with the possibility of a separate event created for each claim line. Each claim line shall go through a four step process to determine the event type. First, the HCPCS/CPT® code on the claim line is evaluated to determine if it qualifies as one of the following event types: Outpatient/Professional Radiology (RR), Outpatient/Professional Pharmacy (DD), Outpatient/Professional Laboratory (LL), and Outpatient/Professional DME (EE). Second, the revenue center code on the claim line is evaluated to determine if it qualifies as an Outpatient ER Facility (FE) event type (page 33). If there is an ER facility revenue code all remaining claims will also be assigned as an Outpatient ER Facility event otherwise, all remaining claim lines from the claim are classified as event type Outpatient Hospital Facility (FO). Third, all claim lines from the same claim that have the same service date and received the same event type classification in steps 1 through 3 shall be combined into a single event.

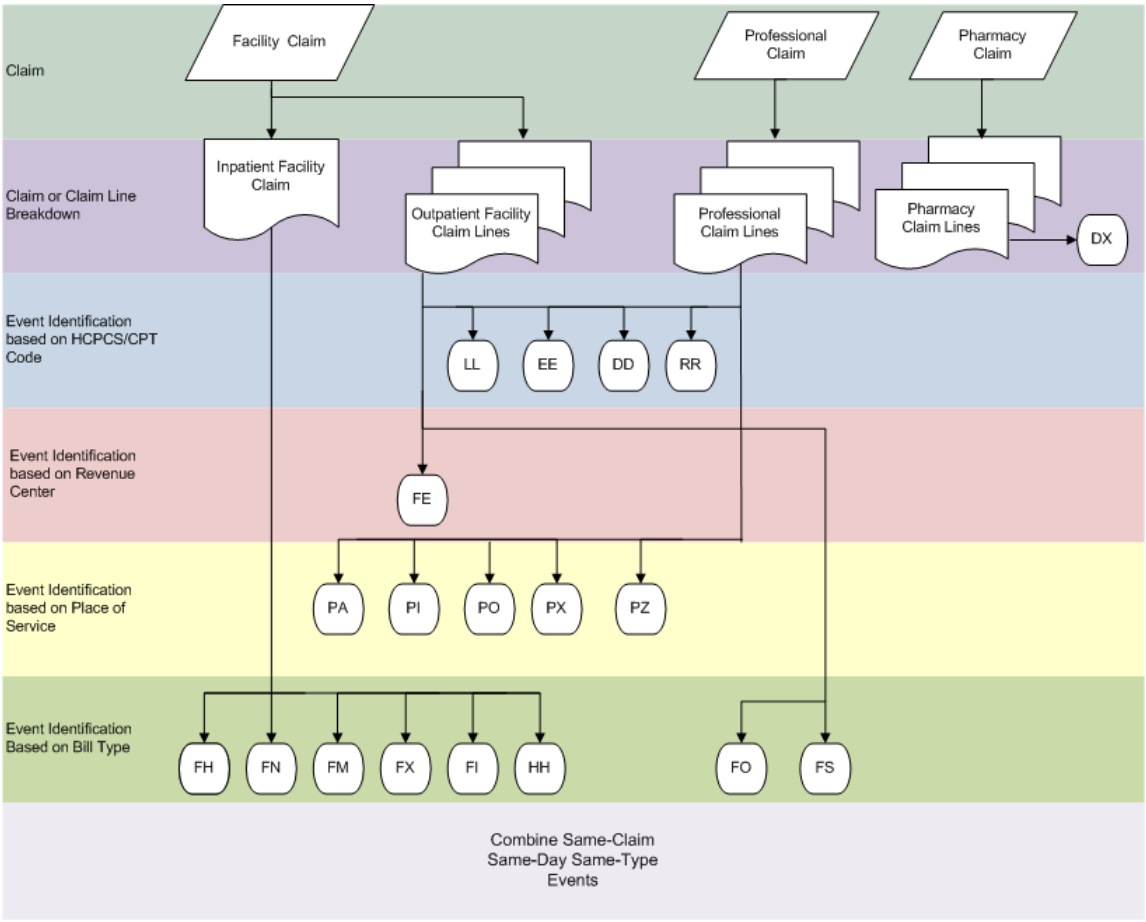
Professional Event Types

Events are created from professional claims through a process similar to outpatient facility claims. Each line of the claim is evaluated separately, with the possibility of a separate event created for each claim line. Each claim lines goes through a three step process to determine the event type. First, the HCPCS/CPT® code on the claim line is evaluated to determine if it qualifies as one of the following event types: Outpatient/Professional Radiology (RR), Outpatient/Professional Pharmacy (DD), Outpatient/Professional Laboratory (LL), and Outpatient/Professional DME (EE). Second, the place of service of the claim line is evaluated to determine the event type, resulting in one of the following five event types: Professional Outpatient (PO), Professional Inpatient (PI), Professional Extended Care (PX), Professional Ancillary/Other (PA), and Professional Office (PZ) (refer to Appendix D). Third, all claim lines from the same claim that have the same service date and received the same event type classification in steps 1 and 2 shall be combined into a single event.

Pharmacy Event Types

If the Claim type is a Pharmacy claim, an event with event type Retail Pharmacy (DX) is created for each set of claim lines with the same date of service.

Flowchart of event identification logic



Bill type mapped to event identification type

Bill Type	Bill Type Description	Event Identification Type	Event Identification Type Description
11	Hospital Inpatient (Including Medicare Part A)	FI	Inpatient Hospital Facility
12	Hospital Inpatient (Medicare Part B Only) (Includes HHA Visits Under a Part B Plan of Treatment)	FI	Inpatient Hospital Facility
13	Hospital Outpatient (Includes HHA Visits Under a Part A Plan of Treatment Including DME Under Part A)	FO	Outpatient Hospital Facility
14	Hospital Laboratory Services Provided to Non-Patients or Home Health Not Under a Plan of Treatment	FO	Outpatient Hospital Facility
15	Hospital Intermediate Care Level 1 Admit through Discharge Claim	FI	Inpatient Hospital Facility
16	Hospital Intermediate Care Level II Interim Continuing Claim	FI	Inpatient Hospital Facility
17	Hospital Reserved for National Assignment Interim	FI	Inpatient Hospital Facility
18	Hospital Swing Beds	FI	Inpatient Hospital Facility
21	Skilled Nursing Inpatient (Including Medicare Part A)	FN	Skilled Nursing Facility
22	Skilled Nursing Inpatient (Medicare Part B Only) (Includes HHA Visits Under a Part B Plan of Treatment)	FN	Skilled Nursing Facility
23	Skilled Nursing Outpatient (Includes HHA Visits Under a Part A Plan of Treatment Including DME Under Part A)	FN	Skilled Nursing Facility

Bill Type	Bill Type Description	Event Identification Type	Event Identification Type Description
24	Skilled Nursing Laboratory Services Provided to Non-Patients or Home Health Not Under a Plan of Treatment	FN	Skilled Nursing Facility
26	Skilled Nursing Intermediate Care Level II Admit through Discharge Claim	FN	Skilled Nursing Facility
27	Skilled Nursing Reserved for National Assignment Admit through Discharge Claim	FN	Skilled Nursing Facility
28	Skilled Nursing Swing Beds Admit through Discharge Claim	FN	Skilled Nursing Facility
31	Home Health Facility Inpatient (Including Medicare Part A)	HH	Home Health
32	Home Health Facility Inpatient (Medicare Part B Only) (Includes HHA Visits Under a Part B Plan of Treatment)	HH	Home Health
33	Home Health Facility Outpatient (Includes HHA Visits Under a Part A Plan of Treatment Including DME Under Part A)	HH	Home Health
34	Home Health Facility Laboratory Services Provided to Non-Patients or Home Health Not Under a Plan of Treatment	HH	Home Health
35	Home Health Facility Intermediate Care Level 1 Admit through Discharge Claim	HH	Home Health
41	Religious Non-medical Health Care Institutions Inpatient (Including Medicare Part A)	FI	Inpatient Hospital Facility
43	Religious Non-medical Health Care Institutions Outpatient (Includes HHA Visits Under a Part A Plan of Treatment Including DME Under Part A)	FO	Outpatient Hospital Facility

Bill Type	Bill Type Description	Event Identification Type	Event Identification Type Description
55	Reserved for National Assignment Intermediate Care Level 1 Admit through Discharge Claim	FM	Other Facility
57	Reserved for National Assignment Reserved for National Assignment	FM	Other Facility
63	Intermediate Care Outpatient (Includes HHA Visits Under a Part A Plan of Treatment Including DME Under Part A)	FM	Other Facility
64	Intermediate Care - Lab to HHA	FM	Other Facility
65	Intermediate Care - Level I	FM	Other Facility
66	Intermediate Care - Level II	FM	Other Facility
71	Clinic Rural Health Clinic	FO	Outpatient Hospital Facility
72	Clinic Clinc - Hospital Based or Independent Renal Dialysis Center	FO	Outpatient Hospital Facility
73	Clinic Freestanding	FO	Outpatient Hospital Facility
74	Clinic ORF	FO	Outpatient Hospital Facility
75	Clinic CORF	FO	Outpatient Hospital Facility
76	Clinic CMHC	FO	Outpatient Hospital Facility
77	Clinic - Federally Qualified Health Centers	FM	Other Facility
79	Clinic Other	FO	Outpatient Hospital Facility
81	Specialty Facility or ASC Surgery Hospice (Non Hospital Based)	FH	Hospice Facility
82	Specialty Facility or ASC Surgery Hospice (Hospital Based)	FH	Hospice Facility
83	Specialty Facility or ASC Surgery Ambulatory Surgery	FS	Outpatient Surgery Facility

Bill Type	Bill Type Description	Event Identification Type	Event Identification Type Description
84	Specialty Facility or ASC Surgery Freestanding Birthing Center	FI	Inpatient Hospital Facility
85	Specialty Facility or ASC Surgery Critical Access Hospital	FO	Outpatient Hospital Facility
86	Specialty Facility or ASC Surgery Residential Facility	FX	Extended Care Facility
89	Specialty Facility or ASC Surgery Other	FX	Extended Care Facility

Revenue center code mapped to Outpatient ER Facility (FE) event identification type

Revenue code	Event identification type Description
0450	Outpatient ER Facility (FE)
0451	Outpatient ER Facility (FE)
0452	Outpatient ER Facility (FE)
0456	Outpatient ER Facility (FE)
0459	Outpatient ER Facility (FE)

Place of service code mapped to event identification type

Place of Service Code	Place of Service Description	Event Identification Type	Event Identification Type Description
00	Not Provided - 00	PA	Professional Ancillary Service
01	Pharmacy	PA	Professional Ancillary Service
02	Telehealth	PO	Professional Outpatient
03	School	PA	Professional Ancillary Service

Place of Service Code	Place of Service Description	Event Identification Type	Event Identification Type Description
04	Homeless Shelter	PA	Professional Ancillary Service
05	Indian Health Service freestanding facility	PZ	Professional Office
06	Indian Health Service provider-based facility	PZ	Professional Office
07	Tribal 638 freestanding facility	PZ	Professional Office
08	Tribal 638 provider-based facility	PZ	Professional Office
09	Prison-Correctional Facility	PA	Professional Ancillary Service
11	Office	PZ	Professional Office
12	Home	PX	Professional Extended Care
13	Assisted living facility	PX	Professional Extended Care
14	Group home	PX	Professional Extended Care
15	Mobile unit	PA	Professional Ancillary Service
16	Temporary Lodging	PA	Professional Ancillary Service
17	Walk-in Retail Health Clinic	PA	Professional Ancillary Service
19	Off Campus-Outpatient Hospital	PO	Professional Outpatient
20	Urgent care facility	PO	Professional Outpatient
21	Inpatient hospital	PI	Professional Inpatient
22	On Campus-Outpatient Hospital	PO	Professional Outpatient
23	Emergency room -- hospital	PO	Professional Outpatient
24	Ambulatory surgical center	PO	Professional Outpatient
25	Birthing center	PI	Professional Inpatient
26	Military treatment facility	PZ	Professional Office
31	Skilled nursing facility	PX	Professional Extended Care

Place of Service Code	Place of Service Description	Event Identification Type	Event Identification Type Description
32	Nursing facility	PX	Professional Extended Care
33	Custodial care facility	PX	Professional Extended Care
34	Hospice	PX	Professional Extended Care
41	Ambulance -- land	PA	Professional Ancillary Service
42	Ambulance -- air or water	PA	Professional Ancillary Service
49	Independent clinic	PZ	Professional Office
50	Federally qualified health center	PZ	Professional Office
51	Inpatient psychiatric facility	PI	Professional Inpatient
52	Psychiatric facility-partial hospitalization	PO	Professional Outpatient
53	Community mental health center	PO	Professional Outpatient
54	Intermediate care facility/mentally retarded	PX	Professional Extended Care
55	Residential substance abuse treatment facility	PX	Professional Extended Care
56	Psychiatric residential treatment center	PX	Professional Extended Care
57	Nonresidential substance abuse treatment facility	PO	Professional Outpatient
58	Nonresidential Opioid Treatment Facility	PO	Professional Outpatient
60	Mass immunization center	PO	Professional Outpatient
61	Comprehensive inpatient rehabilitation facility	PI	Professional Inpatient

Place of Service Code	Place of Service Description	Event Identification Type	Event Identification Type Description
62	Comprehensive outpatient rehabilitation facility	PO	Professional Outpatient
65	End-stage renal disease treatment facility	PO	Professional Outpatient
71	Public health clinic	PZ	Professional Office
72	Rural health clinic	PZ	Professional Office
81	Independent laboratory	PA	Professional Ancillary Service
99	Other place of service	PA	Professional Ancillary Service

Transfer dispositions

Transfer disposition code	Transfer disposition description
2	Discharged/transferred to a short-term general hospital for inpatient care.
3	Discharged/transferred to SNF.
5	Discharged/transferred to another type of institution not defined elsewhere.
62	Discharged/transferred to an inpatient rehabilitation facility including distinct part units of a hospital.
63	Discharged/transferred to long term care hospitals.
65	Discharged/transferred to a psychiatric hospital or psychiatric distinct part unit of a hospital.
66	Discharged/transferred to a Critical Access Hospital (CAH).
82	Discharged/transferred to a short term general hospital for inpatient care with a planned acute care hospital inpatient readmission.
83	Discharged/transferred to a skilled nursing facility (SNF) with Medicare certification with a planned acute care hospital inpatient readmission.
85	Discharged/transferred to a designated cancer center or children's hospital with a planned acute care hospital inpatient readmission.

Transfer disposition code	Transfer disposition description
90	Discharged/transferred to an inpatient rehabilitation facility (IRF) including rehabilitation distinct part units of a hospital with a planned acute care hospital inpatient readmission.
91	Discharged/transferred to a Medicare certified long term care hospital (LTCH) with a planned acute care hospital inpatient readmission.
93	Discharged/transferred to a psychiatric distinct part unit of a hospital with a planned acute care hospital inpatient readmission.
94	Discharged/transferred to a critical access hospital (CAH) with a planned acute care hospital inpatient readmission.