



Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to subcriterion 1b).

Brief Measure Information

NQF #: 0705

Corresponding Measures:

De.2. Measure Title: Proportion of Patients Hospitalized with Stroke that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period)

Co.1.1. Measure Steward: Health Care Incentives Improvement Institute (HCII)

De.3. Brief Description of Measure: Percent of adult population aged 18 – 65 years who were admitted to a hospital with stroke, were followed for one-month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period (Please reference attached document labeled NQF_Stroke_PACs_Risk_Adjustment_2.16.10.xls, tabs labeled CIP_Index PAC_Stays and CIP_PAC_Readmission). We define PACs during each time period as one of three types:

(A) PACs during the Index Stay (Hospitalization):

(1) PACs related to the anchor condition: The index stay is regarded as having a PAC if during the index hospitalization for stroke the patient develops one or more complications such as hypertensive encephalopathy, malignant hypertension, coma, anoxic brain damage, or respiratory failure etc. that may result directly from stroke or its management.

(2) PACs due to Comorbidities: The index stay is also regarded as having a PAC if one or more of the patient's controlled comorbid conditions is exacerbated during the hospitalization (i.e. it was not present on admission). Examples of these PACs are diabetic emergency with hypo- or hyperglycemia, pneumonia, lung complications, acute myocardial infarction, gastritis, ulcer, GI hemorrhage etc.

(3) PACs suggesting Patient Safety Failures: The index stay is regarded as having a PAC if there are one or more complications related to patient safety issues. Examples of these PACs are septicemia, meningitis, other infections, phlebitis, deep vein thrombosis, pulmonary embolism or any of the CMS-defined hospital acquired conditions (HACs).

(B) PACs during the 30-day post discharge period:

(1) PACs related to the anchor condition: Readmissions and emergency room visits during the 30-day post discharge period after a stroke are considered as PACs if they are for hypertensive encephalopathy, malignant hypertension, respiratory failure, coma, anoxic brain damage etc.

(2) PACs due to Comorbidities: Readmissions and emergency room visits during the 30-day post discharge period are also considered PACs if they are due to an exacerbation of one or more of the patient's comorbid conditions, such as a diabetic emergency with hypo- or hyperglycemia, pneumonia, lung complications, acute myocardial infarction, acute renal failure etc.

(3) PACs suggesting Patient Safety Failures: Readmissions or emergency room visits during the 30-day post discharge period are considered PACs if they are due to sepsis, infections, deep vein thrombosis, pulmonary embolism, or for any of the CMS-defined hospital acquired conditions (HACs).

The enclosed workbook labeled NQF_Stroke_PACs_Risk_Adjustment_2.16.10.xls, gives the frequency and costs associated with each

#0705 Proportion of Patients Hospitalized with Stroke that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period), Last Updated: Jan 21, 2016

of these types of PACs during the index hospitalization (tab labeled CIP_Index PAC_Stays) and for readmissions and emergency room visits during the 30-day post-discharge period (tab labeled CIP_PAC_Readmission). The information is based on a two-year national commercially insured population (CIP) claims database. The database had 4.7 million covered lives and \$95 billion in “allowed amounts” for claims costs. The database was an administrative claims database with medical as well as pharmacy claims. The two tabs demonstrate the most common PACs that occurred in patients hospitalized with stroke.

1b.1. Developer Rationale: Accountability for and measurement of PACs occurs at the practice, medical group, provider system or purchaser/payer level, not for an individual physician’s performance. PAC rates are calculated as absolute not relative values. For example, a health plan would report that 60% of its plan members with Stroke incurred PACs in the study time window. The objective of the measure is to encourage the unit being measured to progressively reduce that amount, not to discriminate performance between two units being measured.

Comparisons of PAC rates across plans or provider systems is appropriate and these organizations should be encouraged to publicly report their PAC rates. Once the PAC rates have been measured, the automated SAS programs have the capability to let the users drill down to the patient level and identify the leading causes of PACs as well as do regional variation and provider group level analysis. This makes the data actionable. There are several tools available for provider systems and health plans to impact PAC rates. These include care coordination across care settings, post-discharge planning and patient follow-up, active care management, sharing medical record data between care settings and providers, total quality management within hospitals and active reduction of patient safety failures.

Reducing PACs has the potential to significantly improve the overall level of quality, and creating a single measure of accountability for physicians and hospitals tied to gaps in quality, and a measure of accountability for health plans to improve the ways in which they engage patients in more optimal care management and coordination, is likely to yield much improved outcomes for patients.

S.4. Numerator Statement: Outcome: Potentially avoidable complications (PACs) in patients hospitalized for stroke occurring during the index stay or in the 30-day post-discharge period.

S.7. Denominator Statement: Adult patients aged 18 – 65 years who had a relevant hospitalization for stroke (with no exclusions) and were followed for one-month after discharge.

S.10. Denominator Exclusions: Denominator exclusions include exclusions of either “patients” or “claims” based on the following criteria: (1) “Patients” excluded are those with that have any form of cancer, ESRD (end-stage renal disease), transplants such as lung or heart-lung transplant or complications related to transplants, intracranial trauma, pregnancy and delivery, HIV, or suicide. (2) “Claims” are excluded from the stroke measure if they are considered not relevant to stroke care or are for major surgical services that suggests that stroke may be a comorbidity or complication associated with the procedure e.g. CABG procedure. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

De.1. Measure Type: Outcome

S.23. Data Source: Claims, Electronic Health Data

S.26. Level of Analysis: Clinician : Group/Practice, Facility, Health Plan, Other, Population : Community, County or City, Population : Regional and State

IF Endorsement Maintenance – Original Endorsement Date: Jan 17, 2011 **Most Recent Endorsement Date:** Jan 17, 2011

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. ***Measures must be judged to meet all subcriteria to pass this criterion and be evaluated against the remaining criteria.***

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

0705_Evidence_MSF5.0_Data.doc

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- disparities in care across population groups.

1b.1. Briefly explain the rationale for this measure (e.g., the benefits or improvements in quality envisioned by use of this measure)

Accountability for and measurement of PACs occurs at the practice, medical group, provider system or purchaser/payer level, not for an individual physician's performance. PAC rates are calculated as absolute not relative values. For example, a health plan would report that 60% of its plan members with Stroke incurred PACs in the study time window. The objective of the measure is to encourage the unit being measured to progressively reduce that amount, not to discriminate performance between two units being measured.

Comparisons of PAC rates across plans or provider systems is appropriate and these organizations should be encouraged to publicly report their PAC rates. Once the PAC rates have been measured, the automated SAS programs have the capability to let the users drill down to the patient level and identify the leading causes of PACs as well as do regional variation and provider group level analysis. This makes the data actionable. There are several tools available for provider systems and health plans to impact PAC rates. These include care coordination across care settings, post-discharge planning and patient follow-up, active care management, sharing medical record data between care settings and providers, total quality management within hospitals and active reduction of patient safety failures.

Reducing PACs has the potential to significantly improve the overall level of quality, and creating a single measure of accountability for physicians and hospitals tied to gaps in quality, and a measure of accountability for health plans to improve the ways in which they engage patients in more optimal care management and coordination, is likely to yield much improved outcomes for patients.

1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. (This is required for endorsement maintenance. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included). This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.

Even though hospitalizations for stroke should be potentially avoidable in their own right; once they do occur, the index stay itself may have a potentially avoidable complication (PAC) or patients may develop a PAC during the 30-day post-discharge period. Stroke recurrence within the 30-day post-discharge period was related to hypertension, especially in those with a high diastolic pressure of >100 mmHg, diabetes with blood glucose > 140 mg/dl (Sacco et.al). PACs lead to significant variability in outcomes including prolonged hospitalizations, readmissions and emergency room visits, all indicating poor outcomes that harm the patient, cause payers to incur unnecessary costs and could be improved by providers.

The measure assesses the proportion of patients hospitalized for stroke that had a PAC. In the national claims database used to determine the PAC measure, 58% of them had at least one PAC related to Stroke. A geographical variation analysis demonstrated that across the 50 states in the country, the percent of patients having at least one potentially avoidable complication in Stroke patients varied from 38% in Louisiana to 71% in Delaware.

Similarly, running the same analysis on two separate databases demonstrated that the proportion of Stroke patients having one or more PACs was 61% and 62% respectively. While PACs might not be completely eliminated, identifying their magnitude and understanding their causality, in particular for the most frequent or the most expensive, could lead to improving patient outcomes.

1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.

1. Sacco RL, Shi T, Zamanillo MC, Kargman DE. Predictors of mortality and recurrence after hospitalized cerebral infarction in an urban community: the Northern Manhattan Stroke Study. *Neurology*. 1994;44: 626–634.
2. Hier DB, Foulkes MA, Swiontoniowski M, Sacco RL, Gorelick PB, Mohr JP, Price TR, Wolf PA. Stroke recurrence within 2 years

after ischemic infarction. *Stroke*. 1991;22:155–161.

3. Du X, Cruickshank K, McNamee R, Saraee M, Sourbutts J, Summers A, Roberts N, Walton E, Holmes S. Case-control study of stroke and the quality of hypertension control in north west England. *BMJ*. 1997; 314:272–276.

4. Hyman DJ, Pavlik VN. Self-reported hypertension treatment practices among primary care physicians: blood pressure thresholds, drug choices, and the role of guidelines and evidence-based medicine. *Arch Intern Med*. 2000;160:2281–2286.

5. Leonardi-Bee J, Bath PMW, Phillips SJ, et al. Blood pressure and clinical outcomes in the international stroke trial. *Stroke* 2002;33:1315-20.

6. F. de Brantes and A. Rastogi, "Evidence-Informed Case Rates: Paying for Safer, More Reliable Care," *The Commonwealth Fund* 40, publ. 1146 (2008): 1-14.

7. F. de Brantes, A. Gosfield, D. Emery, A. Rastogi and G. D'Andrea, "Sustaining the Medical Home: How Prometheus Payment Can Revitalize Primary Care", Robert Wood Johnson Foundation Report, May 2009, <http://www.rwjf.org/pr/product.jsp?id=42555>, accessed October 2009.

1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. *(This is required for endorsement maintenance. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.*

Not Applicable

1b.5. If no or limited data on disparities from the measure as specified is reported in 1b4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations.

Not Applicable

1c. High Priority (previously referred to as High Impact)

The measure addresses:

- a specific national health goal/priority identified by DHHS or the National Priorities Partnership convened by NQF; OR
- a demonstrated high-priority (high-impact) aspect of healthcare (e.g., affects large numbers of patients and/or has a substantial impact for a smaller population; leading cause of morbidity/mortality; high resource use (current and/or future); severity of illness; and severity of patient/societal consequences of poor quality).

1c.1. Demonstrated high priority aspect of healthcare

High resource use, Affects large numbers, A leading cause of morbidity/mortality, Severity of illness, Patient/societal consequences of poor quality

1c.2. If Other:

1c.3. Provide epidemiologic or resource use data that demonstrates the measure addresses a high priority aspect of healthcare.

List citations in 1c.4.

Stroke is the third leading cause of death in the U.S. and accounts the largest number of hospitalizations for neurological disease. During 2000, a total of 445,452 hospitalizations among Medicare enrollees were attributed to stroke, resulting in an age-adjusted rate of 16.3 per 1,000 enrollees. Stroke hospitalization rates increased with age and were higher among men than women and among blacks than whites. Patients who have had a stroke are at a high risk of stroke recurrence (rates of recurrence range from 4-14% annually). Control of risk factors and stroke prevention therapy can reduce the likelihood of recurrence.

A significant portion of waste in today's healthcare system is due to "care defects" – errors, avoidable hospitalizations, and other process failures that cause patients to incur unnecessary services and some harm. The June 2007 MedPAC report to Congress on "Promoting Greater Efficiency in Medicare" highlighted the fact that in 2005, \$12 billion were spent on potentially preventable readmissions alone within 30 days of discharge from the hospital. Another study by Jencks and colleagues found that roughly 19.6% of Medicare patients incurred re-hospitalizations within 30 days of discharge. When hospitalizations do occur, they must be managed expeditiously and readmissions following discharge should be avoided.

Hospital acquired conditions (HACs) have been defined by the Centers for Medicare and Medicaid (CMS) under the proposed rules for 2008 and 2009. Other potentially avoidable complications have been suggested by AHRQ's patient safety indicators (PSIs).

In her address at the Healthcare Incentives Institute, Oct 2008, Anne Mutti from MedPAC emphasized the need for bundled payments to a single entity, to cover hospitalizations plus some time after discharge (e.g. 30 days), to motivate providers to collaborate with partners to improve collective performance and reduce the unnecessary costs of avoidable readmissions.

1c.4. Citations for data demonstrating high priority provided in 1a.3

1. American Heart Association. Heart disease and stroke statistics---2003 update. Dallas, Texas: American Heart Association, 2002.
2. CDC. Davis HF, Croft JB, Malarcher AM et al. Public Health and Aging: Hospitalizations for Stroke Among Adults Aged >65 Years --- United States, 2000. MMWR. June 27, 2003/52(25): 586-589.
3. Wolf PA et al. Preventing ischemic stroke in patients with prior stroke and transient ischemic attack. Stroke 1999; 30: 1991-1994.
4. Li C, Engstrom G, Hedblad B, Berglund G, Janzon L. Blood pressure control and risk of stroke: A population-based prospective cohort study. Stroke 2005; 36:725-730
5. MedPAC. Report to The Congress: Promoting Greater Efficiency in Medicare. 2007. Available at: <http://www.medpac.gov/documents/jun07_EntireReport.pdf>. Accessed October 29th 2009.
6. Mutti A. Policies to encourage collective accountability: readmissions and bundled payment. Available at: <http://www.ehcca.com/presentations/hcii1/mutti_1.pdf>. Accessed Oct 29th, 2008.
7. S.F. Jencks, M.V. Williams, and E.A. Coleman: Rehospitalizations among Patients in the Medicare Fee-for-Service Program. New England Journal of Medicine 2009; 360: 1418-1428.
8. ECRI Institute. Special Advisory: List of CMS Hospital-Acquired Conditions Expanded under New Final Rule. 2008. Available at: <https://www.ecri.org/PatientSafety/HrcReports/Pages/CMS_Final_Rule_on_Hospital_Acquired_Conditions.aspx>. Accessed October 30th 2009.
9. T. Bodenheimer, "Coordinating Care — a Perilous Journey through the Health Care System," New England Journal of Medicine 358, no. 10 (2008): 1064-1071.

1c.5. If a PRO-PM (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)

2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **Measures must be judged to meet the subcriteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. Subject/Topic Area (check all the areas that apply):
Neurology, Neurology : Stroke/Transient Ischemic Attack (TIA)

De.6. Non-Condition Specific (check all the areas that apply):

S.1. Measure-specific Web Page (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

www.prometheuspayout.org

S.2a. If this is an eMeasure, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

Attachment:

S.2b. Data Dictionary, Code Table, or Value Sets (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

Attachment **Attachment:** [NQF_Stroke_all_codes_1.22.10.xls](#)

S.3. For endorsement maintenance, please briefly describe any changes to the measure specifications since last endorsement date and explain the reasons.

S.4. Numerator Statement (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome)

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

Outcome: Potentially avoidable complications (PACs) in patients hospitalized for stroke occurring during the index stay or in the 30-day post-discharge period.

S.5. Time Period for Data (What is the time period in which data will be aggregated for the measure, e.g., 12 mo, 3 years, look back to August for flu vaccination? Note if there are different time periods for the numerator and denominator.)

The time window starts with a hospitalization for stroke and continues for one month after discharge.

S.6. Numerator Details (All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

Patients that had an index hospitalization for stroke, and were identified as having services for potentially avoidable complications (PACs) either during the index hospitalization or within one month after discharge from the index hospitalization.

The enclosed excel workbook entitled [NQF_Stroke_all_codes_1.22.10](#) gives the detailed codes for PACs. Services for PACs are identified as follows:

- In the EXPND Stroke TRGS tab, claims with ICD-9 diagnosis codes, ICD-9 procedure codes or CPT codes marked with an assignment PAC in column B.
- In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column E (labeled Stroke PAC)
- In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in column D (labeled Stroke PAC)
- In the Pharm tab, pharmacy claims that map to a category identified as a PAC in the Stroke Action Descr column

These claims are included as PACs only if the PAC is NOT present on admission AND the claims are considered as relevant to Stroke. Relevant claims are defined as claims that:

- Have a "filter code" on the claim - see tab entitled "EXPND Stroke TRGS" - all codes with an assignment as typical or PAC in the enclosed worksheet are filter codes. One of these codes needs to be present on a claim to be included as relevant to the episode, AND
- Do not have an exclusion code. Exclusion codes for numerator are defined in the same fashion as in the Denominator Exclusion section.

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

S.7. Denominator Statement (Brief, narrative description of the target population being measured)

Adult patients aged 18 – 65 years who had a relevant hospitalization for stroke (with no exclusions) and were followed for one-

month after discharge.

S.8. Target Population Category (Check all the populations for which the measure is specified and tested if any):

S.9. Denominator Details (All information required to identify and calculate the target population/denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

Please refer to the enclosed excel workbook entitled NQF_Stroke_all_codes_1.22.10.

The target population should have the following criteria:

1. Have an index hospitalization with a trigger code as defined in the Stroke TRIGGERS tab
2. The patient should have continuous enrollment for the entire time window with no enrollment gaps with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).
3. Do not have an exclusion code. Exclusion codes are defined in the same fashion as in the Denominator Exclusion section.

S.10. Denominator Exclusions (Brief narrative description of exclusions from the target population)

Denominator exclusions include exclusions of either “patients” or “claims” based on the following criteria: (1) “Patients” excluded are those with that have any form of cancer, ESRD (end-stage renal disease), transplants such as lung or heart-lung transplant or complications related to transplants, intracranial trauma, pregnancy and delivery, HIV, or suicide. (2) “Claims” are excluded from the stroke measure if they are considered not relevant to stroke care or are for major surgical services that suggests that stroke may be a comorbidity or complication associated with the procedure e.g. CABG procedure. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

S.11. Denominator Exclusion Details (All information required to identify and calculate exclusions from the denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

Denominator exclusions include exclusions of “patients” as well as “claims” not relevant to stroke care. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

Please refer to the enclosed excel workbook entitled NQF_Stroke_all_codes_1.22.10.

1. “Patients” are excluded from the stroke measures if they meet one of the following criteria:

- a. If age is < 18 years or >= 65 years
- b. If gender is missing
- c. If they do not have continuous enrollment for the entire time window with no enrollment gaps with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).
- d. During the index hospitalization, patients have an in-hospital death or leave against medical advice.
- e. The index hospital stay cost is an outlier (less than \$50 or greater than \$ 1 million).
- f. Patients that have claims with ICD-9 diagnosis codes marked with an assignment “Termination” in column B in the EXPND Stroke TRGS tab.
- g. Patients with claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a “1” in column C labeled “Stroke Irrelevant cases (Terminate)” in the medical tab.
- h. The total episode cost with all medical and pharmacy claims included for the episode time window is an outlier (less than \$20 or greater than \$2 million).

2. “Claims” are excluded from the stroke measure if they meet one of the following criteria:

- a. In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a “1” in column D labeled “Stroke Irrelevant claims (exclude)”
- b. In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a “1” in column C labeled “Stroke Irrelevant claims (Exclude)”
- c. In the Pharm tab, pharmacy claims that map to a category identified as a delete in the “Stroke Action Descr” column

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to

categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

S.12. Stratification Details/Variables (All information required to stratify the measure results including the stratification variables, definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b)

None

S.13. Risk Adjustment Type (Select type. Provide specifications for risk stratification in S.12 and for statistical model in S.14-15)

Statistical risk model

If other:

S.14. Identify the statistical risk model method and variables (Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development and testing should be addressed with measure testing under Scientific Acceptability)

Conceptual Model

Variations in outcomes across populations may be due to patient-related factors or due to provider-controlled factors. When we adjust for patient-related factors, the remaining variance in PACs are due to factors that could be controlled by all providers that are managing or co-managing the patient, both during and after the hospitalization.

We have developed a “severity index” based on patient-related factors such as patient demographics and comorbidities. The severity-adjusted PAC counts give a fair comparison of PACs and PAC rates from population to population and helps providers determine the degree of PACs that are not related to patient-level factors but due to factors that they could control and thus result in fewer PACs being incurred by patients and paid for by payers.

Methodology Overview

A severity index is calculated for each patient based on the risk-adjustment model for professional and other services that determines the cost drivers for typical care for a given condition. Demographic variables, comorbid conditions, various types of services as well as different patient-level pharmacy indicators are fed into the model. Conditions and services that lead to higher costs and increased resource consumption are weighted more heavily in our model. For example, DME use is associated with a higher coefficient in the model. The model determines the patient-level factors that are drivers for increased financial risk. For each patient the “predicted” log coefficients from the severity adjustment model are summed to give the patient level severity index. Summing the patient level severity index helps derive the population level severity index. Adjusting the overall PAC rates by the severity-index for the population helps adjust for variations in outcomes related to severity.

The risk-adjustment variables that were included were patient demographic factors such as age and gender, medical comorbidities, procedures performed, as well as pharmacy variables.

Variable Descriptions:

AGE CONTINUOUS VARIABLE

GENDER FEMALE (MALE IS REFERENCE)

BACL1 ANTICOAGULANTS

EDIAB ANTIDIABETICS

ESTER STEROIDS

ETHYR THYROID DRUGS

GIACD ANTACIDS AND ANTISPASMODICS

GIEM ANTIEMETICS

HACEI ACEI, ARB, ANTI-RENIN DRUGS

HBBLK BETA-BLOCKERS

#0705 Proportion of Patients Hospitalized with Stroke that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period), Last Updated: Jan 21, 2016

HCLBK	CALCIUM CHANNEL BLOCKING AGENTS
HDIUR	DIURETICS
HNITR	NITRATES AND OTHER ANTIANGINALS
HOTHR	OTHER CARDIOVASCULAR AGENTS
HPLT	ANTIPLATELET AGENTS, THROMBIN INHIBITORS
HSTN	STATINS AND OTHER ANTI-LIPID AGENTS
HVSDL	VASODILATORS
IANTB	ANTIBIOTICS
LBDIL	BRONCHODILATORS AND OTHER ANTI-ASTHMATICS
LDECG	DECONGESTANTS AND ANTIHISTAMINICS
LOTHR	INHALERS AND RESPIRATORY AGENTS
M10	DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS
M12	ESSENTIAL HYPERTENSION
M13	HYPERTENSION WITH COMPLICATIONS AND SECONDARY HYPERTENSION
M14	HEART VALVE AND CONGENITAL HEART DISORDERS
M15	CORONARY ATHEROSCLEROSIS AND OTHER HEART DISEASE
M16	CHF, CARDITIS, CARDIOMYOPATHY
M18	DISEASES OF ARTERIES ARTERIOLES AND CAPILLARIES
M2	DIABETES MELLITUS WITH CHRONIC END-ORGAN DAMAGE
M20	CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND BRONCHIECTASIS
M22	OTHER RESPIRATORY INFECTIONS AND DISEASES
M23	ESOPHAGEAL DISORDERS
M24	DISEASES OF THE DIGESTIVE SYSTEM
M26	CHRONIC RENAL FAILURE AND OTHER KIDNEY DISEASE
M29	DISEASES OF THE SKIN AND CONNECTIVE TISSUE
M32	CARDIAC DYSRHYTHMIAS
M35	DISEASES OF BONES, JOINTS, SPINE
M36	PREVENTATIVE, REHABILITATION AND AFTER CARE
M37	NAUSEA, VOMITING, MALAISE, FATIGUE, FEVER
M39	DEMENTIA, PARKINSON'S DISEASE
M4	DIABETES MELLITUS WITHOUT COMPLICATION
M40	RETINOPATHY, VISION DEFECTS, BLINDNESS
M5	FLUID AND ELECTROLYTE DISTURBANCES
M6	OTHER ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS
M7	DISORDERS OF LIPID METABOLISM
M8	ANEMIA, COAGULATION, HEMORRHAGIC DISORDERS
M9	MENTAL AND BEHAVIORAL ILLNESS
MSKRL	SKELETAL MUSCLE RELAXANT COMBINATIONS
NACNV	ANTICONVULSANTS
NANLG	ANALGESICS AND ANTI-INFLAMMATORY
NDEPR	ANTIDEPRESSANTS
NMCNS	MISCELLANEOUS CNS AGENTS
NSED	SEDATIVES AND HYPNOTICS
P1	EYE, ENT, ORAL PROCEDURES
P13	RESPIRATORY DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P14	NERVOUS SYSTEM, ENDOCRINE, HEAD AND NECK MINOR PROCEDURES
P15	GI DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P23	RADIOLOGY AND RADIONUCLEAR DIAGNOSTIC SERVICES
P26	PHYSICAL THERAPY AND REHABILITATION
P27	ANCILLARY, HOME HEALTH, TRANSPORT
P28	MEDICATION ADMINISTRATION
P29	MENTAL HEALTH SERVICES
P31	DME, VISUAL AND HEARING AIDS
P35	CT HEAD, CEREBRAL ANGIOGRAM, DIAGNOSTIC TESTS HEAD AND NECK

#0705 Proportion of Patients Hospitalized with Stroke that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period), Last Updated: Jan 21, 2016

P4 INVASIVE VASCULAR DIAGNOSTIC & MINOR THERAPEUTIC PROCEDURES
P6 NON-INVASIVE CARDIOVASCULAR PROCEDURES
SRF1 HEMORRHAGIC STROKE
SRF2 ISCHAEMIC, MIGRAINE, THROMBOEMBOLIC STROKE, CVA
SRF3 TRANSIENT CEREBRAL ISCHEMIA, TIA
SRF5 CHRONIC CEREBROVASCULAR DISEASE
SRF6 SYNCOPE, COLLAPSE, DIZZINESS, HYPOTENSION
SRF7 LATE EFFECTS OF CEREBROVASCULAR DISEASE
SRF8 OBESITY, SLEEP APNEA
SRF9 TOBACCO USE
ZNUTR IRON AND OTHER NUTRITIONAL SUPPLEMENTS

The risk adjustment variables and their prevalence in our population are listed in the enclosed workbook entitled NQF_Stroke_PACs_Risk_Adjustment_2.16.10 – see tabs CIP_RiskFactors. The output of the regression model are given in the same workbook in the tab CIP_Prof_Risk-Adj Model.

The details of the codes that map to the risk-adjustment variables are given in the excel workbook entitled NQF_Stroke_all_codes_1.22.10.xls

S.15. Detailed risk model specifications (must be in attached data dictionary/code list Excel or csv file. Also indicate if available at measure-specific URL identified in S.1.)

Note: Risk model details (including coefficients, equations, codes with descriptors, definitions), should be provided on a separate worksheet in the suggested format in the Excel or csv file with data dictionary/code lists at S.2b.

S.15a. Detailed risk model specifications (if not provided in excel or csv file at S.2b)

S.16. Type of score:

Rate/proportion

If other:

S.17. Interpretation of Score (Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)

S.18. Calculation Algorithm/Measure Logic (Describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; aggregating data; risk adjustment; etc.)

Using administrative claims database, patients with stroke are identified as those having a hospitalization for stroke based on the trigger codes on a stay claim with no trigger exclusion codes.

Patients are retained if they are 18 – 65 years of age, do not have a missing gender, have continuous enrollment for the entire episode time window, have no outlier episode costs, and do not have a termination code. The index hospitalization, as well as professional and other claims that are incurred for one month following discharge after a stroke related hospitalization are included as part of the episode, and are considered relevant to stroke care if they have one of the filter codes present on the claim (as defined by the expanded triggers).

Relevant claims are classified as PACs based on the numerator definitions listed above. Relevant claims that do not have a single PAC code are listed as typical claims. Patients that have even a single PAC claim are counted as part of the numerator and the proportion of total stroke patients that have PACs are calculated as the measure.

A flow chart demonstrating the series of steps and the counts of patients at each step is shown in tab 1 (Decision Tree) of the enclosed workbook called NQF_Stroke_PACs_Risk_Adjustment_2.16.10.xls

S.19. Calculation Algorithm/Measure Logic Diagram URL or Attachment *(You also may provide a diagram of the Calculation Algorithm/Measure Logic described above at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)*

S.20. Sampling *(If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)*

IF a PRO-PM, identify whether (and how) proxy responses are allowed.

Not Applicable

S.21. Survey/Patient-reported data *(If measure is based on a survey, provide instructions for conducting the survey and guidance on minimum response rate.)*

IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

S.22. Missing data (specify how missing data are handled, e.g., imputation, delete case.)

Required for Composites and PRO-PMs.

S.23. Data Source *(Check ONLY the sources for which the measure is SPECIFIED AND TESTED).*

If other, please describe in S.24.

Claims, Electronic Health Data

S.24. Data Source or Collection Instrument *(Identify the specific data source/data collection instrument e.g. name of database, clinical registry, collection instrument, etc.)*

IF a PRO-PM, identify the specific PROM(s); and standard methods, modes, and languages of administration.

CIP Database: Commercially Insured Population Database.

A two-year national commercially insured population (CIP) claims database was used as our developmental database. The database had 4.7 million covered lives and \$95 billion in "allowed amounts" for claims costs. The database was an administrative claims database with medical as well as pharmacy claims. The methodology can be used on any claims database with at least two years of data and a minimum of 150 patients with the anchor condition or hospitalization. Having pharmacy data adds to the richness of the risk-adjustment models. A standardized SAS-based program has been developed that users could download from the website to calculate PAC rates using their own data. The methodology has been tested on databases of several health plans as well as on a few employer databases.

No data collection instrument was used.

S.25. Data Source or Collection Instrument *(available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)*

S.26. Level of Analysis *(Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)*

Clinician : Group/Practice, Facility, Health Plan, Other, Population : Community, County or City, Population : Regional and State

S.27. Care Setting *(Check ONLY the settings for which the measure is SPECIFIED AND TESTED)*

Inpatient/Hospital

If other:

S.28. COMPOSITE Performance Measure - Additional Specifications *(Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)*

2a. Reliability – See attached Measure Testing Submission Form

2b. Validity – See attached Measure Testing Submission Form

[0705_MeasureTesting_MSF5.0_Data.doc](#)

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. Data Elements Generated as Byproduct of Care Processes.

[Coded by someone other than person obtaining original information \(e.g., DRG, ICD-9 codes on claims\)](#)

If other:

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. To what extent are the specified data elements available electronically in defined fields? (*i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields*)

[ALL data elements are in defined fields in electronic claims](#)

3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.

3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL.

Attachment:

3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.1. Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

IF a PRO-PM, consider implications for both individuals providing PROM data (patients, service recipients, respondents) and those whose performance is being measured.

[As part of our general implementation of these measures and related analyses, we have worked through dozens of different and sometimes very large datasets. From Medicare to Medicaid to regional and national commercial carriers, as well as individual employers, the principal lesson learned is the heterogeneity of the data sets and the significant variability in fill rate of critical data elements. As a result, we have created highly specific recommendations for which data elements are required to ensure measure validity, the accuracy of those data elements, and their completeness in the dataset. When claims datasets are organized in the way we specify in the measure analysis, and contain the coding information required, the analysis of the measure and its results are highly reliable.](#)

3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (*e.g., value/code set, risk model, programming code, algorithm*).

[The calculations of rates of potentially avoidable complications can be replicated by anyone that uses the measure specifications](#)

along with the metadata file that is available for free on our web site at <http://www.hci3.org/ecre/xml-agreement.html>. We also plan on providing a limited automated analysis, at no cost, on our website.

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Planned	Current Use (for current use provide URL)
Public Reporting	Payment Program Blue Cross Blue Shield of North Carolina
Professional Certification or Recognition Program	Blue Cross Blue Shield of New Jersey), Pennsylvania Employee Benefits Trust Fund https://www.bcbsnc.com/ http://www.horizonblue.com/ https://www.pebtf.org/ Quality Improvement (Internal to the specific organization) Blue Cross Blue Shield of North Carolina https://www.bcbsnc.com/assets/providers/public/pdfs/specialty_methodology.pdf

4a.1. For each CURRENT use, checked above, provide:

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included

Measures associated to potentially avoidable complications (PACs) are in use today with some private sector payers and gaining further acceptance among a wide variety of organizations across the health system (public and private payers, clinicians, consultants, all-payer claims database stewards, etc.) [1-8]. They are being used in various capacities in different pilot site implementations. To name a few:

- BCBSA (Blue Cross Blue Shield Association) – uses them for their Centers of Excellence (COE) programs: Blue Distinction
- BCBSNC (Blue Cross Blue Shield of North Carolina) – is using them for tiering providers

In addition, the PAC measures are incorporated by the following organizations in their bundled payment programs:

- BCBSSC – for CABG and PCI programs
- Horizon BCBSNJ– for CHF and CABG programs
- BCBSNC
- PEBTF in PA

<http://www.ajmc.com/interviews/Lili-Brillstein-on-How-Bundled-Payments-Are-Tranforming-Healthcare>

In these programs they look at PACs related to the measure for process improvement activities and for practice re-engineering.

We have created reports for rates of PACs for the following organizations:

- Vermont Payment Reform
- Maine Health Management Coalition
- WellPoint / Anthem CT
- NY State Medicaid
- CT Medicaid
- CO All-payer Claims Database, Center for Improving Value in Health Care

There are several companies that are leveraging these measures to create analytics and software for customers – these include HealthQx, Aver Informatics, McKesson, and TriZetto.

1. Hibbard JH, Greene J, Sofaer S, Firminger K, and Hirsh J. Experiment shows that a well-designed report on costs and quality can help consumers choose high value health care. *Health Affairs*, 31, no.3 (2012):560-568 (doi: 10.1377/hlthaff.2011.1168)
2. Rastogi A, de Brantes F, Costley J, and Tompkins C. HCI3 Improving Incentives Issue Brief – Analysis of Medicare and Commercial Insurer-Paid Total Knee Replacement Reveals Opportunity for Cost Reduction. Available from: <http://www.hci3.org/content/hci3-improving-incentives-issue-brief-analysis-medicare-and-commercial-insurer-paid-total-kn>, Accessed Jun 1 2015.
3. de Brantes F, Rastogi A, and Sorensen CM. Episode of Care Analysis Reveals Sources of Variation in Costs. *Am J Manag Care*. 2011; 17(10): e383-e392.
4. de Brantes F, Rastogi A, and Painter M. Reducing Potentially Avoidable Complications in Patients with Chronic Diseases: The Prometheus Payment Approach. *Health Services Research* 2010; 45(6), Part II: 1854-1871.
5. Pierre L. Yong and LeighAnne Olsen. The Healthcare Imperative: Lowering Costs and Improving Outcomes: Workshop Series Summary; Roundtable on Evidence-Based Medicine; Institute of Medicine. 2010. ISBN: 0-309-14434-5, <http://www.nap.edu/catalog/12750.html>, accessed June 14, 2015.
6. Pham HH, Ginsburg PB, Lake TK, and Maxfield MM. Episode-based Payments: Charting a course for Health care Payment Reform. National Institute for Health Care Reform. Policy Analysis, No.1. Jan 2010. Available from: http://www.nihcr.org/Episode_Based_Payments.html. Accessed Jun 1 2015.
7. François de Brantes, M.S., M.B.A., Meredith B. Rosenthal, Ph.D., and Michael Painter, J.D., M.D. Building a Bridge from Fragmentation to Accountability —The Prometheus Payment Model. *NEJM* 2009; 361:1033 (Perspective)
8. de Brantes F, D'Andrea G, Rosenthal MB. Should health care come with a warranty? *Health Aff (Millwood)* 2009; 28:w678-w687.

4a.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

N/A

4a.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)

Measures associated to PACs are currently in use as described in the prior section. In addition, we are working with several not-for-profit and for-profit organizations to provide them with the algorithms needed to calculate rates of potentially avoidable complications. Some of these organizations include:

Fair Health – based in NY and whose mission is to increase transparency of provider cost and quality,

CastLight – based in CA and serving large employers. We currently provide CastLight with Bridges To Excellence recognitions and will work with them to augment provider transparency by using PAC measures,

MA APCD (Massachusetts All Payers Claims Database) Council – we currently have an agreement in place with the MA APCD Council to produce PAC measures on hospitals and physicians and report back to the council with tests of reliability and validity of the measures. The purpose is to authorize the publication of these measures,

Maryland Health Care Cost Commission – we have a two year agreement to produce measures of cost and quality for public dissemination.

In Dec 2014, the measure was conditionally approved by MAP (Measure Applications Partnership), for use in Medicare's Inpatient Quality Reporting program, and continues to be pushed by organizations like the Consumer-Purchaser Alliance for that purpose.

4b. Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b.1. Progress on Improvement. (Not required for initial endorsement unless available.)

Performance results on this measure (current and over time) should be provided in 1b.2 and 1b.4. Discuss:

- Progress (trends in performance results, number and percentage of people receiving high-quality healthcare)
- Geographic area and number and percentage of accountable entities and patients included

We do not have any public information to share about the improvements in rates of potentially avoidable complications, as the implementation of these measures is too recent to provide valid comparisons. Further, some of the definitions of PACs have changed since the measures were initially endorsed, making comparisons even more difficult and unreliable.

4b.2. If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

Performance results provide summary PACs rates by provider, which can be used by payers and providers in a number of ways to improve the quality of care.

From the payer perspective, payers can use this information to 1) create a high-value provider networks, 2) work with high-value providers to share best practices, 3) incentivize low-value providers to improve, 4) modify their insurance design to activate consumers to select the right care from the right providers at the right time.

From the provider perspective, providers can 1) view services and activity for their patients longitudinally across the entire care continuum, such as frequency of readmissions and ED visits and drill down on patients with high PAC rates, 2) review actionable drill down reports to identify the most frequent PACs across all patients to create care pathways and process improvement plans to impact the most frequent PACs.

4c. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4c.1. Were any unintended negative consequences to individuals or populations identified during testing; OR has evidence of unintended negative consequences to individuals or populations been reported since implementation? If so, identify the negative unintended consequences and describe how benefits outweigh them or actions taken to mitigate them.

No unintended consequences were reported, but there is the potential for:

1. Under-coding of PACs in the claim stream resulting in under-reporting the actual rate and/or providers gaming the measures
2. Payers calculating the measures even with inadequate sample sizes and using the results to penalize providers

The measure is designed for transparency efforts and to spur quality improvement. Detailed PAC reports can help providers identify areas of quality improvement. Even detailed reports of small samples of patients can be helpful for quality improvement purposes, but not for public reporting. To mitigate the potential for invalid provider comparisons, we specify in this submission the minimum sample size needed to ensure the reliability of a provider's score. Ultimately, there isn't any good way to prevent provider gaming of the measure by under-coding claims, however, under the current DRG payment methodology, many providers would be penalized by under-coding PACs since these codes often result in the assignment of more complicated DRGs.

5. Comparison to Related or Competing Measures

#0705 Proportion of Patients Hospitalized with Stroke that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period), Last Updated: Jan 21, 2016

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

5.1a. List of related or competing measures (selected from NQF-endorsed measures)

0001 : Asthma assessment

0141 : Patient Fall Rate

0202 : Falls with injury

0337 : Pressure Ulcer Rate (PDI 2)

0450 : Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate (PSI 12)

0704 : Proportion of Patients Hospitalized with AMI that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period)

0708 : Proportion of Patients with Pneumonia that have a Potentially Avoidable Complication (during the episode time window)

0709 : Proportion of patients with a chronic condition that have a potentially avoidable complication during a calendar year.

1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.

-0531 Patient Safety for Selected Indicators (Composite Measure, endorsed) (AHRQ)

-CMS defined hospital acquired conditions (HACs) are a subset of our PACs. We have pain-stakingly matched the definitions to provide as much consistency as possible. <http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalRHQDAPU.html>

5a. Harmonization

The measure specifications are harmonized with related measures;

OR

The differences in specifications are justified

5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):

Are the measure specifications completely harmonized?

No

5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

Several of the measures listed in the prior section are, in fact, fully harmonized with the submitted measures. In particular, 0705, 0708, 0709, 0531, 0450, 2503, 0337, 0141, 0202. However, there are some that are not, in particular the 30-day all-cause readmission measures. While the submitted PAC measures include readmissions that occur within 30 days of discharge, the readmissions, by definition, are related to the index hospitalization and not any hospitalization. While 30-day all-cause readmissions might make sense in a Medicare population, it is not self-evident that they do for commercial or Medicaid populations. However, that said, our data suggest that there are, in fact, very few readmissions within 30 days post discharge that aren't relevant to the index hospitalization. It is worth noting that there is some mounting controversy about the 30 day all cause readmission measures and some data suggest that these measures might have simply pushed out certain readmissions to 31 or more days post discharge. Irrespective of these points, PACs include readmissions and are designed to enable accountability at the locus of provider control as well as some shared accountability between settings, centered around a patient, and for a specific medical episode of care. In that sense, they are consistent with the all-cause 30-day readmission rates, but represent a subset of those admissions. As such, the PAC measures, as submitted, don't create added burden of reporting because the readmissions reported are simply a part of the broader 30-day all-cause readmission measures already endorsed by NQF. Because PAC measures are comprehensive, they include patient safety events that can occur during the stay, as well as adverse events, including readmissions, that can occur post-discharge. As a result, they provide facilities and physicians with an overall measure of avoidable complications for a specific medical episode. The data collection for all of the BTE measures is automated by a software package and is fully harmonized with all other PAC measures.

A single download automates creation of all reports related to each of the PAC measures.

5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

OR

Multiple measures are justified.

5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):

Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)

The PAC measure is a comprehensive measure representing “all-cause harms”. It looks at all potentially avoidable complications in patients hospitalized with AMI during the stay or for 30-days post-discharge. It looks at readmissions, emergency room visits, adverse events due to errors of omission or commission. It looks at complications that are due to patient safety failures, and also those directly related to the index condition. These are a cause of significant waste and quality concerns for patients with an AMI episode. As such, the measure can provide clinicians with an overall and comprehensive view, in one measure, of all potentially avoidable complications for a patient and drive quality improvement efforts.

For clinicians and facilities increasingly engaged in value-based payment efforts and/or driving quality improvement for population health, the value of a PAC measure over a series of related, but more discrete measures, is that one can better determine if the sources of complications primarily stem from activities within the facility or outside the facility, and the specific nature of the complications that have a higher frequency of occurrence. For providers, it’s far easier to construct a quality dashboard from a parsimonious set of measures, and that’s what PAC measures offer.

Further, as a comprehensive outcome measures, PACs are also useful for public transparency of quality, as substantiated by the research from Judy Hibbard and colleagues previously cited in the “testing” section of this submission.

Appendix

A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

Attachment:

Contact Information

Co.1 Measure Steward (Intellectual Property Owner): Health Care Incentives Improvement Institute (HCI3)

Co.2 Point of Contact: Francois, de Brantes, Francois.debrantes@hci3.org, 203-270-2906-

Co.3 Measure Developer if different from Measure Steward: Health Care Incentives Improvement Institute (HCI3)

Co.4 Point of Contact: Amita, Rastogi, amita.rastogi@hci3.org, 219-934-9624-

Additional Information

Ad.1 Workgroup/Expert Panel involved in measure development

Provide a list of sponsoring organizations and workgroup/panel members’ names and organizations. Describe the members’ role in measure development.

From 2006 onwards, and under the auspices of various funding organizations, HCI3 has convened and managed, or helped to convene and manage, Clinical Working Groups to inform the development and refinement of the measures. For example, in 2011, 2012 and 2013, HCI3 worked collaboratively with the American Board of Medical Specialties and the American Medical Association’s Physicians Consortium for Performance Improvement, under a federal contract, to convene and get input from various clinical experts on definitions of episodes of care and their sequelae, including avoidable complications.

Some of the clinical experts that have contributed to our work include:

-Dr. John Allen, American Gastroenterology Association (AGA)

#0705 Proportion of Patients Hospitalized with Stroke that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period), Last Updated: Jan 21, 2016

-Dr. Morton Arnsdorf, Cardiologist, University of Chicago, IL
 -Dr. Peter Bach, Memorial Sloan Kettering Cancer Center (MSKCC)
 -Dr. Peter Basch, Primary Care, Medstar Health, DC
 -Dr. Justin Beckelman, Radiation Oncology, University of Pennsylvania, PA
 -Dr. Debra Bingham, Executive Director, California Maternal Quality Care Collaborative (CMQCC) at Stanford University, CA
 -Dr. John Birkmeyer, American Society of Metabolic and Bariatric Surgery (ASMBS)
 -Dr. Linda Bosserman, Wilshire Oncology Medical Group, CA
 -Dr. Matthew Brengman, American Society of Metabolic and Bariatric Surgery (ASBMS)
 -Dr. Joel Brill, American Gastroenterology Association (AGA)
 -Dr. George Cautilli, Cautilli Orthopedic Surgical Specialists PC, Yardley, PA
 -Dr. Ashwini Davison, Internist, Johns Hopkins Hospital, MD
 -Dr. James Denny, III, American Academy of Otolaryngology – Head and Neck Surgery (AAO-HNS)
 -Dr. Chris Gallagher, American Society of Metabolic and Bariatric Surgery (ASMBS)
 -Dr. Robert Haralson, III, American Academy of Orthopedic Surgeons (AAOS)
 -Ms. Dawn Holcombe, Executive Director, Connecticut Oncology Association, CT
 -Dr. Colin Howden, American Gastroenterology Association (AGA)
 -Dr. John Knightly, American Association of Neurological Surgeons (AANS)
 -Dr. Larry Kosinski, American Gastroenterology Association (AGA)
 -Dr. Nalini Krishnan, Obstetrics & Gynecology, MN
 -Dr. Kelly Kyanko, Internist, NYU School of Medicine, NY
 -Dr. Tara Lagu, Internist & Infectious Disease, Baystate Medical Center, MA
 -Dr. Robert Lee, Society of Thoracic Surgeons (STS)
 -Dr. Alex Little, Society of Thoracic Surgeons (STS)
 -Dr. Michael London, Orthopedic Surgeon, OMNI Orthopedics, OH
 -Dr. Elliott Main, Obstetrics & Gynecology, California Pacific Medical Center, CA
 -Dr. Constantine Mantz, 21st Century Oncology, FL
 -Dr. Joseph Messer, Cardiologist, Rush University Medical Center, IL
 -Dr. David Metz, American Gastroenterology Association (AGA)
 -Dr. Ronald Nahass, Infectious Disease Care, NJ
 -Dr. Ajay Nehra, Urologist, Rush University Medical Center, IL
 -Dr. Francis Nichols, Society of Thoracic Surgeons (STS)
 -Dr. Patrick O'Connor, Primary Care, HealthPartners, MN
 -Dr. Sara Perkel, National Comprehensive Cancer Network, PA
 -Dr. David Peura, American Gastroenterology Association (AGA)
 -Dr. John Ratliff, American Association of Neurological Surgeons (AANS)
 -Dr. Steven Schutzer, Connecticut Joint Replacement Institute, CT
 -Dr. Leif Solberg, Primary Care, HealthPartners, MN
 -Dr. Scott Sporer, Midwest Orthopedics at Rush, Chicago IL
 -Dr. Bonnie Weiner, Cardiologist, Worcester Medical Center, MA
 -Dr. Jonathan Weiner, Bariatric Surgery codes, Prof of Health Policy and Management, Johns Hopkins University, MD
 -Dr. Janet Wright, Cardiologist, Northstate Cardiology Consultants, CA

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 Year the measure was first released: 2008

Ad.3 Month and Year of most recent revision: 10, 2009

Ad.4 What is your frequency for review/update of this measure? Yearly

Ad.5 When is the next scheduled review/update for this measure? 10, 2010

Ad.6 Copyright statement: Evidence-informed Case Rates®, ECR® and PROMETHEUS Payment® are all registered trademarks of Health Care Incentives Improvement Institute, Inc (HCI3). Use of these materials and any other property of HCI3 is subject to the terms and conditions posted on the website. All rights reserved, 2008-2015.

Ad.7 Disclaimers:

Ad.8 Additional Information/Comments: