



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 IM1.1 relates to sub criterion IM1).

Brief Measure Information

NQF #: 2158

De.2. Measure Title: Medicare Spending Per Beneficiary (MSPB) Hospital

Co.1.1. Measure Steward: Centers for Medicare & Medicaid Services

De.3. Brief Description of Measure: The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital. Specifically, the MSPB Hospital measure assesses the cost to Medicare for Part A and Part B services performed by hospitals and other healthcare providers during an MSPB Hospital episode, which is comprised of the periods 3-days prior to, during, and 30-days following a patient's hospital stay. The MSPB Hospital measure is not condition specific and uses standardized prices when measuring costs. Beneficiary populations eligible for the MSPB Hospital calculation include Medicare beneficiaries enrolled in Medicare Parts A and B who were discharged between January 1 and December 1 in a calendar year from short-term acute hospitals paid under the Inpatient Prospective Payment System (IPPS).

IM.1.1. Developer Rationale: The MSPB Hospital measure is included in the Efficiency and Cost Reduction domain of the Hospital VBP program. With measures in other domains of clinical outcomes, safety, and person and community engagement, the HVBP program provides financial incentives to hospitals to further the value of care they provide.

The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital. This scoring allows hospitals to improve their score by spending less than the episode-weighted risk-adjusted median cost during a given performance period through improved care coordination and provision of efficient care. For instance, hospitals can decrease (i.e., improve) their risk-adjusted episode costs through actions such as: 1) improving coordination with post-acute providers to reduce the likelihood post-discharge of adverse events, 2) identifying unnecessary or low-value post-acute services and reducing or eliminating these services, or 3) shifting post-acute care from more expensive services (e.g., skilled nursing facilities) to less expensive services (e.g., home health) in cases that would not affect patient outcomes. Care coordination helps ensure a patient's needs and preferences for care are understood, and that those needs and references are shared between providers, patients, and families as a patient moves from one healthcare setting to another. People with chronic conditions, such as diabetes and hypertension, often receive care in multiple settings from numerous providers. As a result, care coordination among different providers is required to avoid waste, over-, under-, or misuse of prescribed medications and conflicting plans of care.

De.1. Measure Type: Cost/Resource Use

S.5. Data Source: Assessment Data

Claims

Enrollment Data

Other

S.3. Level of Analysis: Facility

IF Endorsement Maintenance – Original Endorsement Date: Dec 09, 2013 **Most Recent Endorsement Date:** Jul 13, 2017

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? N/A

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 sub criteria to pass this criterion and be evaluated against the remaining criteria.***

IM.1. Opportunity for Improvement

IM.1.1. Briefly explain the rationale for this measure (e.g., the benefits or improvements in performance envisioned by use of this measure)

The MSPB Hospital measure is included in the Efficiency and Cost Reduction domain of the Hospital VBP program. With measures in other domains of clinical outcomes, safety, and person and community engagement, the HVBP program provides financial incentives to hospitals to further the value of care they provide.

The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital. This scoring allows hospitals to improve their score by spending less than the episode-weighted risk-adjusted median cost during a given performance period through improved care coordination and provision of efficient care. For instance, hospitals can decrease (i.e., improve) their risk-adjusted episode costs through actions such as: 1) improving coordination with post-acute providers to reduce the likelihood post-discharge of adverse events, 2) identifying unnecessary or low-value post-acute services and reducing or eliminating these services, or 3) shifting post-acute care from more expensive services (e.g., skilled nursing facilities) to less expensive services (e.g., home health) in cases that would not affect patient outcomes. Care coordination helps ensure a patient's needs and preferences for care are understood, and that those needs and references are shared between providers, patients, and families as a patient moves from one healthcare setting to another. People with chronic conditions, such as diabetes and hypertension, often receive care in multiple settings from numerous providers. As a result, care coordination among different providers is required to avoid waste, over-, under-, or misuse of prescribed medications and conflicting plans of care.

IM.1.2. 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, stddev, 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 include).

This information also will be used to address the subcriterion on improvement (U.3.1.) under Usability and Use.

Analysis of all IPPS eligible hospitals with at least 25 episodes for the 2018 performance period

shows a large range of provider scores on the MSPB Hospital measure. The MSPB Hospital measure score has the following distributional characteristics:

- Mean: 0.99, standard deviation: 0.08
- Median: 0.99
- Min: 0.49, max: 1.68
- Interquartile range spans from 0.94 to 1.03

The score decile distribution for the 2018 performance period is:

- 10th: 0.90
- 20th: 0.93
- 30th: 0.95
- 40th: 0.97
- 50th: 0.99
- 60th: 1.01
- 70th: 1.02
- 80th: 1.05
- 90th: 1.08

Analysis of MSPB Hospital measure score changes between 2017 and 2018 showed that hospital scores do vary over time, as 48.8 percent of providers evidenced improved (lower) scores. The distribution in score change between these two years, with negative values indicating improvement, is

- Min: -166.24%
- 5th: -17.54%
- 10th: -4.15%
- 25th: -1.76%
- 50th: 0.10%
- 75th: 2.01%
- 90th: 4.41%
- 95th: 18.92%
- Max: 35.68%

IM.1.3. If no or limited performance data on the measure as specified is reported in IM.1.2., 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.

The response to IM2.2 includes measure scores calculated for all IPPS-eligible hospitals with at least 25 episodes during the performance period of January 1, 2018 to December 1, 2018.

IM.1.4. 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 (U.3.1.) under Usability and Use.**

We analyzed disparities data through analysis of beneficiary and community/regional characteristics based on or directly from the American Community Survey (ACS) and CMS' Enrollment Database (EDB). All ACS variables firstly defined at the Census Block Group level and then ZIP code when census block group is missing. The specific social risk factors (SRFs) analyzed include the following variables.

- Income (ACS): Low Income: median income < 33rd percentile nationally; Medium Income: median income in the interval spanning the 33rd percentile to the 66th percentile nationally; High Income: median income > 66th percentile
- Education (ACS): Education < High School: when % with < high school education is the highest for a given Census Block Group; Education = High School: when % with only high school is the highest; Education > High School: when % with > high school is the highest
- Employment (ACS): Unemployment Rate > 10%; Unemployment Rate <= 10%
- Race (EDB): Asian, Black, Hispanic, North American Native, White, and Other
- Sex (EDB): Female, male
- Dual status (CME): Full dual, partial dual, non-dual status
- Area Deprivation Index (ADI)[1]
- Agency of Healthcare Research and Quality (AHRQ) SES Index: AHRQ index scores are calculated using the AHRQ scoring algorithm and is a continuous dependent variable as a replacement of all SES variables. The index includes percentage of households containing one or more person per room, median value of owner-occupied dwelling, percentage of persons below the federally defined poverty line, median household income, percentage of persons aged = 25 years with at least 4 years of college, percentage of persons aged = 25 years with less than a 12th grade education, and percentage of persons aged 16 or older in the labor force who are unemployed.[2]

Out of 4,023,571 beneficiaries and 5,984,315 beneficiary episodes across all major diagnostic categories [3], the percentage of female beneficiaries range from 27.0 percent to 63.5 percent across the 23 of the 26 MDCs in this measure that reasonably occur for both sexes (MDC 13 and MDC 14 are nearly 100 percent female as they are related to pregnancy, childbirth, and the female reproductive system, while MDC 12 is 0 percent female as it is related to the male reproductive system). For 23 out of 26 MDCs, most beneficiaries (55.7% - 84.4%) have non-dual status. The MDCs with a minority of non-dual status beneficiaries includes MDC 14 – Pregnancy, Childbirth, and the Puerperium (12.1%), MDC 25 – Human Immunodeficiency Virus Infections (30.1%), and MDC 19 – Mental Diseases and Disorders (44.0%). Income level is categorized into high, medium, and low from the continuous average income variable in ACS; therefore, each category has 33.3 percent of episodes. Approximately 2.0 to 8.1 percent of beneficiaries across all MDCs are classified as having below a high school education level, while 16.8 to 37.1 percent of beneficiaries have high unemployment designation (>10% for the Census Block Group). The AHRQ Index ranged from 28.82 to 78.4 across beneficiary episodes and approximately 14.36 of beneficiary episodes were ranked in the top quintile of the ADI's national ranking.

We also analyzed the effect and impact of several social risk factors in the MSPB Hospital measure's risk adjustment model and

sought to determine the extent to which these effects may be attributable to hospitals versus the patients they serve. As in our previous studies, we found inconsistency in the beneficiary-level estimates of the social risk factors and minimal impact to MSPB Hospital scores. Moreover, we found statistically significant hospital-level effects when decomposing the effects of select social risk factors between hospitals and beneficiaries.

[1] University of Wisconsin School of Medicine Public Health. 2015 Area Deprivation Index v2.0. Downloaded from <https://www.neighborhoodatlas.medicine.wisc.edu/> February 24, 2020.

[2] Agency for Healthcare Research & Quality, Centers for Medicare & Medicaid Services, and RTI International. "Creation of New Race-Ethnicity Codes and Socioeconomic Status (SES) Indicators for Medicare Beneficiaries." Research Triangle Park, 2008. <https://archive.ahrq.gov/research/findings/final-reports/medicareindicators/index.html>

[3] Note that SRF testing occurred over a smaller set of beneficiary episodes than most other testing as approximately 1.7 percent of beneficiary episodes with missing income/employment ACS data were excluded from SRF studies.

IM.1.5. If no or limited data on disparities from the measure as specified is reported in IM.1.4., then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations.

N/A

IM.2. Measure Intent

IM.2.1. Describe intent of the measure and its components/ Rationale (including any citations) for analyzing variation in resource use in this way.

The MSPB Hospital measure aims to incentivize hospitals to coordinate care and reduce unnecessary utilization during the period immediately prior to, during, and in the 30 days after a hospital discharge. Because a hospital's MSPB Hospital measure score is based on all Medicare Part A and Part B claims data for episodes during the period of performance and is not condition-specific, the MSPB Hospital measure evaluates hospitals' efficiency across all conditions and admissions. The all-cause nature of the MSPB Hospital measure makes the measure relevant to a large number of hospitals, maximizing its impact. The effect of patient health status and demographics on episode spending is accounted for by the MSPB Hospital's risk adjustment methodology. One can measure whether hospitals provide efficient care by examining the MSPB Hospital measure alone as well as in concert with a variety of quality of care measures already reported on CMS' Hospital Compare webpage and developed as part of CMS's Hospital VBP Programs.

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 sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.***

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):

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

Care Coordination

Safety : Overuse

De.7. Care Setting (Select all the settings for which the measure is specified and tested):

Inpatient/Hospital

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.)

<WebPageURLExists

nodeType="1">https://www.qualitynet.org/files/5f1b3bd12bd4670021abc1b4?filename=MSPB_Hospital_MIF_2020.pdf

S.2. Type of resource use measure *(Select the most relevant)*

Per episode

S.3. Level of Analysis *(Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED):*

Facility

S.4. Target Population Category *(Check all the populations for which the measure is specified and tested if any):*

S.5. Data Source *(Check ONLY the sources for which the measure is SPECIFIED AND TESTED).*

If other, please describe in S.5.1.

Assessment Data

Claims

Enrollment Data

Other

S.5.1. Data Source or Collection Instrument *(Identify the specific data source or data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.)*

Medicare Part A and Part B claims data: Part A and B claims data are used to build MSPB Hospital episodes, calculate episode costs, and construct risk adjusters. CMS Office of Information Systems (OIS) maintains a detailed Medicare Claims Processing Manual available at the following URL: <https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs-Items/CMS018912>.

Medicare Enrollment Database (EDB): This is used to determine beneficiary-level exclusions and supplemental risk adjusters, specifically Medicare Parts A, B, and C enrollment; primary payer; disability status; end-stage renal disease (ESRD); beneficiary birth dates; and beneficiary death dates.

Minimum Data Set (MDS): The MDS is used to create the Long Term Care Indicator variable in risk adjustment. Data documentation for the MDS is available at the following URL: <https://www.resdac.org/cms-data/files/mds-3.0>.

We used additional data sources for measure testing purposes:

- American Community Survey (ACS): This is used for evaluating social risk factors. <https://www.census.gov/programs-surveys/acs/technical-documentation/summary-file-documentation.html>.
- Common Medicare Environment (CME) database: This is used for evaluating social risk factors. <https://www.cdwdata.org/documents/10280/19002256/medicare-enrollment-impact-of-conversion-from-edb-to-cme.pdf>.
- Area Deprivation Index (ADI): University of Wisconsin School of Medicine Public Health. 2015 Area Deprivation Index v2.0. Downloaded from <https://www.neighborhoodatlas.medicine.wisc.edu> February 24, 2020.

S.5.2. Data Source or Collection Instrument Reference *(available at measure-specific Web page URL identified in S.1 OR in the file attached here) (Save file as: S_5_2_DataSourceReference)*

2021-01-07-nqf-testing-appendix-mspb-hospital-v5.xlsx

S.6. Data Dictionary or Code Table *(Please provide a web page URL or attachment if exceeds 2 pages. NQF strongly prefers URLs. Attach documents only if they are not available on a web page.)*

Data Dictionary:

URL: The Research Data Assistance Center (ResDAC) maintains Medicare claims and administrative data dictionaries. <https://www.resdac.org/file-availability-vrdc>. CMS maintains the Medicare Enrollment Database and data dictionary: edbonline@cms.hhs.gov

Please supply the username and password:

Attachment: S_6_Data_Dictionary-637456479620999164.xlsx

Code Table:

URL:

Please supply the username and password:

Attachment: S_6_Code_Table.xlsx

Construction Logic

S.7.1. Brief Description of Construction Logic

If applicable, summarize the general approach or methodology to the measure construction. This is most relevant to measures that are part of or rely on the execution of a measure system or applies to multiple measures.

The MSPB Hospital measure evaluates hospitals' risk-adjusted episode costs relative to the risk-adjusted episode costs of the national median hospital.

The MSPB Hospital measure methodology first identifies hospital discharges occurring between January 1 and December 1 of a calendar year and that occur at acute care hospitals paid under the Medicare's IPPS. A set of exclusion criteria, detailed in Sections S.7.2 and S.9.1, are applied to these discharges to promote measure population comparability.

The measure methodology then defines MSPB Hospital episode timeframes, which span from the 3-days prior to a hospitalization, a hospitalization period, and 30-days following hospitalization discharge.

Third, all Medicare Part A and Part B standardized costs for services initiated during an MSPB Hospital episode are then summed to provide the total observed episode cost and risk-adjusted to provide the total expected episode cost.

Finally, MSPB Hospital measure is calculated for each acute care IPPS hospital. The numerator for a hospital's MSPB Hospital measure is the average ratio of observed episode cost to expected episode cost across all episodes from a hospital, multiplied by the average observed cost from all hospital episodes nationwide. The numerator is also referred to as the MSPB Hospital Amount. The denominator for a hospital's MSPB Hospital measure is the episode-weighted median MSPB Hospital Amount across all hospitals nationally.

S.7.2. Construction Logic (*Detail logic steps used to cluster, group or assign claims beyond those associated with the measure's clinical logic.*)

STEP 1: Define and Trigger Episodes

Episodes are opened, or triggered, by admissions to inpatient hospitals during a performance period. The episode window starts 3 days prior to this index admission and ends 30 days after the hospital discharge. A 90-day lookback period directly before the episode start date is used to check beneficiary enrollment information for episode exclusions and beneficiary pre-existing health characteristics used for risk adjustment. The episode is attributed to the hospital where the triggering admission occurred.

STEP 2: Standardize Claim Payments

Medicare Part A and B costs occurring during episodes are standardized to promote cost comparability while preserving differences that result from healthcare delivery choices. This standardization process, also referred to as payment standardization, adjusts the allowed charge for services by removing geographic differences (e.g., due to labor costs) and adjustments from special Medicare programs (e.g., graduate medical education and disproportionate share payments).

Payment standardization is applied to several measures, including the MSPB Hospital measure, and is detailed at <https://www.resdac.org/articles/cms-price-payment-standardization-overview>

STEP 3: Apply Exclusion Criteria

Exclusions that are based on beneficiary or hospitalization characteristics are applied to promote episode comparability and completeness. Episodes are excluded from the MSPB Hospital measure if they meet any of the following conditions:

- The beneficiary has a primary payer other than Medicare during the episode window or in the 90-day lookback period
- Beneficiary was not enrolled in Medicare Parts A and B, or was enrolled in Part C, during the 90-day lookback period and episode window
- The beneficiary's death occurred during the episode.
- The index admission for the episode did not occur in a subsection (d) hospital paid under the Inpatient Prospective

Payment System or occurred in a Maryland hospital.

- The index admission for the episode is involved in an acute-to-acute hospital transfer (i.e., the admission ends in a hospital transfer or begins because of a hospital transfer).
- The index admission inpatient claim indicates a \$0 actual payment or a \$0 standardized payment.

STEP 4: Calculate Observed Episode Cost

Observed episode cost is the sum of all the standardized Medicare claims payments (allowed amounts) for services initiated during the MSPB Hospital episode, between 3-days prior to the hospital admission until 30-days after discharge.

The costs for Medicare Part A and B services that are initiated during an episode and extend in duration beyond the episode are not prorated. Thus, for example, if a patient begins Inpatient Rehabilitation Facility (IRF) care within 30-days of discharge from an index admission, then the episode will contain the full Medicare cost of that IRF claim.

STEP 5: Calculate Expected Episode Cost

Expected episode cost is calculated through risk adjustment models to account for different levels of care beneficiaries may require due to comorbidities, disability, age, and other risk factors. A separate risk adjustment model is estimated for episodes within each Major Diagnostic Category (MDC), which is determined by the MS-DRG of the index admission. This model includes variables from the CMS Hierarchical Condition Category Version 22 (CMS-HCC V22) 2016 Risk Adjustment Model and other standard risk adjusters to capture beneficiary characteristics.

Steps for defining risk adjustment variables and estimating the risk-adjusted expected episode cost are as follows:

- Define HCC and patient characteristic-related risk adjusters using Medicare Parts A and B claims in the 90-day lookback period from the episode start date.
- Define other risk adjusters that rely upon Medicare beneficiary enrollment and assessment data as follows:
 - o Identify beneficiaries who are originally “Disabled without end-stage renal disease (ESRD)” or “Disabled with ESRD” using the original reason for joining Medicare field in the Medicare beneficiary enrollment database.
 - o Identify beneficiaries with ESRD if their enrollment indicates ESRD coverage, ESRD dialysis, or kidney transplant in the Medicare beneficiary enrollment database in the 90-day lookback period.
 - o Identify beneficiaries who are resident in a long-term care institution (90 days without having been discharged for 14 days) as of the episode start date using MDS assessment data.
- Categorize beneficiaries into age ranges using their date of birth information in the Medicare beneficiary enrollment database.
- Calculate an ordinary least squares (OLS) regression model to estimate the relationship between all the risk adjustment variables and the dependent variable, the standardized observed episode cost, to obtain the expected episode cost. A separate OLS regression is run for each episode MDC group nationally.
- Winsorize the expected episode cost by assigning the value of expected episode cost at the 0.5th percentile of the distribution for episodes within the same MDC to all episodes with expected episode costs below the 0.5th percentile.
- Renormalize values by multiplying each episode’s winsorized expected cost by the ratio of the MDC group’s average observed cost and the MDC group’s average winsorized expected cost.
- Exclude episodes with outlier residuals to obtain finalized expected episode cost. This step is performed across all episodes regardless of the MDC group.
 - o Calculate each episode’s residual as the difference between the observed cost and the re-normalized, winsorized expected cost computed above.
 - o Exclude episodes with residuals below the 1st percentile or above the 99th percentile of the residual distribution.
 - o Renormalize all remaining episodes by multiplying their cost by the ratio of the average observed episode cost and the average winsorized expected cost when excluding outliers.

STEP 6: Calculate Measure Scores

The MSPB Hospital measure is calculated for each hospital as the average ratio of observed episode cost to expected episode cost across all episodes from that hospital, multiplied by the average observed cost from all hospital episodes nationwide. The numerator is also referred to as the MSPB Hospital Amount. The denominator for a hospital’s MSPB Hospital measure is the episode-weighted median MSPB Hospital Amount across all hospitals nationally.

The MSPB Hospital measure methodology presented in this Intent to Submit form and accompanying Testing Attachment differs from the methodology previously endorsed by NQF in 2016 and that is in current use in CMS programs in three ways. First, the

MSPB Hospital Amount, as calculated in Step 6, now imposes equal weight to all risk-adjusted hospital episodes by using the average ratio of observed to expected episode costs instead of the ratio of average observed episode costs to average expected episode costs. Second, the refined measure presented in this form expands the coverage of episodes included in the MSPB Hospital measure by allowing acute care re-hospitalizations that occur within 30-days of a hospital discharge to trigger MSPB episodes (Step 1). While the cost of such readmission events were captured in the original methodology, [1]they were not permitted to initiate new MSPB Hospital episodes. Third, the refined methodology adds into the risk adjustment process (Step 5) a control variable that accounts for these newly triggered admissions occurring within 30 days of another index hospitalization discharge date, ensuring that a hospital's risk-adjusted episode cost on these newly triggered episodes is accurately estimated.

[1] Specifically, in the original MSPB Hospital methodology, the cost of such a readmission event would be captured in the preceding index admission's 30 day post-discharge period.

S.7.2a. CONSTRUCTION LOGIC ATTACHMENT or URL: If needed, attach supplemental documentation (Save file as: S_7_2_Construction_Logic). All fields of the submission form that are supplemented within the attachment must include a summary of important information included in the attachment and its intended purpose, including any references to page numbers, tables, text, etc.

URL: See URL provided in Section S.1

Please supply the username and password:

Attachment:

S.7.3. Concurrency of clinical events, measure redundancy or overlap, disease interactions *(Detail the method used for identifying concurrent clinical events, how to manage them, and provide the rationale for this methodology.)*

The MSPB Hospital measure includes Medicare Part A and Part B services that are furnished to a beneficiary during the episode. The MSPB Hospital measure avoids redundancy of clinical events by counting each service once within an episode.

The MSPB Hospital measure allows episode overlap in cases of acute care hospital readmissions. Example: Consider a patient who is discharged from Hospital A and is admitted to Hospital B within 30 days of discharge from Hospital A. The first hospitalization would trigger an MSPB Hospital episode that is attributed to Hospital A and the second hospitalization would trigger an MSPB Hospital episode that is attributed to Hospital B. As that second hospitalization occurred within 30-days of discharge from the first hospitalization, the cost of the second hospitalization would be included as part of Hospital A's MSPB episode cost. The cost of the second hospitalization is also included in Hospital B's episode. As such, the second hospitalization is counted only once in each episode and allows the MSPB Hospital measure to ensure continuous accountability among providers and throughout a beneficiary's trajectory of care. As noted in Section S.7.1 of this document, the MSPB Hospital measure methodology, as previously endorsed by NQF in 2016 and as currently used by CMS, did not allow the second hospitalization in this example to trigger a new episode.

The MSPB Hospital measure accounts for disease interactions through its risk adjustment model, which is based on the CMS Hierarchical Condition Category Version 22 (CMS-HCC V22) 2016 model. In addition to the HCCs, the model includes disease interactions (e.g., Cancer * Immune Disorders). Further details about the risk adjustment model and disease interaction terms are included in Section S.8.2.

S.7.4. Complementary services *(Detail how complementary services have been linked to the measure and provide rationale for this methodology.)*

An episode includes all services from the 3 days prior to a hospital admission to promote MSPB Hospital episode consistency in potentially complementary services, regardless of the diagnosis code or type of pre-admission services that may occur.

Specifically, diagnostic services and non-diagnostic services related to the reason for admission are captured in the inpatient diagnosis-related group (DRG) payment for the hospitalization when they are performed by the hospital during the 3 days prior to admission. However, diagnostic services or non-diagnostic services related to the reason for admission that are performed by a provider other than the hospital are not captured in the inpatient DRG payment and are paid separately under Medicare. Furthermore, non-diagnostic services that appear to be unrelated to the reason for admission are also not captured in the inpatient DRG payment and are paid separately under Medicare. The MSPB Hospital episode includes all services from 3 days prior to ensure that all costs are included in the measure. For additional discussion, please refer to S.8.4., which details the rationale for the construction of the MSPB

Hospital episode.

S.7.5. Clinical hierarchies *(Detail the hierarchy of codes or condition groups used and provide rationale for this methodology.)*

Clinical hierarchies are embedded in the risk adjustment model, described in Section S.7.2 and in more detail in Sections S.8.4 and S.8.5. The MSPB Hospital measure uses variables from CMS' Hierarchical Condition Category (HCC) model. This approach is adopted to ensure sufficient capture of the patient's comorbid disposition prior to the index hospital admission and allow more comprehensive risk adjustment of comorbid factors. The model suppresses HCCs for less severe manifestations of a conditions when evidence for the more severe condition is found to prevent collinearity in regression estimation.

S.7.6. Missing Data *(Detail steps associated with missing data and provide rationale for this methodology (e.g., any statistical techniques to impute missing data))*

:

Since the MSPB Hospital measure uses claims data, we expect a high degree of data completeness.

CMS has in place several auditing programs used to assess overall claims code accuracy, to ensure appropriate billing, and to recoup any overpayments. CMS routinely conducts data analysis to identify potential problem areas and detect fraud, and audits important data fields used in this measure, including diagnosis and procedure codes and other elements that are consequential to payment. Specifically, CMS works with Zone Program Integrity Contractors (ZPICs), and formerly Program Safeguard Contractors (PSCs), to ensure program integrity; the agency also uses Recovery Audit Contractors (RACs) to identify and correct for underpayments and overpayments.

CMS also uses the Comprehensive Error Rate Testing (CERT) Program to ensure that Medicare payments are correct in accordance with coverage, coding, and billing rules. Between 2005 and 2017, CERT estimates that proper payment, which is payments that met Medicare coverage, coding, and billing rules, ranged from 87.3 to 96.4 percent of total payments each year. The FY 2018 Medicare FFS program proper payment rate was 91.9 percent.[1] CMS continues to perform successful corrective actions and give providers additional education to ensure accurate billing.

To further ensure the completeness and accuracy of data for each beneficiary who opens an episode, the measure excludes episodes where beneficiary date of birth information (an input to the risk adjustment model) cannot be found in the EDB or the beneficiary death date occurs before the episode trigger date (an indication of errant data).

The MSPB Hospital measure also excludes episodes where the beneficiary is enrolled in Medicare Part C or has a primary payer other than Medicare in the 90-day lookback period and episode window. In such situations, Medicare Parts A and B claims data may not capture the complete clinical profile for the beneficiary needed to capture the clinical risk of the beneficiary in risk adjustment. Furthermore, Parts A and B claims data may not capture all Medicare resource use if some portion of the beneficiary's care is covered under Medicare Part C. These steps ensure that we have complete claims data for beneficiaries included in the MSPB Hospital measure.

To ensure claims completeness and inclusion of any corrections, the measure was developed and calculated using data with a three-month claim run out from the end of the performance period.

[1] Comprehensive Error Rate Testing (CERT) Program. "Appendices Medicare Fee-for-Service 2018 Improper Payments Report". Table A6. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Monitoring-Programs/Medicare-FFS-Compliance-Programs/CERT/Downloads/2018MedicareFFSSupplementalImproperPaymentData.pdf>

S.7.7. Resource Use Service Categories (Units) *(Select all categories that apply)*

Inpatient services: Inpatient facility services

Inpatient services: Evaluation and management

Inpatient services: Procedures and surgeries

Inpatient services: Imaging and diagnostic

Inpatient services: Lab services

Inpatient services: Admissions/discharges

Ambulatory services: Outpatient facility services

Ambulatory services: Emergency Department

Ambulatory services: Pharmacy

Ambulatory services: Evaluation and management

Ambulatory services: Procedures and surgeries

Ambulatory services: Imaging and diagnostic

Ambulatory services: Lab services

Durable Medical Equipment (DME)

S.7.8. Identification of Resource Use Service Categories (Units)

(For each of the resource use service categories selected above, provide the rationale for their selection and detail the method or algorithms to identify resource units, including codes, logic and definitions.)

The MSPB Hospital measure assesses the standardized allowed amounts of services during an MSPB episode, which includes all Medicare Parts A and B claims that occur 3 days prior to the index admission through 30 days after the hospital discharge. This identification approach allows the MSPB Hospital measure to capture the breadth of service categories that can be attributed to the hospital where the beneficiary's episode of care was initiated.

S.7.8a. If needed, provide supplemental resource use service category specifications in either URL (preferred) or as an attachment (Save file as S.7.8a_RU_Service_Categories):

URL: See URL provided in Section S.1

Please supply the username and password:

Attachment:

Clinical Logic

S.8.1. Brief Description of Clinical Logic (Briefly describe your clinical logic approach including clinical topic area, whether or not your account for comorbid and interactions, clinical hierarchies, clinical severity levels and concurrency of clinical events.)

Objective: The MSPB Hospital measure aims to improve care coordination and care quality in the period between 3 days prior to an acute inpatient hospital admission through the period 30 days after discharge.

Clinical Topic Area: Inpatient Admissions, all conditions

Accounting for Comorbidities: Application of a variant of the CMS-HCC risk adjustment model. The model includes a full set of interaction terms between comorbidities and MDC of the index admission, as well as a select number of interaction terms between comorbidities.

Measure of Episode Severity: Risk adjustment model includes indicators for the MS-DRG of the index admission.

Concurrency of Clinical Events. The MSPB Hospital episode spans the period 3 days prior to the index hospital admission through 30-days post-discharge. All Medicare Part A and B claim-based events initiated during this period are included in the MSPB Hospital episode.

S.8.2. Clinical Logic *(Detail any clustering and the assignment of codes, including the grouping methodology, the assignment algorithm, and relevant codes for these methodologies.)*

Objective: The MSPB Hospital measure aims to improve care coordination in the period between 3 days prior to an acute inpatient hospital admission through the period 30 days after discharge. The MSPB Hospital measure recognizes lower costs associated with a reduction in unnecessary services, preventable complications, readmissions, and shifting post-acute care from more expensive to less expensive services when appropriate.

Grouping methodology: The MSPB Hospital measure evaluates resource use through the unit of MSPB Hospital episodes. The MSPB Hospital episodes are constructed by including all Medicare Part A and Part B claims with a start date falling between 3 days prior to an acute inpatient hospital admission through the period 30 days after discharge. Episodes that may provide an incomplete or non-comparable view of episodes spending, such as when a beneficiary enrolled in a Medicare Advantage plan, are excluded from measure calculation. A full set of exclusion criteria are provided in Section S.7.2.

Cost Calculation: The MSPB Hospital amount includes the cost of services performed by hospitals and other healthcare providers during an MSPB Hospital episode, which is comprised of the period 3 days prior to an inpatient PPS hospital admission (index admission) through 30-days post-hospital discharge. All costs are payment standardized to control for geographic variation in Medicare reimbursement rates. To account for the clinical severity of patients, standardized costs are risk adjusted at the Major Diagnostic Category (MDC) level, using a combination of clinical indicators of CMS' Hierarchical Condition Category Version 22 (CMS-HCC V22) risk adjustment model (patient-level), an indicator of the severity of the index hospitalization (hospital stay, MS-DRG), an indicator of whether an index hospitalization is initiated within 30 days of another inpatient stay, indicators that rely on Medicare beneficiary enrollment and assessment data (patient level, e.g., ESRD coverage), and combinations thereof. The risk adjustment models are run within each MDC and with these indicators to support comparability across episodes. Further, the risk adjustment indicators are assessed over the 90 days preceding the episode to ensure that clinical events occurring near the episode window are captured and to minimize the loss of data for patients with a limited history of Medicare claims and administrative data. The indicators used for risk adjustment and the methodology are detailed in the Measure Information Form linked in Section S.1.

S.8.3. Evidence to Support Clinical Logic Described in S.8.2 *Describe the rationale, citing evidence to support the grouping of clinical conditions in the measurement population(s) and the intent of the measure (as described in IM3)*

Grouping Methodology:

The MSPB Hospital measure methodology defines an MSPB Hospital episode as all claims with start dates falling between 3 days prior to an IPPS hospital admission (index admission) through 30-days post-hospital discharge and does not separate concurrent events. It includes services initiated in the period 3-days prior to hospital admission, during the hospitalization, and 30 days after hospital discharge to emphasize the importance of care transitions and care coordination in improving patient care and reducing unnecessary readmissions.

This episode grouping approach is consistent the MSPB Hospital measure's original intent and provides continued value as newer cost measures focus on condition- and procedure-specific episodes of care. Indeed, the MSPB Hospital measure's episode definition is consistent with MedPAC's response to the FY 2012 IPPS proposed rule in which they recommended that "both CMS and MedPAC should focus on creating parallel incentives for hospitals and post-acute care providers to work to reduce readmissions. The end goal is to align incentives across the sectors to encourage cooperation among providers to improve the quality of the episode of care, reduce the cost of the episode of care, and reduce the number of unnecessary inpatient episodes." [1] More recently, in 2016, MedPAC noted their belief that hospitals be "rewarded or penalized based on a broad all-condition 30-day cost measure", that "cost measures used should be as broadly based as possible" to "ensure reliability and provide a broad incentive to reduce costs across all types of services", and their support for the use of the MSBP Hospital measure in CMS programs [2]. This episode grouping approach is also consistent with NQF's theoretical definition of an episode of care in that it is "...a series of temporally contiguous healthcare services related to the treatment of a given spell of illness or provided in response to a specific request by the patient or other relevant entity." [3]

Cost Calculation:

The inpatient setting is an area of high spending where increased cost effectiveness can be impactful in keeping Medicare spending affordable: in 2016, Medicare FFS paid \$183 billion for approximately 10 million Medicare inpatient admissions and 200 million outpatient services, which reflects a 2.3 percent increase in hospital spending per FFS beneficiary between 2015 and 2016 [4]. Of the \$190 billion that the Medicare FFS program and FFS beneficiaries paid to 4,700 short-term acute care hospitals in 2018 \$121 billion

was for inpatient stays – an increase of 1.1 percent from 2017 [5]. Given that the inpatient hospital setting is such an important contributor to overall Medicare spending, it is necessary to measure costs related to hospitalizations.

The MSPB Hospital measure offers opportunity for improvement where providers can exercise influence on costs during the hospitalization or contiguous after care. Through its episode grouping and cost capture, providers can assess the cost of care for patients, identify particularly costly episode characteristics; and, with quality measures, determine the value of care provided to patients. To promote these activities, the clinical logic for the model used to risk adjust episode cost affords equitable patient episode and measure comparisons by controlling for patient clinical characteristics prior to episode start. Patient comorbidities are associated with higher resource use in the inpatient setting, such as through additional hospitalization charges, longer stays, and higher readmission rates. These include comorbidities for chronic conditions; for example, diabetes, hypertension, and heart failure have been found to be associated with higher levels of resource use [6,7]. Also, psychiatric comorbidities (e.g., depression, anxiety, dementia, substance use, bipolar disorders) have been associated with higher readmission rates for common inpatient treatment.[8,9] Medicare beneficiaries with multiple comorbidities account for a disproportionate amount of expenditure, including through additional resource use and length of stays [10,11]. As such, it is important to account for patient comorbidities and disease interactions in a resource use measure.

[1] FY2012 IPPS Final Rule <https://www.govinfo.gov/content/pkg/FR-2011-08-18/pdf/2011-19719.pdf>

[2] MedPAC Letter to Acting Administrator RE: File Code CMS-1655-P

<http://www.medpac.gov/docs/default-source/comment-letters/medpac-comment-on-cms-s-proposed-rule-on-hospital-inpatient-prospective-payment-systems-for-acute-ca.pdf?sfvrsn=0>

[3] National Quality Forum. (2010). Measurement framework: Evaluating efficiency across patient-focused episodes of care. In Patient-Focused Episodes of Care. Retrieved from http://www.qualityforum.org/Publications/2010/01/Measurement_Framework__Evaluating_Efficiency_Across_Patient-Focused_Episodes_of_Care.aspx

[4] MedPAC. (2018) Report to the Congress: Medicare Payment Policy.”

[5] MedPAC. (2020) Report to the Congress: Medicare Payment Policy.”

[6] Boehme J, McKinley S, Michael Brunt L, Hunter TD, Jones DB, Scott DJ, Schwaitzberg SD.

Patient comorbidities increase postoperative resource utilization after laparoscopic and open cholecystectomy. *Surg Endosc.* 2016 Jun;30(6):2217-30. doi: 10.1007/s00464-015-4481-6. Epub 2015 Oct 1.

[7] Weeks, D L., Daratha KB, and Towle LA. “Diabetes Prevalence and Influence on Resource Use in Washington State Inpatient Rehabilitation Facilities, 2001 to 2007.” *Archives of Physical Medicine and Rehabilitation* 90, no. 11 (November 2009): 1937–43. <https://doi.org/10.1016/j.apmr.2009.06.008>.

[8] Sayers, SL., Hanrahan N, Kutney A, Clarke S, Reis BF, and Riegel B. “Psychiatric Comorbidity and Greater Hospitalization Risk, Longer Length of Stay, and Higher Hospitalization Costs in Older Adults with Heart Failure.” *Journal of the American Geriatrics Society* 55, no. 10 (October 2007): 1585–91. <https://doi.org/10.1111/j.1532-5415.2007.01368.x>

[9] Ahmedani, B. K., J. Hu, D. R. Nerenz, and L. K. Williams. “Psychiatric Comorbidity and 30-Day Readmissions after Hospitalization for Heart Failure, AMI, and Pneumonia.” *American Psychiatric Association* 66, no. 2 (February 1, 2015): 134–40

[10] Sorace, J, Millman M, Bounds M, Collier M, Wong H, Worrall C, Kelman J, and MaCurdy T. “Temporal Variation in Patterns of Comorbidities in the Medicare Population.” *Population Health Management* 16, no. 2 (2013): 120–24. <https://doi.org/10.1089/pop.2012.0045>

[11] Pugely, A J., Martin C T, Gao Y, Belatti D A, and Callaghan J J. “Comorbidities in Patients Undergoing Total Knee Arthroplasty: Do They Influence Hospital Costs and Length of Stay?” *Clinical Orthopaedics and Related Research*® 472, no. 12 (May 2014): 3943–50. <https://doi.org/10.1007/s11999-014-3918-x>

S.8.3a. CLINICAL LOGIC ATTACHMENT or URL: If needed, attach supplemental documentation (Save file as: S_8_3a_Clinical_Logic). All fields of the submission form that are supplemented within the attachment must include a summary of important information included in the attachment and its intended purpose, including any references to page numbers, tables, text, etc.

URL: See URL provided in Section S.1

Please supply the username and password:

Attachment:

S.8.4. Measure Trigger and End mechanisms (Detail the measure's trigger and end mechanisms and provide rationale for this methodology)

Trigger Event: admission to acute care hospital (“index admission”)

MSPB Hospital Episode Start Date: 3 days prior to index inpatient hospital admission

MSPB Hospital Episode End Date: 30 days after discharge from the index inpatient hospital admission

The triggering and ending mechanism allow consistent capture of services initiated during the period directly surrounding an inpatient stay. The static timing of the episode start and end dates and use of all Medicare Part A and B claims minimize the complexity of this measure, making the easily implementable and readily actionable.

The 3 days prior to index admission period is motivated by Medicare’s differential payment policies on services leading to an inpatient admission. Specifically, diagnostic services and non-diagnostic services that are related to the reason for inpatient admission and performed by the hospital are paid under the Inpatient Prospective Payment System (IPPS), while services furnished during this period are paid separately from the hospital payment if they are performed by a provider other than the hospital.

Services captured 30 days after a hospital discharge emphasize the importance of care transitions and care coordination. The length of this period is long enough to capture costs related to the hospital stay, without being so long as to reduce the attributed providers’ influence, aligns with other measures, and corresponds to identified care coordination and cost surveillance needs, as noted in Section S.8.3. Trigger Event: Inpatient admission, with the exception of acute-to-acute transfer cases

Start Date: 3 days prior to index inpatient admission

End Date: 30 days after discharge from the index hospital admission

As discussed in S.8.2., an MSPB episode is defined as all claims with start date falling between 3 days prior to an inpatient PPS hospital admission (index admission) through 30 days post hospital discharge. In other words, the MSPB Measure’s trigger is an inpatient PPS hospital admission, and the start is 3 days prior to an index admission, while the end is 30 days post hospital discharge. Admissions that occur within 30 days of discharge from another index admission and admissions during which a beneficiary is transferred from one acute hospital to another are not considered to be index admissions. Hospitalizations that occur within the 30-day post discharge window of the index admission are attributed to the index admissions. On the other hand, hospitalizations that begin more than 30 days after the beneficiary is discharged from a hospital trigger a new MSPB episode as an index admission.

Diagnostic services and non-diagnostic services related to the reason for admission are captured in the inpatient DRG payment for the hospitalization when they are performed by the hospital during the 3 days prior to admission (http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Three_Day_Payment_Window.html); however, if, during the 3 days prior to a hospital admission, a beneficiary receives diagnostic services from a provider other than the hospital or non-diagnostic services that appear on the claim to be unrelated to the reason for admission, those services are separately payable under Medicare. To promote MSPB episode consistency regardless of where these complementary services take place and to incorporate payments for services that may appear on the face of a claim to be unrelated to the original admission (as described in section S.8.2), a 3-day window prior to the index admission is included at the start of the MSPB episode. The MSPB time frame also includes services that take place during the time period 30 days post-hospital discharge in order to emphasize the importance of care transitions and care coordination in improving patient care. As a result, services whose claim start dates fall between 3 days prior to an index admission through 30 days post hospital discharge are attributed to that index admission.

The advantages of this measure trigger and end mechanism are twofold. First, this approach is simple and easily-implementable since it includes all claims during the MSPB episode. An alternative would be to create separate episodes for each type of hospital admission. Although episode-based approaches are attractive for a number of purposes, the MSPB aims to evaluate overall hospital efficiency level across all types of care and creating are over 700 types of hospitals admission episodes (i.e., there are over 700 MS-

DRGs) is not practical. Second, the MSPB approach incorporates costs due to care complications unrelated to the original admission, encouraging hospital care coordination. For example, if a beneficiary is admitted for AMI but develops pneumonia due to poor care coordination, these costs will be captured in the episode generated by the initial AMI index admission.

S.8.5. Clinical severity levels *(Detail the method used for assigning severity level and provide rationale for this methodology)*

Clinical severity levels are embedded in the risk adjustment methodology, which is based on the CMS-HCC model. That model, described in Section S.8.6, includes variables indicating a patient's health status at the start of the episode. In addition, the risk adjustment model adjusts for the MS-DRG of the index admission that triggered the episode, which reflects severity levels for that type of admission as there are separate MS-DRGs to indicate Complication and Comorbidity, Major Complication and Comorbidity, or no Complication and Comorbidity/Major Complication and Comorbidity. The risk adjustment model also includes an indicator for whether the index admission was triggered within the 30 day post discharge period of another inpatient stay.

In addition, the risk adjustment model includes status indicator variables for whether the beneficiary qualifies for Medicare through Disability or has ESRD. The model also includes an indicator of whether the beneficiary was receiving long-term care as of the start of the episode, defined as 90 days in a long-term care facility without being discharged to community for 14 days. Beneficiaries who need to reside in long-term care facilities typically require more intensive care than beneficiaries who live in the community. These enrollment and long-term care status variables are non-diagnostic based indicators of severity of illness.

S.8.6. Comorbid and interactions *(Detail the treatment of co-morbidities and disease interactions and provide rationale for this methodology.)*

Comorbidities and severity of illness are measured using HCCs, indicators of enrollment and long-term care status, and disease interactions. The risk adjustment model for the MSPB Hospital measure broadly follows the CMS-HCC risk adjustment methodology used in the Medicare Advantage (MA) program. The CMS-HCC model was selected based on previous studies evaluating its appropriateness for use in risk adjusting Medicare claims data. The MSPB Hospital model includes 79 HCC indicators derived from the beneficiary's Parts A and B claims during the period 90 days prior to the episode start date, used in the CMS-HCC Version 22 (V22) 2016 model. The MSPB Hospital risk adjustment model includes 12 age categorical variables.

As the relationship between comorbidities' episode cost may be non-linear in some cases (i.e., beneficiaries may also have more than one disease during a hospitalization episode), the model also takes into account a limited set of interactions between HCCs and/or enrollment status variables. The risk adjustment methodology includes only a limited set of interaction terms for two reasons. First, inclusion of too many interaction terms will over-fit the model. Second, the risk adjustment methodology broadly follows the established CMS-HCC risk adjustment methodology, which uses similar interaction terms.

Adjustments for Comparability

S.9.1. Inclusion and Exclusion Criteria *Detail initial inclusion/exclusion criteria and data preparation steps (related to clinical exclusions, claim-line or other data quality, data validation, e.g. truncation or removal of low or high dollar claim, exclusion of ESRD patients)*

:

The MSPB Hospital measure calculation is comprised of Medicare beneficiary episodes of care for beneficiaries and hospitals that do not meet population exclusion criteria. The population exclusion criteria promote comparability across the population captured by this measure. MSPB Hospital measure's risk adjustment, which includes winsorization for extreme values and outlier exclusion, further promotes measure comparability at its most granular level, the episode level.

Population Exclusions for Comparability.

As discussed in Section S.7.2, Step 3, the MSPB Hospital measure excludes episodes based on select hospitalization or beneficiary characteristics to foster comparability in service use and population captured by the measure. Specifically, the measure excludes episodes that meet any of the following criteria:

- The beneficiary has a primary payer other than Medicare during the episode window or in the 90-day lookback period
- The beneficiary was not enrolled in Medicare Parts A and B, or was enrolled in Part C, during the 90-day lookback period

and episode window

- The beneficiary's death occurred during the episode.
- The index admission for the episode did not occur in neither a subsection (d) hospital paid under the Inpatient Prospective Payment System (IPPS) or occurred in a Maryland hospital.
- The index admission for the episode is involved in an acute-to-acute hospital transfer (i.e., the admission ends in a hospital transfer or begins because of a hospital transfer).
- The index admission inpatient claim indicates a \$0 actual payment or a \$0 standardized payment.

The rationale and testing results for these exclusions are contained in the testing attachment, Section 2b2.

Statistical Adjustments for Comparability.

The MSPB Hospital measure also applies risk adjustment and statistical exclusions and renormalization to further ensure comparability. These adjustments are fully described in Step 5 of the construction methodology (Section S.7.2). The risk adjustment approach accounts for patient level variation prior to the index hospitalization and the severity of the index hospitalization through regression models. The statistical exclusions and renormalizations that follow cost predictions from these models ensure that cost distributions resulting from outlier exclusions remain true to population averages.

Specifically, as with the CMS-HCC model, the risk adjustment approach for this measure uses an ordinary least squares linear regression model. The predicted, or expected, cost is winsorized at 0.5th percentile to make sure episodes with unusually small predicted cost, which would lead to abnormally large O/E ratios, do not dominate certain providers' final score. The winsorized expected costs are renormalized to ensure the average expected episode cost is the same before and after winsorizing. Then, extremely low- or high-cost outlier episodes with residuals below the 1st percentile or above the 99th percentile are excluded to reduce the effect of these episodes that deviate the most from their expected values in absolute terms. The expected cost after excluding these outliers is again renormalized to ensure that average expected costs are the same after outlier removal.

S.9.2. Risk Adjustment Type (Select type)

Stratification by risk category/subgroup

If other:

S.9.3. Stratification Details/Variables (All information required to stratify the measure results including the stratification variables, definitions, specific data collection items/responses, code/value sets)

The MSPB Hospital measure is stratified by Major Diagnostic Category (MDC), which are mutually exclusive groups of MS-DRGs that correspond to an organ system (e.g., diseases and disorders of the digestive system) or cause (e.g., burns). There are 25 MDCs (numbered 01-25), and a Pre-MDC group for extremely resource intensive MS-DRGs. MS-DRGs within the numbered MDCs are largely determined by principal diagnosis, while MS-DRGs within the Pre-MDC group are determined by Operating Room procedures (e.g., organ transplant).

The MSPB Hospital measure's MDC stratification and risk adjustment model, which controls for episode MS-DRG, allows for equitable patient episode comparisons that preserve clinically meaningful distinctions in the beneficiary population within each MDC.

The risk adjustment variables included in the model are listed in document hyperlinked in Section S.1.

S.9.4 Costing method

Detail the costing method including the source of cost information, steps to capture, apply or estimate cost information, and provide rationale for this methodology.

Standardized pricing

The measure removes sources of variation in spending that are unrelated to healthcare delivery choices, as described in Section S.7.2. The methodology used to payment standardize the Medicare claims used to specify this measure is available for download ("CMS Price (Payment) Standardization") from the following URL: <https://www.resdac.org/articles/cms-price-payment-standardization-overview>

S.10. Type of score(Select the most relevant):

Ratio

Attachment

If other:

Attachment: [S10_sample_score_report.xlsx](#)

S.11. Interpretation of Score *(Classifies interpretation of a ratio score(s) according to whether higher or lower resource use amounts is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score, etc.)*

An MSPB Hospital measure that is less than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is less than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period. An MSPB Hospital measure that is greater than 1 indicates that a hospital's MSPB Hospital Amount (i.e. risk-adjusted spending) is greater than the national episode-weighted median MSPB Hospital Amount across all hospitals during a given performance period.

S.12. Detail Score Estimation *(Detail steps to estimate measure score.)*

As described Step 6 in Section S.7.2, the MSPB Hospital measure is calculated for each hospital as the average ratio of observed episode cost to expected episode cost across all episodes from that hospital, multiplied by the average observed cost from all hospital episodes nationwide. The numerator is also referred to as the MSPB Hospital Amount. The denominator for a hospital's MSPB Hospital measure is the episode-weighted median MSPB Hospital Amount across all hospitals nationally.

Reporting Guidelines

This section is optional and will be available for users of the measure as guidance for implementation and reporting.

S.13.1. Describe discriminating results approach

Detail methods for discriminating differences (reporting with descriptive statistics--e.g., distribution, confidence intervals).

The MSPB Hospital measure version under consideration has not been reported under the Hospital Value Based Purchasing Program. The revised MSPB Hospital measure's use in CMS programs, like the Hospital Value-Based Purchasing (VBP) program, is expected after legislative public reporting requirements for the Hospital Inpatient Quality Reporting and HVBP program are met. The version under consideration differs from the previously NQF-endorsed MSPB Hospital measure version that is in current use by CMS programs ("current version") in that the version under consideration allows acute care hospital readmissions to trigger a new MSPB episode and changes the calculation of the MSPB Amount (the measure score numerator) from a calculation based on the ratio of average observed episode cost to average expected episode cost to an average ratio of observed to expected episode cost (see the end of Section S.7.1 for more detail).

The distribution of all MSPB Hospital measure scores for in 2018 between both measure versions are provided below (current version versus revised version).

For all hospitals with an MSPB Hospital measure, the distribution is:

- Maximum : 2.03 vs. 2.00
- 90th percentile: 1.08 vs. 1.09
- 75h percentile: 1.03 vs. 1.03
- 50th percentile: 0.99 vs. 0.99
- 25th percentile: 0.94 vs. 0.94
- 10th percentile: 0.89 vs. 0.89
- Minimum : 0.31 vs. 0.32

And, for all hospitals with at least 25 episodes, the distribution is:

- Maximum : 1.53 vs. 1.68
- 90th percentile: 1.08 vs. 1.08
- 75h percentile: 1.03 vs. 1.03
- 50th percentile: 0.99 vs. 0.99
- 25th percentile: 0.94 vs. 0.94
- 10th percentile: 0.89 vs. 0.90
- Minimum : 0.48 vs. 0.49

A distribution of hospitals' MSPB measure values is provided to hospitals as part of their hospital-specific reports (HSRs). As noted in Section S.7.2., the denominator of the MSPB Hospital measure is weighted by the number of episodes; as a result, the (unweighted)

median MSPB Hospital measure score is not necessarily always equal to one.

The MSPB Hospital measure is also reported to hospitals with information about the national average measure and the state average measure for the specific state that the hospital is a part of. Hospitals can also see the national and state average observed and expected spending per MDC and the national and state percent of spending for each claim type within the episode window. With this information, hospitals can identify the areas where the observed and expected spending are most concentrated and is most different from the national and state average.

Because CMS uses the full population of Medicare Parts A and B claims data to calculate the MSPB Hospital measure and due to the large sample sizes, confidence intervals are of limited value. The calculated MSPB Hospital measure represents the true measure for the period of interest. A confidence interval is still of value in assessing the “statistical noise” in a hospital’s measure score, but the reliability metrics presented in this submission also formally assess the extent of “statistical noise” and the ability to distinguish between providers’ performance.

S.13.2. Detail attribution approach

Detail the attribution rules used for attributing resources/costs to providers (e.g., a proportion of total measure cost or frequency of visits during the measure's measurement period) and provide rationale for this methodology.

An MSPB Hospital episode is attributed to the hospital whose inpatient admission triggered the episode (Section S.8.4).

Hospitalizations eligible to start an MSPB Hospital episode must end in a discharge 30 days prior to the end of the period of performance to permit the collection of claim information during the post-discharge period. Further, as noted in S.9.1., acute-to-acute hospitalization transfers are not eligible to trigger an episode due to the uncertainty surrounding proper attribution of such episodes.

S.13.3. Identify and define peer group

Identify the peer group and detail how peer group is identified and provide rationale for this methodology.

All short-term acute inpatient prospective payment system (IPPS) hospitals. Short-term acute IPPS hospitals are hospitals in the 50 States and D.C. other than: psychiatric hospitals, rehabilitation hospitals, and long-term care hospitals. The measure also excludes inpatient facilities whose patients are predominantly under 18 years old, hospitals whose average inpatient length of stay exceeds 25 days, and hospitals involved extensively in treatment for or research on cancer. [1]

[1] The MSPB Hospital uses the CMS definition of a cancer hospital: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/PPS_Exc_Cancer_Hospasp.html

S.13.4. Sample size

Detail the sample size requirements for reporting measure results.

The revised MSPB Hospital measure’s use in CMS programs, like the HVBP program, is expected after legislative public reporting requirements for the Hospital Inpatient Quality Reporting and HVBP program are met. The current MSPB Hospital measure is publicly reported and used in HVBP payment determination for measure scores derived from at least 25 episodes and analysis of the revised MSPB Hospital measure indicates that the 25-episode case minimum for public reporting can remain unchanged.

The previously endorsed MSPB Hospital measure is publicly reported on Hospital Compare and used in the HVBP Program for eligible hospitals that have at least 25 episodes.

S.13.5. Define benchmarking and comparative estimates

Detail steps to produce benchmarking and comparative estimates and provide rationale for this methodology.

The MSPB Hospital measure can be scored against benchmarks for the purpose of inclusion in incentive payment or other performance measurement programs. In this way, value in healthcare can be recognized and incentivized. The Hospital VBP Program provides financial incentives to short-term acute hospitals based on their performance on selected quality measures. By measuring the cost of care through the MSPB Hospital measure, CMS aims to recognize hospitals that can provide high quality care at a lower cost to Medicare. Combined with the other quality measures that comprise the Total Performance Score (TPS) under the Hospital VBP Program, the MSPB Hospital measure allows CMS to assess the value of care and incentivize both achievement and improvement in efficiency.

Under the Hospital VBP Program, hospital performance on the MSPB Hospital measure will be determined using the higher of its achievement or improvement score, as described in the FY 2012 IPPS Final Rule at 76 FR 51654-56. The MSPB Hospital measure score will then be included in the hospital's Total Performance Score (TPS) within the Efficiency and Cost Reduction domain. For information on how the MSPB-Hospital measure score was incorporated into the Hospital VBP Program, please refer to the FY 2012 IPPS/LTCH PPS final rule: <http://www.gpo.gov/fdsys/pkg/FR-2011-08-18/pdf/2011-19719.pdf>.

Validity – See attached Measure Testing Submission Form

SA.1. Attach measure testing form

[2020-07-31-nqf-testing-form-mspb-hospital-v6-637318175300838758.docx](#)

Feasibility

F.1. 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).

F.1.1. Data Elements Generated as Byproduct of Care Processes.

Generated by and used by healthcare personnel during the provision of care, e.g., blood pressure, lab value, medical condition

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

If other:

F.2. 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.

F.2.1. 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 a combination of electronic sources](#)

F.2.1a. 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.

F.2.2. 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:

F.3. 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.

F.3.1. 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.

[CMS uses Medicare administrative claims data that hospitals submit to CMS for payment to calculate the MSPB Hospital measure. As a result, the required data are readily available and retrievable without undue burden. These claims data used are maintained by CMS's OIS. These data undergo additional quality assurance checks during measure development and maintenance. Specifically, CMS has in place several hospital auditing programs used to assess overall claims code accuracy, ensure appropriate billing, and for overpayment recoupment. CMS routinely conducts data analyses to identify potential problem areas and detect fraud. CMS also](#)

audits important data fields, including diagnosis and procedure codes, as well as other elements that are consequential to payment. Specifically, CMS works with Program Safeguard Contractors (PSCs)/Zone Program Integrity Contractors (ZPICs) to ensure program integrity; the agency also uses Comprehensive Error Rate Testing (CERT) Contractors to ensure that Medicare payments are correct. Between 2005 and 2015, CERT estimates that proper payment, which is payments that met Medicare coverage, coding, and billing rules, ranged from 87.3 to 96.4 percent of total payments each year, and 92.7 percent in FY2019.[1,2] CMS continues to perform successful corrective actions and give providers additional education to ensure accurate billing. To ensure claims completeness and inclusion of any corrections, the measure is calculated using data with a 3 month claims run-out from the end of the performance period. During the data preview for the MSPB Hospital measure, each hospital receives a Hospital-Specific Report (HSR) that provides information on the hospital's performance on the MSPB Hospital measure, as well as three supplementary hospital-specific data files (an index admission file, a beneficiary risk score file, and an MSPB Hospital episode file) related to the hospital's MSPB Hospital measure. Together, these files provide an overview of how the hospital performed on the MSPB Hospital measure as well as a summary of how hospitals in the state and in the nation performed. For example, each hospital's files provide the number of eligible admissions, average spending per episode, MSPB Hospital amount, and MSPB Hospital measure for the hospital as well as for the state and the nation. Additionally, each hospital's MSPB Hospital spending is broken into three categories (i.e., 3 days prior to index admission, during-index admission, and 30 days after hospital discharge), and within these categories, spending levels are broken down by claim type. For comparison, the state and national values for these breakdowns are given to hospitals as well. Further, each hospital's average observed spending and average expected spending (based on beneficiary age and health status) by Major Diagnostic Category (MDC) are presented in the hospital's HSR alongside analogous values at the state and national levels to allow the hospital to compare its case mix against the state and the nation. In addition to helping hospitals verify their MSPB Hospital measure scores and identify opportunities to improve efficiency, providing these files allows us to better communicate MSPB Hospital scores to hospitals and allows hospitals to provide informed feedback to the measure contractor and CMS.

[1] Comprehensive Error Rate Testing (CERT) Program. "Appendices Medicare Fee-for-Service 2015 Improper Payments Report". Table A6. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Monitoring-Programs/Medicare-FFS-Compliance-Programs/CERT/CERT-Reports-Items/Downloads/AppendicesMedicareFee-for-Service2015ImproperPaymentsReport.pdf>

[2] Comprehensive Error Rate Testing Program. "2019 Medicare Fee-for-Service Supplemental Improper Payment Data" <https://www.cms.gov/files/document/2019-medicare-fee-service-supplemental-improper-payment-data.pdf>

F.3.2. 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, and algorithm)?

There are no fees, licensing, or other requirements for use of the MSPB Hospital measure values and MSPB Hospital measure spending breakdowns made publicly available on Hospital Compare.

F.3.3. If there are any fees associated with the use of this measure as specified, attach the fee schedule here. (Save file as: F3_3_FeeSchedule)

Usability and Use

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making.

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.

U.1.1. Current and Planned Use

| Specific Plan for Use | Current Use (for current use provide URL) |
|-----------------------|---|
| Payment Program | Public Reporting |

U.1.2. 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

Program Name: Hospital Value-Based Purchasing Program

Sponsor: CMS

Purpose: The Hospital VBP program provides financial incentives to subsection (d) hospitals based on their performance on selected quality measures. Section 1886(o)(2)(B)(ii) of the Social Security Act, 3001 of the Patient Protection and Affordable Care Act requires that CMS implement a measure of Medicare spending per beneficiary as part of its Hospital Value-Based Purchasing (VBP) initiatives. The hospital performance score for a performance period will be determined using a higher of its achievement or improvement score for the MSPB-Hospital measure as described in the FY 2012 IPPS Final Rule at 76 FR 51654-56. The MSPB Hospital measure score will be incorporated into the Hospital VBP Program as part of the Efficiency domain. Because the MSPB Hospital measure is the only measure currently in the Efficiency domain, the total points earned for the domain would be the points earned on the MSPB-Hospital measure. Each hospital's Total Performance Score (TPS), used to calculate each hospital's incentive payment, is calculated by combining its component domain scores. A hospital's improvement score is calculated from a comparison of the hospital's MSPB Hospital measure value during a period of performance against the MSPB Hospital measure value during a baseline period.

Geographic Area and Number/Percentage of Patients: In the FY2020 Hospital VBP Program, 2,731 hospitals received adjustment factors that incorporated data MSPB Hospital measure data. The MSPB Hospital measure is reported publicly on CMS' Hospital Compare website. Number/Percentage of Patients: N/A

U.1.3. 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.

U.1.4. 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.)

N/A.

U.2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation. How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.

Providers have a review and correction period during which they can view Hospital-Specific Reports (HSR) that contain information on the MSPB Hospital measure. The HSR provides information on the hospital's performance on the MSPB Hospital measure and cost breakdowns of measure components in relation to state and national statistics. For example, each hospital's HSR provides the number of eligible admissions, average spending per episode, MSPB Hospital amount, and MSPB Hospital measure for the hospital as well as for the state and the nation. Additionally, each hospital's MSPB Hospital spending is broken into three categories (i.e., 3 days prior to index admission, during-index admission, and 30 days after hospital discharge), and within these categories, spending levels are broken down by claim type. For comparison, the state and national values for these category breakdowns are also provided in HSRs. Further, each hospital's average observed spending and average expected spending (based on beneficiary age and health status) by Major Diagnostic Category (MDC) are presented in the hospital's HSR alongside analogous values at the state and national levels to allow the hospital to compare its case mix against the state and the nation. HSR instructions and table footnotes are provided to assist providers with measure interpretation. Any hospital with an MSPB Hospital measure score that meets the 25-episode case minimum can request an HSR. The HSRs further include three supplementary hospital-specific data files (an index admission file, a beneficiary risk score file, and an MSPB Hospital episode file) that contain various data used to calculate episode costs, identify beneficiary risk factors, and Medicare claims used in measure calculation. Over the past two years, at least 79 percent of HSRs were downloaded by hospital providers. Section U.2.1.2 lists additional resources, including stakeholder outreach, for the MSPB Hospital measure.

We obtained feedback on the measure and potential refinements in February 2020 from a technical expert panel comprised 20 members with expertise in cost measure development and evaluation and quality improvement from diverse backgrounds, including clinicians, healthcare providers, academia, and patient advocacy organizations. The specific feedback and refinements adopted are discussed in Sections U.2.2.1- U.2.3.

U.2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.

The HSRs are provided once per year, in early to mid summer, and providers may request re-uploads of their HSRs as needed. Further, CMS provides an annual webinar during which the MSPB Hospital measure methodology and measure score interpretation is detailed. The webinar includes a question & answer session and the transcript and recording of the webinar are posted publicly. CMS also provides email help-desk support for operations (HSR re-uploads) and other questions (e.g., methodological questions).

Further, the following materials are provided for educational/explanatory efforts on the public facing QualityNet website:

- Measure information form
- MSPB Hospital measure calculation example
- MSPB Hospital measure SAS documentation and code
- MSPB Hospital measure frequently asked questions document.

U.2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1. Describe how feedback was obtained.

Feedback, as obtained through annual question & answer sessions or email help-desk support, typically centers around methodological questions of clarification (e.g., which claims are included in the measure). Most of these questions come from providers, few questions come from researchers.

U.2.2.2. Summarize the feedback obtained from those being measured.

Potential refinements to the MSPB Hospital measure methodology that is in current use were identified from prior rule comments, past NQF endorsement cycles, and related measure development (e.g., MSPB Clinician). These potential refinements included

- Narrowing the Medicare costs and service use included in the measure
- Allowing readmissions to trigger new MSPB Hospital episodes
- Updating the MSPB Hospital measure's MSPB Amount (score numerator) calculation to evenly weight all of a hospital's episodes
- Additional social risk factors to consider for testing for social risk factor inclusion

These potential refinements were tested and reviewed by a Technical Expert Panel (TEP) in February 2020 as part of the MSPB Hospital measure's re-evaluation. The TEP comprised 20 members with expertise in cost measure development and evaluation and quality improvement from diverse backgrounds, including clinicians, healthcare providers, academia, and patient advocacy organizations.

Though no official vote was taken, panelists agreed that maintaining MSPB Hospital measure's holistic "all-cost" approach, allowing readmissions to trigger new MSPB Hospital episodes to increase measure surveillance, and updating the MSPB Hospital measure's MSPB Amount (score numerator) calculation to evenly weight all of a hospital's episodes were appropriate refinements. Panelists further provided additional considerations for ongoing social risk factor testing, like examining the impact of controlling for the Area Deprivation Index.

U.2.2.3. Summarize the feedback obtained from other users.

See U.2.2.2 – the technical expert panel noted included individuals from academia and advocacy organizations.

U.2.3. Describe how the feedback described in 4a2.2 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not

The ultimate status of the four potential refinements is as follows:

- Narrowing the Medicare costs and service use included in the measure
 - o Was not adopted. While such a narrowing of costs captured by the measure might result in improvements in the measure's statistical reliability, the added complexity from defining service/cost exclusions for the measure did not outweigh the potential improvement in reliability for an already highly reliable measure (see Section 2a2 of the Testing Attachment). Further, unlike the MSPB Clinician measure – a similar measure that does impose service/cost exclusions, for example, services surrounding the index admission were largely seen as in control of the hospital provider.
- Allowing readmissions to trigger new MSPB Hospital episodes
 - o Was adopted. In addition to the benefit of increasing the measure's surveillance of beneficiary episodes, an indicator to identify readmission-based episodes in the risk adjustment model was included to ensure that episode costs for these types of episodes were accurately predicted.

- Updating the MSPB Hospital measure's MSPB Amount (score numerator) calculation to evenly weight all of a hospital's episodes
 - o Was adopted. The overall impact on measure scores' was generally limited (e.g., less than 3 percent change in the overall score distribution end points), while allowing each risk-adjusted episode equal weight in a provider's measure score (see all hospital distribution in Section S.13.1 of this document)
- Additional social risk factors to consider for testing for social risk factor inclusion
 - o Was not adopted. Testing of additional SRF factors, like the Area Deprivation Index, continued to exhibit minimal measure score impacts while suggesting the masking of provider-level effects, as in prior NQF cycle analyses (see Section 2b3 of the Testing Attachment).

The refinements that were adopted exhibited the intended impacts. For example, by allowing readmission inpatient stays to trigger new episodes in the MSPB Hospital measure, the number of episodes used in MSPB Hospital measure score calculations increased by 16.97 percent from 5.10 million to 5.97 million episodes (Appendix Table 3a). Further, the inclusion of an indicator variable to control for the readmission characteristic of an episode controlled for the higher observed cost of readmission-based episodes (mean: \$26,552) relative to non-readmission episodes (mean: \$21,565), as evidenced by average observed to expected episode cost ratios that are close to 1.00 and by differences between these average observed to expected episode cost ratios for readmission and non-readmission episode types that were largely less than 1 percent. Taken with the change in measure risk adjustment calculation that ensures equal weight of each risk-adjusted episode at a hospital, the MSPB Hospital measure refinements resulted in score changes of less than 3 percent, relative to the original measure methodology, for approximately 94.5 percent of providers (Appendix Table 3b).

The refinements adopted also further harmonized the MSPB Hospital measure with the MSPB Clinician measure. Section H2 provides more detail on this improved harmonization across MSPB measures.

U.3.1. Progress on Improvement. (Not required for initial endorsement unless available.) Performance results on this measure (current and over time) should be provided in IM.1.2 and IM.1.4.

Discuss:

- **Purpose Progress (trends in performance results)**
- **Geographic area and number and percentage of accountable entities and patients included**

When comparing MSPB Hospital measure scores between 2017 and 2018, we see that nearly half of all hospitals improved on their MSPB Hospital measure score (more detail in Section IM.2.2.). The MSPB Hospital measure is able to effectively capture provider risk-adjusted spending during an episode and is able to capture differences between providers. Results from our testing are described in depth in the Testing Attachment included in this submission.

U.3.2. 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.

N/A

U.4.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.

No unintended consequences to individuals or populations have been identified during testing, and no evidence of unintended negative consequences to individuals or populations have been reported since implementation.

U.4.2. Please explain any unexpected benefits from implementation of this measure.

N/A

Related or Competing Measures

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.

H.1. Relation to Other NQF-endorsed Measures

If there are 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.

H.1.1. List of related or competing measures (selected from NQF-endorsed measures)

H.1.2. If related or competing measures are not NQF endorsed please indicate measure title and steward.

Measure Name: Medicare Spending Per Beneficiary (MSPB) Clinician;

Measure Steward: CMS;

Measure Relationship to MSPB Hospital: The MSPB Hospital and MSPB Clinician measures are closely aligned. Both measures assess costs from the same time window (three days prior to the index admission to 30 days after discharge) and focus on the same target population of beneficiaries admitted to the inpatient setting. Together, these measures align the incentives for clinicians and hospitals taking care of Medicare patients who are hospitalized.

Measure Name: Medicare Spending Per Beneficiary (MSPB) PAC; Measure Steward: CMS; Measure Relationship to MSPB Hospital: MSPB-PAC measures are harmonized across PAC settings as well as with MSPB Hospital. MSPB-PAC measures were developed in parallel for all PAC settings to meet the mandate of the IMPACT Act. To align with the goals of standardized assessment across PAC settings, these measures were conceptualized uniformly across the four settings in terms of the construction logic, the approach to risk adjustment, and measure calculation. The measures mirror the general construction of MSPB Hospital. Aligning the MSPB Hospital and MSPB-PAC measures in this way creates continuous accountability and aligns incentives to improve care planning and coordination across inpatient and PAC settings.

H.2. Harmonization

H.2.1. 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?

Yes

H.2.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

H.3. Competing Measure(s)

H.3.1. 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.)

H.2.1 Response: The MSPB Hospital measure has been harmonized with MSPB Clinician and MSPB-PAC in the following ways: (i) change in risk adjusted ratio calculation, and (ii) allowing readmissions to trigger an episode (specific to MSPB Clinician).

The MSPB Hospital measure differs from MSPB Clinician and MSPB-PAC in that it captures all Medicare Part A and Part B costs associated with an episode that is triggered by an inpatient stay while MSPB Clinician, for example, excludes services that are unrelated to clinician care.

H.3.1 Response: The MSPB Hospital measure evaluates hospitals' efficiency relative to the efficiency of the median hospital. The target population is Medicare beneficiaries enrolled in Medicare Parts A and B who were discharged from short-term acute hospitals. There are currently no NQF-endorsed measures that address both this same measure focus and this same target population.

Contact Information

Co.1 Measure Steward (Intellectual Property Owner): Centers for Medicare & Medicaid Services

Co.2 Point of Contact: Ronique, Evans, kimberly.spaldingbush@cms.hhs.gov, 410-786-8882-

Co.3 Measure Developer if different from Measure Steward: Acumen, LLC

Co.4 Point of Contact: N/A, N/A, ccsq-macra-support@acumenllc.com

| Additional Information |
|--|
| <p>Ad.1 Workgroup/Expert Panel involved in measure development List the workgroup/panel members' names and organizations. Describe the members' role in measure development. Technical Expert Panel Members:</p> <p>Anita Bemis-Dougherty, American Physical Therapy Association Kathleen Blake, American Medical Association Akinluwa (Akin) Demehin, American Hospital Association Kurtis Hoppe, American Academy of Physical Medicine and Rehabilitation Caroll Koscheski, American College of Gastroenterology Alan Lazaroff, American Geriatrics Society Shirley Levenson, American Academy of Nurse Practitioners Robert Leviton, American Medical Informatics Association Edison Machado, American Health Quality Association James Naessens, Mayo Clinic Shelly Nash, Adventist Health System Diane Padden, American Association of Nurse Practitioners Parag Parekh, American Society of Cataract and Refractive David Seidenwurm, American College of Radiology Mary Fran Tracy, National Association of Clinical Nurse Specialists Janice Tufte, Society for Participatory Medicine Ugochukwu (Ugo) Uwaoma, Trinity Health of New England Danny van Leeuwen, Health Hats Michael Wasserman, California Association of Long Term Care Medicine Adolph Yates, Jr., American Association of Hip and Knee Surgeons</p> |
| <p>Measure Developer/Steward Updates and Ongoing Maintenance Ad.2 Year the measure was first released: 2012 Ad.3 Month and Year of most recent revision: 06, 2020 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? 06, 2021</p> |
| <p>Ad.6 Copyright statement: Ad.7 Disclaimers:</p> |
| <p>Ad.8 Additional Information/Comments: Secondary CMS steward point of contact</p> <p>Organization: Centers for Medicare & Medicaid Services First Name: Helen Last Name: Dollar-Maples Email Address: Helen.Dollar-Maples@cms.hhs.gov Phone Number: (410) 786-7214</p> |