NATIONAL QUALITY FORUM

Measure Information

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

Brief Measure Information

NQF #: 3503e
Corresponding Measures:
De.2. **Measure Title:** Hospital Harm – Severe Hypoglycemia
Co.1.1. **Measure Steward:** Centers for Medicare & Medicaid Services
De.3. **Brief Description of Measure:** This electronic clinical quality measure (eCQM) assesses the proportion of inpatient admissions for patients aged 18 years and older who received at least one antihyperglycemic medication during their hospitalization, and who suffered a severe hypoglycemic event (blood glucose less than 40 mg/dL) within 24 hours of the administration of an antihyperglycemic agent.
1b.1. **Developer Rationale:** This safety eCQM relates to glycemic control and hypoglycemia management in the hospital inpatient setting. Rates of inpatient hypoglycemic events are considered an indicator of the quality of care provided by a hospital. Hypoglycemic events are an adverse outcome that causes patients to experience drowsiness, confusion, anxiety, or irritability; sweating, weakness, increased heart rate, or trembling, as well as loss of consciousness, seizure or death.[1,2] Several important benefits related to quality improvement can be envisioned with the implementation of this eCQM. Furthermore, this eCQM will encourage providers to implement interventions aimed at better glycemic control and prevent severe hypoglycemia for hospital inpatients. In addition to avoiding direct patient harm from the severe hypoglycemic event, lower rates of hypoglycemia among hospitalized individuals would be expected to result in shorter lengths of stay and lower mortality.[3] Adoption of this performance eCQM has the potential to improve quality of care for individuals at risk of hypoglycemia and, therefore, advance the quality of care in the area of patient safety, a priority area identified by the National Quality Strategy.

This will fill a gap in measurement and provide incentives for hospital quality improvement, as there is no current hypoglycemia measure in a CMS program. With a systematic EHR-based patient safety measure in place, hospitals can more reliably assess harm reduction efforts and modify their improvement efforts in near real-time. In addition, we can expect to make greater achievements in reducing harms and enhancing hospital performance on patient safety outcomes.[4]

References

1. Classen, D. C., Jaser, L., & Budnitz, D. S. (2010). Adverse drug events among hospitalized Medicare patients: Epidemiology and national estimates from a new approach to surveillance. Jt Comm J Qual Patient Saf, 36(1), 12-21.
2. American Diabetes Association. Hypoglycemia (Low Blood Glucose). 2015; http://diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html. Accessed August 20, 2018.
3. Nirantharakumar K, Marshall T, Kennedy A, Narendran P, Hemming K, Coleman JJ. Hypoglycaemia is associated with increased length of stay and mortality in people with diabetes who are hospitalized. Diabet Med. 2012;29(12):e445-448.
4. Services USDoHaH. National Action Plan for Adverse Drug Event Prevention. Washington, DC2014.

S.4. **Numerator Statement:** The number of inpatient admissions during which a test for blood glucose with a result less than 40 mg/dL (severe hypoglycemia) where the event follows the administration of an antihyperglycemic medication within 24 hours.
S.6. **Denominator Statement:** All patients 18 years or older at the start of the encounter with a discharged inpatient hospital admission during the measurement period who were given at least one antihyperglycemic medication during their hospital stay. The measure includes inpatient admissions which began in the Emergency Department or in observation status.
S.8. **Denominator Exclusions:** N/A, there are no denominator exclusions.

De.1. **Measure Type:** Outcome
S.17. **Data Source:** Electronic Health Records
S.20. **Level of Analysis:** Facility

IF Endorsement Maintenance – Original Endorsement Date: Oct 23, 2019 **Most Recent Endorsement Date:** Oct 23, 2019

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

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

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

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form
Hospital_Harm_Severe_Hypoglycemia_NQF_Evidence_Submission_Form.docx
1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?
Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.
Yes

1b. Performance Gap

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

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

1b.1. **Briefly explain the rationale for this measure** *(e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)*
If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.
This safety eCQM relates to glycemic control and hypoglycemia management in the hospital inpatient setting. Rates of inpatient hypoglycemic events are considered an indicator of the quality of care provided by a hospital. Hypoglycemic events are an adverse outcome that causes patients to experience drowsiness, confusion, anxiety, or irritability; sweating, weakness, increased heart rate, or trembling, as well as loss of consciousness, seizure or death.[1,2] Several important benefits related to quality improvement can be envisioned with the implementation of this eCQM. Furthermore, this eCQM will encourage providers to implement interventions aimed at better glycemic control and prevent severe hypoglycemia for hospital inpatients. In addition to avoiding direct patient harm from the severe hypoglycemic event, lower rates of hypoglycemia among hospitalized individuals would be expected to result in shorter lengths of stay and lower mortality.[3] Adoption of this performance eCQM has the potential to improve quality of care for individuals at risk of hypoglycemia and, therefore, advance the quality of care in the area of patient safety, a priority area identified by the National Quality Strategy.

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References
1. Classen, D. C., Jaser, L., & Budnitz, D. S. (2010). Adverse drug events among hospitalized Medicare patients: Epidemiology and national estimates from a new approach to surveillance. Jt Comm J Qual Patient Saf, 36(1), 12-21.
2. American Diabetes Association. Hypoglycemia (Low Blood Glucose). 2015; http://diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html. Accessed August 20, 2018.
3. Nirantharakumar K, Marshall T, Kennedy A, Narendran P, Hemming K, Coleman JJ. Hypoglycaemia is associated with increased length of stay and mortality in people with diabetes who are hospitalized. Diabet Med. 2012;29(12):e445-448.
4. Services USDoHaH. National Action Plan for Adverse Drug Event Prevention. Washington, DC2014.

1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. *(This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*
This eCQM was tested with 2 test sites (6 hospitals) in 2 states (located in Midwest, South). Hospitals varied in size (50-1,000 beds, and 200-3,800 beds) and EHR system (Cerner, Epic), and were both teaching hospitals in urban settings. A detailed breakdown of the characteristics of the measured facilities and the patient population can be found in the attached Measure Testing Form (Beta Datasets 1 and 2).

The measure performance, including the denominator, numerator, and measure rate by hospital, follows.

Hospital Test Site 1 (Beta dataset 1 per Testing Form)
- Number of Hospitals: 4
- Data collection period: Discharges between 1/1/2017 - 12/31/2017
- Denominator: 7,748
- Numerator: 195
- Performance rate: 2.52%
- 95% confidence interval: 2.18%, 2.89%
- Standard Deviation: 1.20%

Hospital Test Site 2 (Beta dataset 2 per Testing Form)
- Number of Hospitals: 2
- Data collection period: Discharges between 1/1/2017 - 12/31/2017
- Denominator: 5,888
- Numerator: 174
- Performance rate: 2.96%
- 95% confidence interval: 2.54%, 3.42%
- Standard Deviation: 0.30%

Overall Performance
- Number of Hospitals: 6
- Performance Rate: 2.71%
- 95% confidence interval: 2.44%, 2.99%
- Standard deviation: 1.00%
- Range: 1.05% to 3.56%

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

1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. *(This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.) For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*
Data below are from initial development testing; this eCQM is not yet implemented.
The measure performance was stratified for disparities by age, race, ethnicity, and payer source.

Hospital Test Site 1 (Beta dataset 1 per Testing Form)
- Number of Hospitals: 4
- Data collection period: 1/1/2017 - 12/31/2017
- Denominator (admissions): 7,748

Hospital Test Site 2 (Beta dataset 2 per Testing Form)
- Number of Hospitals: 2
- Data collection period: 1/1/2017 - 12/31/2017
- Denominator: 5,888

Across Sites (n= 13,636, 6 hospitals)
Age//Denominator//Numerator//Measure Rate (95% Confidence Interval)
18-64//7,529//206//2.7% (2.4%, 3.1%)
65+//6,107//163//2.7% (2.3%, 3.1%)

Gender//Denominator//Numerator//Measure Rate (95% Confidence Interval)
Male//7,130//197//2.8% (2.4%, 3.2%)
Female//6,487//170//2.6% (2.3%, 3.0%)
Unknown//19//2//10.5% (1.3%, 33.1%)

Race//Denominator//Numerator//Measure Rate (95% Confidence Interval)
Black or African American//2,967//114//3.8% (3.2%, 4.6%)
White//8,386//188//2.2% (2.0%, 2.6%)
Other//2,011//55//2.7% (2.1%, 3.6%)
Unknown//272//12//4.4% (2.3%, 7.6%)

Ethnicity//Denominator//Numerator//Measure Rate (95% Confidence Interval)
Hispanic or Latino//1,080//30//2.8% (1.9%, 3.9%)
Non-Hispanic//12,201//330//2.7% (2.4%, 3.0%)
Unknown//355//9//2.5% (1.2%, 4.8%)

(Primary) Payer//Denominator//Numerator//Measure Rate (95% Confidence Interval)
Medicare//7,161//192//2.7% (2.3%, 3.1%)
Medicaid//1,359//46//3.4% (2.5%, 4.5%)
Private Insurance//4,225//110//2.6% (2.1%, 3.1%)
Self-pay or Uninsured//171//3//1.8% (0.4%, 5.0%)
Other (such as other government plans)//617//17//2.8% (1.6%, 4.4%)
Unknown//103//1//1.0% (0.0%, 5.3%)

It is important to note that these results are derived from a small dataset that is not generalizable to the entire population, and the datasets include many characteristics that are 'unknown' in the EHR which limits the usability of the results.

1b.5. **If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4**
N/A

2. Reliability and Validity—Scientific Acceptability of Measure Properties

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

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

De.5. **Subject/Topic Area** *(check all the areas that apply):*

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

De.7. **Target Population Category** *(Check all the populations for which the measure is specified and tested if any):*

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.)*
Final measure specifications for implementation will be made publicly available on CMS' appropriate quality reporting website, once the finalized through the NQF endorsement and CMS rulemaking processes.

S.2a. **If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)
This is an eMeasure **Attachment:** Del18c2HOP5HarmsHypoITS12172018v5_6_Artifacts-636824656414337046.zip,Hypoglycemia_Bonnie_Test_Cases_Results.pdf

S.2b. **Data Dictionary, Code Table, or Value Sets** *(and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)*
Attachment **Attachment:** Del18c2HOP5HarmsHypoFeasibilityScorecard12172018_v02.xlsx

S.2c. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.
No, this is not an instrument-based measure **Attachment:**

S.2d. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.
Not an instrument-based measure

S.3.1. **For maintenance of endorsement:** Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.
Yes

S.3.2. **For maintenance of endorsement,** please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.
This measure is a re-specification of a previously NQF-endorsed measure that has never been used in a CMS program. Changes to the measure specifications are as follows:

Numerator differences: The current Hospital Harm—Severe Hypoglycemia measure assesses whether a severe hypoglycemia event occurred during an inpatient hospitalization (dichotomous outcome). The previous NQF-endorsed measure counted number of hypoglycemia events in the numerator per patient days in the denominator.
Additionally, the Hospital Harm–Severe Hypoglycemia measure assesses the use of specific antihyperglycemic medications found in the Value Set Authority Center (VSAC) that are likely to cause hypoglycemia, within 24 hours of administration. The measure no longer has separate specifications for short-acting insulin. The previous NQF-endorsed measure differentiated between administration of short-acting insulin within 12-hours and other medications within 24 hours.
These changes will ease the burden on hospitals and be meaningful to patients, while still adhering to the original intent of the measure.

Denominator differences: The current Hospital Harm–Severe Hypoglycemia measure examines the total number of admissions with at least one antihyperglycemic agent administered during the hospital stay. The NQF-endorsed measure examined the total number of hospital days with at least one anti-diabetic agent administered.
This change aligns with the numerator change to number of admissions, which eases hospital burden.
Exclusions differences: The current Hospital Harm–Severe Hypoglycemia measure specifications do not have any denominator

exclusions; the previous NQF-endorsed measure excludes admissions with lengths of stay greater than 120 days.
This exclusion was dropped as it is not applicable to the current measure specifications because the measure is not based on patient days.

S.4. **Numerator Statement** *(Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.*
IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
The number of inpatient admissions during which a test for blood glucose with a result less than 40 mg/dL (severe hypoglycemia) where the event follows the administration of an antihyperglycemic medication within 24 hours.

S.5. **Numerator Details** *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)*
IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
This is an eCQM, and therefore uses electronic health record data to calculate the measure score. The time period for data collection is during an inpatient hospitalization, beginning at hospital arrival (whether through Emergency Department, observation stay, or directly admitted as inpatient).

All data elements necessary to calculate this measure are defined within value sets available in the VSAC, and listed below.

Glucose tests are represented by LOINC Codes in the value set Glucose Lab Test (2.16.840.1.113762.1.4.1045.134). Codes include both laboratory and point-of-care glucose tests, including venous or arterial blood and serum or plasma.

The antihyperglycemic medications are defined by the value set of Hypoglycemics (2.16.840.1.113762.1.4.1179.3). This value set includes medications and insulin capable of causing hypoglycemia in a patient.

To access the value sets for the measure, please visit the Value Set Authority Center (VSAC), sponsored by the National Library of Medicine, at https://vsac.nlm.nih.gov/.

S.6. **Denominator Statement** *(Brief, narrative description of the target population being measured)*
All patients 18 years or older at the start of the encounter with a discharged inpatient hospital admission during the measurement period who were given at least one antihyperglycemic medication during their hospital stay. The measure includes inpatient admissions which began in the Emergency Department or in observation status.

S.7. **Denominator Details** *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*
IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
This measure includes all encounters aged 18 years and older at the time of admission, and all payers. Measurement period is one year. This measure is at the hospital-by-admission level; only one numerator event is counted per admission.

Inpatient Encounters are represented using the value set of Encounter Inpatient (2.16.840.1.113883.3.666.5.307).

Emergency Department visits are represented using the value set of Emergency Department Visit (2.16.840.1.113883.3.117.1.7.1.292).

Patients who had observation encounters are represented using the value set of Observation Services (2.16.840.1.113762.1.4.1111.143).

Encounters who were given at least one antihyperglycemic medication are defined by the value set of Hypoglycemics

(2.16.840.1.113762.1.4.1179.3), which also defines the numerator medications. This value set includes medications and insulin capable of causing hypoglycemia in a patient.

To access the value sets for the measure, please visit the Value Set Authority Center, sponsored by the National Library of Medicine, at https://vsac.nlm.nih.gov/.

S.8. **Denominator Exclusions** *(Brief narrative description of exclusions from the target population)*
N/A, there are no denominator exclusions.

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

S.10. **Stratification Information** *(Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)*
N/A; this measure is not stratified.

S.11. **Risk Adjustment Type** (Select type. Provide specifications for risk stratification in measure testing attachment)
No risk adjustment or risk stratification
If other:

S.12. **Type of score:**
Rate/proportion
If other:

S.13. **Interpretation of Score** *(Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)*
Better quality = Lower score

S.14. **Calculation Algorithm/Measure Logic** (*Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)*
Target population: Inpatient admission encounters, all payer, where individuals are aged 18 years or older at the start of the admission and who were given at least one antihyperglycemic medication during their hospital stay, within the measurement period.

To create the denominator:
1. If the inpatient admission was during the measurement period, go to Step 2. If not, do not include in measure population.

2. Determine the patient's age in years. The patient's age is equal to the admission date minus the birth date. If the patient is 18 years or older, go to Step 3. If less than 18 years old, do not include in the measure population.

3. Determine if there was at least one antihyperglycemic medication (from the Hypoglycemic value set 2.16.840.1.113762.1.4.1179.3) administered during the inpatient hospitalization (including in the Emergency Department or observation stay if later converted into an inpatient admission). If not, do not include in the measure population.

To create the numerator, for each encounter identify:
1. Any instance of a test for blood glucose with a result less than 40 mg/dL during the encounter is considered a severe hypoglycemic event, including values from either laboratory or Point of Care (POC) testing.

2. For any value less than 40mg/dL, determine if there was an antihyperglycemic medication administered by hospital staff within the 24 hours before the event and during the hospitalization (including emergency department and observation stays contiguous with the admission). If not, do not include in the numerator.

a. The 24-hour time frame extends from the end of the medication administration to the start of the blood glucose test.

3. For any value less than 40mg/dL, do not include any events (identified in Step 1) if it was followed by a repeat POC test for blood glucose within 5 minutes of the initial test and with a result greater than 80 mg/dL.

a. Rationale: The measure logic does –not– require a repeat blood glucose test to be performed. The expectation is that in most cases of severe hypoglycemia, the clinical team will be treating the patient and will not immediately repeat the test. However, if the severe hypoglycemic event is suspected to be spurious, for example if the patient is clinically asymptomatic, and a repeat test is performed to confirm that suspicion, this step will remove false positives that can occur in POC testing to ensure hospitals are not penalized for erroneous results. The 5-minute time frame extends from the time that the initial blood glucose test was performed to the time that the repeat blood glucose test was performed.

Only the first qualifying severe hypoglycemic event is counted in the numerator, and only one severe hypoglycemic event is counted per encounter.

S.15. **Sampling** *(If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)*
IF an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.
N/A; this measure does not use a sample or survey.

S.16. **Survey/Patient-reported data** *(If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)*
Specify calculation of response rates to be reported with performance measure results.
N/A; this measure does not use a sample or survey.

S.17. **Data Source** *(Check ONLY the sources for which the measure is SPECIFIED AND TESTED).*
If other, please describe in S.18.
Electronic Health Records

S.18. **Data Source or Collection Instrument** *(Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.)*
IF instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.
Hospitals collect EHR data using certified electronic health record technology (CEHRT). The MAT output, which includes the human readable and XML artifacts of the clinical quality language (CQL) for the measure are contained in the eCQM specifications attached. No additional tools are used for data collection for eCQMs.

S.19. **Data Source or Collection Instrument** *(available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)*
No data collection instrument provided

S.20. **Level of Analysis** *(Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)*
Facility

S.21. **Care Setting** *(Check ONLY the settings for which the measure is SPECIFIED AND TESTED)*
Inpatient/Hospital
If other:

S.22. **COMPOSITE Performance Measure** - Additional Specifications *(Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)*
N/A

2. Validity – See attached Measure Testing Submission Form
Del18c2HOP5HarmsHypoITSForm010219-636824679941320611.docx,Del18c2HOP5HarmsHypoTestingForm012219_v0.2.docx

2.1 For maintenance of endorsement
Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the

measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.
Yes

2.2 For maintenance of endorsement
Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.
Yes

2.3 For maintenance of endorsement
Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1,2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.
No - This measure is not risk-adjusted

3. Feasibility

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

3a. Byproduct of Care Processes

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

3a.1. **Data Elements Generated as Byproduct of Care Processes.**
Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score)
If other:

3b. Electronic Sources

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

3b.1. **To what extent are the specified data elements available electronically in defined fields** (*i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields*) Update this field for **maintenance of endorsement**.
ALL data elements are in defined fields in electronic health records (EHRs)

3b.2. **If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.** For **maintenance of endorsement**, if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).
N/A; this is an eCQM that uses all data elements from defined fields in the EHR.

3b.3. **If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.**
Attachment: Del18c2HOP5HarmsHypoFeasibilityScorecard12172018_v02-636892935277842876.xlsx

3c. Data Collection Strategy

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

3c.1. **Required for maintenance of endorsement. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.**
IF instrument-based, consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.
This measure is not instrument-based. As this measure has been re-specified as an eCQM and has not been implemented, difficulties with this measure have not been experienced. As noted above, feasibility assessment across six hospitals with two different EHR vendors found that all data elements used to calculate the measure were reliably available in a structured format within the EHR, captured as part of the course of care, accurately recorded information, and coded using nationally accepted terminology.

3c.2. **Describe any fees, licensing, or other requirements to use any aspect of the measure as specified** *(e.g., value/code set, risk model, programming code, algorithm)*.
There are no fees associated with the use of this eCQM. Value sets are housed in the Value Set Authority Center (VSAC), which is provided by the National Library of Medicine (NLM), in coordination with the Office of the National Coordinator for Health Information Technology and the Centers for Medicare & Medicaid Services.

Viewing or downloading value sets requires a free Unified Medical Language System® (UMLS) Metathesaurus License, due to usage restrictions on some of the codes included in the value sets.

Individuals interested in accessing value set content can request a UMLS license at (https://uts.nlm.nih.gov/license.html).

4. Usability and Use

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

4a. Accountability and Transparency

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

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

Specific Plan for Use	Current Use (for current use provide URL)
Not in use	

4a1.1 **For each CURRENT use, checked above (update for maintenance of endorsement), provide:**

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

N/A; this eCQM is under endorsement review and is not currently used in any accountability program.

4a1.2. **If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons?** (*e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?*)
This eCQM is not currently publicly reported or used in an accountability application because it has only recently completed re-specification and is being submitted to NQF for endorsement in its re-specified form. The previously NQF-endorsed measure was not implementable because the MAT could not support the measure as specified when it was originally developed. The measure was re-specified using the updates to the MAT including expression of the logic with CQL. This re-specified measure was presented to the

Measure Applications Partnership (MAP) in December 2018 and received conditional support for rulemaking, pending NQF review and endorsement.

4a1.3. **If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement.** (*Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.*)
Following MAP's recommendations and conditional support, we envision that this measure will be considered for accountability programs through future rulemaking.

4a2.1.1. **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.
N/A; this measure has been re-specified as an eCQM and as such has not been implemented. Implementation is planned pending finalization of the NQF and CMS rulemaking processes.

4a2.1.2. **Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**
N/A; this measure has been re-specified as an eCQM and as such has not been implemented. Implementation is planned pending finalization of the NQF and CMS rulemaking processes.

4a2.2.1. **Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**
Describe how feedback was obtained.
N/A; this measure has been re-specified as an eCQM and as such has not been implemented. Implementation is planned pending finalization of the NQF and CMS rulemaking processes.

4a2.2.2. **Summarize the feedback obtained from those being measured.**
N/A; this measure has been re-specified as an eCQM and as such has not been implemented. Implementation is planned pending finalization of the NQF and CMS rulemaking processes.

4a2.2.3. **Summarize the feedback obtained from other users**
While this measure does not have usability information from measured entities, as it has been re-specified as an eCQM and has not been implemented yet, our team sought input from multiple stakeholder groups throughout the measure development process. We believe in a transparent measure development process and highly value the feedback received on the measure. During the development, a technical expert panel composed of a variety of stakeholders was engaged at various stages of the development to obtain balanced, expert input. We also solicited and received feedback on the measure through an MMS Blueprint 44-day Public Input Period during development.

4a2.3. **Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**
As noted above, input received from TEP members was instrumental to the development and specification of this measure. Feedback received during public comment was also explored during the measure testing process.

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

4b1. **Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)**
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.
This is a re-specified eCQM and there is no time trend information available regarding facility performance improvement. This eCQM is not currently used in any quality improvement programs, but a primary goal of the measure is to provide hospitals with performance information necessary to implement focused quality improvement efforts.

4b2. Unintended Consequences

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

4b2.1. **Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.**
We did not identify any unintended consequences during eCQM development or testing. However, we are committed to monitoring this measure's use and assessing its potential unintended consequences over time, such as the inappropriate shifting of care and other negative unintended consequences for patients.

4b2.2. **Please explain any unexpected benefits from implementation of this measure.**
No unexpected benefits were noted during eCQM development testing.

5. Comparison to 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.

5. Relation to Other NQF-endorsed Measures
Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.
No

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

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

5a. Harmonization of Related Measures

The measure specifications are harmonized with related measures;
OR
The differences in specifications are justified

5a.1. **If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):**
Are the measure specifications harmonized to the extent possible?

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

5b. Competing Measures

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

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

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

Appendix

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

Contact Information

Co.1 **Measure Steward (Intellectual Property Owner):** Centers for Medicare & Medicaid Services
Co.2 **Point of Contact:** Helen, Dollar-Maples, Helen.Dollar-Maples@cms.hhs.gov, 410-786-7214-
Co.3 **Measure Developer if different from Measure Steward:** IMPAQ International, LLC
Co.4 **Point of Contact:** Benjamin, Shirley, bshirley@impaqint.com, 202-774-1964-

Additional Information

Ad.1 **Workgroup/Expert Panel involved in measure development**
Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.
Technical Expert Panel Members:
David Baker, MD, MPH, The Joint Commission
Cynthia Barnard, PhD, MBA, MSJS, Northwestern Memorial Healthcare
Lisa Freeman, BA, Connecticut Center for Patient Safety
Patrick Guffey, MD, University of Colorado Department of Anesthesiology
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Karen Zimmer, MD, MPH, Jefferson School of Population Health
Julia Hallisy, The Empowered Patient Coalition (served from March 2017 to September 2017)
Jennifer Meddings, MD, MSc, University of Michigan Health System (served from March 2017 to October 2018)
Eric Thomas, MD, MPH, McGovern Medical School at University of Texas Health (served from March 2017 to October 2018)

Technical Advisory Group Members:
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Brett Stauffer MD MHS FHM, Baylor Scott and White Health
Brooks Udelsman, MD/MHS, Massachusetts General Hospital
Boback Ziaeian, UCLA

Similar to our TEP, these experts responded to the posted Call for TEP members. The Technical Advisory Group was utilized similar to a TEP, providing feedback on clinical acceptability of measure specifications and feasibility of the measure.

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 **Year the measure was first released:**

Ad.3 **Month and Year of most recent revision:**

Ad.4 **What is your frequency for review/update of this measure?** We anticipate annual updates and potentially triennial endorsement maintenance cycles.

Ad.5 **When is the next scheduled review/update for this measure?**

Ad.6 **Copyright statement:** Limited proprietary coding is contained in the Measure specifications for user convenience. Users of proprietary code sets should obtain all necessary licenses from the owners of the code sets. CPT(R) contained in the Measure specifications is copyright 2004-2016 American Medical Association. LOINC(R) copyright 2004-2016 Regenstrief Institute, Inc. This material contains SNOMED Clinical Terms(R) (SNOMED CT[R]) copyright 2004-2016 International Health Terminology Standards Development Organisation. ICD-10 copyright 2016 World Health Organization. All Rights Reserved.

Ad.7 **Disclaimers:** This measure and specifications are subject to further revisions. This performance measure is not a clinical guideline and does not establish a standard of medical care, and has not been tested for all potential applications. THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND. Due to technical limitations, registered trademarks are indicated by (R) or [R] and unregistered trademarks are indicated by (TM) or [TM].

Ad.8 **Additional Information/Comments:** This measure was originally developed, specified, and tested by Yale New Haven Health Service Corporation Center for Outcomes Research and Evaluation, and by Mathematica Policy Research on behalf of the Centers for Medicare and Medicaid Services (CMS). IMPAQ International, LLC assumed developer responsibility for this measure in March 2019.