



## Measure Information - Composite

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

### Brief Measure Information

**NQF #: 0698**

**De.2. Measure Title:** 30-Day Post-Hospital AMI Discharge Care Transition Composite Measure

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

**De.3. Brief Description of Measure:** This measure scores a hospital on the incidence among its patients during the month following discharge from an inpatient stay having a primary diagnosis of heart failure for three types of events: readmissions, ED visits and evaluation and management (E&M) services.

These events are relatively common, measurable using readily available administrative data, and associated with effective coordination of care after discharge. The input for this score is the result of measures for each of these three events that are being submitted concurrently under the Patient Outcomes Measures Phase I project's call for measures (ED and E&M) or is already approved by NQF (readmissions). Each of these individual measures is a risk-adjusted, standardized rate together with a percentile ranking. This composite measure is a weighted average of the deviations of the three risk-adjusted, standardized rates from the population mean for the measure across all patients in all hospitals. Again, the composite measure is accompanied by a percentile ranking to help with its interpretation.

**1d.3. Developer Rationale:**

**S.4. Numerator Statement:** The numerator is the weighted sum of the three deviations from their expected values for the individual measures comprising the component measure. The question of appropriate weights on the deviations is difficult and would probably lead to a wide variation in opinion. The weights of -4, -2, and 1 are selected to represent order of magnitude differences in seriousness of the three outcomes, which most would agree to (that is to say: readmission is more important than ED which is more important in a negative way than E & M service is in a positive way). The idea of not using weights was also considered, but this was noted to be itself a de facto weight scheme (with all weights the same), and as such, a weight scheme that was less appropriate than the one chosen.

**S.7. Denominator Statement:** The composite measure is the weighted sum of three individual measures. Thus, the denominator is one.

**S.10. Denominator Exclusions:** N/A

**De.1. Measure Type:** Composite

**S.23. Data Source:** Documentation of original self-assessment, Electronic Health Records, Management Data, Paper medical record/flow-sheet, Pharmacy data, Registry data

**S.26. Level of Analysis:** Other

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

**1d.1. Composite Measure Construction:**

**Component Measures (if endorsed or submitted for endorsement):**

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

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

**remaining criteria.**

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

[0698\\_Evidence\\_CompositeMSF1.0\\_Data.doc](#)

**1b. Performance Gap**

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

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

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

[Reduced mortality and major morbidity rates for elderly following surgeries.](#)

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

The rates of the serious events described in this measure are highly variable by institution. ACS NSQIP uses clinical, audited, third-party collection, and risk adjusted data. An analysis of ACS NSQIP data shows that O/E ratios for mortality and serious morbidity in the elderly (age equal or greater than 65 years). The results show that O/E ratios for mortality and serious morbidity range from 0.49 to 4.22 for all participating hospitals. The interquartile range for O/E ratios is 0.89-1.13, a difference in performance of more than 25% between institutions at these quartile cutoffs, and the 10th percentile and 90th percentile O/E ratios were 0.76 and 1.25, respectively, a difference of 64%. These statistics demonstrate the significance of the performance gap in mortality and serious morbidity outcomes in the elderly across hospital providers.

**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.**

The data cited above is unpublished, obtained from an internal analysis of ACS NSQIP data. However, these gaps have been repeatedly demonstrated since the inception of the program.

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

Dramatic variations in the quality and delivery of surgical care<sup>11-13</sup> as well as involvement in clinical trials<sup>14, 15</sup> have been documented for those individuals aged 65 years and older. Birkmeyer et al. demonstrated that Medicare beneficiaries undergoing one of six major surgical procedures who belonged to a lower socioeconomic class had higher rates of adjusted mortality than those from a higher class, attributing the variation in outcomes to hospital-level differences in care.<sup>16</sup> Furthermore, in the Nationwide Inpatient Sample, operative mortality among patients aged 65 years and older who underwent pancreatic resection and esophagectomy was 10% less at high-volume centers compared to low-volume centers.<sup>17</sup> Hardiman et al. demonstrated through a retrospective review of prospectively collected data on 10,433 patients diagnosed with primary colon tumors that individuals who were at least 80 years old were less likely to have colectomy for advanced or metastatic disease, have fewer lymph nodes removed, receive chemotherapy for every stage than those who were younger than 80 years old.<sup>18</sup> Skinner et al. found that the rate of surgical treatment of osteoarthritis of the knee in Medicare beneficiaries varies substantially by region of the country, sex, and race or ethnicity.<sup>19</sup> Jha et al. confirmed the persistence of significant racial disparities in the performance of coronary artery bypass grafts, carotid endarterectomy, and total hip replacement among Medicare beneficiaries despite federal initiatives to reduce this variation.<sup>20</sup>

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

11. Wanebo HJ, Cole B, Chung M, et al. Is surgical management compromised in elderly patients with breast cancer? *Ann Surg.* May 1997;225(5):579-586; discussion 586-579.

12. Laycock WS, Siewers AE, Birkmeyer CM, Wennberg DE, Birkmeyer JD. Variation in the use of laparoscopic cholecystectomy for elderly patients with acute cholecystitis. *Arch Surg.* Apr 2000;135(4):457-462.

13. Dunlop DD, Manheim LM, Song J, et al. Age and racial/ethnic disparities in arthritis-related hip and knee surgeries. *Med*

Care. Feb 2008;46(2):200-208.

14. Bugeja G, Kumar A, Banerjee AK. Exclusion of elderly people from clinical research: a descriptive study of published reports. BMJ. Oct 25 1997;315(7115):1059.

15. Murthy VH, Krumholz HM, Gross CP. Participation in cancer clinical trials: race-, sex-, and age-based disparities. JAMA. Jun 9 2004;291(22):2720-2726.

16. Birkmeyer NJ, Gu N, Baser O, Morris AM, Birkmeyer JD. Socioeconomic status and surgical mortality in the elderly. Med Care. Sep 2008;46(9):893-899.

17. Finlayson EV, Birkmeyer JD. Operative mortality with elective surgery in older adults. Eff Clin Pract. Jul-Aug 2001;4(4):172-177.

18. Hardiman KM, Cone M, Sheppard BC, Herzig DO. Disparities in the treatment of colon cancer in octogenarians. Am J Surg. May 2009;197(5):624-628.

19. Skinner J, Weinstein JN, Sporer SM, Wennberg JE. Racial, ethnic, and geographic disparities in rates of knee arthroplasty among Medicare patients. N Engl J Med. Oct 2 2003;349(14):1350-1359.

20. Jha AK, Fisher ES, Li Z, Orav EJ, Epstein AM. Racial trends in the use of major procedures among the elderly. N Engl J Med. Aug 18 2005;353(7):683-691.

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

The measure addresses:

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

#### **1c.1. Demonstrated high priority aspect of healthcare**

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

#### **1c.2. If Other:**

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

##### **List citations in 1c.4.**

Individuals aged 65 years and older consume more medical services than younger generations. In 1999, according to the National Hospital Discharge Survey, patients aged 65 years or older represented 12% of the population but accounted for 40% of hospital discharges and nearly half (48%) of days of inpatient care.<sup>1</sup> In an analysis of the 1996 National Hospital Discharge Surgery and the National Survey of Ambulatory Surgery, Etzioni et al. demonstrated that individuals aged 65 years or older underwent surgery at a higher rate than their younger counterparts for 58% of the procedures analyzed.

In addition to consuming more medical resources than their younger counterparts, the elderly are at greater risk of morbidity and mortality after surgical procedures. Major perioperative complications after nonemergent, major, noncardiac procedures have been documented to occur in 5.7% of patients 60-69 years of age, 9.6% of patients 70 to 79 years of age, and 12.5% of patients at least 80 years of age.<sup>2</sup> Finlayson et al. demonstrated that the mortality associated with 14 major elective surgeries in Medicare beneficiaries ranged from 1.3% to 13.7% depending on the procedure, with the highest mortality associated with mitral valve replacement (10.5%), esophagectomy (13.6%), and pneumonectomy (13.7%). Those older than 80 years of age are at particularly high risk for perioperative adverse events.<sup>3, 4</sup> Finlayson et al. demonstrated that the operative mortality among octogenarians was significantly higher than that of their younger counterparts (patients aged 65 to 69 years) for esophagectomy (19.9% versus 8.8%,  $p < 0.0001$ ), pancreatectomy (15.5% versus 6.7%,  $p < 0.0001$ ), and lung resections (6.9% versus 3.7%,  $p < 0.0001$ ) for cancer.<sup>5</sup>

In addition to causing patients significant harm and potentially costing them their life, postoperative adverse events are associated with a significant financial burden. The cost of ventilator associated pneumonia has been documented to be between \$10,019 and \$57,158 with the daily cost of intensive care unit care being \$1,861.<sup>6-8</sup> The cost of postoperative acute renal failure ranges from \$18,414 to \$25,219.<sup>9, 10</sup> Reducing complications can avert significant costs associated with complications. By reducing the number of surgical site infections, one participant in the American College of Surgeons National Surgical Quality Improvement Program has estimated savings at \$2,543,180 over four years. (unpublished data)

Not considering the associated adverse events, individuals aged 65 years and older consume a significant proportion of health care resources through the rate at which they undergo surgical procedures. Additionally, the elderly require additional medical resources due to their increased risk for postoperative morbidity and mortality. Reductions in postoperative morbidity and mortality will not only improve patient well-being but will reduce the cost of medical care.

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

1. Popovic J. 1999 National hospital Discharge Survey: Annula Summary with Detailed Diagnoses and Procedure Data. In: Statistics NCfH, ed. Vol 1; 2001.
2. Polanczyk CA, Marcantonio E, Goldman L, et al. Impact of age on perioperative complications and length of stay in patients undergoing noncardiac surgery. *Ann Intern Med.* Apr 17 2001;134(8):637-643.
3. Hamel MB, Henderson WG, Khuri SF, Daley J. Surgical outcomes for patients aged 80 and older: morbidity and mortality from major noncardiac surgery. *J Am Geriatr Soc.* Mar 2005;53(3):424-429.
4. Turrentine FE, Wang H, Simpson VB, Jones RS. Surgical risk factors, morbidity, and mortality in elderly patients. *J Am Coll Surg.* Dec 2006;203(6):865-877.
5. Finlayson E, Fan Z, Birkmeyer JD. Outcomes in octogenarians undergoing high-risk cancer operation: a national study. *J Am Coll Surg.* Dec 2007;205(6):729-734.
6. Warren DK, Shukla SJ, Olsen MA, et al. Outcome and attributable cost of ventilator-associated pneumonia among intensive care unit patients in a suburban medical center. *Crit Care Med.* May 2003;31(5):1312-1317.
7. Safdar N, Dezfulian C, Collard HR, Saint S. Clinical and economic consequences of ventilator-associated pneumonia: a systematic review. *Crit Care Med.* Oct 2005;33(10):2184-2193.
8. Cocanour CS, Ostrosky-Zeichner L, Peninger M, et al. Cost of a ventilator-associated pneumonia in a shock trauma intensive care unit. *Surg Infect (Larchmt).* Spring 2005;6(1):65-72.
9. Pronovost P, Garrett E, Dorman T, et al. Variations in complication rates and opportunities for improvement in quality of care for patients having abdominal aortic surgery. *Langenbecks Arch Surg.* Jul 2001;386(4):249-256.
10. Dimick JB, Pronovost PJ, Cowan JA, Lipsett PA. Complications and costs after high-risk surgery: where should we focus quality improvement initiatives? *J Am Coll Surg.* May 2003;196(5):671-678.

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

**1d. Composite Quality Construct and Rationale**

**1d.1. A composite performance measure is a combination of two or more component measures, each of which individually reflects quality of care, into a single performance measure with a single score.**

For purposes of NQF measure submission, evaluation, and endorsement, the following will be considered composites:

- Measures with two or more individual performance measure scores combined into one score for an accountable entity.
- Measures with two or more individual component measures assessed separately for each patient and then aggregated into one score for an accountable entity:
  - all-or-none measures (e.g., all essential care processes received, or outcomes experienced, by each patient); or
  - any-or-none measures (e.g., any or none of a list of adverse outcomes experienced, or inappropriate or unnecessary care processes received, by each patient).

**1d.1.** Please identify the composite measure construction:

**1d.2. Describe the quality construct, including:**

- the overall area of quality
- included component measures and
- the relationship of the component measures to the overall composite and to each other.

**1d.3. Describe the rationale for constructing a composite measure, including how the composite provides a distinctive or additive**

value over the component measures individually.

**1d.4. Describe how the aggregation and weighting of the component measures are consistent with the stated quality construct and rationale.**

## 2. Reliability and Validity—Scientific Acceptability of Measure Properties

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

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

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

Cardiovascular, Cardiovascular : Coronary Artery Disease (AMI)

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

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

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

**Attachment:**

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

**URL Attachment:**

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

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

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

The numerator is the weighted sum of the three deviations from their expected values for the individual measures comprising the component measure. The question of appropriate weights on the deviations is difficult and would probably lead to a wide variation in opinion. The weights of -4, -2, and 1 are selected to represent order of magnitude differences in seriousness of the three outcomes, which most would agree to (that is to say: readmission is more important than ED which is more important in a negative way than E & M service is in a positive way). The idea of not using weights was also considered, but this was noted to be itself a de facto weight scheme (with all weights the same), and as such, a weight scheme that was less appropriate than the one chosen.

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

Targeted events within 30 days of the operation are included.

<p><b>S.6. Numerator Details</b> <i>(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)</i>  <u>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.</u></p>
<p><b>S.7. Denominator Statement</b> <i>(Brief, narrative description of the target population being measured)</i>  The composite measure is the weighted sum of three individual measures. Thus, the denominator is one.</p>
<p><b>S.8. Target Population Category</b> <i>(Check all the populations for which the measure is specified and tested if any):</i></p>
<p><b>S.9. Denominator Details</b> <i>(All information required to identify and calculate the target population/denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)</i></p>
<p><b>S.10. Denominator Exclusions</b> <i>(Brief narrative description of exclusions from the target population)</i>  N/A</p>
<p><b>S.11. Denominator Exclusion Details</b> <i>(All information required to identify and calculate exclusions from the denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)</i></p>
<p><b>S.12. Stratification Details/Variables</b> <i>(All information required to stratify the measure results including the stratification variables, definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b)</i>  The measure is risk adjusted and case mix adjusted. There is no risk adjustment of race or ethnicity, however race and ethnicity variables will be collected and secondary stratification by race/ethnicity to investigate disparities can be performed.</p>
<p><b>S.13. Risk Adjustment Type</b> <i>(Select type. Provide specifications for risk stratification in S.12 and for statistical model in S.14-15)</i>  No risk adjustment or risk stratification  If other:</p>
<p><b>S.14. Identify the statistical risk model method and variables</b> <i>(Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development and testing should be addressed with measure testing under Scientific Acceptability)</i></p>
<p><b>S.15. Detailed risk model specifications</b> <i>(must be in attached data dictionary/code list Excel or csv file. Also indicate if available at measure-specific URL identified in S.1.)</i>  Note: Risk model details (including coefficients, equations, codes with descriptors, definitions), should be provided on a separate worksheet in the suggested format in the Excel or csv file with data dictionary/code lists at S.2b.</p>
<p><b>S.15a. Detailed risk model specifications</b> <i>(if not provided in excel or csv file at S.2b)</i></p>
<p><b>S.16. Type of score:</b>  Ratio  If other:</p>
<p><b>S.17. Interpretation of Score</b> <i>(Classifies interpretation of score according to whether better quality is associated with a higher score,</i></p>

*a lower score, a score falling within a defined interval, or a passing score)*

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

For data collected during the one year time interval at each hospital: (a) O = the number of observed adverse events at the hospital; (b) using parameters from the applicable model derived logistic equation, compute predicted event probabilities for each patient in the hospital's data set; (c) the sum of these predicted probabilities defines E; (d) compute the hospital's O/E ratio and applicable confidence intervals.

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

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

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

For each data collection year, hospitals would need to estimate their number of qualifying surgeries. Based on that denominator and the required sample size (roughly 180 cases) to achieve reliability of 0.4 (see Risk-adjustment Methodology section), hospitals would take a systematic sample (e.g., every 3rd qualifying case), to achieve the minimum sample size. In the event that the required sample size can not be achieved, hospitals would collect data on all eligible patients.

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

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

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

Required for Composites and PRO-PMs.

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

*If other, please describe in S.24.*

Documentation of original self-assessment, Electronic Health Records, Management Data, Paper medical record/flow-sheet, Pharmacy data, Registry data

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

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

The modeling presented herein is based on historical ACS NSQIP Data files for the last several years. As a measure, data would be collected and reported on an annual basis. Hospitals would not be required to participate in ACS NSQIP- they would simply submit their data to the implementing organization or agency, and would receive their assessments in return.

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

URL

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

Other

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

If other:

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

**2a. Reliability** – See attached Measure Testing Submission Form

**2b. Validity** – See attached Measure Testing Submission Form

[0698\\_MeasureTesting\\_CompositeMSF1.0\\_Data.doc](#)

### 3. Feasibility

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

#### 3a. Byproduct of Care Processes

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

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

[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:

#### 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)*

No

**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.**

[A completely electronic medical record will be needed to capture the risk factors that enter into the model. In addition, a software module \(currently available to ACS NSQIP subscribers\) will be required to transfer information from the EMR to a measure submission database.](#)

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

Attachment:

#### 3c. Data Collection Strategy

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

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

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

[ACS NSQIP has been open to subscription by private sector hospitals since 2004. Ten years prior to this time the program was implemented in the U.S. Department of Veterans Affairs. Thus we have long term experience with the data collection and operational use of the O/E ratio for quality improvement and benchmarking on which this measure is based. Historically, the use of trained data collectors within ACS NSQIP and a comprehensive support system has resulted in high reliability of data and very few problems with missing data. Participants in the program are required to assign a dedicated person for data collection to ensure](#)

reliable assessment of clinical data.

Data definitions are continually evaluated and inter-rater reliability audits are regularly performed.

ACS NSQIP has placed a very high value on accuracy of data collection while maintaining a sample size large enough for statistical modeling and keeping within regulations for patient confidentiality. The methodology of our program has been highly successful with increasing numbers of participants every year, and measureable improvements in surgical outcomes over time based on the O/E ratios for mortality and various post surgical complications. Due to the much smaller number of variables needed for participation in this measure than in the full program, we expect that hospitals that are not ACS NSQIP participants will also be able to achieve highly reliable results.

**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).**

## 4. Usability and Use

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

### 4a. Accountability and Transparency

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

#### 4.1. Current and Planned Use

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

Planned	Current Use (for current use provide URL)
Public Reporting	
Quality Improvement (Internal to the specific organization)	

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

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

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

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

### 4b. Improvement

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

results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

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

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

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

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

**4c. Unintended Consequences**

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

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

Based upon experience with ACS NSQIP data collection, there are very few problems with errors or inaccuracies. Data collectors in the ACS NSQIP receive extensive training and support for accurate data collection. In addition, data collectors are audited for inter-rater reliability and are held to a 95% or better concordance rate for all variables. Additionally, chart audits have been planned in accordance with CMS stipulations for measure participants who are not ACS NSQIP participants.

## 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.

**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**

The measure specifications are harmonized with related measures;

**OR**

The differences in specifications are justified

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

**Are the measure specifications completely harmonized?**

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

**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.)**

**Appendix**

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

**Attachment:**

**Contact Information**

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

**Co.2 Point of Contact:** Helen, Dollar-Maples, [Helen.Dollar-Maples@cms.hhs.gov](mailto:Helen.Dollar-Maples@cms.hhs.gov), 410-786-7214-

**Co.3 Measure Developer if different from Measure Steward:** Centers for Medicare & Medicaid Services

**Co.4 Point of Contact:** Shaheen, Halim, [Shaheen.Halim@cms.hhs.gov](mailto:Shaheen.Halim@cms.hhs.gov), 410-786-6738-

**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.**

[American College of Surgeons, Area of Continuous Quality Improvement](#)

[Clifford Ko](#)

[Karen Richards](#)

[Bruce Hall](#)

[Mark Cohen](#)

[Mehul Raval](#)

[Mira Shiloach](#)

[Angela Ingraham](#)

[Stanley Frencher](#)

[Describe the group's role in measure development](#)

[This group used ACS NSQIP data to develop the statistical risk-adjusted model on which this measure is based. The workgroup also reviewed and summarized the literature that supports the importance of using this measure to as a tool to improve surgical quality.](#)

**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?**

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

**Ad.6 Copyright statement:**

**Ad.7 Disclaimers:**

**Ad.8 Additional Information/Comments:**