TO: NQF Members and Public

FR: NQF Staff

RE: Pre-voting review of an addendum to National Voluntary Consensus Standards: Surgery Endorsement Maintenance 2010, Phase II: A Consensus Report

DA: January 19, 2012

In the recent draft report, National Voluntary Consensus Standards: Surgery Endorsement Maintenance, 2010, Phase II, eight measures were pending final recommendation for endorsement due to harmonization issues and the review of one measure on CAHPS surgical care was completed. Measure developers were asked to collaborate on harmonization and provide responses back to the Steering Committee on the eight measures. In this addendum, nine measures are recommended for endorsement.

Pursuant to section II.A of the Consensus Development Process v. 1.9, this draft document, along with the accompanying material, is being provided to you at this time for purposes of review and comment only and is not intended to be used for voting purposes. You may post your comments and view the comments of others on the NQF website.

NQF Member and public comments must be submitted no later than 6:00 pm ET, February 17, 2012.

NATIONAL QUALITY FORUM

NATIONAL VOLUNTARY CONSENSUS STANDARDS: SURGERY ENDORSEMENT MAINTENANCE 2010, PHASE II: A CONSENSUS REPORT ADDENDUM

DRAFT REPORT FOR COMMENTING

JANUARY 19, 2012

NATIONAL QUALITY FORUM

NATIONAL VOLUNTARY CONSENSUS STANDARDS: SURGERY ENDORSEMENT MAINTENANCE 2010, PHASE II: A CONSENSUS REPORT ADDENDUM

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INTRODUCTION

In the draft report, National Voluntary Consensus Standards: Surgery Endorsement Maintenance 2010, Phase II, eight measures were pending final recommendation for endorsement due to harmonization issues. The Steering Committee first evaluated each candidate standard on its own merits and then compared the measures that met NQF evaluation criteria with the related or competing measures using NQF's harmonization and competing measures guidance. Measures that were identified to be related were evaluated to determine if harmonization was needed. Requests for harmonization were sent to the developers. Final actions and any measure specification changes are addressed in the report.

This report presents the results of the evaluation of 9 measures considered under NQF's Consensus Development Process (CDP). The candidate consensus standards were evaluated against the 2009 version of the measure evaluation criteria (prior to implementing the task force recommendations). All nine measures are recommended for endorsement as voluntary consensus standards suitable for accountability and quality improvement. Six of the measures are previously endorsed measures that have undergone maintenance; three are newly submitted measures recommended for initial endorsement.

- 0365 Pancreatic resection mortality rate (IQI 9) (AHRQ)
- 0366 Pancreatic resection volume (IQI 2) (AHRQ)
- 0357 Abdominal aortic aneurysm (AAA) repair volume (IQI 4) (AHRQ)
- 0359 Abdominal aortic artery (AAA) repair mortality rate (IQI 11)
- 1523 In-hospital mortality following elective open repair of small AAAs (SVS)
- 1534 In-hospital mortality following elective EVAR of small AAAs (SVS)
- 1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey (ACS)
- 0128 Duration of antibiotic prophylaxis for cardiac surgery patients (STS)
- 0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time (CMS)

OVERARCHING ISSUES

Competing and Related Measures

The Steering Committee reviewed eight measures that were specifically identified to be related or competing. Additional detail on each of the measures and discussions of the Committee are included within the measure evaluation tables below.

Antibiotic Prophylaxis: Two of the measures (0128 and 0529) were determined to be related in that they measured the duration of antibiotic prophylaxis but for different procedures. In addition, several other measures that were not included within this endorsement maintenance project were identified as related and requests were sent to each developer to harmonize. All developers indicated that they would work together to harmonize the measures but were not able to complete harmonization during the time requested. While the Committee stressed that the importance of harmonization to those using and reporting the measures, they determined that the benefit of continuing endorsement on these critical areas outweighed the need for harmonized measures at this time. The Committee also indicated to the developers that any further delays in this effort should be avoided at all costs and all of the developers submitted a plan to ensure that the issues would be addressed by the next endorsement maintenance review.

Pancreatic Surgery: Measures 0365 and 0366 are risk-adjusted mortality and volume measures of pancreatic surgery. In the last year, the NQF has also endorsed a similar measure developed by Leapfrog, Measure 0738, Survival predictor for pancreatic resection surgery. The Committee had requested the AHRQ stratify measures 0365 and 0366 by benign and malignant disease. After some discussion, the Committee agreed that the measures were not competing but rather complimentary. Because the AHRQ measures require risk adjustment and are stratified, the Committee determined that they offer information not provided by the Leapfrog measure and recommended continued endorsement of both 0365 and 0366.

Abdominal aortic aneurysm (AAA) repair: Several measures related to AAA repair were under consideration in this project. In a discussion similar to the one on the pancreatic surgery, two risk adjusted measures from AHRQ on mortality and volume (0357 and 0359), now adjusted by volume, were undergoing maintenance review and the Committee evaluated those measures against the recently endorsed Leapfrog measure (0736). In this instance, the Committee viewed Measures 0357 and 0359 as competing against Measure 0736. Because the AHRQ measures were risk adjusted and distinguished

between open vs. endovascular procedures, the Committee determined that they were superior to the Leapfrog measures and recommended continued endorsement.

As a part of this discussion, the Committee was also asked to determine whether Measures 1523 and 1524 were considered competing or related to the other AAA repair measures. It was determined that the focus of Measures 1523 and 1524 differed in that these measures focus on the successful outcomes of the procedure for those performed on smaller AAAs, which should only be performed if the patients are low risk and if treatment is really warranted. The Committee agreed to recommend measures 1523 and 1534 for endorsement as they currently stand with the expectation that the measure developer will harmonize with the AHRQ measures (0357 and 0359) if and when they revise measures 1523 and 1534 to include claims data.

RECOMMENDATIONS FOR ENDORSEMENT

This report presents the results of the evaluation of 9 Phase II addendum measures considered under the NQF CDP.

Candidate Consensus Standards Recommended for Endorsement

Six measures are recommended for continued endorsement and three measures are recommended for initial endorsement as voluntary consensus standards suitable for public accountability and quality improvement. Evaluation summary tables follow the lists of measures and summarize the results of the Steering Committee's evaluation of and voting on the candidate standards that are recommended for continued or initial endorsement. Hyperlinks are provided:

- from each listed measure to the evaluation summary table;
- from each summary table to the detailed measure specifications:
- from each summary table to the web page where all materials submitted by the developer or steward are posted; and
- from each summary table to the web page where the meeting and call summaries, transcripts, and recordings can be accessed.

The Steering Committee recommended the following candidate consensus standards for continued or initial endorsement.

Cardiac, Appendectomy and Pancreatic Resection

Evaluation Summary—Candidate Consensus Standards Recommended for Endorsement

0365 Pancreatic resection mortality rate (IQI 9) (risk adjusted)
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Percentage of adult hospital discharges with procedure code of pancreatic resection with an in-hospital death, stratified by benign and malignant disease. Numerator Statement: Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator. Denominator Statement: Hospital discharges, age 18 years and older, with ICD-9-CM pancreatic resection code procedure and a diagnosis code of pancreatic cancer in any field, stratified by benign and malignant disease. Exclusions: Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) ICD-9-CM codes: 577.0 Acute pancreatitis Adjustment/Stratification: Risk adjustment method widely or commercially available The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age in years (in 5-year age groups), All Patient Refined-Diagnosis Related Group (APR-DRG) and APR-DRG risk-of-mortality subclass. The reference population used in the model is the universe of discharges for states that participate in the HCUP State Inpatient Databases (SID) for the year 2007 (updated annually), a database consisting of 43 states and approximately 30 million adult discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate/User has the optin to stratify by gender, age (5-year age groups), race/ ethnicity, primary payer, and custom stratifiers./ Malignant Disease: ICD-9-CM pancreatic cancer diagnosis codes: 1520 MALIGNANT NEOPL DUODENUM 1561 MAL NEO EXTRAHEPAT DUCTS 1562 MAL NEO AMPULLA OF VATER

0365 Pancreatic resection mortality rate (IQI 9) (risk adjusted)
1570 MAL NEO PANCREAS HEAD 1571 MAL NEO PANCREAS BODY 1572 MAL NEO PANCREAS TAIL 1573 MAL NEO PANCREATIC DUCT 1574 MAL NEO ISLET LANGERHANS 1578 MALIG NEO PANCREAS NEC 1579 MALIG NEO PANCREAS NOS Benign Disease: All other cases Level of Analysis: Facility/ Agency Type of Measure: Outcome Data Source: Electronic administrative data/ claims Measure Steward: Agency for Healthcare Research and Quality | 540 Gaither Road | Rockville | Maryland | 20850
Steering Committee Recommendation for Endorsement: Y-15; N-0; A-0 Rationale: The measure is based on strong evidence and evaluation criteria are met. With stratification that includes benign and malignant disease and both endovascular and open repair, its usefulness is enhanced.
If applicable, Conditions/Questions for Developer: Overarching comment: Please provide feasibility of reporting mortality stratified by institutional volume (e.g., high, medium, low volume with parameters for each) rather than having rate and mortality separated. 1. De.2 Ensure measure description accurately captures measure focus. 2. 2a.8 Denominator Details: Do not limit to pancreatic resection for cancer - could stratify by malignant and benign. Also, consider providing volume as well as rate. 3. 2a.9 Denominator Exclusions: Please remove 'transferring to another short-term hospital (DISP=2)' from the exclusions. 4. 2a.9 Denominator Exclusions: Add exclusion for pancreatitis. Measures 0365 and 0366 should be fully harmonized in order to properly report as a pair. This will involve including all pancreatic disease in both the numerator and denominator of both measures. They can then be stratified by malignant and benign disease. Note: Discussion of Related and Competing measures may result in additional requests to developers specific to harmonization. Developer Response: 1. AHRQ agrees to revise the measure description to more accurately capture the measure focus 2. AHRQ agrees to harmonize the mortality and volume indicator denominators to include benign disease in the mortality measure. Note that the mortality and volume indicator (0366) are designated as paired measures 3. This request is problematic for a few reasons. First, the outcome of interest (in-hospital mortality) is not observed for these cases. Second, it is possible that a single case may be counted twice (once for the transferring hospital, once for the receiving hospital). Third, removing this exclusion would require using data that linked patients across hospitalizations (in order to avoid the issues #1 and #2), which is not readily available for individual hospitals across institutions. Therefore, we respectively defer a definitive response to this request pending the routine availability of linked hospitalization data, or at a minimum additional analysis using such data of the potential impact of removing the exclusion. 4. AHRQ agrees to add an exclusion for pancreatitis Steering Committee Follow-up: 1. The Steering Committee expressed their concern about transferred patients being excluded from the measure. AHRQ responded that the number is less that 1 percent and the majority is transfer of convenience for the patient. The Steering Committee agreed that the response from the developer was adequate. 2. This was one of three related measures considered for potential harmonization. The three included: m*aintenance measure 0365*: Pancreatic resection mortality rate (IQI 9); m*aintenance measure 0366*: Pancreatic resection volume (IQI 2); and *endorsed measure 0738*: Survival predictor for pancreatic resection surgery. Discussion of the three measures is included

0365 Pancreatic resection mortality rate (IQI 9) (risk adjusted)
here. The Steering Committee requested the measure developer continue its expedited work to combine measures 0365 and 0366, including benign disease. After some discussion, the Members agreed that because measures 0365 and 0366 are risk adjusted and measure 0738 is not, that recommendations related to harmonization of numerator and denominator should not be advanced at this time. On the September 13 conference call, the Steering Committee reviewed Measures 0365 and 0366 which have been harmonized to reflect both benign and malignant disease. The developer stated that empirical literature has predominately focused on resections for cancer and there is a substantial difference in short term outcomes between high volume and low volume centers. They noted the potential value of including benign disease as a separate stratum. The developer also indicated that they continue to work on combining the measures into a single measure. Progress to this end will be reviewed on a subsequent conference call. On the November 29 call, the developer indicated that testing results were provided for the revised measures (0365 and 0366) that are now stratified by benign and malignant disease. The Committee was satisfied with the testing results and recommended both measures for endorsement. The Committee will vote on final recommendation for endorsement of this measure following the conference call.
1. Importance to Measure and Report: Y-15; N-0 (1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence) Rationale: The evidence supports the measure's focus on pancreatic resections for cancer and while it is a low-volume procedure, mortality rates are high and merit tracking.
2. Scientific Acceptability of Measure Properties: C-9; P-6; M-0; N-0 (2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities) Rationale: The measure was considered scientifically acceptable. The Committee discussed the importance of separate measures focusing on a pancreatic resection for cancer and a pancreatic resection for benign disease and determined that both could be captured in a single measure that is stratified to report each. The developer revised the measure and it is now stratified by benign and malignant disease.
3. Usability: C-10; P-5; M-0; N-0 (3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures) Rationale: This measure is in use in multiple states and healthcare systems and is reported on HCUPnet as well as used in the MONAHRQ system that is provided for public reporting and quality improvement.
4. Feasibility: C-12; P-3; M-0; N-0 (4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented) Rationale: This measure was considered feasible; data is obtained from electronic claims and chart abstraction.

0366 Pancreatic resection volume (IQI 2)
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Number of adult hospital discharges with procedure for pancreatic resection, stratified by benign and malignant disease. Numerator Statement: Hospital discharges, age 18 years and older, with ICD-9-CM codes for pancreatic resection procedure, stratified by benign and malignant disease. Denominator Statement: Not applicable Exclusions: Not applicable Adjustment/Stratification: No risk adjustment necessary/. Malignant Disease: ICD-9-CM pancreatic cancer diagnosis codes: 1520 MALIGNANT NEOPL DUODENUM 1561 MAL NEO EXTRAHEPAT DUCTS 1562 MAL NEO AMPULLA OF VATER 1570

0366 Pancreatic resection volume (IQI 2)

MAL NEO PANCREAS HEAD
1571
MAL NEO PANCREAS BODY
1572
MAL NEO PANCREAS TAIL
1573
MAL NEO PANCREATIC DUCT
1574
MAL NEO ISLET LANGERHANS
1578
MALIG NEO PANCREAS NEC
1579
MALIG NEO PANCREAS NOS
Benign Disease:
All other cases
Level of Analysis: Facility/ Agency
Type of Measure: Structure/management
Data Source: Electronic administrative data/ claims
Measure Steward: Agency for Healthcare Research and Quality | 540 Gaither Road | Rockville | Maryland | 20850

Steering Committee Recommendation for Endorsement: Y-15; N-0; A-0
Rationale: The measure was considered important and cited strong evidence. With reporting as a pair with 0365 and stratification that includes benign and malignant disease and both endovascular and open repair, its usefulness is enhanced.

If applicable, Conditions/Questions for Developer:

1. De.2 Ensure measure description accurately captures measure focus.
2. 2a.3 Numerator Details: Partial resections and partial operations should be included in 0366,
3. 2a.8 Denominator Details: Do not limit to pancreatic resection for cancer.
4. 2a.9 Denominator Exclusions: Please remove 'transferring to another short-term hospital (DISP=2)' from the exclusions.
5. 2a.9 Denominator Exclusions: Add exclusion for pancreatitis.
6. 2b.3 and 2.c.3 Testing Results: Text speaks to esophageal resection. Please provide correct information and advise if there are other such errors within the submission that have required correction.

Measures 0365 and 0366 should be fully harmonized in order to properly report as a pair. This will involve including all pancreatic disease in both the numerator and denominator of both measures. They can then be stratified by malignant and benign disease.
Note: Discussion of Related and Competing measures may result in additional requests to developers specific to harmonization.

Developer Response:

1. AHRQ agrees to revise the measure description to more accurately capture the measure focus
2. AHRQ agrees to include partial resections and partial operations
3. The volume measure contains no such exclusion. However, in general AHRQ agrees to harmonize the mortality and volume indicator denominators to include benign disease in the mortality measure. Note that the mortality (0365) and volume indicator are designated as paired measures.
4. The volume measure contains no such exclusion; however, see note above regarding harmonization
5. The volume measure contains no such exclusion; however, see note above regarding harmonization
6. Such erroneous references shall be corrected

Steering Committee Follow-up:

1. The Steering Committee agreed that the response from the developer was adequate.
2. This was one of three related measures considered for potential harmonization. The three included: m*aintenance measure 0365*: Pancreatic resection mortality rate (IQI 9); m*aintenance measure 0366*: Pancreatic resection volume (IQI 2); and e*ndorsed measure 0738*: Survival predictor for pancreatic resection surgery. Discussion of the three measures is included here. The Steering Committee requested the measure developer continue its expedited work to combine measures 0365 and 0366, including benign disease. After some discussion, the Members agreed that because measures 0365 and 0366 are risk adjusted and measure 0738 is not, that recommendations related to harmonization of numerator and denominator should not be advanced at this time.

0366 Pancreatic resection volume (IQI 2)
On the September 13 conference call, the Steering Committee reviewed Measures 0365 and 0366 which have been harmonized to reflect both benign and malignant disease. The developer stated that empirical literature has predominately focused on resections for cancer and there is a substantial difference in short term outcomes between high volume and low volume centers. They noted the potential value of including benign disease as a separate stratum. The developer also indicated that they continue to work on combining the measures into a single measure. Progress to this end will be reviewed on a subsequent conference call. On the November 29 call, the developer indicated that testing results were provided for the revised measures (0365 and 0366) that are now stratified by benign and malignant disease. The Committee was satisfied with the testing results and recommended both measures for endorsement. The Committee will vote on final recommendation for endorsement of this measure following the conference call.
1. Importance to Measure and Report: Y-15; N-0 (1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence) Rationale: The evidence supports the measure's focus on pancreatic resections for cancer and while it is a low-volume procedure, the impact in terms of mortality is important to track and report.
2. Scientific Acceptability of Measure Properties: C-9; P-6; M-0; N-0 (2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities) Rationale: The measure was considered scientifically acceptable. The Committee discussed the importance of separate measures focusing on a pancreatic resection for cancer and a pancreatic resection for benign disease and determined that both could be captured in a single measure to be stratified to report each. The developer revised the measure and it is now stratified by benign and malignant disease.
3. Usability: C-10; P-5; M-0; N-0 (3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures) Rationale: This measure is in use in multiple states and healthcare systems and is reported on HCUPnet as well as used in the MONAHRQ system that is provided for public reporting and quality improvement.
4. Feasibility: C-14; P-1; M-0; N-0 (4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented) Rationale: This measure was considered feasible; data is obtained from electronic claims and chart abstraction.

0357 Abdominal aortic aneurysm (AAA) repair volume (IQI 4)
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Count of adult hospital discharges in a one year time period with a procedure code of AAA repair. Numerator Statement: Discharges, age 18 years and older, with an abdominal aortic aneurysm (AAA) repair procedure and a primary or secondary diagnosis of AAA. Denominator Statement: Not applicable. Exclusions: Not applicable. Adjustment/Stratification: no risk adjustment necessary/ The stratification of the denominator for open vs. endovascular and ruptured vs. unruptured involve the following codes in the denominator specification: AAA Repair (ICD-9-CM Procedure Codes: OPEN ; '3834´ = ´1´ /* AORTA RESECTION & ANAST * ´3844´ = ´1´ /* RESECT ABDM AORTA W REPL */ ´3864´ = ´1´ /* EXCISION OF AORTA */ /* ENDOVASCULAR */; ´3971´ = ´1´ /* ENDO IMPL GRFT ABD AORTA */ /* Include Only: AAA */ /* ICD-9-CM Diagnosis Codes: */ /* RUPTURED */; ´4413´ = ´1´ /* RUPT ABD AORTIC ANEURYSM */ /* UNRUPTURED */;

0357 Abdominal aortic aneurysm (AAA) repair volume (IQI 4)

´4414´ = ´1´ /* ABDOM AORTIC ANEURYSM */
Level of Analysis: Facility/ Agency
Type of Measure: Structure/management
Data Source: Electronic administrative data/ claims
Measure Steward: Agency for Healthcare Research and Quality | 540 Gaither Road | Rockville | Maryland | 20850

Steering Committee Recommendation for Endorsement: Y-15; N-2; A-0
Rationale: The measure initially did not pass the importance criterion; however, the Committee asked for additional information. With that information, the Committee reconsidered the measure. The developer revised the measure to include stratification by endovascular and open repairs. With this change, the Committee decided to recommend the measure for endorsement.

If applicable, Conditions/Questions for Developer:

1. Overarching Comment: The Steering Committee vote regarding the NQF evaluation criterion of "Importance" was split with 10 voting yes and 11 voting no and a number of members noted the measure should only be reported with the related mortality measure. The developer will want to review the measure in its entirety in this light and provide whatever additional information/specification including value as a paired measure with mortality that it believes appropriate. Should specifications change, it is important to provide information regarding testing with the changes.
2. 2a. 11 Stratification Details/Variables: Measure should stratify the measure by endovascular and open repairs.

Note: Discussion of Related and Competing measures may result in additional requests to developers specific to harmonization. As discussed the developer should meet with SVS to harmonize or blend measures concerning AAA

Developer Response:

1. AHRQ agrees to stratify the measure by endovascular and open repairs, but notes that additional methodological development will be required to ensure the measures have adequate reliability.
2. AHRQ noted at the meeting that the volume and mortality measures are to be reported as paired measures though some users may not have the information to report both.

Steering Committee Follow-Up:

The Steering Committee was concerned about volume being reported as a singular measure.

1. The Steering Committee requested information regarding needed methodological changes for the measure based on the endovascular and open repair stratification and will further consider the measure with that information. AHRQ will also further clarify the risk adjustment model.
2. The Steering Committee was concerned that the developer had not addressed creating a composite of the volume (0357) and morbidity measure (0359). Members noted that the developer had agreed to stratify the measure by endovascular and open repairs but that the measure did have reliability testing for the requested change. The Steering Committee asked for additional information about how the developer would redevelop their risk stratification model. On the August 3 conference call, the developer discussed the measure together with Measure 0359 and highlighted preliminary results of revising the measure with four strata. The developer is continuing to explore how the outcomes information can be put back together with volume for the requested composite/combined measures. The measure will move forward as a composite rather than as two measures.

On the September 13 conference call, the Steering Committee reviewed the developer's revisions to reflect four strata, ruptured or unruptured aneurysms repaired by open or endovascular approaches. These four components will be reported separately within this measure in addition to reporting overall measure performance. The developer also responded to questions about testing results and public reporting details to the satisfaction of the Committee.

On the November 29 call, the developer stated that measure 0359: Abdominal aortic artery (AAA) repair mortality rate (IQI 11) was revised and is now adjusted by volume. Although volume has been incorporated into measure 0359, the developer stated that measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4) should remain. Some Committee members voiced their concerns as to whether volume should be a stand-alone measure. Members of the Committee also indicated that both measures are used by a variety of individuals for a variety of reasons. It was noted on the call that measures 0357 and 0359 are to be reported as paired measures. During the related and competing measures discussion, the Committee agreed that measures 0357 and 0359 were competing against the Leapfrog measure, measure 0736: Survival predictor for abdominal aortic aneurysm (AAA). The Committee determined that the AHRQ measures (0357 and 0359) were superior to measure 0736 as measures 0357 and 0359 distinguish between open vs. endovascular procedures and the measures are risk adjusted. The Committee will vote on each criteria and final recommendation for endorsement of this measure following the conference call.

1. Importance to Measure and Report: Y-14; N-3

0357 Abdominal aortic aneurysm (AAA) repair volume (IQI 4)
(1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence) Rationale: The measure would provide key information to the public about AAA mortality. The majority of AAA repairs are done endovascularly and open repairs have become more complicated.
2. Scientific Acceptability of Measure Properties: C-8; P-8; M-1; N-0 *(2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities)* Rationale: The developer revised the measure to reflect four strata, ruptured or unruptured aneurysms repaired by open or endovascular approaches.
3. Usability: C-11; P-4; M-1; N-1 *(3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures)* Rationale: Several members were uncertain if volume should remain as a stand-alone performance measure.
4. Feasibility: C-14: P-3; M-0; N-0 *(4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented)* Rationale: The data is derived from electronic claims.

0359 Abdominal aortic artery (AAA) repair mortality rate (IQI 11) (risk adjusted)
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Percent of adult hosptial discharges in a one-year time period with a procedure code of AAA repair and a diagnosis of AAA with an in-hospital death. Numerator Statement: Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator. Denominator Statement: Discharges, age 18 years and older, with ICD-9-CM AAA repair code procedure and a diagnosis of AAA in any field. The denominator may be stratified by open vs. endovascular procedures, and ruptured vs. un-ruptured AAA. Exclusions: Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) Adjustment/Stratification: risk adjustment method widely or commercially available The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age in years (in 5-year age groups), All Patient Refined-Diagnosis Related Group (APR-DRG) and APR-DRG risk-of-mortality subclass. The reference population used in the model is the universe of discharges for states that participate in the HCUP State Inpatient Databases (SID) for the year 2007 (updated annually), a database consisting of 43 states and approximately 30 million adult discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Risk adjustment factors: sex age 18-24; age 25-29; age 30-34; age 35-39; age 40-44; age 45-49; age 50-54; age 55-59; age 60-64; age 65-69; age 70-74; age 75-79; age 80-84; age 85+ ADRG 1731 (other vascular procedures-minor) ADRG 1732 (other vascular procedures-moderate) ADRG 1733 (other vascular procedures-major) ADRG 1734 (other vascular procedures-extreme) ADRG 1691 (major thoracic and abdominal vascular procedures-minor) ADRG 1692 (major thoracic and abdominal vascular procedures-moderate) ADRG 1693 (major thoracic and abdominal vascular procedures-major) ADRG 1694 (major thoracic and abdominal vascular procedures-extreme MDC 5 (Cardiovascular) Transfer-in status Gender, age (5-year age groups), race/ ethnicity, primary payer, custom The stratification of the denominator for open vs. endovascular and ruptured vs. unruptured involves the following codes in the

0359 Abdominal aortic artery (AAA) repair mortality rate (IQI 11) (risk adjusted)

denominator specification:
AAA Repair
ICD-9-CM Procedure Codes:
OPEN
´3834´ = ´1´ /* AORTA RESECTION & ANAST */
´3844´ = ´1´ /* RESECT ABDM AORTA W REPL */
´3864´ = ´1´ /* EXCISION OF AORTA */
ENDOVASCULAR
´3971´ = ´1´ /* ENDO IMPL GRFT ABD AORTA */
AAA
ICD-9-CM Diagnosis Codes:
RUPTURED
´4413´ = ´1´ /* RUPT ABD AORTIC ANEURYSM */
UNRUPTURED
´4414´ = ´1´ /* ABDOM AORTIC ANEURYSM */
Level of Analysis: Facility/ Agency
Type of Measure: Outcome
Data Source: Electronic administrative data/ claims
Measure Steward: Agency for Healthcare Research and Quality | 540 Gaither Road | Rockville | Maryland | 20850

Steering Committee Recommendation for Endorsement: Y-16; N-0; A-0
Rationale: The measure initially did not pass the importance criterion; however, the Committee asked for additional information. With that information, the Committee reconsidered the measure. The developer revised the measure to include stratification by endovascular and open repairs. With this change, the Committee decided to recommend the measure for endorsement.

If applicable, Conditions/Questions for Developer:

1. 2a.11 Stratification Details/Variables: a) Stratify the measure by endovascular and open repairs as well as emergency vs. elective repair; b) specify the risk stratification model used; 3) identify settings where the model has been validated in addition to the training data set in which it was developed or provide other supporting data as to its validity.
2. 2b.3 Testing Results: Please provide information about signal to noise ratio.

Note: Discussion of Related and Competing measures may result in additional requests to developers specific to harmonization. As discussed, the developer should meet with SVS to harmonize or blend measures concerning AAA.

Developer Response:

1. a) As noted above, AHRQ agrees to stratify the measure by endovascular and open repairs; in addition, AHRQ agrees to stratify by ruptured vs. un-ruptured aneurysm (which is what we assume you mean by emergency vs. elective repair); but AHRQ again notes that additional methodological development will be required to ensure the measures have adequate reliability; b) the risk stratification model is specified below; c) the model has been validated on the State Inpatient Databases (SID), which consists of hospital discharge data from 40 states (constituting about 90% of hospital discharges in the U.S) for the years 2001-2008
2. The signal to noise ratio is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). The ratio itself is only a diagnostic for the degree of variance in the risk-adjusted rate systematically associated with the provider. Therefore, what matters is the magnitude of the variance in the "smoothed" rate (that is, the variance in the risk-adjusted rate after the application of the univariate shrinkage estimator based on the signal ratio). What the data demonstrate is systematic variation in the provider level rate of 2.6 to 7.6 per 100 from the 5th to 95th percentile after a signal ratio of 0.307 is applied as the shrinkage estimator (that is, after accounting for variation due to random factors).

Table 3. Risk Adjustment Coefficients for IQI #11— AAA Repair Mortality

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
Intercept		1	-6.6044	0.1713	1486.04	0.0000
Sex	Female	1	0.4539	0.0747	36.95	0.0000
Age	65 to 74	1	0.4879	0.1072	20.72	0.0000
Age	75 to 79	1	0.8737	0.1201	52.97	0.0000

0359 Abdominal aortic artery (AAA) repair mortality rate (IQI 11) (risk adjusted)						
Age	80 to 84	1	1.1092	0.1200	85.50	0.0000
Age	85+	1	1.4440	0.1359	112.97	0.0000
APR-DRG	'1691' to '1692'	1	1.6789	0.1623	107.05	0.0000
APR-DRG	'1693' to '1694'	1	3.9127	0.1523	659.72	0.0000
APR-DRG	'1733' to '1734'	1	3.1568	0.1676	354.55	0.0000
MDC	5	1	2.6400	0.1483	316.85	0.0000
MDC	Other	1	2.9536	0.2252	172.05	0.0000
RUPTURED		1	2.0565	0.0808	647.42	0.0000

c-statistic 0.937

Note: The APR-DRG consists of the DRG and the risk-of-mortality subclass (minor (1), moderate (2), major (3) and extreme (4)).

Steering Committee Follow-Up:

1. The Steering Committee requested information regarding needed methodological changes for the measure based on the endovascular and open repair stratification and will further review the measure with that information. AHRQ will also further clarify the risk adjustment model.
2. The Steering Committee was concerned that the developer had not addressed creating a composite of the volume (0357) and morbidity measure (0359). It noted that the developer had agreed to stratify the measure by endovascular and open repairs but that the measure did not have any reliability testing for the requested change. The Steering Committee asked for additional information about how the developer would redevelop their risk stratification model. On the August 3 conference call, the developer highlighted preliminary results about the measure's stratification. A Steering Committee member questioned whether the measure was useful for endovascular un-ruptured repairs, if the difference between the best performing hospitals was 0.00 percent and worst performing hospitals was 0.75 percent repairs, which was considered minimal. Additionally, it was noted that open ruptured repairs also showed little difference between the best performing hospitals at 24.74 percent and the worst performing hospitals at 26.53 percent. The Steering Committee resolved that while some of the collected data may show small differences, the measure would also show areas of variation. The developer further explained that they could use the data to identify hospitals that performed at better or worse than average but for other subsets.

On the August 3 conference call, the developer highlighted preliminary results of revising the measure with four strata – ruptured vs. unruptured; and open vs. endovascular repair using available data from a period of years using data from 1700 hospitals, of which 500 do endovascular repair of ruptured aneurysms. Based on the preliminary data of that stratification, a number of issues were discussed including whether the measure was useful for endovascular un-ruptured repairs, given minimal differences between the best performing hospitals (0.00 percent)and worst performing hospitals (0.75 percent);small differences in open ruptured repairs between hospitals that performed better than expected (24.74 percent) and those that performed worse than expected (26.53 percent); risk stratification approaches using inpatient diagnoses vs. clinical data or outpatient diagnoses. The Steering Committee opined that while some of the collected data may show small differences, the breakdown can show areas of variation that warrant measurement and follow up. The developer is continuing to explore how the outcomes information can be put back together with volume for the requested composite/combined measures.

On the September 13 conference call, the Steering Committee reviewed the developer's revisions to reflect four strata, ruptured or unruptured aneurysms repaired by open or endovascular approaches. These four components will be reported separately within this measure in addition to reporting overall measure performance. The developer also responded to questions about testing results and public reporting details to the satisfaction of the Committee.

On the November 29 call, the developer stated that measure 0359: Abdominal aortic artery (AAA) repair mortality rate (IQI 11) was revised and is now adjusted by volume. Although volume has been incorporated into measure 0359, the developer stated that measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4) should remain. Some Committee members voiced their concerns as to whether volume should be a stand-alone measure. Members of the Committee also indicated that both measures are used by a variety of individuals for a variety of reasons. It was noted on the call that measures 0357 and 0359 are to be reported as paired measures. During the related and competing measures discussion, the Committee agreed that measures 0357 and 0359 were competing against the Leapfrog measure, measure 0736: Survival predictor for abdominal aortic aneurysm (AAA). The Committee determined that the

0359 Abdominal aortic artery (AAA) repair mortality rate (IQI 11) (risk adjusted)
AHRQ measures (0357 and 0359) were superior to measure 0736 as measures 0357 and 0359 distinguished between open vs. endovascular procedures and the measures are risk adjusted. The Committee will vote on each criteria and final recommendation for endorsement of this measure following the conference call.
1. Importance to Measure and Report: Y-15; N-1 *(1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence)* Rationale: The measure would provide key information to the public about AAA mortality. The majority of AAA repairs are done endovascularly and open repairs have become more complicated.
2. Scientific Acceptability of Measure Properties: C-10; P-6; M-0; N-0 *(2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities)* Rationale: The developer revised the measure to reflect four strata, ruptured or unruptured aneurysms repaired by open or endovascular approaches.
3. Usability: C-14; P-2; M-0; N-0 *(3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures)* Rationale: This measure is in use in multiple states and healthcare systems and is reported on HCUPnet as well as used in the MONAHRQ system that is provided for public reporting and quality improvement.
4. Feasibility: C-13; P-3; M-0; N-0 *(4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented)* Rationale: The data is derived from electronic claims.

1523 In-hospital mortality following elective open repair of small AAAs
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Percentage of aymptomatic patients undergoing open repair of small abdominal aortic aneurysms (AAA)who die while in hospital. This measure is proposed for both hospitals and individual providers. Numerator Statement: Mortality following elective open repair of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs Denominator Statement: All elective open repairs of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs Exclusions: > 6 cm minor diameter - men > 5.5 cm minor diameter - women Symptomatic AAAs that required urgent/emergent (non-elective) repair Adjustment/Stratification: No risk adjustment necessary/No stratification is required for this measure. Level of Analysis: Can be measured at all levels, Clinicians : Group, Clinicians : Individual, Facility/ Agency Type of Measure: Outcome Data Source: Registry data Measure Steward: Society for Vascular Surgery | 633 N. St. Clair, 24th floor | Chicago | Illinois | 60611
Steering Committee Recommendation for Endorsement: Y-16; N-1; A-0 Rationale: The evidence supports the measure's focus on small AAAs repairs and it provides important outcome data.
If applicable, Conditions/Questions for Developer: Overall comment: Based on the narrow margin of the Steering Committee vote related to having met criteria for endorsement the measure will be reconsidered with the response to the questions and conditions below. 1. De2. Brief Description and 2a.1 Numerator Statement: Suggested addition of 30-day mortality with in-hospital mortality. Also, please clarify whether aneurysm size can be collected using administrative (i.e., is widely available outside the Northern New England registry), or available clinical data and the added burden of such collection. 2. 2a. Measure Specifications: Provide a timeframe for availability of newly created CPT2 codes to make this a universally applicable measure. 3. 2a.3 Numerator Details: Reword the numerator details here and throughout where registry is specified to be clear that a specific registry (i.e., SVS, VSGNE) is not required to collect the data. 4. 2b Reliability Testing and 2c Validity Testing: Advise what testing will be needed and completed for the suggested modification to 30 day mortality? 5. 2d. Exclusions: Provide reconcile sample size and data for what is being measured. Also reconcile aneurysm size in the

1523 In-hospital mortality following elective open repair of small AAAs

population of interest and the sizes specified throughout.

6. 2h. Disparities in Care: Provide information about disparities or plans to be able to provide data.
7. 3a.2 Use in a Public Reporting Initiative: Please provide plans for public reporting (within 3 years).

Note: Discussion of Related and Competing measures may result in additional requests to developers specific to harmonization

Developer Response:

1. We suggest in-hospital instead of 30-day mortality for several reasons. We have previously studied mortality within the first year after open AAA repair. In-hospital mortality was 2.1% and 30-day mortality was 2.3% in VSGNE, since almost every patient who died within 30 days was never discharged. [Predicting 1-year mortality after elective abdominal aortic aneurysm repair. Beck et al, J Vasc Surg. 2009.49:838-44]. Further, in-hospital mortality is more easily obtained and audited, and is immediately available at the time of discharge. Finally, there is lower cost for obtaining in-hospital results, since subsequent patient contact after discharge is not necessary. We believe that these advantages make in-hospital mortality a more appropriate measure and have not changed this portion of the application. AAA size is readily available in the medical record, and is tracked not only in VSGNE, but the SVS VQI registry, which now comprises more than 80 centers in 30 states across the U. S., and is expected to comprise all states by 2012. The SVS VQI is the de facto national registry for vascular surgery. While AAA size cannot currently be collected using administrative data, we expect that the great majority of vascular surgeons in the U.S. will be participating in SVS VQI by 2012.
2. It is our plan to request CPT2 codes to allow coding of AAA diameter by claims data. These codes will be reviewed by the CPT Performance Measures Advisory Group's next meeting, which is scheduled for July 18-19, 2011. The CPT Editorial Panel will then have to approve the codes before they can appear in any CPT publication. The Editorial Panel will meet October 13-15, 2011.
3. Numerator and denominator have been edited to clearly state than ANY registry tracking the appropriate variables can be used for reporting all of the current measures being proposed by SVS.
4. As stated above, we have already compared in-hospital and 30-day mortality in 748 patients undergoing open elective AAA repair in VSGNE and found no advantage to using 30-day mortality, which is more difficult and more expensive to collect.
5. This section has been expanded. Data are provided for large and small AAAs, showing difference in operative mortality, emphasizing the reason for including only SMALL dia AAAs in this measure. Patients with larger diameter AAAs cannot be included without complex risk adjusting that is not available. However, data indicate that MANY small AAAs are being electively repaired, and it is in this population that a quality measure is needed. Most patients with much larger AAAs always warrant treatment, since the AAA rupture risk is so high if not treated.
6. Disparities have not been reported. As additional data are acquired from the SVS registry across a much larger and varied population, future disparities may be discovered.
7. SVS intends to request that all of these measures be included in PQRS, and expects CMS to begin publishing PQRS data in the near future. Independent of this, SVS plans to request permission from participating providers and hospitals to publish these measures on the SVS public website.

Steering Committee Follow-up:

The Steering Committee expressed concern about the documentation and tracking of aneurysm size outside of the SVS registry though it was believed that this could be captured based on chart notes. The Steering Committee will have a follow-up call to review this measure as part of the AAA Repair related and competing measures once a composite has been created for measures 0357 and 0359.

On the November 29 call, during the related and competing measures discussion, the Committee determined that measures 1523 and 1534 were not competing against measures 0357, 0359 and 0736 because measures' 1523 and 1534 focus is different. The SVS measures focus on the successful outcomes of the procedure for those performed on smaller AAAs, which should only be performed if the patients are low risk and if treatment is really warranted. SVS, the developer, did indicate that they are currently expanding the data source of these two measures, measures 1523 and 1534, to include claims data. The Committee agreed to recommend measures 1523 and 1534 for endorsement as they currently stand with the expectation that the measure developer will harmonize with the AHRQ measures (0357 and 0359) if and when they revise measures 1523 and 1534 to include claims data. The Committee will vote on final recommendation for endorsement of this measure following the conference call.

1. Importance to Measure and Report: Y-18; N-3; A-0

(1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence)

Rationale: The measure provides important outcome data. More AAA repairs are being conducted; although, they may not be medically necessary. However, the data provided in the measure included both small and large aneurysms, despite the stated measure's focus on

1523 In-hospital mortality following elective open repair of small AAAs
only small AAAs. High mortality levels may encourage a process review.
2. Scientific Acceptability of Measure Properties: C-2; P-16; M-2; A-1 *(2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities)* Rationale: The Committee described the importance of extending the measure to 30-day mortality to identify adverse outcomes. The Committee stated the numerator time window, while verbally explained satisfactorily, could be confusing to users.
3. Usability: C-4; P-11; M-4; A-2 *(3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures)* Rationale: The data used for the measure is drawn from registry data that includes both claims and chart abstracted data thus is usable for registry participants although for non-registry participants, the data would prove challenging to collect.
4. Feasibility: C-4; P-10; M-3; A-4 *(4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented)* Rationale: The registry group from which data for this measure is drawn is about 10 hospitals thus information about feasibility is limited both in terms of the number of facilities in which tested and testing with only registry data. At present there is no mechanism for identifying small aneurysms with administrative data. The developer is working to develop CPT II codes that would allow aneurysm size to be captured and reported with administrative data. This would require new/additional specifications for the measure. It was noted that the measure could be revised and limited to mortality unrelated to aneurysm size that could be collected using administrative data; this would require further modification of the measure.

1534 In-hospital mortality following elective EVAR of small AAAs
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Percentage of patients undergoing elective endovascular repair of small asymptomatic abdominal aortic aneurysms (AAA) who die while in hospital. This measure is proposed for both hospitals and individual providers. Numerator Statement: Mortality following elective endovascular AAA repair of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs Denominator Statement: All elective endovascular repairs of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs Exclusions: A registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for denominator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) registries records such information. Patients who underwent endovascular AAA repair are included if their aneurysm was asymptomatic and small (< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging). Adjustment/Stratification: No risk adjustment necessary/No stratification is required for this measure. Level of Analysis: Can be measured at all levels, Clinicians : Group, Clinicians : Individual, Facility/ Agency Type of Measure: Outcome Data Source: Registry data Measure Steward: Society for Vascular Surgery | 633 N. St. Clair, 22nd Floor | Chicago | Illinois, 60611
Steering Committee Recommendation for Endorsement: Y-16; N-1; A-0 Rationale: The evidence supports the measure's focus on small AAAs repairs and it provides important outcome data.
If applicable, Conditions/Questions for Developer: Based on the narrow margin of the Steering Committee vote related to having met criteria for endorsement, the committee will reconsider the measure with the response to the questions and conditions below. 1. De2. Brief Description and 2a.1 Numerator Statement: Suggested modification- addition of 30-day mortality with in-hospital mortality. Also, please clarify whether aneurysm size can be collected using administrative (i.e., is widely available outside the Northern New England registry), or available clinical data and the added burden of such collection. 2. 2a Measure Specifications: Scope of the measure as specified will have limited impact. Please reevaluate. 3. 2b Reliability Testing and 2c Validity Testing: Identify the testing that will need to be completed for the suggested modifications? 4. 2d. Exclusions: Provide reconcile sample size and data for what is being measured. Also reconcile aneurysm size in the population of interest and the sizes specified throughout.

1534 In-hospital mortality following elective EVAR of small AAAs

5. 2h. Disparities in Care: Providing information about disparities or plans to be able to provide same.
6. 3a.2 Use in a public reporting initiative: Please provide plans for public reporting (within 3 years).

Developer Response:

1. We suggest in-hospital instead of 30-day mortality for several reasons. We have previously studied mortality within the first year after elective endovascular AAA repair. In-hospital mortality was 0.48% and 30-day mortality was 0.50% in VSGNE, since almost every patient who died within 30 days was never discharged. [Predicting 1-year mortality after elective abdominal aortic aneurysm repair. Beck et al, J Vasc Surg. 2009.49:838-44]. Further, in-hospital mortality is more easily obtained and audited, and is immediately available at the time of discharge. Finally, there is lower cost for obtaining in-hospital results, since subsequent patient contact after discharge is not necessary. We believe that these advantages make in-hospital mortality a more appropriate measure and have not changed this portion of the application. AAA size is readily available in the medical record, and is tracked not only in VSGNE, but the SVS VQI registry, which now comprises more than 80 centers in 30 states across the U. S., and is expected to comprise all states by 2012. The SVS VQI is the de facto national registry for vascular surgery. While AAA size cannot currently be collected using administrative data, we expect that the great majority of vascular surgeons in the U.S. will be participating in SVS VQI by 2012.
2. We are not certain as to the exact specification within 2a to which this comment is applied. However, we disagree that this measure will have limited impact. Most AAAs are small when detected, and there is a general suspicion that too many small AAAs are being repaired unnecessarily, with a resulting unnecessary operative mortality. This measure will focus attention on the elective mortality rate of endovascular AAA repair in these patients. Although the median mortality rate is low in VSGNE, there is significant variation among hospitals, and large clinical trials have documented this mortality to be 2-3%, even for small AAAs. If 10,000 patients per year in the US undergo unnecessary endovascular repair of such small AAAs, a 3% mortality results in 300 avoidable deaths. This is an important quality measure, and needs to be established in parallel with our open AAA repair measure, so that surgeons performing AAA repair can/must report their outcomes independent of which technique they use. We have not changed the measure form, because it was not clear where to insert this information.
3. As stated above, we have already compared in-hospital and 30-day mortality in 639 patients undergoing elective endovascular AAA repair in VSGNE and found no advantage to using 30-day mortality, which is more difficult and more expensive to collect.
4. This section has been expanded. Data are provided for large and small AAAs, showing difference in operative mortality, emphasizing the reason for including only SMALL dia AAAs in this measure. Patients with larger diameter AAAs cannot be included without complex risk adjusting that is not available. However, data indicate that MANY small AAAs are being electively repaired, and it is in this population that a quality measure is needed. Most patients with much larger AAAs always warrant treatment, since the AAA rupture risk is so high if not treated.
5. Disparities have not been reported. As additional data are acquired from the SVS registry across a much larger and varied population, future disparities may be discovered.
6. SVS intends to request that all of these measures be included in PQRS, and expects CMS to begin publishing PQRS data in the near future. Independent of this, SVS plans to request permission from participating providers and hospitals to publish these measures on the SVS public website.

Steering Committee Follow-up:

The Steering Committee expressed concern about the documentation and tracking of aneurysm size outside of the SVS registry. The Steering Committee will have a follow-up call to review this measure as part of the AAA Repair related and competing measures once a composite has been created for measures 0357 and 0359.

On the November 29 call, during the related and competing measures discussion, the Committee decided that measures 1523 and 1534 were not competing against measures 0357, 0359 and 0736 because measures' 1523 and 1534 focus is different. The SVS measures focus on the successful outcomes of the procedure for those performed on smaller AAAs, which should only be performed if the patients are low risk and if treatment is really warranted. SVS, the developer, did indicate that they are currently revising the data source of these two measures, measures 1523 and 1534, to include claims data. The Committee agreed to recommend measures 1523 and 1534 for endorsement as they currently stand with the expectation that the measure developer will harmonize with the AHRQ measures (0357 and 0359) if and when they revise measures 1523 and 1534 to include claims data. The Committee will vote on final recommendation for endorsement of this measure following the conference call.

1. Importance to Measure and Report: Y-21; N-0 ; A-0

(1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence)

Rationale: The measure provides important outcome data. More AAA repairs are being conducted; although, they may not be medically necessary. However, the data provided in the measure included both small and large aneurysms, despite the measure's focus on only

1534 In-hospital mortality following elective EVAR of small AAAs
small AAAs. High mortality levels may encourage a process review.
2. Scientific Acceptability of Measure Properties: C-5; P-13; M-3; N-0 *(2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities)* Rationale: The Committee discussed the importance of extending the measure to 30-day mortality to identify adverse outcomes. The Committee stated that the time window may be confusing.
3. Usability: C-3; P-15; M-2; N-1 *(3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures)* Rationale: In the future the measure could be adjusted to be applicable for other procedures.
4. Feasibility: C-5; P-10; M-5; N-1 *(4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented)* Rationale: The measure did not provide wide spread testing data and may not be feasible without the registry. The developer is attempting to create CPT II codes to facilitate use beyond the registry in the future.

1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: The following 6 composites and 1 single-item measure are generated from the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Surgical Care Survey. Each measure is used to assess a particular domain of surgical care quality from the patient's perspective. Measure 1: Information to help you prepare for surgery (2 items) Measure 2: How well surgeon communicates with patients before surgery (4 items) Measure 3: Surgeon's attentiveness on day of surgery (2 items) Measure 4: Information to help you recover from surgery (4 items) Measure 5: How well surgeon communicates with patients after surgery (4 items) Measure 6: Helpful, courteous, and respectful staff at surgeon's office (2 items) Measure 7: Rating of surgeon (1 item) The Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Surgical Care Survey is administered to adult patients (age 18 and over) having had a major surgery as defined by CPT codes (90 day globals) within 3 to 6 months prior to the start of the survey. Numerator Statement: We recommend that CAHPS Surgical Survey composites be calculated using a top-box scoring method. The top box score refers to the percentage of patients whose responses indicated excellent performance for a given measure. This approach is a kind of categorical scoring because the emphasis is on the score for a specific category of responses. The composite measures do not have a typical numerator. This section is used to describe the composite score. The composite score is the average proportion of respondents who answered the most positive response category across the questions in the composite. The top box numerators for items within Composite measures 1, 2, 4, 5, and 6 is the number of respondents who answered "Yes, definitely" across the items in each composite. The top box composite score is the average proportion of respondents who answered "Yes, definitely" across the items in the composite. The top box numerator for items within Composite measure 3 is the number of respondents who answered "Yes" across the items in this composite. The top box composite score is the average proportion of respondents who answered "Yes" across the items in this composite. The top box numerator for the Measure 7, the Global Rating Item, is the number of respondents who answered 9 or 10 to the Global Rating Item. Note that for users who want to case-mix adjust their scores, case-mix adjustment can be done using the CAHPS macro and the adjustment is made prior to the calculation of the total score. For more, see section 2e.2. See also Attachment H: Reporting Measures for the CAHPS Surgical Care Survey. Denominator Statement: The composite does not have a typical denominator statement. This section describes the target population. The major criteria for selecting patients were having had a major surgery as defined by CPT codes (90 day globals) within 3 to 6 months prior to the start of the survey. . [For the full list of CPT codes, see Attachment J]. Exclusions: The following patients would be excluded from all composites:

1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey
• Surgical patients whose procedure was greater than 6 months or less than 3 months prior to the start of the survey. • Surgical patients younger than 18 years old. • Surgical patients who are institutionalized (put in the care of a specialized institution) or deceased. • Surgery performed had to be scheduled and not an emergency procedure since emergency procedures are unlikely to have visits with the surgeon before the surgery. • Multiple surgery patients within the same household can be included in the sampling frame. However, once one patient in the household is sampled, any other patients in the same household would be excluded from being sampled in order to minimize survey burden to the household. Adjustment/Stratification: Case-mix adjustment (optional)/No stratification is required for this measure. Level of Analysis: Clinicians: Individual, Group Type of Measure: Composite Data Source: Survey-patient Measure Steward: American College of Surgeons | 20 F Street NW, Suite 1000 | Washington | District of Columbia, 20001
Steering Committee Recommendation for Endorsement: Y-15, N-1; A-0 Rationale: The Committee noted the importance of patient centered measures. This measure provides information from the patient perspective regarding their surgical experience.
If applicable, Conditions/Questions for Developer: 1. Provide final data results on the scale 2. Revise the composite submission form to: a) make it easier to understand what is being submitted for review; and b) provide the requested information in the correct section of the submission form.
1. Importance to Measure and Report: Y-16, N-0 *(1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence)* Rationale: This measure provides important information regarding quality of care to consumers as well as individual providers and institutions.
2. Scientific Acceptability of Measure Properties: C-9; P-6; M-1; N-0 *(2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities)* Rationale: The 40 percent recommended response rate is relatively high and may not be attainable, especially if the survey is administered via mail. Case-mix adjustment is optional for this measure. Some Committee members indicated that case-mix adjustment being optional is not appropriate for a national standard for performance evaluation for accountability. Other Committee members noted that case-mix adjustment is not necessary for internal quality improvement usage and felt there would not be a vast distinction between adjusted and unadjusted data for external public reporting.
3. Usability: C-9; P-7; M-0; N-0 *(3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures)* Rationale: This measure is not currently in use; however, the steward is in the process of integrating the measure into a number of quality programs that are used for public reporting.
4. Feasibility: C-10; P-6; M-0; N-0 *(4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented)* Rationale: Sampling patients 6 months post-surgery can be complicated and expensive. There may be an inherent bias caused by which patients choose to respond to the survey. There is also a possibility of creating a burden on surgical practices to provide follow-up communication to patients in an effort to retrieve surveys in order to achieve the recommended response rate.

0128 Duration of antibiotic prophylaxis for cardiac surgery patients
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Percent of patients aged 18 years and older undergoing cardiac surgery whose prophylactic antibiotics were discontinued within 48 hours after surgery end time Numerator Statement: Number of patients undergoing cardiac surgery whose prophylactic antibiotics were discontinued within 48 hours after surgery end time

0128 Duration of antibiotic prophylaxis for cardiac surgery patients
Denominator Statement: Number of patients undergoing cardiac surgery Exclusions: Exclusions: -Patients who had a principal diagnosis suggestive of preoperative infectious diseases -Patients whose ICD-9-CM principal procedure was performed entirely by Laparoscope -Patients enrolled in clinical trials -Patients with documented infection prior to surgical procedure of interest -Patients who expired perioperatively -Patients who were receiving antibiotics more than 24 hours prior to surgery -Patients who were receiving antibiotics within 24 hours prior to arrival -Patients who did not receive any antibiotics during this hospitalization -Patients with reasons to extend antibiotics This list will be provided in the STS Adult Cardiac Surgery Database Data Manager's Training Manual as acceptable exclusions. Adjustment/Stratification: no risk adjustment necessary/No stratification is required for this measure. Level of Analysis: Clinicians: Group, Facility/ Agency, Population: Counties or cities, Population: National, Population: Regional/ network, Population: States Type of Measure: Process Data Source: Registry data Measure Steward: Society of Thoracic Surgeons | 633 North Saint Clair Street, Suite 2320 | Chicago | Illinois | 60611
Steering Committee Recommendation for Endorsement: Y-17, N-0; A-0 Rationale: The measure was considered important due to the potential for prolonged antibiotic use and the percent of antimicrobial resistance.
Steering Committee Follow-up: This was one of four related measures considered for potential harmonization. The four included: m*aintenance measure 0529*: Prophylactic antibiotics discontinued within 24 hours after surgery end time; e*ndorsed measure 0637*: Discontinuation of prophylactic antibiotics (cardiac procedures); m*aintenance measure 0128*: Duration of antibiotic prophylaxis for cardiac surgery patients; and e*ndorsed measure 0271*: Discontinuation of prophylactics antibiotics (non-cardiac procedures). Discussion of the four measures is included here. The Steering Committee determined there were no competing measures in the group. Members requested that the developers evaluate the extent to which harmonization of the four measures could be accomplished. They asked that initial focus be on refining the exclusions to ensure they capture the same information and that end times of 24 and 48 hours be examined in terms of whether there are cardiac surgeries for which the different end times are specifically indicated and if so that they be specified for capture within the relevant measures. Also, members asked that the laparoscopy exclusion be removed from Measure 0128. For those measures not within the current project (AMA-PCPI measures 0637 and 0271), NQF staff will relay the requests of the Committee for their action as they update and test the measures. The measure developers provided a response to the Committee's request. The developers are currently working to schedule a conference call to begin discussing harmonization and/or combining the antibiotic prophylaxis measures per the Committee's request. On the November 29 call, the Committee agreed to recommend measure 0128 as it currently stands with the expectation that the harmonized measure will be submitted to the next Surgery project in 2013. The Committee will vote on final recommendation for endorsement of this measure following the conference call.
1. Importance to Measure and Report: Y-18, N-1 *(1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence)* Rationale: The measure noted a performance gap in appropriate antibiotic administration, which can increase the incidence of deep sternal wound infection or antimicrobial resistance.
2. Scientific Acceptability of Measure Properties: C-10; P-6; M-2; N-1 *(2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities)* Rationale: The Committee debated the time period for antibiotic discontinuation reviewing the merits of 48 hours versus 24 hours.
3. Usability: C-13; P-6; M-0; N-0 *(3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures)* Rationale: The measure will be reported as part of a composite in the future.
4. Feasibility: C-11; P-8; M-0; N-0

0128 Duration of antibiotic prophylaxis for cardiac surgery patients
(4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented) Rationale: The measure presented minimal evidence of costs.

0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time
For More Information: Detailed Measure Specifications; Complete Measure Submission; Meeting/Call Proceedings
Description: Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time (48 hours for CABG or Other Cardiac Surgery). The Society of Thoracic Surgeons (STS) Practice Guideline for Antibiotic Prophylaxis in Cardiac Surgery (2006) indicates that there is no reason to extend antibiotics beyond 48 hours for cardiac surgery and very explicitly states that antibiotics should not be extended beyond 48 hours even with tubes and drains in place for cardiac surgery. Numerator Statement: Number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time (48 hours for CABG or Other Cardiac Surgery). Denominator Statement: All selected surgical patients with no evidence of prior infection. Included Populations: An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes) AND An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.01-5.08 for ICD-9-CM codes) Exclusions: Excluded Populations: Patients less than 18 years of age Patients who have a length of Stay greater than 120 days Patients who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 for ICD-9-CM codes) Patients whose ICD-9-CM principal procedure was performed entirely by Laparoscope Patients enrolled in clinical trials Patients whose ICD-9-CM principal procedure occurred prior to the date of admission Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA) documented infection prior to surgical procedure of interest Patients who expired perioperatively Patients who had other procedures requiring general or spinal anesthesia that occurred within three days (four days for CABG or Other Cardiac Surgery) prior to or after the procedure of interest (during separate surgical episodes) during this hospital stay Patients who were receiving antibiotics more than 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics) Patients who were receiving antibiotics within 24 hours prior to arrival (except colon surgery patients taking oral prophylactic antibiotics) Patients who did not receive any antibiotics during this hospitalization. Patients who received urinary antiseptics only (as defined in Appendix C, Table 3.11) Patients with Reasons to Extend Antibiotics. Adjustment/Stratification: no risk adjustment necessary/The antibiotic prophylaxis measures are stratified according to surgery type. The tables are subsets of Table 5.10 (see link for Specification Manual and Appendix A, Tables 5.01 to 5.08. The specific procedures must be in the large table (Table 5.10) to be eligible for the SCIP measures. The measure specific tables for SCIP-Inf-3 are 5.01 to 5.08 Level of Analysis: Facility/ Agency, Population: National, Can be measured at all levels, Program: QIO Type of Measure: Process Data Source: Electorinc administrative data/ claims; Electronic Health/ Medical Record; Paper medical record/ flow-sheet Most facilities use vendors to collect the data electronically. CMS provides a free, downloadable tool called CART. A paper tool modeled after the data collected electronically is provided as an attachment. CART downloads can be found on QualityNet.org at http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1138900279093 Measure Steward: Centers for Medicare & Medicaid Services | 7500 Security Boulevard , Mail Stop S3-01-02 | Baltimore | Maryland | 21244-1850
Steering Committee Recommendation for Endorsement: Y-17; N-0; A-0 Rationale: The measure is important and provides an appropriate timeline for discontinuing antibiotic therapy promoting appropriate use of antibiotics.
Steering Committee Comments: This was one of four related measures considered for potential harmonization. The four included: m*aintenance measure 0529*: Prophylactic antibiotics discontinued within 24 hours after surgery end time; e*ndorsed measure 0637*: Discontinuation of prophylactic

0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time
antibiotics (cardiac procedures); m*aintenance measure 0128*: Duration of antibiotic prophylaxis for cardiac surgery patients; and e*ndorsed measure 0271*: Discontinuation of prophylactics antibiotics (non-cardiac procedures). Discussion of the four measures is included here. The Steering Committee determined there were no competing measures in the group. Members requested that the developers evaluate the extent to which harmonization of the four measures could be accomplished. They asked that initial focus be on refining the exclusions to ensure they capture the same information and that end times of 24 and 48 hours be examined in terms of whether there are cardiac surgeries for which the different end times are specifically indicated and if so that they be specified for capture within the relevant measures. Also, members asked that the laparoscopy exclusion be removed from Measure 0128. For those measures not within the current project (AMA-PCPI measures 0637 and 0271), NQF staff will relay the requests of the Committee for their consideration as they update and test the measures. The measure developers provided a response to the Committee's request. The developers are currently working to schedule a conference call to begin discussing harmonization or combining the antibiotic prophylaxis measures per the Committee's request. On the November 29 call, the Committee agreed to recommend measure 0529 as it currently stands with the expectation that the harmonized measure will be submitted to the next Surgery project in 2013. The Committee will vote on final recommendation for endorsement of this measure following the conference call.
1. Importance to Measure and Report: Y-19; N-0 *(1a. Impact; 1b. Performance gap; 1c. Outcome or Evidence)* Rationale: The measure has a small performance gap but includes evidence that disparities among subpopulations demonstrate performance below 90 percent.
2. Scientific Acceptability of Measure Properties: C-14; P-4; M-1; N-0 *(2a. Precise specifications; 2b. Reliability testing; 2c. Validity testing; 2d. Exclusions justified; 2e. Risk adjustment/stratification; 2f. Meaningful differences; 2g. Comparability; 2h. Disparities)* Rationale: The Committee discussed single dose prophylaxis compared with 24 hour prophylaxis and no post-operative prophylaxis noting the timeframe of this measure is standard at present. They also discussed requesting the measure's 24 hour timeframe to be changed to shorten duration when the evidence supports. The laparoscopic exclusion is removed effective January 1, 2012.
3. Usability: C-18; P-1; M-0; N-0 *(3a. Meaningful/useful for public reporting and quality improvement; 3b. Harmonized; 3c. Distinctive or additive value to existing measures)* Rationale: The measure is currently in use and is part of the Surgical Care Improvement Project (SCIP) measure set.
4. Feasibility: C-16; P-3; M-0; N-0 *(4a. Clinical data generated during care process; 4b. Electronic sources; 4c. Exclusions – no additional data source; 4d. Susceptibility to inaccuracies/ unintended consequences identified 4e. Data collection strategy can be implemented)* Rationale: The measure relies on administrative claims data.

APPENDIX A – SPECIFICATIONS FOR THE NATIONAL VOLUNTARY CONSENSUS STANDARDS: SURGERY ENDORSEMENT MAINTENANCE 2010, PHASE II ADDENDUM

The following tables present the detailed measure specifications for the recommended consensus standards. All information presented here has been derived directly from the measure developers without modification or alteration (except where measure developers agreed to such modifications) and is current as of January 13, 2012. All proposed voluntary consensus standards are open source, meaning they are fully accessible and disclosed.

	0365 Pancreatic resection mortality rate (IQI 9) (risk adjusted)
Steward	Agency for Healthcare Research and Quality
Description	Percentage of adult hospital discharges with procedure code of pancreatic resection with an in-hospital death, stratified by benign and malignant disease.
Type	Outcome
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility
Numerator Statement	In-hospital deaths among cases meeting the inclusion and exclusion rules for the denominator.
Numerator Details	Time Window: Time window can be determined by user, but is generally a calendar year. Note the volume-outcome relationship is based on volume over a one year time period. In-hospital deaths (DISP=20)
Denominator Statement	Hospital discharges, age 18 years and older, with an ICD-9-CM pancreatic resection procedure code in any field, stratified by benign and malignant disease.
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: Time window can be determined by user, but is generally a calendar year. Note the volume-outcome relationship is based on volume over a one year time period. ICD-9-CM pancreatic resection procedure codes:

	0365 Pancreatic resection mortality rate (IQI 9) (risk adjusted)
	526 TOTAL PANCREATECTOMY 527 RADICAL PANCREATICODUODENECT 52.51 Proximal pancreatectomy 52.52 Distal pancreatectomy 52.53 Radical subtotal pancreatectomy 52.59 Other partial pancreatectomy
Exclusions	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) ICD-9-CM codes: 577.0 Acute pancreatitis
Exclusion Details	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) ICD-9-CM codes: 577.0 Acute pancreatitis
Risk Adjustment	Risk adjustment method widely or commercially available The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age in years (in 5-year age groups), All Patient Refined-Diagnosis Related Group (APR-DRG) and APR-DRG risk-of-mortality subclass. The reference population used in the model is the universe of discharges for states that participate in the HCUP State Inpatient Databases (SID) for the year 2008 (updated annually), a database consisting of 43 states and approximately 30 million adult discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Specific covariates included in the model for this indicator: Intercept Sex Female Age 65 to 74 Age 75+ APR-DRG '2603' to '2604' APR-DRG '2201' to '2202' APR-DRG '2203' to '2204' MDC 7 MDC Other WHIPPLE Whipple Procedure Note: APR-DRG 260 is Major Pancreas, Liver & Shunt Procedures; APR-DRG 220 is Major Stomach,

	0365 Pancreatic resection mortality rate (IQI 9) (risk adjusted)
	Esophageal & Duodenal Procedures. MDC 7 is Diseases & Disorders of the Hepatobiliary System & Pancreas. http://qualityindicators.ahrq.gov/Downloads/Software/SAS/V43/Risk%20Adjustment%20Tables%20IQI%204.3.pdf
Stratification	Malignant Disease: ICD-9-CM pancreatic cancer diagnosis codes: 1520 MALIGNANT NEOPL DUODENUM 1561 MAL NEO EXTRAHEPAT DUCTS 1562 MAL NEO AMPULLA OF VATER 1570 MAL NEO PANCREAS HEAD 1571 MAL NEO PANCREAS BODY 1572 MAL NEO PANCREAS TAIL 1573 MAL NEO PANCREATIC DUCT 1574 MAL NEO ISLET LANGERHANS 1578 MALIG NEO PANCREAS NEC 1579 MALIG NEO PANCREAS NOS Benign Disease: All other cases
Type Score	Rate/proportion Better quality= Higher score
Algorithm	Each indicator is expressed as a rate, defined as outcome of interest / population at risk or numerator / denominator. The AHRQ Quality Indicators (AHRQ QI) software performs a number of steps to produce the rates. 1) Discharge-level data is used to identify inpatient records containing the outcome of interest and 2) the population at risk. For provider indicators, the population at risk is also derived from hospital discharge records. 3) Calculate observed rates. Using output from steps 1 and 2, rates are calculated for user-specified combinations of stratifiers. 4) Calculate expected rates. Regression coefficients from a reference population database are applied to the discharge records and aggregated to the provider level. 5) Calculate risk-adjusted rate. Use the indirect standardization to account for case-mix. 6) Calculate smoothed rate. A Univariate shrinkage factor is applied to the risk-adjusted rates. The shrinkage estimate reflects a reliability adjustment unique to each indicator.

	0366 Pancreatic resection volume (IQI 2)
Steward	Agency for Healthcare Research and Quality
Description	Number of adult hospital discharges with procedure for pancreatic resection, stratified by benign and malignant disease.
Type	Structure
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility
Numerator Statement	Hospital discharges, age 18 years and older, with ICD-9-CM codes for pancreatic resection procedure, stratified by benign and malignant disease.

	0366 Pancreatic resection volume (IQI 2)
Numerator Details	Time Window: Time window can be determined by user, but is generally a calendar year. Note the volume-outcome relationship is based on volume over a one year time period. ICD-9-CM pancreatic resection procedure codes: 526 TOTAL PANCREATECTOMY 527 RADICAL PANCREATICODUODENECT 52.51 Proximal pancreatectomy 52.52 Distal pancreatectomy 52.53 Radical subtotal pancreatectomy 52.59 Other partial pancreatectomy Exclude cases: -MDC 14 (pregnancy, childbirth, and puerperium) -with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing) ICD-9-CM codes: 577.0 Acute pancreatitis
Denominator Statement	N/A
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: N/A N/A
Exclusions	N/A
Exclusion Details	N/A
Risk Adjustment	No risk adjustment necessary
Stratification	Malignant Disease: ICD-9-CM pancreatic cancer diagnosis codes: 1520 MALIGNANT NEOPL DUODENUM 1561 MAL NEO EXTRAHEPAT DUCTS 1562 MAL NEO AMPULLA OF VATER 1570 MAL NEO PANCREAS HEAD 1571 MAL NEO PANCREAS BODY 1572

	0366 Pancreatic resection volume (IQI 2)
	MAL NEO PANCREAS TAIL 1573 MAL NEO PANCREATIC DUCT 1574 MAL NEO ISLET LANGERHANS 1578 MALIG NEO PANCREAS NEC 1579 MALIG NEO PANCREAS NOS Benign Disease: All other cases
Type Score	Count
Algorithm	The volume is the count of the number of discharges with a procedure for pancreatic resection per hospital.

	0357 Abdominal aortic aneurysm (AAA) repair volume (IQI 4)
Steward	Agency for Healthcare Research and Quality
Description	Count of adult hospital discharges in a one-year time period with a procedure code of AAA repair.
Type	Structure
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility
Numerator Statement	Discharges, age 18 years and older, with an abdominal aortic aneurysm (AAA) repair procedure and a principal or secondary diagnosis of AAA
Numerator Details	Time Window: Time window can be determined by user, but is generally a calendar year. Note the volume-outcome estimates are based on one year of data. ICD-9-CM AAA procedure codes: 3834 AORTA RESECTION & ANAST 3844 RESECT ABDM AORTA W REPL 3864 EXCISION OF AORTA 3971 ENDO IMPLANT OF GRAFT IN AORTA ICD-9-CM AAA diagnosis codes: 4413 RUPT ABD AORTIC ANEURYSM 4414 ABDOM AORTIC ANEURYSM
Denominator Statement	N/A
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: N/A N/A

	0357 Abdominal aortic aneurysm (AAA) repair volume (IQI 4)
Exclusions	N/A
Exclusion Details	N/A
Risk Adjustment	No risk adjustment necessary
Stratification	/* AAA Repair */ /* ICD-9-CM Procedure Codes: */ /* OPEN */; ´3834´ = ´1´ /* AORTA RESECTION & ANAST */ ´3844´ = ´1´ /* RESECT ABDM AORTA W REPL */ ´3864´ = ´1´ /* EXCISION OF AORTA */ /* ENDOVASCULAR */; ´3971´ = ´1´ /* ENDO IMPL GRFT ABD AORTA */ /* Include Only: AAA */ /* ICD-9-CM Diagnosis Codes: */ /* RUPTURED */; ´4413´ = ´1´ /* RUPT ABD AORTIC ANEURYSM */ /* UNRUPTURED */; ´4414´ = ´1´ /* ABDOM AORTIC ANEURYSM */
Type Score	Count
Algorithm	The volume is the number of discharges with a diagnosis of, and a procedure for AAA. There are four volume strata: open vs. endovascular, and ruptured vs. un-ruptured.

	0359 Abdominal aortic aneurysm (AAA) repair mortality rate (IQI 11)
Steward	Agency for Healthcare Research and Quality
Description	Percent of adult hospital discharges in a one-year time period with a procedure code of AAA repair and a diagnosis of AAA with an in-hospital death.
Type	Outcome
Data Source	Administrative claims
Level	Facility
Setting	Hospital/Acute Care Facility
Numerator Statement	Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.
Numerator Details	Time Window: Time window can be determined by user, but is generally a calendar year. Note that the reliability weights are calculated on one year of data. Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.
Denominator Statement	Discharges, age 18 years and older, with ICD-9-CM AAA repair code procedure and a diagnosis of AAA in any field. The denominator may be stratified by open vs. endovascular procedures, and ruptured vs. un-ruptured AAA.
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: Time window can be determined by user, but is generally a calendar year. Note that the reliability weights are calculated on one year of data. Discharges, age 18 years and older, with ICD-9-CM AAA repair code procedure and a diagnosis of AAA in any field.

	0359 Abdominal aortic aneurysm (AAA) repair mortality rate (IQI 11)
	ICD-9-CM AAA repair procedure codes: 3834 AORTA RESECTION & ANAST 3844 RESECT ABDM AORTA W REPL 3864 EXCISION OF AORTA 3971 ENDO IMPLANT OF GRAFT IN AORTA ICD-9-CM AAA diagnosis codes: 4413 RUPT ABD AORTIC ANEURYSM 4414 ABDOM AORTIC ANEURYSM
Exclusions	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium)
Exclusion Details	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium)
Risk Adjustment	Risk adjustment method widely or commercially available The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age in years (in 5-year age groups), All Patient Refined-Diagnosis Related Group (APR-DRG) and APR-DRG risk-of-mortality subclass. The reference population used in the model is the universe of discharges for states that participate in the HCUP State Inpatient Databases (SID) for the year 2008 (updated annually), a database consisting of 43 states and approximately 30 million adult discharges and 4,000 hospitals. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Risk adjustment factors: sex age 18-24; age 25-29; age 30-34; age 35-39; age 40-44; age 45-49; age 50-54; age 55-59; age 60-64; age 65-69; age 70-74; age 75-79; age 80-84; age 85+ ADRG 1731 (other vascular procedures-minor) ADRG 1732 (other vascular procedures-moderate) ADRG 1733 (other vascular procedures-major) ADRG 1734 (other vascular procedures-extreme) ADRG 1691 (major thoracic and abdominal vascular procedures-minor) ADRG 1692 (major thoracic and abdominal vascular procedures-moderate) ADRG 1693 (major thoracic and abdominal vascular procedures-major) ADRG 1694 (major thoracic and abdominal vascular procedures-extreme MDC 5 (Cardiovascular) Transfer-in status
Stratification	Gender, age (5-year age groups), race / ethnicity, primary payer, custom

	0359 Abdominal aortic aneurysm (AAA) repair mortality rate (IQI 11)
	The stratification of the denominator for open vs. endovascular and ruptured vs. unruptured involves the following codes in the denominator specification: AAA Repair ICD-9-CM Procedure Codes: OPEN ´3834´ = ´1´ /* AORTA RESECTION & ANAST */ ´3844´ = ´1´ /* RESECT ABDM AORTA W REPL */ ´3864´ = ´1´ /* EXCISION OF AORTA */ ENDOVASCULAR ´3971´ = ´1´ /* ENDO IMPL GRFT ABD AORTA */ AAA ICD-9-CM Diagnosis Codes: RUPTURED ´4413´ = ´1´ /* RUPT ABD AORTIC ANEURYSM */ UNRUPTURED ´4414´ = ´1´ /* ABDOM AORTIC ANEURYSM */
Type Score	Rate/proportion better quality = lower score
Algorithm	There are four rates calculated, one for each stratum (open vs. endovascular, ruptured vs. un-ruptured). Each stratum indicator is expressed as a rate, and is defined as outcome of interest / population at risk or numerator / denominator. The AHRQ Quality Indicators (AHRQ QI) software performs several steps to produce the rates. 1) Discharge-level data is used to identify inpatient records containing the outcome of interest and 2) the population at risk. For provider indicators, the population at risk is derived from hospital discharge records; 3) Calculate observed rates. Using output from steps 1 and 2, rates are calculated for user-specified combinations of stratifiers. 4) Calculate expected rates. Regression coefficients from a reference population database are applied to the discharge records and aggregated to the provider level. 5) Calculate risk-adjusted rate. Use the indirect standardization to account for case-mix. 6) Calculate smoothed rate. A multi-variate shrinkage factor is applied to the risk-adjusted rates. The shrinkage estimate reflects a reliability adjustment unique to each indicator and hospital, and takes into account both the signal (between provider variance) and noise (within provider variance) for the indicator in each stratum, but also the covariance with the indicators across stratum. The smoothed rate is a weighted average of the hospital- and stratum-specific risk-adjusted rate and the volume- and stratum-specific risk-adjusted rate, where the weight is the multi-variate shrinkage factor; 7) Calculate combined rate across stratum. The overall rate is a weighted average of the stratum-specific rates. The "disease" weights are the relative frequency of ruptured and un-ruptured cases in the reference population. The "procedure" weights are the relative frequency of open and endovascular cases in the hospital. The stratum weight is the disease weight multiplied by the procedure weight and the sum of weights across stratum is normalized to 1.0 Additional information on calculation algorithms and specifications can be found at http://qualityindicators.ahrq.gov/Downloads/Resources/Publications/2011/QI%20Empirical%20Methods%2005-03-11.pdf

	1523 In-hospital mortality following elective open repair of small AAAs
Steward	Society for Vascular Surgery
Description	Percentage of aymptomatic patients undergoing open repair of small abdominal aortic aneurysms (AAA)who die while in hospital. This measure is proposed for both hospitals and individual providers.
Type	Outcome
Data Source	Electronic Clinical Data : Registry
Level	Clinician: Individual, Group/Practice; Facility

	1523 In-hospital mortality following elective open repair of small AAAs
Setting	Hospital/Acute Care Facility
Numerator Statement	Mortality following elective open repair of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs
Numerator Details	Time Window: Since hospitals have sufficient annual volume to generate accurate reporting levels, these are proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive procedures, which may span more than one year, with suppression if < 10 procedures (ie, reported as too low volume to report). ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for numerator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information, but the measure is not limited to these registries. Patients who died in hospital following elective open infrarenal AAA repair if their aneurysm was asymptomatic and small (< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging (CT, MR or ultrasound)).
Denominator Statement	All elective open repairs of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: Since hospitals have sufficient annual volume to generate accurate reporting levels, these are proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive procedures, which may span more than one year, with suppression if < 10 procedures (ie, reported as too low volume to report). ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for denominator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information, but the measure is not limited to these registries. Patients who underwent elective open AAA repair are included if their aneurysm was asymptomatic and small (< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging(CT, MR or ultrasound)).
Exclusions	> 6 cm minor diameter - men > 5.5 cm minor diameter - women Symptomatic AAAs that required urgent/emergent (non-elective) repair
Exclusion Details	Patients undergoing non-elective open repair of symptomatic AAAs or those with AAAs larger than the diameters noted above.
Risk Adjustment	No risk adjustment necessary
Stratification	N/A
Type Score	Rate/proportion better quality = lower score
Algorithm	Identify denominator, exclude non-elective repair of symptomatic or ruptured patients and men with AAA >6 cm, and women with AAA >5.5, find number of deaths Outcome = deaths/ # cases

	1534 In-hospital mortality following elective EVAR of small AAAs
Steward	Society for Vascular Surgery
Description	Percentage of patients undergoing elective endovascular repair of small asymptomatic abdominal aortic aneurysms (AAA) who die while in hospital. This measure is proposed for both hospitals and individual providers.
Type	Outcome

	1534 In-hospital mortality following elective EVAR of small AAAs
Data Source	Electronic Clinical Data : Registry
Level	Facility; Clinician: Individual, Group/Practice
Setting	Hospital/Acute Care Facility
Numerator Statement	Mortality following elective endovascular AAA repair of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs
Numerator Details	Time Window: Since hospitals have sufficient annual volume to generate accurate reporting levels, these are proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive procedures, which may span more than one year, with suppression if < 10 procedures (ie, reported as too low volume to report). ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for numerator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information, but the measure is not limited to these registries. Patients who died in hospital following elective endovascular infrarenal AAA repair if their aneurysm was asymptomatic and small (< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging (CT, MR or ultrasound)).
Denominator Statement	All elective endovascular repairs of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: Since hospitals have sufficient annual volume to generate accurate reporting levels, these are proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive procedures, which may span more than one year, with suppression if < 10 procedures (ie, reported as too low volume to report). ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for denominator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information, but the measure is not limited to these registries. Patients who died in hospital following elective endovascular infrarenal AAA repair if their aneurysm was asymptomatic and small (< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging (CT, MR or ultrasound)).
Exclusions	> 6 cm diameter - men > 5.5 cm diameter – women Symptomatic AAAs that required urgent/emergent (non-elective) repair
Exclusion Details	Patients undergoing non-elective open repair of symptomatic AAAs or those with AAAs larger than the diameters noted above.
Risk Adjustment	No risk adjustment necessary
Stratification	N/A
Type Score	Rate/proportion better quality = lower score
Algorithm	Identify denominator, exclude non-elective repair of symptomatic or ruptured patients and men with AAA >6 cm, and women with AAA >5.5, find number of deaths Outcome = deaths/ # cases

	1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey
Steward	American College of Surgeons

	1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey
Description	The following 6 composites and 1 single-item measure are generated from the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Surgical Care Survey. Each measure is used to assess a particular domain of surgical care quality from the patient's perspective. Measure 1: Information to help you prepare for surgery (2 items) Measure 2: How well surgeon communicates with patients before surgery (4 items) Measure 3: Surgeon's attentiveness on day of surgery (2 items) Measure 4: Information to help you recover from surgery (4 items) Measure 5: How well surgeon communicates with patients after surgery (4 items) Measure 6: Helpful, courteous, and respectful staff at surgeon's office (2 items) Measure 7: Rating of surgeon (1 item) The Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Surgical Care Survey is administered to adult patients (age 18 and over) having had a major surgery as defined by CPT codes (90 day globals) within 3 to 6 months prior to the start of the survey.
Type	Composite
Data Source	Survey-patient
Level	Clinicians: Individual, Group
Setting	Ambulatory Care: Ambulatory Surgery Center, Office, Clinic, Hospital Outpatient
Numerator Statement	We recommend that CAHPS Surgical Survey composites be calculated using a top-box scoring method. The top box score refers to the percentage of patients whose responses indicated excellent performance for a given measure. This approach is a kind of categorical scoring because the emphasis is on the score for a specific category of responses. The composite measures do not have a typical numerator. This section is used to describe the composite score. The composite score is the average proportion of respondents who answered the most positive response category across the questions in the composite. The top box numerators for items within Composite measures 1, 2, 4, 5, and 6 is the number of respondents who answered "Yes, definitely" across the items in each composite. The top box composite score is the average proportion of respondents who answered "Yes, definitely" across the items in the composite. The top box numerator for items within Composite measure 3 is the number of respondents who answered "Yes" across the items in this composite. The top box composite score is the average proportion of respondents who answered "Yes" across the items in this composite. The top box numerator for the Measure 7, the Global Rating Item, is the number of respondents who answered 9 or 10 to the Global Rating Item. Note that for users who want to case-mix adjust their scores, case-mix adjustment can be done using the CAHPS macro and the adjustment is made prior to the calculation of the total score. For more, see section 2e.2. See also Attachment H: Reporting Measures for the CAHPS Surgical Care Survey.
Numerator Details	Time Window: Respondents assess their experience with surgical care before, on the day of, and after the target procedure as defined in the denominator. There are three basic steps to this approach: 1. Calculate the proportion of patient responses in the top box or most positive response category for each item in a composite. 2. Calculate the mean top box proportions across all items in a composite to determine the composite's top box score. The following steps show how top box scores are calculated: *Step 1 – Calculate the proportion of cases in the top box or most positive response for the each item in a composite* Composite 1 "Information To Help You Prepare For Surgery" (2 items) has three response options: Yes, definitely

	1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey

Yes, somewhat
No

The top box percentage for each item in this composite is only the proportion of respondents who answered "Yes, definitely."

PItem 1 = Proportion of respondents who answered "Yes, definitely" = 80%
PItem 2 = Proportion of respondents who answered "Yes, definitely"= 90%

Step 2 – Average the top box item scores to form the overall composite top box score
Calculate the average top box score across the items in the composite. In the above example, the calculation would be as follows:

Top box score for Composite 1 = Proportion responding "yes, definitely" =
(PItem1 + PItem2) / 2 = (80% + 90%) / 2 = 85%.

A total of 19 questions comprise 6 composite measures and one single item measure, as follows:

1. Information To Help You Prepare For Surgery

Q3	A health provider could be a doctor, nurse, or anyone else you would see for health care. Before your surgery, did anyone in this surgeon's office give you all the information you needed about your surgery?	Response Options Yes, definitely Yes, somewhat No
Q4	Before your surgery, did anyone in this surgeon's office give you easy to understand instructions about getting ready for your surgery?	

2. How Well Surgeon Communicates With Patients Before Surgery

Q9	During your office visits before your surgery, did this surgeon listen carefully to you?	Response Options Yes, definitely Yes, somewhat No
Q10	During your office visits before your surgery, did this surgeon spend enough time with you?	
Q11	During your office visits before your surgery, did this surgeon encourage you to ask questions?	
Q12	During your office visits before your surgery, did this surgeon show respect for what you had to say?	

3. Surgeon's Attentiveness On Day of Surgery

Q15	After you arrived at the hospital or surgical facility, did this surgeon visit you before your surgery?	Response Options Q15 Yes No Q17 Yes No Don't know (Note: Don't know responses are treated
Q17	Before you left the hospital or surgical facility, did this surgeon discuss the outcome of your surgery with you?	

<table>
<tr><td></td><td>1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey</td></tr>
<tr><td></td><td>
<table>
<tr><td></td><td></td><td>as missing)</td></tr>
</table>

4. Information to Help You Recover From Surgery
<table>
<tr><td>Q26</td><td>Did anyone in this surgeon's office explain what to expect during your recovery period?</td><td rowspan="4">Response Options
Yes, definitely
Yes, somewhat
No</td></tr>
<tr><td>Q27</td><td>Did anyone in this surgeon's office warn you about any signs or symptoms that would need immediate medical attention during your recovery period?</td></tr>
<tr><td>Q28</td><td>Did anyone in this surgeon's office give you easy to understand instructions about what to do during your recovery period?</td></tr>
<tr><td>Q29</td><td>Did this surgeon make sure you were physically comfortable or had enough pain relief after you left the hospital or surgical facility where you had your surgery?</td></tr>
</table>

5. How Well Surgeon Communicates With Patients After Surgery
<table>
<tr><td>Q31</td><td>After your surgery, did this surgeon listen carefully to you?</td><td rowspan="4">Response Options
Yes, definitely
Yes, somewhat
No</td></tr>
<tr><td>Q32</td><td>After your surgery, did this surgeon spend enough time with you?</td></tr>
<tr><td>Q33</td><td>After your surgery, did this surgeon encourage you to ask questions?</td></tr>
<tr><td>Q34</td><td>After your surgery, did this surgeon show respect for what you had to say?</td></tr>
</table>

6. Helpful, Courteous, and Respectful Staff at Surgeon's Office
<table>
<tr><td>Q36</td><td>During these visits, were clerks and receptionists at this surgeon's office as helpful as you thought they should be?</td><td rowspan="2">Response Options
Yes, definitely
Yes, somewhat
No</td></tr>
<tr><td>Q37</td><td>During these visits, did clerks and receptionists at this surgeon's office treat you with courtesy and respect?</td></tr>
</table>

7. Global Rating: Patients' Rating of the Surgeon
<table>
<tr><td>Q35</td><td>Using any number from 0 to 10, where 0 is the worst surgeon possible and 10 is the best surgeon possible, what number would you use to rate all your care from this surgeon?</td><td>Response Options
0-10</td></tr>
</table>
</td></tr>
<tr><td>Denominator Statement</td><td>The composite does not have a typical denominator statement. This section describes the target population. The major criteria for selecting patients were having had a major surgery as defined by CPT codes (90 day globals) within 3 to 6 months prior to the start of the survey. . [For the full list of CPT codes, see Attachment J].</td></tr>
<tr><td>Denominator Categories</td><td>Female; Male 18 and older</td></tr>
<tr><td>Denominator</td><td>Time Window: The major criteria for selecting patients were having had a major surgery as defined by CPT</td></tr>
</table>

<table>
<tr><td></td><td>1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey</td></tr>
<tr><td>Details</td><td>codes (90 day globals) within 3 to 6 months prior to the start of the survey. Results will typically be compiled over a 12-month period.

The timeframe for the surgery was selected to (1) minimize recall bias and (2) ensure ample time was allowed for follow-up care after surgery.
The CPT codes (90 day globals) for major surgery represent over 10,000 possible codes across multiple surgical specialties. The Surgical Quality Alliance felt that specifying only 90 day global procedure codes would include appropriate procedures while excluding minor procedures that were not intended to be included. [For the CPT codes, see Attachment J].
For each composite, respondents who answer at least one item of the composite are included in the scoring.</td></tr>
<tr><td>Exclusions</td><td>The following patients would be excluded from all composites:
Surgical patients whose procedure was greater than 6 months or less than 3 months prior to the start of the survey.
Surgical patients younger than 18 years old.
Surgical patients who are institutionalized (put in the care of a specialized institution) or deceased.
Surgery performed had to be scheduled and not an emergency procedure since emergency procedures are unlikely to have visits with the surgeon before the surgery.
Multiple surgery patients within the same household can be included in the sampling frame. However, once one patient in the household is sampled, any other patients in the same household would be excluded from being sampled in order to minimize survey burden to the household.</td></tr>
<tr><td>Exclusion Details</td><td>See item 2a.9 above.</td></tr>
<tr><td>Risk Adjustment</td><td>Case-mix adjustment is optional.
The set of variables retained for risk adjustment included:
Self-reported overall health
Self-reported overall mental and emotional health
Age
Education
<table>
<tr><td colspan="3">Items Used for Case-Mix Adjustment</td></tr>
<tr><td>Q38</td><td>In general, how would you rate your overall health?</td><td>Excellent
Very good
Good
Fair
Poor</td></tr>
<tr><td>Q39</td><td>In general, how would you rate your overall mental or emotional health?</td><td>Excellent
Very good
Good
Fair
Poor</td></tr>
<tr><td>Q40</td><td>What is your age?</td><td>18 to 24 years
25 to 34 years
35 to 44 years
45 to 54 years
55 to 64 years
65 to 74 years
75 years or older</td></tr>
</table></td></tr>
</table>

	1741 Patient experience with surgical care based on the consumer assessment of healthcare providers and systems (CAHPS) ® surgical care survey
	Q43 | What is the highest grade or level of school that you have completed? | 8th grade or less Some high school, but did not graduate High school graduate or GED Some college or 2-year degree 4-year college graduate More than 4-year college degree
	See pp. 10-15 of the Surgical Patient Experience of Care Survey: Field Test Operations and Results, Attachment C. See also pp.44-52 of the Instructions for Analyzing Data from CAHPS Surveys, Attachment G.
Stratification	N/A
Type Score	Non-Weighted/Composite Better Quality=Higher Score
Algorithm	N/A

	0128 Duration of antibiotic prophylaxis for cardiac surgery patients
Steward	Society of Thoracic Surgeons
Description	Percent of patients aged 18 years and older undergoing cardiac surgery whose prophylactic antibiotics were discontinued within 48 hours after surgery end time
Type	Process
Data Source	Electronic Clinical Data: Registry
Level	Facility; Clinicians: Group/Practice; Population: County or City, Regional, State, National
Setting	Hospital/Acute Care Facility
Numerator Statement	Number of patients undergoing cardiac surgery whose prophylactic antibiotics were discontinued within 48 hours after surgery end time
Numerator Details	Time Window: Within 48 hours after surgery end time Number of cardiac surgery procedures in which appropriate antibiotic discontinuation [AbxDisc (STS Adult Cardiac Surgery Database Version 2.73)] is marked "yes"
Denominator Statement	Number of patients undergoing cardiac surgery
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: 12 months Number of cardiac surgery procedures; A cardiac procedure is determined as a procedure for which at least one of the following is not marked "no" or "missing" (note: full terms for STS field names are provided in brackets []): OpCAB[Coronary Artery Bypass], OpValve[Valve Surgery], VADProc [VAD Implanted or Removed], VSAV [Aortic Valve Procedure], VSMV [Mitral Valve Procedure], OpTricus [Tricuspid Valve Procedure Performed], OpPulm[Pulmonic Valve Procedure Performed], OpOCard [Other Cardiac Procedure other than CABG or Valve], OCarLVA [Left Ventricular Aneurysm Repair], OCarVSD [Ventricular Septal Defect Repair], OCarSVR [Surgical Ventricular Restoration], OCarCong [Congenital Defect Repair], OCarTrma [surgical procedure for an injury due to Cardiac Trauma], OCarCrTx [Cardiac Transplant], OCarACD [Arrhythmia Correction Surgery], OCAoProcType[Aortic Procedure Type], EndoProc [Endovascular Procedure (TEVAR)], OCTumor [resection of an intracardiac tumor], OCPulThromDis [Pulmonary Thromboembolectomy,, OCarOthr [Other Cardiac Procedure other than those listed previously], ECMO [Extracorporeal Membrane Oxygenation], OCarLasr [-Transmyocardial

	0128 Duration of antibiotic prophylaxis for cardiac surgery patients
	Laser Revascularization], OCarASD [Atrial Septal Defect Repair], OCarAFibSur [Atrial Fibrillation Surgical Procedure]
Exclusions	Exclusions: - Patients who had a principal diagnosis suggestive of preoperative infectious diseases - Patients whose ICD-9-CM principal procedure was performed entirely by Laparoscope - Patients enrolled in clinical trials - Patients with documented infection prior to surgical procedure of interest - Patients who expired perioperatively - Patients who were receiving antibiotics more than 24 hours prior to surgery - Patients who were receiving antibiotics within 24 hours prior to arrival - Patients who did not receive any antibiotics during this hospitalization - Patients with reasons to extend antibiotics This list will be provided in the STS Adult Cardiac Surgery Database Data Manager's Training Manual as acceptable exclusions.
Exclusion Details	AbxDisc is marked "Exclusion"
Risk Adjustment	No risk adjustment necessary
Stratification	N/A
Type Score	Rate/proportion Better quality= Higher score
Algorithm	N/A

	0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time
Steward	Centers for Medicare & Medicaid Services
Description	Surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time (48 hours for CABG or Other Cardiac Surgery). The Society of Thoracic Surgeons (STS) Practice Guideline for Antibiotic Prophylaxis in Cardiac Surgery (2006) indicates that there is no reason to extend antibiotics beyond 48 hours for cardiac surgery and very explicitly states that antibiotics should not be extended beyond 48 hours even with tubes and drains in place for cardiac surgery.
Type	Process
Data Source	Administrative claims, Electronic clinical data: electronic health record, Paper records
Level	Facility; Population: National, Regional
Setting	Hospital/Acute Care Facility
Numerator Statement	Number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after Anesthesia End Time (48 hours for CABG or Other Cardiac Surgery).
Numerator Details	Time Window: Admission to 48 hours after Anesthesia End Time Data Elements: Anesthesia End Date Anesthesia End Time Antibiotic Administration Date Antibiotic Administration Time
Denominator Statement	All selected surgical patients with no evidence of prior infection. Included Populations: An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes) AND

	0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time
	An ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.01-5.08 for ICD-9-CM codes)
Denominator Categories	Female; Male 18 and older
Denominator Details	Time Window: Admission to discharge Data Elements: Admission Date Anesthesia Start Date Antibiotic Administration Route Antibiotic Name Antibiotic Received Birthdate Clinical Trial Discharge Date ICD-9-CM Principal Diagnosis Code ICD-9-CM Principal Procedure Code Infection Prior to Anesthesia Laparoscope Oral Antibiotics Other Surgeries Perioperative Death Reasons to Extend Antibiotics Surgical Incision Date Surgical Incision Time
Exclusions	Excluded Populations: Patients less than 18 years of age Patients who have a length of Stay greater than 120 days Patients who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 for ICD-9-CM codes) Patients whose ICD-9-CM principal procedure was performed entirely by Laparoscope Patients enrolled in clinical trials Patients whose ICD-9-CM principal procedure occurred prior to the date of admission Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA) documented infection prior to surgical procedure of interest Patients who expired perioperatively Patients who had other procedures requiring general or spinal anesthesia that occurred within three days (four days for CABG or Other Cardiac Surgery) prior to or after the procedure of interest (during separate surgical episodes) during this hospital stay Patients who were receiving antibiotics more than 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics) Patients who were receiving antibiotics within 24 hours prior to arrival (except colon surgery patients taking oral prophylactic antibiotics) Patients who did not receive any antibiotics during this hospitalization. Patients who received urinary antiseptics only (as defined in Appendix C, Table 3.11) Patients with Reasons to Extend Antibiotics.
Exclusion Details	Clinical Trial Infection Prior to Anesthesia Laparoscope Other Surgeries Perioperative Death

	0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time
	Reasons to Extend Antibiotics
Risk Adjustment	No risk adjustment necessary
Stratification	The antibiotic prophylaxis measures are stratified according to surgery type. The tables are subsets of Table 5.10 (see link for Specification Manual and Appendix A, Tables 5.01 to 5.08. The specific procedures must be in the large table (Table 5.10) to be eligible for the SCIP measures. The measure specific tables for SCIP-Inf-3 are 5.01 to 5.08.
Type Score	Rate/proportion better quality = higher score
Algorithm	1.Start processing. Run cases that are included in the Surgical Care Improvement Project (SCIP) Initial Patient Population and pass the edits defined in the Transmission Data Processing Flow: Clinical through this measure. 2.Calculate Patient Age. The Patient Age, in years, is equal to the Admission Date minus the Birthdate. Use the month and day portion of admission date and birthdate to yield the most accurate age. 3.Check Patient Age a.If Patient Age is less than 18 years, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for Centers for Medicare and Medicaid Services (CMS). Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Patient Age is greater than or equal to 18 years, continue processing and proceed to ICD-9-CM Principal Procedure Code. 4.Check ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is not on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and proceed to recheck ICD-9-CM Principal Diagnosis Code. 5.Check ICD-9-CM Principal Diagnosis Code a.If the ICD-9-CM Principal Diagnosis Code is on Table 5.09, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the ICD-9-CM Principal Diagnosis Code is not on Table 5.09, continue processing and proceed to Laparoscope. 6.Check Laparoscope a.If Laparoscope is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Laparoscope equals 1 or 3, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Laparoscope equals 2, continue processing and proceed to Clinical Trial. 7.Check Clinical Trial a.If Clinical Trial is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Clinical Trial equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Clinical Trial equals No, continue processing and proceed to Anesthesia Start Date. 8.Check Anesthesia Start Date a.If the Anesthesia Start Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission.

	0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time
	b.If the Anesthesia Start Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Anesthesia Start Date equals a Non Unable To Determine Value, continue processing and proceed to the Surgery Days calculation. 9.Calculate Surgery Days. Surgery Days, in days, is equal to the Anesthesia Start Date minus the Admission Date. 10.Check Surgery Days a.If the Surgery Days is less than zero, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Surgery Days is greater than or equal to zero, continue processing and proceed to Infection Prior to Anesthesia. 11.Check Infection Prior to Anesthesia a.If Infection Prior to Anesthesia is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Infection Prior to Anesthesia equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Infection Prior to Anesthesia equals No, continue processing and proceed to Perioperative Death. 12.Check Perioperative Death a.If Perioperative Death is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Perioperative Death equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Perioperative Death equals No, continue processing and proceed to Surgical Incision Date. 13.Check Surgical Incision Date a.If the Surgical Incision Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP- Inf-3a) for The Joint Commission. b.If the Surgical Incision Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Surgical Incision Date equals a Non Unable To Determine Value, continue processing and proceed to Other Surgeries. 14.Check Other Surgeries a.If Other Surgeries is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Other Surgeries equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Other Surgeries equals No, continue processing and proceed to Antibiotic Received. 15.Check Antibiotic Received a.If Antibiotic Received equals 1 or 2, continue processing and proceed to recheck ICD-9-CM Principal Procedure Code b.If Antibiotic Received equals 4, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint

	0529 Prophylactic antibiotics discontinued within 24 hours after surgery end time
	Commission. c.If Antibiotic Received equals 3, continue processing and proceed to step 19 and check Antibiotic Name. Do not check step 16 ICD-9-CM Principal Procedure Code, step 17 Oral Antibiotics or step 18 Antibiotic Received. 16.Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Received equals 1 or 2 a.If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the measure population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and proceed to check Oral Antibiotics. 17.Check Oral Antibiotics a.If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Oral Antibiotics equals Yes, continue processing and proceed to recheck Antibiotic Received. 18.Recheck Antibiotic Received a.If Antibiotic Received equals 1, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Antibiotic Received equals 2, continue processing and proceed to Antibiotic Name. 19.Check Antibiotic Name a.If the Antibiotic Grid is not populated, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. Note: The front-end edits reject cases containing invalid data and/or an incomplete Antibiotic Grid. A complete Antibiotic Grid requires all data elements in the row to contain either a valid value and/or Unable to Determine. b.If the Antibiotic Name is on Table 2.1, continue processing and recheck Antibiotic Name. 20.Recheck Antibiotic Name a.If all of the Antibiotic Names are on Table 3.11, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If at least one of the Antibiotic Names is NOT on Table 3.11, continue processing and proceed to Antibiotic Administration Route. Exclude antibiotic doses on Table 3.11 from further processing. 21.Check Antibiotic Administration Route a.If the Antibiotic Administration Route is equal to 3 or 10 for all antibiotic doses, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Antibiotic Administration Route is equal to 1 or 2 for any antibiotic dose, continue processing and proceed to Antibiotic Administration Date. Proceed only with antibiotic doses on Table 2.1 that are administered via routes 1 or 2. 22.Check Antibiotic Administration Date a.If the Antibiotic Administration Date is equal to Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Antibiotic Administration Date is equal to a Non Unable to Determine date for at least one antibiotic dose, continue processing and proceed to the Antibiotic Days I calculation. Note: Proceed only with antibiotic doses that have an associated Non Unable to Determine date. 23.Calculate Antibiotic Days I. Antibiotic Days I, in days, is equal to the Surgical Incision Date minus the Antibiotic Administration Date.

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	24.Check Antibiotic Days I a.If the Antibiotic Days I is greater than 1 for at least one antibiotic dose, continue processing and recheck the ICD-9-CM Principal Procedure Code. Do not recheck step 27 Antibiotic Days I, step 28 Surgical Incision Time, steps 29 and 30 Antibiotic Administration Time, or step 31 Antibiotic Timing I. b.If the Antibiotic Days I is less than or equal to 1 for all antibiotic doses, continue processing. Proceed to step 27 and recheck Antibiotics Days I. Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics. 25.Recheck ICD-9-CM Principal Procedure Code only if Antibiotic Days I is greater than 1 for at least one antibiotic dose a.If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics. 26.Check Oral Antibiotics a.If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Oral Antibiotics equals Yes, continue processing and proceed to step 35 and check Anesthesia End Date. Do not recheck step 27 Antibiotic Days I, step 28 Surgical Incision Time, steps 29 and 30 Antibiotic Administration Time, or 31 Antibiotic Timing I. 27.Recheck Antibiotic Days I only if Antibiotic Days I was less than or equal to 1 for all antibiotic doses a.If the Antibiotic Days I is less than or equal to zero for ALL antibiotic doses, continue processing. Proceed to step 35 and check Anesthesia End Date. Do not check step 28 Surgical Incision Time, step 29 and 30 Antibiotic Administration Time, or step 31 Antibiotic Timing I. b.If the Antibiotic Days I is equal to 1 for ANY antibiotic dose, continue processing and proceed to Surgical Incision Time. 28.Check Surgical Incision Time a.If the Surgical Incision Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Surgical Incision Time is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If the Surgical Incision Time is equal to a Non Unable to Determine Value, continue processing and check Antibiotic Administration Time. 29.Check Antibiotic Administration Time a.If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and recheck Antibiotic Administration Time. 30.Recheck Antibiotic Administration Time a.If the Antibiotic Administration Time equals Unable to Determine for ANY antibiotic dose with Antibiotic Days I equal to 1, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Antibiotic Administration Time equals a Non Unable to Determine time for ALL antibiotic doses with Antibiotic Days I equal to 1, continue processing and proceed to the Antibiotic Timing I calculation. 31.Calculate Antibiotic Timing I. Antibiotic Timing I, in minutes, is equal to the Surgical Incision Date and Surgical

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	Incision Time minus the Antibiotic Administration Date and Antibiotic Administration Time. Calculate Antibiotic Timing I for all antibiotic doses with non Unable to Determine date and time. Proceed with antibiotic doses that have Antibiotic Timing I calculated, or Antibiotic Days I less than or equal to zero. 32.Check Antibiotic Timing I a.If the Antibiotic Timing I is greater than 1440 minutes for any antibiotic dose, continue processing and recheck the ICD-9-CM Principal Procedure Code. Proceed with antibiotic does that have Antibiotic Timing I calculated, or Antibiotic Days I less than or equal to zero. b.If the Antibiotic Timing I is less than or equal to 1440 minutes for all antibiotic doses with non Unable to Determine date and time, continue processing. Proceed to step 35 and check Anesthesia End Date. Do not recheck ICD-9-CM Principal Procedure Code or Oral Antibiotics. 33.Recheck ICD-9-CM Principal Procedure Code only if the Antibiotic Timing I is greater than 1440 minutes for any antibiotic dose a.If the ICD-9-CM Principal Procedure Code is not on Table 5.03, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the ICD-9-CM Principal Procedure Code is on Table 5.03, continue processing and check Oral Antibiotics. 34.Check Oral Antibiotics a.If Oral Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If Oral Antibiotics equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If Oral Antibiotics equals Yes, continue processing and proceed to Anesthesia End Date. 35.Check Anesthesia End Date a.If the Anesthesia End Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Anesthesia End Date is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If the Anesthesia End Date is equal to a Non Unable to Determine value, continue processing and proceed to the Antibiotic Days II calculation. 36.Calculate Antibiotic Days II. Antibiotic Days II, in days, is equal to the Antibiotic Administration Date minus the Anesthesia End Date. 37.Set Exclusion Flag, for all cases, to equal No. If all of the antibiotic doses of a case satisfy one of the two following conditions, set Exclusion Flag (for this case) to equal ?Yes'. These conditions are: a.Antibiotic Days II is greater than 3 days regardless of table on which procedure code is on; OR b.Antibiotic Days II is greater than 2 days AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07, or 5.08. 38.Check Exclusion Flag a.If the Exclusion Flag is equal to Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Exclusion Flag is equal to No, continue processing and proceed to check Antibiotic Days II. Remove any dose that satisfies one of the two following conditions. These conditions are: 1.Antibiotic Days II is greater than 3 days regardless of procedure on which procedure code is on; OR 2.Antibiotic Days II is greater than 2 days AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07 or 5.08. 39.Check Antibiotic Days II a.If the Antibiotic Days II is less than or equal to zero for all antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 47

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	and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Antibiotic Days II is greater than zero for at least one antibiotic dose, continue processing and recheck ICD-9-CM Principal Procedure Code. 40.Recheck ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02, continue processing and recheck Antibiotic Days II. 1.If the Antibiotic Days II is less than 2 days for antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. 2.If the Antibiotic Days II is greater than or equal to 2 days for at least one antibiotic dose, continue processing and proceed to Anesthesia End Time. b.If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and proceed to Anesthesia End Time. 41.Check Anesthesia End Time a.If the Anesthesia End Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Anesthesia End Time is equal to Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If the Anesthesia End Time is equal to a Non Unable to Determine Value, continue processing and recheck Antibiotic Administration Time. 42.Recheck Antibiotic Administration Time a.If the Antibiotic Administration Time equals Unable to Determine for all antibiotic doses, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Antibiotic Administration Time equals a Non Unable to Determine time for at least one antibiotic dose, continue processing and proceed to the Antibiotic Timing II calculation. Remove from consideration any antibiotic doses for which Antibiotic Administration Time equals Unable to Determine. 43.Calculate Antibiotic Timing II. Antibiotic Timing II, in minutes, is equal to the Antibiotic Administration Date and Antibiotic Administration Time minus Anesthesia End Date and Anesthesia End Time. 44.Set Exclusion Flag. Set Exclusion Flag, for all cases, to equal ?No'. If all of the antibiotic doses of a case satisfy one of the two following conditions, set Exclusion Flag (for this case) to equal ?Yes'. These conditions are: a.Antibiotic Timing is greater than 4320 minutes; OR b.Antibiotic Timing II is greater than 2880 minutes AND ICD-9-CM Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07, or 5.08. 45.Check Exclusion Flag a.If the Exclusion Flag equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to step 47 and check the Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the Exclusion Flag equals No, continue processing and recheck ICD-9-CM Principal Procedure Code and Antibiotic Timing II. Remove any dose that satisfies one of the two following conditions. These conditions are: 1.Antibiotic Timing II is greater than 4320 minutes; OR Principal Procedure Code is on Table 5.03, 5.04, 5.05, 5.06, 5.07, or 5.08. 46.Recheck ICD-9-CM Principal Procedure Code and Antibiotic Timing II a.If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 and Antibiotic Timing II is less than or equal to 2880 minutes for all antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. b.If the ICD-9-CM Principal Procedure Code is on Table 5.01 or 5.02 and Antibiotic Timing II is greater than 2880 minutes for at least one antibiotic dose, continue processing and proceed to check Reasons To Extend Antibiotics.

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	1.If Reasons To Extend Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. 2.If Reasons To Extend Antibiotics equals 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. 3.If Any Reasons To Extend Antibiotics equals 1, 2, 3, 4, 5, 6 and None equals 7, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. c.If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08 and Antibiotic Timing II is less than or equal to 1440 minutes for all antibiotic doses, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. d.If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08 and Antibiotic Timing II is greater than 1440 minutes for at least one antibiotic dose, continue processing and proceed to check Reasons To Extend Antibiotics. 1.If Reasons To Extend Antibiotics is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. 2.If Reasons To Extend Antibiotics equals 7, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. 3.If Any Reasons To Extend Antibiotics equals 1, 2, 3, 4, 5, 6 and None equals 7, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing for CMS. Proceed to Stratified Measures for Overall Rate (SCIP-Inf-3a) for The Joint Commission. 47.For The Joint Commission Only, continue processing for the Stratified Measures. Note: Initialize the Measure Category Assignment for each strata measure (b-g) to equal B, not in the Measure Population. Do not change the Measure Category Assignment that was already calculated for the overall rate (SCIP-Inf-3a). The rest of the algorithm will reset the appropriate Measure Category Assignment to be equal to the overall rate´s (SCIP-Inf-3a) Measure Category Assignment. 48.Check Overall Rate Category Assignment a.If the Overall Rate Category Assignment is equal to B or X, set the Measure Category Assignment for the strata measures (SCIP-Inf-3b through SCIP-Inf-3h) to equal B, not in the Measure Population. Stop processing. b.If the Overall Rate Category Assignment is equal to D or E, continue processing and check the ICD-9-CM Principal Procedure Code. 49.Check ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is on Table 5.01, for Stratified Measure SCIP-Inf-3b, set the Measure Category Assignment for measure SCIP-Inf-3b to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing. b.If the ICD-9-CM Principal Procedure Code is on Table 5.02 or 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code. 50.Recheck ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is on Table 5.02, for Stratified Measure SCIP-Inf-3c, set the Measure Category Assignment for measure SCIP-Inf-3c to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing. b.If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.04 or 5.05 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code. 51.Recheck ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is on Table 5.04, for Stratified Measure SCIP-Inf-3d, set the Measure Category Assignment for measure SCIP-Inf-3d to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing. b.If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.05 or 5.06 or 5.07 or 5.08, continue processing

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	and recheck the ICD-9-CM Principal Procedure Code. 52.Recheck ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is on Table 5.05, for Stratified Measure SCIP-Inf-3e, set the Measure Category Assignment for measure SCIP-Inf-3e to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing. b.If the ICD-9-CM Principal Procedure Code is on Table 5.03 or 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code. 53.Recheck ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is on Table 5.03, for Stratified Measure SCIP-Inf-3f, set the Measure Category Assignment for measure SCIP-Inf-3f to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing. b.If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07 or 5.08, continue processing and recheck the ICD-9-CM Principal Procedure Code. 54.Recheck ICD-9-CM Principal Procedure Code a.If the ICD-9-CM Principal Procedure Code is on Table 5.06 or 5.07, for Stratified Measure SCIP-Inf-3g, set the Measure Category Assignment for measure SCIP-Inf-3g to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing. b.If the ICD-9-CM Principal Procedure Code is on Table 5.08, for Stratified Measure SCIP-Inf-3h, set the Measure Category Assignment for measure SCIP-Inf-3h to equal the Measure Category Assignment for measure SCIP-Inf-3a. Stop processing.

APPENDIX B—COMPARISON OF RELATED MEASURES

AAA Repair

Pancreatic Resection

AAA Repair

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
Status	Currently undergoing review	Currently undergoing review	Endorsed 9/2010	Currently undergoing review	Currently undergoing review
Steward	Agency for Healthcare Research and Quality	Agency for Healthcare Research and Quality	Leapfrog Group	Society for Vascular Surgery	Society for Vascular Surgery
Description	Count of adult hospital discharges in a one year time period with a procedure code of AAA repair.	Percent of adult hosptial discharges in a one-year time period with a procedure code of AAA repair and a diagnosis of AAA with an in-hospital death.	A reliability adjusted measure of AAA repair performance that optimally combines two important domains: AAA hospital volume and AAA operative mortality, to provide predictions on hospital AAA survival rates in patients age 18 and over.	Percentage of asymptomatic patients undergoing open repair of small abdominal aortic aneurysms (AAA) who die while in hospital. This measure is proposed for both hospitals and individual providers.	Percentage of patients undergoing elective endovascular repair of small asymptomatic abdominal aortic aneurysms (AAA) who die while in hospital. This measure is proposed for both hospitals and individual providers.
Type of Measure	Structure/management	Outcome	Outcome	Outcome	Outcome
Numerator	Discharges, age 18 years and older, with an abdominal aortic aneurysm repair procedure and a primary or secondary diagnosis of AAA. Time window: Time window can be determined by user, but is generally a calendar	Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator. Time window: Time window can be determined by user, but is generally a calendar year.	Survival rate for patients age 18 and over without AAA rupture who undergo an AAA repair. Time Window: During the hospital admission	Mortality following elective open repair of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs. Time window: Since hospitals have sufficient annual volume to generate accurate reporting levels, these are	Mortality following elective endovascular AAA repair of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs. Time window: Since hospitals have sufficient annual volume to generate accurate reporting levels,

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
	year.			proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive procedures, which may span more than one year, with suppression if < 10 procedures (i.e., reported as too low volume to report).	these are proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive procedures, which may span more than one year, with suppression if < 10 procedures (i.e., reported as too low volume to report).
Numerator Details	ICD-9-CM AAA procedure codes: 3834 AORTA RESECTION & ANAST 3844 RESECT ABDM AORTA W REPL 3864 EXCISION OF AORTA 3971 ENDO IMPLANT OF GRAFT IN AORTA ICD-9-CM AAA diagnosis codes:	Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.	For the observed mortality, the hospital submits the observed deaths for AAA cases in patients without rupture as identified using the denominator and exclusion codes.	ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for numerator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information but the measure is not limited to	ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for numerator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information but the measure is not limited to these registries.

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
	4413 RUPT ABD AORTIC ANEURYSM 4414 ABDOM AORTIC ANEURYSM			these registries. Patients who died in hospital following elective open infrarenal AAA repair if their aneurysm was asymptomatic and small (< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging (CT, MR or ultrasound)).	Patients who died in hospital following endovascular infrarenal AAA repair (EVAR) if their asymptomatic aneurysm was repaired electively and was asymptomatic and small (< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging (CT, MR or ultrasound)).
Denominator	N/A	Discharges, age 18 years and older, with ICD-9-CM AAA repair code procedure and a diagnosis of AAA in any field. The denominator may be stratified by open vs. endovascular procedures, and ruptured vs. un-reuptured AAA. Time window: Time window can be determined by user, but is generally a calendar year.	All hospital patients age 18 and over without rupture who had an AAA repair. Time Window: 12 months	All elective open repairs of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs. Time window: Since hospitals have sufficient annual volume to generate accurate reporting levels, these are proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive	All elective endovascular repairs of asymptomatic AAAs in men with < 6 cm dia and women with < 5.5 cm dia AAAs. Time window: Since hospitals have sufficient annual volume to generate accurate reporting levels, these are proposed for reporting every 12 months for hospital. Since surgeons have lower individual volume, we recommend annual reporting of the last 50 consecutive procedures,

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
				procedures, which may span more than one year, with suppression if < 10 procedures (i.e., reported as too low volume to report).	which may span more than one year, with suppression if < 10 procedures (i.e., reported as too low volume to report).
Denominator Categories	Female, Male; 18 and older	Female, Male; 18 and older		Female, Male; 18 years or older	Female, Male; 18 years or older
Denominator Details	N/A	Discharges, age 18 years and older, with ICD-9-CM AAA repair code procedure and a diagnosis of AAA in any field. ICD-9-CM AAA repair procedure codes: 3834 AORTA RESECTION & ANAST 3844 RESECT ABDM AORTA W REPL 3864 EXCISION OF AORTA 3971 ENDO IMPLANT OF GRAFT IN AORTA ICD-9-CM AAA diagnosis codes: 4413	For the volume predicted mortality, hospitals count the number of all AAA repair cases using the following procedure codes. ICD-9-CM Procedure Codes for AAA repair 3834 Aorta Resection & Anast 3844 Resection Abdominal Aorta with replacement 3864 Excision of aorta 3925 Aorta-iliac-femoral bypass 3971 Endo Implant of Graft in Aorta For the observed mortality hospitals count	ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for denominator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information but the measure is not limited to these registries. Patients who underwent elective open AAA repair are included if their aneurysm was asymptomatic and small	ANY registry that includes hospitalization details, AAA diameter and discharge status is required to identify patients for denominator inclusion. The Society for Vascular Surgery Vascular Quality Initiative (SVS VQI) and the Vascular Study Group of New England (VSGNE) are examples of registries that record such information but the measure is not limited to these registries. Patients who underwent endovascular AAA repair are included if their aneurysm was asymptomatic and small (< 6cm dia in men, <5.5

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
		RUPT ABD AORTIC ANEURYSM 4414 ABDOM AORTIC ANEURYSM	the number of AAA repair cases that also have a diagnosis of unruptured AAA using the following codes. ICD-9CM Codes for AAA without rupture 441.4 Dissection of aorta aneurysm unspecified site 441.7 Thoracoabdominal aneurysm without rupture 441.9 Aortic aneurysm of unspecified site without rupture	(< 6cm dia in men, <5.5 cm dia in women, judged by preoperative imaging (CT, MR or ultrasound)).	cm dia in women, judged by preoperative imaging).
Exclusions	> 6 cm diameter - men > 5.5 cm diameter – women Symptomatic AAAs that required urgent/emergent (non-elective) repair	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2)	Patients with ruptured aneurysm or thoracoabdominal aneurysms.	> 6 cm minor diameter - men > 5.5 cm minor diameter - women Symptomatic AAAs that required urgent/emergent (non-elective) repair	> 6 cm diameter - men > 5.5 cm diameter – women Symptomatic AAAs that required urgent/emergent (non-elective) repair

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
		• MDC 14 (pregnancy, childbirth, and puerperium)			
Exclusion Details	This volume measure does not have a denominator.	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium)	For the count of all AAA procedures exclude: 3845 Thoracoabdominal procedures. For the observed mortality domain, exclude all Thoracic Diagnosis Codes and dissection codes for AAA 441.0x General code 441.1 Thoracic aneurysm ruptured 441.2 Thoracic aneurysm without rupture 441.3 Abdominal aneurysm ruptured 441.5 Aortic aneurysm of unspecified site ruptured 441.6 Thoracoabdominal aneurysm ruptured. Mortality Domain does exclude thoracic aneurysm Procedure Code: 38.45 Resection of vessel	Patients undergoing non-elective open repair of symptomatic AAAs or those with AAAs larger than the diameters noted above.	Patients undergoing non-elective open repair of symptomatic AAAs or those with AAAs larger than the diameters noted above.

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
			with replacement, other thoracic vessels.		
Risk Adjustment	No risk adjustment necessary	Risk adjustment method widely or commercially available. The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age in years (in 5-year age groups), All Patient Refined-Diagnosis Related Group (APR-DRG) and APR-DRG risk-of-mortality subclass. The reference population used in the model is the universe of discharges for states that participate in the HCUP State Inpatient Databases (SID) for the year 2008 (updated annually), a database consisting of 43 states and approximately 30 million adult discharges. The expected rate is computed as the sum of the	We used an empirical Bayes approach to combine mortality rates with information on hospital volume at each hospital. In traditional empirical Bayes methods, a point estimate (e.g., mortality rate observed at a hospital) is adjusted for reliability by shrinking it towards the overall mean (e.g., overall mortality rate in the population). We modified this traditional approach by shrinking the observed mortality rate back toward the mortality rate expected given the volume at that hospital—we refer to this as the "volume-predicted mortality". With this approach, the observed mortality rate is weighted according to how reliably it is estimated, with the	No risk adjustment necessary	No risk adjustment necessary

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
		predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Risk adjustment factors: sex age 18-24; age 25-29; age 30-34; age 35-39; age 40-44; age 45-49; age 50-54; age 55-59; age 60-64; age 65-69; age 70-74; age 75-79; age 80-84; age 85+ each age category*female ADRG 1731 (other vascular procedures-minor) ADRG 1732 (other vascular procedures-moderate) ADRG 1733 (other vascular procedures-major)	remaining weight placed on the information regarding hospital volume [volume-predicted mortality]. Risk adjustment for patient characteristics is not used because in sensitivity analysis, composite measures based on an unadjusted mortality input and a risk-adjusted mortality input had a correlation of (.95) and thus were equally good at predicting future performance. The formula for calculating the survival predictor has two components, one is a volume predicted mortality rate, and the second is an observed mortality rate. The volume predicted		

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
		ADRG 1734 (other vascular procedures-extreme) ADRG 1691 (major thoracic and abdominal vascular procedures-minor) ADRG 1692 (major thoracic and abdominal vascular procedures-moderate) ADRG 1693 (major thoracic and abdominal vascular procedures-major) ADRG 1694 (major thoracic and abdominal vascular procedures-extreme ADRG 9999 (other) MDC 5 (Cardiovascular) Transfer-in status	mortality rate reflects the hospitals experience performing AAA surgeries (thus, it includes all AAA surgeries) and uses mortality for all hospitals at that specific volume to create the volume predicted mortality. The input data from the hospitals for this domain is a volume count of all AAAs performed in the hospital. The second domain is the observed mortality, for this domain the population is the group of AAA cases without rupture, the data needed for this domain is the number of observed deaths occurring for AAA cases without rupture, within the inpatient setting. The general composite		

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
			measure calculation is as follows: Predicted Survival = 1-Predicted Mortality Predicted Mortality = (weight)*(mortality) + (1-weight)*(volume predicted mortality) Volume predicted mortality* = intercept - coefficient*ln(caseload), where the intercepts and coefficients are derived from regression using the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure). *Any negative values are reset to "0" Weight = mortality signal/(mortality signal + [mortality sigma/caseload]), where mortality signal and sigma are derived from		

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
			the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure). Method: We used an empirical Bayes approach to combine mortality rates with information on hospital volume at each hospital. In traditional empirical Bayes methods, a point estimate (e.g., mortality rate observed at a hospital) is adjusted for reliability by shrinking it towards the overall mean (e.g., overall mortality rate in the population). We modified this traditional approach by shrinking the observed mortality rate back toward the mortality rate expected given the volume at that hospital—we refer to this as the "volume-predicted		

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
			mortality". With this approach, the observed mortality rate is weighted according to how reliably it is estimated, with the remaining weight placed on the information regarding hospital volume [volume-predicted mortality]. Risk adjustment for patient characteristics is not used because in sensitivity analysis, composite measures based on an unadjusted mortality input and a risk-adjusted mortality input had a correlation of (.95) and thus were equally good at predicting future performance. The formula for calculating the survival predictor has two components, one is a volume predicted		

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
			mortality rate, and the second is an observed mortality rate. The volume predicted mortality rate reflects the hospitals experience performing AAA surgeries (thus, it includes all AAA surgeries) and uses mortality for all hospitals at that specific volume to create the volume predicted mortality. The input data from the hospitals for this domain is a volume count of all AAAs performed in the hospital. The second domain is the observed mortality, for this domain the population is the group of AAA cases without rupture, the data needed for this domain is the number of observed deaths occurring for		

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
			AAA cases without rupture, within the inpatient setting. The general composite measure calculation is as follows: Predicted Survival = 1-Predicted Mortality Predicted Mortality = (weight)*(mortality) + (1-weight)*(volume predicted mortality) Volume predicted mortality* = intercept - coefficient*ln(caseload), where the intercepts and coefficients are derived from regression using the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure). *Any negative values are reset to "0" Weight = mortality		

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
			signal/(mortality signal + [mortality sigma/caseload]), where mortality signal and sigma are derived from the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure).		
Stratification	The stratification of the denominator for open vs. endovascular and ruptured vs. unruptured involve the following codes in the denominator specification: AAA Repair ICD-9-CM Procedure Codes: OPEN; 3834 =AORTA RESECTION & ANAST 3844 = RESECT ABDM AORTA W REPL 3864 = EXCISION OF AORTA ENDOVASCULAR; 3971 = ENDO IMPL	Gender, age (5-year age groups), race/ ethnicity, primary payer, custom The stratification of the denominator for open vs. endovascular and ruptured vs. unruptured involves the following codes in the denominator specification: AAA Repair ICD-9-CM Procedure Codes: OPEN 3834 = AORTA RESECTION & ANAST 3844= 1RESECT ABDM AORTA W REPL 3864 = EXCISION OF		N/A	N/A

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
	GRFT ABD AORTA Include Only: AAA ICD-9-CM Diagnosis Codes: RUPTURED; 4413 = RUPT ABD AORTIC ANEURYSM UNRUPTURED 4414 = ABDOM AORTIC ANEURYSM	AORTA ENDOVASCULAR 3971 = ENDO IMPL GRFT ABD AORTA AAA ICD-9-CM Diagnosis Codes: RUPTURED 4413 = RUPT ABD AORTIC ANEURYSM UNRUPTURED 4414 = ABDOM AORTIC ANEURYSM			
Type Score	Count	Rate/proportion		Rate/proportion	Rate/proportion
Algorithm	The volume is the number of discharges with a diagnosis of, and a procedure for AAA.	Each indicator is expressed as a rate, is defined as outcome of interest / population at risk or numerator / denominator. The AHRQ Quality Indicators (AHRQ QI) software performs five steps to produce the rates. 1) Discharge-level data is used to mark inpatient records containing the outcome of interest and 2) the population at risk. For provider indicators, the population at risk is also		Identify denominator, exclude non-elective repair of symptomatic or ruptured patients and men with AAA >6 cm, and women with AAA >5.5, find number of deaths Outcome = deaths/ # cases	Identify denominator, exclude non-elective repair of symptomatic or ruptured patients and men with AAA >6 cm, and women with AAA >5.5, find number of deaths Outcome = deaths/ # cases

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
		derived from hospital discharge records; for area indicators, the population at risk is derived from U.S. Census data. 3) Calculate observed rates. Using output from steps 1 and 2, rates are calculated for user-specified combinations of stratifiers. 4) Calculate expected rates. Regression coefficients from a reference population database are applied to the discharge records and aggregated to the provider or area level. 5) Calculate risk-adjusted rate. Use the indirect standardization to account for case-mix. 6) Calculate smoothed rate. A Univariate shrinkage factor is applied to the risk-adjusted rates. The shrinkage estimate reflects a reliability adjustment unique to each indicator. Full information on calculation algorithms and			

	Maintenance Measure 0357: Abdominal aortic aneurysm (AAA) repair volume (IQI 4)	**Maintenance Measure 0359**: Abdominal aortic artery (AAA) repair mortality rate (IQI 11)	**Endorsed Measure 0736:** Survival predictor for abdominal aortic aneurysm (AAA)	**New Candidate Standard 1523**: In-hospital mortality following elective open repair of small AAAs	**New Candidate Standard 1534**: In-hospital mortality following elective EVAR of small AAAs
		specifications can be found at http://qualityindicators.ahrq.gov/IQI_download.htm			
Data Source	Electronic administrative data/claims	Electronic administrative data/claims	Electronic administrative data/claims	Registry data	Registry data
Level of Measurement /Analysis	Facility/agency	Facility/agency	Facility/agency	Clinicians: Individual, group; Facility/agency;	Clinicians: Individual, group; Facility/agency;
Care Settings	Hospital	Hospital	Hospital	Hospital	Hospital

Pancreatic Resection

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
Status	Currently undergoing review	Currently undergoing review	Endorsed 9/2010
Steward	Agency for Healthcare Research and Quality	Agency for Healthcare Research and Quality	Leapfrog Group
Description	Percentage of adult hospital discharges with procedure code of pancreatic resection with an in-hospital death, stratified by benign and malignant disease.	Number of adult hospital discharges with procedure for pancreatic resection, stratified by benign and malignant disease.	A reliability adjusted measure of pancreatic resection surgical performance that optimally combines two important domains: Pancreatic resection hospital volume and pancreatic operative mortality, to provide predictions on hospital pancreatic survival rates in patients age 18 and over.
Type of Measure	Outcome	Structure	Outcome
Numerator	Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator. Time window: Time window can be determined by user, but is generally a calendar year.	Hospital discharges, age 18 years and older, with ICD-9-CM codes for pancreatic resection procedure, stratified by benign and malignant disease. Time window: Time window can be determined by user, but is generally a calendar year.	Survival of pancreatic cancer patients age 18 and over who undergo a pancreatic resection. Time window: During the hospital admission
Numerator Details	Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.	Discharges, age 18 years and older, with ICD-9-CM codes for pancreatic resection procedure. ICD-9-CM pancreatic resection procedure codes: 526 TOTAL PANCREATECTOMY 527 RAD PANCREATICODUODENECT5 2.5 Partial pancreatectomy 52.51 Proximal pancreatectomy 52.52 Distal pancreatectomy 52.53 Radical subtotal pancreatectomy 52.59 Other partial pancreatectomy	For the observed mortality, the hospital submits the observed deaths for pancreatic resection cases in patients with pancreatic cancer as identified using the population codes.

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
		Exclude cases: • MDC 14 (pregnancy, childbirth, and puerperium)	
Denominator	Hospital discharges, age 18 years and older, with ICD-9-CM pancreatic resection code procedure and a diagnosis code of pancreatic cancer in any field, stratified by benign and malignant disease. Time window: Time window can be determined by user, but is generally a calendar year.	N/A	All hospital patients age 18 and over with pancreatic cancer who had a pancreatic resection. Time Window : 12 months
Denominator Categories	Female, Male; 18 and older	Female, Male; 18 and older	
Denominator Details	Discharges, age 18 years and older, with ICD-9-CM pancreatic resection code procedure and a diagnosis code for pancreatic cancer in any field. ICD-9-CM pancreatic resection procedure codes: 526 TOTAL PANCREATECTOMY 527 RAD PANCREATICODUODENECT	N/A	For the volume predicted mortality, hospitals count the number of all pancreatic resection cases using the following codes. ICD-9-CM Procedure Codes for Pancreatectomy Any pancreaticoduodenectomy: 5251 Proximal Pancreatectomy 5253 Radical Subtot Pancreatectomy 526 Total Pancreatectomy 527 Radical Pancreatectomy For the observed mortality, the hospital counts the number of pancreatic resection cases that also have a pancreatic cancer diagnosis using the following codes ICD-9-CM Codes for pancreatic cancer 1521 MALIGNANT NEOPL JEJUNUM 1522 MALIGNANT NEOPLASM ILEUM 1523 MAL NEO MECKEL'S

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
			DIVERT 1528 MAL NEO SMALL BOWEL NEC 1529 MAL NEO SMALL BOWEL NOS 1560 MALIG NEO GALLBLADDER 1561 MAL NEO EXTRAHEPAT DUCTS 1562 MAL NEO AMPULLA OF VATER 1568 MALIG NEO BILIARY NEC 1569 MALIG NEO BILIARY NOS 1570 MAL NEO PANCREAS HEAD 1571 MAL NEO PANCREAS BODY 1572 MAL NEO PANCREAS TAIL 1573 MAL NEO PANCREATIC DUCT 1574 MAL NEO ISLET LANGERHANS 1578 MALIG NEO PANCREAS NEC 1579 MALIG NEO PANCREAS NOS
Exclusions	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) ICD-9-CM codes: 577.0 Acute pancreatitis 577.1 Chronic pancreatitis	N/A	Patients who do not have a diagnosis of pancreatic cancer

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
Exclusion Details	Exclude cases: • missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1 =missing) • transferring to another short-term hospital (DISP=2) • MDC 14 (pregnancy, childbirth, and puerperium) ICD-9-CM codes: 577.0 Acute pancreatitis 577.1 Chronic pancreatitis	N/A	Pancreatectomy cases without a pancreatic cancer diagnosis code.
Risk Adjustment	Risk adjustment method widely or commercially available. The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age in years (in 5-year age groups), All Patient Refined-Diagnosis Related Group (APR-DRG) and APR-DRG risk-of-mortality subclass. The reference population used in the model is the universe of discharges for states that participate in the HCUP State Inpatient Databases (SID) for the year 2007 (updated annually), a database consisting of 43 states and approximately 30 million adult discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect	No risk adjustment necessary.	We used an empirical Bayes approach to combine mortality rates with information on hospital volume at each hospital. In traditional empirical Bayes methods, a point estimate (e.g., mortality rate observed at a hospital) is adjusted for reliability by shrinking it towards the overall mean (e.g., overall mortality rate in the population). We modified this traditional approach by shrinking the observed mortality rate back toward the mortality rate expected given the volume at that hospital—we refer to this as the "volume-predicted mortality". With this approach, the observed mortality rate is weighted according to how reliably it is estimated, with the remaining weight placed on the information regarding hospital volume [volume-predicted mortality]. Risk adjustment for patient characteristics is not used because in sensitivity analysis,

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
	standardization as the observed rate divided by the expected rate, multiplied by the reference population rate.		composite measures based on an unadjusted mortality input and a risk-adjusted mortality input had a correlation of (.95) and thus were equally good at predicting future performance. The formula for calculating the survival predictor has two components, one is a volume predicted mortality rate, and the second is an observed mortality rate. The volume predicted mortality rate reflects the hospitals experience performing pancreatic resection surgeries (thus, it includes all pancreatic resection surgeries) and uses mortality for all hospitals at that specific volume to create the volume predicted mortality. The input data from the hospitals for this domain is a volume count of all pancreatic resections performed in the hospital. The second domain is the observed mortality, for this domain the population is narrowed to a homogenous group of pancreatic resections with a diagnosis of cancer, the data needed for this domain is the number of observed deaths occurring for pancreatic resection cases with cancer, within the inpatient setting. The general composite measure calculation is as follows: Predicted Survival = 1-Predicted Mortality Predicted Mortality =

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
			(weight)*(mortality) + (1-weight)*(volume predicted mortality) Volume predicted mortality* = intercept - coefficient*ln(caseload), where the intercepts and coefficients are derived from regression using the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure). *Any negative values are reset to "0" Weight = mortality signal/(mortality signal + [mortality sigma/caseload]), where mortality signal and sigma are derived from the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure). Method: We used an empirical Bayes approach to combine mortality rates with information on hospital volume at each hospital. In traditional empirical Bayes methods, a point estimate (e.g., mortality rate observed at a hospital) is adjusted for reliability by shrinking it towards the overall mean (e.g., overall mortality rate in the population). We modified this traditional approach by shrinking the observed mortality rate back toward the mortality rate expected given the volume at that hospital—we refer to this as the "volume-predicted mortality". With this

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
			approach, the observed mortality rate is weighted according to how reliably it is estimated, with the remaining weight placed on the information regarding hospital volume [volume-predicted mortality]. Risk adjustment for patient characteristics is not used because in sensitivity analysis, composite measures based on an unadjusted mortality input and a risk-adjusted mortality input had a correlation of (.95) and thus were equally good at predicting future performance. The formula for calculating the survival predictor has two components, one is a volume predicted mortality rate, and the second is an observed mortality rate. The volume predicted mortality rate reflects the hospitals experience performing pancreatic resection surgeries (thus, it includes all pancreatic resection surgeries) and uses mortality for all hospitals at that specific volume to create the volume predicted mortality. The input data from the hospitals for this domain is a volume count of all pancreatic resections performed in the hospital. The second domain is the observed mortality, for this domain the population is narrowed to a homogenous group of pancreatic resections with a diagnosis of cancer, the

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
			data needed for this domain is the number of observed deaths occurring for pancreatic resection cases with cancer, within the inpatient setting. The general composite measure calculation is as follows: Predicted Survival = 1-Predicted Mortality Predicted Mortality = (weight)*(mortality) + (1-weight)*(volume predicted mortality) Volume predicted mortality* = intercept - coefficient*ln(caseload), where the intercepts and coefficients are derived from regression using the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure). *Any negative values are reset to "0" Weight = mortality signal/(mortality signal + [mortality sigma/caseload]), where mortality signal and sigma are derived from the NIS data and the caseload comes from the Leapfrog Hospital Survey (answer to question #1 for each high-risk procedure).
Stratification	User has the option to stratify by gender, age (5-year age groups), race / ethnicity, primary payer, and custom stratifiers. Malignant Disease: ICD-9-CM pancreatic cancer diagnosis codes:	Malignant Disease: ICD-9-CM pancreatic cancer diagnosis codes: 1520 MALIGNANT NEOPL DUODENUM 1561 MAL NEO EXTRAHEPAT	

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
	1520 MALIGNANT NEOPL DUODENUM 1561 MAL NEO EXTRAHEPAT DUCTS 1562 MAL NEO AMPULLA OF VATER 1570 MAL NEO PANCREAS HEAD 1571 MAL NEO PANCREAS BODY 1572 MAL NEO PANCREAS TAIL 1573 MAL NEO PANCREATIC DUCT 1574 MAL NEO ISLET LANGERHANS 1578 MALIG NEO PANCREAS NEC 1579 MALIG NEO PANCREAS NOS Benign Disease: All other cases	DUCTS 1562 MAL NEO AMPULLA OF VATER 1570 MAL NEO PANCREAS HEAD 1571 MAL NEO PANCREAS BODY 1572 MAL NEO PANCREAS TAIL 1573 MAL NEO PANCREATIC DUCT 1574 MAL NEO ISLET LANGERHANS 1578 MALIG NEO PANCREAS NEC 1579 MALIG NEO PANCREAS NOS Benign Disease: All other cases	
Type Score	Rate/proportion	Count	
Algorithm	Each indicator is expressed as a rate, is defined as outcome of interest / population at risk or numerator / denominator. The AHRQ Quality Indicators (AHRQ QI) software performs five steps to produce the rates. 1) Discharge-level data is used to mark inpatient records containing the outcome of interest and 2) the population at risk. For provider indicators, the population at	The volume is the number of discharges with a procedure for pancreatic resection.	

	Maintenance Measure 0365: Pancreatic resection mortality rate (IQI 9)	**Maintenance Measure 0366**: Pancreatic resection volume (IQI 2)	**Endorsed Measure 0738:** Survival predictor for pancreatic resection surgery
	risk is also derived from hospital discharge records; for area indicators, the population at risk is derived from U.S. Census data. 3) Calculate observed rates. Using output from steps 1 and 2, rates are calculated for user-specified combinations of stratifiers. 4) Calculate expected rates. Regression coefficients from a reference population database are applied to the discharge records and aggregated to the provider or area level. 5) Calculate risk-adjusted rate. Use the indirect standardization to account for case-mix. 6) Calculate smoothed rate. A Univariate shrinkage factor is applied to the risk-adjusted rates. The shrinkage estimate reflects a reliability adjustment unique to each indicator. Full information on calculation algorithms and specifications can be found at http://qualityindicators.ahrq.gov/IQI_download.htm		
Data Source	Administrative claims	Administrative claims	Electronic administrative data/claims
Level of Measurement /Analysis	Facility	Facility/agency	Facility/agency
Care Settings	Hospital/Acute Care Facility	Hospital/Acute Care Facility	Hospital
Clinical Services	Physicians (MD/DO)	Physicians (MD/DO)	