Patient Safety, Fall 2018 Cycle: CDP Report

TECHNICAL REPORT

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NATIONAL QUALITY FORUM

Contents

Patient Safety, Fall 2018 Cycle

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Executive Summary

Patient safety-related events occur across healthcare settings and include a variety of preventable and potentially preventable incidents such as pressure ulcers, falls, and healthcare-associated infections. Medical errors are a major cause of patient safety events. Medical errors alone are estimated to cause hundreds of thousands of preventable deaths each year in the United States,[1] making them the third leading cause of death.[2] Quality measurement and improvement efforts have helped to drive substantial reductions in patient safety-related events, particularly in hospitals, such as reductions in central line-related blood stream infections and catheter-associated urinary tract infections. Yet, despite these improvements in safety, opportunities still exist to reduce harm and promote more affordable, effective, and equitable care across settings.

The Patient Safety Standing Committee oversees the NQF Patient Safety portfolio and assesses both new and existing performance measures for endorsement using NQF's measure evaluation criteria. This review cycle included measures related to the following key safety topics: medication monitoring, medication review, surgical site and hospital-acquired infections, and nurses' practice environment. Additionally, the Standing Committee provides feedback on gaps and priorities related to patient safety and contributes to the advancement of measurement in this area.

The Committee identified several overarching themes in this review cycle, including ensuring appropriate risk adjustment for patient and community confounders in patient safety measures and ensuring that measures keep up with guidelines. In addition, the Committee explored measure harmonization in measures of medication review and reconciliation where there is variation in definitions and specifications and made focused recommendations about how developers could harmonize these measures in the future.

For this project, the Standing Committee evaluated six measures undergoing maintenance review against NQF's standard evaluation criteria. All six measures were endorsed:

- 0553 Care for Older Adults (COA) – Medication Review
- 0555 INR Monitoring for Individuals on Warfarin
- 0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure
- 1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
- 1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure
- 3450 Practice Environment Scale - Nursing Work Index (PES-NWI) (composite and five subscales)

Brief summaries of the measures reviewed are included in the body of the report; detailed summaries of the Committee's discussion and ratings of the criteria for each measure are in Appendix A.

Introduction

Addressing patient safety is central to advancing healthcare quality and improving healthcare delivery. For almost 20 years, the National Quality Forum (NQF) has led initiatives to measure patient safety performance, promote safe practices, and identify and reduce serious reportable events (SREs). These efforts have also involved expanding the number of high-quality patient safety measures across settings as well as promoting alignment of existing measures. Measures in the Patient Safety portfolio target various patient safety events and practices across healthcare settings. In this review cycle, measures span several types of healthcare settings and are connected to important areas in patient safety, including medication monitoring, medication review, surgical site and hospital-acquired infections, and nurses' practice environment.

Patient safety measurement and quality improvement efforts represent one of the most successful applications of quality measurement and have had a significant impact on patient-safety events in U.S. hospitals. Results from the Agency for Healthcare Research and Quality National Scorecard on Hospital-Acquired Conditions Updated Baseline Rates and Preliminary Results indicate that from 2014 to 2017 hospital-acquired conditions (HACs) fell by approximately 13 percent. From 2015 through 2017 national efforts targeting these conditions helped prevent 20,500 deaths and saved $7.7 billion. Results also showed that adverse drug events and Clostridium difficile infections decreased 28 percent and 37 percent, respectively, with no change in surgical site infections.[3]

A fundamental factor in promoting safe and quality care is ensuring a healthy workplace environment for staff. A recent study found that between 2005 and 2015, 21 percent of hospitals made substantial gains in improving the working environment of nurses. By comparison, 7 percent of hospital working environments worsened. Among hospitals where the care environment improved for nurses, improvements in performance on patient safety indicators followed.[4] Another study found that most new nurses are working 12-hour shifts and approximately half work overtime, trends that have been fairly stable. This occurs despite an established link between overtime and poor patient outcomes (e.g., medical errors, healthcare-associated infections [HAIs]) and nurses' well-being, making measurement of the nursing working environment an area in need for continued measurement and improvement.[5–8] These data demonstrate how quality measurement in the nursing working environment can drive improved safety.

Patient safety in the hospital setting is a common target of quality reporting and payment programs, due in part to the clear impact of many clinical processes and care on outcomes. Similarly, most measures in NQF's Patient Safety portfolio are focused on hospitals. Addressing safety of ambulatory care and transitions of care is similarly important, especially as the majority of care takes place in the outpatient setting. In addition, the trend over the past decade has been a movement in care away from hospitals into outpatient settings, and patient safety events are increasing in outpatient settings with approximately 4.5 million ambulatory visits related to adverse drug events (ADEs) each year. Certain groups are at higher risk, such as individuals taking multiple medications and those visiting primary care

versus specialty care.[9] Missed and delayed diagnosis and prescribing problems are also key issues that can lead to avoidable harm in the outpatient setting.[10] Furthermore, an estimated 5 percent of adults are exposed to a diagnostic error in the outpatient setting each year.[11]

Measuring quality outside of the hospital presents unique challenges, partly due to the unavailability of data to assess care across settings and other issues, such as provider attribution and adverse events that occur outside of healthcare settings. Medication review, reconciliation, and monitoring are examples of important components of safety with applicability across settings and for which measures exist. Safe use of medications includes ensuring close monitoring of patients on anticoagulants as well as accurately recording and communicating patients' medications. Both of these are central to The Joint Commission's Ambulatory Health Care National Patient Safety Goals.[12]

There are six measures related to medication reconciliation and medication review currently in the Patient Safety portfolio. In addition to evaluating one medication review measure for continued endorsement, efforts were made during this cycle to initiate alignment and standardization of medication reconciliation and medication review measures—an ongoing harmonization initiative undertaken by the Patient Safety Standing Committee.

NQF Portfolio of Performance Measures for Patient Safety Conditions

The Patient Safety Standing Committee (Appendix C) oversees NQF's portfolio of Patient Safety measures (Appendix B). This portfolio contains 74 measures: 24 process measures, 42 outcome measures, two intermediate outcome measures, two structure measures, and four composite measures (see table below).

Table 1. NQF Patient Safety Portfolio of Measures

	Process	Outcome	Intermediate Outcome	Structure	Composite	Total
Medication Safety	11	1	–	–	–	12
Healthcare-Associated Infections	2	8	–	–	–	10
Perioperative Safety	–	7	–	–	–	7
Falls	1	6	–	–	–	7
Mortality	–	7	–	–	1	8
Venous Thromboembolism	4	1	–	–	–	5
Pressure Ulcers	–	4	–	–	–	4
Workforce	–	–	–	2	1	3
Radiation Safety	1	–	1	–	–	2
Other	5	8	1	–	2	16
Total	**24**	**42**	**2**	**2**	**4**	**74**

Additional measures related to patient safety are assigned to other projects. These include various diabetes assessment and screening measures (Prevention and Population Health/Behavioral Health and

Substance Use projects), primary care and chronic illness measures (Primary Care and Chronic Illness project), angiotensin-converting-enzyme inhibitor/angiotensin II receptor blockers medication measures (Cardiovascular project), complications and outcomes measures (Prevention and Population Health/Surgery projects), and cost and efficiency measures (Cost and Efficiency project).

Patient Safety Measure Evaluation

On January 29 and 31 and February 8, 2019 the Patient Safety Standing Committee evaluated six measures undergoing maintenance review against NQF's standard evaluation criteria.

Table 2. Patient Safety Measure Evaluation Summary

	Maintenance	New	Total
Measures under consideration	6	0	6
Measures endorsed	6	0	6

Comments Received Prior to Committee Evaluation

NQF solicits comments on endorsed measures on an ongoing basis through the Quality Positioning System (QPS). In addition, NQF solicits comments for a continuous 16-week period during each evaluation cycle via an online tool located on the project webpage. For this evaluation cycle, the commenting period opened on November 29, 2018 and closed on April 9, 2019. As of January 18, 2019, seven comments were submitted and shared with the Committee prior to the measure evaluation web meetings (Appendix F). Five comments were in support of measure 3450. Two comments questioned if testing was sufficient for measures 1716 and 1717.

All submitted comments were provided to the Committee prior to its initial deliberations during the measure evaluation web meetings.

Comments Received After Committee Evaluation

The continuous 16-week public commenting period with NQF member support closed on April 9, 2019. Following the Committee's evaluation of the measures under consideration, NQF received 13 comments from eight organizations (including two member organizations) and individuals pertaining to the draft report and to the measures under consideration. All comments for each measure under consideration have been summarized in Appendix A.

Throughout the 16-week continuous public commenting period, NQF members had the opportunity to express their support ("support" or "do not support") for each measure submitted for endorsement consideration to inform the Committee's recommendations. Two NQF members provided their expressions of support or nonsupport. One of the NQF members did not support 0555. Both NQF members did not support measures 1716 and 1717.

Overarching Issues

During the Standing Committee's discussion of the measures, several overarching issues emerged that were factored into the Committee's ratings and recommendations for multiple measures and are not repeated in detail with each individual measure. The Committee also continued discussing the harmonization of the six NQF-endorsed medication reconciliation and medication review measures, an ongoing effort to align attributes across these measures.

Ensuring Appropriate Risk Adjustment for Patient and Community Confounders

During the evaluation of several measures under review, the Committee suggested that developers consider the impact of additional clinical and social risk factors on measure scores, both for fair comparisons of performance and to better identify and address disparities. There was some concern that certain system- and structure-level adjustments (e.g., hospital teaching status, community onset infection rates) might not be the best proxies for patient mix, although other members noted that these adjusters were validated and widely used.

Regarding the infection outcome measures, the Committee suggested that developers consider collecting and validating patient-related factors to be used for analysis, but also recognized this would involve additional burden that would need to be justified. The Committee was also interested in hospital infection performance data categorized by hospital unit and comorbidities (e.g., patient immune status, clinical condition). Additional years of performance data and more detailed data would also allow for a better understanding of gaps and trends over time.

The Committee discussed that patient behavior impacts whether or not a patient receives (or shows up for) INR monitoring, though measure 0555 does not adjust or stratify for any clinical or social variables. This conceptual link coupled with disparities from the literature led some Committee members to suggest that risk adjustment should be considered in the future for this process measure. However, the developer suggested that NQF does not advise risk adjustment for process measures and emphasized that the measure is used at the health plan level; an individual hospital that serves patients with extreme social risk would not be penalized. NQF does not prohibit risk adjustment based on measure type (e.g., process, outcome) and continues to examine guidance and best practices around risk adjustment. The developer acknowledged that they could consider risk adjustment in the future if nationally representative data become available and if directed by the Committee and NQF.

Ensuring that Measures Match Guideline Recommendations

During this cycle, there was considerable discussion to ensure that the Patient Safety portfolio and specific measures keep current with evolving guidelines. The Committee agreed that continued attention will be needed to ensure that the Patient Safety portfolio is kept up to date as treatment patterns, standards of care, and guidelines evolve.

Medication Review and Reconciliation Measure Harmonization

In September and December 2018, the Committee discussed the potential harmonization of six medication reconciliation and medication review measures:

- 0097 Medication Reconciliation Post-Discharge,
- 0419e Documentation of Current Medications in the Medical Record,
- 0553 Care for Older Adults (COA)-Medication Review,
- 2456 Medication Reconciliation: Number of Unintentional Medication Discrepancies per Patient,
- 3317 Medication Reconciliation on Admission, and
- 2988 Medication Reconciliation for Patients Receiving Care at Dialysis Facilities.

The goal of this effort was to align measure specifications where possible to reduce burden and promote measurement efficiency. To date, there have been several Committee discussions on the harmonization of medication review and reconciliation measures. The Committee has been presented a comparison of attributes across these measures as well as a summary of major similarities and differences in specifications. Specifically, existing measures apply to different populations of patients, different settings, and—importantly—different methodologies and standards for the process of medication reconciliation and who can perform this task. While the Committee did not explicitly recommend that harmonization should or could feasibly occur today across these measures, they discussed areas that may be easiest for developers to standardize in the future: individuals eligible to perform the medication reconciliation or review and information that must be reconciled and included in the medication list. Other areas for potential harmonization include the review and reconciliation processes (including how they need to be completed and documented) and sources from which to gather information.

As measurement science is evolving, conversations similar to this one can help move measures forward to improve quality and harmonization. Concurrent to this effort, the Committee stressed the need for measures to advance the capture of the outcomes of reconciliation or review (e.g., discrepancies corrected, medication changed) rather than that the process was completed. Next steps include identifying which attributes of the specifications can be aligned and recommending how these areas can be standardized. Working with the Patient Safety Standing Committee as well as measure developers, NQF aims to promote evidence-based measures that can be operationalized across settings and populations to assess quality of medication review and reconciliation.

Summary of Measure Evaluation

The following brief summaries of the measure evaluation highlight the major issues that the Committee considered. Details of the Committee's discussion and ratings of the criteria for each measure are included in Appendix A.

0553 Care for Older Adults (COA)-Medication Review (National Committee for Quality Assurance): Endorsed

Description: Percentage of adults 65 years and older who had a medication review during the measurement year. A medication review is a review of all a patient's medications, including prescription medications, over-the-counter (OTC) medications and herbal or supplemental therapies by a prescribing practitioner or clinical pharmacist. **Measure Type**: Process; **Level of Analysis**: Health Plan; **Setting of Care**: Outpatient Services; **Data Source**: Claims, Electronic Health Records, Paper Medical Records

The Standing Committee recommended this measure for continued endorsement. The developer pointed to literature indicating that medication reviews are associated with a decrease in the number of drug-related problems, as well as positive impact on health outcomes such as hemoglobin A1c, blood pressure, and cholesterol. Although one of the studies provided was based on pharmacist-led medication review, the Committee generally agreed that the studies were similar enough to the specifications in the measure. The Committee discussed the eligibility requirement for who is able to perform the medication review and agreed that the measure is appropriate in allowing a clinical pharmacist or prescribing practitioner to conduct the review.

The Committee noted that de-prescribing is one of the goals of medication review but is not a process that is captured in this measure. The Committee strongly recommended that future measures move toward determining the quality and outcomes of the medication review (e.g., changes to medication, discrepancies corrected). The Committee expressed interest in the relationship between measure performance and adverse drug events within each health plan, but that type of data is not currently collected. The developer noted that measuring de-prescribing or similar medication review outcomes is not currently possible due to data challenges, especially at the health plan level, but suggested they would consider such outcomes for future maintenance or measure development efforts.

The measure has been used for the past 10 years with steady improvement over time, but there is still performance variation and opportunity for improvement, especially for Medicare patients.

NQF received one public comment that suggested the developer consider measure 0553 as a competing measure with the Pharmacy Quality Alliance's (PQA) MTM Program Completion Rate Comprehensive Medication Review measure.

0555 INR Monitoring for Individuals on Warfarin (Centers for Medicare & Medicaid Services): Endorsed

Description: Percentage of individuals at least 18 years of age as of the end of the measurement period with at least 56 days of warfarin therapy who receive at least one International Normalized Ratio (INR) test during each 56-day interval with active warfarin therapy; **Measure Type**: Process; **Level of Analysis**: Health Plan; **Setting of Care**: Outpatient Services; **Data Source**: Claims

The Standing Committee recommended this measure for continued endorsement. Some Committee members observed that the measure assesses whether INR is monitored within an eight-week interval and noted that this is not entirely consistent with the two major existing guidelines, one of which recommends a four-week monitoring interval, and the other recommends a 12-week interval. The developer stated that the evidence continues to support regular monitoring of INR as the standard of care for patients taking warfarin and suggested that the eight-week interval is a conservative approach that bridges the gap between these two discrepant recommendations. Committee members also noted the lack of risk adjustment for this measure, suggesting that adjusting for social risk factors may be appropriate for this measure given its partial dependence on patient behavior. The developer pointed out that this is a process measure, and that risk adjustment is not typically expected for process measures but stated that they would consider risk adjustment in the future.

NQF received three comments on 0555. Three commenters expressed concern that the eight-week monitoring interval for this measure is not entirely consistent with existing conflicting guideline recommendations and, therefore, did not support the Committee's recommendation for re-endorsement.

0753 American College of Surgeons-Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure (Centers for Disease Control and Prevention): Endorsed

Description: Facility adjusted Standardized Infection Ratio (SIR) and Adjusted Ranking Metric (ARM) for deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged >= 18 years as reported through the CDC National Health and Safety Network (NHSN); **Measure Type**: Outcome; **Level of Analysis**: Facility, Other, Population: Regional and State; **Setting of Care**: Inpatient/Hospital; **Data Source**: Electronic Health Data, Electronic Health Records, Other, Paper Medical Records

The Standing Committee recommended the measure for continued endorsement. The Committee discussed that an additional publication strengthened the measure's scientific evidence and that data provided from 2014 to 2016 indicated that a performance gap exists.

Since the Methods Panel did not reach consensus on the measure's reliability, the Committee reviewed the Methods Panel's concerns and the developer's response. The Committee commented that reliability scores were relatively low. NQF does not currently set thresholds for reliability; NQF stated that lower reliability scores may also be related to low-frequency events. The developer noted that state health departments or external agencies conduct validations, and the reliability testing methodology used varies, but the developer does provide guidance and is aiming to have more consistent data moving forward.

The Committee requested that additional trend analysis of measure performance be provided in the future. The measure is currently publicly reported, and the Committee agreed that the measure is useful, feasible, and important.

NQF did not receive comments following the Committee's evaluation of the measure.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure (Centers for Disease Control and Prevention): Endorsed

Description: Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM) of hospital-onset unique blood source MRSA Laboratory-identified events (LabID events) among all inpatients in the facility; **Measure Type**: Outcome; **Level of Analysis**: Facility, Other, Population: Regional and State; **Setting of Care**: Emergency Department and Services, Inpatient/Hospital, Post-Acute Care; **Data Source**: Electronic Health Data, Electronic Health Records, Other, Paper Medical Records

The Standing Committee recommended the measure for continued endorsement. The Committee strongly agreed that the evidence and performance gap data indicate that this is an important area for

measurement with an opportunity for improvement. One Committee member expressed that the performance gap is not clear to the public or hospitals, as most hospitals are middle-performers, and recommended the consideration of additional increments to differentiate performance. There was also interest in measuring patient typology or unit.

The Committee discussed the risk factors included in the adjustment model, especially the use of medical school affiliation and community-onset infection rate, but ultimately agreed with the Methods Panel's validity rating. The developer commented that there is a relationship between colonization in the community and community infection. The developer explained that they do not collect patient-level information, so they rely on high-level factors that have shown through analysis to account for patient mix. The Committee recommended that the developer consider looking at the impact of patient-level factors (e.g., number of oncology patients, immune status, social factors), but also recognized the potential data burden. One Committee member cautioned that adjustment to account for high-risk patients or social factors is not appropriate, noting that hospitals should be responsible for having systems in place to prevent infection for high-risk patients.

NQF received one pre-evaluation comment and two post-evaluation comments. Commenters expressed concerns regarding the lack of data element testing at the hospital level, questioned the sampling method and presentation of validity by state, and suggested that the validity testing provided did not meet NQF's validity criteria. One commenter also supported the Committee's recommendations to explore additional risk factors in the developer's adjustment approach.

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure (Centers for Disease Control and Prevention): Endorsed

Description: Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM) of hospital-onset CDI Laboratory-identified events (LabID events) among all inpatients in the facility, excluding well-baby nurseries and neonatal intensive care units (NICUs); **Measure Type**: Outcome; **Level of Analysis**: Facility, Other, Population: Regional and State; **Setting of Care**: Emergency Department and Services, Inpatient/Hospital, Post-Acute Care; **Data Source**: Electronic Health Data, Electronic Health Records, Other, Paper Medical Records

The Standing Committee recommended the measure for continued endorsement. Committee members agreed that there is strong evidence supporting the measure. Similar to measure 1716, some Committee members expressed concerns about the use of community onset admission rate as a risk-adjustment factor and referred back to their recommendation to consider examining patient-level factors for risk adjustment. The Committee agreed with the Scientific Methods Panel's evaluation of the measure's scientific acceptability and accepted the Methods Panel's ratings for reliability and validity.

NQF received one pre-evaluation comment and two post-evaluation comments. Commenters expressed concerns regarding the lack of data element testing at the hospital level, questioned the sampling method and presentation of validity by state, and suggested that the validity testing provided did not meet NQF's validity criteria. One commenter also supported the Committee's recommendations to explore additional risk factors in the developer's adjustment approach.

3450 Practice Environment Scale-Nursing Work Index (PES-NWI) (University of Pennsylvania, Center for Health Outcomes and Policy Research): Endorsed

Description: Practice Environment Scale-Nursing Work Index (PES-NWI) is a survey-based measure of the nursing practice environment completed by staff registered nurses; includes mean scores on index subscales and a composite mean of all subscale scores.; **Measure Type**: Structure; **Level of Analysis**: Clinician: Group/Practice, Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Instrument-Based Data

The Standing Committee recommended the measure for continued endorsement. This structure measure is based on a survey (PES-NWI) of 31 items completed by registered nurses on their current job and includes a composite score and five subscales. The measure is designed to analyze organizational traits that support or undermine the professional practice of registered nurses. The Committee and the developer noted that this measure is used both nationally and internationally. The evidence, which includes two meta-analyses and systematic literature reviews, supports the linkage between better nurse work environments and patient outcomes including—but not limited to—mortality, readmissions, complications, infections, and nurse-rated quality and safety. A Committee member inquired if particular subscales have correlated with patient outcomes. The developer noted challenges with linking performance data to patient outcomes but can connect the data with nurse job outcomes.

Both the Committee and the developer would like to see more use of this measure, given the number of hospitals in the U.S. However, the developer noted participation in the National Database of Nursing Quality Indicators (NDNQI) is voluntary.

One Committee member commented that culture in the workplace is not mentioned in the PES-NWI. The developer agreed that culture in the workplace is important and referenced selected items in AHRQ's Surveys on Patient Safety Culture. The developer noted, however, that these tools are not directly targeted towards nurses.

The Scientific Methods Panel reviewed this measure and passed the measure on the reliability and validity criteria of scientific acceptability.

NQF received five pre-evaluation comments and five post-evaluation comments. Commenters noted the measure's contribution to helping advance improvement of the work environment for nurses.

Measures Withdrawn from Consideration

Five measures previously endorsed by NQF have not been re-submitted for maintenance of endorsement or have been withdrawn during the endorsement evaluation process. Endorsement for these measures will be removed.

Table 3. Measures Withdrawn from Consideration

Measure	Reason for withdrawal
0556 INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications	Developer is not seeking re-endorsement. Measure will no longer be in use.

Measure	Reason for withdrawal
0708 Proportion of Patients with Pneumonia that have a Potentially Avoidable Complication (during the episode time window)	Developer is not seeking re-endorsement. Developer does not feel measure focus is relevant/important.
0709 Proportion of patients with a chronic condition that have a potentially avoidable complication during a calendar year.	Developer is not seeking re-endorsement due to lack of resources.
2337 Antipsychotic Use in Children Under 5 Years Old	Developer is not seeking re-endorsement. Developer noted there is limited uptake of measure in public reporting and accountability programs.
2371 Annual Monitoring for Patients on Persistent Medications (MPM)	Developer is not seeking re-endorsement. Developer noted this measure was based on the HEDIS version of the measure and they are considering a range of options related to this measurement area.

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Appendix A: Details of Measure Evaluation

Rating Scale: H=High; **M**=Moderate; **L**=Low; **I**=Insufficient; **NA**=Not Applicable

Measures Endorsed

0553 Care for Older Adults (COA) – Medication Review

Submission | Specifications

Description: Percentage of adults 65 years and older who had a medication review during the measurement year. A medication review is a review of all a patient's medications, including prescription medications, over-the-counter (OTC) medications and herbal or supplemental therapies by a prescribing practitioner or clinical pharmacist.

Numerator Statement: At least one medication review conducted by a prescribing practitioner or clinical pharmacist during the measurement year and the presence of a medication list in the medical record.

Denominator Statement: All patients 66 years and older as of the end (e.g., December 31) of the measurement year.

Exclusions: Exclude members who use hospice services.

Adjustment/Stratification: No risk adjustment or risk stratification

Level of Analysis: Health Plan

Setting of Care: Outpatient Services

Type of Measure: Process

Data Source: Claims, Electronic Health Records, Paper Medical Records

Measure Steward: National Committee for Quality Assurance

STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **H-3**; **M-8**; **L-3**; **I-1**; 1b. Performance Gap: **H-6**; **M-6**; **L-3**; **I-0;**

Rationale:

- The Committee discussed the evidence for this measure, which includes two systematic reviews, one with meta-analysis. The first review found a reduction in drug-related problems, but no impact on clinical outcomes. A more recent meta-analysis of pharmacist-led medication review found a positive impact on hemoglobin A1c, blood pressure, and cholesterol.
- There was concern about whether the specifications for this measure are similar enough to the cited evidence and if the process is closely linked to improved outcomes.
- There was discussion about the need for medication review measures that are more outcomes focused. The developer cautioned that there are data challenges (e.g., health plan access to clinical data) that accompany more ambitious measurement, but that deprescribing and similar medication review outcomes would be considered in the future.

- There is variation in performance with steady increases over time and continued room for improvement, especially for the Medicare patient population for which mean performance scores are around 65%.

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2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: **H-1**; **M-11**; **L-3**; **I-0** 2b. Validity: **H-0**; **M-13**; **L-2**; **I-0**

<u>Rationale</u>:

- The developer conducted score-level reliability testing using a beta-binomial model (signal to noise). In the previous 2012 submission, the signal to noise score for this measure, provided by the developer was calculated as 0.987. The updated signal to noise score for this measure was calculated as 0.985 using 2016 data from Medicare Advantage Special Needs Plans.
- The results from the Construct Validity testing used a Pearson Correlation test by exploring whether this measure is correlated with *Care for Older Adults – Pain Assessment*. The Pearson Correlation coefficient was significant at 0.82.
- There was some discussion about which individuals should be allowed to perform the medication review. Overall, the Committee agreed the measure as specified is appropriate to allow a clinical pharmacist or prescribing practitioner to complete the review.
- The Committee reiterated that just because the review is done, does not mean it was a quality review or impactful (e.g., Were discrepancies found? Were they corrected?). While the Committee suggested that measurement should move in this direction, there were also comments that the current measure is important as it establishes a baseline that requires vulnerable populations to get a medication review.

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3. Feasibility: H-6; M-9; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

<u>Rationale</u>:

- To allow for widespread reporting, data elements can be collected though administrative data, electronic health record data, or paper records.

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4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-12; No Pass-3** *4b. Usability:* **H-3; M-8; L-3; I-1**

<u>Rationale</u>:

- The measure is used in the CMS Star Ratings Program and the Healthcare Effectiveness and Data Information Set (HEDIS).
- Performance rates indicate additional opportunity for improvement, and the Committee agreed there were minimal/no unintended consequences.

- The was one comment the noted that performance results could potentially be misleading if the public thinks that high performance is directly related to safe drug prescribing practices. The developer responded that the measure is not meant to be a singular, definitive representation of quality related to mediation safety and appropriate prescribing, but it assesses if health plans are completing a process that has known links for improved outcomes.
- The Committee was also interested in the correlation between performance on this measure and adverse drug events (ADEs) within each health plan, but plans do not provide ADE data.

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5. Related and Competing Measures

- This measure is related to, but not directly competing with the following measures:
    - 0097: Medication Reconciliation Post-Discharge
    - 0419e: Documentation of Current Medications in the Medical Record
    - 2456: Medication Reconciliation: Number of Unintentional Medication Discrepancies per Patient
    - 2988: Medication Reconciliation for Patients Receiving Care at Dialysis Facilities
    - 3317: Medication Reconciliation on Admission
- As there are multiple measures related to medication review and medication reconciliation, the Committee is aiming to harmonize attributes of these measures to the extent possible.
- There was also at least one comment that an operational definition of medication review/medication reconciliation is needed.

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6. Standing Committee Recommendation for Endorsement: **Y-12**; **N-3**

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7. Public and Member Comment

- One post-evaluation public comment was submitted on 0553. One commenter suggested that the developer consider measure 0553 *Care for Older Adults (COA) – Medication Review* as a competing measure with the Pharmacy Quality Alliance's (PQA's) MTM Program Completion Rate Comprehensive Medication Review measure.
  NQF Response:
  NQF confirmed that they do not ask Standing Committees to consider non NQF-endorsed measures as part of the related and competing evaluation criteria. The Standing Committee had no further discussion on this comment, but suggested PQA's measure may be appropriate to include as part of the broader effort to harmonize the medication review and reconciliation measures.
  Measure Steward/Developer Response:

  Thank you for your commentary on this measure. NQF defines a competing measure as a measure that has the same measure focus (e.g., target process, condition, event, or outcome; i.e., numerator) AND the same target population (i.e., denominator). PQA's MTM measure does not share either with NCQA's COA – Medication Review measure.

  PQA's measure seeks completion rate of medication therapy management (which is a broader process than medication review involving a face-to-face or telehealth encounter and producing an individualized written summary for the beneficiary), and the denominator is

members in Part-D plans (Part-D plans must offer MTM services, BUT they have some flexibility in which patients they target for MTM programs. A recent analysis by CMS shows that 71% of patients targeted for MTM programs are defined as being eligible by being on 8 or more medications.*) The COA-Medication Review measure, in contrast, includes all patients 65 and older in SNP and Medicare-Medicaid plans.

Both the numerator and denominator are sufficiently different that they should not be considered competing measures.

The commenter contends that the measure has been adopted by Part-D plans so it may be more widely utilized. However, the COA-Medication Review measure is used in CMS Medicare Stars Rating program for Part-C plans, requiring all Part-C and Part-C+D plans to report.

We also believe both measures support quality for their respective populations.

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8. Consensus Standards Approval Committee (CSAC) Vote: Y-14; N-0

Decision: Approved for continued endorsement

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9. Appeals

No appeals were received.

0555 INR Monitoring for Individuals on Warfarin

Submission | Specifications

Description: Percentage of individuals at least 18 years of age as of the end of the measurement period with at least 56 days of warfarin therapy who receive at least one International Normalized Ratio (INR) test during each 56-day interval with active warfarin therapy.

Numerator Statement: The number of individuals in the denominator who receive at least one INR monitoring test during each 56-day interval with active warfarin therapy.

Denominator Statement: Continuously enrolled individuals, at least 18 years of age at of the end of the measurement period, with at least 56 days of warfarin therapy during the measurement period.

Exclusions: 1. Individuals who are monitoring INR at home. These individuals are excluded because the claims associated with home INR monitoring are associated with up to four INR tests per claim. Therefore, a single claim for home INR monitoring would not be representative of a single INR test and would prohibit being able to distinguish if the home INR test was within the 56-day timeframe specified by the numerator of this measure.

2. Individuals who have first or last warfarin claims with missing days' supply.

Adjustment/Stratification: No risk adjustment or risk stratification

Level of Analysis: Health Plan

Setting of Care: Outpatient Services

Type of Measure: Process

Data Source: Claims

Measure Steward: Centers for Medicare & Medicaid Services

STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **H-4**; **M-10**; **L-1**; **I-0**; 1b. Performance Gap: **H-6**; **M-9**; **L-0**; **I-0**

Rationale:

- The Committee discussed the evidence supporting this measure, which includes several clinical guidelines and systematic reviews.
- Some Committee members observed that the measure assesses whether INR is monitored within an 8-week interval and noted that this is not entirely consistent with the two major existing guidelines, one of which recommends a 4-week monitoring interval, and the other of which recommends a 12-week interval. The developer stated that the evidence continues to support regular monitoring of INR as the standard of care for patients taking warfarin and suggested that the 8-week interval is a conservative approach that bridges the gap between these two discrepant recommendations.
- The developer provided performance data showing scores ranging from 44 percent to 76 percent on this measure. The Committee was satisfied that there is an opportunity for improvement in the area of INR monitoring, although it was noted that if a different monitoring interval was used, performance results could look different.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: **H-2**; **M-12**; **L-1**; **I-0** 2b. Validity: **H-0**; **M-13**; **L-1**; **I-1**

Rationale:

- The developer used a signal-to-noise analysis to demonstrate empirical reliability of the measure score, showing a mean reliability score of 0.7.
- The developer also submitted the results of both empirical validity testing and a face validity assessment; the Committee was satisfied with the results. Pearson correlation coefficients with measure 0541 Proportion of Days Covered (PDC): 3 Rates by Therapeutic Category were diabetes: r=0.591, hypertension: r=0.700, and cholesterol: r=0.751 ($p<0.0001$ for all).
- Committee members noted the lack of risk adjustment for this measure, suggesting that adjusting for social risk factors may be appropriate for this measure given its partial dependence on patient behavior. The developer pointed out that this is a process measure, and that risk adjustment is not typically expected for process measures, but stated that they would consider risk adjustment in the future.

3. Feasibility: H-7; M-8; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- Data used in the calculation of this measure are obtained from administrative claims, which are routinely collected for billing purposes. The Committee was satisfied that this measure can be feasibly implemented.

4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-13; No Pass-2** *4b. Usability:* **H-0; M-12; L-3; I-0**

Rationale:

- This measure was previously in use for the Quality and Resource Use Reports but was removed from that program. The measure is now being considered for use in the Quality Rating System for Qualified Health Plans offered on Health Insurance Exchanges.

5. Related and Competing Measures

- No related or competing measures noted.

6. Standing Committee Recommendation for Endorsement: **Y-11**; **N-4**

Rationale

- While the Committee had some concerns about the time interval for INR monitoring, Committee members generally believed the measure was sound, useful, and warranted continued endorsement.

7. Public and Member Comment

- NQF received three comments on 0555. Three commenters expressed concern that the 8-week monitoring interval for measure 0555 *INR Monitoring for Individuals on Warfarin* is not entirely consistent with existing conflicting guideline recommendations and, therefore, did not support the Committee's recommendation for re-endorsement.

  Committee Response:

  The Standing Committee felt that the time monitoring interval was thoroughly discussed during the measure evaluation web meeting. Some Committee members agreed that the developer should consider testing for the impact of social risk factors, but at least one Standing Committee member expressed concern about risk-adjusting process measures. The Committee maintained their recommendation for continued endorsement.

  Measure Steward/Developer Response:

  Clinical practice guidelines recommend regular INR monitoring for patients taking warfarin with recommendations ranging from 4 weeks to up to 12 weeks for patients with stable INRs.[1,2] The current evidence suggests that monitoring less frequently than 56 days is associated with a decrease in the time in therapeutic range (TTR),[3] which is associated with adverse outcomes of bleeding and thromboembolism.[4-8] Recent literature suggests that there has been clinical hesitancy in adopting the 12-week interval due to limited evaluation in practice[9,10] and after a 24-month study of the 12-week interval, it was concluded that even for patients with long-term INR stability, past stability is not a predictor of future stability.[11] This topic was discussed by the NQF Patient Safety Committee and based on current evidence the majority of members voted to retain the measure as specified with the 56-day interval.[12]

- One of the comments about this measure also supported the Committee's recommendation that the developers consider risk adjustment and analyze the impact of social risk factors in the adjustment model.

  Committee Response:

  The Standing Committee felt that the time monitoring interval was thoroughly discussed during the measure evaluation web meeting. Some Committee members agreed that the developer should consider testing for the impact of social risk factors, but at least one Standing Committee member expressed concern about risk-adjusting process measures. The Committee maintained their recommendation for continued endorsement.

  Measure Steward/Developer Response:

  Regarding risk adjustment, the NQF Standing Committee agreed that it was acceptable to not consider risk adjustment during this comprehensive review since the measure is a process measure and the data were not available for conducting the required testing from the participating health plans. However, further evaluation of risk adjustment is planned for next comprehensive review since data from implementation may be available to support the analysis.

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8. Consensus Standards Approval Committee (CSAC) Vote: Y-13; N-0

Decision: Approved for continued endorsement

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9. Appeals

No appeals were received.

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Submission | Specifications

Description: Facility adjusted Standardized Infection Ratio (SIR) and Adjusted Ranking Metric (ARM) for deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged >= 18 years as reported through the CDC National Health and Safety Network (NHSN).

Numerator Statement: Deep incisional primary (DIP) and organ/space SSIs during the 30-day postoperative period among patients = 18 years of age, who undergo inpatient colon surgeries or abdominal hysterectomies. SSIs will be identified before discharge from the hospital, upon readmission to the same hospital, or during outpatient care or admission to another hospital (post-discharge surveillance).

Numerator Exclusion SSI events with PATOS* field = yes.

Infection present at time of surgery (PATOS): PATOS denotes that there is evidence of an infection or abscess at the start of or during the index surgical procedure (in other words, it is present preoperatively). PATOS is a YES/NO field on the SSI Event form. PATOS does not apply if there is a period of wellness between the time of a preoperative condition and surgery. The evidence of infection or abscess must be noted/documented intraoperatively in an operative note or report of surgery. Only

select PATOS = YES if it applies to the depth of SSI that is being attributed to the procedures (e.g., if a patient has evidence of an intraabdominal infection at the time of surgery and then later returns with an organ/space SSI the PATOS field would be selected as a YES. If the patient returned with a superficial or deep incisional SSI the PATOS field would be selected as a NO). The patient does not have to meet the NHSN definition of an SSI at the time of the primary procedure but there must be notation that there is evidence of an infection or abscess present at the time of surgery. PATOS is not necessarily diagnosis driven.

Denominator Statement: An NHSN Operative Procedure is a procedure:

• that is included in the ICD-10-PCS or CPT NHSN operative procedure code mapping. And

• takes place during an operation where at least one incision (including laparoscopic approach and cranial Burr holes) is made through the skin or mucous membrane, or reoperation via an incision that was left open during a prior operative procedure And

• takes place in an operating room (OR), defined as a patient care area that met the Facilities Guidelines Institute's (FGI) or American Institute of Architects' (AIA) criteria for an operating room when it was constructed or renovated. This may include an operating room, C-section room, interventional radiology room, or a cardiac catheterization lab.

Exclusions: Otherwise eligible procedures that are assigned an ASA score of 6 are not eligible for NHSN SSI surveillance.

Using multivariable logistic regression models for colon surgeries and abdominal hysterectomies, the predicted number of SSIs is obtained. These predicted numbers are summed by facility and surgical procedure and used as the denominator of this measure (see also 2a.8).

Exclusions: Denominator data are excluded from the SSI measure due to various reasons related to data quality, data outlier and data errors. The complete list of universal exclusion criteria applied to denominator are listed in the SSI section of the SIR guide that is referenced above. These exclusions include but are not limited to procedures associated with SSI events where the PATOS = yes, and those with ASA Class VI (6). The measure specific denominator exclusions for the Complex 30-day SSI, are off plan colon and abdominal hysterectomy procedures, procedures performed on persons under the age of 18, and procedure performed on an outpatient basis. .

Note: Under the 2015 baseline, both primarily closed procedures and those that are not closed primarily are included in the denominator data.Persons under the age of 18, those having a procedure performed on an outpatient basis, procedures associated with SSI events where the PATOS = yes, those with ASA Class VI (6) are excluded.

Note: Both primarily closed procedures and those that are not closed primarily are included in the denominator data.

Adjustment/Stratification: The measure reports the individual adjusted Standardized Infection Ratio (SIR) for colon surgeries and abdominal hysterectomies for each facility during the specified reporting period. SIR is an indirect standardization method for summarizing healthcare associated infection (HAI) experience across any number of stratified groups of data. Because the facility SIR has lower precision for facilities with few expected events relative to the number of procedures performed, i.e. low reliability, empirical Bayes techniques are used to derive the final reported SIR or reliability-adjusted SIR.

Level of Analysis: Facility, Other, Population : Regional and State

Setting of Care: Inpatient/Hospital

Type of Measure: Outcome

Data Source: Electronic Health Data, Electronic Health Records, Other, Paper Medical Records

Measure Steward: Centers for Disease Control and Prevention

STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **Y-19; N-0**; 1b. Performance Gap: **H-6**; **M-12**; **L-1**; **I-0;**

Rationale:

- The Committee discussed the updated CDC Guideline for the Prevention of Surgical Site Infection, which they believed only strengthened the scientific evidence supporting this measure and the ability for facilities to reduce surgical site infections using various prevention activities and best practices.
- SIRs provided from 2014 to 2016 at both the facility and national level indicate there is an opportunity to decrease the SSI rate for both abdominal hysterectomy and colon surgeries.
- The Committee requested that additional trend analysis of measure performance be provided in the future.

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2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: **H-1**; **M-16**; **L-2**; **I-0**

2b. Validity: Does the Standing Committee agree with the Scientific Method's Panel Moderate Rating: **Yes-19: No-0**

Rationale:

- Reliability testing was conducted at the data element and measure score levels.
- Measure score testing results indicated mean reliability of 50.1% for colorectal and of 52.9% for hysterectomy.
- Since the Methods Panel did not reach consensus on the measure's reliability, the Committee reviewed the Methods Panel's concerns and the 'developer's response. Some concerns noted by the Methods Panel were the fairly low reliability scores and number of facilities meeting the Minimum Precision Criteria, which underscores the rarity of the outcome being assessed.
- The Committee commented on the reliability scores being relatively lower. NQF does not currently set thresholds for reliability; NQF stated that lower reliability scores may also be related to low-frequency events. The developer noted that state health departments or external agencies conduct validations, and the reliability testing methodology used varies, but the developer does provide guidance and is aiming to have more consistent data moving forward.
- The developer commented that around one-third of the facilities that met the minimum precision criteria had reliability below 40% due to a lower number of procedures being performed. This means there is less precision in the data for that facility but does not mean the measure is unreliable.
- Data element validity testing included the sensitivity, specificity, positive predictive value, and negative predictive value for COLO and HYST.
- The Committee reached consensus and accepted the Methods Panel assessment of moderate validity. The Methods Panel had noted some concerns around the lack of data element

validation for the risk factors used in the adjustment model. There was one Committee member comment on lack of adjustment for social risk factors.

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3. Feasibility: H-8; M-14; L-1; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- Data are routinely generated during care – some available in defined fields in electronic sources but free text/unstructured data are also needed.
- The NHSH tool automatically calculates SIRs.

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4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-18; No Pass-1** *4b. Usability:* **H-4; M-14; L-1; I-0**

Rationale:

- The measure is currently publicly reported and used in various accountability programs.
- SIRs following colon surgeries have been reduced by 6% and SSI SIRs following abdominal hysterectomies by 12% between 2015 and 2016.
- The Committee did not discuss any concerns around use or usability. In pre-evaluation comments, one member expressed some uncertainty as to whether poor performing sites are using the measure and making any improvements.

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5. Related and Competing Measures

- This measure is related to–but not directly competing with–NQF 3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome.
- The setting of NQF 3025 is ambulatory surgery centers whereas NQF 0753 focuses on the inpatient facilities. In addition, these two measure target populations have potential difference in SSI risk as their comorbidities, types of procedures performed, and length of time cared for in a healthcare facility are inherently different. The risk models for each measure vary based on procedure and facility type.

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6. Standing Committee Recommendation for Endorsement: **Y-18**; **N-1**

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7. Public and Member Comment

- NQF did not receive comments following the Committee's evaluation of the measure.

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8. Consensus Standards Approval Committee (CSAC) Vote: Y-14; N-0

Decision: Approved for continued endorsement

9. Appeals

No appeals were received.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Submission | Specifications

Description: Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM)of hospital-onset unique blood source MRSA Laboratory-identified events (LabID events) among all inpatients in the facility

Numerator Statement: Total number of observed hospital-onset unique blood source MRSA LabID events among all inpatients in the facility per NHSN protocols.

Denominator Statement: Total number of predicted hospital-onset unique blood source MRSA LabID events, calculated from a negative binomial regression model and risk adjusted for facility's number of inpatient days, inpatient community-onset MRSA prevalence rate, average length of patient stay in the hospital, medical school affiliation, facility type, number of critical care beds in the hospital, and outpatient community-onset MRSA prevalence rate from emergency departments and observation units.

Exclusions: Data from patients who are not assigned to an inpatient bed in an applicable location are excluded from the denominator counts. Denominator counts exclude data from inpatient rehabilitation units and inpatient psychiatric units with different CMS Certification Numbers (CCN) from the acute care facility.

Adjustment/Stratification: Other Statistical negative binomial regression. See attachment for details. The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S7.

Level of Analysis: Facility, Other, Population : Regional and State

Setting of Care: Emergency Department and Services, Inpatient/Hospital, Post-Acute Care

Type of Measure: Outcome

Data Source: Electronic Health Data, Electronic Health Records, Other, Paper Medical Records

Measure Steward: Centers for Disease Control and Prevention

STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **Pass: 17**; **No Pass: 0**; 1b. Performance Gap: **H-5**; **M-13**; **L-0**; **I-0**

Rationale:

- This is an outcome measure (specifically the standardized infection ratio of blood infections with MRSA, that are identified by NHSN), and there was good agreement by the Committee that one or more healthcare actions could be done to impact this outcome.

- There was also agreement that although this measure had been in use and endorsed for a long period of time, there was still a sufficient performance gap to justify continued measurement.
- This measure also appears in guidelines (2006 HICPAC guideline).

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2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: Does the Standing Committee agree with the Scientific Method's Panel Moderate Rating: **Yes-17: No-1**

2b. Validity: Does the Standing Committee agree with the Scientific Method's Panel Moderate Rating: **Yes-18: No-0**

Rationale:

- This measure was reviewed by the Scientific Methods Panel and there was general agreement that the measure was well specified, that the reliability and validity testing were sufficient to justify approving the measure. However, specific concerns that were raised by the Methods Panel included: 1) that a positive test was dependent on testing being conducted (which assumes that tests are always conducted when the disease is present), 2) that measure sensitivity and specificity are generally high, but could be improved, 3) concerns with the risk adjustment model, 4) that hospital auditing may not be sufficient to justify reliability (formal testing was not provided by the developer), and 5) that there was no testing of the effect of missing data.
- There was concern by the Committee that teaching status and community-level colonization rates are used in the risk adjustment for the measure. However, after discussion the Committee agreed that these are confounders that were associated with infection rates and may be proxies for the underlying risk in the patient population. This was not identified as an issue by the Methods Panel.
- There was discussion by the Committee that the testing was done at the data element level rather than the measure score level (as identified by the Methods panel) which gave the measure a moderate as opposed to a high rating on validity; this was identified by the Methods panel as a concern.

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3. Feasibility: H-12; M-7; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- Many of the data elements are in defined fields in electronic sources.
- NHSN provides the option for facilities to collect the data electronically and download into NHSN. They leave the option for manual entry for facilities that are not equipped or ready to submit electronically.
- The Committee recommended that future versions of the measure include stratification by ethnic subgroups (e.g., Hispanic); however, this is not feasible today because data on these variables are not collected. This raised concerns related to the Committee's recommendation because of the validity of gathering such information in NHSN and how this process would be validated given the variation in how race and ethnicity information is captured across hospitals.

4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-19; No Pass-0** *4b. Usability:* **H-12; M-7; L-0; I-0**

Rationale:

- The measure is used in numerous public reporting and payment programs: Hospital Inpatient Quality Reporting Program (HIQR), Prospective Payment System Exempt Cancer Hospital Quality Reporting Program, Inpatient Rehabilitation Facility (IRF) Quality Reporting Program, Long Term Care Hospital (LTCH) Quality Reporting Program, Hospital Value-Based Purchasing, and Hospital-Acquired Condition Reduction Program (HACRP).
- The measure is also used for Public Health/Disease Surveillance.
- There was a slow continuous decline in the unadjusted NHSN crude rate of hospital-onset MRSA bacteremia (the outcome represented by the SIR) from 2012 through 2016, ranging from 0.61 cases per 10,000 patient days to 0.55 cases per 10,000 patient days, with no increase in 2015.
- There were concerns about the way the measure is reported because it does not provide consumers with enough information; a very high percentage of hospitals fall into the "middle" category, while only a small percentage fall into the categories "high" and "low".

5. Related and Competing Measures

- This measure is directly related to 1717: National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI however, it does not directly compete with this measure as they measure infection rates for different organisms.

6. Standing Committee Recommendation for Endorsement: **Y-19**; **N-0**

Rationale:

- The Committee spoke and voted favorably about this measure given its clear importance, scientific validity, feasibility and broad use in several publicly reported applications.

7. Public and Member Comment

- NQF received one pre-evaluation comment and two post-evaluation comments. Commenters expressed concerns regarding the lack of data element testing at the hospital level, questioned the sampling method and presentation of validity by state, and suggested that the validity testing provided did not meet NQF's validity criteria. One commenter also supported the Committee's recommendations to explore additional risk factors in the developer's adjustment approach.

  Committee Response:

  NQF staff confirmed that the testing provided was appropriate based on NQF standards. The Standing Committee felt that the validity testing was thoroughly discussed during the measure evaluation web meeting and maintained the Standing Committee's recommendation for continued endorsement.

  Measure Steward/Developer Response:

Critical data elements for LabID events such as the CDI and MRSA measures include two criteria: a laboratory test and date of hospitalization. Each facility makes the determination of a case, based on the two elements stated above. NHSN provides a guidance toolkit that suggests the selection methodology of a sample of facilities and medical charts to determine the accuracy of data elements. The recommended sample sizes are developed with a priori assumptions of expected accuracy and prevalence of LabID events. The state health departments using the NHSN guidance methodology conduct external validations. Data validations are conducted at each facility, and facility specific data accuracy estimates are provided to each facility by the respective state health departments. These data are shared with NHSN on an aggregate level for estimation of state specific accuracy of reporting. Results from individual facility and state validations have been published in peer-reviewed journals, via scientific presentations at national public health meetings, and in annual public reports of healthcare-associated infection data in several states.

NHSN has confidence that the sampling methodology as described is adequate for purposes of rendering estimates of accuracy and meets the NQF criteria for data element validity.

Peer reviewed publication

Gase KA, Haley VB, Xiong K, Van Antwerpen C, Stricof RL. Comparison of 2 Clostridium difficile surveillance methods: National Healthcare Safety Network's laboratory-identified event reporting module versus clinical infection surveillance. *Infect Control Hosp Epidemiol.* 2013 Mar;34(3):284-90.

Health Department annual reports

New York http://www.health.state.ny.us/statistics/facilities/hospital/hospital_acquired_infections/

South Carolina http://www.scdhec.gov/health/disease/hai/

Pennsylvania http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234

New Mexico https://nmhealth.org/data/view/report/2213/

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8. Consensus Standards Approval Committee (CSAC) Vote: Y-14; N-0

Decision: Approved for continued endorsement

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9. Appeals

No appeals were received.

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Submission | Specifications

Description: Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM) of hospital-onset CDI Laboratory-identified events (LabID events) among all inpatients in the facility, excluding well-baby nurseries and neonatal intensive care units (NICUs).

Numerator Statement: Total number of observed hospital-onset incident CDI LabID events among all inpatients in the facility, excluding NICU, Special Care Nursery, babies in LDRP, well-baby nurseries, or well-baby clinics.

Denominator Statement: Total number of predicted hospital-onset CDI LabID events, calculated using the facility´s number of inpatient days, facility type, CDI event reporting from Emergency Department and 24 hour observation units, bed size, ICU bed size, affiliation with medical school, microbiological test method used to identify C. difficile, and community-onset CDI admission prevalence rate.

Exclusions: Data from patients who are not assigned to an inpatient bed are excluded from the denominator counts, including outpatient clinics, 24-hour observation units, and emergency department visits. Inpatient rehab locations and inpatient psychiatric locations that have their own Centers for Medicare and Medicaid Services (CMS) Certification Number (CCN) are excluded. Additionally, data from NICU, SCN, babies in LDRP, well-baby nurseries, or well-baby clinics are excluded from the denominator count.

Adjustment/Stratification: Statistical risk model. The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S9.

Level of Analysis: Facility, Other, Population : Regional and State

Setting of Care: Emergency Department and Services, Inpatient/Hospital, Post-Acute Care

Type of Measure: Outcome

Data Source: Electronic Health Data, Electronic Health Records, Other, Paper Medical Records

Measure Steward: Centers for Disease Control and Prevention

STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **Pass-15**; **No Pass-0**; 1b. Performance Gap: **H-8**; **M-8**; **L-0**; **I-0;**

Rationale:

- This is an outcome measure (specifically the standardized infection ratio of infections with CDI, that are identified by NHSN), and there was good agreement by the Committee that one or more healthcare actions could be done to impact this outcome.
- There was also agreement that – although this measure had been used and endorsed for a long period of time, there was still a sufficient performance gap to justify continued measurement.
- This measure is included in several guidelines including:
    - IDSA/SHEA Clinical Practice Guidelines for Clostridium difficile Infection in Adults and Children
      (2017)

- Centers for Disease Control and Prevention´s Healthcare Infection Control Practices Advisory
- Committee (HICPAC) Guideline for Disinfection and Sterilization in Healthcare Facilities (2008)
- Centers for Disease Control and Prevention´s Healthcare Infection Control Practices Advisory
  Committee (HICPAC) Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007)

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2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: Does the Standing Committee agree with the Scientific Method's Panel Moderate Rating: **Yes-15: No-0**

2b. Validity: Does the Standing Committee agree with the Scientific Method's Panel Moderate Rating: **Yes-15: No-0**

Rationale:

- This measure was reviewed by the Scientific Methods Panel and there was general agreement that the measure was well specified, that the reliability and validity testing were sufficient to justify approving the measure. However, there were several issues raised: 1) that hospital auditing may not be sufficient to justify reliability (formal testing was not provided by the developer), 2) that the sensitivity and specificity were not higher, 3) that there was no testing conducted at the score level (only data element validity has been conducted), and 4) that the validity testing has not been conducted with more recent data and primarily relies on older data within NQF submissions for endorsement.
- The Committee accepted the methods panel's overall assessment to pass the measure on reliability and validity. .

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3. Feasibility: H-10; M-5; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- Data elements are in defined fields in a combination of electronic sources.
- NHSN provides the option for facilities to collect the data electronically and download into NHSN.
- Based on this information, the Committee believed that the measure was feasible.

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4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-15; No Pass-0** *4b. Usability:* **H-9; M-6; L-0; I-0**

Rationale:

- The measure is used in numerous public reporting and payment programs: Hospital Inpatient Quality Reporting Program (HIQR), Prospective Payment System Exempt Cancer Hospital Quality Reporting
  Program, Inpatient Rehabilitation Facility (IRF) Quality Reporting Program, Long Term Care Hospital
  (LTCH) Quality Reporting Program, Hospital Value-Based Purchasing, and Hospital-Acquired Condition
  Reduction Program (HACRP).
- The measure is also used for Public Health/Disease Surveillance.
- Based on the information presented by the developer and lead discussant on the Committee, there was sufficient information to pass the measure based on use and usability.

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5. Related and Competing Measures

- This measure is directly related to 1716: National Healthcare Safety Network (NHSN) Facility-wide Hospital-Wide Methicillin Resistant Staph Aureus (MRSA) Bacteremia Outcome Measure; however, it does not directly compete with this measure as they measure infection rates for different organisms.

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6. Standing Committee Recommendation for Endorsement: **Y-15**; **N-0**

Rationale

- The Committee spoke and voted favorably about this measure given its clear importance, scientific validity, feasibility and its broad use in several publicly reported applications.

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7. Public and Member Comment

- NQF received one pre-evaluation comment and two post-evaluation comments. Commenters expressed concerns regarding the lack of data element testing at the hospital level, questioned the sampling method and presentation of validity by state, and suggested that the validity testing provided did not meet NQF's validity criteria. One commenter also supported the Committee's recommendations to explore additional risk factors in the developer's adjustment approach.

  Committee Response:

  NQF staff confirmed that the testing provided was appropriate based on NQF standards. The Standing Committee felt that the validity testing was thoroughly discussed during the measure evaluation web meeting and maintained the Standing Committee's recommendation for continued endorsement.

  Measure Steward/Developer Response:

  Critical data elements for LabID events such as the CDI and MRSA measures include two criteria: a laboratory test and date of hospitalization. Each facility makes the determination of a case, based on the two elements stated above. NHSN provides a guidance toolkit that suggests the selection methodology of a sample of facilities and medical charts to determine the accuracy of data elements. The recommended sample sizes are developed with a priori assumptions of expected accuracy and prevalence of LabID events. The state health departments using the NHSN guidance methodology conduct external validations. Data validations are conducted at each facility, and facility

specific data accuracy estimates are provided to each facility by the respective state health departments. These data are shared with NHSN on an aggregate level for estimation of state specific accuracy of reporting. Results from individual facility and state validations have been published in peer-reviewed journals, via scientific presentations at national public health meetings, and in annual public reports of healthcare-associated infection data in several states.

NHSN has confidence that the sampling methodology as described is adequate for purposes of rendering estimates of accuracy and meets the NQF criteria for data element validity.

Peer reviewed publication

Gase KA, Haley VB, Xiong K, Van Antwerpen C, Stricof RL. Comparison of 2 Clostridium difficile surveillance methods: National Healthcare Safety Network's laboratory-identified event reporting module versus clinical infection surveillance. *Infect Control Hosp Epidemiol.* 2013 Mar;34(3):284-90.

Health Department annual reports

New York http://www.health.state.ny.us/statistics/facilities/hospital/hospital_acquired_infections/

South Carolina http://www.scdhec.gov/health/disease/hai/

Pennsylvania http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234

New Mexico https://nmhealth.org/data/view/report/2213/

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8. Consensus Standards Approval Committee (CSAC) Vote: Y-14; N-0

Decision: Approved for continued endorsement

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9. Appeals

No appeals were received.

3450 Practice Environment Scale - Nursing Work Index (PES-NWI) (composite and five subscales) (previously NQF 0206 - Undergoing Maintenance)

Submission | Specifications

Description: Practice Environment Scale-Nursing Work Index (PES-NWI) is a survey-based measure of the nursing practice environment completed by staff registered nurses; includes mean scores on index subscales and a composite mean of all subscale scores.

Numerator Statement: Continuous Variable Statement: For surveys completed by Registered Nurses (RN):

12a) Mean score on a composite of all subscale scores

12b) Mean score on Nurse Participation in Hospital Affairs (survey item numbers 5, 6, 11, 15, 17, 21, 23, 27, 28)

12c) Mean score on Nursing Foundations for Quality of Care (survey item numbers 4, 14, 18, 19, 22, 25, 26, 29, 30, 31)

12d) Mean score on Nurse Manager Ability, Leadership, and Support of Nurses (survey item numbers 3, 7, 10, 13, 20)

12e) Mean score on Staffing and Resource Adequacy (survey item numbers 1, 8, 9, 12)

12f) Mean score on Collegial Nurse-Physician Relations (survey item numbers 2, 16, 24)

12g) Three category variable indicating favorable, mixed, or unfavorable practice environments: favorable = four or more subscale means exceed 2.5; mixed = two or three subscale means exceed 2.5; unfavorable = zero or one subscales exceed 2.5.

Denominator Statement: Staff RNs

Exclusions: Not applicable

Adjustment/Stratification: No risk adjustment or risk stratification

Level of Analysis: Facility, Clinician : Group/Practice

Setting of Care: Inpatient/Hospital

Type of Measure: Structure

Data Source: Instrument-Based Data

Measure Steward: University of Pennsylvania, Center for Health Outcomes and Policy Research

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STANDING COMMITTEE MEETING 2/9/2018

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **H-8**; **M-7**; **L-0**; **I-0**; 1b. Performance Gap: **H-5**; **M-10**; **L-0**; **I-0;**

Rationale:

- Overall, the Committee agreed that the measure meets the evidence and performance gap subcriteria.
- The developer provided a summary of several systematic literature reviews, including at least one (pre-publication) review and meta-analysis of the evidence connecting hospital nurses' work environments to patient outcomes. Results of that review noted that better work environments were associated with lower odds of negative outcomes and higher odds of positive outcomes.
- The evidence supports the linkage between better nurse work environments and patient outcomes including—but not limited to—mortality, readmissions, complications, infections, and nurse-rated quality and safety.
- One Committee member commented that culture in the workplace is not mentioned in the PES-NWI. The developer agreed culture in the workplace is important and referenced selective items in AHRQ's Surveys on Patient Safety Culture. The developer noted, however, that these tools are not directly targeted towards nurses.
- Performance data from the National Database of Nursing Quality Indicators are provided, covering the years 2013-2017. The developer noted that the sample hospitals exhibited the full

range of possible scores (1.00 to 4.00), with standard deviations on the measure ranging from 0.29 to 0.31.
- The Committee inquired on the linkage of performance data to patient outcomes. The developer noted challenges with linking performance data to patient outcomes but can connect the data with nurse job outcomes.

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2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: Does the Standing Committee agree with the Scientific Method's Panel High Rating: **Yes-15: No-0**

2b. Validity: Does the Standing Committee agree with the Scientific Method's Panel High Rating: **Yes-14: No-1**

<u>Rationale</u>:

- This measure was reviewed by the Scientific Methods Panel and given a high reliability and high validity rating.
- The Committee voted to accept the Scientific Methods Panel ratings for reliability and validity.
- Reliability testing was conducted at the data element and measure score level.
- Reliability data element testing was conducted by computing Cronbach's alpha. 37 articles (out of a total of 46 articles) reported Cronbach's alphas; coefficients ranged from .71 – .96, with the exception of one .67, and one .53 in a small sample size.
- Performance measure score reliability testing was conducted by assessing inter-rater reliability, which focuses on whether nurses give consistent responses within a hospital or nursing unit, as compared to across hospitals or nursing units in a sample. Performance measure score reliability is assessed using the intraclass correlation (ICC) (1,*k*). Results were based on 14 articles and the 2015 National Database of Nursing Quality Indicators nurse survey data.
- With respect to validity, the developers present data on concurrent validity linking other measures of quality (i.e. magnet status) with performance on this measure. In addition, systematic reviews were described that linked outcomes on job satisfaction to patient safety.
- The Committee discussed the sample, the minimum of 30 nurse survey responses and if that was an adequate sample size. The developer noted from a research perspective that 30 is an adequate number.

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3. Feasibility: H-3; M-12; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

<u>Rationale</u>:

- The Committee agreed that the measure meets the feasibility subcriterion.
- Data for the measure are generated through the Practice Environment Scale-Nursing Work Index (PES-NWI) Survey.
- The survey can be collected through electronic survey software or via paper.
- The developer suggests that a minimum of 30 responses per year are required to establish a minimum sample, and recommended that hospitals survey all eligible nurses

4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-15; No Pass-0** *4b. Usability:* **H-5; M-10; L-0; I-0**

Rationale:

- Overall, the Committee agreed that the measure meets the use and usability subcriterion.
- The measure is used in a number of accountability programs, including public reporting of results in at least one state (Colorado).
- The measure is used in the National Database of Nursing Quality Indicators (NDNQI), the VA, and military hospitals, and that performance results are shared in reports and dashboards with hospital managers.
- The Committee would like to see more use of this measure, given the number of hospitals in the U.S. The developer noted participation in the National Database of Nursing Quality Indicators (NDNQI) is voluntary.
- The Committee and developer noted that this measure is used both nationally and internationally

5. Related and Competing Measures

- No related or competing measures noted.

6. Standing Committee Recommendation for Endorsement: **Y-15**; **N-0**

Rationale

- The Committee indicated its strong support of the measure. However, the Committee would like to see more use of this measure, given the number of hospitals in the U.S.

7. Public and Member Comment

- NQF received five pre-evaluation comments and five post-evaluation comments. Commenters noted the measure's contribution to helping advance improvement of the work environment for nurses.

8. Consensus Standards Approval Committee (CSAC) Vote: Y-14; N-0

Decision: Approved for continued endorsement

9. Appeals

No appeals were received.

Appendix B: Patient Safety Portfolio—Use in Federal Programs[a]

NQF #	Title	Federal Programs: Implemented or Finalized
0022	Use of High Risk Medications in the Elderly	Merit-Based Incentive Payment System (MIPS) Program (Finalized 2016)
0097	Medication Reconciliation Post-Discharge	Merit-Based Incentive Payment System (MIPS) Program (Finalized 2016) Physician Compare (Implemented 2007)
0101	Falls: Screening for Future Fall Risk	Merit-Based Incentive Payment System (MIPS) Program (Proposed 2018)
0138	National Healthcare Safety Network (NHSN) Catheter-associated Urinary Tract Infection (CAUTI) Outcome Measure	Hospital Acquired Condition Reduction Program (Implemented 2014) Inpatient Rehabilitation Facility Quality Reporting (Implemented 2014) Long-Term Care Hospital Quality Reporting (Implemented 2013)
0139	National Healthcare Safety Network (NHSN) Central line-associated Bloodstream Infection (CLABSI) Outcome Measure	Hospital Acquired Condition Reduction Program (Implemented 2014) Hospital Inpatient Quality Reporting (Implemented 2013) Long-Term Care Hospital Quality Reporting (Implemented 2013)
0468	Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization	Hospital Compare (Implemented 2010) Hospital Inpatient Quality Reporting (Implemented 2010/Scheduled Removal 2020) Hospital Value Base Purchasing (Implemented 2014)
0500	Severe Sepsis and Septic Shock: Management Bundle	Hospital Compare (Implemented 2016) Hospital Inpatient Quality Reporting (Implemented 2016)
0513	Thorax CT—Use of Contrast Material	Hospital Compare (Implemented 2014) Hospital Outpatient Quality Reporting (Implemented 2014/Scheduled Removal 2021)
0531	PSI 90: Patient Safety and Adverse Events Composite (Composite Measure)	Hospital Acquired Condition Reduction Program (Implemented 2017) Hospital Compare (Implemented 2014) Hospital Inpatient Quality Reporting (Implemented 2015/Scheduled Removal 2019) Hospital Value Base Purchasing (Implemented 2013)
0553	Care for Older Adults (COA) – Medication Review	Medicare Part C Star Rating (Implemented 2017)
0674	Percent of Residents Experiencing One or More Falls with Major Injury (Long Stay)	Nursing Home Quality Initiative (Implemented 2017)

[a] Per CMS Measures Inventory Tool as of 01/05/2019

NQF #	Title	Federal Programs: Implemented or Finalized
0678	Percent of Residents or Patients with Pressure Ulcers That Are New or Worsened (Short-Stay)	Nursing Home Quality Initiative (Implemented 2017)
0679	Percent of High Risk Residents with Pressure Ulcers (Long Stay)	Nursing Home Quality Initiative (Implemented 2017)
0684	Percent of Residents with a Urinary Tract Infection (Long-Stay)	Nursing Home Quality Initiative (Implemented 2017)
0686	Percent of Residents Who Have/Had a Catheter Inserted and Left in Their Bladder (long stay)	Nursing Home Quality Initiative (Implemented 2017)
0687	Percent of Residents Who Were Physically Restrained (Long Stay)	Nursing Home Quality Initiative (Implemented 2017)
0689	Percent of Residents Who Lose Too Much Weight (Long-Stay)	Nursing Home Quality Initiative (Implemented 2017)
0733	Operative Mortality Stratified by the Five STS-EACTS Mortality Categories	Merit-Based Incentive Payment System (MIPS) Program (Finalized 2016)
0753	American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	Hospital Compare (Implemented 2016) Hospital Value Base Purchasing (Implemented 2016) Hospital Acquired Condition Reduction Program (Implemented 2015) Hospital Inpatient Quality Reporting (Implemented 2015/Scheduled Removal 2021) Prospective Payment System-Exempt Cancer Hospital Quality Reporting (Implemented 2014)
1365	Child and Adolescent Major Depressive Disorder (MDD): Suicide Risk Assessment	Merit-Based Incentive Payment System (MIPS) Program (Finalized 2016)
1365e	Child and Adolescent Major Depressive Disorder (MDD): Suicide Risk Assessment	Merit-Based Incentive Payment System (MIPS) Program (Finalized 2016)
1463	Standardized Hospitalization Ratio for Admissions	End-Stage Renal Disease Quality Incentive Program (Finalized 2016)
1523	Rate of Open Repair of Small or Moderate Abdominal Aortic Aneurysms (AAA) Where Patients Are Discharged Alive	Merit-Based Incentive Payment System (MIPS) Program (Finalized 2016)
1716	National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure	Hospital Acquired Condition Reduction Program (Implemented 2016) Hospital Compare (Implemented 2016) Hospital Inpatient Quality Reporting (Implemented 2014/Scheduled Removal 2021) Hospital Value Base Purchasing (Implemented 2016) Prospective Payment System-Exempt Cancer Hospital Quality Reporting (Implemented 2017)

NQF #	Title	Federal Programs: Implemented or Finalized
1717	National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	Hospital Acquired Condition Reduction Program (Implemented 2016) Hospital Compare (Implemented 2016) Hospital Inpatient Quality Reporting (Implemented 2014/Scheduled Removal 2021) Hospital Value Base Purchasing (Implemented 2016) Prospective Payment System-Exempt Cancer Hospital Quality Reporting (Implemented 2017)
1893	Hospital 30-Day, all-cause, risk-standardized mortality rate (RSMR) following chronic obstructive pulmonary disease (COPD)	Hospital Compare (Implemented 2015) Hospital Inpatient Quality Reporting (Implemented 2015/Scheduled Removal 2020) Hospital Value Base Purchasing (Implemented 2015/Scheduled for Implementation 2020)
2726	Prevention of Central Venous Catheter (CVC)-Related Bloodstream Infections	Merit-Based Incentive Payment System (MIPS) Program (Finalized 2016)
2940	Use of Opioids at High Dosage in Persons Without Cancer	Medicaid (Implemented 2016)
2988	Medication Reconciliation for Patients Receiving Care at Dialysis Facilities	End-Stage Renal Disease Quality Incentive Program (Finalized 2018/Scheduled Implementation 2022)

Appendix C: Patient Safety Standing Committee and NQF Staff

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Appendix D: Measure Specifications

0553 Care for Older Adults (COA) – Medication Review

STEWARD

National Committee for Quality Assurance

DESCRIPTION

Percentage of adults 65 years and older who had a medication review during the measurement year. A medication review is a review of all a patient's medications, including prescription medications, over-the-counter (OTC) medications and herbal or supplemental therapies by a prescribing practitioner or clinical pharmacist.

TYPE

Process

DATA SOURCE

Claims, Electronic Health Records, Paper Medical Records This measure is based on administrative claims and medical record documentation collected in the course of providing care to health plan members. NCQA collects the Healthcare Effectiveness Data and Information Set (HEDIS) data for this measure directly from health plans via NCQA's online data submission system.

LEVEL

Health Plan

SETTING

Outpatient Services

NUMERATOR STATEMENT

At least one medication review conducted by a prescribing practitioner or clinical pharmacist during the measurement year and the presence of a medication list in the medical record.

NUMERATOR DETAILS

This measure can be met using the administrative specification (using administrative claims codes) or the hybrid specification (using administrative claims codes and medical record review).

Administrative: Either of the following meet criteria:

- Both of the following during the same visit during the measurement year where the provider type is a prescribing practitioner or clinical pharmacist:
  - At least one medication review (Medication Review Value Set).
  - The presence of a medication list in the medical record (Medication List Value Set).
- Transitional care management services (Transitional Care Management Services Value Set).

Exclude services provided in an acute inpatient setting (Acute Inpatient Value Set; Acute Inpatient POS Value Set).

(See corresponding Excel document for the value sets referenced above.)

Hybrid: Documentation must come from the same medical record and must include one of the following:

- A medication list in the medical record, and evidence of a medication review by a prescribing practitioner or clinical pharmacist and the date when it was performed.
- Notation that the member is not taking any medication and the date when it was noted.

A review of side effects for a single medication at the time of prescription alone is not sufficient. An outpatient visit is not required to meet criteria. Do not include medication lists or medication reviews performed in an acute inpatient setting.

Prescribing practitioner is defined as a practitioner with prescribing privileges, including nurse practitioners, physician assistants and other non-MDs who have the authority to prescribe medications.

DENOMINATOR STATEMENT

All patients 66 years and older as of the end (e.g., December 31) of the measurement year.

DENOMINATOR DETAILS

Use administrative data to identify all patients 66 years and older as of the end of the measurement year.

EXCLUSIONS

Exclude members who use hospice services.

EXCLUSION DETAILS

Exclude members who use hospice services or elect to use a hospice benefit any time during the measurement year, regardless of when the services began. These members may be identified using various methods, which may include but are not limited to enrollment data, medical record or claims/encounter data (Hospice Value Set).

RISK ADJUSTMENT

No risk adjustment or risk stratification

STRATIFICATION

N/A

TYPE SCORE

Rate/proportion better quality = higher score

ALGORITHM

Step 1. Determine the eligible population: All patients 66 years and older as of the end (e.g., December 31) of the measurement year.

Step 2: Identify the denominator: Exclude any patients who use hospice services or elect to use a hospice benefit any time during the measurement year, regardless of when the services began.

The remainder is the eligible population

Step 3: Identify the numerator: Individuals in the denominator who have documentation of at least one medication review conducted by a prescribing practitioner or clinical pharmacist and have a medication list in their medical record.

Step 4: Calculate the rate: Numerator/Denominator

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0555 INR Monitoring for Individuals on Warfarin

STEWARD

Centers for Medicare & Medicaid Services

DESCRIPTION

Percentage of individuals at least 18 years of age as of the end of the measurement period with at least 56 days of warfarin therapy who receive at least one International Normalized Ratio (INR) test during each 56-day interval with active warfarin therapy.

TYPE

Process

DATA SOURCE

Claims There is no data collection instrument; individual health plans produce administrative claims in the course of providing care to health plan members.

The following sources of data are needed to calculate NQF 0555:

1. QHP products: Claims data from issuers, consisting of hospital and office visits, pharmacy, and laboratory claims (when available); enrollment data; and members' demographic data OR

2. Medicare: Claims data from Medicare Parts A, B and D consisting of inpatient and outpatient claims and prescription drug events; enrollment data; and beneficiaries' demographic data.

Please note that Medicare data were used for measure testing to enhance the measure testing results. At the time this form was completed, CMS does not yet have any plan to add this measure to any quality reporting or value-based purchasing programs for Medicare beneficiaries but may consider these measures for the future. However, this measure is being considered for use in the Quality Rating System for Qualified Health Plans.

LEVEL

Health Plan

SETTING

Outpatient Services

NUMERATOR STATEMENT

The number of individuals in the denominator who receive at least one INR monitoring test during each 56-day interval with active warfarin therapy.

NUMERATOR DETAILS

Individuals in the denominator who have at least one INR test performed during each 56-day interval with warfarin therapy will be counted in the numerator. All 56-day intervals in which an individual is both prescribed warfarin and continuously enrolled are used to calculate the INR compliance rate for the individual. A 56-day interval with a hospitalization of more than 48 hours is considered an interval with an INR test.

Interval: The first day of the first 56-day interval is the start date of the first warfarin prescription in the measurement period, and the last day of the first 56-day interval is the start date of the first warfarin prescription + 55 days. The subsequent 56-day interval starts on the day after the first 56-day interval and ends 56 days following the first 56-day interval, as long as this end date occurs within the warfarin therapy time frame. This process continues until a calculated 56-day interval end date does not occur within the warfarin therapy time frame. If there are fewer than 56 days of warfarin therapy within the warfarin therapy time frame, those remaining days are not counted in any interval in determining the numerator. Only full 56-day intervals are used for calculating the numerator. "Warfarin usage" or "warfarin therapy" is determined by the start date of the first prescription for warfarin up through the start date of the last prescription for warfarin plus the days' supply from the last claim.

2015-2017 CODES FOR INR TEST

The specific year of codes used for the measure is dependent upon the measurement year.

CPT code:

85610 – Prothrombin time

LOINC codes:

34714-6 – INR in blood by coagulation assay

5894-1 – Prothrombin time (PT) actual/normal

6301-6 – INR in platelet poor plasma by coagulation assay

38875-1 – INR in platelet poor plasma or blood by coagulation assay

5964-2 – Prothrombin time (PT) in blood by coagulation

5902-2 – Prothrombin time (PT)

6418-0 – INR in capillary blood by coagulation assay [2016 only]

46418-0 – INR in capillary blood by coagulation assay [2017 only]

46417-2 – Prothrombin time (PT) in capillary blood by coagulation assay

52129-4 – INR in platelet poor plasma by coagulation assay—post heparin adsorption

Note: A full list of codes necessary for measure calculation is provided in the attached Excel file.

DENOMINATOR STATEMENT

Continuously enrolled individuals, at least 18 years of age at of the end of the measurement period, with at least 56 days of warfarin therapy during the measurement period.

DENOMINATOR DETAILS

The time period of the data is defined as any time during the measurement period (12 consecutive months). "Continuously enrolled" for this measure is defined as enrollment in a QHP product for at least two months, with no gap in enrollment between the first enrolled month and last enrolled month of a calendar year. "Warfarin usage" or "warfarin therapy" is determined by the start date of the first prescription for warfarin through the start date of the last prescription for warfarin plus the days' supply from the last claim.

ENROLLMENT CRITERIA

Criteria for QHP products: At least two months enrollment in a QHP product, with no gap in enrollment between the first enrolled month and the last enrolled month of a calendar year.

MEDICATION ACTIVE INGREDIENTS

Active Ingredients by Class: Anticoagulants – Warfarin. Note the active ingredient is limited to oral formulations only. A full list of codes necessary for measure calculation is provided in an attached Excel file.

EXCLUSIONS

1. Individuals who are monitoring INR at home. These individuals are excluded because the claims associated with home INR monitoring are associated with up to four INR tests per claim. Therefore, a single claim for home INR monitoring would not be representative of a single INR test and would prohibit being able to distinguish if the home INR test was within the 56-day timeframe specified by the numerator of this measure.

2. Individuals who have first or last warfarin claims with missing days' supply.

EXCLUSION DETAILS

2015-2017 INR MONITORING AT HOME HCPCS CODES:

G0248 – Demonstrate Use Home INR Mon

G0249 – Provide Test Mats & Equip Home INR

G0250 – MD INR Test Review Inter Mgmt

Note: A full list of codes necessary for measure calculation is provided in the attached Excel file.

RISK ADJUSTMENT

No risk adjustment or risk stratification

STRATIFICATION

Not applicable

TYPE SCORE

Rate/proportion better quality = higher score

ALGORITHM

Denominator: Continuously enrolled individuals, at least 18 years of age at of the end of the measurement period, with at least 56 days of warfarin therapy during the measurement period.

Create Denominator:

1. Pull individuals who are at least 18 years of age as of the end of the measurement period.
2. Include individuals who meet continuous enrollment criteria as described above in S.7.
3. Of the individuals identified in Step 2, include those who had warfarin claims during the measurement period.
4. Exclude individuals who have warfarin claims with missing days' supply. Exclude individuals who are monitoring their INR at home.
5. Of the individuals who were not excluded in Step 4, calculate the start date and end date of warfarin therapy for each individual and count the days between the start date and the end date inclusive. If an individual's death date is available, then use the death date as the end date.
6. Keep individuals who had at least 56 days of warfarin therapy during the measurement period and calculate the number of full 56-day intervals for each individual.

Numerator: The number of individuals in the denominator who receive at least one INR monitoring test during each 56-day interval with active warfarin therapy.

Create Numerator:

7. Pull all INR test claims from claims data for the current measurement period.
8. From the claims identified in Step 7, keep only those INR test claims for the individuals who are included in the denominator.
9. From claims data, identify and pull all inpatient stays of more than 48 hours during the measurement period (where hours are not available, calculate and keep stays of at least three days).
10. From the claims identified in Step 9, keep those that are for the individuals who are included in the denominator.
11. Combine the INR test claims dataset from Step 8 and the hospitalizations of more than 48 hours dataset from Step 10.

12. Using the start date of warfarin therapy identified in the denominator, determine the subsequent start dates for each of the calculated 56-day interval(s) of warfarin therapy and determine the number of full 56-day intervals designated in the denominator for each individual.

13. From the dataset created in Step 11, create a dataset containing INR tests performed and inpatient stays by unique individual and date of service.

14. Determine which full 56-day intervals have an INR test completed or have an inpatient stay by comparing each date of service from Step 13 to each full 56-day interval for each individual designated in Step 12.

15. From the dataset created in Step 14, calculate the individual's INR monitoring compliance rate as the sum of the number of full 56-day intervals with an INR test divided by the total number of full 56-day intervals.

16. From the dataset created in Step 15, calculate the measure numerator by counting the number of individuals with a 100% INR monitoring compliance rate.

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0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

STEWARD

Centers for Disease Control and Prevention

DESCRIPTION

Facility adjusted Standardized Infection Ratio (SIR) and Adjusted Ranking Metric (ARM) for deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged >= 18 years as reported through the CDC National Health and Safety Network (NHSN).

TYPE

Outcome

DATA SOURCE

Electronic Health Data, Electronic Health Records, Other, Paper Medical Records Data will be reported using the formats in the following forms:

1) NHSN SSI Event form (CDC 57.120)

2) NHSN Denominator for Procedure form (CDC 57.121)

LEVEL

Facility, Other, Population : Regional and State

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

Deep incisional primary (DIP) and organ/space SSIs during the 30-day postoperative period among patients = 18 years of age, who undergo inpatient colon surgeries or abdominal hysterectomies. SSIs will be identified before discharge from the hospital, upon readmission to the same hospital, or during outpatient care or admission to another hospital (post-discharge surveillance).

Numerator Exclusion SSI events with PATOS* field = yes.

Infection present at time of surgery (PATOS): PATOS denotes that there is evidence of an infection or abscess at the start of or during the index surgical procedure (in other words, it is present preoperatively). PATOS is a YES/NO field on the SSI Event form. PATOS does not apply if there is a period of wellness between the time of a preoperative condition and surgery. The evidence of infection or abscess must be noted/documented intraoperatively in an operative note or report of surgery. Only select PATOS = YES if it applies to the depth of SSI that is being attributed to the procedures (e.g., if a patient has evidence of an intraabdominal infection at the time of surgery and then later returns with an organ/space SSI the PATOS field would be selected as a YES. If the patient returned with a superficial or deep incisional SSI the PATOS field would be selected as a NO). The patient does not have to meet the NHSN definition of an SSI at the time of the primary procedure but there must be notation that there is evidence of an infection or abscess present at the time of surgery. PATOS is not necessarily diagnosis driven.

NUMERATOR DETAILS

Colon surgeries: Defined by the ICD-10-PCS procedure codes that comprise the NHSN colon surgery category for that program, or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

Abdominal hysterectomy: Defined by the ICD-10-PCS procedure codes that comprise the NHSN abdominal hysterectomy category for that program, or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

Inpatient: A patient for whom the discharge date is at least one day later than the admission date

Adult: A person =18 years of age

A deep incisional SSI must meet one of the following criteria:

The date of event for infection occurs within 30 days after the NHSN operative procedure (where day 1 = the procedure date)

AND

involves deep soft tissues of the incision (e.g., fascial and muscle layers)

AND

patient has at least one of the following:

a. purulent drainage from the deep incision.

b. a deep incision that spontaneously dehisces, or is deliberately opened or aspirated by a surgeon, attending physician** or other designee

AND

organism is identified by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST) or culture or non-culture based microbiologic testing method is not performed

AND

patient has at least one of the following signs or symptoms: fever(>38°C); localized pain or tenderness. A culture or non-culture based test that has a negative finding does not meet this criterion.

c. an abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test

** The term attending physician for the purposes of application of the NHSN SSI criteria may be interpreted to mean the surgeon(s), infectious disease, other physician on the case, emergency

An organ/space SSI involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure. The table below lists the specific sites that must be used to differentiate organ/space SSI. Specific sites are assigned to organ/space SSI to further identify the location of the infection. Specific sites of organ/space have specific criteria which must be met in order to qualify as an NHSN event. These criteria are in addition to the general criteria for NHSN organ/space SSI.

Specific sites of Organ/space events available for COLO and HYST.

COLO - Colon surgery

GIT - Gastrointestinal tract

IAB - Intraabdominal, not specified elsewhere

OREP - Other infection of the male or female reproductive tract

USI - Urinary System Infection

HYST - Abdominal hysterectomy

IAB - Intraabdominal, not specified elsewhere

OREP - Other infection of the male or female reproductive tract

VCUF - Vaginal cuff infection

An organ/space SSI must meet one of the following criteria:

Date of event for infection occurs within 30 days after the NHSN operative procedure (where day 1 = the procedure date)

AND

infection involves any part of the body deeper than the fascial/muscle layers, that is opened or manipulated during the operative procedure

AND

patient has at least one of the following:

a. purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)

b. organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test evidence suggestive of infection.

AND

meets at least one criterion for a specific organ/space infection site listed in COLO and HYST tables above.

These criteria are found in the Surveillance Definitions for Specific Types of Infections chapter 17.

REPORTING INSTRUCTIONS:

Multiple tissue levels are involved in the infection: The type of SSI (superficial incisional, deep incisional, or organ/space) reported should reflect the deepest tissue layer involved in the infection during the surveillance period. The date of event should be the date that the patient met criteria for the deepest level of infection:

a. Report infection that involves the organ/space as an organ/space SSI, whether or not it also involves the superficial or deep incision sites.

b. Report infection that involves the superficial and deep incisional sites as a deep incisional SSI.

c. If an SSI started as a deep incisional SSI on day 10 of the SSI surveillance period and then a week later, (day 17 of the SSI surveillance period) meets criteria for an organ space SSI the date of event would be the date of the organ space SSI.

Patient Specific Data:

Procedure/SSI Complex 30-Day Model- 2015 Baseline

Complex 30-day SSI Model: COLO

Diabetes

ASA Score

Age

Gender

BMI

Cancer hospital

Closure technique

Complex 30-day SSI Model: HYST

Diabetes

ASA Score

Age

BMI

Cancer hospital

DENOMINATOR STATEMENT

An NHSN Operative Procedure is a procedure:

• that is included in the ICD-10-PCS or CPT NHSN operative procedure code mapping. And

• takes place during an operation where at least one incision (including laparoscopic approach and cranial Burr holes) is made through the skin or mucous membrane, or reoperation via an incision that was left open during a prior operative procedure And

• takes place in an operating room (OR), defined as a patient care area that met the Facilities Guidelines Institute's (FGI) or American Institute of Architects' (AIA) criteria for an operating room when it was constructed or renovated. This may include an operating room, C-section room, interventional radiology room, or a cardiac catheterization lab.

Exclusions: Otherwise eligible procedures that are assigned an ASA score of 6 are not eligible for NHSN SSI surveillance.

Using multivariable logistic regression models for colon surgeries and abdominal hysterectomies, the predicted number of SSIs is obtained. These predicted numbers are summed by facility and surgical procedure and used as the denominator of this measure (see also 2a.8).

DENOMINATOR DETAILS

Data required to calculate the denominator:

1) Data for each operative procedure

Colon surgeries: Defined by the ICD-10-PCS procedure codes that comprise the NHSN colon surgery category for that program, and or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

Abdominal hysterectomy: Defined by the ICD-10-PCS procedure codes that comprise the NHSN abdominal hysterectomy category for that program, or and the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

2) Parameter estimates for operative procedure-specific logistic regression models are needed to calculate the predicted number of SSIs. See pages 29 of the SIR guide, 2a.15 attachment.

3) Patient Specific Data: Procedure/SSI Complex 30-Day Model- 2015 Baseline

Complex 30-day SSI Model: COLO

Diabetes

ASA Score

Age

Gender

BMI

Cancer hospital

Closure technique

Complex 30-day SSI Model: HYST

Diabetes

ASA Score

Age

BMI

Cancer hospital

EXCLUSIONS

Denominator data are excluded from the SSI measure due to various reasons related to data quality, data outlier and data errors. The complete list of universal exclusion criteria applied to denominator are listed in the SSI section of the SIR guide that is referenced above. These exclusions include but are not limited to procedures associated with SSI events where the PATOS = yes, and those with ASA Class VI (6). The measure specific denominator exclusions for the Complex 30-day SSI, are off plan colon and abdominal hysterectomy procedures, procedures performed on persons under the age of 18, and procedure performed on an outpatient basis. .

Note: Under the 2015 baseline, both primarily closed procedures and those that are not closed primarily are included in the denominator data.Persons under the age of 18, those having a procedure performed on an outpatient basis, procedures associated with SSI events where the PATOS = yes, those with ASA Class VI (6) are excluded.

Note: Both primarily closed procedures and those that are not closed primarily are included in the denominator data.

EXCLUSION DETAILS

Age (person is under 18)

Date of admission and date discharge on the same calendar day

Procedures associated with a PATOS = yes SSI event

ASA Class (6)

RISK ADJUSTMENT

Other The measure reports the individual adjusted Standardized Infection Ratio (SIR) for colon surgeries and abdominal hysterectomies for each facility during the specified reporting period. SIR is an indirect standardization method for summarizing healthcare associated infection (HAI) experience across any number of stratified groups of data. Because the facility SIR has lower precision for facilities with few expected events relative to the number of procedures performed, i.e. low reliability, empirical Bayes techniques are used to derive the final reported SIR or reliability-adjusted SIR.

STRATIFICATION

None

If desired by an implementing organization or agency, race and ethnicity information could be added to data collection to allow for post-hoc stratification to identify disparities by these groupings. Risk adjustment based on these variables is not proposed.

TYPE SCORE

Other Adjusted Ratio: The reliability adjusted SIR is the reliability adjusted number of SSIs divided by the expected number of SSIs. The reliability adjustment for each facility is based on procedure volume. better quality = lower score

ALGORITHM

An SIR <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an SIR >1.0 indicates that the number of SSIs was more than expected, given the patients treated.

An ARM <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an ARM >1.0 indicates that the number of SSIs was more than expected, given the patients treated.

The SIR is calculated as follows:

1. Identify the number of SSIs for each procedure

2. Total these numbers for an observed number of SSIs

3. Obtain the predicted number of SSIs for each procedure by multiplying the observed number of procedures by the corresponding SSI rates for each procedure from a standard population (as reflected in the regression models, see section 2b.3 Testing Results)

4. Sum the number of predicted SSIs for each procedure in the measurement time period.

5. Divide the total number of observed SSIs ("2" above) by the "predicted" number of SSIs ("4" above).

6. Result = SIR

An ARM <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an ARM >1.0 indicates that the number of SSIs was more than expected, given the patients treated.

The SIR is calculated as follows:

1. Identify the number of SSIs for each procedure

2. Total these numbers for an observed number of SSIs

3. Obtain the predicted number of SSIs for each procedure by multiplying the observed number of procedures by the corresponding SSI rates for each procedure from a standard population (as reflected in the regression models, see section 2b.3 Testing Results)

4. Sum the number of predicted SSIs for each procedure in the measurement time period.

5. Divide the total number of observed SSIs ("2" above) by the "predicted" number of SSIs ("4" above).

6. Result = SIR

The reliability ARM is calculated as follows:

1. Obtain the adjusted number of observed SSI by using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model.

2. Sum these adjusted number of observed SSI by hospital for the adjusted observed SSIs total.

3. For every patient undergoing the operative procedure in the period, calculate the probability of SSI using the patient data and parameter estimates of the factors in the applicable model.

4. Sum the probabilities by hospital to obtain the total expected number of SSIs.

5. Divide the total number of adjusted observed SSIs by the total number of expected SSIs for the resulting ARM.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

STEWARD

Centers for Disease Control and Prevention

DESCRIPTION

Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM)of hospital-onset unique blood source MRSA Laboratory-identified events (LabID events) among all inpatients in the facility

TYPE

Outcome

DATA SOURCE

Electronic Health Data, Electronic Health Records, Other, Paper Medical Records NHSN Laboratory-identified MDRO or CDI Event form and NHSN MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring Form

LEVEL

Facility, Other, Population : Regional and State

SETTING

Emergency Department and Services, Inpatient/Hospital, Post-Acute Care

NUMERATOR STATEMENT

Total number of observed hospital-onset unique blood source MRSA LabID events among all inpatients in the facility per NHSN protocols.

NUMERATOR DETAILS

1. Definition of MRSA – Includes Staphylococcus aureus cultured from any specimen that tests oxacillin-resistant, cefoxitin-resistant, or methicillin-resistant by standard susceptibility testing methods, or by a positive result from molecular testing for mecA and PBP2a; these methods may also include positive results of specimens tested by any other FDA approved PCR test for MRSA

2. Definition of MRSA isolate - Any specimen obtained for clinical decision making testing positive for MRSA. This excludes any tests related to active surveillance testing/culturing.

3. Definition of unique MRSA blood isolate - An MRSA isolate from blood in a patient that is the first MRSA isolate from any specimen for the patient in the location in that month or an MRSA isolate from blood in a patient with no prior positive blood culture for MRSA in the current inpatient location in <= 2 weeks .

4. Definition of duplicate MDRO Isolate: If monitoring MRSA , any MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source, except unique blood source

5. Definition of MRSA Bacteremic LabID event - All non-duplicate unique blood source MRSA isolates, including specimens collected during an emergency department or other affiliated outpatient clinic visit, if collected the same day as patient admission to the facility.

6. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1)

7. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection. For this measure, LabID events from patients housed in a CMS-certified inpatient rehabilitation unit (IRF) or inpatient psychiatric unit (IPF) are excluded.

DENOMINATOR STATEMENT

Total number of predicted hospital-onset unique blood source MRSA LabID events, calculated from a negative binomial regression model and risk adjusted for facility's number of inpatient days, inpatient community-onset MRSA prevalence rate, average length of patient stay in the hospital, medical school affiliation, facility type, number of critical care beds in the hospital, and outpatient community-onset MRSA prevalence rate from emergency departments and observation units.

DENOMINATOR DETAILS

1. Number of inpatient days for the facility for the time period under surveillance is included in the calculation of the denominator. The number of inpatient days is obtained by summing the daily count of patients occupying beds in each applicable inpatient location in the facility over the time period under surveillance. The count of patients occupying inpatient beds is collected at the same time each day. A monthly sum of total patient days is reported to NHSN. Patient day counts from CMS-certified inpatient rehabilitation units and inpatient psychiatric units are excluded.

2. Risk factors included in the calculation of the number of predicted hospital-onset MRSA LabID events for acute care hospitals: (see attached document for further details)

- Inpatient community-onset MRSA bacteremia prevalence rate

- Average length of stay for patients in the hospital

- Medical school affiliation

- Type of hospital

-Number of ICU beds

-Community-onset prevalence rate in Emergency Departments and 24 hour observation units

EXCLUSIONS

Data from patients who are not assigned to an inpatient bed in an applicable location are excluded from the denominator counts. Denominator counts exclude data from inpatient rehabilitation units and inpatient psychiatric units with different CMS Certification Numbers (CCN) from the acute care facility.

EXCLUSION DETAILS

Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of the daily inpatient census count.

RISK ADJUSTMENT

Other Statistical negative binomial regression. See attachment for details.

STRATIFICATION

The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S7.

TYPE SCORE

Ratio better quality = lower score

ALGORITHM

The Standardized Infection Ratio (SIR) for annual and quarterly data aggregation and analysis of MRSA bacteremia LabID events is calculated for each healthcare facility for a specified time period. The SIR is an indirect standardization method for summarizing healthcare-associated infection (HAI) experience, including MRSA bacteremia LabID events, in a single group of data or across any number of stratified groups of data. To produce the SIR:

1. Identify number of observed non-duplicate hospital-onset unique blood source MRSA LabID events for a given time period by adding the total number of observed events across the facility. Duplicate events that occurred in the same patient within a 14-day period are excluded.

2. Calculate the number of predicted hospital-onset unique blood source MRSA LabID events for the facility using the negative binomial regression model.

3. Divide the number of observed hospital-onset unique blood source MRSA LabID events (1 above) by the number of predicted hospital-onset unique blood source MRSA LabID events (2 above) to obtain the SIR.

4. Perform a mid-P Exact Test to compare the SIR obtained in 3 above to the nominal value of 1. P-value and 95% confidence intervals will be calculated, which can be used to assess statistical significance of SIR.

The Adjusted Ranking Metric (ARM) for annual data aggregation and analysis of HAI events, including MRSA bacteremia LabID events, combines the method of indirect standardization used to calculate the unadjusted SIR described above with a Bayesian random effects hierarchical model to account for the potentially low precision and/or reliability inherent in the unadjusted SIR. A Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling is used to produce the adjusted numerator. The ARM enables more meaningful statistical differentiation between hospitals by accounting for differences in patient case-mix, exposure volume (e.g. patient days, central line-days, surgical procedure volume), and unmeasured factors that are not reflected in the unadjusted SIR and that cause variation between healthcare facilities. Accounting for these sources of variability enables better measure discrimination between facilities and leads to more reliable performance rankings. To produce the ARM:

1. Identify the number of hospital-onset unique blood source MRSA LabID events for the facility

2. Obtain the adjusted number of observed hospital-onset unique blood source MRSA LabID events for the facility using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model.

3. Total these numbers for an observed number of hospital-onset unique blood source MRSA LabID events

4. Obtain the predicted number of hospital-onset unique blood source MRSA LabID events (see attachment for final risk adjustment model)

5. Divide the total number of adjusted hospital-onset unique blood source MRSA LabID events (3 above) by the predicted number of hospital-onset unique blood source MRSA LabID events (4 above) to obtain the ARM.

6. Perform a Poisson test to compare the SIR obtained in 5 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.

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1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

STEWARD

Centers for Disease Control and Prevention

DESCRIPTION

Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM) of hospital-onset CDI Laboratory-identified events (LabID events) among all inpatients in the facility, excluding well-baby nurseries and neonatal intensive care units (NICUs).

TYPE

Outcome

DATA SOURCE

Electronic Health Data, Electronic Health Records, Other, Paper Medical Records NHSN Laboratory-identified MDRO or CDI Event Form and NHSN MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring Form

LEVEL

Facility, Other, Population : Regional and State

SETTING

Emergency Department and Services, Inpatient/Hospital, Post-Acute Care

NUMERATOR STATEMENT

Total number of observed hospital-onset incident CDI LabID events among all inpatients in the facility, excluding NICU, Special Care Nursery, babies in LDRP, well-baby nurseries, or well-baby clinics.

NUMERATOR DETAILS

1. Definition of CDI-positive laboratory assay - A positive laboratory test result for C. difficile toxin A and/or B or a toxin-producing C. difficile organism detected by culture or other laboratory means performed on an unformed stool sample. When using a multi-testing methodology for CD identification, the final result of the last test finding which is placed onto the patient medical record will determine if the CDI laboratory assay definition is met.

2. Definition of duplicate CDI-positive test - Any C. difficile toxin-positive laboratory result from the same patient and location, following a previous C. difficile toxin-positive laboratory result within the last 14 days.

3. Definition of CDI LabID event - All non-duplicate C. difficile toxin-positive laboratory results, including specimens collected in an emergency department or 24-hour observation location.

4. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1)

5. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection.

6. Definition of incident CDI LabID Event - Any CDI LabID Event from a specimen obtained > 56 days after the most recent CDI LabID Event (or with no previous CDI LabID Event documented) for that patient. Note: the date of first specimen collection is considered day 1.

DENOMINATOR STATEMENT

Total number of predicted hospital-onset CDI LabID events, calculated using the facility´s number of inpatient days, facility type, CDI event reporting from Emergency Department and 24 hour observation units, bed size, ICU bed size, affiliation with medical school, microbiological test method used to identify C. difficile, and community-onset CDI admission prevalence rate.

DENOMINATOR DETAILS

1. Number of inpatient days for the facility for the time period under surveillance. The number of inpatient days is obtained by summing the daily count of patients occupying beds in each inpatient location in the facility over the time period under surveillance. The count of patients occupying inpatient beds is collected at the same time each day.

2. Facility–specific information, including facility type, bed size, number of ICU beds, and affiliation with a medical school (see 3 below).

3. Medical school affiliation categories:

a. Major – facility has a program for medical students and post-graduate medical training

b. Graduate – facility has a program for post-graduate medical training (i.e., residency and/or fellowships)

c. Undergraduate: facility has a program for medical students only

4. Number of admission-prevalent CDI LabID events (identified within the first 3 days after admission to the facility, where date of admission = day 1).

5. Reporting of CDI labID events in Emergency Departments or 24-hour observation units.

6. Number of admissions to the facility.

7. Microbiological test method used to identify C. difficile (e.g., PCR for toxin, EIA assay for toxin, stool antigen, culture, other). The CDI testing algorithm of “NAAT plus EIA, if NAAT-positive” is currently receiving the “NAAT” level of risk adjustment under the 2017 NHSN protocol. Starting in 2018, the CDI testing algorithm of “NAAT plus EIA, if NAAT-positive” will be assigned the “EIA” level of risk adjustment.

EXCLUSIONS

Data from patients who are not assigned to an inpatient bed are excluded from the denominator counts, including outpatient clinics, 24-hour observation units, and emergency

department visits. Inpatient rehab locations and inpatient psychiatric locations that have their own Centers for Medicare and Medicaid Services (CMS) Certification Number (CCN) are excluded. Additionally, data from NICU, SCN, babies in LDRP, well-baby nurseries, or well-baby clinics are excluded from the denominator count.

EXCLUSION DETAILS

Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of the daily inpatient census count.

RISK ADJUSTMENT

Statistical risk model

STRATIFICATION

The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S9.

TYPE SCORE

Ratio better quality = lower score

ALGORITHM

The Standardized Infection Ratio (SIR) for annual and quarterly data aggregation and analysis of CDI bacteremia LabID events is calculated for each healthcare facility for a specified time period. The SIR is an indirect standardization method for summarizing healthcare-associated infection (HAI) experience, including CDI bacteremia LabID events, in a single group of data or across any number of stratified groups of data. To produce the SIR:

1. Identify number of observed hospital-onset incident CDI LabID events for a given time period by adding the total number of observed events across the facility.

2. Calculate the number of predicted hospital-onset incident CDI LabID events for the facility using the methodology described. See attached table.

3. Divide the number of observed hospital-onset incident CDI LabID events (1 above) by the number of predicted hospital-onset incident CDI LabID events (2 above) to obtain the SIR.

4. Perform a mid-P Exact test to compare the SIR obtained in 3 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.

The Adjusted Ranking Metric (ARM) for annual data aggregation and analysis of HAI events, including CDI bacteremia LabID events, combines the method of indirect standardization used to calculate the unadjusted SIR described above with a Bayesian random effects hierarchical model to account for the potentially low precision and/or reliability inherent in the unadjusted SIR. A Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling is used to produce the adjusted numerator. The ARM enables more meaningful statistical differentiation between hospitals by accounting for differences in patient case-mix, exposure volume (e.g. patient days, central line-days, surgical procedure volume), and unmeasured factors that are not reflected in the unadjusted SIR and that cause variation between healthcare facilities. Accounting for these sources of variability enables better measure discrimination between facilities and leads to more reliable performance rankings. To produce the ARM:

1. Identify the number of hospital-onset incident CDI LabID events for the facility

2. Obtain the adjusted number of observed hospital-onset incident CDI LabID events for the facility using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model.

3. Total these numbers for an observed number of hospital-onset incident CDI LabID events

4. Obtain the predicted number of hospital-onset incident CDI LabID events for the facility following the methodology provided (see attachment for final risk adjustment model).

5. Divide the total number of adjusted hospital-onset incident CDI LabID events (3 above) by the predicted number of hospital-onset incident CDI LabID events (4 above) to obtain the reliability-adjusted SIR

6. Perform a Poisson test to compare the SIR obtained in 5 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.

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3450 Practice Environment Scale - Nursing Work Index (PES-NWI) (composite and five subscales) (previously NQF 0206 - Undergoing Maintenance)

STEWARD

University of Pennsylvania, Center for Health Outcomes and Policy Research

DESCRIPTION

Practice Environment Scale-Nursing Work Index (PES-NWI) is a survey-based measure of the nursing practice environment completed by staff registered nurses; includes mean scores on index subscales and a composite mean of all subscale scores.

TYPE

Structure

DATA SOURCE

Instrument-Based Data Practice Environment Scale-Nursing Work Index (PES-NWI) Survey

LEVEL

Facility, Clinician : Group/Practice

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

Continuous Variable Statement: For surveys completed by Registered Nurses (RN):

12a) Mean score on a composite of all subscale scores

12b) Mean score on Nurse Participation in Hospital Affairs (survey item numbers 5, 6, 11, 15, 17, 21, 23, 27, 28)

12c) Mean score on Nursing Foundations for Quality of Care (survey item numbers 4, 14, 18, 19, 22, 25, 26, 29, 30, 31)

12d) Mean score on Nurse Manager Ability, Leadership, and Support of Nurses (survey item numbers 3, 7, 10, 13, 20)

12e) Mean score on Staffing and Resource Adequacy (survey item numbers 1, 8, 9, 12)

12f) Mean score on Collegial Nurse-Physician Relations (survey item numbers 2, 16, 24)

12g) Three category variable indicating favorable, mixed, or unfavorable practice environments: favorable = four or more subscale means exceed 2.5; mixed = two or three subscale means exceed 2.5; unfavorable = zero or one subscales exceed 2.5.

NUMERATOR DETAILS

Included Populations:

•Registered Nurses with direct patient care responsibilities for 50% or greater of their shift

•All hospital units

•Full time, part time, and flex / pool RNs employed by the hospital

Excluded Populations

•New hires of less than 3 months

•Agency, traveler or contract nurses

•Nurses in management or supervisory roles with direct patient care responsibilities less than 50% of their shift, whose primary responsibility is administrative in nature

Data Elements by Subscale (with survey question/item number)

Nurse Participation in Hospital Affairs

PES-NWI Career Development (5)

PES-NWI Participation in Policy Decisions (6)

PES-NWI Chief Nursing Officer Visibility (11)

PES-NWI Chief Nursing Officer Authority (15)

PES-NWI Advancement Opportunities (17)

PES-NWI Administration Listens and Responds (21)

PES-NWI Staff Nurses Hospital Governance (23)

PES-NWI Nursing Committees (27)

PES-NWI Nursing Administrators Consult (28)

Nursing Foundations for Quality of Care

PES-NWI Continuing Education (4)

PES-NWI High Nursing Care Standards (14)

PES-NWI Philosophy of Nursing (18)

PES-NWI Nurses Are Competent (19)

PES-NWI Quality Assurance Program (22)

PES-NWI Preceptor Program (25)

PES-NWI Nursing Care Model (26)

PES-NWI Patient Care Plans (29)

PES-NWI Continuity of Patient Assignments (30)

PES-NWI Nursing Diagnosis (31)

Nurse Manager Ability, Leadership, and Support of Nurses

PES-NWI Supportive Supervisory Staff (3)

PES-NWI Supervisors Learning Experiences (7)

PES-NWI Nurse Manager and Leader (10)

PES-NWI Recognition (13)

PES-NWI Nurse Manager Backs up Staff (20)

Staffing and Resource Adequacy

PES-NWI Adequate Support Services (1)

PES-NWI Time to Discuss Patient Problems (8)

PES-NWI Enough Nurses for Quality Care (9)

PES-NWI Enough Staffing (12)

Collegial Nurse-Physician Relations

PES-NWI Nurse and Physician Relationships (2)

PES-NWI Nurse and Physician Teamwork (16)

PES-NWI Collaboration (24)

Composite Score

Mean of subscale scores

Three Category Variable

Favorable = four or more subscale means exceed 2.5

Mixed = two or three subscale means exceed 2.5

Unfavorable = zero or one subscales exceed 2.5

DENOMINATOR STATEMENT

Staff RNs

DENOMINATOR DETAILS

Not applicable

EXCLUSIONS

Not applicable

EXCLUSION DETAILS

Not applicable

RISK ADJUSTMENT

No risk adjustment or risk stratification

STRATIFICATION

12a) Mean score on a composite of all subscale scores

12b) Mean score on Nurse Participation in Hospital Affairs (survey item numbers 5, 6, 11, 15, 17, 21, 23, 27, 28)

12c) Mean score on Nursing Foundations for Quality of Care (survey item numbers 4, 14, 18, 19, 22, 25, 26, 29, 30, 31)

12d) Mean score on Nurse Manager Ability, Leadership, and Support of Nurses (survey item numbers 3, 7, 10, 13, 20)

12e) Mean score on Staffing and Resource Adequacy (survey item numbers 1, 8, 9, 12)

12f) Mean score on Collegial Nurse-Physician Relations (survey item numbers 2, 16, 24)

12g) Three category variable indicating favorable, mixed, or unfavorable practice environments: favorable = four or more subscale means exceed 2.5; mixed = two or three subscale means exceed 2.5; unfavorable = zero or one subscales exceed 2.5.

TYPE SCORE

Continuous variable, e.g. average better quality = higher score

ALGORITHM

1. Start processing.

2. Check Survey Date

a. If the Survey Date is missing or invalid the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

b. If Survey Date is valid, continue and proceed to initialization.

3. Initialization. Initialize NurseParticipationScore to 0; NursingFoundationScore to 0; NurseMgrAbilityScore to 0; StaffingScore to 0; RelationsScore to 0; TotalScore to 0; ExceedCounter to 0. Continue and proceed to PES-NWI Career Development.

4. Check PES-NWI Career Development

a. If the PES-NWI Career Development is missing or zero, the case will proceed to PES-NWI Participation in Policy Decisions.

b. If the PES-NWI Career Development equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Career Development to the NurseParticipationScore and proceed to PES-NWI Participation in Policy Decisions.

5. Check PES-NWI Participation in Policy Decisions

a. If the PES-NWI-Participation in Policy Decisions is missing or zero, the case will proceed to PES-NWI Chief Nursing Officer Visibility.

b. If the PES-NWI Participation in Policy Decisions equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Participation in Policy Decisions to the NurseParticipationScore and proceed to PES-NWI Chief Nursing Officer Visibility.

6. Check PES-NWI Chief Nursing Officer Visibility

a. If the PES-NWI- Chief Nursing Officer Visibility is missing or zero, the case will proceed to PES-NWI Chief Nursing Officer Authority.

b. If the PES-NWI Chief Nursing Officer Visibility equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Chief Nursing Officer Visibility to the NurseParticipationScore and proceed to PES-NWI Chief Nursing Officer Authority.

7. Check PES-NWI Chief Nursing Officer Authority

a. If the PES-NWI- Chief Nursing Officer Authority is missing or zero, the case will proceed to PES-NWI Advancement Opportunities.

b. If the PES-NWI Chief Nursing Officer Authority equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Chief Nursing Officer Authority to the NurseParticipationScore and proceed to PES-NWI Advancement Opportunities.

8. Check PES-NWI Advancement Opportunities

a. If the PES-NWI- Advancement Opportunities is missing or zero, the case will proceed to PES-NWI Administration Listens and Responds.

b. If the PES-NWI Advancement Opportunities equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Advancement Opportunities to the NurseParticipationScore and proceed to PES-NWI Administration Listens and Responds.

9. Check PES-NWI Administration Listens and Responds

a. If the PES-NWI Administration Listens and Responds is missing or zero, the case will proceed to PES-NWI Staff Nurses Hospital Governance.

b. If the PES-NWI Administration Listens and Responds equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Administration Listens and Responds to the NurseParticipationScore and proceed to PES-NWI Staff Nurses Hospital Governance.

10. Check PES-NWI Staff Nurses Hospital Governance

a. If the PES-NWI- Staff Nurses Hospital Governance is missing or zero, the case will proceed to PES-NWI Nursing Committees.

b. If the PES-NWI Staff Nurses Hospital Governance equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Staff Nurses Hospital Governance to the NurseParticipationScore and proceed to PES-NWI Nursing Committees.

11. Check PES-NWI Nursing Committees

a. If the PES-NWI Nursing Committees is missing or zero, the case will proceed to PES-NWI Nursing Administrators Consult.

b. If the PES-NWI Nursing Committees equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nursing Committees to the NurseParticipationScore and proceed to PES-NWI Nursing Administrators Consult.

12. Check PES-NWI Nursing Administrators Consult

a. If the PES-NWI Nursing Administrators Consult is missing or zero, the case will proceed to calculate mean score on Nurse-Participation in Hospital Affairs.

b. If the PES-NWI Nursing Administrators Consult equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nursing Administrators Consult to the NurseParticipationScore and proceed to calculate mean score on Nurse-Participation in Hospital Affairs.

13. Calculate Mean Score on Nurse-Participation in Hospital Affairs. Mean Score of Nurse-Participation in Hospital Affairs equals mean of NurseParticipationScore. Assign the calculated mean score to NSC-12b. Continue and proceed to PES-NWI Continuing Education.

14. Check PES-NWI Continuing Education

a. If the PES-NWI Continuing Education is missing or zero, the case will proceed to PES-NWI High Nursing Care Standards.

b. If the PES-NWI Continuing Education equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Continuing Education to the NurseFoundationScore and proceed to PES-NWI High Nursing Care Standards.

15. Check PES-NWI High Nursing Care Standards

a. If the PES-NWI High Nursing Care Standards is missing or zero, the case will proceed to PES-NWI Philosophy of Nursing.

b. If the PES-NWI High Nursing Care Standards equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI High Nursing Care Standards to the NurseFoundationScore and proceed to PES-NWI Philosophy of Nursing.

16. Check PES-NWI Philosophy of Nursing

a. If the PES-NWI Philosophy of Nursing is missing or zero, the case will proceed to PES-NWI Nurses Are Competent.

b. If the PES-NWI Philosophy of Nursing equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Philosophy of Nursing to the NurseFoundationScore and proceed to PES-NWI Nurses Are Competent.

17. Check PES-NWI Nurses Are Competent

a. If the PES-NWI Nurses Are Competent is missing or zero, the case will proceed to PES-NWI Quality Assurance Program.

b. If the PES-NWI Nurses Are Competent equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurses Are Competent to the NurseFoundationScore and proceed to PES-NWI Quality Assurance Program.

18. Check PES-NWI Quality Assurance Program

a. If the PES-NWI Quality Assurance Program is missing or zero, the case will proceed to PES-NWI Preceptor Program.

b. If the PES-NWI Quality Assurance Program equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Quality Assurance Program to the NurseFoundationScore and proceed to PES-NWI Preceptor Program.

19. Check PES-NWI Preceptor Program

a. If the PES-NWI Preceptor Program is missing or zero, the case will proceed to PES-NWI Nursing Care Model.

b. If the PES-NWI Preceptor Program equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Preceptor Program to the NurseFoundationScore and proceed to PES-NWI Nursing Care Model.

20. Check PES-NWI Nursing Care Model

a. If the PES-NWI Nursing Care Model is missing or zero, the case will proceed to PES-NWI Patient Care Plans.

b. If the PES-NWI Nursing Care Model equals 1, 2, 3, or 4, add the allowable value scored for Nursing Care Model to the NurseFoundationScore and proceed to PES-NWI Patient Care Plans.

21. Check PES-NWI Patient Care Plans

a. If the PES-NWI Patient Care Plans is missing or zero, the case will proceed to PES-NWI Continuity of Patient Assignments.

b. If the PES-NWI Patient Care Plans equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Patient Care Plans to the NurseFoundationScore and proceed to PES-NWI Continuity of Patient Assignments

22. Check PES-NWI Continuity of Patient Assignments

a. If the PES-NWI Continuity of Patient Assignments is missing or zero, the case will proceed to PES-NWI Nursing Diagnosis.

b. If the PES-NWI Continuity of Patient Assignments equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Continuity of Patient Assignments to the NurseFoundationScore and proceed to PES-NWI Nursing Diagnosis.

23. Check PES-NWI Nursing Diagnosis

a. If the PES-NWI Nursing Diagnosis is missing or zero, the case will proceed to calculate mean score on Nursing Foundations for Quality of Care.

b. If the PES-NWI Nursing Diagnosis equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nursing Diagnosis to theNurseFoundationScore and proceed to calculate mean score on Nursing Foundations for Quality of Care.

24. Calculate Mean Score on Nursing Foundations for Quality of Care. Mean Score of Nursing Foundations for Quality of Care equals mean of NurseFoundationScore. Assign the calculated mean score to NSC-12c. Continue and proceed to PES-NWI Supportive Supervisory Staff.

25. Check PES-NWI Supportive Supervisory Staff

a. If the PES-NWI Supportive Supervisory Staff is missing or zero, the case will proceed to PES-NWI Supervisors Learning Experience.

b. If the PES-NWI Supportive Supervisory Staff equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Supportive Supervisory Staff to the NurseMgrAbilityScore and proceed to PES-NWI Supervisors Learning Experience.

26. Check PES-NWI Supervisors Learning Experience

a. If the PES-NWI Supervisors Learning Experience is missing or zero, the case will proceed to PES-NWI Nurse Manager and Leader.

b. If the PES-NWI Supervisors Learning Experience equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Supervisors Learning Experience to the NurseMgrAbilityScore and proceed to PES-NWI Nurse Manager and Leader.

27. Check PES-NWI Nurse Manager and Leader

a. If the PES-NWI Nurse Manager and Leader is missing or zero, the case will proceed to PES-NWI Recognition.

b. If the PES-NWI Nurse Manager and Leader equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse Manager and Leader to the NurseMgrAbilityScore and proceed to PES-NWI Recognition.

28. Check PES-NWI Recognition

a. If the PES-NWI Recognition is missing or zero, the case will proceed to PES-NWI Nurse Manager Backs up Staff

b. If the PES-NWI Recognition equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Recognition to the NurseMgrAbilityScore and proceed to PES-NWI Nurse Manager Backs up Staff.

29. Check PES-NWI Nurse Manager Backs up Staff

a. If the PES-NWI Nurse Manager Backs up Staff is missing or zero, the case will proceed to calculate mean score on Nurse Manager Ability, Leadership, and Support of Nurses.

b. If the PES-NWI Nurse Manager Backs up Staff equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse Manager Backs up Staff to the NurseMgrAbilityScore and proceed to calculate mean score on Nurse Manager Ability, Leadership, and Support of Nurses.

Calculate Mean Score on Nurse Manager Ability, Leadership, and Support of Nurses. Mean Score of Nurse Manager Ability, Leadership, and Support of Nurses equals mean of NurseMgrAbilityScore. Assign the calculated mean score to NSC-12d. Continue and proceed to PES-NWI Adequate Support Services.

30. Check PES-NWI Adequate Support Services

a. If the PES-NWI Adequate Support Services is missing or zero, the case will proceed to PES-NWI Time to Discuss Patient Problems.

b. If the PES-NWI Adequate Support Services equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Adequate Support Services to the StaffingScore and proceed to PES-NWI Time to Discuss Patient Problems.

31. Check PES-NWI Time to Discuss Patient Problems

a. If the PES-NWI Time to Discuss Patient Problems is missing or zero, the case will proceed to PES-NWI Enough Nurses for Quality Care.

b. If the PES-NWI Time to Discuss Patient Problems equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Time to Discuss Patient Problems to the StaffingScore and proceed to PES-NWI Enough Nurses for Quality Care.

32. Check PES-NWI Enough Nurses for Quality Care

a. If the PES-NWI Enough Nurses for Quality Care is missing or zero, the case will proceed to PES-NWI Enough Staffing.

b. If the PES-NWI Enough Nurses for Quality Care equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Enough Nurses for Quality Care to the StaffingScore and proceed to PES-NWI Enough Staffing.

33. Check PES-NWI Enough Staffing

a. If the PES-NWI Enough Staffing is missing or zero, the case will proceed to calculate mean score on Staffing and Resource Adequacy.

b. If the PES-NWI Enough Staffing equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Enough Staffing to the StaffingScore and proceed to calculate mean score on Staffing and Resource Adequacy.

34. Calculate Mean Score on Staffing and Resource Adequacy. Mean Score of Staffing and Resource Adequacy equals mean of StaffingScore. Assign the calculated mean score to NSC-12e. Continue and proceed to PES-NWI Nurse and Physician Relationships.

35. Check PES-NWI Nurse and Physician Relationships

a. If the PES-NWI Nurse and Physician Relationships is missing or zero, the case will proceed to PES-NWI Nurse and Physician Teamwork.

b. If the PES-NWI Nurse and Physician Relationships equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse and Physician Relationships to the RelationsScore and proceed to PES-NWI Nurse and Physician Teamwork.

36. Check PES-NWI Nurse and Physician Teamwork

a. If the PES-NWI Nurse and Physician Teamwork is missing or zero, the case will proceed to PES-NWI Collaboration.

b. If the PES-NWI Nurse and Physician Teamwork equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse and Physician Teamwork to the RelationsScore and proceed to PES-NWI Collaboration.

37. Check PES-NWI Collaboration

a. If the PES-NWI Collaboration is missing or zero, the case will proceed to calculate mean score on Collegial Nurse-Physician Relations.

b. If the PES-NWI Collaboration equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Collaboration to the RelationsScore and proceed to calculate mean score on Collegial Nurse-Physician Relations.

38. Calculate Mean Score on Collegial Nurse-Physician Relations. Mean Score of Collegial Nurse-Physician Relations equals mean of RelationsScore. Assign the calculated mean score to NSC-12f. Continue and proceed to calculate the Total Score on composite of all subscale scores.

39. Calculate Total Score on a composite of all subscale scores. Total Score of a composite of all subscale scores equals the sum of NurseParticipationScore, NursingFoundationScore, NurseMgrAbilityScore, StaffingScore, and RelationsScore. Continue and proceed to calculate Mean Score on a composite of all subscale scores.

40. Calculate Mean Score on a composite of all subscale scores. Mean Score of a composite of all subscale scores equals the mean of Total Score on a composite of all subscale scores. Assign the calculated mean score to NSC-12a. Continue and proceed to Mean Score on NurseParticipationScore.

41. Check Mean Score on NurseParticipationScore

a. If the score of Mean Score on NurseParticipationScore is less than or equal to 2.5, the case will proceed to Mean Score on NursingFoundationScore.

b. If the score of Mean Score on NurseParticipationScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on NursingFoundationScore.

42. Check Mean Score on NursingFoundationScore

a. If the score of Mean Score on NursingFoundationScore is less than or equal to 2.5, the case will proceed to Mean Score on NurseMgrAbilityScore.

b. If the score of Mean Score on NursingFoundationScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on NurseMgrAbilityScore.

43. Check Mean Score on NurseMgrAbilityScore

a. If the score of Mean Score on NurseMgrAbilityScore is less than or equal to 2.5, the case will proceed to Mean Score on StaffingScore.

b. If the score of Mean Score on NurseMgrAbilityScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on StaffingScore.

44. Check Mean Score on StaffingScore

a. If the score of Mean Score on StaffingScore is less than or equal to 2.5, the case will proceed to Mean Score on RelationsScore.

b. If the score of Mean Score on StaffingScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on RelationsScore.

45. Check Mean Score on RelationsScore

a. If the score of Mean Score on RelationsScore is less than or equal to 2.5, the case will proceed to ExceedCounter.

b. If the score of Mean Score on RelationsScore is greater than 2.5, add 1 to ExceedCounter and proceed to ExceedCounter.

46. Check ExceedCounter

a. If ExceedCounter is greater than or equal to 4, the case will proceed to a Measure Category Assignment of “Favorable”. Stop processing.

b. If ExceedCounter is greater than or equal to 2 and less than 4, the case will proceed to a Measure Category Assignment of “Mixed”. Stop processing.

c. If ExceedCounter is greater than or equal to 0 and less than 2, the case will proceed to a Measure Category Assignment of “Unfavorable”. Stop processing.

Appendix E1: Related and Competing Measures (tabular version)

Comparison of NQF 0555 and NQF 2732e

	0555 INR Monitoring for Individuals on Warfarin	2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge
Steward	Centers for Medicare & Medicaid Services	Centers for Medicare & Medicaid Services
Description	Percentage of individuals at least 18 years of age as of the end of the measurement period with at least 56 days of warfarin therapy who receive at least one International Normalized Ratio (INR) test during each 56-day interval with active warfarin therapy.	Percentage of adult inpatient hospital discharges to home for which the individual was on warfarin and discharged with a non-therapeutic International Normalized Ratio (INR) who had an INR test within 14 days of hospital discharge
Type	Process	Process
Data Source	Claims There is no data collection instrument; individual health plans produce administrative claims in the course of providing care to health plan members. The following sources of data are needed to calculate NQF 0555: 1. QHP products: Claims data from issuers, consisting of hospital and office visits, pharmacy, and laboratory claims (when available); enrollment data; and members' demographic data OR 2. Medicare: Claims data from Medicare Parts A, B and D consisting of inpatient and outpatient claims and prescription drug events; enrollment data; and beneficiaries' demographic data. Please note that Medicare data were used for measure testing to enhance the measure testing results. At the time this form was completed, CMS does not yet have any plan to add this measure to any quality reporting or value-based purchasing programs for Medicare beneficiaries but may consider these measures for the future. However, this measure is being considered for use in the Quality Rating System for Qualified Health Plans.	Claims, Electronic Health Data, Electronic Health Records, Other • Hospital electronic health record (EHR) data and Medicare claims data • For measure calculation, the following EHR data are required: o Inpatient (IP) Master Patient file with demographic, diagnostic, and procedural information for inpatients o INR test file with the names, results, and times of INR tests for laboratory testing o Medication administration records (MARs) for warfarin, dabigatran, rivaroxaban, apixaban o Discharge Disposition o Payer • For measure calculation, the following Medicare claims data are required: o Denominator tables o Beneficiary file o Institutional claims (Part A) o Non-institutional claims (Part B) – physician carrier/non-DME No data collection instrument provided Attachment INR_after_Discharge_vaule_set_0410_2015.xls

	0555 INR Monitoring for Individuals on Warfarin	2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge
	No data collection instrument provided Attachment 0555_INR_CompleteCoding-636764172796610581.xlsx	
Level	Health Plan	Facility
Setting	Outpatient Services	Inpatient/Hospital
Numerator Statement	The number of individuals in the denominator who receive at least one INR monitoring test during each 56-day interval with active warfarin therapy.	Individuals in the denominator who had an INR test within 14 days of discharge
Numerator Details	Individuals in the denominator who have at least one INR test performed during each 56-day interval with warfarin therapy will be counted in the numerator. All 56-day intervals in which an individual is both prescribed warfarin and continuously enrolled are used to calculate the INR compliance rate for the individual. A 56-day interval with a hospitalization of more than 48 hours is considered an interval with an INR test. Interval: The first day of the first 56-day interval is the start date of the first warfarin prescription in the measurement period, and the last day of the first 56-day interval is the start date of the first warfarin prescription + 55 days. The subsequent 56-day interval starts on the day after the first 56-day interval and ends 56 days following the first 56-day interval, as long as this end date occurs within the warfarin therapy time frame. This process continues until a calculated 56-day interval end date does not occur within the warfarin therapy time frame. If there are fewer than 56 days of warfarin therapy within the warfarin therapy time frame, those remaining days are not counted in any interval in determining the numerator. Only full 56-day intervals are used for calculating the numerator. "Warfarin usage" or "warfarin therapy" is determined by the start date of the first prescription for warfarin up through the start date of the last prescription for warfarin plus the days' supply from the last claim. 2015-2017 CODES FOR INR TEST	INR monitoring is determined using the following CPT code in the Medicare Part A or Part B claims with the service date on the claim as the date that the INR test was conducted. Note: Outpatient INR monitoring claims can be contained in either Part A or Part B Medicare fee-for-service (FFS) claims because Part A claims include hospital outpatient department and Part B claims include physician office. INR Test: Prothrombin time, CPT 85610 The day after the discharge date is counted as day 1 of the 14-day follow-up period.

	0555 INR Monitoring for Individuals on Warfarin	2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge
	The specific year of codes used for the measure is dependent upon the measurement year. CPT code: 85610 – Prothrombin time LOINC codes: 34714-6 – INR in blood by coagulation assay 5894-1 – Prothrombin time (PT) actual/normal 6301-6 – INR in platelet poor plasma by coagulation assay 38875-1 – INR in platelet poor plasma or blood by coagulation assay 5964-2 – Prothrombin time (PT) in blood by coagulation 5902-2 – Prothrombin time (PT) 6418-0 – INR in capillary blood by coagulation assay [2016 only] 46418-0 – INR in capillary blood by coagulation assay [2017 only] 46417-2 – Prothrombin time (PT) in capillary blood by coagulation assay 52129-4 – INR in platelet poor plasma by coagulation assay—post heparin adsorption Note: A full list of codes necessary for measure calculation is provided in the attached Excel file.	
Denominator Statement	Continuously enrolled individuals, at least 18 years of age at of the end of the measurement period, with at least 56 days of warfarin therapy during the measurement period.	Adult inpatient discharges to home for which the individual had active warfarin therapy within 1 day prior to discharge and the last monitored INR within 7 days of discharge was <=1.5 or >= 4
Denominator Details	The time period of the data is defined as any time during the measurement period (12 consecutive months). “Continuously enrolled” for this measure is defined as enrollment in a QHP product for at least two months, with no gap in enrollment between the first enrolled month and last enrolled month of a calendar year. “Warfarin usage” or “warfarin therapy” is	This measure was originally designed for use by the Centers for Medicare & Medicaid Services. As a result, the target population for the measure is defined in the following way: 1. Medicare fee-for-service (FFS) beneficiaries, which are identified as having Medicare as the primary payer source with a valid Medicare identification number in the electronic health record (EHR) system.

	0555 INR Monitoring for Individuals on Warfarin	2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge
	determined by the start date of the first prescription for warfarin through the start date of the last prescription for warfarin plus the days' supply from the last claim. ENROLLMENT CRITERIA Criteria for QHP products: At least two months enrollment in a QHP product, with no gap in enrollment between the first enrolled month and the last enrolled month of a calendar year. MEDICATION ACTIVE INGREDIENTS Active Ingredients by Class: Anticoagulants – Warfarin. Note the active ingredient is limited to oral formulations only. A full list of codes necessary for measure calculation is provided in an attached Excel file.	From this target population, the denominator population is defined. The denominator consists of inpatient discharges for those beneficiaries in the target population that meet the following conditions, based on data obtained from the EHR system: 1. Patient is 18 years of age or older at the time of admission. 2. The discharge status indicates discharge to home or home health care (see Table 1 below). 3. Individual had active warfarin therapy within 1 day prior to discharge (see Table 2 below). a. Note: To identify individuals who were discharged on warfarin, the current measure algorithm for the denominator requires an administration of warfarin either on the day of discharge or the day prior to discharge. This algorithm is established as a proxy for the "Medication, Discharge" data type in the EHR system and will be replaced by logic ascertaining warfarin on the discharge medication list when "Medication, Discharge" becomes a valid and routinely used EHR data type. 4. The last monitored INR within 7 days of discharge for the individual was <=1.5 or >= 4 (see Table 3 below). To ensure that the last INR test was reflective of the patient's clinical condition near the time of discharge, the last INR test needed to be conducted within the last seven days of the discharge date, counting the discharge date as day 7. Table 1. Status Indicating Discharge to Home 01 – Home/self-care 06 – Home care/home health Table 2. Warfarin Therapy Active Ingredient Generic (Brand) Warfarin (Coumadin, Jantoven) Table 3. LOINC Codes Used to Identify INR Test 34714-6 – INR in Blood by Coagulation assay 38875-1 – INR in Platelet poor plasma or blood by Coagulation assay 46418-0 – INR in Capillary blood by Coagulation assay 52129-4 – INR in Platelet poor plasma by Coagulation assay – post heparin adsorption 6301-6 – INR in Platelet poor plasma by Coagulation assay

	0555 INR Monitoring for Individuals on Warfarin	2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge
Exclusions	1. Individuals who are monitoring INR at home. These individuals are excluded because the claims associated with home INR monitoring are associated with up to four INR tests per claim. Therefore, a single claim for home INR monitoring would not be representative of a single INR test and would prohibit being able to distinguish if the home INR test was within the 56-day timeframe specified by the numerator of this measure. 2. Individuals who have first or last warfarin claims with missing days' supply.	The following inpatient discharges are excluded from the denominator. The following exclusion is identified from the Medication Administration Record (MAR) within the patient's EHR. 1) Inpatient discharges for which the individuals received dabigatran, rivaroxaban, or apixaban within one day prior to discharge The following exclusions are identified from Part A and Part B Medicare Administrative Claims. 2) Inpatient discharges for which the individuals are monitoring INR at home 3) Inpatient discharges for which the individuals expired within 14 days post-discharge 4) Inpatient discharges for which the individuals received hospice care within 14 days post-discharge 5) Inpatient discharges for which the individuals had a hospital inpatient admission within 14 days post-discharge 6) Inpatient discharges for which the individuals were admitted to a skilled nursing facility (SNF) within 14 days post-discharge 7) Inpatient discharges for which the end date of the 14-day follow-up period occurs after the end of the measurement period 8) Inpatient discharges for which the individual is not enrolled in Medicare Part A and Part B at the time of discharge and during the 14-day follow-up period post discharge.
Exclusion Details	2015-2017 INR MONITORING AT HOME HCPCS CODES: G0248 – Demonstrate Use Home INR Mon G0249 – Provide Test Mats & Equip Home INR G0250 – MD INR Test Review Inter Mgmt Note: A full list of codes necessary for measure calculation is provided in the attached Excel file.	The following exclusion is identified from the Medication Administration Record (MAR) within the patient's EHR. Inpatient discharges for which the individuals received a new oral anticoagulant therapy initiated upon discharge, as identified through Medication Administration Records (MARs), excluded (Table 4). Table 4. New Oral Anticoagulant Active (NOAC) Ingredients Generic (Brand) Dabigatran (Pradaxa) Rivaroxaban (Xarelto) Apixaban (Eliquis)

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		The following exclusions are identified from Part A and Part B Medicare Administrative Claims Administrative Claims Note: The exact variables are dependent on the claims files used for analysis. The variable names below are based on use of HAJI data. When applied to different claims data files, the variable names may change. INR monitoring at home: An individual is determined to be monitoring INR at home, if the individual has a claim with any of the following HCPCS code in the Medicare Part A and B claims (Table 5). Table 5. HCPCS Codes for INR Monitoring at Home G0248 – DEMONSTRATE USE HOME INR MON G0249 – PROVIDE TEST MATS & EQUIP HOME INR G0250 – MD INR TEST REVIEW INTER MGMT Expired: An individual is determined to be expired within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the individual's death date is less than or equal to 14. The death date is identified using the bene_death_dt field in the CMS denominator file. Hospice: An individual is determined to receive hospice care within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the Hse_clm_fron_dt field for the following claim is less than or equal to 14 (Table 6). Table 6. Part A and Part B Codes for Identifying Hospice Admissions Claim Type – Claim Field = Code Value Part A – nch_clm_type_cd = 50 OR Part A – hse_clm_fac_type_cd = 8; and, Part A – hse_clm_srvc_clsfctn_type_cd = 1 or 2 OR Part B – hse_b_plc_srvc_cd = 34 Hospital admission post-discharge: An individual is determined to be admitted to a hospital within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the Hse_clm_fron_dt field for the following claim is less than or equal to 14 (Table 7). Table 7. Part A Code for Identifying Hospital Inpatient Admissions

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		Claim Type – Claim Field = Code Value Part A – hse_clm_fac_type_cd = 1 Admission to SNF: An individual is determined to be admitted to a SNF within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the Hse_clm_fron_dt field for the following claim is less than or equal to 14 (Table 8). Table 8. Part A and Part B Codes for identifying SNF Admissions Claim Type – Claim Field = Code Value Part A – nch_clm_type_cd = 20 OR Part A – hse_clm_fac_type_cd = 2; and, Part A – hse_clm_srvc_clsfctn_type_cd = 1 or 2 OR Part B – hse_b_plc_srvc_cd = 31 Definitions of the Claim Fields: - Hse_clm_from_dt: the first date of provider's services rendered - nch_clm_type_cd: the type of claim record being processed - hse_clm_fac_type_cd: the first digit of the type of bill submitted on an institutional claim, which identifies the type of facility that provided the care for the beneficiary - hse_clm_srvc_clsfctn_type_cd: the second digit of the type of bill submitted on an institutional claim, which identifies the type of facility that provided the care for the beneficiary - hse_b_plc_srvc_cd: the place of service, as defined in the Medicare carrier manual for the claim
Risk Adjustment	No risk adjustment or risk stratification	No risk adjustment or risk stratification
Stratification	Not applicable	None
Type Score	Rate/proportion better quality = higher score	Rate/proportion better quality = higher score
Algorithm	Denominator: Continuously enrolled individuals, at least 18 years of age at of the end of the measurement period, with at least 56 days of warfarin therapy during the measurement period.	The proposed measure is a hybrid measure that utilizes data from both EHR systems and Medicare FFS claims data to calculate the score. The initial patient (target) population is first identified using the Medicare ID from EHR system. The denominator is identified using the EHR system. The

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	Create Denominator: 1. Pull individuals who are at least 18 years of age as of the end of the measurement period. 2. Include individuals who meet continuous enrollment criteria as described above in S.7. 3. Of the individuals identified in Step 2, include those who had warfarin claims during the measurement period. 4. Exclude individuals who have warfarin claims with missing days' supply. Exclude individuals who are monitoring their INR at home. 5. Of the individuals who were not excluded in Step 4, calculate the start date and end date of warfarin therapy for each individual and count the days between the start date and the end date inclusive. If an individual's death date is available, then use the death date as the end date. 6. Keep individuals who had at least 56 days of warfarin therapy during the measurement period and calculate the number of full 56-day intervals for each individual. Numerator: The number of individuals in the denominator who receive at least one INR monitoring test during each 56-day interval with active warfarin therapy. Create Numerator: 7. Pull all INR test claims from claims data for the current measurement period. 8. From the claims identified in Step 7, keep only those INR test claims for the individuals who are included in the denominator. 9. From claims data, identify and pull all inpatient stays of more than 48 hours during the measurement period (where hours are not available, calculate and keep stays of at least three days).	exclusions are identified using EHR and administrative claims data. The numerator is dependent on administrative claims because claims data enables us to look across all outpatient setting to determine if INR monitoring was done. Target Population: Medicare FFS beneficiaries, identified as having Medicare as the primary payer source with a valid Medicare identification number in the Electronic Health Record (EHR) system. 1. Determine if the individual is a Medicare fee-for-service (FFS) beneficiary. Medicare FFS beneficiaries are identified as having Medicare as the primary payer source and a valid Medicare identification number. Keep the inpatient discharges for which the individuals are Medicare FFS. Denominator: Adult inpatient discharges to home for which the individual had active warfarin therapy within 1 day prior to discharge and the last monitored INR within 7 days of discharge was <=1.5 or >= 4 Data Sources: EHR and Part A and Part B administrative claims. The steps below are separated based on data source. Electronic Health Record, Steps 1-6 *Note: Step 2 and Step 6 of the denominator logic are established to ensure that the individuals were discharged on warfarin and function as a proxy for the "Medication, Discharge" data type in the EHR system. These two steps will be replaced by logic ascertaining warfarin on the discharge medication list when "Medication, Discharge" becomes a valid and routinely used EHR data type. 1. For all discharges in the target population, determine the individual's age in years. The age is equal to the admission date minus the birth date. Keep the inpatient discharges for which the individuals are at least 18 years of age at admission. 2. Determine if the individual received warfarin during the inpatient stay by identifying all warfarin administrations (including brands: Coumadin and Jantoven). Identify and include the eligible discharges that had warfarin, Coumadin, or Jantoven given on the day of discharge or the day prior to discharge.*

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	10. From the claims identified in Step 9, keep those that are for the individuals who are included in the denominator. 11. Combine the INR test claims dataset from Step 8 and the hospitalizations of more than 48 hours dataset from Step 10. 12. Using the start date of warfarin therapy identified in the denominator, determine the subsequent start dates for each of the calculated 56-day interval(s) of warfarin therapy and determine the number of full 56-day intervals designated in the denominator for each individual. 13. From the dataset created in Step 11, create a dataset containing INR tests performed and inpatient stays by unique individual and date of service. 14. Determine which full 56-day intervals have an INR test completed or have an inpatient stay by comparing each date of service from Step 13 to each full 56-day interval for each individual designated in Step 12. 15. From the dataset created in Step 14, calculate the individual's INR monitoring compliance rate as the sum of the number of full 56-day intervals with an INR test divided by the total number of full 56-day intervals. 16. From the dataset created in Step 15, calculate the measure numerator by counting the number of individuals with a 100% INR monitoring compliance rate.	3. From the discharges identified in Step 3, keep those for which the individuals had an INR test performed within 7 days prior to the discharge date. 4. From the discharges in Step 4, keep those with the last INR being non-therapeutic (i.e., INR result <=1.5 or >=4.0). 5. From the discharges in Step 5, keep those for which the individuals were discharged to home or home health care. 6. Exclude discharges for which the individuals received dabigatran, rivaroxaban, or apixaban on the day of discharge or the day prior to discharge.* Administrative Claims, Step 7 7. Using Part A and Part B administrative claims, exclude the following: a) Discharges for which the individuals are monitoring INR at home a. Note: patients that monitor their INR at home are excluded from the denominator because there is no record in the EHR or claims data to confirm that monitoring was done within 14 days of discharge. b) Discharges for which the individuals expired within 14 days post-discharge c) Discharges for which the individuals received hospice care within 14 days post-discharge d) Discharges for which the individuals had a hospital inpatient admission within 14 days post-discharge a. Note: Discharges for which the patient was admitted to any hospital within 14 days post-discharge are excluded to allow an equal follow-up window for all discharges in the denominator. If the patient is admitted during that window, the days allowed for monitoring are shorten. e) Discharges for which the individuals were admitted to a SNF within 14 days post-discharge f) Discharges in which the end date of the 14 days follow-up period occurs after the end of the measurement period g) Discharges for which the individual is not enrolled in Medicare Part A and Part B at the time of discharge and during the 14-day follow-up period post discharge

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		Numerator: Individuals in the denominator who had an INR test within 14 days of discharge Data Source: Part A and Part B administrative claims 1. Using Part A and Part B administrative claims, identify inpatient discharges from the denominator for which the individuals had INR monitoring after the discharge date. 2. For each inpatient discharge identified in Step 1, identify the first INR test performed post-discharge. If the first INR test post-discharge is within 14 days of the discharge date, include the inpatient discharge in the numerator. The day after the discharge date is counted as day 1 of the 14-day follow-up period.
Submission items	5.1 Identified measures: 0556 : INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications 2732 : INR Monitoring for Individuals on Warfarin after Hospital Discharge 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: The measure under review (NQF 0555) is related to both NQF 0556 (INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications) and NQF 2732 (INR Monitoring for Individuals on Warfarin after Hospital Discharge). All three have the same measure focus, which is INR testing, and their specifications for INR testing are harmonized; however, the three measures have different clinical foci and target populations. The measure under review (NQF 0555) focuses on INR testing during every 56-day interval in which an individual is prescribed warfarin. NQF 0556 focuses on INR testing within three to seven days for patients on warfarin who are prescribed anti-infective medications that are known to interact with warfarin and result in a higher risk for adverse events, and NQF 2732 focuses	5.1 Identified measures: 0556 : INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications 0555 : INR Monitoring for Individuals on Warfarin 0586 : Warfarin_PT/ INR Test 0612 : Warfarin - INR Monitoring 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: See Supplement Attachment: INR after Discharge_Supplement_ Differences from Competing Measures 5b.1 If competing, why superior or rationale for additive value: Not applicable; measures noted above are not competing measures as they do not address both the same focus and target population.

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	on INR monitoring within 14 days of hospital discharge for individuals on warfarin who were not yet in the therapeutic range at the time of discharge. Due to the difference in the clinical foci, the timeframe for INR monitoring (three to seven days, 14 days, 56 days) is different among the three measures and complimentary rather than competing with one another. 5b.1 If competing, why superior or rationale for additive value: Not applicable	

Comparison of NQF 0753 and NQF 3025

	0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure
Steward	Centers for Disease Control and Prevention	Surveillance Branch, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention
Description	Facility adjusted Standardized Infection Ratio (SIR) and Adjusted Ranking Metric (ARM) for deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged >= 18 years as reported through the CDC National Health and Safety Network (NHSN).	This measure is for the risk-adjusted Standardized Infection Ratio (SIR) for all Surgical Site Infections (SSI) following breast procedures conducted at ambulatory surgery centers (ASCs) among adult patients (ages 18 - 108 years) and reported to the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN). The measure compares the reported number of surgical site infections observed at an ASC with a predicted value based on nationally aggregated data. The measure was developed collaboratively by the CDC, the Ambulatory Surgery Center Quality Collaboration (ASC QC), and the Colorado Department of Public Health and Environment. CDC is the measure steward.
Type	Outcome	Outcome
Data Source	Electronic Health Data, Electronic Health Records, Other, Paper Medical Records Data will be reported using the formats in the following forms: 1) NHSN SSI Event form (CDC 57.120) 2) NHSN Denominator for Procedure form (CDC 57.121) Available at measure-specific web page URL identified in S.1 Attachment icd10-pcs-pcm-nhsn-opc.xlsx	Electronic Health Records, Other, Paper Medical Records Currently, NHSN data collection for SSIs following outpatient operative procedures is via the Patient Safety Component. Plans call for NHSN data collection for SSIs following outpatient operative procedures to be moved to the new Outpatient Procedure Component in 2018. Available at measure-specific web page URL identified in S.1 Attachment Breast_Procedure_CPT_List_and_Final_Model_for_Ambulatory_Breast_Procedure_SSI_Outciome_Measure_05.31.2016_-_Copy.xlsx
Level	Facility, Other, Population : Regional and State	Facility
Setting	Inpatient/Hospital	Outpatient Services
Numerator Statement	Deep incisional primary (DIP) and organ/space SSIs during the 30-day postoperative period among patients = 18 years of age, who undergo inpatient colon surgeries or abdominal hysterectomies. SSIs will be identified before discharge from the hospital, upon readmission to the same hospital, or during	Surgical site infections (SSIs) during the 30-day (superficial SSI) and 90-day (deep and organ/space SSI) postoperative periods following breast procedures in Ambulatory Surgery Centers.

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	outpatient care or admission to another hospital (post-discharge surveillance). Numerator Exclusion SSI events with PATOS* field = yes. Infection present at time of surgery (PATOS): PATOS denotes that there is evidence of an infection or abscess at the start of or during the index surgical procedure (in other words, it is present preoperatively). PATOS is a YES/NO field on the SSI Event form. PATOS does not apply if there is a period of wellness between the time of a preoperative condition and surgery. The evidence of infection or abscess must be noted/documented intraoperatively in an operative note or report of surgery. Only select PATOS = YES if it applies to the depth of SSI that is being attributed to the procedures (e.g., if a patient has evidence of an intraabdominal infection at the time of surgery and then later returns with an organ/space SSI the PATOS field would be selected as a YES. If the patient returned with a superficial or deep incisional SSI the PATOS field would be selected as a NO). The patient does not have to meet the NHSN definition of an SSI at the time of the primary procedure but there must be notation that there is evidence of an infection or abscess present at the time of surgery. PATOS is not necessarily diagnosis driven.	
Numerator Details	Colon surgeries: Defined by the ICD-10-PCS procedure codes that comprise the NHSN colon surgery category for that program, or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1). Abdominal hysterectomy: Defined by the ICD-10-PCS procedure codes that comprise the NHSN abdominal hysterectomy category for that program, or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1). Inpatient: A patient for whom the discharge date is at least one day later than the admission date Adult: A person =18 years of age A deep incisional SSI must meet one of the following criteria:	SSIs are defined in the NHSN Patient Safety Protocol: http://www.cdc.gov/nhsn/CPTcodes/ssi-cpt.html. Surgical site infection: An infection, following a breast procedure, of either the skin, subcutaneous tissue and breast parenchyma at the incision site (superficial incisional SSI), deep soft tissues of the incision site (deep incisional SSI), or any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure (organ/space SSI). Superficial incisional SSI Must meet the following criteria: Infection occurs within 30 days after any NHSN operative procedure (where day 1 = the procedure date) AND

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	The date of event for infection occurs within 30 days after the NHSN operative procedure (where day 1 = the procedure date) AND involves deep soft tissues of the incision (e.g., fascial and muscle layers) AND patient has at least one of the following: a. purulent drainage from the deep incision. b. a deep incision that spontaneously dehisces, or is deliberately opened or aspirated by a surgeon, attending physician** or other designee AND organism is identified by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST) or culture or non-culture based microbiologic testing method is not performed AND patient has at least one of the following signs or symptoms: fever(>38°C); localized pain or tenderness. A culture or non-culture based test that has a negative finding does not meet this criterion. c. an abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test ** The term attending physician for the purposes of application of the NHSN SSI criteria may be interpreted to mean the surgeon(s), infectious disease, other physician on the case, emergency An organ/space SSI involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure. The table below lists the specific sites that must be used to differentiate organ/space SSI. Specific sites	involves only skin, subcutaneous tissue (e.g. fatty tissue) and breast parenchyma (e.g. milk ducts and glands that produce milk) of the incision AND patient has at least one of the following: a. purulent drainage from the superficial incision. b. organisms identified from an aseptically-obtained specimen from the superficial incision or subcutaneous tissue by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST). c. superficial incision that is deliberately opened by a surgeon, attending physician** or other designee and culture or non-culture based testing is not performed. d. diagnosis of a superficial incisional SSI by the surgeon or attending physician** or other designee. AND patient has at least one of the following signs or symptoms: pain or tenderness; localized swelling; erythema; or heat. A culture or non-culture based test that has a negative finding does not meet this criterion. Deep incisional SSI Must meet the following criteria: Infection occurs within 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2 AND involves deep soft tissues of the incision (e.g., fascial and muscle layers) AND patient has at least one of the following: a. purulent drainage from the deep incision.

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	are assigned to organ/space SSI to further identify the location of the infection. Specific sites of organ/space have specific criteria which must be met in order to qualify as an NHSN event. These criteria are in addition to the general criteria for NHSN organ/space SSI. Specific sites of Organ/space events available for COLO and HYST. COLO - Colon surgery GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere OREP - Other infection of the male or female reproductive tract USI - Urinary System Infection HYST - Abdominal hysterectomy IAB - Intraabdominal, not specified elsewhere OREP - Other infection of the male or female reproductive tract VCUF - Vaginal cuff infection An organ/space SSI must meet one of the following criteria: Date of event for infection occurs within 30 days after the NHSN operative procedure (where day 1 = the procedure date) AND infection involves any part of the body deeper than the fascial/muscle layers, that is opened or manipulated during the operative procedure AND patient has at least one of the following: a. purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage) b. organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes	b. a deep incision that spontaneously dehisces, or is deliberately opened or aspirated by a surgeon, attending physician** or other designee and organism is identified by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST) or culture or non-culture based microbiologic testing method is not performed c. an abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test AND patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness. A culture or non-culture based test that has a negative finding does not meet this criterion. Organ/Space SSI Must meet the following criteria: Infection occurs within 30 or 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2 AND infection involves any part of the body deeper than the fascial/muscle layers (e.g. subpectoral), that is opened or manipulated during the operative procedure AND patient has at least one of the following: a. purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage) b. organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

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	of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST). c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test evidence suggestive of infection. AND meets at least one criterion for a specific organ/space infection site listed in COLO and HYST tables above. These criteria are found in the Surveillance Definitions for Specific Types of Infections chapter 17. REPORTING INSTRUCTIONS: Multiple tissue levels are involved in the infection: The type of SSI (superficial incisional, deep incisional, or organ/space) reported should reflect the deepest tissue layer involved in the infection during the surveillance period. The date of event should be the date that the patient met criteria for the deepest level of infection: a. Report infection that involves the organ/space as an organ/space SSI, whether or not it also involves the superficial or deep incision sites. b. Report infection that involves the superficial and deep incisional sites as a deep incisional SSI. c. If an SSI started as a deep incisional SSI on day 10 of the SSI surveillance period and then a week later, (day 17 of the SSI surveillance period) meets criteria for an organ space SSI the date of event would be the date of the organ space SSI. Patient Specific Data: Procedure/SSI Complex 30-Day Model- 2015 Baseline Complex 30-day SSI Model: COLO Diabetes ASA Score Age	c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test AND meets at least one of the following criteria for BRST-Breast abscess or mastitis BRST-Breast abscess/infection 1. Patient has organisms identified from affected breast tissue or fluid obtained by invasive procedure by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST). 2. Patient has a breast abscess or other evidence of infection on gross anatomic or histopathologic exam. AND Physician initiates antimicrobial therapy within 2 days of onset or worsening of symptoms. Notes: • Breast procedures may involve a secondary operative site. i.e., procedures that include flaps. The flap site is the secondary site. Secondary sites have a 30 day surveillance period. If the secondary site meets criteria for an SSI, it reported as either a superficial incisional SSI at the secondary site or deep incisional infection at the incisional site. • Accessing a breast expander after a breast procedure is considered an invasive procedure and any subsequent infection is not deemed an SSI attributable to the breast procedure. ** The term attending physician for the purposes of application of the NHSN SSI criteria may be interpreted to mean the surgeon(s), infectious disease, other physician on the case, emergency physician or physician's designee (nurse practitioner or physician's assistant).

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	Gender BMI Cancer hospital Closure technique Complex 30-day SSI Model: HYST Diabetes ASA Score Age BMI Cancer hospital	
Denominator Statement	An NHSN Operative Procedure is a procedure: • that is included in the ICD-10-PCS or CPT NHSN operative procedure code mapping. And • takes place during an operation where at least one incision (including laparoscopic approach and cranial Burr holes) is made through the skin or mucous membrane, or reoperation via an incision that was left open during a prior operative procedure And • takes place in an operating room (OR), defined as a patient care area that met the Facilities Guidelines Institute's (FGI) or American Institute of Architects' (AIA) criteria for an operating room when it was constructed or renovated. This may include an operating room, C-section room, interventional radiology room, or a cardiac catheterization lab. Exclusions: Otherwise eligible procedures that are assigned an ASA score of 6 are not eligible for NHSN SSI surveillance. Using multivariable logistic regression models for colon surgeries and abdominal hysterectomies, the predicted number of SSIs is obtained. These predicted numbers are summed by facility and surgical procedure and used as the denominator of this measure (see also 2a.8).	Breast procedures, as specified by the operative codes that comprise the breast procedure category of the NHSN Patient Safety Component Protocol, performed at ambulatory surgery centers.

	0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure
Denominator Details	Data required to calculate the denominator: 1) Data for each operative procedure Colon surgeries: Defined by the ICD-10-PCS procedure codes that comprise the NHSN colon surgery category for that program, and or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1). Abdominal hysterectomy: Defined by the ICD-10-PCS procedure codes that comprise the NHSN abdominal hysterectomy category for that program, or and the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1). 2) Parameter estimates for operative procedure-specific logistic regression models are needed to calculate the predicted number of SSIs. See pages 29 of the SIR guide, 2a.15 attachment. 3) Patient Specific Data: Procedure/SSI Complex 30-Day Model- 2015 Baseline Complex 30-day SSI Model: COLO Diabetes ASA Score Age Gender BMI Cancer hospital Closure technique Complex 30-day SSI Model: HYST Diabetes ASA Score Age BMI Cancer hospital	Information required to calculate the denominator: CPT codes for NHSN Breast Procedure category: 11970, 19101, 19112, 19120, 19125, 19126, 19300, 19301, 19302, 19303, 19304, 19305, 19306, 19307, 19316, 19318, 19324, 19325, 19328, 19330, 19340, 19342, 19350, 19355, 19357, 19361, 19364, 19366, 19367, 19368, 19369, 19370, 19371, 19380 See attached spreadsheet for descriptions of each code. Note: Bilateral breast procedures performed during the same trip to operating room are counted as two separate procedures Ambulatory surgical center (ASC): any distinct entity that operates exclusively for the purpose of providing surgical services to patients not requiring hospitalization and in which the expected duration of services would not exceed 24 hours following an admission. Parameter estimates for breast procedure logistic regression model are needed to calculate the expected number of SSIs (included in the attached document). Patient-specific data: Age, American Society of Anesthesiologists Physical Status Classification (ASA Class).

	0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure
Exclusions	Denominator data are excluded from the SSI measure due to various reasons related to data quality, data outlier and data errors. The complete list of universal exclusion criteria applied to denominator are listed in the SSI section of the SIR guide that is referenced above. These exclusions include but are not limited to procedures associated with SSI events where the PATOS = yes, and those with ASA Class VI (6). The measure specific denominator exclusions for the Complex 30-day SSI, are off plan colon and abdominal hysterectomy procedures, procedures performed on persons under the age of 18, and procedure performed on an outpatient basis. . Note: Under the 2015 baseline, both primarily closed procedures and those that are not closed primarily are included in the denominator data.Persons under the age of 18, those having a procedure performed on an outpatient basis, procedures associated with SSI events where the PATOS = yes, those with ASA Class VI (6) are excluded. Note: Both primarily closed procedures and those that are not closed primarily are included in the denominator data.	Hospital inpatients and hospital outpatient department patients, pediatric patients and very elderly patients, and brain-dead patients whose organs are being removed for donor purposes
Exclusion Details	Age (person is under 18) Date of admission and date discharge on the same calendar day Procedures associated with a PATOS = yes SSI event ASA Class (6)	Exclusion Criteria: 1. Inpatient breast procedures* 2. Breast procedures performed on patients under age 18 or age 109 or over. 3. Breast procedures with ASA Class VI (6). *Breast procedures performed in hospital outpatient departments (HOPDs) are not included in the measure scope.
Risk Adjustment	Other The measure reports the individual adjusted Standardized Infection Ratio (SIR) for colon surgeries and abdominal hysterectomies for each facility during the specified reporting period. SIR is an indirect standardization method for summarizing healthcare associated infection (HAI) experience across any number of stratified groups of data. Because the facility SIR has lower precision for facilities with few expected	Statistical risk model

	0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure
	events relative to the number of procedures performed, i.e. low reliability, empirical Bayes techniques are used to derive the final reported SIR or reliability-adjusted SIR.	
Stratification	None If desired by an implementing organization or agency, race and ethnicity information could be added to data collection to allow for post-hoc stratification to identify disparities by these groupings. Risk adjustment based on these variables is not proposed.	None
Type Score	Other Adjusted Ratio: The reliability adjusted SIR is the reliability adjusted number of SSIs divided by the expected number of SSIs. The reliability adjustment for each facility is based on procedure volume. better quality = lower score	Ratio better quality = lower score
Algorithm	An SIR <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an SIR >1.0 indicates that the number of SSIs was more than expected, given the patients treated. An ARM <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an ARM >1.0 indicates that the number of SSIs was more than expected, given the patients treated. The SIR is calculated as follows: 1. Identify the number of SSIs for each procedure 2. Total these numbers for an observed number of SSIs 3. Obtain the predicted number of SSIs for each procedure by multiplying the observed number of procedures by the corresponding SSI rates for each procedure from a standard population (as reflected in the regression models, see section 2b.3 Testing Results) 4. Sum the number of predicted SSIs for each procedure in the measurement time period. 5. Divide the total number of observed SSIs (“2” above) by the “predicted” number of SSIs (“4” above).	Each SIR is calculated as follows: 1. Identify the number of infections reported during the measurement period for an observed number of infections. 2. Obtain the predicted number of infections by applying the risk adjustment model to all eligible breast procedures during the measurement period. 3. Divide the observed number of infections by the predicted number of infections. 4. Result = SIR for the given period. 5. Note: SIRs are not calculated when the number of predicted infections is less than 0.2.

	0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure
	6. Result = SIR An ARM <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an ARM >1.0 indicates that the number of SSIs was more than expected, given the patients treated. The SIR is calculated as follows: 1. Identify the number of SSIs for each procedure 2. Total these numbers for an observed number of SSIs 3. Obtain the predicted number of SSIs for each procedure by multiplying the observed number of procedures by the corresponding SSI rates for each procedure from a standard population (as reflected in the regression models, see section 2b.3 Testing Results) 4. Sum the number of predicted SSIs for each procedure in the measurement time period. 5. Divide the total number of observed SSIs (“2” above) by the “predicted” number of SSIs (“4” above). 6. Result = SIR The reliability ARM is calculated as follows: 1. Obtain the adjusted number of observed SSI by using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model. 2. Sum these adjusted number of observed SSI by hospital for the adjusted observed SSIs total. 3. For every patient undergoing the operative procedure in the period, calculate the probability of SSI using the patient data and parameter estimates of the factors in the applicable model. 4. Sum the probabilities by hospital to obtain the total expected number of SSIs. 5. Divide the total number of adjusted observed SSIs by the total number of expected SSIs for the resulting ARM.	

	0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure
Submission items	5.1 Identified measures: 3025 : Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: The populations included in the 2 measures differ with the ASC measure being intended for surgeries performed at ambulatory surgery centers and the present measure intended for inpatient surgical patients. 5b.1 If competing, why superior or rationale for additive value: The populations included in the 2 measures differ with the ASC measure being intended for surgeries performed at ambulatory surgery centers and the present measure intended for inpatient surgical patients. These populations have potential difference in SSI risk as their comorbidities, types of procedures performed, and length of time cared for in a healthcare facility are inherently different. Risk modeling has been performed for both measures, with different models developed based on procedure and facility type. No excess burden collection is anticipated.	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value: None

Comparison of NQF 1717 and NQF 1716

	1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
Steward	Centers for Disease Control and Prevention	Centers for Disease Control and Prevention
Description	Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM) of hospital-onset CDI Laboratory-identified events (LabID events) among all inpatients in the facility, excluding well-baby nurseries and neonatal intensive care units (NICUs).	Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM)of hospital-onset unique blood source MRSA Laboratory-identified events (LabID events) among all inpatients in the facility
Type	Outcome	Outcome

	1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
Data Source	Electronic Health Data, Electronic Health Records, Other, Paper Medical Records NHSN Laboratory-identified MDRO or CDI Event Form and NHSN MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring Form Available at measure-specific web page URL identified in S.1 Attachment NQF_CDI_ACH_attachment_2018_Final-636692505821528619.docx	Facility, Other, Population : Regional and State
Level	Facility, Other, Population : Regional and State	Emergency Department and Services, Inpatient/Hospital, Post-Acute Care
Setting	Emergency Department and Services, Inpatient/Hospital, Post-Acute Care	Total number of observed hospital-onset unique blood source MRSA LabID events among all inpatients in the facility per NHSN protocols.
Numerator Statement	Total number of observed hospital-onset incident CDI LabID events among all inpatients in the facility, excluding NICU, Special Care Nursery, babies in LDRP, well-baby nurseries, or well-baby clinics.	1. Definition of MRSA – Includes Staphylococcus aureus cultured from any specimen that tests oxacillin-resistant, cefoxitin-resistant, or methicillin-resistant by standard susceptibility testing methods, or by a positive result from molecular testing for mecA and PBP2a; these methods may also include positive results of specimens tested by any other FDA approved PCR test for MRSA 2. Definition of MRSA isolate - Any specimen obtained for clinical decision making testing positive for MRSA. This excludes any tests related to active surveillance testing/culturing. 3. Definition of unique MRSA blood isolate - An MRSA isolate from blood in a patient that is the first MRSA isolate from any specimen for the patient in the location in that month or an MRSA isolate from blood in a patient with no prior positive blood culture for MRSA in the current inpatient location in <= 2 weeks . 4. Definition of duplicate MDRO Isolate: If monitoring MRSA , any MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source, except unique blood source 5. Definition of MRSA Bacteremic LabID event - All non-duplicate unique blood source MRSA isolates, including specimens collected during an emergency department or other affiliated outpatient

	1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
		clinic visit, if collected the same day as patient admission to the facility. 6. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1) 7. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection. For this measure, LabID events from patients housed in a CMS-certified inpatient rehabilitation unit (IRF) or inpatient psychiatric unit (IPF) are excluded.
Numerator Details	1. Definition of CDI-positive laboratory assay - A positive laboratory test result for C. difficile toxin A and/or B or a toxin-producing C. difficile organism detected by culture or other laboratory means performed on an unformed stool sample. When using a multi-testing methodology for CD identification, the final result of the last test finding which is placed onto the patient medical record will determine if the CDI laboratory assay definition is met. 2. Definition of duplicate CDI-positive test - Any C. difficile toxin-positive laboratory result from the same patient and location, following a previous C. difficile toxin-positive laboratory result within the last 14 days. 3. Definition of CDI LabID event - All non-duplicate C. difficile toxin-positive laboratory results, including specimens collected in an emergency department or 24-hour observation location. 4. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1) 5. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection.	1. Definition of MRSA – Includes Staphylococcus aureus cultured from any specimen that tests oxacillin-resistant, cefoxitin-resistant, or methicillin-resistant by standard susceptibility testing methods, or by a positive result from molecular testing for mecA and PBP2a; these methods may also include positive results of specimens tested by any other FDA approved PCR test for MRSA 2. Definition of MRSA isolate - Any specimen obtained for clinical decision making testing positive for MRSA. This excludes any tests related to active surveillance testing/culturing. 3. Definition of unique MRSA blood isolate - An MRSA isolate from blood in a patient that is the first MRSA isolate from any specimen for the patient in the location in that month or an MRSA isolate from blood in a patient with no prior positive blood culture for MRSA in the current inpatient location in <= 2 weeks . 4. Definition of duplicate MDRO Isolate: If monitoring MRSA , any MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source, except unique blood source 5. Definition of MRSA Bacteremic LabID event - All non-duplicate unique blood source MRSA isolates, including specimens collected during an emergency department or other affiliated outpatient clinic visit, if collected the same day as patient admission to the facility.

	1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
	6. Definition of incident CDI LabID Event - Any CDI LabID Event from a specimen obtained > 56 days after the most recent CDI LabID Event (or with no previous CDI LabID Event documented) for that patient. Note: the date of first specimen collection is considered day 1.	6. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1) 7. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection. For this measure, LabID events from patients housed in a CMS-certified inpatient rehabilitation unit (IRF) or inpatient psychiatric unit (IPF) are excluded.
Denominator Statement	Total number of predicted hospital-onset CDI LabID events, calculated using the facility´s number of inpatient days, facility type, CDI event reporting from Emergency Department and 24 hour observation units, bed size, ICU bed size, affiliation with medical school, microbiological test method used to identify C. difficile, and community-onset CDI admission prevalence rate.	Total number of predicted hospital-onset unique blood source MRSA LabID events, calculated from a negative binomial regression model and risk adjusted for facility's number of inpatient days, inpatient community-onset MRSA prevalence rate, average length of patient stay in the hospital, medical school affiliation, facility type, number of critical care beds in the hospital, and outpatient community-onset MRSA prevalence rate from emergency departments and observation units.
Denominator Details	1. Number of inpatient days for the facility for the time period under surveillance. The number of inpatient days is obtained by summing the daily count of patients occupying beds in each inpatient location in the facility over the time period under surveillance. The count of patients occupying inpatient beds is collected at the same time each day. 2. Facility–specific information, including facility type, bed size, number of ICU beds, and affiliation with a medical school (see 3 below). 3. Medical school affiliation categories: a. Major – facility has a program for medical students and post-graduate medical training b. Graduate – facility has a program for post-graduate medical training (i.e., residency and/or fellowships) c. Undergraduate: facility has a program for medical students only	1. Number of inpatient days for the facility for the time period under surveillance is included in the calculation of the denominator. The number of inpatient days is obtained by summing the daily count of patients occupying beds in each applicable inpatient location in the facility over the time period under surveillance. The count of patients occupying inpatient beds is collected at the same time each day. A monthly sum of total patient days is reported to NHSN. Patient day counts from CMS-certified inpatient rehabilitation units and inpatient psychiatric units are excluded. 2. Risk factors included in the calculation of the number of predicted hospital-onset MRSA LabID events for acute care hospitals: (see attached document for further details) - Inpatient community-onset MRSA bacteremia prevalence rate - Average length of stay for patients in the hospital - Medical school affiliation

	1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
	4. Number of admission-prevalent CDI LabID events (identified within the first 3 days after admission to the facility, where date of admission = day 1). 5. Reporting of CDI labID events in Emergency Departments or 24-hour observation units. 6. Number of admissions to the facility. 7. Microbiological test method used to identify C. difficile (e.g., PCR for toxin, EIA assay for toxin, stool antigen, culture, other). The CDI testing algorithm of "NAAT plus EIA, if NAAT-positive" is currently receiving the "NAAT" level of risk adjustment under the 2017 NHSN protocol. Starting in 2018, the CDI testing algorithm of "NAAT plus EIA, if NAAT-positive" will be assigned the "EIA" level of risk adjustment.	- Type of hospital -Number of ICU beds -Community-onset prevalence rate in Emergency Departments and 24 hour observation units
Exclusions	Data from patients who are not assigned to an inpatient bed are excluded from the denominator counts, including outpatient clinics, 24-hour observation units, and emergency department visits. Inpatient rehab locations and inpatient psychiatric locations that have their own Centers for Medicare and Medicaid Services (CMS) Certification Number (CCN) are excluded. Additionally, data from NICU, SCN, babies in LDRP, well-baby nurseries, or well-baby clinics are excluded from the denominator count.	Data from patients who are not assigned to an inpatient bed in an applicable location are excluded from the denominator counts. Denominator counts exclude data from inpatient rehabilitation units and inpatient psychiatric units with different CMS Certification Numbers (CCN) from the acute care facility.
Exclusion Details	Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of the daily inpatient census count.	Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of the daily inpatient census count.
Risk Adjustment	Statistical risk model	Other Statistical negative binomial regression. See attachment for details.
Stratification	The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S9.	The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S7.
Type Score	Ratio better quality = lower score	Ratio better quality = lower score
Algorithm	The Standardized Infection Ratio (SIR) for annual and quarterly data aggregation and analysis of CDI bacteremia	The Standardized Infection Ratio (SIR) for annual and quarterly data aggregation and analysis of MRSA bacteremia LabID events is

	1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
	LabID events is calculated for each healthcare facility for a specified time period. The SIR is an indirect standardization method for summarizing healthcare-associated infection (HAI) experience, including CDI bacteremia LabID events, in a single group of data or across any number of stratified groups of data. To produce the SIR: 1. Identify number of observed hospital-onset incident CDI LabID events for a given time period by adding the total number of observed events across the facility. 2. Calculate the number of predicted hospital-onset incident CDI LabID events for the facility using the methodology described. See attached table. 3. Divide the number of observed hospital-onset incident CDI LabID events (1 above) by the number of predicted hospital-onset incident CDI LabID events (2 above) to obtain the SIR. 4. Perform a mid-P Exact test to compare the SIR obtained in 3 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR. The Adjusted Ranking Metric (ARM) for annual data aggregation and analysis of HAI events, including CDI bacteremia LabID events, combines the method of indirect standardization used to calculate the unadjusted SIR described above with a Bayesian random effects hierarchical model to account for the potentially low precision and/or reliability inherent in the unadjusted SIR. A Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling is used to produce the adjusted numerator. The ARM enables more meaningful statistical differentiation between hospitals by accounting for differences in patient case-mix, exposure volume (e.g. patient days, central line-days, surgical procedure volume), and unmeasured factors that are not reflected in the unadjusted SIR and that cause variation between healthcare	calculated for each healthcare facility for a specified time period. The SIR is an indirect standardization method for summarizing healthcare-associated infection (HAI) experience, including MRSA bacteremia LabID events, in a single group of data or across any number of stratified groups of data. To produce the SIR: 1. Identify number of observed non-duplicate hospital-onset unique blood source MRSA LabID events for a given time period by adding the total number of observed events across the facility. Duplicate events that occurred in the same patient within a 14-day period are excluded. 2. Calculate the number of predicted hospital-onset unique blood source MRSA LabID events for the facility using the negative binomial regression model. 3. Divide the number of observed hospital-onset unique blood source MRSA LabID events (1 above) by the number of predicted hospital-onset unique blood source MRSA LabID events (2 above) to obtain the SIR. 4. Perform a mid-P Exact Test to compare the SIR obtained in 3 above to the nominal value of 1. P-value and 95% confidence intervals will be calculated, which can be used to assess statistical significance of SIR. The Adjusted Ranking Metric (ARM) for annual data aggregation and analysis of HAI events, including MRSA bacteremia LabID events, combines the method of indirect standardization used to calculate the unadjusted SIR described above with a Bayesian random effects hierarchical model to account for the potentially low precision and/or reliability inherent in the unadjusted SIR. A Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling is used to produce the adjusted numerator. The ARM enables more meaningful statistical differentiation between hospitals by accounting for differences in patient case-mix, exposure volume (e.g. patient days, central line-days, surgical procedure volume), and unmeasured factors that are not reflected in the unadjusted SIR and that cause variation between healthcare

	1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure	1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure
	facilities. Accounting for these sources of variability enables better measure discrimination between facilities and leads to more reliable performance rankings. To produce the ARM: 1. Identify the number of hospital-onset incident CDI LabID events for the facility 2. Obtain the adjusted number of observed hospital-onset incident CDI LabID events for the facility using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model. 3. Total these numbers for an observed number of hospital-onset incident CDI LabID events 4. Obtain the predicted number of hospital-onset incident CDI LabID events for the facility following the methodology provided (see attachment for final risk adjustment model). 5. Divide the total number of adjusted hospital-onset incident CDI LabID events (3 above) by the predicted number of hospital-onset incident CDI LabID events (4 above) to obtain the reliability-adjusted SIR 6. Perform a Poisson test to compare the SIR obtained in 5 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.	facilities. Accounting for these sources of variability enables better measure discrimination between facilities and leads to more reliable performance rankings. To produce the ARM: 1. Identify the number of hospital-onset unique blood source MRSA LabID events for the facility 2. Obtain the adjusted number of observed hospital-onset unique blood source MRSA LabID events for the facility using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model. 3. Total these numbers for an observed number of hospital-onset unique blood source MRSA LabID events 4. Obtain the predicted number of hospital-onset unique blood source MRSA LabID events (see attachment for final risk adjustment model) 5. Divide the total number of adjusted hospital-onset unique blood source MRSA LabID events (3 above) by the predicted number of hospital-onset unique blood source MRSA LabID events (4 above) to obtain the ARM. 6. Perform a Poisson test to compare the SIR obtained in 5 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.
Submission items	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value: N/A	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value: N/A

Appendix E2: Related and Competing Measures (narrative version)

Comparison of NQF 0555 and NQF 2732e

0555 INR Monitoring for Individuals on Warfarin
2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Steward

0555 INR Monitoring for Individuals on Warfarin

Centers for Medicare & Medicaid Services

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Centers for Medicare & Medicaid Services

Description

0555 INR Monitoring for Individuals on Warfarin

Percentage of individuals at least 18 years of age as of the end of the measurement period with at least 56 days of warfarin therapy who receive at least one International Normalized Ratio (INR) test during each 56-day interval with active warfarin therapy.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Percentage of adult inpatient hospital discharges to home for which the individual was on warfarin and discharged with a non-therapeutic International Normalized Ratio (INR) who had an INR test within 14 days of hospital discharge

Type

0555 INR Monitoring for Individuals on Warfarin

Process

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Process

Data Source

0555 INR Monitoring for Individuals on Warfarin

Claims There is no data collection instrument; individual health plans produce administrative claims in the course of providing care to health plan members.

The following sources of data are needed to calculate NQF 0555:

1. QHP products: Claims data from issuers, consisting of hospital and office visits, pharmacy, and laboratory claims (when available); enrollment data; and members' demographic data OR

2. Medicare: Claims data from Medicare Parts A, B and D consisting of inpatient and outpatient claims and prescription drug events; enrollment data; and beneficiaries' demographic data.

Please note that Medicare data were used for measure testing to enhance the measure testing results. At the time this form was completed, CMS does not yet have any plan to add this measure to any quality reporting or value-based purchasing programs for Medicare beneficiaries but may consider these measures for the future. However, this

measure is being considered for use in the Quality Rating System for Qualified Health Plans.

No data collection instrument provided Attachment 0555_INR_CompleteCoding-636764172796610581.xlsx

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Claims, Electronic Health Data, Electronic Health Records, Other • Hospital electronic health record (EHR) data and Medicare claims data

- For measure calculation, the following EHR data are required:

o Inpatient (IP) Master Patient file with demographic, diagnostic, and procedural information for inpatients

o INR test file with the names, results, and times of INR tests for laboratory testing

o Medication administration records (MARs) for warfarin, dabigatran, rivaroxaban, apixaban

o Discharge Disposition

o Payer

- For measure calculation, the following Medicare claims data are required:

o Denominator tables

o Beneficiary file

o Institutional claims (Part A)

o Non-institutional claims (Part B) – physician carrier/non-DME

No data collection instrument provided Attachment INR_after_Discharge_vaule_set_0410_2015.xls

Level

0555 INR Monitoring for Individuals on Warfarin

Health Plan

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Facility

Setting

0555 INR Monitoring for Individuals on Warfarin

Outpatient Services

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Inpatient/Hospital

Numerator Statement

0555 INR Monitoring for Individuals on Warfarin

The number of individuals in the denominator who receive at least one INR monitoring test during each 56-day interval with active warfarin therapy.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Individuals in the denominator who had an INR test within 14 days of discharge

Numerator Details

0555 INR Monitoring for Individuals on Warfarin

Individuals in the denominator who have at least one INR test performed during each 56-day interval with warfarin therapy will be counted in the numerator. All 56-day intervals in which an individual is both prescribed warfarin and continuously enrolled are used to calculate the INR compliance rate for the individual. A 56-day interval with a hospitalization of more than 48 hours is considered an interval with an INR test.

Interval: The first day of the first 56-day interval is the start date of the first warfarin prescription in the measurement period, and the last day of the first 56-day interval is the start date of the first warfarin prescription + 55 days. The subsequent 56-day interval starts on the day after the first 56-day interval and ends 56 days following the first 56-day interval, as long as this end date occurs within the warfarin therapy time frame. This process continues until a calculated 56-day interval end date does not occur within the warfarin therapy time frame. If there are fewer than 56 days of warfarin therapy within the warfarin therapy time frame, those remaining days are not counted in any interval in determining the numerator. Only full 56-day intervals are used for calculating the numerator. "Warfarin usage" or "warfarin therapy" is determined by the start date of the first prescription for warfarin up through the start date of the last prescription for warfarin plus the days' supply from the last claim.

2015-2017 CODES FOR INR TEST

The specific year of codes used for the measure is dependent upon the measurement year.

CPT code:

85610 – Prothrombin time

LOINC codes:

34714-6 – INR in blood by coagulation assay

5894-1 – Prothrombin time (PT) actual/normal

6301-6 – INR in platelet poor plasma by coagulation assay

38875-1 – INR in platelet poor plasma or blood by coagulation assay

5964-2 – Prothrombin time (PT) in blood by coagulation

5902-2 – Prothrombin time (PT)

6418-0 – INR in capillary blood by coagulation assay [2016 only]

46418-0 – INR in capillary blood by coagulation assay [2017 only]

46417-2 – Prothrombin time (PT) in capillary blood by coagulation assay

52129-4 – INR in platelet poor plasma by coagulation assay—post heparin adsorption

Note: A full list of codes necessary for measure calculation is provided in the attached Excel file.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

INR monitoring is determined using the following CPT code in the Medicare Part A or Part B claims with the service date on the claim as the date that the INR test was conducted. Note: Outpatient INR monitoring claims can be contained in either Part A or Part B Medicare fee-for-service (FFS) claims because Part A claims include hospital outpatient department and Part B claims include physician office.

INR Test: Prothrombin time, CPT 85610

The day after the discharge date is counted as day 1 of the 14-day follow-up period.

Denominator Statement

0555 INR Monitoring for Individuals on Warfarin

Continuously enrolled individuals, at least 18 years of age at of the end of the measurement period, with at least 56 days of warfarin therapy during the measurement period.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Adult inpatient discharges to home for which the individual had active warfarin therapy within 1 day prior to discharge and the last monitored INR within 7 days of discharge was <=1.5 or >= 4

Denominator Details

0555 INR Monitoring for Individuals on Warfarin

The time period of the data is defined as any time during the measurement period (12 consecutive months). “Continuously enrolled” for this measure is defined as enrollment in a QHP product for at least two months, with no gap in enrollment between the first enrolled month and last enrolled month of a calendar year. “Warfarin usage” or “warfarin therapy” is determined by the start date of the first prescription for warfarin through the start date of the last prescription for warfarin plus the days’ supply from the last claim.

ENROLLMENT CRITERIA

Criteria for QHP products: At least two months enrollment in a QHP product, with no gap in enrollment between the first enrolled month and the last enrolled month of a calendar year.

MEDICATION ACTIVE INGREDIENTS

Active Ingredients by Class: Anticoagulants – Warfarin. Note the active ingredient is limited to oral formulations only. A full list of codes necessary for measure calculation is provided in an attached Excel file.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

This measure was originally designed for use by the Centers for Medicare & Medicaid Services. As a result, the target population for the measure is defined in the following way:

1. Medicare fee-for-service (FFS) beneficiaries, which are identified as having Medicare as the primary payer source with a valid Medicare identification number in the electronic health record (EHR) system.

From this target population, the denominator population is defined. The denominator consists of inpatient discharges for those beneficiaries in the target population that meet the following conditions, based on data obtained from the EHR system:

1. Patient is 18 years of age or older at the time of admission.
2. The discharge status indicates discharge to home or home health care (see Table 1 below).
3. Individual had active warfarin therapy within 1 day prior to discharge (see Table 2 below).

a. Note: To identify individuals who were discharged on warfarin, the current measure algorithm for the denominator requires an administration of warfarin either on the day of discharge or the day prior to discharge. This algorithm is established as a proxy for the "Medication, Discharge" data type in the EHR system and will be replaced by logic ascertaining warfarin on the discharge medication list when "Medication, Discharge" becomes a valid and routinely used EHR data type.

4. The last monitored INR within 7 days of discharge for the individual was <=1.5 or >= 4 (see Table 3 below). To ensure that the last INR test was reflective of the patient's clinical condition near the time of discharge, the last INR test needed to be conducted within the last seven days of the discharge date, counting the discharge date as day 7.

Table 1. Status Indicating Discharge to Home

01 – Home/self-care

06 – Home care/home health

Table 2. Warfarin Therapy Active Ingredient

Generic (Brand)

Warfarin (Coumadin, Jantoven)

Table 3. LOINC Codes Used to Identify INR Test

34714-6 – INR in Blood by Coagulation assay

38875-1 – INR in Platelet poor plasma or blood by Coagulation assay

46418-0 – INR in Capillary blood by Coagulation assay

52129-4 – INR in Platelet poor plasma by Coagulation assay – post heparin adsorption

6301-6 – INR in Platelet poor plasma by Coagulation assay

Exclusions

0555 INR Monitoring for Individuals on Warfarin

1. Individuals who are monitoring INR at home. These individuals are excluded because the claims associated with home INR monitoring are associated with up to four INR tests per claim. Therefore, a single claim for home INR monitoring would not be representative of a single INR test and would prohibit being able to distinguish if the home INR test was within the 56-day timeframe specified by the numerator of this measure.

2. Individuals who have first or last warfarin claims with missing days' supply.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

The following inpatient discharges are excluded from the denominator.

The following exclusion is identified from the Medication Administration Record (MAR) within the patient's EHR.

1) Inpatient discharges for which the individuals received dabigatran, rivaroxaban, or apixaban within one day prior to discharge

The following exclusions are identified from Part A and Part B Medicare Administrative Claims.

2) Inpatient discharges for which the individuals are monitoring INR at home

3) Inpatient discharges for which the individuals expired within 14 days post-discharge

4) Inpatient discharges for which the individuals received hospice care within 14 days post-discharge

5) Inpatient discharges for which the individuals had a hospital inpatient admission within 14 days post-discharge

6) Inpatient discharges for which the individuals were admitted to a skilled nursing facility (SNF) within 14 days post-discharge

7) Inpatient discharges for which the end date of the 14-day follow-up period occurs after the end of the measurement period

8) Inpatient discharges for which the individual is not enrolled in Medicare Part A and Part B at the time of discharge and during the 14-day follow-up period post discharge.

Exclusion Details

0555 INR Monitoring for Individuals on Warfarin

2015-2017 INR MONITORING AT HOME HCPCS CODES:

G0248 – Demonstrate Use Home INR Mon

G0249 – Provide Test Mats & Equip Home INR

G0250 – MD INR Test Review Inter Mgmt

Note: A full list of codes necessary for measure calculation is provided in the attached Excel file.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

The following exclusion is identified from the Medication Administration Record (MAR) within the patient's EHR.

Inpatient discharges for which the individuals received a new oral anticoagulant therapy initiated upon discharge, as identified through Medication Administration Records (MARs), excluded (Table 4).

Table 4. New Oral Anticoagulant Active (NOAC) Ingredients

Generic (Brand)

Dabigatran (Pradaxa)

Rivaroxaban (Xarelto)

Apixaban (Eliquis)

The following exclusions are identified from Part A and Part B Medicare Administrative Claims

Administrative Claims Note: The exact variables are dependent on the claims files used for analysis. The variable names below are based on use of HAJI data. When applied to different claims data files, the variable names may change.

INR monitoring at home: An individual is determined to be monitoring INR at home, if the individual has a claim with any of the following HCPCS code in the Medicare Part A and B claims (Table 5).

Table 5. HCPCS Codes for INR Monitoring at Home

G0248 – DEMONSTRATE USE HOME INR MON

G0249 – PROVIDE TEST MATS & EQUIP HOME INR

G0250 – MD INR TEST REVIEW INTER MGMT

Expired: An individual is determined to be expired within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the individual's death date is less than or equal to 14. The death date is identified using the bene_death_dt field in the CMS denominator file.

Hospice: An individual is determined to receive hospice care within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the Hse_clm_fron_dt field for the following claim is less than or equal to 14 (Table 6).

Table 6. Part A and Part B Codes for Identifying Hospice Admissions

Claim Type – Claim Field = Code Value

Part A – nch_clm_type_cd = 50

OR

Part A – hse_clm_fac_type_cd = 8; and,

Part A – hse_clm_srvc_clsfctn_type_cd = 1 or 2

OR

Part B – hse_b_plc_srvc_cd = 34

Hospital admission post-discharge: An individual is determined to be admitted to a hospital within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the Hse_clm_fron_dt field for the following claim is less than or equal to 14 (Table 7).

Table 7. Part A Code for Identifying Hospital Inpatient Admissions

Claim Type – Claim Field = Code Value

Part A – hse_clm_fac_type_cd = 1

Admission to SNF: An individual is determined to be admitted to a SNF within 14 days post-discharge if the time (in days) between the discharge date of the encounter and the Hse_clm_fron_dt field for the following claim is less than or equal to 14 (Table 8).

Table 8. Part A and Part B Codes for identifying SNF Admissions

Claim Type – Claim Field = Code Value

Part A – nch_clm_type_cd = 20

OR

Part A – hse_clm_fac_type_cd = 2; and,

Part A – hse_clm_srvc_clsfctn_type_cd = 1 or 2

OR

Part B – hse_b_plc_srvc_cd = 31

Definitions of the Claim Fields:

- Hse_clm_from_dt: the first date of provider's services rendered
- nch_clm_type_cd: the type of claim record being processed
- hse_clm_fac_type_cd: the first digit of the type of bill submitted on an institutional claim, which identifies the type of facility that provided the care for the beneficiary
- hse_clm_srvc_clsfctn_type_cd: the second digit of the type of bill submitted on an institutional claim, which identifies the type of facility that provided the care for the beneficiary

- hse_b_plc_srvc_cd: the place of service, as defined in the Medicare carrier manual for the claim

Risk Adjustment

0555 INR Monitoring for Individuals on Warfarin

No risk adjustment or risk stratification

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

No risk adjustment or risk stratification

Stratification

0555 INR Monitoring for Individuals on Warfarin

Not applicable

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

None

Type Score

0555 INR Monitoring for Individuals on Warfarin

Rate/proportion better quality = higher score

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

Rate/proportion better quality = higher score

Algorithm

0555 INR Monitoring for Individuals on Warfarin

Denominator: Continuously enrolled individuals, at least 18 years of age at of the end of the measurement period, with at least 56 days of warfarin therapy during the measurement period.

Create Denominator:

1. Pull individuals who are at least 18 years of age as of the end of the measurement period.
2. Include individuals who meet continuous enrollment criteria as described above in S.7.
3. Of the individuals identified in Step 2, include those who had warfarin claims during the measurement period.
4. Exclude individuals who have warfarin claims with missing days' supply. Exclude individuals who are monitoring their INR at home.
5. Of the individuals who were not excluded in Step 4, calculate the start date and end date of warfarin therapy for each individual and count the days between the start date and the end date inclusive. If an individual's death date is available, then use the death date as the end date.
6. Keep individuals who had at least 56 days of warfarin therapy during the measurement period and calculate the number of full 56-day intervals for each individual.

Numerator: The number of individuals in the denominator who receive at least one INR monitoring test during each 56-day interval with active warfarin therapy.

Create Numerator:

7. Pull all INR test claims from claims data for the current measurement period.

8. From the claims identified in Step 7, keep only those INR test claims for the individuals who are included in the denominator.

9. From claims data, identify and pull all inpatient stays of more than 48 hours during the measurement period (where hours are not available, calculate and keep stays of at least three days).

10. From the claims identified in Step 9, keep those that are for the individuals who are included in the denominator.

11. Combine the INR test claims dataset from Step 8 and the hospitalizations of more than 48 hours dataset from Step 10.

12. Using the start date of warfarin therapy identified in the denominator, determine the subsequent start dates for each of the calculated 56-day interval(s) of warfarin therapy and determine the number of full 56-day intervals designated in the denominator for each individual.

13. From the dataset created in Step 11, create a dataset containing INR tests performed and inpatient stays by unique individual and date of service.

14. Determine which full 56-day intervals have an INR test completed or have an inpatient stay by comparing each date of service from Step 13 to each full 56-day interval for each individual designated in Step 12.

15. From the dataset created in Step 14, calculate the individual's INR monitoring compliance rate as the sum of the number of full 56-day intervals with an INR test divided by the total number of full 56-day intervals.

16. From the dataset created in Step 15, calculate the measure numerator by counting the number of individuals with a 100% INR monitoring compliance rate.

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

The proposed measure is a hybrid measure that utilizes data from both EHR systems and Medicare FFS claims data to calculate the score. The initial patient (target) population is first identified using the Medicare ID from EHR system. The denominator is identified using the EHR system. The exclusions are identified using EHR and administrative claims data. The numerator is dependent on administrative claims because claims data enables us to look across all outpatient setting to determine if INR monitoring was done.

Target Population:

Medicare FFS beneficiaries, identified as having Medicare as the primary payer source with a valid Medicare identification number in the Electronic Health Record (EHR) system.

1. Determine if the individual is a Medicare fee-for-service (FFS) beneficiary. Medicare FFS beneficiaries are identified as having Medicare as the primary payer source and a valid Medicare identification number. Keep the inpatient discharges for which the individuals are Medicare FFS.

Denominator:

Adult inpatient discharges to home for which the individual had active warfarin therapy within 1 day prior to discharge and the last monitored INR within 7 days of discharge was <=1.5 or >= 4

Data Sources: EHR and Part A and Part B administrative claims. The steps below are separated based on data source.

Electronic Health Record, Steps 1-6

*Note: Step 2 and Step 6 of the denominator logic are established to ensure that the individuals were discharged on warfarin and function as a proxy for the "Medication, Discharge" data type in the EHR system. These two steps will be replaced by logic ascertaining warfarin on the discharge medication list when "Medication, Discharge" becomes a valid and routinely used EHR data type.

1. For all discharges in the target population, determine the individual's age in years. The age is equal to the admission date minus the birth date. Keep the inpatient discharges for which the individuals are at least 18 years of age at admission.

2. Determine if the individual received warfarin during the inpatient stay by identifying all warfarin administrations (including brands: Coumadin and Jantoven). Identify and include the eligible discharges that had warfarin, Coumadin, or Jantoven given on the day of discharge or the day prior to discharge.*

3. From the discharges identified in Step 3, keep those for which the individuals had an INR test performed within 7 days prior to the discharge date.

4. From the discharges in Step 4, keep those with the last INR being non-therapeutic (i.e., INR result <=1.5 or >=4.0).

5. From the discharges in Step 5, keep those for which the individuals were discharged to home or home health care.

6. Exclude discharges for which the individuals received dabigatran, rivaroxaban, or apixaban on the day of discharge or the day prior to discharge.*

Administrative Claims, Step 7

7. Using Part A and Part B administrative claims, exclude the following:

a) Discharges for which the individuals are monitoring INR at home

a. Note: patients that monitor their INR at home are excluded from the denominator because there is no record in the EHR or claims data to confirm that monitoring was done within 14 days of discharge.

b) Discharges for which the individuals expired within 14 days post-discharge

c) Discharges for which the individuals received hospice care within 14 days post-discharge

d) Discharges for which the individuals had a hospital inpatient admission within 14 days post-discharge

a. Note: Discharges for which the patient was admitted to any hospital within 14 days post-discharge are excluded to allow an equal follow-up window for all discharges in the denominator. If the patient is admitted during that window, the days allowed for monitoring are shorten.

e) Discharges for which the individuals were admitted to a SNF within 14 days post-discharge

f) Discharges in which the end date of the 14 days follow-up period occurs after the end of the measurement period

g) Discharges for which the individual is not enrolled in Medicare Part A and Part B at the time of discharge and during the 14-day follow-up period post discharge

Numerator:

Individuals in the denominator who had an INR test within 14 days of discharge

Data Source: Part A and Part B administrative claims

1. Using Part A and Part B administrative claims, identify inpatient discharges from the denominator for which the individuals had INR monitoring after the discharge date.

2. For each inpatient discharge identified in Step 1, identify the first INR test performed post-discharge. If the first INR test post-discharge is within 14 days of the discharge date, include the inpatient discharge in the numerator. The day after the discharge date is counted as day 1 of the 14-day follow-up period.

Submission items

0555 INR Monitoring for Individuals on Warfarin

5.1 Identified measures: 0556 : INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications

2732 : INR Monitoring for Individuals on Warfarin after Hospital Discharge

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: The measure under review (NQF 0555) is related to both NQF 0556 (INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications) and NQF 2732 (INR Monitoring for Individuals on Warfarin after Hospital Discharge). All three have the same measure focus, which is INR testing, and their specifications for INR testing are harmonized; however, the three measures have different clinical foci and target populations. The measure under review (NQF 0555) focuses on INR testing during every 56-day interval in which an individual is prescribed warfarin. NQF 0556 focuses on INR testing within three to seven days for patients on warfarin who are prescribed anti-infective medications that are known to interact with warfarin and result in a higher risk for adverse events, and NQF 2732 focuses on INR monitoring within 14 days of hospital discharge for individuals on warfarin who were not yet in the therapeutic range at the time of discharge. Due to the difference in the clinical foci, the timeframe for INR monitoring (three to seven days, 14 days, 56 days) is different among the three measures and complimentary rather than competing with one another.

5b.1 If competing, why superior or rationale for additive value: Not applicable

2732e INR Monitoring for Individuals on Warfarin after Hospital Discharge

5.1 Identified measures: 0556 : INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications

0555 : INR Monitoring for Individuals on Warfarin

0586 : Warfarin_PT/ INR Test

0612 : Warfarin - INR Monitoring

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: See Supplement Attachment: INR after Discharge_Supplement_ Differences from Competing Measures

5b.1 If competing, why superior or rationale for additive value: Not applicable; measures noted above are not competing measures as they do not address both the same focus and target population.

Comparison of NQF 0753 and NQF 3025

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure
3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Steward

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Centers for Disease Control and Prevention

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Surveillance Branch, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention

Description

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Facility adjusted Standardized Infection Ratio (SIR) and Adjusted Ranking Metric (ARM) for deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged >= 18 years as reported through the CDC National Health and Safety Network (NHSN).

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

This measure is for the risk-adjusted Standardized Infection Ratio (SIR) for all Surgical Site Infections (SSI) following breast procedures conducted at ambulatory surgery centers (ASCs) among adult patients (ages 18 - 108 years) and reported to the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN). The measure compares the reported number of surgical site infections observed at an ASC with a predicted value based on nationally aggregated data. The measure was developed collaboratively by the CDC, the Ambulatory Surgery Center Quality Collaboration (ASC QC), and the Colorado Department of Public Health and Environment. CDC is the measure steward.

Type

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Outcome

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Outcome

Data Source

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Electronic Health Data, Electronic Health Records, Other, Paper Medical Records Data will be reported using the formats in the following forms:

1) NHSN SSI Event form (CDC 57.120)

2) NHSN Denominator for Procedure form (CDC 57.121)

Available at measure-specific web page URL identified in S.1 Attachment icd10-pcs-pcm-nhsn-opc.xlsx

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Electronic Health Records, Other, Paper Medical Records Currently, NHSN data collection for SSIs following outpatient operative procedures is via the Patient Safety Component. Plans call for NHSN data collection for SSIs following outpatient operative procedures to be moved to the new Outpatient Procedure Component in 2018.

Available at measure-specific web page URL identified in S.1 Attachment Breast_Procedure_CPT_List_and_Final_Model_for_Ambulatory_Breast_Procedure_SSI_Outciome_Measure_05.31.2016_-_Copy.xlsx

Level

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Facility, Other, Population : Regional and State

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Facility

Setting

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Inpatient/Hospital

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Outpatient Services

Numerator Statement

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Deep incisional primary (DIP) and organ/space SSIs during the 30-day postoperative period among patients = 18 years of age, who undergo inpatient colon surgeries or abdominal hysterectomies. SSIs will be identified before discharge from the hospital, upon readmission to the same hospital, or during outpatient care or admission to another hospital (post-discharge surveillance).

Numerator Exclusion SSI events with PATOS* field = yes.

Infection present at time of surgery (PATOS): PATOS denotes that there is evidence of an infection or abscess at the start of or during the index surgical procedure (in other words, it is present preoperatively). PATOS is a YES/NO field on the SSI Event form. PATOS does not apply if there is a period of wellness between the time of a preoperative condition and surgery. The evidence of infection or abscess must be noted/documented intraoperatively in an operative note or report of surgery. Only select PATOS = YES if it applies to the depth of SSI that is being attributed to the procedures (e.g., if a patient has evidence of an intraabdominal infection at the time of surgery and then later returns with an organ/space SSI the PATOS field would be selected as a YES. If the patient returned with a superficial or

deep incisional SSI the PATOS field would be selected as a NO). The patient does not have to meet the NHSN definition of an SSI at the time of the primary procedure but there must be notation that there is evidence of an infection or abscess present at the time of surgery. PATOS is not necessarily diagnosis driven.

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Surgical site infections (SSIs) during the 30-day (superficial SSI) and 90-day (deep and organ/space SSI) postoperative periods following breast procedures in Ambulatory Surgery Centers.

Numerator Details

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Colon surgeries: Defined by the ICD-10-PCS procedure codes that comprise the NHSN colon surgery category for that program, or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

Abdominal hysterectomy: Defined by the ICD-10-PCS procedure codes that comprise the NHSN abdominal hysterectomy category for that program, or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

Inpatient: A patient for whom the discharge date is at least one day later than the admission date

Adult: A person =18 years of age

A deep incisional SSI must meet one of the following criteria:

The date of event for infection occurs within 30 days after the NHSN operative procedure (where day 1 = the procedure date)

AND

involves deep soft tissues of the incision (e.g., fascial and muscle layers)

AND

patient has at least one of the following:

a. purulent drainage from the deep incision.

b. a deep incision that spontaneously dehisces, or is deliberately opened or aspirated by a surgeon, attending physician** or other designee

AND

organism is identified by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST) or culture or non-culture based microbiologic testing method is not performed

AND

patient has at least one of the following signs or symptoms: fever(>38°C); localized pain or tenderness. A culture or non-culture based test that has a negative finding does not meet this criterion.

c. an abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test

** The term attending physician for the purposes of application of the NHSN SSI criteria may be interpreted to mean the surgeon(s), infectious disease, other physician on the case, emergency

An organ/space SSI involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure. The table below lists the specific sites that must be used to differentiate organ/space SSI. Specific sites are assigned to organ/space SSI to further identify the location of the infection. Specific sites of organ/space have specific criteria which must be met in order to qualify as an NHSN event. These criteria are in addition to the general criteria for NHSN organ/space SSI.

Specific sites of Organ/space events available for COLO and HYST.

COLO - Colon surgery

GIT - Gastrointestinal tract

IAB - Intraabdominal, not specified elsewhere

OREP - Other infection of the male or female reproductive tract

USI - Urinary System Infection

HYST - Abdominal hysterectomy

IAB - Intraabdominal, not specified elsewhere

OREP - Other infection of the male or female reproductive tract

VCUF - Vaginal cuff infection

An organ/space SSI must meet one of the following criteria:

Date of event for infection occurs within 30 days after the NHSN operative procedure (where day 1 = the procedure date)

AND

infection involves any part of the body deeper than the fascial/muscle layers, that is opened or manipulated during the operative procedure

AND

patient has at least one of the following:

a. purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)

b. organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test evidence suggestive of infection.

AND

meets at least one criterion for a specific organ/space infection site listed in COLO and HYST tables above.

These criteria are found in the Surveillance Definitions for Specific Types of Infections chapter 17.

REPORTING INSTRUCTIONS:

Multiple tissue levels are involved in the infection: The type of SSI (superficial incisional, deep incisional, or organ/space) reported should reflect the deepest tissue layer involved in the infection during the surveillance period. The date of event should be the date that the patient met criteria for the deepest level of infection:

a. Report infection that involves the organ/space as an organ/space SSI, whether or not it also involves the superficial or deep incision sites.

b. Report infection that involves the superficial and deep incisional sites as a deep incisional SSI.

c. If an SSI started as a deep incisional SSI on day 10 of the SSI surveillance period and then a week later, (day 17 of the SSI surveillance period) meets criteria for an organ space SSI the date of event would be the date of the organ space SSI.

Patient Specific Data:

Procedure/SSI Complex 30-Day Model- 2015 Baseline

Complex 30-day SSI Model: COLO

Diabetes

ASA Score

Age

Gender

BMI

Cancer hospital

Closure technique

Complex 30-day SSI Model: HYST

Diabetes

ASA Score

Age

BMI

Cancer hospital

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

SSIs are defined in the NHSN Patient Safety Protocol: http://www.cdc.gov/nhsn/CPTcodes/ssi-cpt.html.

Surgical site infection: An infection, following a breast procedure, of either the skin, subcutaneous tissue and breast parenchyma at the incision site (superficial incisional SSI), deep soft tissues of the incision site (deep incisional SSI), or any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure (organ/space SSI).

Superficial incisional SSI

Must meet the following criteria:

Infection occurs within 30 days after any NHSN operative procedure (where day 1 = the procedure date)

AND

involves only skin, subcutaneous tissue (e.g. fatty tissue) and breast parenchyma (e.g. milk ducts and glands that produce milk) of the incision

AND

patient has at least one of the following:

a. purulent drainage from the superficial incision.

b. organisms identified from an aseptically-obtained specimen

from the superficial incision or subcutaneous tissue by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

c. superficial incision that is deliberately opened by a surgeon, attending physician** or other designee and culture or non-culture based testing is not performed.

d. diagnosis of a superficial incisional SSI by the surgeon or attending physician** or other designee.

AND

patient has at least one of the following signs or symptoms: pain or tenderness; localized swelling; erythema; or heat. A culture or non-culture based test that has a negative finding does not meet this criterion.

Deep incisional SSI

Must meet the following criteria:

Infection occurs within 90 days after the NHSN operative procedure (where day 1 = the procedure date)

according to the list in Table 2

AND

involves deep soft tissues of the incision (e.g., fascial and muscle layers)

AND

patient has at least one of the following:

a. purulent drainage from the deep incision.

b. a deep incision that spontaneously dehisces, or is deliberately opened or aspirated by a surgeon, attending physician** or other designee and organism is identified by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST) or culture or non-culture based microbiologic testing method is not performed

c. an abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test

AND

patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness. A culture or non-culture based test that has a negative finding does not meet this criterion.

Organ/Space SSI

Must meet the following criteria:

Infection occurs within 30 or 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

infection involves any part of the body deeper than the fascial/muscle layers (e.g. subpectoral), that is opened or manipulated during the operative procedure

AND

patient has at least one of the following:

a. purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)

b. organisms are identified from an aseptically-obtained fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test

AND

meets at least one of the following criteria for BRST-Breast abscess or mastitis

BRST-Breast abscess/infection

1. Patient has organisms identified from affected breast tissue or fluid obtained by invasive procedure by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

2. Patient has a breast abscess or other evidence of infection on gross anatomic or histopathologic exam.

AND

Physician initiates antimicrobial therapy within 2 days of onset or worsening of symptoms.

Notes:

- Breast procedures may involve a secondary operative site. i.e., procedures that include flaps. The flap site is the secondary site. Secondary sites have a 30 day surveillance period. If the secondary site meets criteria for an SSI, it reported as either a superficial incisional SSI at the secondary site or deep incisional infection at the incisional site.
- Accessing a breast expander after a breast procedure is considered an invasive procedure and any subsequent infection is not deemed an SSI attributable to the breast procedure.

** The term attending physician for the purposes of application of the NHSN SSI criteria may be interpreted to mean the surgeon(s), infectious disease, other physician on the case, emergency physician or physician's designee (nurse practitioner or physician's assistant).

Denominator Statement

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

An NHSN Operative Procedure is a procedure:

- that is included in the ICD-10-PCS or CPT NHSN operative procedure code mapping. And

• takes place during an operation where at least one incision (including laparoscopic approach and cranial Burr holes) is made through the skin or mucous membrane, or reoperation via an incision that was left open during a prior operative procedure And

• takes place in an operating room (OR), defined as a patient care area that met the Facilities Guidelines Institute's (FGI) or American Institute of Architects' (AIA) criteria for an operating room when it was constructed or renovated. This may include an operating room, C-section room, interventional radiology room, or a cardiac catheterization lab.

Exclusions: Otherwise eligible procedures that are assigned an ASA score of 6 are not eligible for NHSN SSI surveillance.

Using multivariable logistic regression models for colon surgeries and abdominal hysterectomies, the predicted number of SSIs is obtained. These predicted numbers are summed by facility and surgical procedure and used as the denominator of this measure (see also 2a.8).

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Breast procedures, as specified by the operative codes that comprise the breast procedure category of the NHSN Patient Safety Component Protocol, performed at ambulatory surgery centers.

Denominator Details

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Data required to calculate the denominator:

1) Data for each operative procedure

Colon surgeries: Defined by the ICD-10-PCS procedure codes that comprise the NHSN colon surgery category for that program, and or the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

Abdominal hysterectomy: Defined by the ICD-10-PCS procedure codes that comprise the NHSN abdominal hysterectomy category for that program, or and the corresponding set of CPT procedure codes used in ACS/NSQIP for that program (see Appendix 1).

2) Parameter estimates for operative procedure-specific logistic regression models are needed to calculate the predicted number of SSIs. See pages 29 of the SIR guide, 2a.15 attachment.

3) Patient Specific Data: Procedure/SSI Complex 30-Day Model- 2015 Baseline

Complex 30-day SSI Model: COLO

Diabetes

ASA Score

Age

Gender

BMI

Cancer hospital

Closure technique

Complex 30-day SSI Model: HYST

Diabetes

ASA Score

Age

BMI

Cancer hospital

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Information required to calculate the denominator:

CPT codes for NHSN Breast Procedure category:

11970, 19101, 19112, 19120, 19125, 19126, 19300, 19301, 19302, 19303, 19304, 19305, 19306, 19307, 19316, 19318, 19324, 19325, 19328, 19330, 19340, 19342, 19350, 19355, 19357, 19361, 19364, 19366, 19367, 19368, 19369, 19370, 19371, 19380

See attached spreadsheet for descriptions of each code.

Note: Bilateral breast procedures performed during the same trip to operating room are counted as two separate procedures

Ambulatory surgical center (ASC): any distinct entity that operates exclusively for the purpose of providing surgical services to patients not requiring hospitalization and in which the expected duration of services would not exceed 24 hours following an admission.

Parameter estimates for breast procedure logistic regression model are needed to calculate the expected number of SSIs (included in the attached document).

Patient-specific data: Age, American Society of Anesthesiologists Physical Status Classification (ASA Class).

Exclusions

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Denominator data are excluded from the SSI measure due to various reasons related to data quality, data outlier and data errors. The complete list of universal exclusion criteria applied to denominator are listed in the SSI section of the SIR guide that is referenced above. These exclusions include but are not limited to procedures associated with SSI events where the PATOS = yes, and those with ASA Class VI (6). The measure specific denominator exclusions for the Complex 30-day SSI, are off plan colon and abdominal hysterectomy procedures, procedures performed on persons under the age of 18, and procedure performed on an outpatient basis. .

Note: Under the 2015 baseline, both primarily closed procedures and those that are not closed primarily are included in the denominator data.Persons under the age of 18, those having a procedure performed on an outpatient basis, procedures associated with SSI events where the PATOS = yes, those with ASA Class VI (6) are excluded.

Note: Both primarily closed procedures and those that are not closed primarily are included in the denominator data.

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Hospital inpatients and hospital outpatient department patients, pediatric patients and very elderly patients, and brain-dead patients whose organs are being removed for donor purposes

Exclusion Details

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Age (person is under 18)

Date of admission and date discharge on the same calendar day

Procedures associated with a PATOS = yes SSI event

ASA Class (6)

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Exclusion Criteria:

1. Inpatient breast procedures*
2. Breast procedures performed on patients under age 18 or age 109 or over.
3. Breast procedures with ASA Class VI (6).

*Breast procedures performed in hospital outpatient departments (HOPDs) are not included in the measure scope.

Risk Adjustment

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Other The measure reports the individual adjusted Standardized Infection Ratio (SIR) for colon surgeries and abdominal hysterectomies for each facility during the specified reporting period. SIR is an indirect standardization method for summarizing healthcare associated infection (HAI) experience across any number of stratified groups of data. Because the facility SIR has lower precision for facilities with few expected events relative to the number of procedures performed, i.e. low reliability, empirical Bayes techniques are used to derive the final reported SIR or reliability-adjusted SIR.

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Statistical risk model

Stratification

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

None

If desired by an implementing organization or agency, race and ethnicity information could be added to data collection to allow for post-hoc stratification to identify disparities by these groupings. Risk adjustment based on these variables is not proposed.

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

None

Type Score

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

Other Adjusted Ratio: The reliability adjusted SIR is the reliability adjusted number of SSIs divided by the expected number of SSIs. The reliability adjustment for each facility is based on procedure volume. better quality = lower score

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Ratio better quality = lower score

Algorithm

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

An SIR <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an SIR >1.0 indicates that the number of SSIs was more than expected, given the patients treated.

An ARM <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an ARM >1.0 indicates that the number of SSIs was more than expected, given the patients treated.

The SIR is calculated as follows:

1. Identify the number of SSIs for each procedure

2. Total these numbers for an observed number of SSIs

3. Obtain the predicted number of SSIs for each procedure by multiplying the observed number of procedures by the corresponding SSI rates for each procedure from a standard population (as reflected in the regression models, see section 2b.3 Testing Results)

4. Sum the number of predicted SSIs for each procedure in the measurement time period.

5. Divide the total number of observed SSIs (“2” above) by the “predicted” number of SSIs (“4” above).

6. Result = SIR

An ARM <1.0 indicates that the number of SSIs was fewer than expected for that facility, whereas an ARM >1.0 indicates that the number of SSIs was more than expected, given the patients treated.

The SIR is calculated as follows:

1. Identify the number of SSIs for each procedure

2. Total these numbers for an observed number of SSIs

3. Obtain the predicted number of SSIs for each procedure by multiplying the observed number of procedures by the corresponding SSI rates for each procedure from a standard population (as reflected in the regression models, see section 2b.3 Testing Results)

4. Sum the number of predicted SSIs for each procedure in the measurement time period.

5. Divide the total number of observed SSIs (“2” above) by the “predicted” number of SSIs (“4” above).

6. Result = SIR

The reliability ARM is calculated as follows:

1. Obtain the adjusted number of observed SSI by using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model.

2. Sum these adjusted number of observed SSI by hospital for the adjusted observed SSIs total.

3. For every patient undergoing the operative procedure in the period, calculate the probability of SSI using the patient data and parameter estimates of the factors in the applicable model.

4. Sum the probabilities by hospital to obtain the total expected number of SSIs.

5. Divide the total number of adjusted observed SSIs by the total number of expected SSIs for the resulting ARM.

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

Each SIR is calculated as follows:

1. Identify the number of infections reported during the measurement period for an observed number of infections.

2. Obtain the predicted number of infections by applying the risk adjustment model to all eligible breast procedures during the measurement period.

3. Divide the observed number of infections by the predicted number of infections.

4. Result = SIR for the given period.

5. Note: SIRs are not calculated when the number of predicted infections is less than 0.2.

Submission items

0753 American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

5.1 Identified measures: 3025 : Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: The populations included in the 2 measures differ with the ASC measure being intended for surgeries performed at ambulatory surgery centers and the present measure intended for inpatient surgical patients.

5b.1 If competing, why superior or rationale for additive value: The populations included in the 2 measures differ with the ASC measure being intended for surgeries performed at ambulatory surgery centers and the present measure intended for inpatient surgical patients. These populations have potential difference in SSI risk as their comorbidities, types of procedures performed, and length of time cared for in a healthcare facility are inherently different. Risk modeling has been performed for both measures, with different models developed based on procedure and facility type. No excess burden collection is anticipated.

3025 Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure

5.1 Identified measures:

5a.1 Are specs completely harmonized?

5a.2 If not completely harmonized, identify difference, rationale, impact:

5b.1 If competing, why superior or rationale for additive value: None

Comparison of NQF 1717 and NQF 1716

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure
1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Steward

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Centers for Disease Control and Prevention

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Centers for Disease Control and Prevention

Description

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM) of hospital-onset CDI Laboratory-identified events (LabID events) among all inpatients in the facility, excluding well-baby nurseries and neonatal intensive care units (NICUs).

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Standardized infection ratio (SIR) and Adjusted Ranking Metric (ARM)of hospital-onset unique blood source MRSA Laboratory-identified events (LabID events) among all inpatients in the facility

Type

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Outcome

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Outcome

Data Source

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Electronic Health Data, Electronic Health Records, Other, Paper Medical Records NHSN Laboratory-identified MDRO or CDI Event Form and NHSN MDRO and CDI Prevention Process and Outcome Measures Monthly Monitoring Form

Available at measure-specific web page URL identified in S.1 Attachment NQF_CDI_ACH_attachment_2018_Final-636692505821528619.docx

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Facility, Other, Population : Regional and State

Level

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Facility, Other, Population : Regional and State

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Emergency Department and Services, Inpatient/Hospital, Post-Acute Care

Setting

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Emergency Department and Services, Inpatient/Hospital, Post-Acute Care

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Total number of observed hospital-onset unique blood source MRSA LabID events among all inpatients in the facility per NHSN protocols.

Numerator Statement

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Total number of observed hospital-onset incident CDI LabID events among all inpatients in the facility, excluding NICU, Special Care Nursery, babies in LDRP, well-baby nurseries, or well-baby clinics.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

1. Definition of MRSA – Includes Staphylococcus aureus cultured from any specimen that tests oxacillin-resistant, cefoxitin-resistant, or methicillin-resistant by standard susceptibility testing methods, or by a positive result from molecular testing for mecA and PBP2a; these methods may also include positive results of specimens tested by any other FDA approved PCR test for MRSA

2. Definition of MRSA isolate - Any specimen obtained for clinical decision making testing positive for MRSA. This excludes any tests related to active surveillance testing/culturing.

3. Definition of unique MRSA blood isolate - An MRSA isolate from blood in a patient that is the first MRSA isolate from any specimen for the patient in the location in that month or an MRSA isolate from blood in a patient with no prior positive blood culture for MRSA in the current inpatient location in <= 2 weeks .

4. Definition of duplicate MDRO Isolate: If monitoring MRSA , any MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source, except unique blood source

5. Definition of MRSA Bacteremic LabID event - All non-duplicate unique blood source MRSA isolates, including specimens collected during an emergency department or other affiliated outpatient clinic visit, if collected the same day as patient admission to the facility.

6. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1)

7. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection. For this measure, LabID events from patients housed in a CMS-certified inpatient rehabilitation unit (IRF) or inpatient psychiatric unit (IPF) are excluded.

Numerator Details

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

1. Definition of CDI-positive laboratory assay - A positive laboratory test result for C. difficile toxin A and/or B or a toxin-producing C. difficile organism detected by culture or other laboratory means performed on an unformed stool sample. When using a multi-testing methodology for CD identification, the final result of the last test finding which is placed onto the patient medical record will determine if the CDI laboratory assay definition is met.

2. Definition of duplicate CDI-positive test - Any C. difficile toxin-positive laboratory result from the same patient and location, following a previous C. difficile toxin-positive laboratory result within the last 14 days.

3. Definition of CDI LabID event - All non-duplicate C. difficile toxin-positive laboratory results, including specimens collected in an emergency department or 24-hour observation location.

4. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1)

5. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection.

6. Definition of incident CDI LabID Event - Any CDI LabID Event from a specimen obtained > 56 days after the most recent CDI LabID Event (or with no previous CDI LabID Event documented) for that patient. Note: the date of first specimen collection is considered day 1.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

1. Definition of MRSA – Includes Staphylococcus aureus cultured from any specimen that tests oxacillin-resistant, cefoxitin-resistant, or methicillin-resistant by standard susceptibility testing methods, or by a positive result from molecular testing for mecA and PBP2a; these methods may also include positive results of specimens tested by any other FDA approved PCR test for MRSA

2. Definition of MRSA isolate - Any specimen obtained for clinical decision making testing positive for MRSA. This excludes any tests related to active surveillance testing/culturing.

3. Definition of unique MRSA blood isolate - An MRSA isolate from blood in a patient that is the first MRSA isolate from any specimen for the patient in the location in that month or an MRSA isolate from blood in a patient with no prior positive blood culture for MRSA in the current inpatient location in <= 2 weeks .

4. Definition of duplicate MDRO Isolate: If monitoring MRSA , any MDRO isolate from the same patient and location after an initial isolation of the specific MDRO during a calendar month, regardless of specimen source, except unique blood source

5. Definition of MRSA Bacteremic LabID event - All non-duplicate unique blood source MRSA isolates, including specimens collected during an emergency department or other affiliated outpatient clinic visit, if collected the same day as patient admission to the facility.

6. Definition of hospital-onset LabID event – LabID event with specimen collected >3 days after admission to the hospital (i.e. on or after calendar day 4 of admission, where date of admission = day 1)

7. Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of specimen collection. For this measure, LabID events from patients housed in a CMS-certified inpatient rehabilitation unit (IRF) or inpatient psychiatric unit (IPF) are excluded.

Denominator Statement

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Total number of predicted hospital-onset CDI LabID events, calculated using the facility´s number of inpatient days, facility type, CDI event reporting from Emergency Department and 24 hour observation units, bed size, ICU bed size, affiliation with medical school, microbiological test method used to identify C. difficile, and community-onset CDI admission prevalence rate.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Total number of predicted hospital-onset unique blood source MRSA LabID events, calculated from a negative binomial regression model and risk adjusted for facility's number of inpatient days, inpatient community-onset MRSA prevalence rate, average length of patient stay in the hospital, medical school affiliation, facility type, number of critical care beds in the hospital, and outpatient community-onset MRSA prevalence rate from emergency departments and observation units.

Denominator Details

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

1. Number of inpatient days for the facility for the time period under surveillance. The number of inpatient days is obtained by summing the daily count of patients occupying beds in each inpatient location in the facility over the time period under surveillance. The count of patients occupying inpatient beds is collected at the same time each day.

2. Facility–specific information, including facility type, bed size, number of ICU beds, and affiliation with a medical school (see 3 below).

3. Medical school affiliation categories:

a. Major – facility has a program for medical students and post-graduate medical training

b. Graduate – facility has a program for post-graduate medical training (i.e., residency and/or fellowships)

c. Undergraduate: facility has a program for medical students only

4. Number of admission-prevalent CDI LabID events (identified within the first 3 days after admission to the facility, where date of admission = day 1).

5. Reporting of CDI labID events in Emergency Departments or 24-hour observation units.

6. Number of admissions to the facility.

7. Microbiological test method used to identify C. difficile (e.g., PCR for toxin, EIA assay for toxin, stool antigen, culture, other). The CDI testing algorithm of "NAAT plus EIA, if NAAT-positive" is currently receiving the "NAAT" level of risk adjustment under the 2017 NHSN protocol. Starting in 2018, the CDI testing algorithm of "NAAT plus EIA, if NAAT-positive" will be assigned the "EIA" level of risk adjustment.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

1. Number of inpatient days for the facility for the time period under surveillance is included in the calculation of the denominator. The number of inpatient days is obtained by summing the daily count of patients occupying beds in each applicable inpatient location in the facility over the time period under surveillance. The count of patients occupying inpatient beds is collected at the same time each day. A monthly sum of total patient days is reported to NHSN. Patient day counts from CMS-certified inpatient rehabilitation units and inpatient psychiatric units are excluded.

2. Risk factors included in the calculation of the number of predicted hospital-onset MRSA LabID events for acute care hospitals: (see attached document for further details)

- Inpatient community-onset MRSA bacteremia prevalence rate

- Average length of stay for patients in the hospital

- Medical school affiliation

- Type of hospital

-Number of ICU beds

-Community-onset prevalence rate in Emergency Departments and 24 hour observation units

Exclusions

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Data from patients who are not assigned to an inpatient bed are excluded from the denominator counts, including outpatient clinics, 24-hour observation units, and emergency department visits. Inpatient rehab locations and inpatient psychiatric locations that have their own Centers for Medicare and Medicaid Services (CMS) Certification Number (CCN) are excluded. Additionally, data from NICU, SCN, babies in LDRP, well-baby nurseries, or well-baby clinics are excluded from the denominator count.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Data from patients who are not assigned to an inpatient bed in an applicable location are excluded from the denominator counts. Denominator counts exclude data from inpatient rehabilitation units and inpatient psychiatric units with different CMS Certification Numbers (CCN) from the acute care facility.

Exclusion Details

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of the daily inpatient census count.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Definition of inpatient - A patient who is located in an inpatient location for care and treatment at the time of the daily inpatient census count.

Risk Adjustment

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Statistical risk model

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Other Statistical negative binomial regression. See attachment for details.

Stratification

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S9.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

The measure will not be stratified, as it is an overall facility-wide summary measure. Facility characteristics will be used for risk adjustment, described above in S7.

Type Score

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

Ratio better quality = lower score

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

Ratio better quality = lower score

Algorithm

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

The Standardized Infection Ratio (SIR) for annual and quarterly data aggregation and analysis of CDI bacteremia LabID events is calculated for each healthcare facility for a specified time period. The SIR is an indirect standardization method for summarizing healthcare-associated infection (HAI) experience, including CDI bacteremia LabID events, in a single group of data or across any number of stratified groups of data. To produce the SIR:

1. Identify number of observed hospital-onset incident CDI LabID events for a given time period by adding the total number of observed events across the facility.

2. Calculate the number of predicted hospital-onset incident CDI LabID events for the facility using the methodology described. See attached table.

3. Divide the number of observed hospital-onset incident CDI LabID events (1 above) by the number of predicted hospital-onset incident CDI LabID events (2 above) to obtain the SIR.

4. Perform a mid-P Exact test to compare the SIR obtained in 3 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.

The Adjusted Ranking Metric (ARM) for annual data aggregation and analysis of HAI events, including CDI bacteremia LabID events, combines the method of indirect standardization used to calculate the unadjusted SIR described above with a Bayesian random effects hierarchical model to account for the potentially low precision and/or reliability inherent in the unadjusted SIR. A Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling is used to produce the adjusted numerator. The ARM enables more meaningful statistical differentiation between hospitals by accounting for differences in patient case-mix, exposure volume (e.g. patient days, central line-days, surgical procedure volume), and unmeasured factors that are not reflected in the unadjusted SIR and that cause variation between healthcare facilities. Accounting for these sources of variability enables better measure discrimination between facilities and leads to more reliable performance rankings. To produce the ARM:

1. Identify the number of hospital-onset incident CDI LabID events for the facility

2. Obtain the adjusted number of observed hospital-onset incident CDI LabID events for the facility using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model.

3. Total these numbers for an observed number of hospital-onset incident CDI LabID events

4. Obtain the predicted number of hospital-onset incident CDI LabID events for the facility following the methodology provided (see attachment for final risk adjustment model).

5. Divide the total number of adjusted hospital-onset incident CDI LabID events (3 above) by the predicted number of hospital-onset incident CDI LabID events (4 above) to obtain the reliability-adjusted SIR

6. Perform a Poisson test to compare the SIR obtained in 5 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

The Standardized Infection Ratio (SIR) for annual and quarterly data aggregation and analysis of MRSA bacteremia LabID events is calculated for each healthcare facility for a specified time period. The SIR is an indirect standardization method for summarizing healthcare-associated infection (HAI) experience, including MRSA bacteremia LabID events, in a single group of data or across any number of stratified groups of data. To produce the SIR:

1. Identify number of observed non-duplicate hospital-onset unique blood source MRSA LabID events for a given time period by adding the total number of observed events across the facility. Duplicate events that occurred in the same patient within a 14-day period are excluded.

2. Calculate the number of predicted hospital-onset unique blood source MRSA LabID events for the facility using the negative binomial regression model.

3. Divide the number of observed hospital-onset unique blood source MRSA LabID events (1 above) by the number of predicted hospital-onset unique blood source MRSA LabID events (2 above) to obtain the SIR.

4. Perform a mid-P Exact Test to compare the SIR obtained in 3 above to the nominal value of 1. P-value and 95% confidence intervals will be calculated, which can be used to assess statistical significance of SIR.

The Adjusted Ranking Metric (ARM) for annual data aggregation and analysis of HAI events, including MRSA bacteremia LabID events, combines the method of indirect standardization used to calculate the unadjusted SIR described above with a Bayesian random effects hierarchical model to account for the potentially low precision and/or reliability inherent in the unadjusted SIR. A Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling is used to produce the adjusted numerator. The ARM enables more meaningful statistical differentiation between hospitals by accounting for differences in patient case-mix, exposure volume (e.g. patient days, central line-days, surgical procedure volume), and unmeasured factors that are not reflected in the unadjusted SIR and that cause variation between healthcare facilities. Accounting for these sources of variability enables better measure discrimination between facilities and leads to more reliable performance rankings. To produce the ARM:

1. Identify the number of hospital-onset unique blood source MRSA LabID events for the facility

2. Obtain the adjusted number of observed hospital-onset unique blood source MRSA LabID events for the facility using a Bayesian posterior distribution constructed through Monte Carlo Markov Chain sampling which results from a Bayesian random effects model.

3. Total these numbers for an observed number of hospital-onset unique blood source MRSA LabID events

4. Obtain the predicted number of hospital-onset unique blood source MRSA LabID events (see attachment for final risk adjustment model)

5. Divide the total number of adjusted hospital-onset unique blood source MRSA LabID events (3 above) by the predicted number of hospital-onset unique blood source MRSA LabID events (4 above) to obtain the ARM.

6. Perform a Poisson test to compare the SIR obtained in 5 above to the nominal value of 1. P-value and confidence interval will be calculated, which can be used to assess significance of SIR.

Submission items

1717 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure

5.1 Identified measures:

5a.1 Are specs completely harmonized?

5a.2 If not completely harmonized, identify difference, rationale, impact:

5b.1 If competing, why superior or rationale for additive value: N/A

1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure

5.1 Identified measures:

5a.1 Are specs completely harmonized?

5a.2 If not completely harmonized, identify difference, rationale, impact:

5b.1 If competing, why superior or rationale for additive value: N/A

Appendix F: Pre-Evaluation Comments

Comments received as of January 18, 2019

Topic	Commenter	Comment
1716 National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus aureus (MRSA) Bacteremia Outcome Measure (Centers for Disease Control and Prevention)	Submitted by Federation of American Hospitals	The Federation of American Hospitals (FAH) appreciates the opportunity to comment on NQF #1716: National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Methicillin-resistant *Staphylococcus aureus* bloodstream infection. FAH requests that the Patient Safety Standing Committee consider whether sufficient information has been provided regarding the data element validity testing under Criterion 2b. Validity. The measure developer notes that the validation was completed on a sample of hospitals and patient charts in each state but we were unable to determine whether the sampling was sufficient and question whether the information aggregated at the state level rather than for each facility and at the measure score and not for each individual data element demonstrates valid data capture and reporting at the facility level. We believe that additional information to demonstrate the validity of each data element by facility is needed to meet the validity criterion.
1717: National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI) Outcome Measure (Centers for Disease Control and Prevention)	Submitted by Federation of American Hospitals	The Federation of American Hospitals (FAH) appreciates the opportunity to comment on NQF #1717: National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset Clostridium difficile Infection (CDI). FAH requests that the Patient Safety Standing Committee consider whether sufficient information has been provided regarding the data element validity testing under Criterion 2b. Validity. The measure developer notes that the validation was completed on a sample of hospitals and patient charts in each state but we were unable to determine whether the sampling was sufficient and question whether the information aggregated at the state level rather than for each facility and at the measure score and not for each individual data element demonstrates valid data capture and reporting at the facility level. We believe that additional information to demonstrate the validity of each data element by facility is needed to meet the validity criterion.
3450 Practice Environment Scale-Nursing Work Index (PES-NWI) (University of Pennsylvania, Center for Health Outcomes and Policy Research)	Unknown	The PES-NWI is a well-recognized, valid tool for measuring nurses' work environments. Since a positive work environment is linked to patient safety, I strongly support NQF's continued endorsement.

Topic	Commenter	Comment
3450 Practice Environment Scale-Nursing Work Index (PES-NWI) (University of Pennsylvania, Center for Health Outcomes and Policy Research)	Unknown	The PES-NWI is a valid, reliable tool to measure the nurse work environment. In my research using the PES-NWI, I have found that it performs consistently in different samples in terms of having above an acceptable Cronbach's alpha level. It has stood the test of time and is a globally used measure for the nurse work environment that has found to be associated with patient and nurse outcomes. I highly recommend continuing National Quality Forum endorsement for the PES-NWI.
3450 Practice Environment Scale-Nursing Work Index (PES-NWI) (University of Pennsylvania, Center for Health Outcomes and Policy Research)	Unknown	The PES-NWI is a well recognized, valid, and reliable instrument for the measurement of nurses' work environments. The PES-NWI has been an important measure for describing differences in healthcare quality across numerous settings as well as linking variation in nurses' practice environments with differences in patient outcomes. The PES-NWI is widely used by numerous organizations and researchers both nationally as well as internationally. It clearly meets each of the measurement criteria at a high level. I strongly support ongoing endorsement of the PES-NWI.
3450 Practice Environment Scale-Nursing Work Index (PES-NWI) (University of Pennsylvania, Center for Health Outcomes and Policy Research)	National League for Nursing Accrediting Commission, Inc.	The PES-NWI is a recognized instrument to measure various elements of the nursing practice environment. Numerous publications highlight the breadth and depth of the variables in various practice settings and countries. Identified subscales specify characteristics of the measures. Widely used and accepted, the research findings continue since first introduced in 2004. Comparisons of nursing practice environment scores and adverse events/outcomes support the need to use the instrument's findings as part of nursing leaders' strategic initiatives to improve quality and safety of nursing care. The instrument is invaluable to employers, nursing leaders and ultimately, patients. I urge further strong support of this nursing practice measure.
3450 Practice Environment Scale-Nursing Work Index (PES-NWI) (University of Pennsylvania, Center for Health Outcomes and Policy Research)	UAB University Hospital	The PES-NWI remains a commonly used and reliable instrument with which to measure the nursing practice environment. The large body of research demonstrating associations between PES-NWI scores and adverse events/outcomes underpins the value and utility of this instrument. Continued use and analysis of the relationships demonstrated, particularly with regard to the instrument's subscales, provides nursing leaders with actionable information to use when they aim to improve the quality and safety of nursing care via improvements in the nursing practice environment. Please endorse this measure.

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