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Patient Safety, Spring 2022 Cycle: CDP Report

DRAFT REPORT FOR COMMENT
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Executive Summary

The National Quality Forum (NQF) views patient safety as a critical issue for measurement, and patient safety measurement efforts over the last two decades have focused on improving care delivery and outcomes for patients. Examples include medication reconciliation; healthcare worker immunization rates; determining appropriate dosing levels for radiation-associated procedures; and reductions in central line-associated blood stream infections (CLABSIs), pressure ulcers, inpatient mortality, and others. NQF's Patient Safety Standing Committee, a multistakeholder group consisting of patient safety clinical leaders, patient representatives, healthcare quality experts, and other thought leaders, carefully reviews new and existing patient safety measures and makes recommendations for endorsement.

During this cycle, the Patient Safety Standing Committee evaluated three newly submitted measures and three maintenance measure against NQF's measure evaluation criteria. These measures focused on the inappropriate diagnosis of illnesses, pediatric radiation dosing, quality of the nursing work environment, reduction of blood culture contamination rates, and medication reconciliation. The medication reconciliation measure was originally reviewed during the fall 2020 cycle as a maintenance measure. Due to an error, the measure was stated to have passed but was in fact "consensus not reached" on validity. To ensure consensus on the measure, a discussion and revote on validity, and subsequently on overall suitability for endorsement, were held during the current spring 2022 measure evaluation meeting. The Standing Committee recommended five measures for endorsement, including the medication reconciliation measure, but did not reach consensus on the sixth and final measure.

The Standing Committee recommended the following measures:

- NQF #3690 Inappropriate Diagnoses of Urinary Tract Infection (UTI) in Hospitalized Medical Patients (University of Michigan/Michigan Hospital Safety Consortium)
- NQF #3671 Inappropriate Diagnosis of Community-Acquired Pneumonia (CAP) in Hospitalized Medical Patients (University of Michigan/Michigan Hospital Safety Consortium)
- NQF #2820 Pediatric Computed Tomography (CT) Radiation Dose (University of California, San Francisco)
- NQF #3658 Adult Blood Culture Contamination Rate (Centers for Disease Control and Prevention)
- NQF #0097 Medication Reconciliation Post-Discharge (National Committee for Quality Assurance)

The Standing Committee did not reach consensus on the following measure:

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

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

Introduction

Over the last 20 years, widespread efforts have been made to reduce preventable harm across all healthcare arenas; however, mistakes continue to happen, and more than 200,000 patients suffer from hospital errors, injuries, accidents, and infections annually.[1] Patient safety and high quality care remain a top priority for the United States (U.S.). The World Health Organization (WHO) recognizes that patient safety is a global health concern and outlines the burden of harm to include issues with medication errors, health care-associated infections, unsafe surgical and injection practices, diagnostic errors, and radiation errors.[2]

Patient safety is not only about providing safe and efficient care, but also about providing a culture of safety in a healthcare environment. An environment that fosters psychological safety in reporting errors, implementing solutions, and adopting system improvements is also vital in harm reduction.[3] Every healthcare team member has a significant impact on the delivery of care and the culture of the environment in which care is delivered.[3]

The spring 2022 cycle included a review of patient safety measures that address both clinical care and the environment in which care is delivered. The measure topics reviewed include the inappropriate diagnosis of illnesses in hospital patients, pediatric computed tomography (CT) radiation dosing, measuring the nursing work environment, and reducing blood culture contamination rates.

The spring 2022 cycle also includes a discussion and revote on validity, and subsequently on overall suitability for endorsement, for NQF #0097. This measure originally underwent maintenance review during the fall 2020 cycle. Those deliberations and voting results can be found in the Fall 2020 Technical Report.

Improper Diagnosis of Illness

Misdiagnosis and overtreatment of illness put patients at risk for prolonged illness, complications, and even death. Disease misdiagnosis and overtreatment lead to overutilization of hospital admissions and inappropriate antibiotic usage.[4] Community-acquired pneumonia (CAP) is often diagnosed with a chest radiograph, but treatment often begins without the necessary clinical changes to support the diagnosis. Urinary tract infections (UTIs) are diagnosed by using urine lab studies, but treatment often begins without supporting symptoms.[5] Misdiagnosed illnesses, such as CAP and UTIs, highlight the importance of symptom evaluation, appropriate testing, and consideration of differential diagnoses to minimize preventable harm.[5]

Radiation Safety in Pediatric Computed Tomography (CT)

Radiation exposure from CT is a known risk factor for cancer. This tool is readily available for use and can be used with a high level of accuracy, which results in overuse in some areas of healthcare.[6] CT is vital to rapid diagnostic evaluation but must be used appropriately in people of varying ages. Specifically, children are more sensitive to radiation than adults.[7] More than 5 million CT examinations are performed annually on children in the U.S. Without proper dosing of radiation during these examinations, children are at a much higher risk for developing radiation-related cancer.[7]

Healthy Working Environment for Nurses

Fostering a healthy work environment is important in all professions. During the coronavirus disease 2019 (COVID-19) pandemic, healthcare workers experienced burnout and fatigue at much greater levels.[8] Staffing shortages and quality concerns continue to plague an already weary workforce and threaten the infrastructure of healthcare. Survival rates for an in-hospital cardiac arrest is 16 percent lower in hospitals with poor work environments, and other patient outcomes may be similarly impacted by the nursing work environment and staffing levels.[9] Fostering a healthy environment is vital for patient and caregiver safety and wellness.[10]

Blood Culture Contamination

Blood cultures are a critical diagnostic tool designed to enhance patient care; however, blood culture contamination is costly to patients and healthcare institutions. Many patients have treatment initiated unnecessarily, and costs accrue in the form of avoidable hospital days, increased pharmaceutical expenses, complications, and additional testing needs.[11] Blood cultures are a critical diagnostic tool designed to enhance patient care.

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), which includes measures for the improper diagnosis of illness, appropriate radiation dosing, falls, pressure ulcers, etc. This portfolio contains 51 measures: 20 process measures, 21 outcome and resource use measures, three composite measures, three structure measures, and four intermediate outcome measures.

Additional measures have been assigned to other portfolios. These include care coordination measures (Geriatrics and Palliative Care), imaging efficiency measures (Cost and Efficiency), and a variety of condition- or procedure-specific outcome measures (Cardiovascular, Cancer, Renal, etc.).

Patient Safety Measure Evaluation

On June 23 and 28, 2022, the Patient Safety Standing Committee evaluated three new measures and three measures undergoing maintenance review against NQF's standard measure evaluation criteria.

Table 1. Patient Safety Measure Evaluation Summary

Measure	Maintenance	New	Total
Measures under review for endorsement	3	3	6
Measures recommended for endorsement	2	3	5
Measures for which consensus is not yet reached	1	0	1
Reasons for not recommending	Importance – 1	N/A	-

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Scientific Methods Panel Measure Evaluation

Prior to the Standing Committee's review, the Scientific Methods Panel (SMP) reviewed one complex measure in this topic area. The SMP passed this measure during its measure evaluation. Measures that passed the SMP's review or for which the SMP did not reach consensus were reviewed by the Standing Committee.

A meeting summary detailing the SMP's measure evaluation for the spring 2022 cycle is available on the SMP webpage.

Comments Received Prior to Standing Committee Evaluation

NQF accepts 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 May 10, 2022, and pre-meeting commenting closed on June 7, 2022. As of June 7, 2022, two comments have been submitted and shared with the Standing Committee prior to the measure evaluation meeting(s) (Appendix F).

NQF members had the opportunity to express their support ("support" or "do not support") for each measure submitted for endorsement consideration to inform the Standing Committee's recommendations during the commenting period. This expression of support (or not) during the commenting period replaces the member voting opportunity that was previously held subsequent to the Standing Committee's deliberations. No expressions of support (or non-support) have been received as of June 7, 2022.

Summary of Measure Evaluation

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

Improper Diagnosis of Illness

NQF #3690 Inappropriate Diagnosis of Urinary Tract Infection (UTI) in Hospitalized Medical Patients (University of Michigan/Michigan Hospital Safety Consortium): Recommended

Description: The inappropriate diagnosis of UTI in hospitalized medical patients (or "Inappropriate Diagnosis of UTI") measure is a process measure that evaluates the annual proportion of hospitalized adult medical patients treated for UTI who do not meet diagnostic criteria for UTI (thus are inappropriately diagnosed and overtreated); **Measure Type**: Process; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Electronic Health Data

This facility-level measure was newly submitted for endorsement. It is currently used in an accountability program by the Michigan Hospital Medicine Safety Consortium.

During the evidence discussion, the Standing Committee noted that the justification for the measure is largely focused on a 2019 guideline from the Infectious Disease Society of America (IDSA) that did not

recommend treatment for asymptomatic bacteria in the urine (also known as "bacteriuria"). The Standing Committee ultimately passed the measure on evidence. During the discussion on performance gap, the Standing Committee questioned why there were differences based on insurance for the measure gap. The developer clarified that it was likely due to Medicare patients being older and having higher rates of asymptomatic bacteriuria. The Standing Committee ultimately passed the measure on performance gap.

The Standing Committee discussed some concerns with the measure's specifications, including potential delays in diagnosis and treatment in patients who are unable to report symptoms. The developer referred to the growing evidence that treating asymptomatic bacteriuria in the elderly without other symptoms was not shown to improve outcomes. The Standing Committee also requested clarification on how the measure performed in small hospitals. In response, the developer informed the Standing Committee that the measure was not tested in critical access hospitals but *was* tested in small hospitals, and that almost all of them could obtain sufficient samples to meet pre-determined reliability thresholds. The Standing Committee ultimately passed the measure on reliability.

The Standing Committee had several questions about the validity of the measure. It sought confirmation that only patients who received antibiotics would be included in the measure and asked about measure exclusions, specifically when patients are not able to verbalize symptoms of UTI. The developer responded by explaining that they ultimately decided to define the measure based on the 2019 IDSA guideline, which stated that patients with altered mental status or who were unable to provide symptoms, they would be able to meet the definition through systemic inflammatory response syndrome (SIRS) or physical examination findings (e.g., costovertebral angle tenderness). The Standing Committee ultimately passed the measure on validity.

During the review of feasibility, the Standing Committee questioned whether hospitals outside of the Michigan collaborative would be able to implement this measure, highlighting that 22.5 percent of hospitals in Michigan reported having trouble extracting data for the measure, the abstractor training takes a full day and smaller hospitals may not have adequate staffing to accommodate the measure. The developer reassured the Standing Committee that the abstraction for the measure was similar to other chart review measures currently in use. The Standing Committee ultimately decided to pass the measure on feasibility.

Regarding the use of this measure, a Standing Committee member noted that it may be more difficult to generalize the use of this measure outside of Michigan where there are incentives to invest resources into measure abstraction. The Standing Committee had no other concerns and passed the measure on use. The Standing Committee also discussed the possibility of unintended consequences, particularly whether delays in diagnosis lead to delays in treatment and subsequent morbidity, such as higher rates of sepsis and dissatisfaction from patients who were not given antibiotics; it also noted that 25 percent of hospitals also foresaw such unintended consequences. Ultimately, the Standing Committee decided to pass the measure on usability and overall suitability for endorsement.

NQF #3671 Inappropriate Diagnosis of Community-Acquired Pneumonia (CAP) in Hospitalized Medical Patients (University of Michigan/Michigan Hospital Medicine Safety Consortium): Recommended

Description: The inappropriate diagnosis of CAP in hospitalized medical patients (or "Inappropriate Diagnosis of CAP") measure is a process measure that evaluates the annual proportion of hospitalized

adult medical patients treated for CAP who do not meet diagnostic criteria for pneumonia (thus are inappropriately diagnosed and treated); **Measure Type**: Process; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Electronic Health Records; Electronic Health Data; Other (chart review)

This facility-level measure was newly submitted for endorsement. It is currently used in an external benchmarking program by the Michigan Hospital Medicine Safety Consortium.

The Standing Committee first discussed evidence, and whether the measure appropriately associated the diagnosis of pneumonia, rather than antibiotic overuse, with adverse outcomes. The concern was that the clinical diagnosis of pneumonia does not fully correlate with the measure's definition. The Standing Committee ultimately passed the measure on evidence. Overall, the Standing Committee agreed that a gap existed. However, one Standing Committee member expressed concern with whether the observed gap reflected real differences in quality of care or whether it was due to the aforementioned issues with the definition of pneumonia. Ultimately, the Standing Committee agreed that the data sufficiently captured that a gap exists due to the quality of care that existed and passed the measure on performance gap.

The Standing Committee had no concerns with the reliability testing for this measure and passed the measure on reliability. For validity, a Standing Committee member expressed appreciation for the way in which the measure identified patients who did not have pneumonia. The Standing Committee had no concerns and passed the measure on validity. The Standing Committee's concerns on the measure's feasibility were very similar to those for the previous measure, NQF #3690, since NQF #3671 is also a chart abstraction measure; it ultimately decided to pass the measure on feasibility.

While the measure was tested in a variety of hospitals, a Standing Committee member questioned whether the measure would be as usable outside of collaborative networks. Although the measure is not currently publicly reported, the developer informed the Standing Committee of ongoing conversations to include it in public programs; the Standing Committee ultimately passed the measure on use. It also brought up similar concerns to the last measure about possible unintended consequences regarding delays in diagnosis and a potential increase in sepsis rates. The Standing Committee noted that the rate of inappropriate diagnoses had dropped by 32 percent since the program was launched and passed the measure on usability and overall suitability for endorsement.

Radiation Safety in Pediatric Computed Tomography

NQF #2820 Pediatric Computed Tomography (CT) Radiation Dose (University of California, San Francisco): Recommended

Description: Radiation dose is measured as the dose-length product for every diagnostic brain, skull, and abdomen and pelvis CT scan performed by a reporting facility on any child less than 18 years of age during the reporting period of 12 months. The dose associated with each scan is evaluated as "high" or "acceptable," relative to the 75th percentile benchmark for that type of scan and age of patient. Median doses are calculated at the facility level for each type of scan and age of patient stratum, and then compared with the same 75th percentile benchmark. The overall proportion of high dose exams is calculated including all CT scans; **Measure Type**: Outcome: Intermediate Clinical Outcome; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital; Outpatient Services; **Data Source**: Electronic Health Data; Electronic Health Records; Registry Data

This maintenance measure was originally endorsed in 2016. It is currently used by the Leapfrog Group and is publicly reported as part of their Hospital and Surgery Center Ratings.

The radiology expert on the Patient Safety Standing Committee was recused from the discussion due to a conflict of interest; therefore, NQF invited Dr. Robert Rosenberg, a radiologist from the Cancer Standing Committee, to serve as a non-voting consultant and subject-matter expert (SME) for this measure to aid the Patient Safety Standing Committee in the discussion of this scientifically complex measure.

The Standing Committee noted that the evidence for this measure has remained strong since its last review, with additional supportive studies provided, and passed the measure on evidence. In addition, the Standing Committee agreed that a performance gap existed but questioned why patients with low socioeconomic status receive higher doses of radiation. The developer explained that the number of CTs is higher in poorer areas and clarified that the measure under discussion focuses on dose per scan, for which there is not a disparity associated with this variable. The Standing Committee ultimately passed the measure on performance gap.

The SMP reviewed this measure prior to the meeting and passed it on both reliability and validity. The Standing Committee agreed that the reliability testing scores were high but questioned how the binary nature of the measure affected the reliability. The developer stated that the threshold approach proved more reliable than adding more categories, particularly at non-children's hospitals that do not have a high number of scans in subcategories. The Standing Committee ultimately passed the measure on reliability. The Standing Committee also discussed the validity testing, noting the high sensitivity and specificity of the measure; it had no concerns and passed the measure on validity.

The Standing Committee also had no concerns with the measure's feasibility because the data elements for this measure are in defined fields in electronic sources; and therefore, it passed the measure on feasibility. This measure is also currently in use. Likewise, the Standing Committee had no concerns and passed the measure on use. With regard to usability, the Standing Committee expressed concern that this measure might lead to repeat CT scans. The developer noted that a close relationship typically exists between the technologist and the radiologist to optimize image quality and that any need for rescanning would be very small in comparison to the overall variation in dose. The Standing Committee ultimately passed the measure on usability.

Healthy Work Environment for Nurses

NQF #3450 Practice Environment Scale Nursing Work Index (PES-NWI) (Composite and Five Subscales) (University of Pennsylvania, Center for Health Outcomes and Policy Research): Recommended

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**: Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Instrument-Based Data

This facility-level measure was originally endorsed in 2009 and last retained endorsement in 2019. It is publicly reported and used in several accountability programs as well as benchmarking and internal quality improvement programs.

Since the measure's last endorsement, the developer included new evidence connecting better hospital nurses' work environments to positive patient outcomes. The Standing Committee had no concerns and

passed the measure on evidence. During the discussion on performance gap, a Standing Committee member noted that while the measure scores have improved since 2006 (in the data provided for the measure's initial endorsement), there is still a gap in performance, and the data show that lower scores on the instrument were associated with higher rates of poor socioeconomic status. Other Standing Committee members expressed concerns with the lack of disparities testing, especially considering how long the measure has been in use. Unfortunately, the Standing Committee was not able to reach consensus on performance gap.

The developer provided studies demonstrating reliability at both the encounterand accountable-entity levels. The Standing Committee had no concerns and passed the measure on reliability. One of these studies was also used to show validity testing at the accountable-entity level. The Standing Committee discussed whether this measure was susceptible to selection bias. A Standing Committee member shared that many hospitals mandate completion of this survey, and another member noted that research was also done on non-respondents and the responses were found to be similar to the respondents. The Standing Committee ultimately passed the measure on validity.

The Standing Committee had no concerns with the measure's feasibility or use since the survey can be collected through electronic survey software and the measure is in use and currently publicly reported. The Standing Committee ultimately passed the measure on feasibility and use. For usability, the Standing Committee expressed concerns that the improvement shown on the measure from 2006 to 2016 was negligible, but it ultimately decided to pass the measure on usability, stating that even small gains could be clinically significant. A vote on overall suitability for endorsement was not taken since the Standing Committee did not reach consensus d on performance gap.

Blood Culture Contamination

NQF #3658 Adult Blood Culture Contamination Rate (Centers for Disease Control and Prevention): Recommended

Description: The blood culture contamination measure follows healthcare providers' adherence to pre-analytic blood culture collection instructions established by the hospital clinical laboratory in patients 18 years or older. Blood culture contamination is defined as having certain commensal organisms isolated from only one blood culture set out of two or more sets collected within a 24-hour period. A secondary related measure is the single set blood culture rate in patients 18 years or older. A single set blood culture in a 24-hour period is not an adequate volume of blood to make an accurate diagnosis of bacteremia and a single set blood culture positive predefined commensal organisms cannot be evaluated using the definition for possible contamination without the second set blood culture; **Measure Type**: Process; **Level of Analysis**: Facility; **Setting of Care**: Inpatient/Hospital; **Data Source**: Other (specify): Laboratory Information Systems (LIS) data; Blood Culture Analyzer Software

This facility-level measure was newly submitted for endorsement and is currently used for internal quality improvement at facilities.

The Standing Committee agreed with the evidence that driving down rates of blood culture contamination can improve both antibiotic stewardship and reduce overuse and passed the measure on evidence. The Standing Committee also noted varying levels of performance scores between data quartiles presented by the developer and passed the measure on performance gap.

During the reliability discussion, the Standing Committee questioned whether emergency departments (Eds) had higher rates of contamination. In response, the developer explained that while this may be

true, they did not have data to show it. Another Standing Committee member noted that the higher ED rates could be because it can be more difficult to obtain blood cultures in this population, thereby potentially increasing the rate of contamination. The Standing Committee did not believe this issue warranted too much concern and passed the measure on reliability. In addition, the Standing Committee largely found the face validity testing the developer provided to be sufficient and passed the measure on validity.

The Standing Committee quorum was lost following the discussion of and vote on reliability. Therefore, voting for the measure occurred offline for validity, feasibility, use, usability, and overall suitability for endorsement. The Standing Committee noted that the data are generated by a lab professional, using lab software for data analysis, and had no concerns about the implementation of the measure. The Standing Committee passed the measure on feasibility. This measure is currently used for quality improvement at several hospitals, and a plan is underway for its use in accountability programs. The Standing Committee passed the measure on use. For usability, a Standing Committee member expressed concernthat anemia can be a major problem in hospitalized patients. In response, another Standing Committee member explained that while there may be issues with anemia, this is more related to daily labs rather than blood cultures, which are a rarer event. The Standing Committee noted the data provided pertaining to the use of the measure by Johns Hopkins hospitals and that blood culture contamination rates dropped from 3-4 percent to 1 percent. The Standing Committee passed the measure on usability and overall suitability for endorsement.

Medication Reconciliation

NQF #0097 Medication Reconciliation Post-Discharge (National Committee for Quality Assurance): Recommended

Note: ***Discussion and voting on validity and suitability for endorsement ONLY***

Description: The percentage of discharges from January 1–December 1 of the measurement year for patients 18 years of age and older for whom medications were reconciled the date of discharge through 30 days after discharge (31 days total); **Measure Type**: Process; **Level of Analysis**: Health Plan; **Setting of Care**: Outpatient Services; **Data Source**: Claims, Electronic Health Records, Paper Medical Records

This measure was originally reviewed during the fall 2020 cycle as a maintenance measure. During that time, an error was made in calculating whether the measure passed on validity. The measure was stated to have passed but was in fact "consensus not reached" on validity. The error was not identified until after the fall 2020 post-comment call, where "consensus not reached" votes are typically resolved. Therefore, the discussion and revote on validity, and subsequently on overall suitability for endorsement, were moved to the current spring 2022 measure evaluation meeting. While the measure was reviewed during the cycle's initial measure evaluation meeting, the review of the measure should be seen as a post-comment review, where greater than 60 percent consensus was needed to pass the measure; the measure would then proceed to the fall 2021 Consensus Standards Approval Committee (CSAC) meeting instead of to post-evaluation commenting. The previous discussion and voting can be found in the Fall 2020 Technical Report. This measure retained endorsement in the interim.

This health plan-level measure was originally endorsed in 2007 and last received maintenance endorsement in 2015. It is and has been used in several federal programs, including reported Physician Quality Reporting Systems (PQRS) and the Centers for Medicare and Medicaid Services (CMS) Medicare Advantage Plan Rating System (STARS) Program.

The Standing Committee discussed whether documentation of medication reconciliation was a surrogate of whether medical reconciliation was performed effectively or simply whether any discrepancies were detected. A Standing Committee member noted that while this measure is not perfect, it does drive actions by clinicians to assess medications. Another member of the Standing Committee noted that the medication reconciliation performed by pharmacists also detects issues that are then remediated. Another Standing Committee member commented that medication reconciliation was more of an intermediary step and that the question of outcomes of changing medications or accuracy of medication reconciliation may be more effective as a separate measure, though it was also stated that medication reconciliation is a complicated process, and it may be problematic to create a measure related to medication reconciliation accuracy. Ultimately, the Standing Committee passed the measure on validity and overall suitability for endorsement.

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Appendix A: Details of Measure Evaluation

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

NQF ensures that quorum is maintained for all live voting. Quorum is 66 percent of active Standing Committee members minus any recused Standing Committee members. Due to the exclusion of recused Standing Committee members from the quorum calculation, the required quorum for live voting may vary among measures. The quorum (15 out of 22 Standing Committee members for NQF #3450 and NQF #0097 and 14 out of 21 Standing Committee members for NQF #3690, NQF #3671, and NQF #2820) was met and maintained throughout the review of these measures. The quorum for NQF #3658 (15 out of 22 Standing Committee members) was lost during its discussion. Therefore, the Standing Committee discussed all remaining criteria for NQF #3658 and voted after the meeting using an online voting tool. The Standing Committee received a recording of the meeting and a link to submit online votes. Voting closed after a minimum of 48 hours with the minimum number of votes required for quorum. Voting results are provided below.

A measure is recommended for endorsement by the Standing Committee when greater than 60 percent of voting members select a passing vote option (i.e., Pass, High and Moderate, or Yes) on all must-pass criteria and overall suitability for endorsement. A measure is not recommended for endorsement when less than 40 percent of voting members select a passing vote option on any must-pass criterion or overall suitability for endorsement. If a measure does not pass a must-pass criterion, voting during the measure evaluation meeting will cease. The Standing Committee will not re-vote on the measures during the post-comment meeting unless the Standing Committee decides to reconsider the measure(s) based on submitted comments or a formal reconsideration request from the developer. The Standing Committee has not reached consensus on a measure if between 40 and 60 percent of voting members select a passing vote option on any must-pass criterion or overall suitability for endorsement. The Standing Committee will re-vote on criteria for which consensus was not reached and potentially overall suitability for endorsement during the post-comment web meeting.

Measures Recommended

NQF #3690 Inappropriate Diagnosis of Urinary Tract Infection in Hospitalized Medical Patients

Measure Worksheet Specifications

Description: The inappropriate diagnosis of UTI in hospitalized medical patients (or "Inappropriate Diagnosis of UTI") measure is a process measure that evaluates the annual proportion of hospitalized adult medical patients treated for UTI who do not meet diagnostic criteria for UTI (thus are inappropriately diagnosed and overtreated).

Numerator Statement: The measure quantifies adult, hospitalized medical patients inappropriately diagnosed with UTI. Here, inappropriate diagnosis is defined as patients treated with antibiotics for UTI who do not meet diagnostic criteria for UTI. Patients were considered inappropriately diagnosed if they received antibiotic therapy for a UTI but did not have at least one sign or symptom of a UTI.

Denominator Statement: The denominator includes all adult, general care, immunocompetent, medical patients hospitalized and treated for UTI who do not have a concomitant infection.

Exclusions: Left against medical advice or refused medical care, Admitted on hospice, Pregnant or breastfeeding, Spinal cord injury, UTI-related complication (e.g., perinephric abscess [Operationalized as >14 days of antibiotics at discharge])

Adjustment/Stratification: N/A

Level of Analysis: Facility

Setting of Care: Inpatient/Hospital

Type of Measure: Process
Data Source: Electronic Health Data
Measure Steward: University of Michigan

STANDING COMMITTEE MEETING [June 23, 2022]

1. Importance to Measure and Report:

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

1a. Evidence: **Total votes-17**; **M-15**; **L-1**; **I-1**; 1b. Performance Gap: **Total votes- 17; H-6**; **M-10**; **L-1**; **I-0**

Rationale:

- The Standing Committee highlighted that the justification for the measure largely focused on the guideline from the May 2019 *Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America (IDSA)*, which did not recommend treatment for asymptomatic bacteria in the urine (also known as "bacteriuria"), which is often incorrectly diagnosed as a UTI.
- The Standing Committee agreed that the evidence supported tracking the annual proportion of hospitalized adult medical patients treated for UTIs who do not meet diagnostic criteria for a UTI, noting that because urine is frequently checked in hospitalized medical patients, symptoms for other illnesses are often misdiagnosed as a UTI.
- The Standing Committee noted that the testing showed that of 13,805 patients treated for a UTI, 23.2% were inappropriately diagnosed.
- The Standing Committee also observed that one study found that as many as 20% of patients who receive antibiotics experienced at least one antibiotic-associated adverse event.
- The Standing Committee questioned why there were differences in the performance gap based on insurance. The developer clarified that it was likely due to Medicare patients being older and having higher rates of asymptomatic bacteriuria.
- The Standing Committee passed the measure on evidence and performance gap.

2. Scientific Acceptability of Measure Properties:

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

2a. Reliability: **Total votes-17**; **H-3**; **M-13**; **L-1**; **I-0**; 2b. Validity: **Total votes-17**; **H-4**; **M-12**; **L-1**; **I-0**

Rationale:

- The SMP did not review this measure.
- Regarding the measure specifications, the Standing Committee discussed that delays could occur in diagnosis and treatment in patients who are unable to report symptoms. The developer referred to the growing evidence that treating asymptomatic bacteriuria in the elderly without other symptoms was not shown to improve outcomes.
- Another Standing Committee member expressed concern that some of the symptoms in the definition of UTI may be chronic (e.g., dysuria or urinary frequency); however, the developer clarified that chronicity was not taken into account to better accommodate clinicians in the decision making.
- The Standing Committee noted that reliability testing was conducted at both the accountable-entity and the patient/encounter levels. At the accountable-entity level, the Standing Committee noted that the intraclass correlation coefficient (ICC) was low (0.0641); however, the developer clarified in a public comment that this ICC represents one data point and that a reliability score of 0.9 was achieved across the testing cohort. The Standing Committee had no further concerns on this issue.
- The Standing Committee requested clarification on how the measure performed in small hospitals.

- The developer stated that the measure was tested in small hospitals and that almost all of them could obtain sufficient samples to meet predetermined reliability thresholds. The Standing Committee agreed that the measure was reliable.
- The Standing Committee noted that the validity testing was conducted at both the accountable-entity level (including both face validity and empirical testing of the measure score) and the patient/encounter level using structured implicit case reviews and case audits. It also noted that the testing was sufficient but requested clarification on the measure exclusions.
- The Standing Committee sought confirmation that only patients who received antibiotics would be included in the measure and asked about measure exclusions, specifically when patients are not able to verbalize symptoms of UTI.
- The developer responded by explaining that the measure was based on the 2019 IDSA guideline, which stated that patients with altered mental status or who were unable to provide symptoms would be able to meet the definition through systemic inflammatory response syndrome (SIRS) or physical examination findings (e.g., costovertebral angle tenderness).
- The Standing Committee asked a follow-up question, noting that patients who do not have symptoms may also not have other signs, such as fever, and it still may be reasonable to treat patients.
- The developer again clarified that the 2019 IDSA guideline recommends watchful waiting in patients with altered mental status and bacteriuria because those patients often have altered mental status due to other causes (e.g., dehydration), which should be addressed first. In addition, the developer referenced a study in similar patients who were treated or not treated with antibiotics and found there were no differences in the outcomes, except that those patients treated with antibiotics had higher rates of antibiotic-associated complications.
- The Standing Committee passed the measure on reliability and validity.

3. Feasibility: Total votes-16; **H-0; M-13; L-3; 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:

- The Standing Committee questioned whether hospitals outside of the Michigan collaborative would be able to implement this measure, considering it is a chart abstraction measure, which takes considerable time, effort, and experience to accomplish. The Standing Committee noted that the submission mentioned that 22.5% of hospitals in Michigan reported having trouble extracting data for the measure. The Standing Committee shared an additional concern: The training to be an abstractor for the measure takes a full day. The developer responded by explaining that this measure requires a similar amount of time to abstract as other abstraction measures that have already been endorsed; they also expressed that abstraction is a common method for reporting data.
- A few Standing Committee members voiced concerns for small hospitals that do not have sufficient staff, specifically noting that the roles required for abstractors (i.e., infection preventionist or nurse) have become scarcer since the onset of the COVID-19 pandemic, which may pose additional challenges around data collection. The developer noted that most hospitals that reported difficulties were still able to obtain the data for the measure.
- The Standing Committee ultimately agreed that the measure was feasible despite their concerns and passed the measure on feasibility.

4. Usability and Use:

(Used and useful to the intended audiences for 4a. Accountability and Transparency; 4b. Improvement; and 4c. Benefits outweigh evidence of unintended consequences)

4a. Use**: Total votes-16**; **Pass-15; No Pass-1**; 4b. Usability: **Total votes-16**; **H-3; M-12; L-1; I-0**

Rationale:

- The Standing Committee highlighted that the measure is currently used by the Michigan Hospital Medicine Safety Consortium.
- The Standing Committee expressed that it may be more difficult to generalize the use of this measure outside of Michigan, where there are incentives to invest resources into measure abstraction; however, it agreed that the measure met the use criterion as a new measure.
- The Standing Committee also discussed the possibility of unintended consequences. It was concerned that delays in diagnosis could lead to delays in treatment and subsequent morbidity. The Standing Committee also noted that there could be higher rates of sepsis as well as dissatisfaction from patients who were not given antibiotics, noting that the data show 25% of hospitals also foresaw such unintended consequences. Ultimately, the Standing Committee decided these issues were not of significant concern and passed the measure on usability.

5. Related and Competing Measures

- This measure is related to the following measures:
    - NQF #0138 National Healthcare Safety Network (NHSN) Catheter-Associated Urinary Tract Infection (CAUTI) Outcome Measure
    - NQF #0684 Percent of Residents With a Urinary Tract Infection (Long Stay)

- The Standing Committee was unable to discuss related and competing measures during the measure evaluation meeting but will have the opportunity to do so during the post-comment call.

6. Standing Committee Recommendation for Endorsement: **Total votes- 16**; **Yes-15**; **No-1**

7. Public and Member Comment

- Two public comments were submitted by the measure developer to help clarify the results of the reliability and validity testing.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision

9. Appeals

NQF #3671 Inappropriate Diagnosis of Community-Acquired Pneumonia (CAP) in Hospitalized Medical Patients

Measure Worksheet | Specifications

Description: The inappropriate diagnosis of CAP in hospitalized medical patients (or "Inappropriate Diagnosis of CAP") measure is a process measure that evaluates the annual proportion of hospitalized adult medical patients treated for CAP who do not meet diagnostic criteria for pneumonia (thus are inappropriately diagnosed and treated).

Numerator Statement: The measure quantifies adult, hospitalized medical patients inappropriately diagnosed with pneumonia. Here, inappropriate diagnosis is defined as patients treated with antibiotics for CAP who do not meet diagnostic criteria for pneumonia. Patients are considered inappropriately diagnosed if they did not have 2 or more signs or symptoms of pneumonia (documented at some point in the 2 days prior to the hospital encounter through the first 2 days of the hospital encounter) AND meet radiographic criteria for pneumonia.

Denominator Statement: The denominator includes all adult, general care, immunocompetent, medical patients hospitalized and treated for CAP who do not have a concomitant infection.

Exclusions: Patients are excluded from the denominator if they are/have: left against medical advice or refused medical care, admitted on hospice, pregnant or breastfeeding, cystic fibrosis, pneumonia-related complication (e.g., empyema)
Adjustment/Stratification: N/A
Level of Analysis: Facility
Setting of Care: Inpatient/Hospital
Type of Measure: Process
Data Source: Electronic Health Records
Measure Steward: University of Michigan

STANDING COMMITTEE MEETING [June 23, 2022]

1. Importance to Measure and Report:

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

1a. Evidence: **Total votes-16**; **H-0**; **M-11**; **L-3**; **I-2**; 1b. Performance Gap: **Total votes- 16; H-0**; **M-14**; **L-1**; **I-1**

Rationale:

- The Standing Committee agreed that the evidence, which mainly consisted of two studies supporting that CAP is inappropriately diagnosed in hospitals and three studies supporting the harm associated with unnecessary antibiotic use, supported the measure but questioned whether the measure appropriately associated the diagnosis of pneumonia, rather than antibiotic overuse, with adverse outcomes.
- The Standing Committee noted that the clinical diagnosis of pneumonia does not fully correlate with the measure's definition, noting that a clinical diagnosis of pneumonia involves clinical input rather than being assessable solely with an algorithm.
- The Standing Committee also highlighted that the evidence on the inappropriate diagnosis showed differences between ED diagnosis and discharge diagnosis and questioned whether the measure used a reasonable way of making an inappropriate diagnosis.
- The developer responded by explaining that a narrow case definition exists to ensure that patients with normal chest x-rays and few signs of pneumonia were not inappropriately counted; they also stated that the measure is designed to be undercounted.
- The Standing Committee accepted the developer's rationale and passed the measure on evidence.
- The Standing Committee agreed that the data demonstrated a gap in care, noting that in 2019, the median hospital in the best-performing decile had 4.5 percent of cases inappropriately diagnosed with a CAP. The worst performing decile had 22.4 percent of cases inappropriately diagnosed with a CAP.
- A Standing Committee member questioned whether the observed gap reflected real differences in quality of care or whether it was due to the aforementioned issues with the definition of pneumonia.
- The Standing Committee decided that the data showed a sufficient continued gap in performance that the measure could help to address and passed the measure on performance gap.

2. Scientific Acceptability of Measure Properties:

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

2a. Reliability: **Total votes-16**; **H-1**; **M-13**; **L-1**; **I-1**; 2b. Validity: **Total votes-15**; **H-1**; **M-12**; **L-0**; **I-2**

Rationale:

- The SMP did not review this measure.
- The Standing Committee noted that reliability was tested in a sample of 49 hospitals and the ICC was 0.0525, which appeared low.
- The developer clarified that this ICC applied to each case. Using the Spearman-Brown formula, the reliability would be 0.8 if 73 or more cases were reviewed per hospital.
- The Standing Committee passed the measure on reliability.

- The Standing Committee also noted that the developer conducted several types of validity testing, including face validity testing, empirical measure validity testing, and structured implicit case reviews, with moderate to strong results.
- The Standing Committee asked the developer to clarify the exclusions and the developer explained that patients with COVID-19 were excluded from the measure, as well as patients who went to the intensive care unit (ICU) or who were placed on ventilators.
- A Standing Committee member expressed appreciation for the way in which the measure identified patients who clearly did not have pneumonia.
- The Standing Committee passed the measure on validity.

3. Feasibility: Total votes-15; **H-1; M-10; L-3; I-1**

(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:

- The Standing Committee questioned whether hospitals outside of the Michigan collaborative would be able to implement this measure, considering it is a chart abstraction measure, which takes considerable time, effort, and experience to accomplish.
- The Standing Committee expressed concerns about the length of time needed for case review (20-30 minutes). The developer clarified that this process takes no longer to report than other chart review measures that are already endorsed.
- The Standing Committee ultimately agreed that the measure was still feasible despite these concerns and passed the measure on feasibility.

4. Usability and Use:

(Used and useful to the intended audiences for 4a. Accountability and Transparency; 4b. Improvement; and 4c. Benefits outweigh evidence of unintended consequences)

4a. Use**: Total votes-15**; **Pass-14; No Pass-1**; 4b. Usability: **Total votes-15**; **H-1; M-10; L-3; I-1**

Rationale:

- The Standing Committee noted that the measure is currently being used in an external benchmarking program through Blue Cross Blue Shield of Michigan.
- The Standing Committee expressed concerns about the potential unintended consequences of delays in diagnosis and resulting increases in sepsis.
- A Standing Committee member questioned whether the measure would be applicable outside of a collaborative network. Other Standing Committee members noted that the measure was tested in a variety of hospital types (e.g., small, large, for-profit, and non-profit), which demonstrates that it would be usable in different settings.

5. Related and Competing Measures

- This measure is related to the following measure:
  - NQF #0468 Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization
- The Standing Committee was unable to discuss related and competing measures during the measure evaluation meeting but will have the opportunity to do so during the post-comment call in October 2022.

6. Standing Committee Recommendation for Endorsement: **Total votes- 16**; **Yes-13**; **No-3**

7. Public and Member Comment

- Two public comments were submitted by the measure developer to help clarify the results of the reliability and validity testing.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision

9. Appeals

NQF #2820 Pediatric Computed Tomography (CT) Radiation Dose

Measure Worksheet | Specifications

Description: Radiation dose is measured as the dose-length product for every diagnostic brain, skull, and abdomen and pelvis CT scan performed by a reporting facility on any child less than 18 years of age during the reporting period of 12 months. The dose associated with each scan is evaluated as "high" or "acceptable," relative to the 75th percentile benchmark for that type of scan and age of patient. Median doses are calculated at the facility level for each type of scan and age of patient stratum, and then compared with the same 75th percentile benchmark. The overall proportion of high dose exams is calculated including all CT scans.

Numerator Statement: The number of diagnostic CT scans within an eligible anatomic region (i.e., brain, skull, abdomen and pelvis) and age stratum for which the radiation dose (measured in dose-length product, DLP) exceeds the 75th percentile benchmark for that type of scan and age of patient.

Denominator Statement: The denominator is the total number of diagnostic CT scans within an eligible anatomic region and age stratum (infant (<1 year); small child (1-4); medium child (5-9); large child (10-14) and adolescent (15-17) that were performed during the reporting period. These totals are summed to generate the total number of diagnostic CT scans within all eligible anatomic regions and age strata.

Exclusions: Examinations with missing anatomic area, patient age, or missing dose length product are excluded.

Adjustment/Stratification: N/A

Level of Analysis: Facility

Setting of Care: Inpatient/Hospital; Outpatient Services

Type of Measure: Outcome: Intermediate Clinical Outcome

Data Source: Electronic Health Records; Electronic Health Records; Registry Data

Measure Steward: University of California, San Francisco

STANDING COMMITTEE MEETING [June 23, 2022]

1. Importance to Measure and Report:

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

1a. Evidence: **Total votes-17**; **H-5**; **M-11**; **L-1**; **I-0**; 1b. Performance Gap: **Total votes- 17**; **H-8**; **M-9**; **L-0**; **I-0**

Rationale:

- National Quality Forum (NQF) invited Dr. Robert Rosenberg, a radiologist from the Cancer Standing Committee, to serve as a non-voting consultant and SME for this measure to aid the Patient Safety Standing Committee in the discussion of this measure.
- The Standing Committee noted that since the last review of the measure in 2016, the developer presented two additional systematic reviews showing evidence of the increased cancer risk from low-dose ionizing radiation use in CT scans. The Standing Committee also noted that a large body of epidemiological evidence now supports this linkage.
- The Standing Committee found the evidence to be strong, particularly in a pediatric population that is very susceptible to radiation.
- The Standing Committee highlighted that the average performance score on this measure was 26%, along with a standard deviation of 16% and an interquartile range of 18%.
- The Standing Committee questioned why patients from low socioeconomic status receive higher doses of radiation. The developer explained that the number of CTs is higher in poorer areas, not higher dosing per scan, and that the measure under discussion focuses on dose per scan, which does not show this disparity.

- The Standing Committee passed the measure on evidence and performance gap.

2. Scientific Acceptability of Measure Properties:

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

2a. Reliability: **Total Votes-17; Y-17; N-0; 2b. Validity: Total Votes-17; Y-17; N-0**

Rationale:

- The SMP reviewed this measure and passed it with a rating of high on reliability (**Total votes-10; H-5, M-4, L-0, I-1)** and a rating of moderate on validity **(Total votes-10; H-1, M-7, L-1, I-1).**
- The Standing Committee noted that several measure specifications were changed in the updated measure, including examinations and how the dose length product (DLP) was calculated.
- The Standing Committee questioned whether DLP was a consistent measure of the amount of radiation given and whether the age of the patient captures more variation in the amount of radiation than other measurements, such as body mass index (BMI).
- The developer explained that the DLP is the amount of energy that the machine (e.g., CT scan) produces and is a consistent measurement; they also explained that age was selected over BMI because the results were very similar when using age-based dosing versus size-based dosing. Therefore, unless a facility sees an unusually high number of obese children, age is a simpler way to determine dosage.
- The Standing Committee highlighted that the developer conducted reliability testing at the accountable-entity level by examining the University of California San Francisco (UCSF) International CT Dose Registry data and noted that agreement consistently exceeded 90% and the Cohen's kappa exceeded 0.81 for a sample size in the range of 8 to 11 anatomic areas strata, showing strong reliability.
- The Standing Committee asked how the binary nature of the measure affected its reliability. The developer noted that the threshold approach was more reliable than adding more categories, particularly at non-children's hospitals that do not have a high number of scans in subcategories.
- The Standing Committee accepted the SMP's rating for reliability.
- The Standing Committee agreed that the validity testing, which included testing at the accountable-entity level, used literature that demonstrates the relationship between organizational structures on measure performance, process of care surveys, and a randomized control trial.
- The Standing Committee noted that the submission included validity testing using a randomized trial that examined the impact of educational feedback; the submission also showed a 23–58% reduction in the proportion of high-dose exams with no change in image quality and included testing at the encounter level using an algorithm to assign categories using Current Procedural Terminology (CPT) and International Classification of Diseases, 10th Revision (ICD-10) codes compared to expert review.
- The Standing Committee accepted the SMP's rating for validity.

3. Feasibility: Total votes-17; **H-7; M-10; 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:

- The Standing Committee noted that the data elements for this measure are in defined fields in electronic sources and had no concerns about feasibility.

4. Usability and Use:

(Used and useful to the intended audiences for 4a. Accountability and Transparency; 4b. Improvement; and 4c. Benefits outweigh evidence of unintended consequences)

4a. Use**: Total votes-17**; **Pass-17; No Pass-0**; 4b. Usability: **Total votes-17**; **H-2; M-14; L-1; I-0**

Rationale:

- The Standing Committee noted that this measure is currently used by the Leapfrog Group and the results are publicly reported as part of the Hospital and Surgery Center ratings. The developer also noted that radiologists were very engaged with this measure.
- The Standing Committee expressed concerns about the potential unintended consequence of this measure leading to repeat CT scans. The developer noted that a close relationship often exists between the technologist and the radiologist to optimize image quality and that any need for rescanning is very small in comparison to the overall variation in dose.
- No improvement data over time were shown for this measure; however, the Leapfrog Group has been using them for two years and have not yet had sufficient time to demonstrate improvement. Data are expected in the near future.

5. Related and Competing Measures

- This measure is related to the following measure:
  - NQF #3621 Composite Weighted Average for Three CT Exam Types
- The Standing Committee was unable to discuss related and competing measures during the measure evaluation meeting but will have the opportunity to do so during the post-comment call in October 2022.

6. Standing Committee Recommendation for Endorsement: **Total votes- 17**; **Yes-17**; **No-0**

7. Public and Member Comment

- No public comments were received.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision

9. Appeals

NQF #3658 Adult Blood Culture Contamination Rate

Measure Worksheet | Specifications

Description: The Blood culture contamination (BCC) rate is a process measure designed to follow healthcare providers' adherence to pre-analytic blood culture collection instructions established by the hospital clinical laboratory in patients 18 years or older. Blood culture contamination is defined as having certain commensal organisms (bacteria or fungus that normally colonizes human skin, without causing disease) isolated from only one blood culture set out of two or more sets collected within a 24-hour period (this is considered a false positive test result).

Numerator Statement: Total number of blood culture sets with growth of a commensal organism in only one blood culture set out of two or three blood culture sets collected within a 24-hour period.

Denominator Statement: Total number of all blood culture sets collected which are eligible to be considered for contamination per eligibility criteria

Exclusions: Only a single set collected (must have two sets or more collected) within a 24-hour period; Patient ≤ 18 years in age.

Adjustment/Stratification: N/A

Level of Analysis: Facility

Setting of Care: Inpatient/Hospital

Type of Measure: Process

Data Source: Other (specify): Laboratory Information Systems (LIS) data; Blood Culture Analyzer Software

Measure Steward: Centers for Disease Control and Prevention

STANDING COMMITTEE MEETING [June 28, 2022]

1. Importance to Measure and Report:

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

1a. Evidence: **Total votes-15**; **H-15**; **M-0**; **L-0**; **I-0**; 1b. Performance Gap: **Total votes- 16; H-2**; **M-13**; **L-1**; **I-0**

Rationale:

- The Standing Committee noted that the evidence for this measure was drawn from a systemic review detailing the best practices for blood culture collection. There were also data demonstrating that rates of blood culture contamination can both improve antibiotic stewardship and reduce overuse.
- A Standing Committee member noted that blood culture contamination leads to higher rates of unnecessary antibiotic use, which can lead to adverse events and patient complications.
- The developer provided data from the 2012–2017 Premier database on more than 6.6 million blood cultures, noting that the median facility contamination rate was 2.67%, with the first quartile at 1.97% and the third quartile at 3.5%. For the single set culture rate, the median was 6.45%, with the first quartile at 4.25% and the third quartile at 10.43%.
- The Standing Committee passed the measure on evidence and performance gap.

2. Scientific Acceptability of Measure Properties:
(2a. Reliability – precise specifications, testing; 2b. Validity – testing, threats to validity)
2a. Reliability: **Total votes-15**; **H-7**; **M-8**; **L-0**; **I-0**; 2b. Validity: **Total votes-19**; **H-1**; **M-17**; **L-0**; **I-1**
Rationale:

- The SMP did not review this measure.
- A Standing Committee member asked why 3% was used as the benchmark for the blood culture contamination rate. The developer explained that this percentage came from the Clinical Laboratory Standards Institute, noting that if best practices are followed, the rate should actually be less than 1%.
- The Standing Committee noted that reliability testing was conducted at the accountable-entity level using split-sample testing with an agreement (ICC) between the two groups of 0.81. For the single set sub-measure, the ICC was 0.79. The Standing Committee agreed that these results show strong reliability.
- A Standing Committee member asked whether EDs had higher rates of contamination. Another member responded by explaining that this could be because it can be more difficult to obtain blood cultures in this population, which may increase the rate of contamination. The developer noted they did not have data on EDs from the Premier database to show this trend.
- The developer conducted face validity testing, with all eight SMEs agreeing that the measure was a good indicator of quality of care, which the Standing Committee found acceptable and thus passed the measure on validity.

3. Feasibility: Total votes-19; **H-4; M-15; 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:

- The Standing Committee agreed that the data would be relatively easy to obtain since blood culture contamination data are generated by a lab professional using lab software to analyze the data.
- The Standing Committee passed the measure on feasibility.

4. Usability and Use:
(Used and useful to the intended audiences for 4a. Accountability and Transparency; 4b. Improvement; and 4c. Benefits outweigh evidence of unintended consequences)
4a. Use**: Total votes-19**; **Pass-19; No Pass-0**; 4b. Usability: **Total votes-19**; **H-1; M-18; L-0; I-0**
Rationale:

- The Standing Committee noted that the measure is currently used for quality improvement at several hospitals and that the developer described a plan for future use in accountability programs.
- One Standing Committee member expressed concern that anemia can be a major concern and possible unintended consequences in taking repeat blood cultures for hospitalized patients. In response, another member explained that issues with anemia are more related to daily labs than blood cultures, which are a rarer event.
- The developer noted that by implementing the measure at Johns Hopkins hospitals, the blood culture contamination rates dropped from 3–4% to 1%.
- A Standing Committee noted that the measure was very useful for internal quality improvement.
- The Standing Committee passed the measure on use and usability.

5. Related and Competing Measures

- No related or competing measures were noted.

6. Standing Committee Recommendation for Endorsement: **Total votes- 19**; **Yes-18**; **No-1**

7. Public and Member Comment

- No public comments were received.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision

9. Appeals

NQF #0097 Medication Reconciliation Post-Discharge

Measure Worksheet | Specifications

Description: The percentage of discharges from January 1–December 1 of the measurement year for patients 18 years of age and older for whom medications were reconciled the date of discharge through 30 days after discharge (31 days total).

Numerator Statement: Medication reconciliation conducted by a prescribing practitioner, clinical pharmacist or registered nurse, as documented through either administrative data or medical record review on the date of discharge through 30 days after discharge (31 total days).

Denominator Statement: All acute or nonacute inpatient discharges on or between January 1 and December 1 of the measurement year for patients who are 18 years and older.

Exclusions: N/A

Adjustment/Stratification: N/A

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 [June 28, 2022]

2. Scientific Acceptability of Measure Properties:

(2b. Validity - testing, threats to validity)

2b. Validity: **Total votes-17**; **H-1**; **M-11**; **L-3**; **I-2**

Rationale:

- The Standing Committee noted the developer assessed construct validity by comparing medication reconciliation rates with three other Healthcare Effectiveness Data and Information Set (HEDIS) measures: *Notification of Inpatient Admission*, *Receipt of Discharge Information*, and *Patient Engagement After*

Inpatient Discharge Rate. The Standing Committee agreed that all of the measures demonstrated positive correlations with r values of 0.43–0.60, all significant at p<0.001.

- The Standing Committee highlighted that the developer also conducted face validity testing, and the Technical Expert Panel agreed with the measure's intent.
- The Standing Committee asked whether the measure included post-acute care facilities. The developer clarified that the measure applies when being discharged from one facility to another (e.g., hospital or skilled nursing facility to home) and can be conducted within 30 days.
- The Standing Committee also asked how the measure assessed medication reconciliation. The developer clarified that the measure looks for reconciliation to be documented by specific provider types within a specific time frame and must include documentation of an actual reconciliation of those medications. If the patient has no medications post-discharge, a note could be used to show compliance with the measure.
- The Standing Committee had another concern as to whether documentation of medication reconciliation was really a surrogate of whether medical reconciliation was simply performed or whether any discrepancies were detected.
- A Standing Committee member noted that the medication reconciliation performed by pharmacists does detect issues that are remediated.
- Another Standing Committee member commented that the medication reconciliation was more of an intermediary step and that outcomes of changing medications or accuracy of medication reconciliation may be a more effective measure. Other members responded by explaining that medication reconciliation is a complicated process and it may be problematic to create a measure related to medication reconciliation accuracy.
- Another Standing Committee member noted that the measure does drive actions performed by clinicians to assess medications, which is helpful in clinical care.
- NQF staff clarified that since this was considered a post-comment discussion, a "consensus not reached" option would not be available during the vote. The measure would require 60% or more passing votes to pass on validity; otherwise, it would not pass.
- The Standing Committee passed the measure on validity.

6. Standing Committee Recommendation for Endorsement: **Total votes- 16**; **Yes-12**; **No-4**

7. Public and Member Comment

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision

9. Appeals

Measures for Which Consensus Is Not Yet Reached

NQF #3450 Practice Environment Scale – Nursing Work Index (PES-NWI) (Composite and Five Subscales) (previously NQF #0206 – Undergoing Maintenance)

Measure Worksheet | 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: N/A
Adjustment/Stratification: N/A
Level of Analysis: Facility
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

STANDING COMMITTEE MEETING [June 23, 2022]

1. Importance to Measure and Report:
(1a. Evidence, 1b. Performance Gap)
1a. Evidence: **Total votes- 17**; **H-0**; **M-15**; **L-2**; **I-0**; 1b. Performance Gap: **Total votes- 17**; **H-0**; **M-9**; **L-6**; **I-2;**
Rationale:

- The Standing Committee noted that since the last endorsement, the developer provided a summary of several systematic literature reviews, including at least one review and meta-analysis of the evidence connecting hospital nurses' work environments to patient outcomes.
- The Standing Committee agreed that the evidence demonstrated that better work environments are associated with lower odds of negative outcomes and higher odds of positive outcomes.
- The Standing Committee passed the measure on evidence.
- The Standing Committee questioned why the submission did not provide data more recent than 2016 showing a continued performance gap. The developer noted that additional data up to 2020 have been provided during the pre-evaluation NQF member and public commenting period. The developer stated that the updated data demonstrated that a large gap in performance remains even though work environments appear to be improving. The developer also noted that a sufficient difference was visible across the measure to show differences in outcomes across the tertiles of the work environment score.
- The developer demonstrated that scores on the instrument were associated with higher rates of poor socioeconomic status. In addition, differences in practice environment were associated with breastfeeding at discharge in lower income mothers; nevertheless, the Standing Committee was concerned with the lack of disparities data provided as a whole and thus did not reach consensus on performance gap.

2. Scientific Acceptability of Measure Properties:
(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)
2a. Reliability: **Total votes- 16**; **H-1**; **M-14**; **L-1**; **I-0**; 2b. Validity: **Total votes- 17**; **H-1**; **M-16**; **L-0**; **I-0**
Rationale:

- The SMP did not assess this measure.

- A Standing Committee member asked what types of nurses were included in the measure. The developer clarified that this is a survey of registered nurses, who are staff nurses in direct patient care as well as contract staff.
- The developer provided additional reliability testing at the encounter level since the measure's last maintenance review, citing a meta-analysis that reviewed 51 studies and calculated reliability estimates for the 31 items in PES-NWI.
- The developer used the same study used for reliability testing to present validity testing at the accountable-entity level, with studies demonstrating that scores on the PES-NWI were associated with several patient outcomes, including mortality; readmissions; length of stay; and clinical outcomes, including restraint use, catheter-associated UTIs, nurse-reported outcomes, and patient satisfaction.
- The Standing Committee questioned whether selection bias may apply to this measure. In particular, the sample of nurses who complete the survey may not be representative of the full population. A Standing Committee member noted that completing the survey was mandated by many hospitals and that the measure's response rate was 68–70% at the unit level.
- The developer noted that in research studies, they did give incentives to respondents, and when nonresponse bias was assessed, the answers were largely unbiased.
- Another Standing Committee member noted that the COVID-19 pandemic may impact future results since nursing work has been dramatically affected.
- Ultimately, the Standing Committee passed the measure on reliability and validity.

3. Feasibility: Total votes- 17; H-5; M-11; 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:

- The Standing Committee noted that the survey can be collected through electronic survey software and passed the measure on feasibility.

4. Usability and Use:

(Used and useful to the intended audiences for 4a. Accountability and Transparency; 4b. Improvement; and 4c. Benefits outweigh evidence of unintended consequences)

4a. Use: Total votes- 17; Pass-17; No Pass-0; 4b. Usability: Total votes-18; H-2; M-14; L-2; I-0

Rationale:

- The Standing Committee noted that the measure is used for public reporting but not in federal programs; it is also used widely for internal quality improvement as well as in Veterans Health Administration and military hospitals.
- The developer stated that the Leapfrog Group is planning to add the measure to public reporting in 2023.
- The Standing Committee passed the measure on use.
- The Standing Committee noted that the score on the measure had improved from 2.70 in 2006 to 2.77 in 2016 with a change in the standard deviation of from 0.22 to 0.25.
- While the Standing Committee did question whether this was a meaningful improvement, it ultimately decided that even small gains could be clinically significant and passed the measure on usability.

5. Related and Competing Measures

- This measure is related to the following measures:
  - NQF #0204 Skill Mix (Registered Nurse [RN], Licensed Vocational/Practical Nurse [LVN/LPN], Unlicensed Assistive Personnel [UAP], and Contract)
  - NQF #0205 Nursing Hours per Patient Day

- The Standing Committee was unable to discuss related and competing measures during the measure evaluation meeting but will have the opportunity to do so during the post-comment call in October 2022.

6. Standing Committee Recommendation for Endorsement: Vote Not Taken

- A vote on overall suitability for endorsement was not taken because the Standing Committee did not reach consensus on performance gap.

7. Public and Member Comment

- One public comment was submitted by the measure developer to clarify various items related to the measure submission.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision

9. Appeals

Appendix B: Patient Safety Portfolio—Use in Federal Programs*

Measure #	Measure Title	Federal Programs (Finalized or Implemented)
0022	Use of High-Risk Medications in Older Adults (DAE)	Merit-Based Incentive Payment System (MIPS) Program Doctors and Clinicians Compare HEDIS Quality Measure Rating System
0097	Medication Reconciliation Post-Discharge	Medicare Part C Star Rating Doctors and Clinicians Compare HEDIS Quality Measure Rating System
0101	Falls: Screening, Risk-Assessment, and Plan of Care to Prevent Future Falls	None
0138	National Healthcare Safety Network (NHSN) Catheter-Associated Urinary Tract Infection (CAUTI) Outcome Measure	Hospital-Acquired Condition Reduction Program Hospital Compare Inpatient Rehabilitation Facility Quality Reporting Long-Term Care Hospital Quality Reporting Inpatient Rehabilitation Facility Compare Prospective Payment System-Exempt Cancer Hospital Quality Reporting Long-Term Care Hospital Compare
0139	National Healthcare Safety Network (NHSN) Central Line-Associated Bloodstream Infection (CLABSI) Outcome Measure	Hospital-Acquired Condition Reduction Program Hospital Compare Long-Term Care Hospital Quality Reporting Prospective Payment System-Exempt Cancer Hospital Quality Reporting Long-Term Care Hospital Compare
0204	Skill Mix (Registered Nurse [RN], Licensed Vocational/Practical Nurse [LVN/LPN], Unlicensed Assistive Personnel [UAP], and Contract)	None
0205	Nursing Hours per Patient Day	None
0468	Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Pneumonia Hospitalization	Hospital Compare

Measure #	Measure Title	Federal Programs (Finalized or Implemented)
0500	Severe Sepsis and Septic Shock: Management Bundle	Hospital Inpatient Quality Reporting
0531	Patient Safety Indicator (PSI) 90: Patient Safety and Adverse Events Composite	Hospital Compare
0537	Multifactor Fall Risk Assessment Conducted for All Patients Who Can Ambulate	Home Health Service Compare
0541	Proportion of Days Covered (PDC): 3 Rates by Therapeutic Category	None
0553	Care for Older Adults (COA) – Medication Review	None
0555	INR Monitoring for Individuals on Warfarin	Marketplace Quality Rating System (QRS)
0674	Percent of Residents Experiencing One or More Falls With Major Injury (Long Stay)	Nursing Home Quality Initiative
0679	Percent of High-Risk Residents With Pressure Ulcers (Long Stay)	Nursing Home Quality Initiative
0684	Percent of Residents With a Urinary Tract Infection (Long Stay)	Nursing Home Quality Initiative
0686	Percent of Residents Who Have/Had a Catheter Inserted and Left in Their Bladder (Long Stay)	Nursing Home Quality Initiative
0687	Percent of Residents Who Were Physically Restrained (Long Stay)	Nursing Home Quality Initiative
0689	Percent of Residents Who Lose Too Much Weight (Long Stay)	Nursing Home Quality Initiative
0753	American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure-Specific Surgical Site Infection (SSI) Outcome Measure	Hospital Value-Based Purchasing Hospital Acquired Condition Reduction
1716	National Healthcare Safety Network (NHSN) Facility-Wide Inpatient Hospital-Onset Methicillin-Resistant Staphylococcus Aureus (MRSA) Bacteremia Outcome Measure	Hospital-Acquired Condition Reduction Program Hospital Compare Prospective Payment System-Exempt Cancer Hospital Quality Reporting

Measure #	Measure Title	Federal Programs (Finalized or Implemented)
1717	National Healthcare Safety Network (NHSN) Facility-Wide Inpatient Hospital-Onset Clostridium Difficile Infection (CDI) Outcome Measure	Hospital Compare Inpatient Rehabilitation Facility Quality Reporting Long-Term Care Hospital Quality Reporting Long-Term Care Hospital Compare Inpatient Rehabilitation Facility Compare
1893	Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Chronic Obstructive Pulmonary Disease (COPD) Hospitalization	Hospital Compare
2456	Medication Reconciliation: Number of Unintentional Medication Discrepancies per Medication per Patient	None
2720	National Healthcare Safety Network (NHSN) Antimicrobial Use Measure	None
2723	Wrong-Patient Retract-and-Reorder (Wrong Patient-RAR) Measure	None
2726	Prevention of Central Venous Catheter (CVC)-Related Bloodstream Infections	None
2820	Pediatric Computed Tomography (CT) Radiation Dose	None
2940	Use of Opioids at High Dosage in Persons Without Cancer	Medicaid: Adult Core Set
2950	Use of Opioids From Multiple Providers in Persons Without Cancer	None
2951	Use of Opioids From Multiple Providers and at High Dosage in Persons Without Cancer	None
2988	Medication Reconciliation for Patients Receiving Care at Dialysis Facilities	None
2993	Potentially Harmful Drug-Disease Interactions in Older Adults (DDE)	None
3025	Ambulatory Breast Procedure Surgical Site Infection (SSI) Outcome Measure	None
3136	GAPPS: Rate of Preventable Adverse Events per 1,000 Patient-Days Among Pediatric Inpatients	None
3215	Adult Inpatient Risk-Adjusted Sepsis Mortality	None

Measure #	Measure Title	Federal Programs (Finalized or Implemented)
3316e	Safe Use of Opioids – Concurrent Prescribing	Hospital Inpatient Quality Reporting (IQR) Medicare and Medicaid Promoting Interoperability Program for Eligible Hospitals and Critical Access Hospitals
3389	Concurrent Use of Opioids and Benzodiazepines (COB)	Medicaid: Adult Core Set
3450	Practice Environment Scale - Nursing Work Index (PES-NWI) (Composite and Five Subscales) (previously NQF #0206 - Undergoing Maintenance)	None
3501e	Hospital Harm – Opioid-Related Adverse Events	None
3502	Hybrid Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure	Hospital Inpatient Quality Reporting
3503e	Hospital Harm – Severe Hypoglycemia	None
3504	Claims-Only Hospital-Wide (All-Condition, All-Procedure) Risk-Standardized Mortality Measure	None
3533e	Hospital Harm – Severe Hyperglycemia	None
3558	Initial Opioid Prescribing for Long Duration (IOP-LD)	None
3621	Composite Weighted Average for Three CT Exam Types: Overall Percent of CT Exams for Which Dose Length Product Is at or Below the Size-Specific Diagnostic Reference Level (for CT Abdomen-Pelvis With Contrast/Single Phase Scan, CT Chest Without Contrast/Single	None
3663e	Excessive Radiation Dose or Inadequate Image Quality for Diagnostic Computed Tomography (CT) in Adults (Clinician Level)	None
3636	Quarterly Reporting of COVID-19 Vaccination Coverage among Healthcare Personnel	None
3662e	Excessive Radiation Dose or Inadequate Image Quality for Diagnostic Computed Tomography (CT) in Adults (Clinician Group Level)	None
3663e	Excessive Radiation Dose or Inadequate Image Quality for Diagnostic Computed Tomography (CT) in Adults (Facility Level)	None

*Adapted from the CMS Measures Inventory Tool. Last Accessed on July 14, 2022.

Appendix C: Patient Safety Standing Committee and NQF Staff

STANDING COMMITTEE

John James, PhD (Co-Chair)
Founder, Patient Safety America
Houston, TX

Geeta Sood, MD, ScM (Co-Chair)
Assistant Professor of Medicine, Johns Hopkins University School of Medicine
Baltimore, MD

Emily Aaronson, PhD
Assistant Chief Quality Officer, Massachusetts General Hospital
Boston, MA

Joel Bundy, MD, FACP, FASN, CPE
Vice President, Chief Quality & Safety Officer, Sentara Healthcare
Norfolk, VA

Elissa Charbonneau, DO, MS
Chief Medical Officer, Encompass Health Corporation
Birmingham, AL

Curtis Collins, PharmD, MS
Specialty Pharmacist, Infectious Diseases, St. Joseph Mercy Health System
Ann Arbor, MI

Theresa Edelstein, MPH, LNHA
Vice President, New Jersey Hospital Association
Princeton, NJ

Terry Fairbanks, MD, MS, FACEP
Vice President, Quality & Safety, MedStar Health
Washington, DC

Jason Falvey, DPT, PhD
Assistant Professor, University of Maryland School of Medicine, Department of Epidemiology and Public Health
Baltimore, MD

Robert Green, MD, MPH, MA
Vice President of Quality & Patient Safety, New York Presbyterian Healthcare System
New York, NY

Sara Hawkins, PhD, RN, CPPS
Director of Patient Safety & Risk, Eastern Idaho Regional Medical Center (EIRMC)
Idaho Falls, ID

Bret Jackson
President, The Economic Alliance for Michigan
Novi, MI

Laura Kinney MA, BSN, RN
Director of Clinical Quality, Teladoc Health
Louisville, KY

Arpana Mathur, MD, MBA
Medical Director, Physician Services, CVS Health
Naperville, IL

Raquel Mayne, MS, MPH, RN
Senior Quality Management Specialist, Hospital for Special Surgery
New York City, NY

Anne Myrka, RPh, MAT
Director, Drug Safety, Island Peer Review Organization (IPRO)
Lake Success, NY

Edward Pollak, MD
Chief Quality Officer, Henry Ford Health System
Detroit, MI

Jamie Roney, DNP, NPD-BC, CCRN-K
Covenant Health Texas Regional Research Coordinator, Covenant Health System
Lubbock, TX

Nancy Schoenborn, MD
Geriatric Medicine Specialist, American Geriatrics Society
Baltimore, MD

David Seidenwurm, MD, FACR
Quality and Safety Director, Sutter Health
Sacramento, CA

Iona Thraen, PhD, ACSW
Patient Safety Director, Utah Hospital and Health Clinics Adjunct Assistant Professor, University of Utah, School of Medicine, Department of Biomedical Informatics
Salt Lake City, UT

Yanling Yu, PhD
Physical Oceanographer and Patient Safety Advocate, Washington Advocate for Patient Safety
Seattle, WA

NQF STAFF

Elizabeth Drye, MD, MS
Chief Scientific Officer, Measurement Science and Application

Tricia Elliott, DHA, MBA, CPHQ, FNAHQ
Senior Managing Director, Measurement Science and Application

Poonam Bal, MHSA
Senior Director, Measurement Science and Application

Matthew K. Pickering, PharmD
Senior Director, Measurement Science and Application

Tamara H. Funk, MPH
Director, Measurement Science and Application

Erin Buchanan, MPH
Senior Manager, Measurement Science and Application

Hannah Ingber, MPH
Manager, Measurement Science and Application

Sean Sullivan, MA
Associate, Measurement Science and Application

Yemsrach Kidane, PMP
Senior Project Manager, Program Operations

Jesse Pines, MD, MBA, MSCE
Consultant

Appendix D: Measure Specifications

NQF #3690 Inappropriate Diagnosis of Urinary Tract Infection (UTI) in Hospitalized Medical Patients; Abbreviated form: Inappropriate Diagnosis of UTI

STEWARD

University of Michigan

DESCRIPTION

The inappropriate diagnosis of UTI in hospitalized medical patients (or "Inappropriate Diagnosis of UTI") measure is a process measure that evaluates the annual proportion of hospitalized adult medical patients treated for UTI who do not meet diagnostic criteria for UTI (thus are inappropriately diagnosed and overtreated).

TYPE

Process

DATA SOURCE

Electronic Health Records, Other (specify), Electronic Health Data
Electronic medical record data. The data collection instrument is provided. Those interested in using our online REDCap tool may also contact us directly to coordinate.

LEVEL

Facility

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

The measure quantifies adult, hospitalized medical patients inappropriately diagnosed with UTI. Here, inappropriate diagnosis is defined as patients treated with antibiotics for UTI who do not meet diagnostic criteria for UTI. Patients were considered inappropriately diagnosed if they received antibiotic therapy for a UTI but did not have at least one sign or symptom of a UTI.

NUMERATOR DETAILS

Patients in the numerator include those that received antibiotics for a UTI but did not have ≥1 sign or symptom of a UTI.
* Minor numerator exclusions:
+ Those with a blood culture positive for a pathogenic bacteria (1.8% [91/4961])

Signs (e.g., fever) and symptoms (e.g., dysuria) of UTI are found in the attached excel file. Abstractors are asked to review the medical record for documentation of any signs or symptoms the day prior to obtaining a urine culture (referred to as day -1), the day of the urine culture (day 0), or the two days following the urine culture (days 1, 2). Any combination of 1 or more symptoms at any point in this time frame is required to be considered appropriately diagnosed. The exception is patients with new onset mental status changes. Consistent with recent IDSA guidelines, patients with new onset mental status changes must also have signs of a systemic infection (i.e., leukocytosis, hypotension, or > 2 systemic inflammatory response syndrome

[SIRS] criteria) to be considered a UTI. Any patients without signs and symptoms of a UTI are considered inappropriately diagnosed and placed in the numerator.

DENOMINATOR STATEMENT

The denominator includes all adult, general care, immunocompetent, medical patients hospitalized and treated for UTI who do not have a concomitant infection.

DENOMINATOR DETAILS

The denominator includes all sampled patients eligible for abstraction during the measure period (typically annual measurement). To be considered "treated for a UTI," a patient had to: a) have a positive urine culture, b) receive antibiotic therapy, and c) not have a concomitant infection. Please see excel file (inclusion criteria tab) for detailed operationalized definitions.

Inclusion criteria:

* Adult patient admitted and discharged from the participating hospital
* With a positive urine culture (except for excluded organisms listed in data dictionary) during hospitalization.
* Admitted to a general care medicine service
* Received any eligible antibiotic during the symptom collection window (day -1, 0, 1, 2, where day 0 = day of first positive urine culture)
* Immunocompetent (allowing for mild immune suppression)
* Do not have a concomitant infection (e.g., COVID-19, antibiotic treatment for unrelated infection or prophylaxis)
* Have normal urinary anatomy

EXCLUSIONS

Exclusion Criteria: Left against medical advice or refused medical care

Admitted on hospice

Pregnant or breastfeeding

Spinal cord injury

UTI-related complication (e.g., perinephric abscess)

* Operationalized as >14 days of antibiotics at discharge

EXCLUSION DETAILS

Inclusion and exclusion codes and criteria are provided in the attached excel file.

RISK ADJUSTMENT

No risk adjustment or stratification

STRATIFICATION

N/A

TYPE SCORE

Rate/proportion

Better quality = Lower score

ALGORITHM

The measure estimates hospital-level inappropriate diagnosis of UTI. If the hospital has elected to sample patients, they will generate a sample by first identifying all hospitalized patients with a positive urine culture (using institutional definition of positive) during that month or quarter (based on whether they elect to sample monthly or quarterly). Next, they will apply electronic inclusion criteria (medicine admission, antibiotic receipt during window period [day -1 to day

+2]) to either their quarterly or monthly patient sample. The resulting list will be randomized, and patients screened in order of randomization. First, patients are screened for inclusion in the denominator. All adult, general care, medical patients hospitalized and treated for UTI are potentially eligible. If the patient meets eligibility criteria and does not have any exclusions, they are placed in the denominator. Patients automatically excluded from the numerator are those with blood cultures positive for a pathogenic organism. Patients are then assessed for whether they meet diagnostic criteria for UTI (i.e., do they have at least one sign or symptom of a UTI). If a patient does NOT meet diagnostic criteria they are placed in the numerator. A lower score is considered better diagnostic quality for UTI.

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N/A

NQF #3671 Inappropriate Diagnosis of Community-Acquired Pneumonia (CAP) in Hospitalized Medical Patients; Abbreviated form: Inappropriate Diagnosis of CAP

STEWARD

University of Michigan

DESCRIPTION

The inappropriate diagnosis of CAP in hospitalized medical patients (or "Inappropriate Diagnosis of CAP") measure is a process measure that evaluates the annual proportion of hospitalized adult medical patients treated for CAP who do not meet diagnostic criteria for pneumonia (thus are inappropriately diagnosed and treated).

TYPE

Process

DATA SOURCE

Electronic Health Data, Other (specify), Electronic Health Records

Electronic medical record data. The data collection instrument is provided. Those interested in using our online REDCap tool may contact us directly to coordinate.

LEVEL

Facility

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

The measure quantifies adult, hospitalized medical patients inappropriately diagnosed with pneumonia. Here, inappropriate diagnosis is defined as patients treated with antibiotics for CAP who do not meet diagnostic criteria for pneumonia. Patients are considered inappropriately diagnosed if they did not have 2 or more signs or symptoms of pneumonia (documented at some point in the 2 days prior to the hospital encounter through the first 2 days of the hospital encounter) AND meet radiographic criteria for pneumonia.

NUMERATOR DETAILS

Patients in the numerator include those that did not have a) ≥2 signs or symptoms of pneumonia (documented at some point in the 2 days prior to the hospital encounter through the first 2 days of the hospital encounter) or did not b) meet radiographic criteria for pneumonia.

* Minor numerator exclusions:
+ Those whose only antibiotic treatment was azithromycin (treatment could be related to chronic obstructive pulmonary disease exacerbation): 2.2% (50/2301)
+ Those with a blood culture positive for a pathogenic bacteria: 1.7% (38/2301)
+ Those with a urine antigen positive for streptococcus: (0.9% [20/2301]) or legionella (0.5% [12/2301])

Signs (e.g., tachypnea, leukocytosis) and symptoms (e.g., new cough, shortness of breath) of pneumonia are found in the attached excel file. Any combination of 2 or more signs or symptoms is required to be considered appropriately diagnosed. Any patient who has 0 or 1 eligible signs or symptoms is considered inappropriately diagnosed with CAP and placed in the numerator.

In addition to signs and symptoms, data abstractors are instructed to review the medical record for any chest X-rays, chest computerized tomography (CTs), or abdominal CTs with lung findings to capture language that may be relevant to pneumonia (see excel file for definitions). Chest x-rays, chest CTs, and abdominal CTs that are obtained in the 2 days prior to the hospital encounter through day 4 of the hospital encounter should be included. Imaging results obtained on the day of transfer to the ICU should also be included. Otherwise, imaging results obtained after transfer to the intensive care unit (ICU; e.g., day 2 of transfer) should NOT be included even if it falls within the 4-day window.

Based on descriptions of radiographic criteria identified by abstractors, the following logic is used to determine if the patient met radiographic criteria for CAP for each individual image.

* Highest/first priority radiographic descriptions:
+ If interval improvement/resolution, no change from previous/no interval change, normal/no abnormalities or no evidence of pneumonia is documented, then image considered NOT to meet radiographic criteria

* Second priority radiographic descriptions (overrides other findings except first priority, above):
+ If air space density/opacity/disease, bronchopneumonia, cannot rule out pneumonia, cavitation, infection (cannot rule out infection/likely infection), infiltrate (any lobe specifications), loculations, pneumonia, necrotizing pneumonia, post-obstructive pneumonia, or consolidation is documented, then image considered to meet radiographic criteria

* If none of the above:
+ If ground glass is listed, then image considered to meet radiographic criteria
o Exception: if ground glass plus interstitial lung disease, pulmonary edema or pulmonary vascular congestion is documented, then image considered NOT to meet radiographic criteria
+ If mass is listed, then image considered to meet radiographic criteria
o Exception: If neoplasm/metastatic disease/malignancy is documented, then image considered NOT to meet radiographic criteria
+ If nodular air space disease, then image considered to meet radiographic criteria
o Exception: If neoplasm/metastatic disease/malignancy or interstitial lung disease is documented, then image considered NOT to meet radiographic criteria
+ If pleural effusion, then image considered to meet radiographic criteria
o Exception: If pulmonary edema, pulmonary vascular congestion, or ground glass is documented, then image considered NOT to meet radiographic criteria

+ If aspiration pneumonia, then image considered to meet radiographic criteria
o Exception: If pneumonitis is documented, then image considered NOT to meet radiographic criteria
If there were multiple radiographic images, the following prioritization applies:
If available, chest CTs that occur within 1 calendar day (-1,0,+1) of a chest X-ray or abdominal CT are prioritized (even if they conflict with other results)
* If patient has any Chest CT meeting radiographic criteria, then patient considered to meet radiographic criteria
* If the patient's Chest CT does NOT meet radiographic criteria, then the patient is considered NOT to meet radiographic criteria, and then considered inappropriately diagnosed, add to numerator
* Example
+ Chest X-ray and Chest CT on day 1. Chest X-ray says pneumonia. Chest CT says no pneumonia. Patient considered inappropriately diagnosed.
+ Chest X-ray on day 1. Chest CT on day 5. Chest X-ray says pneumonia. Chest CT says no pneumonia. Patient not considered inappropriately diagnosed.
If no chest CT is present, the following will apply
* If Abdominal CT AND/OR Chest X-Ray meet radiographic criteria, then patient considered to meet radiographic criteria
* If NEITHER Abdominal CT or Chest X-Ray meet radiographic criteria, then patient considered NOT to meet radiographic criteria, and considered inappropriately diagnosed, add to numerator

DENOMINATOR STATEMENT

The denominator includes all adult, general care, immunocompetent, medical patients hospitalized and treated for CAP who do not have a concomitant infection.

DENOMINATOR DETAILS

The denominator includes all sampled patients eligible for abstraction during the measure period (typically annual measurement). Please see excel file (inclusion criteria tab) for detailed operationalized definitions.
Inclusion criteria:
* Adult patient admitted and discharged from the participating hospital with a discharge diagnosis (listed as any discharge diagnosis) of CAP (see excel file for ICD 10 codes)
* Admitted to a general care medicine service
* Received any eligible antibiotic therapy on day 1 or 2 of hospitalization (see excel file for eligible antibiotics)
* Immunocompetent (allowing for mild immune suppression)
* Do not have a concomitant infection (e.g., antibiotic treatment for unrelated infection, COVID-19, fungal pneumonia)

EXCLUSIONS

Patients are excluded from the denominator if they are/have:
* Left against medical advice or refused medical care
* Admitted on hospice
* Pregnant or breastfeeding

* Cystic fibrosis
* Pneumonia-related complication (e.g., empyema)

EXCLUSION DETAILS

Inclusion and exclusion codes and criteria are provided in the attached excel file.

RISK ADJUSTMENT

No risk adjustment or stratification

STRATIFICATION

This measure is not stratified.

TYPE SCORE

Rate/proportion
Better quality = Lower score

ALGORITHM

The measure estimates hospital-level inappropriate diagnosis of CAP. If the hospital has elected to sample patients, they will generate a sample using eligible ICD 10 discharge codes (see excel file for ICD 10 codes). Next, they will apply electronic inclusion criteria (medicine admission, antibiotics on day 1 or 2 of hospitalization) to either their quarterly or monthly patient sample. The resulting list will be randomized, and patients screened in order of randomization. First, patients are screened for inclusion in the denominator. All adult, general care, medical patients hospitalized and treated for CAP are potentially eligible. If the patient meets eligibility criteria and does not have any exclusions, they are placed in the denominator. Patients automatically excluded from the numerator are those treated only with azithromycin, those with blood cultures positive for a pathogenic organism, and those with a positive streptococcal or legionella urinary antigen. Patients are then assessed for whether they meet diagnostic criteria for pneumonia defined as 2 or more symptoms/signs of pneumonia AND meeting radiographic criteria. If a patient does not meet diagnostic criteria they are placed in the numerator. A lower score is considered better diagnostic quality for CAP.

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N/A

NQF #2820 Pediatric Computed Tomography (CT) Radiation Dose

STEWARD

University of California, San Francisco

DESCRIPTION

2022 submission:

Radiation dose is measured as the dose-length product for every diagnostic brain, skull, and abdomen and pelvis CT scan performed by a reporting facility on any child less than 18 years of age during the reporting period of 12 months. The dose associated with each scan is evaluated as “high” or “acceptable,” relative to the 75^th percentile benchmark for that type of scan and age of patient. Median doses are calculated at the facility level for each type of scan and age of patient stratum, and then compared with the same 75^th percentile benchmark. The overall proportion of high dose exams is calculated including all CT scans.

Updated reference from 2016 submission:

Demb J, Chu P, Nelson T, Hall D, Seibert A, Lamba R, Boone J, Krishnam M, Cagnon C, Bostani M, Gould R, Miglioretti D, Smith-Bindman R. Optimizing Radiation Doses for Computed Tomography Across Institutions: Dose Auditing and Best Practices. JAMA Intern Med. 2017 Jun 1;177(6):810-817. doi: 10.1001/jamainternmed.2017.0445. PMID: 28395000; PMCID: PMC5818828.
Note, the Kumar reference noted as being "in preparation" in the 2016 submission was never published.
2016 submission:
The measure requires hospitals and output facilities that conduct Computed Tomography (CT) examinations in children to: 1. Review their CT radiation dose metrics, 2. calculate the distribution of the results, and 3.compare their results to benchmarks. This would then imply a fourth step to investigate instances where results exceed a trigger value for underlying cause, such as issues with protocol, tech, equipment, patient, etc.
It is important to review doses of radiation used for CT, as the doses are far higher than conventional radiographs (x-rays), the doses are in the same range known to be carcinogenic (Pearce, Lancet, 2012; Ozasa, Radiation Research, 2012), and the higher the doses, the greater the risk of subsequent cancer (Miglioretti, JAMA Pediatrics, 2013) Thus the goal of the measure is to provide a framework where facilities can easily assess their doses, compare them to benchmarks, and take corrective action to lower their doses if they exceed threshold values, as per specifications in benchmarks.
The measure calls for assessment of doses for the most frequently conducted CT examination types, and compare these doses to published benchmarks. The measure calls for the assessment of radiation doses within four anatomic areas (CT's of the head, chest, abdomen/pelvis and combined chest/abdomen/pelvis.) The measure provides a simple framework for how facilities can assess their dose, compare their doses to published benchmarks (Smith-Bindman, Radiology, 2015) and identify opportunities to improve if their doses are higher than the benchmarks. For example, If a hospital finds their doses are higher than published benchmarks, they can review the processes and procedures they use for performance of CT in children and take corrective action, and follow published guidelines for how to lower doses (such as "child sizing" the doses, reducing multiple phase scans, and reducing scan lengths).
Published benchmarks for radiation dose in children exist (Smith-Bindman, Radiology, 2015) and additional benchmarks are under development and will be published within the year by us. (Kumar, 2015) Other groups have also published benchmarks (Goeske) or in the process of doing so.
Our work and that of others have shown that institutional review of dose metrics as outlined in this measure results in a significant lowering of average and outlier doses. (Demb, 2015; Greenwood, RadioGraphics, 2015; Miglioretti, JAMA Pediatrics, 2013; Keegan, JACR, 2104; Wilson, ARRS, 2015).
This measure is being proposed for diagnostic CT in children, but can also be used for CT in adults, and CT used in conjunction with radiation therapy for cancer. Whenever context the doses are used, the doses should be compared with appropriate benchmarks.

A similar measure (#0739) was previously endorsed by the NQF in 2011. The NQF did not provide ongoing endorsement when the measure was up for renewal in 2015, primarily because

there was no evidence that assessing doses as called for in the measure would result in an improvement in outcomes (i.e. patient dose). Since that time, there has been additional research that has shown that assessing doses using the format outlined in the measure does indeed result in lower doses, and thus we are re-submitting a similar although updated measure.

Of note, the surrogate measure we are using for outcomes is radiation dose. The true outcome of interest is the number of cancers that result from imaging. Because of the lag time between exposure to radiation and cancer development (years to decades) it is not feasible to use cancer cases as the outcome of a quality improvement effort. Thus while there is ample evidence that radiation causes cancer (sited below), and evidenced that cancer risk is proportional to dose, there are no direct data that suggest that lowering doses lowers cancer risk. However, we have used mathematical modeling to try to understand the relationship between lowering doses and cancers and estimated that if the top quartile of doses were reduced in children (i.e. the very high doses are brought down the average doses), the number of cancer cases would be reduced by approximately 43%, the equivalent to preventing 4,350 cancer cases / year in the US among children (Miglioretti, JAMA Pediatrics 2013).

Cited in this section:

Demb J, manuscript under preparation. CT Radiation Dose Standardization Across the University of California Medical Centers Using Audits to Optimize Dose. 2015.

Following an in-person meeting regarding CT radiation dose, radiologists, technologists and medical physicists from University of California medical centers strategized how to best optimize dosing practices at their sites, which were then analyzed for effectiveness and success after implementation.

Greenwood T, Lopez-Costa R, Rhoades P, et al. CT Dose Optimization in Pediatric Radiology: A Multiyear Effort to Preserve the Benefits of Imaging While Reducing the Risks. RadioGraphics. Jan 2015;35(5):1539-1554

“This systematic approach involving education, streamlining access to magnetic resonance imaging and ultrasonography, auditing with comparison with benchmarks, applying modern CT technology, and revising CT protocols has led to a more than twofold reduction in CT radiation exposure between 2005 and 2012…” – Conclusion statement from Abstract

Keegan J, Miglioretti DL, Gould R, Donnelly LF, Wilson ND, Smith-Bindman R. Radiation Dose Metrics in CT: Assessing Dose Using the National Quality Forum CT Patient Safety Measure. Journal of the American College of Radiology: JACR; 11(3):309-315. http://download.journals.elsevierhealth.com/pdfs/journals/1546-1440/PIIS1546144013006625.pdf. Mar 2014

Looking at dose metrics as per compliance with the previously endorsed #0739 NQF measure results in reasonably timed acquisition of CT doses, and seeing such doses resulted in 30-50% dose reduction.

Kumar K, manuscript under preparation. Radiation Dose Benchmarks in Children.

This paper will describe dose metrics among 29,000 children within age strata <1, 1-4 years, 5-9 years, 10-14 years, and 15-19 years. 2015.

Miglioretti D, Johnson E, Vanneman N, Smith-Bindman R, al e. Use of Computed Tomography and Associated Radiation Exposure and Leukemia Risk in Children and Young Adults across

Seven Integrated Healthcare Systems from 1994 – 2010. JAMA Pediatrics Published online June 10, 2013 joli:101001/jamapediatrics2013311, 2013.
Radiation-induced cancers in children could be dramatically reduced if the highest quartile of CT radiation doses were lowered.
Miglioretti, YX Zhang, E Johnson, N Vanneman, R Smith-Bindman. Personalized Technologist Dose Audit Feedback for Reducing Patient Radiation Exposure from Computed Tomography. Journal of the American College of Radiology: JACR 2014.
"Personalized audit feedback and education can change technologists´ attitudes about, and awareness of, radiation and can lower patient radiation exposure from CT imaging." – Conclusion statement from Abstract
Ozasa K, Shimizu Y, Suyama A, et al. Studies of the mortality of atomic bomb survivors, Report 14, 1950-2003: an overview of cancer and noncancer diseases. Radiation Research; 177(3):229-243. Mar 2012
Fourteenth follow-up report on the lifetime health effects from radiation on atomic bomb survivor showing that: 58% of the 86,611 LSS cohort members with DS02 dose estimates have died, 17% more cancer deaths especially among those under age 10 at exposure (58% more deaths).
Pearce MS, Salotti JA, Little MP, et al. Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study. Lancet;380(9840):499-505. Aug 4 2012
"Use of CT scans in children to deliver cumulative doses of about 50 mGy might almost triple the risk of leukaemia and doses of about 60 mGy might triple the risk of brain cancer… although clinical benefits should outweigh the small absolute risks, radiation doses from CT scans ought to be kept as low as possible" – Conclusion statement from Abstract
Smith-Bindman R, Moghadassi M, Wilson N, et al. Radiation Doses in Consecutive CT Examinations from Five University of California Centers. Radiology 2015:277: 134–141
"These summary dose data provide a starting point for institutional evaluation of CT radiation doses." – Conclusion statement from Abstract
Wilson N. CT Radiation Dose Standardization Across the Five University of California Medical Centers. ARRS: Annual Toronto Meeting presentation. April 19-24, 2015
Understanding the reasons for variation in commonly performed CT procedures, and figuring out how to standardize them.

TYPE

Outcome: Intermediate Clinical Outcome

DATA SOURCE

Electronic Health Data, Electronic Health Records, Other, Registry Data
2022 submission:
The measure derives standardized data elements from structured fields stored electronically, including:
1. Type of CT examination (i.e., anatomic area imaged)
2. Radiation dose (DLP) stored electronically in standardized DICOM format
3. Patient age

The data can be extracted either manually or automatically from several sources:
1. Derived directly from the CT scanner at the time of examinations;
2. Derived from the Picture Archiving and Communication System (PACS), which is the electric system where imaging data are stored and reviewed; or the Radiology Information System (RIS)
3. Derived from the electronic health record (EHR), where many facilities – whether by custom or law – store radiation dose information.
4. Derived from widely used commercial radiation dose software programs such as Dose Watch, PACS Health and Radimetrics.
We have also published several techniques for dose extraction that can be completed even by small facilities. (Keegan, JACR 2014)
Citations
1. Keegan J, Miglioretti DL, Gould R, Donnelly LF, Wilson ND, Smith-Bindman R. Radiation Dose Metrics in CT: Assessing Dose Using the National Quality Forum CT Patient Safety Measure. Journal of the American College of Radiology: JACR; 11(3):309-315.
2016 submission:
The data sources will include electronic CT images [captured from the CT console at the time of scanning or harvested from the PACS (Picture Archiving Communication System) - the computerized systems for reviewing and storing imaging data], Radiology Information System, EPIC, printed CT images, or information stored in the medical record. Numerous other software products are now available for capturing these data (Bayer, GE, etc.) and several free ware programs are also available. Of note, the 2012 California law now requires the reporting of several of the dose metrics outlined in this measure in the patient medical record, and as a results, many software companies have provided techniques for collating these data.

LEVEL

Facility

SETTING

Inpatient/Hospital, Outpatient Services

NUMERATOR STATEMENT

2022 submission:
The number of diagnostic CT scans within an eligible anatomic region (i.e., brain, skull, abdomen and pelvis) and age stratum for which the radiation dose (measured in dose-length product, DLP) exceeds the 75^th percentile benchmark for that type of scan and age of patient.
2016 submission:
Radiation Dose metrics among consecutive patients, who have undergone CT of the head, chest, abdomen/pelvis, or chest/abdomen/pelvis. The metrics are 1) mean dose as measured using DLP, CTDIvol, and SSDE: within age strata. And 2) the proportion of exams with doses greater than the 75th percentile of the benchmark you are comparing with for the same anatomic area strata (Kumar, 2015; Smith-Bindman, Radiology, 2015; Goske, Radiology, 2013)
The CTDIvol and DLP are directly reported by the scanner using an “industry wide” standardized dose report (DICOM Radiation Dose Structured Report). The data should be assembled for the entire CT examination. If there are several series, the CTDIvol values should be averaged, and the DLP values should be added.

SSDE can be calculated using any dose monitoring software product, or using published multiplier coefficients which are highly valid.
These different metrics are highly correlated, but nonetheless reveal important differences regarding radiology practice and performance and are thus complimentary. However, if a practice only assesses data from a single metric, there is substantial opportunity for data-driven improvement.
CTDIvol reflects the average dose per small scan length. Modern CT scanners directly generate this.
DLP reflects the CTDIvol x scan length, and is directly generated by modern CT scanners.
SSDE is a modified measure of CTDIvol that takes into account the size of the patient scanned and is useful for scaling dose to patient size. Several current radiation tracking software tools directly report SSDE.
Cited in this section
Goske MJ, Strauss KJ, Coombs LP, et al. Diagnostic reference ranges for pediatric abdominal CT. Radiology. Jul 2013;268(1):208-218.
"Calculation of reference doses as a function of BW (body weight) for an individual practice provides a tool to help develop site-specific CT protocols that help manage pediatric patient radiation doses." – Conclusion statement from Abstract
Kumar K, manuscript under preparation. Radiation Dose Benchmarks in Children.
This paper will describe dose metrics among 29,000 children within age strata <1, 1-4 years, 5-9 years, 10-14 years, and 15-19 years. 2015.
Smith-Bindman R, Moghadassi M, Wilson N, et al. Radiation Doses in Consecutive CT Examinations from Five University of California Centers. Radiology 2015:277: 134–141
"These summary dose data provide a starting point for institutional evaluation of CT radiation doses." – Conclusion statement from Abstract
Smith-Bindman R, Miglioretti DL. CTDIvol, DLP, and Effective Dose are excellent measures for use in CT quality improvement. Radiology. Dec 2011;261(3):999; author reply 999-1000.
An explanation as to why these radiation dose metrics are useful in calculating a patient's absorbed doses.

Huda W, Ogden KM, Khorasani MR. Converting dose-length product to effective dose at CT. Radiology. Sep 2008;248(3):995-1003.
"This article describes a method of providing CT users with a practical and reliable estimate of adult patient EDs by using the DLP displayed on the CT console at the end of any given examination." – Conclusion statement from Abstract

NUMERATOR DETAILS

2022 submission:
Calculating the numerator and scoring the measure
The numerator is comprised of the total number of CT exams in the denominator for which the DLP exceeds the 75^th percentile benchmark for the specific anatomic and age strata.
There are two ways of scoring the measure:

1) At the individual strata level: A hospital or outpatient imaging facility's performance, by anatomic area and by age group, are classified using the following scale aligning with the Leapfrog Group's implementation:
* Acceptable = the hospital or outpatient imaging facility's median radiation dose is below the 75th percentile for the stratum.
* Poor = the hospital or outpatient imaging facility's median radiation dose is greater or equal to the benchmark 75th percentile.
2) At the overall level, including all strata combined: A hospital or imaging facility's proportion of high dose exams is defined as the percent of examinations, across all strata, that exceed the relevant stratum specific benchmark 75th percentile.
* Performance is classified as poor when the out-of-range rate is more than twice the expected rate, i.e., when 50% or more examinations exceed the 75th percentile.
The overarching goal is to assess whether an individual reporting entity's distribution of CT exams (within strata, and across all strata) on average exceeds the 75^th percentile, and to what degree. The measure classifies both (1) median radiation doses exceeding the 75^th percentile within a stratum, and (2) a rate of 50% or more of all exams exceeding their respective 75^th percentile levels as poor performance.
Reference phantoms
Radiation doses for head exams (skull and brain) must be reported using the 16-cm reference phantom. Radiation doses for abdomen and pelvis exams must be reported using the 32-cm reference phantom.
While reference phantom selection is highly standardized across imaging facilities (Chu 2021), there is a small amount of variation by CT manufacturer in the abdomen and pelvis category for children up to 10 years of age. Abdomen and pelvis doses referenced to a 16-cm phantom will be approximately double the corresponding doses based on the correct 32 cm phantom. (Nelson 2014, Seibert 2014) Hospitals and imaging facilities that report using the less common phantom need to adjust their DLP values prior to reporting. Abdomen and pelvis doses reported using a 16 cm phantom should be halved, and head doses referenced to a 32-cm phantom should be doubled. (Chu 2021) This is a workaround if facilities are unable to report using the standard phantom selection.
Benchmarks

We have generated benchmarks for CT examinations in children for the three CT categories using data on 116,597 pediatric exams from the UCSF International CT Dose Registry, provided in table sp-1. These benchmark data are being drafted for publication. (Bos 2022, in preparation) These categories reflect the indications that led to imaging, rather than decisions made by the radiologist, for example, whether to do single phase or multiple phase examinations. All skull exams, all brain exams and all abdomen and pelvis exams should be included in the skull, brain and abdomen and pelvis categories, whether a single non-contrast phase, a single contrast phase, or a multiphase exam with and without contrast was done for an included patient.
Table sp-13-1. Median and 75^th percentile radiation doses, measured in dose length product (DLP), for the 3 anatomic areas and 5 age groups, derived from the UCSF International CT Dose Registry.

Anatomic Area & Age Group	Median DLP (mGy·cm) 75th Percentile DLP (mGy·cm)
Skull	-
	-
< 1 year	
	122
	224
1-4 years	
	181
	280
5-9 years	
	203
	307
10-14 years	
	254
	393
15-17 years	
	296
	517
Brain	
	-
	-
< 1 year	
	223
	326
1-4 years	
	350
	486
5-9 years	
	463
	605
10-14 years	
	599
	784
15-17 years	
	726
	967
Abdomen and pelvis	
	-
	-
< 1 year	
	50
	89
1-4 years	
	76
	110
5-9 years	
	126
	197
10-14 years	

		269
		373
15-17 years		
		353
		549

Cells marked with a dash (-) are left intentionally blank

Alternative Text: Table SP - 13-1 displays the Median and 75^th percentile in the Dose Length Product (DLP) in mGy-cm for pediatric CT based on Anatomic Area (including Skull, Brain and Abdomen and Pelvis) and age group (including <1 year, 1-4 years, 5-9 years, 10-14 years and 15-17 years) based on data from 116,597 pediatric exams from the UCSF International CT Dose Registry. These provide benchmarks for pediatric CT. These show that the doses increase with age, that the doses are lowest for Abdomen and Pelvis CT and that Skull doses are lower than Brain doses.

We have used the UCSF Registry to create benchmarks as these are currently the best data to summarize performance for the included anatomic areas and as specified in the measure (e.g., including all skull CT examinations in a single category, all brain CT examinations in a single category and all abdomen and pelvis CT examinations in a single category) and using a single age schema across all anatomic areas simplifying reporting. These benchmarks will be periodically updated and reassessed and we will continue to collaborate with the Leapfrog Group and other users to do so.

The Leapfrog Group, which is the current the primary user of this measure, has developed their own benchmarks based on hospital-reported data, which closely align with the recommended UCSF benchmarks (Table sp-2 for the abdomen and pelvis category). The Leapfrog Group does not currently subdivide head examinations into skull and brain, thus we cannot directly compare those benchmarks.

Table sp-13-2. The Leapfrog Group 75^th percentile benchmarks for pediatric abdomen and pelvis examinations and those created from the UCSF International CT Dose Registry

Abdomen and pelvis	**75th percentile benchmark used by the Leapfrog Group**	**UCSF Registry 75th percentile benchmark**
< 1 year	89	73
1-4 years	110	110
5-9 years	197	176
10-14 years	373	394
15-17 years	549	565

Alternative Text: Table sp-15-1 provides the CPT® codes and ICD-10-CM codes and their descriptions for identifying the types of CT scans that are eligible for inclusion in the measure. displays the 75^th percentile in the Dose Length Product (DLP) in mGy-cm for pediatric Abdomen and Pelvis CT by age group (<1 year, 1-4 years, 5-9 years, 10-14 years and 15-17 years) based on data from the UCSF International CT Dose Registry and from the LeapFrog Group. Based on the data they collected from participating hospitals. These shown the Leapfrog benchmarks closely align with the recommended UCSF benchmarks. For example, for Abdomen

and Pelvis CT in children age 15-17 years, the UCSF benchmarks is 549 mGy-cm, whereas the Leapfrog benchmarks is 565 mGy-Cm.

In our 2016 submission, we did not include recommended benchmarks but suggested measure implementers may use any established benchmarks of their choosing; this is why the Leapfrog Group to date has used benchmarks based on their own collected data. We have notified the Leapfrog Group of the proposed changes in specifications (e.g. splitting the head category and updating radiation dose benchmarks), and we plan to work closely with them to ensure the measure is implemented in keeping with the newer specifications. We believe our benchmarks are the right ones to use, but as noted above, we'll continue to work with the Leapfrog Group (and any future users) to periodically reassess and update benchmarks as needed.

Citations:

1. Bos, D. Pediatric Radiation Dose Benchmarks from the UCSF International CT Dose Registry. 2022, in preparation.

2. Chu PW, Yu S, Wang Y, Seibert JA, Cervantes LF, Kasraie N, Chu CA, Smith-Bindman R. Reference phantom selection in pediatric computed tomography using data from a large, multicenter registry. Pediatr Radiol. 2021 Dec 6. doi: 10.1007/s00247-021-05227-0. Epub ahead of print. PMID: 34866159.

3. Nelson TR. Practical strategies to reduce pediatric CT radiation dose. J Am Coll Radiol. 2014 Mar;11(3):292-9. doi: 10.1016/j.jacr.2013.10.011. PMID: 24589405.

4. Seibert JA, Boone JM, Wootton-Gorges SL, Lamba R. Dose is not always what it seems: where very misleading values can result from volume CT dose index and dose length product. J Am Coll Radiol. 2014 Mar;11(3):233-7. doi: 10.1016/j.jacr.2013.10.010. PMID: 24589395.

2016 submission:

Radiation dose distribution for the three metrics (CTDIvol, DLP, and SSDE) need to be recorded for a consecutive sample of CT examinations within anatomic area and age stratum. The mean, median, and the percent of examinations above the published 75% percentile needs to be generated.

These data can be extracted from the CT examinations in several ways. These numbers can written down directly from the CT scanner itself at the time of the examination; they can be written down from the PACS (computer terminal where images are reviewed and stored); or can be written down from the medical record if the facility stores these data as part of the medical record (all facilities in California due this based on statutory requirements.) The CT manufacturers have agreed (through MITA, Medical Imaging and Technology Alliance, the professional trade association of imaging manufacturers) to make these data electronically available through export from the CT machines to a local server), and these data can also be collected electronically. A growing number of companies are leveraging the standardized data format to systematically collect dose metrics directly from a facilities imaging infrastructure. This not only improves the accuracy of the data but also markedly reduces the costs of data collection. From the PACS, Radiology Information System, EPIC program if the data are exported there, or using any number of dose monitoring software programs allowing the collection and reporting of these dose data. The easiest way to collect these data is through one of the 6 or so commercial software programs developed for dose tracking, and several free-ware programs that enable directly extracting CT dose information from the PACS. We have published

(Keegan, JACR 2014) several examples of techniques for dose extraction that can be completed even by a small facility.

The strata for this measure include:

Anatomic area strata: head, chest, abdomen/pelvis, Chest/abdomen/pelvis

Age strata: infant (<1); small child (1-5); medium child (>5 - 10); large child (>10-15) and adult (>15)

NOTE: The SSDE was developed as a metric for adjusting for size. However, it does not completely adjust for size and analysis within age strata are still needed among children to account for the different doses that are used and should be used for infants to obese children.

Cited in this section:

Keegan J, Miglioretti DL, Gould R, Donnelly LF, Wilson ND, Smith-Bindman R. Radiation Dose Metrics in CT: Assessing Dose Using the National Quality Forum CT Patient Safety Measure. Journal of the American College of Radiology: JACR; 11(3):309-315. http://download.journals.elsevierhealth.com/pdfs/journals/1546-1440/PIIS1546144013006625.pdf. Mar 2014

Looking at dose metrics as per compliance with the previously endorsed #0739 NQF measure results in reasonably timed acquisition of CT doses, and seeing such doses resulted in 30-50% dose reduction.

DENOMINATOR STATEMENT

2022 submission:

The denominator is the total number of diagnostic CT scans within an eligible anatomic region and age stratum (infant (<1 year); small child (1-4); medium child (5-9); large child (10-14) and adolescent (15-17)) that were performed during the reporting period. These totals are summed to generate the total number of diagnostic CT scans within all eligible anatomic regions and age strata.

2016 submission:

Consecutive sample of CTs conducted in the head, chest, abdomen/pelvis and chest/abdomen/pelvis. No examinations should be excluded

DENOMINATOR DETAILS

EXCLUSIONS

2022 submission:

Examinations with missing anatomic area, patient age, or missing dose length product are excluded.

2016 submission:

CT examinations conducted in anatomic areas not included above (such as CTs of the extremities or lumbar spine) or that combine several areas (head and chest) should not be included. In children, these four included categories will reflect approximately 80% of CT scans.

Examinations performed as part of diagnostic procedures – such as biopsy procedures – should not be included. CT examinations performed as part of surgical planning or radiation therapy should not be included.

Examinations that are considered "limited abdomen" or "limited pelvis" studies should be included in the abdomen and pelvis category. Any examinations that include any parts of the abdomen and or pelvis should count in the abdomen/pelvis category.

EXCLUSION DETAILS

2022 submission:
Missing data on anatomic area imaged, patient age, or radiation dose should not be included.
2016 submission:
Most abdominal/pelvis CT scans in adult patients include scanning of the abdomen and pelvis as one contiguous area. If examinations are conducted limited to one region, these should also be included, as it is difficult/impossible to define what areas would be considered limited.

RISK ADJUSTMENT

No additional risk adjustment analysis included
Stratification by risk category (specify number of categories)
N/A

STRATIFICATION

2022 submission:
Anatomic areas stratum
These anatomic areas can be identified using specific CPT® codes or protocol names found in the radiology information systems (such as PACS or RIS) and specified in sp.15 above.
Skull: including all imaging of the facial skeleton, sinus, skull bones, or for the assessment of a ventricular shunt.
Brain: including imaging of the head not specified as part of skull and includes imaging for suspected hemorrhage, trauma, headache, altered mental status, seizures and all other indication for head CT not captured as part of skull imaging. This group should include the very small number of head CTs (<< 1%) that include perfusion angiography. Exams that include both the skull and brain as part of a single evaluation but cannot be separated into the component exams (e.g., performed as part of a single evaluation on the same date and time) should be included with brain imaging.
Abdomen and pelvis: including imaging for all abdomen and/or pelvis CT indications. Examinations that are considered "limited abdomen" or "limited pelvis" studies should be included in the abdomen and pelvis category as there is no reliable way to separate these types of examinations. The scan lengths are not very different between exams codified as abdomen, codified as abdomen and pelvis, or codified as limited pelvis. Thus examinations that include any parts of the abdomen and/or pelvis should count in the abdomen and pelvis category. Multiphase exams of the abdomen and pelvis should be included.
These three anatomic areas were chosen based on being the most common CT examination types conducted in the US, comprising >80% of all CT examinations in children, and because dose varies across these categories. (Chu 2021, Kanal 2021, Smith-Bindman 2021)
Age Strata
Infant (<1 year)
Small child (1-4 years)
Medium child (5-9 years)
Large child (10-14 years)
Adolescent (15-17)
These patient age groups were chosen based on the widespread practice of varying CT machine settings and the resulting radiation dose variation based on patient size or age (age is frequently used as a surrogate for size.) The International Commission on Radiation Protection (ICRP) uses

these child size categories, which correspond to available phantoms. (ICRP publications 121 and 135) Other literature has similarly supported these age groupings. (Vassileva 2015).

Citations

1. Chu PW, Yu S, Wang Y, Seibert JA, Cervantes LF, Kasraie N, Chu CA, Smith-Bindman R. Reference phantom selection in pediatric computed tomography using data from a large, multicenter registry. Pediatr Radiol. 2021 Dec 6. doi: 10.1007/s00247-021-05227-0. Epub ahead of print. PMID: 34866159.

2. International Commission on Radiation Protection. ICRP Publication 121: Radiological protection in paediatric diagnostic and interventional radiology. Ann. ICRP 42(2).

3. International Commission on Radiation Protection. ICRP Publication 135: Diagnostic Reference Levels in Medical Imaging. Ann ICRP 2017;46(1):1–144.

4. Kanal KM, Butler PF, Chatfield MB, Wells J, Samei E, Simanowith M, Golden D, Gress DA, Burleson J, Sensakovic WF, Strauss KJ, Frush D. U.S. Diagnostic Reference Levels and Achievable Doses for 10 Pediatric CT Examinations. Radiology. 2022 Jan;302(1):164-174. doi: 10.1148/radiol.2021211241. Epub 2021 Oct 26. Erratum in: Radiology. 2022 Jan;302(1):E6.

5. Vassileva J, Rehani M. Patient grouping for dose surveys and establishment of diagnostic reference levels in paediatric computed tomography. Radiat Prot Dosimetry. 2015 Jul;165(1-4):81-5. doi: 10.1093/rpd/ncv113. Epub 2015 Apr 1. PMID: 25836695.

6. Smith-Bindman R, Yu S, Wang Y, Kohli MD, Chu P, Chung R, Luong J, Bos D, Stewart C, Bista B, Alejandrez Cisneros A, Delman B, Einstein AJ, Flynn M, Romano P, Seibert JA, Westphalen AC, Bindman A. An Image Quality-informed Framework for CT Characterization. Radiology. 2021 Nov 9:210591. doi: 10.1148/radiol.2021210591. Epub ahead of print.

2016 submission:

Anatomic area strata: head, chest, abdomen/pelvis, chest/abdomen/pelvis

These were chosen based on being the most common CT examination types conducted in the US, comprising >80% of all CT scans, and because dose varies by these groups.

Age strata: infant (<1); small child (1-5); medium child (>5 - 10); large child (>10-15) and adult (>15)

These patient age groups were chosen based on the variation of CT settings and resulting radiation dose based on patient size (and age is frequently used as a surrogate for size.) The ICRU (International Commission on Radiation Units and Measurements) uses these child size categories, they correspond to available phantoms, and they are the ones found to be most reliable

Geographic location where studies were done (zip code or state), to facilitate using the data to create geographically specific benchmarks

TYPE SCORE

Rate/proportion

Passing score defines better quality

ALGORITHM

2022 submission:

1. Each diagnostic CT examination performed within the 12month period is assessed for inclusion based on non-missing anatomic area, patient age, and radiation dose data.

2. Radiation dose (DLP) is recorded for all included exams.
3. The DLP is compared to the benchmark (75^th percentile) value for that anatomic area-age specific stratum.
4. The numerator for the measure documents whether the DLP is above the benchmark stratum.
5. The total number of scans above the benchmark is calculated (aggregated) for each anatomic area-age stratum.
6. The total proportion of CT examinations with DLP greater than the corresponding 75^th percentile benchmark across all categories is calculated.
7. Performance is classified for each stratum (median) and overall (proportion of high dose exams) according to the scale described in sp.13. If the median is above the 75% percentile benchmark for a stratum, the hospital or facility is considered to have a poor dose distribution in that category. If the overall proportion of high dose exams exceeds 50% then the overall dose distribution is considered poor.
2016 submission:
N/A

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N/A

NQF #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

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

The target population is staff registered nurses. The denominator is calculated as the number of eligible staff RNs in the facility. The time period is typically three or four weeks for an eligible nurse to complete the survey. Specific data collection items are answers to each of the 31 survey items.

To calculate a subscale score, the numerator is the sum of responses (values of 1 to 4 in Likert categories) for all items in a subscale. The denominator is the number of items in the subscale.

The quotient is the subscale score, which is a simple average. Higher values indicate greater agreement that desirable organizational attributes are present in the current job, which yields higher scores for the instrument. The composite is calculated as the average value of all the subscales.

EXCLUSIONS

Not applicable

EXCLUSION DETAILS

Not applicable

RISK ADJUSTMENT

No additional risk adjustment analysis included
No risk adjustment or 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.

NQF #3658 Adult Blood Culture Contamination Rate; A National Measure and Standard for Clinical Laboratories and Antibiotic Stewardship Programs

STEWARD

Centers for Disease Control and Prevention

DESCRIPTION

The Blood culture contamination (BCC) rate is a process measure designed to follow healthcare providers' adherence to pre-analytic blood culture collection instructions established by the hospital clinical laboratory in patients 18 years or older. Blood culture contamination is defined as having certain commensal organisms (bacteria or fungus that normally colonizes human skin, without causing disease) isolated from only one blood culture set out of two or more sets collected within a 24-hour period (this is considered a false positive test result).

A secondary related measure is the single set blood culture rate in patients 18 years or older. A single set blood culture in a 24-hour period is not an adequate volume of blood to make an accurate diagnosis of bacteremia (which can lead to false negatives) and a single set blood culture positive predefined commensal organisms cannot be evaluated using the definition for possible contamination without the second set blood culture. The purpose of the measure is to ensure that all hospitals that collect blood cultures follow best practices for how blood culture collection is performed by healthcare providers and monitor the performance of the healthcare providers by calculating and reporting the blood culture contamination and single set rate back to collecting personnel and hospital units. This will allow process improvements to be implemented to reduce BCC contamination to be measured and evaluated on a monthly basis.

TYPE

Process

DATA SOURCE

Other (specify)

Premier Healthcare Database and Cerner Health Facts, two large electronic healthcare databases including data from both private and academic U.S. hospitals. Premier and Cerner databases contain a comprehensive clinical record on each encounter, including sociodemographic data, comorbidities, procedures, medications, patient charges and costs, and diagnoses. Additionally, these databases contain microbiology laboratory data from approximately 500 hospitals, including specimen identification, test name, test day and time of service, and result and sensitivity data.

The databases house Laboratory Information Systems (LIS) data.

The data was analyzed using the same measure specifications of the proposed primary and sub-measures.

* This analysis uses the eligibility criteria specifications defined in sp.02 Primary and Sub measure eligibility criteria.

+ Patient ≥ 18 years old

+ Patient may be present in any department of the hospital such as ICU, ED, inpatient floors, step down units. (No outpatients)
+ At least two blood culture sets drawn in a 24-hour period
+ Commensal organisms are identified by using the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN) list of bacteria identified as skin contaminants. https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx

LEVEL

Facility

SETTING

Inpatient/Hospital

NUMERATOR STATEMENT

Primary Measure – Blood Culture Contamination Rate:

Total number of blood culture sets with growth of a commensal organism in only one blood culture set out of two or three blood culture sets collected within a 24-hour period.

Sub Measure – Single Set Blood Culture Rate:

Total number of single set blood cultures collected either one bottle or one set (1 aerobic and 1 anaerobic bottle) in one blood draw within 24-hour period.

NUMERATOR DETAILS

Calculating the Blood Culture Contamination rate
* Denominator = Using data from the Laboratory Information System (LIS) identify all blood cultures collected by identifying all blood culture order codes within a specified timeframe (usually on a monthly basis)
* Numerator = Using data from the LIS Identify all probable contaminants by identifying all probable skin contaminants result codes within a specified timeframe (usually on a monthly basis)
* Calculate the contamination rate by dividing the number of blood cultures containing skin contaminants by the total number of blood culture sets collected
* BCC = (Number of blood culture sets with growth of skin commensals without the same organism in other sets collected within 24 hours / Total number of BC sets) × 100
Primary Measure Eligibility Criteria:
* Patient ≥ 18 years old
* Patient may be present in any department of the hospital such as ICU, ED, inpatient floors, step down units. (No outpatients)
* At least two blood culture sets drawn in a 24-hour period
Calculating the Single Set Blood Culture Rate
* Denominator = Using data from the LIS identify all blood cultures collected by identifying all blood culture order codes within a specified timeframe (usually on a monthly basis)

* Numerator = Using data from the LIS Identify all single set blood cultures by identifying all events when only one blood culture set was collected in a specified timeframe (usually on a monthly basis)
* Calculate the single set rate by dividing the number of single sets of blood cultures by the total number of blood culture sets collected
* Single Set Blood Culture Rate = (Number of single sets without another set collected within 24 hours / Total number of BC sets) × 100
Sub Measure Eligibility Criteria:
* Patient ≥ 18 years old
* Patient may be present in any department of the hospital such as ICU, ED, inpatient floors, step down units. (No outpatients)

DENOMINATOR STATEMENT

Primary Measure – Blood Culture Contamination Rate:
Total number of all blood culture sets collected which are eligible to be considered for contamination per eligibility criteria
Primary Measure Eligibility Criteria: Patient ≥ 18 years old
Patient may be present in any department of the hospital such as ICU, ED, inpatient floors, step down units. (No outpatients)
At least two blood culture sets drawn in a 24-hour period
Sub Measure – Single Set Blood Culture Rate: Total number of two or three sets and single sets, either one bottle or one blood culture set (1 aerobic and 1 anaerobic bottle), collected in a 24-hour period
Sub Measure Eligibility Criteria: Patient ≥ 18 years old
Patient may be present in any department of the hospital such as ICU, ED, inpatient floors, step down units. (No outpatients)
The need for single set blood culture rate
Blood culture contamination cannot be evaluated unless at least two blood culture sets have been collected, as the definition of blood contamination is a single blood culture set positive out of two sets of blood cultures for a possible skin contaminant. The test result would be reported by the laboratory as follows: " Single set positive out of 2 sets (or 3 sets, if this is the laboratory policy) for possible skin contaminant, please call laboratory if further work up is needed" This comment alerts the clinician that a probable contaminant event has occurred, and they may order an additional 1 or 2 blood culture sets for further evaluation.
In addition, in order to accurately diagnose septicemia and bacteremia, it is important to assess the percent of blood cultures with only one set out of the recommended two or more sets collected within a 24-hour period. Two blood culture sets are necessary to obtain at least 40 mL of blood, which is the amount of blood recommended to accurately evaluate an adult patient for bacteremia and sepsis.
According to a publication by Lee, Andrew et al. "Detection of bloodstream infections in adults: how many blood cultures are needed?" Journal of clinical microbiology vol. 45,11 (2007): 3546-8. doi:10.1128/JCM.01555-07
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2168497/

Data were analyzed to determine the cumulative sensitivity of blood cultures obtained sequentially during the 24-h time period. Of 629 unimicrobial episodes with ≥3 blood cultures obtained during the 24-h period, 460 (73.1%) were detected with the first blood culture, 564 (89.7%) were detected with the first two blood cultures, 618 (98.3%) were detected with the first three blood cultures, and 628 (99.8%) were detected with the first four blood cultures. This study highlights the increase in blood culture testing sensitivity in relation to the amount of blood volume and the number of blood culture sets collected.

The primary and sub-measures must be reported together to ensure patients are being appropriately evaluated for bacteremia and septicemia, and to ensure adverse patient events are avoided.

DENOMINATOR DETAILS

Primary Measure – Blood Culture Contamination Rate:

Total number of all blood culture sets collected which are eligible to be considered for contamination per eligibility criteria

EXCLUSIONS

Primary Measure:

Only a single set collected (must have two sets or more collected) within a 24-hour period

Patient ≤ 18 years in age

EXCLUSION DETAILS

Primary Measure:

Only a single set collected (must have two sets or more collected) within a 24-hour period

Patient ≤ 18 years in age

RISK ADJUSTMENT

No risk adjustment or stratification

N/A

STRATIFICATION

N/A

TYPE SCORE

Rate/proportion

Better quality = Lower score

ALGORITHM

Contaminated blood culture is defined as:

* One blood culture set positive for a commensal organisms out of two to three sets collected

* Examples of bacteria identified as skin contaminants

+ Can be evaluated by genus. "Most species of Coagulase negative Staphylococcus, most species of Corynebacterium (diphtheroids) and related genera, Alpha-hemolytic viridans group strep, Bacillus spp. other than Bacillus anthracis, Micrococcus spp., viridans group streptococcus, Cutibacterium acnes and related species, saprophytic Neisseria sp. and Moraxella sp."

o Doern GV, et al. A comprehensive update on the problem of blood culture contamination and a discussion of methods for addressing the problem. Clinical Microbiology Reviews. January 2020. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6822992/

o Can be evaluated by genus and species referencing the Centers for Disease Control and Prevention National Healthcare Safety Network's list of bacteria identified as skin contaminants. https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx
The skin commensal list does not include pathogens that could be possible contaminants such as Methicillin-resistant Staphylococcus aureus (MRSA)
There are certain organisms that may be considered pathogens even if only isolated in one blood culture set. A clinical decision would be made by the patient's clinical care team to determine whether the identified organism is a true pathogen based off on the patient's clinical presentation.

Calculating the Blood Culture Contamination rate
* Using data from the LIS identify all blood cultures collected by identifying all blood culture order codes within a specified timeframe (usually on a monthly basis)
* Using data from the LIS Identify all probable contaminants by identifying all probable skin contaminants result codes within a specified timeframe
+ The National Healthcare Safety Network maintains a list of bacteria identified as skin contaminants. https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx

* Calculate the contamination rate by dividing the number of blood cultures containing skin contaminants by the total number of blood culture sets collected
* BCC = (Number of blood culture sets with growth of skin commensals without the same organism in other sets collected within 24 hours / Total number of BC sets) × 100

Calculating the Single Set Blood Culture Rate
* Using data from the LIS identify all blood cultures collected by identifying all blood culture order codes within a specified timeframe (usually on a monthly basis)
* Using data from the LIS Identify all single set blood cultures by identifying all events when only one blood culture set was collected in a specified timeframe (usually on a monthly basis)
* Calculate the single set rate by dividing the number of single sets of blood cultures by the total number of blood culture sets collected
* Single Set Blood Culture Rate = (Number of single sets without another set collected within 24 hours / Total number of BC sets) × 100

NQF #0097 Medication Reconciliation Post-Discharge

STEWARD

National Committee for Quality Assurance

DESCRIPTION

The percentage of discharges from January 1–December 1 of the measurement year for patients 18 years of age and older for whom medications were reconciled the date of discharge through 30 days after discharge (31 days total).

TYPE

Process

DATA SOURCE

Claims, Electronic Health Records: Electronic Health Records, Paper Medical Records
Medication Reconciliation Post-Discharge

LEVEL

Health Plan

SETTING

Outpatient Services

NUMERATOR STATEMENT

Medication reconciliation conducted by a prescribing practitioner, clinical pharmacist or registered nurse, as documented through either administrative data or medical record review on the date of discharge through 30 days after discharge (31 total days).

NUMERATOR DETAILS

Medication reconciliation conducted by a prescribing practitioner, clinical pharmacist or registered nurse, as documented through either administrative data or medical record review on the date of discharge through 30 days after discharge (31 total days). Medication reconciliation is defined as a type of review in which the discharge medications are reconciled with the most recent medication list in the outpatient medical record. This measure is specified for medical record or administrative data collection. Medical Record Reporting Details: Documentation in the outpatient medical record must include evidence of medication reconciliation and the date when it was performed. Any of the following meets criteria: • Documentation of the current medications with a notation that the provider reconciled the current and discharge medications. • Documentation of the current medications with a notation that references the discharge medications (e.g., no changes in medications since discharge, same
medications at discharge, discontinue all discharge medications). • Documentation of the patient's current medications with a notation that the discharge medications were reviewed. • Documentation of a current medication list, a discharge medication list and notation that both lists were reviewed on the same date of service. • Documentation of the current medications with evidence that the patient was seen for post-discharge hospital follow-up with evidence of medication reconciliation or review. Evidence that the patient was seen for post-discharge hospital follow-up requires documentation that indicates the provider was aware of the patient's hospitalization or discharge. • Documentation in the discharge summary that the

discharge medications were reconciled with the most recent medication list in the outpatient medical record. There must be evidence that the discharge summary was filed in the outpatient chart on the date of discharge through 30 days after discharge (31 total days). • Notation that no medications were prescribed or ordered upon discharge. Only documentation in the outpatient medical record meets the intent of the measure, but an outpatient visit is not required. Administrative Reporting Method Details: See value sets provided for administrative codes meeting measure numerator intent.

DENOMINATOR STATEMENT

All acute or nonacute inpatient discharges on or between January 1 and December 1 of the measurement year for patients who are 18 years and older.

DENOMINATOR DETAILS

To identify an acute or nonacute inpatient discharge on or between January 1 and December 1 of the measurement year do the following: 1. Identify all acute and nonacute inpatient stays (Inpatient Stay Value Set). 2. Identify the discharge date for the stay. The denominator for this measure is based on discharges, not members. If members have more than one discharge, include all discharges on or between January 1 and December 1 of the measurement year. If the discharge is followed by a readmission or direct transfer to an acute or nonacute inpatient care setting on the date of discharge through 30 days after discharge (31 total days), count only the last discharge. To identify readmissions and direct transfers during the 31-day period: 1. Identify all acute and nonacute inpatient stays (Inpatient Stay Value Set). 2. Identify the admission date for the stay (the admission date must occur during the 31-day period). 3. Identify the discharge date for the stay (the discharge date is the event date). Exclude both the initial and the readmission/direct transfer discharges if the last discharge occurs after December 1 of the measurement year. If the admission date and the discharge date for an acute inpatient stay occur between the admission and discharge dates for a nonacute inpatient stay, include only the nonacute inpatient discharge. To identify acute inpatient discharges: 1. Identify all acute and nonacute inpatient stays (Inpatient Stay Value Set). 2. Exclude nonacute inpatient stays (Nonacute Inpatient Stay Value Set). 3. Identify the admission date for the stay. 4. Identify the discharge date for the stay. To identify nonacute inpatient discharges: 1. Identify all acute and nonacute inpatient stays (Inpatient Stay Value Set). 2. Confirm the stay was for nonacute care based on the presence of a nonacute code (Nonacute Inpatient Stay Value Set). 3. Identify the admission date for the stay. 4. Identify the discharge date for the stay. Additional guidance for identifying appropriate discharges for inclusion in the eligible population: - If a patient remains in an acute or nonacute care setting through December 1 of the measurement year, a discharge is not included in the measure for this patient, but the organization must have a method for identifying the patient's status for the remainder of the measurement year, and may not assume the patient remained admitted based only on the absence of a discharge before December 1. If the organization is unable to confirm the patient remained in the acute or nonacute care setting through December 1, disregard the readmission or direct transfer and use the initial discharge date. Additional guidance for identifying the eligible population: Patients in hospice are removed from the eligible population.

EXCLUSIONS

No exclusions.

EXCLUSION DETAILS

N/A

RISK ADJUSTMENT

No - This measure is not risk-adjusted

STRATIFICATION

N/A

TYPE SCORE

Rate/Proportion

ALGORITHM

Step 1: Determine the eligible population. The eligible population is all the patients aged 18 years and older. Do not include patients who were discharged then subsequently readmitted to the hospital or directly transferred to another inpatient setting. Also do not include patients who received hospice services during the measurement year.

Step 2: Determine number of patients meeting the denominator criteria as specified in section S.9 above. The denominator includes all patients discharged from an inpatient facility. Patients may be counted more than once in the denominator if they had more than one discharge during the measurement year.

Step 3: Determine the number of patients who meet the numerator criteria as specified in section S.6 above. The numerator includes all patients who had a reconciliation of the discharge mediations with the current medication list in the outpatient medical record documented.

Step 4: Calculate the rate by dividing the total from Step 3 by the total from Step 2.

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N/A

Appendix E: Related and Competing Measures

Comparison of NQF #3690 and NQF #0138

Steward/Developer

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

University of Michigan

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Centers for Disease Control and Prevention

Description

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

The inappropriate diagnosis of UTI in hospitalized medical patients (or "Inappropriate Diagnosis of UTI") measure is a process measure that evaluates the annual proportion of hospitalized adult medical patients treated for UTI who do not meet diagnostic criteria for UTI (thus are inappropriately diagnosed and overtreated).

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Standardized Infection Ratio (SIR) of healthcare-associated, catheter-associated urinary tract infections (UTI) will be calculated among patients in bedded inpatient care locations, except level II or level III neonatal intensive care units (NICU).

This includes acute care general hospitals, long-term acute care hospitals, rehabilitation hospitals, oncology hospitals, and behavior health hospitals.

Numerator

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

The measure quantifies adult, hospitalized medical patients inappropriately diagnosed with UTI. Here, inappropriate diagnosis is defined as patients treated with antibiotics for UTI who do not meet diagnostic criteria for UTI. Patients were considered inappropriately diagnosed if they received antibiotic therapy for a UTI but did not have at least one sign or symptom of a UTI.

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Total number of observed healthcare-associated CAUTI among patients in bedded inpatient care locations (excluding patients in Level II or III neonatal ICUs).

Denominator

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

The denominator includes all adult, general care, immunocompetent, medical patients hospitalized and treated for UTI who do not have a concomitant infection.

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Total number of predicted healthcare-associated CAUTI among inpatient care locations under surveillance for CAUTI during the data period, based on the national CAUTI baseline Data is calculated using the facility's number of catheter days and the following significant risk factors:

- Acute Care Hospitals: CDC Location, Facility bed size, Medical school affiliation, and Facility type
- Critical Access Hospitals: Medical school affiliation
- Long-Term Acute Hospitals: Average length of stay, Setting type, and Location type
- Inpatient Rehabilitation Facilities: Setting type, Proportion of admissions with traumatic and non-traumatic spinal cord dysfunction, Proportion of admissions with stroke

Measure Type

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Process

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Outcome

Data Source

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Electronic Health Records, Other (specify), Electronic Health Data

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

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

Target Population

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Elderly (Age >= 65), Adults (Age >= 18)

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Women, Veterans, Elderly, Individuals with multiple chronic conditions, Children, Populations at Risk, Dual eligible beneficiaries

Care Setting

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Inpatient/Hospital

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Post-Acute Care, Other, Inpatient/Hospital

Level of Analysis

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Facility

NQF #0138 NATIONAL HEALTHCARE SAFETY NETWORK (NHSN) CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI) OUTCOME

Other, Population: Regional and State, Facility

Comparison of NQF #3690 and NQF #0684

Steward/Developer

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

University of Michigan

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

Centers for Medicare & Medicaid Services

Description

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

The inappropriate diagnosis of UTI in hospitalized medical patients (or "Inappropriate Diagnosis of UTI") measure is a process measure that evaluates the annual proportion of hospitalized adult medical patients treated for UTI who do not meet diagnostic criteria for UTI (thus are inappropriately diagnosed and overtreated).

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

This measure reports the percentage of long-stay residents in a nursing home who have a urinary tract infection in the 30 days prior to the target assessment. This measure is based on data from the Minimum Data Set (MDS) 3.0 OBRA, PPS, and/or discharge assessments during the selected quarter. Long-stay nursing home residents are identified as those who have had 101 or more cumulative days of nursing home care.

Numerator

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

The measure quantifies adult, hospitalized medical patients inappropriately diagnosed with UTI. Here, inappropriate diagnosis is defined as patients treated with antibiotics for UTI who do not meet diagnostic criteria for UTI. Patients were considered inappropriately diagnosed if they received antibiotic therapy for a UTI but did not have at least one sign or symptom of a UTI.

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

The numerator is the number of long-stay nursing home residents in the denominator sample with an episode during the selected quarter with a target assessment that indicates a urinary tract infection within the last 30 days.

Denominator

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

The denominator includes all adult, general care, immunocompetent, medical patients hospitalized and treated for UTI who do not have a concomitant infection.

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

The denominator includes all long-stay residents in the nursing home who have an episode during the selected quarter with a qualifying target assessment (OBRA, PPS or discharge) and who do not meet the exclusion criteria.

Measure Type

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Process

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

Outcome

Data Source

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Electronic Health Records, Other (specify), Electronic Health Data

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

Assessment Data

Target Population

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Elderly (Age >= 65), Adults (Age >= 18)

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

Elderly, Populations at Risk, Individuals with multiple chronic conditions

Care Setting

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Inpatient/Hospital

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

Post-Acute Care

Level of Analysis

NQF #3690 INAPPROPRIATE DIAGNOSIS OF URINARY TRACT INFECTION (UTI) IN HOSPITALIZED MEDICAL PATIENTS; ABBREVIATED FORM: INAPPROPRIATE DIAGNOSIS OF UTI

Facility

NQF #0684 PERCENT OF RESIDENTS WITH A URINARY TRACT INFECTION (LONG STAY)

Facility

Comparison of NQF #2820 and NQF #3621

Steward/Developer

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

University of California, San Francisco

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

American College of Radiology

Description

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

Radiation dose is measured as the dose-length product for every diagnostic brain, skull, and abdomen and pelvis CT scan performed by a reporting facility on any child less than 18 years of age during the reporting period of 12 months. The dose associated with each scan is evaluated as "high" or "acceptable," relative to the 75th percentile benchmark for that type of scan and age of patient. Median doses are calculated at the facility level for each type of scan and age of patient stratum, and then compared with the same 75th percentile benchmark. The overall proportion of high dose exams is calculated including all CT scans.

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

Weighted average of 3 CT Exam Types: Overall Percent of CT exams for which Dose Length Product is at or below the size-specific diagnostic reference level (for CT Abdomen-pelvis with contrast/single phase scan, CT Chest without contrast/single phase scan and CT Head/Brain without contrast/single phase scan)

Numerator

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

The number of diagnostic CT scans within an eligible anatomic region (i.e., brain, skull, abdomen and pelvis) and age stratum for which the radiation dose (measured in dose-length product, DLP) exceeds the 75^th percentile benchmark for that type of scan and age of patient.

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

Number of CT Abdomen-Pelvis exams with contrast (single phase scan), CT Chest exams without contrast (single phase scan), and CT Head/Brain exams without contrast (single phase scan) for which Dose Length Product is at or below the size-specific exam-specific diagnostic reference level

Denominator

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

The denominator is the total number of diagnostic CT scans within an eligible anatomic region and age stratum (infant (<1 year); small child (1-4); medium child (5-9); large child (10-14) and adolescent (15-17)) that were performed during the reporting period. These totals are summed to generate the total number of diagnostic CT scans within all eligible anatomic regions and age strata.

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

Number of CT Abdomen-pelvis exams with contrast (single phase scans), CT Chest exams without contrast (single phase scans), and CT Head/Brain (single phase scans)

Measure Type

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

Outcome: Intermediate Clinical Outcome

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

Composite

Data Source

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

Electronic Health Data, Electronic Health Records, Other, Registry Data

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

Registry Data

Target Population

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

Children

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

All patients regardless of age.

Care Setting

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

Inpatient/Hospital, Outpatient Services

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

Emergency Department and Services, Outpatient Services, Other, Inpatient/Hospital

Level of Analysis

NQF #2820 PEDIATRIC COMPUTED TOMOGRAPHY (CT) RADIATION DOSE

Facility

NQF #3621 COMPOSITE WEIGHTED AVERAGE FOR 3 CT EXAM TYPES

Clinician: Group/Practice, Facility

Comparison of NQF #3450 and NQF #0204

Steward/Developer

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

University of Pennsylvania, Center for Health Outcomes and Policy Research

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

American Nurses Association

Description

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

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.

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

NSC-12.1 - Percentage of total productive nursing hours worked by RN (employee and contract) with direct patient care responsibilities by hospital unit.

NSC-12.2 - Percentage of total productive nursing hours worked by LPN/LVN (employee and contract) with direct patient care responsibilities by hospital unit.

NSC-12.3 - Percentage of total productive nursing hours worked by UAP (employee and contract) with direct patient care responsibilities by hospital unit.

NSC-12.4 - Percentage of total productive nursing hours worked by contract or agency staff (RN, LPN/LVN, and UAP) with direct patient care responsibilities by hospital unit.

Note that the skill mix of the nursing staff (NSC-12.1, NSC-12.2, and NSC-12.3) represent the proportions of total productive nursing hours by each type of nursing staff (RN, LPN/LVN, and UAP); NSC-12.4 is a separate rate.

Measure focus is structure of care quality in acute care hospital units.

Numerator

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

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

a) Mean score on a composite of all subscale scores

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

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

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

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

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

g) 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.

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

Four separate numerators are as follows:

RN hours – Productive nursing care hours worked by RNs with direct patient care responsibilities for each hospital in-patient unit during the calendar month.

LPN/LVN hours – Productive nursing care hours worked by LPNs/LVNs with direct patient care responsibilities for each hospital in-patient unit during the calendar month.

UAP hours – Productive nursing care hours worked by UAP with direct patient care responsibilities for each hospital in-patient unit during the calendar month.

Contract or agency hours – Productive nursing care hours worked by nursing staff (contract or agency staff) with direct patient care responsibilities for each hospital in-patient unit during the calendar month.

Denominator

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Staff RNs

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

Denominator is the total number of productive hours worked by employee or contract nursing staff with direct patient care responsibilities (RN, LPN/LVN, and UAP) for each hospital in-patient unit during the calendar month.

Measure Type

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Structure

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

Structure

Data Source

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Instrument-Based Data

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

Management Data, Other

Target Population

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Populations at Risk: Veterans, Adults (Age >= 18), Children (Age < 18)

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

Populations at Risk, Children

Care Setting

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Inpatient/Hospital

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

Inpatient/Hospital

Level of Analysis

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Facility

NQF #0204: SKILL MIX (REGISTERED NURSE [RN], LICENSED VOCATIONAL/PRACTICAL NURSE [LVN/LPN], UNLICENSED ASSISTIVE PERSONNEL [UAP], AND CONTRACT)

Other, Facility

Comparison of NQF #3450 and NQF #0205

Steward/Developer

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

University of Pennsylvania, Center for Health Outcomes and Policy Research

NQF #0205: NURSING HOURS PER PATIENT DAY

American Nurses Association

Description

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

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.

NQF #0205: NURSING HOURS PER PATIENT DAY

NSC-13.1 (RN hours per patient day) – The number of productive hours worked by RNs with direct patient care responsibilities per patient day for each in-patient unit in a calendar month.

NSC-13.2 (Total nursing care hours per patient day) – The number of productive hours worked by nursing staff (RN, LPN/LVN, and UAP) with direct patient care responsibilities per patient day for each in-patient unit in a calendar month.

Measure focus is structure of care quality in acute care hospital units.

Numerator

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

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

a) Mean score on a composite of all subscale scores

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

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

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

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

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

g) 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.

NQF #0205: NURSING HOURS PER PATIENT DAY

Total number of productive hours worked by nursing staff with direct patient care responsibilities for each hospital in-patient unit during the calendar month.

Denominator

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Staff RNs

NQF #0205: NURSING HOURS PER PATIENT DAY

Denominator is the total number of patient days for each in-patient unit during the calendar month. Patient days must be from the same unit in which nursing care hours are reported.

Measure Type

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Structure

NQF #0205: NURSING HOURS PER PATIENT DAY

Structure

Data Source

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Instrument-Based Data

NQF #0205: NURSING HOURS PER PATIENT DAY

Management Data, Other

Target Population

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Populations at Risk: Veterans, Adults (Age >= 18), Children (Age < 18)

NQF #0205: NURSING HOURS PER PATIENT DAY

Children, Populations at Risk

Care Setting

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Inpatient/Hospital

NQF #0205: NURSING HOURS PER PATIENT DAY

Inpatient/Hospital

Level of Analysis

NQF #3450 PRACTICE ENVIRONMENT SCALE - NURSING WORK INDEX (PES-NWI) (COMPOSITE AND FIVE SUBSCALES) (PREVIOUSLY NQF#0206 - UNDERGOING MAINTENANCE)

Facility

NQF #0205: NURSING HOURS PER PATIENT DAY

Facility, Other

Appendix F: Pre-Evaluation Comments

Comments received as of June 7, 2022.

Comment 1 by: Submitted by Valerie Vaughn, on behalf of Michigan Hospital Medicine Safety Consortium

This public comment is to address concerns about reliability testing at the accountable entitle level. There are concerns that our ICC appears low (0.0641). We would like to clarity that the ICC of 0.0641 applies only if a single case were obtained from each hospital. This indicates that if each hospital performed 1 case abstraction, there would be high variability and poor reliability. However, we do not suggest each hospital only conduct 1 case abstraction. The Spearman Brown Prophecy provides an estimation of reliability after adjusting the number of measurements. When the median number of case counts for the entire cohort (N=133 median cases per hospital in measure development hospitals) is applied to the Spearman Brown formula, the overall reliability was 0.901 (well above the 0.5 threshold noted for "poor reliability"). The 0.901 was calculated as follows: Median case abstractions: 133 (IQR 92-154) Reliability or ICC for 133 cases (i.e., ICC/reliability for a typical HMS hospital): (133*0.0641)/(1+(133-1)*0.0641)=0.901 Through this same calculation, using the Spearman Brown Prophecy, we calculated the number of annual cases needed to achieve each reliability threshold: Reliability---Number of annual cases needed 0.6---22 0.7---35 0.8 (standard)---59 0.9---132 Thus, we attain reliability of 0.8 (standard reliability for a quality metric of this stakes) with 59 cases per hospital which is our suggested target number of cases for the measure.

Comment 2 by: Submitted by Valerie Vaughn, on behalf of Michigan Hospital Medicine Safety Consortium

This public comment is to address concerns about reliability and validity testing at the critical data element level. We did not include data element validity testing in the original submission but rather reported encounter level validity. We also have data element validity available and include it here: SUMMARY: Critical data element validity testing was conducted by a senior project manager who reviewed all critical data elements from 50 abstracted cases (representing 33 hospitals). Overall, the percent agreement for abstractor and auditor for critical data elements for signs/symptoms of UTI ranged from 94% to 100%. This suggests that data element validity is high and adds to our already submitted information that encounter level validity is high. DETAILS: Critical data elements for clinical signs/symptoms of UTI were examined by the senior project manager in blind audits of 50 consecutive patients with a diagnosis of UTI (appropriate or inappropriate) from 33 hospitals. Data elements were scored based correctness of data abstraction (1 point received if data element was answered correctly, 0 points if there was disagreement). The proportion of cases in which there was agreement for each data element were tabulated for clinical signs/symptoms of UTI and overall abstraction accuracy. Audit findings were as follows: Signs/Symptoms of UTI: Percent agreement between abstractor and auditor for critical data elements: Urgency 100% Rigors 98% Frequency 96% Dysuria 94% Suprapubic Pain or Tenderness 96% Acute Hematuria 94% Costovertebral or Flank Pain Tenderness 100% Fever (>38°C) 98% Altered Mental Status 96% Temperature >38.0 98% Temperature <36.0 98% Heart Rate >90 BPM 96% Respiratory Rate >20 br/min 98% White blood count >10K/µL 98% Hypotension (SBP < 90 mmHg) 96%

Comment 3 by: Submitted by Eileen Lake, on behalf of The University of Pennsylvania, Center for Health Outcomes and Policy Research

This is clarifying information as a public comment on measure #3450, which I steward. The clarifying information is submitted as part of the pre-evaluation commenting period of the spring 2022 Patient Safety Consensus Development Process. Regarding the staff's preliminary ratings assigned in the Preliminary Analysis, please note the following: For Criteria 1. Importance to Measure and Report. 1a. Evidence, The Analysis notes "However, the developer does not provide any further detail regarding how nursing work environment applies within the logic model." My reply is "The work environment is considered an organizational concept within the system. The work environment is considered to moderate the relationship between an intervention and an outcome. Or stated another way, the effect of an intervention depends on the context of the work environment." Under Changes to evidence from last review, there is an error: It states "In the current submission, the developer reports that there are 15 new empirical publications with evidence for the PES-NWI." The correct number is 35 new empirical publications. 1b. Gap in Care/Opportunity for Improvement / 1b. Performance Gap: Bullet 2 states: "However, the time period for these data were not reported." The clarification is: "These data were collected in 2005 through 2008 sequentially in four large states." Bullet 2 also states "Variance around these point estimates was not provided." The clarification is: "In Lake, Riman, & Sloane (2020), Table 2 on page 2159 reports the PES-NWI mean across a panel of 458 hospitals in 2006 and 2016. The means and SDs were: 2006 2.70 (0.22) 2016 2.77 (0.25) These values demonstrate that although the work environment has improved modestly over the ten year period, there is even greater variation in 2016 across hospitals than there was in 2006." 1b. Disparities. The analysis notes: "The developer states that disparities data are not applicable to this measure." The clarification is: "There is one study that demonstrates poorer PES-NWI scores in hospitals that serve disproportionately more patients of Black race: 1. Lake et al (2015) in Health Services Research, in data from 2008, shows in Table 3 on page 386 this PES-NWI mean and SD distribution across a sample of 98 hospitals nationally classified into categories of low, medium, and high percentages of very low birthweight infants of Black race: Low: 3.16 (0.27) Medium: 3.07 (0.21) High: 2.95 (0.24) These differences were statistically significant p = .004. I had not included this information because I am not sure if this is the proper interpretation of disparities for structure measures." For Criteria 2: Scientific Acceptability of Measure Properties 2.a.2. Reliability testing. Specifications Bullet 2 notes: "It is unclear from the cited literature whether the testing data include this minimum response size." The clarification is "In Zangaro & Jones (2019) of the 51 studies included in the reliability generalization meta-analysis, Table 2 on pages 1665 - 1667 shows a range of respondents of 35 to 33,845. Thus, all of these studies meet the minimum sample size." Regarding Questions for the Committee regarding reliability: Bullet 2 states "The Standing Committee should consider whether the cited studies have applied the minimum sample requirement of 30 surveys." The response is "see above comment: all 51 studies exceeded the minimum requirement." For Criterion 4: Use and Usability 4a.1.Accountability program details. Here is an additional program detail that was not listed: "The Leapfrog group plans to begin surveys using the PES-NWI in the 2023 survey year for payors and health plans to include in their value-based purchasing programs." 4b.1 Improvement. Under Improvement Results. Bullet 1 states "concerns exist…minimum recommended number of responders." Clarifying comment is: "The minimum was reached in 51 studies compiled for the Zangaro & Jones (2019)meta-analysis, suggesting that this minimum is routinely met." 4b.2. Benefits versus Harms includes the statement "(if such evidence exists)." The clarifying comment is:

"There has been no evidence of unintended negative consequences to individuals or populations from use of the measure." Preliminary Rating for Usability X Insufficient Rationale "concerns exist related to whether the studies cited are actually showing improvement on the measure over time, and are providing performance results of the measure as specified using the recommended minimum number of surveys." Clarification is "The two panel studies (Lake et al (2020); Sloane et al (2018) of 452 hospitals were designed to show changes in the same group of hospitals over a ten year period." and "As per Zangaro & Jones (2019), we assert that the minimum is routinely met."

National Quality Forum
1099 14th Street NW, Suite 500
Washington, DC 20005
https://www.qualityforum.org