



Patient Safety Spring 2022 Cycle CDP Report

**TECHNICAL REPORT
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Executive Summary

Over the last two decades, patient safety measurement efforts 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 six measures for endorsement, including the medication reconciliation measure which was originally reviewed during the fall 2020 cycle. The Consensus Standards Approval Committee (CSAC) upheld the Standing Committee's recommendations.

The Standing Committee endorsed 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)
- 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 measures under review cover the topics of 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

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

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](#)), including measures for the improper diagnosis of illness, appropriate radiation dosing, falls, pressure ulcers, etc. This portfolio contains 54 measures: 23 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 endorsed	3	3	6

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 were then 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 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. Prior to June 7, 2022, two comments were submitted and shared with the Standing Committee prior to the measure evaluation meeting(s) ([Appendix F](#)).

Comments Received After Standing Committee Evaluation

The continuous public commenting period with NQF member support closed on September 6, 2022. Following the Standing Committee's evaluation of the measures under review, NQF received 40 comments from 13 organizations (including two NQF member organizations) and individuals pertaining to the draft report and the measures under review ([Appendix G](#)). All comments for each measure under review have also been summarized in [Appendix A](#).

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. Two NQF members submitted their expressions of support. One NQF member expressed "support" for NQF #3450, and the other NQF member expressed "support" for NQF #3658.

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): Endorsed

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"), which is often incorrectly diagnosed as a UTI. The Standing Committee 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 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 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 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 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 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 passed 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. The developer provided clarification on the potential unintended consequence of delaying antibiotics, noting that when patient outcomes were analyzed, there were no major differences in outcomes like hospital readmissions between patients who received antibiotics and those who did not. The developer also noted that the length of stay was longer for patients who received antibiotics after the urine culture. The Standing Committee accepted the developer's response and passed the measure on usability and overall suitability for endorsement.

One supportive public comment was received during the commenting period for this measure. During the CSAC meeting on December 9, 2022, the CSAC upheld the Standing Committee's decision to recommend the measure for endorsement. No appeals were received.

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

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 developer explained that the clinical definition of pneumonia is designed to be repeatable from one hospital to another but is not necessarily valid regarding accurately representing clinical pneumonia. This was done to ensure that the measure could consistently pull the population that is inappropriately diagnosed. The Standing Committee accepted the developer's rationale and passed the measure on evidence. The Standing Committee also agreed that a performance gap existed. However, one Standing Committee member expressed concern about whether the observed performance gap reflected real differences in quality of care or whether it developed due to the aforementioned issues with the definition of pneumonia. The developer responded to this concern by explaining that people often assume older adults are at a higher risk of adverse outcomes, which is true, but often forget that adverse events from treatment are also higher in this group. The Standing Committee agreed that the data sufficiently captured a gap due to the quality of care that existed and passed the measure on the performance gap criterion.

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 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 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.

One supportive public comment was received during the commenting period for this measure. During the CSAC meeting on December 9, 2022, the CSAC upheld the Standing Committee's decision to recommend the measure for endorsement. No appeals were received.

Radiation Safety in Pediatric Computed Tomography

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

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 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 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 accepted the SMP's rating for validity.

The Standing Committee had no concerns with the measure's feasibility since the data elements for this measure are in defined fields in electronic sources and 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 passed the measure on usability.

No public or member comments were received during the commenting period for this measure. During the CSAC meeting on December 9, 2022, the CSAC upheld the Standing Committee's decision to recommend the measure for endorsement. No appeals were received.

Blood Culture Contamination

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

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 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 concern that 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.

Six public and/or member comments were received during the commenting period for this measure. All comments expressed support for the measure and were provided to the Standing Committee prior to the post-comment call. During the CSAC meeting on December 9, 2022, the CSAC upheld the Standing Committee's decision to recommend the measure for endorsement. No appeals were received.

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): Endorsed

Description: Practice Environment Scale-Nursing Work Index (PES-NWI) is a survey-based measure of the nursing practice environment completed by staff registered nurses; includes mean scores on index subscales and a composite mean of all subscale scores; **Measure Type:** Structure; **Level of Analysis:** 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. The Standing Committee was unable to reach consensus on performance gap.

The developer provided studies demonstrating reliability at both the encounter and 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 passed the measure on validity.

The Standing Committee had no concerns with the measure's feasibility or use since both the survey can be collected through electronic survey software and the measure is in use and currently publicly reported. The Standing Committee 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 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 on performance gap, a must-pass criterion.

During the public commenting period, 32 comments were received for this measure. The comments received expressed strong support for the PES-NWI. Numerous commenters stated that the use of this tool is standard practice for most facilities and is critical to their understanding of the nursing work environment. The developer provided a public comment, referencing additional data from as recent as 2021, showing that a large gap in performance still exists at the hospital level and that the values within the subscales demonstrate that wide variation also exists within categories that make up the measure score. Concerning disparities data, the developer noted that significant differences in the work environment in neonatal intensive care units were found based on patient race and socioeconomic status. During the post-comment meeting discussion, the Standing Committee noted the supportive public comments, which highlighted the widespread use of this measure and discussed the clarifying comments submitted by the developer. The Standing Committee indicated that its questions and concerns on the measure had been addressed and had no further comments on performance gap. The Standing Committee re-voted and passed the measure on performance gap and overall suitability for endorsement.

During the CSAC meeting on December 9, 2022, the CSAC upheld the Standing Committee's recommendation and endorsed the measure. No appeals were received.

Medication Reconciliation

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

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

During the Fall 2020 Cycle, NQF #0097 was submitted for maintenance review. The Fall 2020 Measure Evaluation Meeting took place on February 10, 2021. NQF #0097 was consensus-not-reached (CNR) on Evidence and was stated to have passed on all other criteria. During the Fall 2020 Post-Comment Meeting, on June 4, 2021, NQF #0097 was re-discussed and a re-vote on Evidence was held. The measure passed on Evidence. It subsequently passed on an overall vote and was recommended for endorsement by the Standing Committee. Prior to the CSAC meeting on June 29, 2021, NQF staff realized that the original Validity vote from the measure evaluation meeting had been miscalculated so the measure did not move on to Fall 2020 CSAC review. NQF #0097 should have been CNR on Validity, but it was miscounted which led to a pass on validity. The previous discussion and voting can be found in the [Fall 2020 Technical Report](#). This measure retained endorsement in the interim.

Because it was too late to correct the error and re-vote during post-comment, the measure was pulled out of the Fall 2020 cycle CSAC review meeting. NQF staff discussed the issue with the developer team, letting them know that NQF #0097 would retain its endorsed status until the issue could be properly resolved. At this point, the Spring 2021 cycle was already underway. Fall 2021 was a pared down cycle during which Standing Committee would review new measures only. As a result, NQF #0097 was planned for inclusion in the next available measure review cycle, Spring 2022.

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.

During the Spring 2022 Measure Evaluation Meeting on June 23, 2022, NQF #0097 was reviewed by the Standing Committee for Validity. The Standing Committee discussed, voted, and passed the measure on Validity. All other criterion votes from Fall 2020 stood, therefore NQF #0097, having been recommended, was fast-tracked to the Fall 2021 CSAC meeting on July 26, 2022, where the CSAC upheld the Standing Committee's recommendation and re-endorsed NQF #0097. No appeals were received.

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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. 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 reached and maintained throughout the full measure evaluation meeting on June 23, 2022. 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. For the post-comment call on October 13, 2022, quorum was not reached, and vote totals were collected via 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.

Measures Endorsed

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 *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, and asymptomatic bacteremia is often misdiagnosed as a UTI as described in the clinical practice guideline.
- 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). The developer noted 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 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 agreed that the measures were harmonized to the extent possible.

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.
- One post-evaluation comment was received.
 - The commenter expressed support for the measure but disagreed with the staff's interpretation of the reliability results. Specifically, the commenter stated that it is incorrect to say that a measure has insufficient reliability by just looking at the intra-class correlation coefficient, which is an estimate of the reliability of using a single observation to distinguish between the objects of measurement. The commenter also stated that using the Spearman-Brown prophecy formula is a standard way of estimating the reliability of a measurement averaged over multiple measurements of the same hospital as represented by an average of multiple patient outcomes within that hospital.
 - NQF provided a response, clarifying that while the measure was rated insufficient on reliability by NQF staff, the measure received a rating of moderate from the Standing Committee and did pass.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision: Total votes-15; Yes-15; No-0 (December 9, 2022: Endorsed)

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

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 does not take longer to report than other chart review measures that are already endorsed.
- The Standing Committee 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 due to time constraints. During the post-comment meeting in October 2022, the Standing Committee agreed that each set of related measures was harmonized to the extent possible.

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.
- One post-evaluation comment was received.
 - The commenter disagreed with how the reliability of the measure was calculated. Specifically, the commenter stated that the intraclass correlation coefficient was not relevant for assessing the reliability of this specific measure and instead supports the application of the Spearman-Brown formula to assess reliability.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision: **Total votes-15; Yes-15; No-0 (December 9, 2022: Endorsed)**

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

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 due to time constraints. During the post-comment meeting on October 2022, the Standing Committee agreed that each set of related measures was harmonized to the extent possible.

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

7. Public and Member Comment

- No NQF member or public comments were received.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision: Total votes-15; Yes-15; No-0 (December 9, 2022: Endorsed)

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

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 blood culture contamination rates can 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 percent.
- 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 percent to 1 percent.
- 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.
- Six post-evaluation comments were received.
 - Five commenters expressed support for the measure, noting that their personal observations of blood culture contamination on unnecessary and prolonged broad spectrum antibiotic therapy, C. difficile infection, MDROs, acute kidney injury, extended length of hospital stay, readmissions, and significant avoidable hospital costs has led them to advocate for the establishment of a new blood culture quality measure, including a significantly reduced blood culture contamination benchmark of 1%.
 - One comment expressed support for the measure but raised concerns.

- The comment outlined additional considerations, such as an existing disconnect between patient care and the reported metric of “overall contamination rate” as currently defined. The commenter stated that inpatients routinely have several sets of blood cultures ordered in an inpatient stay, per patient, and that the denominator (total blood cultures) can become diluted in non-ED or non-outpatient settings. The commenter also suggested considering a metric such as “percent of positive blood cultures judged to be contaminants,” or “percent of patients in whom any blood cultures were ordered and were deemed to have one or more contaminants.”

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision: Total votes- 15; Yes-15; No-0 (December 9, 2022: Endorsed)

- The CSAC upheld the Standing Committee’s decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

NQF #0097 Medication Reconciliation Post-Discharge

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

[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

- NQF member and public commenting on this measure occurred during the fall 2020 cycle and was not repeated during the spring 2022 cycle.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision: Total votes- 8; Yes-7; No-1 (July 26, 2022: Endorsed)

- The CSAC upheld the Standing Committee’s decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

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;** Post-Comment Evidence Revote: **Total Votes-15; H-2, M-13, L-0, I-0**

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.
- The Standing Committee did not reach a consensus on performance gap, a must-pass criterion.
- During the post-comment meeting, the Standing Committee discussed supportive public comments and the clarifying comments from the developer. The Standing Committee indicated that its questions and concerns about the measure had been addressed and had no further comments on performance gap.
- The developer provided a public comment referencing additional data from as recent as 2021, showing that a large gap in performance still exists at the hospital level and that the values within the subscales demonstrate that wide variation also exists within categories that make up the measure score. Concerning disparities data, the developer noted that significant differences in the work environment in neonatal intensive care units were found based on patient race and socioeconomic status.
- A Standing Committee member asked whether disparities could be included in future work-index surveys. The developer responded by explaining that the survey would need to include demographic questions to capture such disparities data, which nurses are sometimes hesitant to answer, and that this is an area the developer has not yet explored. The developer did note that they have examined the disparities question from the patient side but not from the nurse respondent side.

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.
- 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 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
- During the post-comment call, the Standing Committee agreed that each set of related measures was harmonized to the extent possible and posed no unnecessary burden to the system.
- The related and competing measures discussion was not held for NQF #3450 since the endorsement decision for this measure was not yet decided at the time of the post-comment call due to lack of a voting quorum.

6. Standing Committee Recommendation for Endorsement: Total votes- 15; Yes-15; No-0

- During the post-comment meeting, the Standing Committee discussed the measure developer's responses and public comments, voted to pass this measure on gap, and subsequently voted to recommend it for endorsement.

7. Public and Member Comment

- Thirty-two post-evaluation comments were submitted.
- Thirty-one comments were written in support of the measure. The majority of the commenters stated that the use of this tool is standard practice for most facilities and is critical to their understanding of the nursing work environment.
 - One public comment was submitted by the measure developer to clarify various items related to the measure submission. The developer provided a public comment referencing additional data from as recent as 2021, showing that a large gap in performance still exists at the hospital level and that the values within the subscales demonstrate that wide variation also exists within categories that make up the measure score. Concerning disparities data, the developer found significant differences in the work environment in neonatal intensive care units classified according to very low-birth-weight infants of Black race. Lower scores on the instrument were also associated with higher rates of poor socioeconomic status.
 - During the post-comment meeting discussion, the Standing Committee noted the supportive public comments, which highlighted the widespread use of this measure and discussed the clarifying comments submitted by the developer. A Standing Committee member asked whether disparities could be included in future work-index surveys. The developer responded by explaining that the survey would need to include demographic questions to capture such disparities data, which nurses are sometimes hesitant to answer, and that this is an area the developer has not yet explored. The developer did note that they have examined the disparities question from the patient side but not from the nurse respondent side. The Standing Committee indicated that its questions and concerns on the measure had been addressed and had no further comments on performance gap.
 - The Standing Committee re-voted following the meeting and passed the measure on performance gap and overall suitability for endorsement.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision: Total votes- 15; Yes-15; No-0 (December 9, 2022: Endorsed)

- The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.

9. Appeals

- No appeals were received.

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
3633e	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
3658	Adult Blood Culture Contamination Rate; A National Measure and Standard for Clinical Laboratories and Antibiotic Stewardship Programs	None

Measure #	Measure Title	Federal Programs (Finalized or Implemented)
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 (Clinician Level)	None
3663e	Excessive Radiation Dose or Inadequate Image Quality for Diagnostic Computed Tomography (CT) in Adults (Facility Level)	None
3671	Inappropriate Diagnosis of Community-Acquired Pneumonia (CAP) in Hospitalized Medical Patients; Abbreviated Form: Inappropriate Diagnosis of CAP	None
3690	Inappropriate Diagnosis of Urinary Tract Infection (UTI) in Hospitalized Medical Patients; Abbreviated Form: Inappropriate Diagnosis of UTI	None

*Adapted from the [CMS Measures Inventory Tool](#). Last Accessed on January 24, 2023.

Appendix C: Patient Safety Standing Committee and NQF Staff

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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
 - 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
 - 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
 - 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
 - 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
 - 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 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.

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 outpatient 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, et al. 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 joi:10.1001/jamapediatrics.2013.311, 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 75th 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 75th 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 75th percentile, and to what degree. The measure classifies both (1) median radiation doses exceeding the 75th percentile within a stratum, and (2) a rate of 50% or more of all exams exceeding their respective 75th 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 75th 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)	75 th 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 75th 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 75th percentile benchmarks for pediatric abdomen and pelvis examinations and those created from the UCSF International CT Dose Registry

Abdomen and pelvis	75 th percentile benchmark UCSF Registry	75 th percentile benchmark used by the Leapfrog Group
< 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 75th 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 be 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

2022 submission:

Target population

The target population includes all diagnostic CT exams of specified anatomic areas (skull, brain, abdomen and pelvis) performed in children aged 0-17 years during the measurement period. These can be most easily identified using CPT® codes (see below) but can also be identified using specific protocol names available in the Picture Archiving and Information System (PACS) or Radiology Information System (RIS), which correspond to the CPT® codes and descriptions below.

Of note, examinations that are not diagnostic CT are not included. These include: CT examinations performed in conjunction with nuclear medicine (such as SPECT and PET-CT) or as part of diagnostic procedures such as a biopsy or interventional therapeutic procedures; examinations performed as part of surgical planning or radiation therapy; and those where the anatomic area is not specified or where no primary images were obtained. These have different CPT® codes and are not included in the measure.

Table sp-15-1. CPT® codes and descriptions

SKULL CPT® codes	Descriptions
70480	Computed tomography, orbit, sella, or posterior fossa or outer, middle, or inner ear; without [contrast material]
70481	Computed tomography, orbit, sella, or posterior fossa or outer, middle, or inner ear; with [contrast material]
70482	Computed tomography, orbit, sella, or posterior fossa or outer, middle, or inner ear; without [contrast material], followed by contrast material[s] and further sections

SKULL CPT® codes	Descriptions
70486	Computed tomography, maxillofacial area; without [contrast material]
70487	Computed tomography, maxillofacial area; with [contrast material]
70488	Computed tomography, maxillofacial area; without [contrast material], followed by contrast material[s] and further sections
70450	Computed tomography, head or brain; without [contrast material] in conjunction with an ICD-10-CM code that identifies this as an exam done to evaluate a ventricular shunt (see below). These are rare examination types, and therefore if an entity cannot identify ICD-10-CM codes, these examinations should be included in the brain category.
ICD-10-CM codes and descriptors for ventricular shunt evaluation.	These should be identified in combination with CPT® code 70450 to consider a head CT as a skull exam.
T8501XA	Breakdown (mechanical) of ventricular intracranial (communicating) shunt, initial encounter
T8501XD	Breakdown (mechanical) of ventricular intracranial (communicating) shunt, subsequent encounter
T8501XS	Breakdown (mechanical) of ventricular intracranial (communicating) shunt, sequela
T8502XD	Displacement of ventricular intracranial (communicating) shunt, subsequent encounter
T8502XS	Displacement of ventricular intracranial (communicating) shunt, sequela
T8503XA	Leakage of ventricular intracranial (communicating) shunt, initial encounter
T8503XD	Leakage of ventricular intracranial (communicating) shunt, subsequent encounter
T8503XS	Leakage of ventricular intracranial (communicating) shunt, sequela
T8509XA	Other mechanical complication of ventricular intracranial (communicating) shunt, initial encounter
T8509XD	Other mechanical complication of ventricular intracranial (communicating) shunt, subsequent encounter
T8509XS	Other mechanical complication of ventricular intracranial (communicating) shunt, sequela
T85730A	Infection and inflammatory reaction due to ventricular intracranial (communicating) shunt, initial encounter
T85730D	Infection and inflammatory reaction due to ventricular intracranial (communicating) shunt, subsequent encounter

SKULL CPT® codes	Descriptions
T85730S	Infection and inflammatory reaction due to ventricular intracranial (communicating) shunt, sequela
BRAIN CPT® codes	Descriptions
70450	Computed tomography, head or brain; without [contrast material]
70460	Computed tomography, head or brain; with contrast material[s]
70470	Computed tomography, head or brain; without [contrast material], followed by contrast material[s] and further sections
0042T	Cerebral perfusion analysis using computed tomography with contrast administration, including post-processing of parametric maps with determination of cerebral blood flow, cerebral blood volume, and mean transit time
70496	Computed tomographic angiography, head, with contrast material[s], including noncontrast images, if performed, and image post-processing
ABDOMEN AND PELVIS CPT® codes	Descriptions
72191	Computed tomographic angiography, pelvis, with contrast material[s], including non-contrast images, if performed, and image post-processing
72192	Computed tomography, pelvis without contrast
72193	Computed tomography, pelvis; with [contrast material]
72194	Computed tomography, pelvis; without [contrast material] in one or both body regions, followed by contrast material[s] and further sections in one or both body regions
74150	Computed tomography, abdomen; without [contrast material]
74160	Computed tomography, abdomen; with contrast material[s]
74170	Computed tomography, abdomen; without [contrast material], followed by contrast material[s] and further sections
74174	Computed tomographic angiography, abdomen and pelvis, with contrast material[s], including noncontrast images, if performed, and image post-processing
74175	Computed tomographic angiography, abdomen, with contrast material[s], including noncontrast images, if performed, and image post-processing
74176	CT scan of abdomen and pelvis without contrast
74177	Computed tomography, abdomen and pelvis; with [contrast material]

SKULL CPT® codes	Descriptions
74178	Computed tomography, abdomen and pelvis; without [contrast material] in one or both body regions, followed by contrast material[s] and further sections in one or both body regions
74261	Computed tomographic colonography, diagnostic, without contrast material
74262	Computed tomographic colonography, diagnostic, with contrast material(s), including non-contrast images if performed
74263	Screening CT scan of large bowel
75635	CT angiography, abdominal aorta with bilateral iliofemoral lower extremity runoff, with contrast material, including noncontrast images, if performed

Minimum sample size required

For scoring approach 1 (assessment of the facility's median value for each stratum), 11 exams within each age and anatomic area stratum are required for skull and abdomen and pelvis categories, and 25 exams for the skull category.

For scoring approach 2 (assessment of the facility's overall proportion of exams), a total of 23 exams (across all age and anatomic area strata) are required.

The rationale for these sample size requirements is provided in sp.25.

Time Period for Data Collection

One year. The rationale for this time period is that many facilities do not reach the minimal sample size in a shorter duration. Measure implementers may define their own 12-month periods; it does not need to be a calendar year. However, all exams are compared to the same set of benchmarks, and measure score calculation does not take the specific time period into consideration. Thus, measure scores are comparable regardless of the 12-month period selected.

2016 submission:

Consecutive sample of CTs conducted in the head, chest, abdomen/pelvis, chest/abdomen/pelvis

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

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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.
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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 (75th 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 75th 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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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.

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

STEWARDS

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-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
- $BCC = (\text{Number of blood culture sets with growth of skin commensals without the same organism in other sets collected within 24 hours} / \text{Total number of BC sets}) \times 100$

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
 - $\text{Single Set Blood Culture Rate} = (\text{Number of single sets without another set collected within 24 hours} / \text{Total number of BC sets}) \times 100$

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.”
 - 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/>
 - 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-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-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
- $BCC = (\text{Number of blood culture sets with growth of skin commensals without the same organism in other sets collected within 24 hours} / \text{Total number of BC sets}) \times 100$

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
- $\text{Single Set Blood Culture Rate} = (\text{Number of single sets without another set collected within 24 hours} / \text{Total number of BC sets}) \times 100$

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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 medications 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 75th 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 clarify 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 UsabilityX 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."

Appendix G: Post-Evaluation Comments

Post-Evaluation Measure-Specific Comments on Patient Safety Spring 2022 Submissions

NQF #3671 Inappropriate diagnosis of community-acquired pneumonia (CAP) in hospitalized medical patients; Abbreviated form: Inappropriate diagnosis of CAP (Recommended)

Dr. Timothy Hofer

Comment ID#: 8093 (Submitted: 06/09/2022)

Council / Public: Public

Level of Support: N/A

Comment

It is incorrect to say that a measure has insufficient reliability by just looking at the intra-class correlation coefficient which is an estimate of the reliability of using a single observation (or patient outcome) to distinguish between the objects of measurement (in this case hospitals). Using the spearman-brown prophecy formula is a standard way of estimating the reliability of a measurement averaged, as in this example, over multiple measurements of the same hospital as represented by an average of multiple patient outcomes within that hospital. As noted in a classic text, *The Statistical Evaluation of Measurement Errors* (2nd Ed) by Grahm Dunn Arnold, London, 1989 (p 27-28), as well as countless other places: "The reliability of a randomly-selected subject [in this case a hospital] by a randomly selected rater [in this case a patient] is an intraclass correlation... If this reliability is not sufficiently high, then we can replicate [make multiple] measurements, and the reliability of the mean of the assessments of m independent [patients] on a given [hospital] ...can be calculated using the Spearman-Brown formula." This is the argument behind using mortality rates to assess hospitals (where the ICC is often less than 0.01 for using a single patient survival or death to measure the hospital mortality rate) but with sufficient cases the reliability of the hospital average mortality can approach 0.70-0.80. It is also the rationale for all psychometric scales, where the ICC of using a single randomly selected item from the scale to measure the trait is low but when a sum or mean of the N items in the scale is used the reliability approaches or exceeds 0.80. The technique is widely cited in the medical literature relating to quality measures. It is surprising that the NQF review did not seem to appreciate this argument and rated the reliability as insufficient stating that: "... the intraclass correlation coefficient is well below 0.5, a range generally agreed to show poor reliability. It is not clear from the submission how applying the Spearman Brown prophecy formula leads to an overall reliability of 0.9." By this reasoning you would consider every psychometric scale ever constructed as unreliable. You certainly would never consider using readmission rates or mortality rates or basically any patient outcome a reliable measure of hospital performance. Again, the ICC is **not** the relevant reliability estimate to refer to in assessing the reliability of this measurement as defined when it is not intended that a hospital measure will be based on a single measurement (or patient outcome). The relevant calculation for the measure reliability must take into account the expected number of measurements (patients) per hospital that will be used to construct the measure. I work on clinical and performance measurement and have over 20 years of experience and publications on this topic and have advised the team constructing this measure.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer. To clarify, this measure was rated insufficient during the preliminary review by staff but did pass with a rating of moderate during the Standing Committee review.

NQF Committee Response

N/A

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

Ann Kutney-Lee

Comment ID#: 8160 (Submitted: 09/02/2022)

Council / Public: Public

Level of Support: N/A

Comment

The PES-NWI is one of the most widely used and well-known instruments for measuring the quality of nurse work environments. For over 15 years, I have used the PES-NWI in my research on the relationship between nurse work environments and nurse job (e.g. burnout) and patient outcomes that has spanned both academic and government settings. For example, in a national study of Veterans Affairs Medical Centers, we found that better nurse work environments (as measured by the PES-NWI) were associated with more favorable bereaved family reports of the quality of end-of-life care that Veterans received (Kutney-Lee et al., J Pain Symptom Manage. 2015). More recently, my work has examined the high-priority issue of electronic health record usability. Using a large multi-state survey of nurses that included the PES-NWI, our team found that variations in nurse work environments were associated with nurses' evaluations of EHR usability, and that the quality of the work environment plays a significant role in whether EHRs exert their intended effects on improving quality and safety of care (Kutney-Lee et al., Appl Clin Inform. 2019). As current reports of nurse burnout and poor working environments continue to increase, re-endorsement of the PES-NWI is critical so that researchers and healthcare systems can continue to rely upon this invaluable, mainstay measure to track changes over time in nurse work environments and identify targets for improvement. Thank you for your consideration, Ann Kutney-Lee, PhD, RN, FAAN

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Bernadette Melnyk, The Ohio State University

Comment ID#: 8183 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am recognized nationally and globally for my clinical knowledge, expertise in evidence-based practice, and innovative approaches to a wide range of health care challenges – including nurse wellness. My extensive research in clinician burnout and well-being has demonstrated that the environment in which a nurse practices not only impacts their personal wellness, but also has a significant impact on the occurrence of medical errors and other patient safety measures. The PES-NWI is invaluable as it has low respondent burden and satisfactory psychometric properties. As the most used nursing practice environment measure, the PES-NWI helps our organization and researchers monitor nursing performance and compare with the performance of our peers. Further, with the ongoing nurse staffing shortage, is of upmost importance to have an accurate tool that measures staffing and resource adequacy. I recommend re-endorsement of all criteria in the PES-NWI.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Caitlin Campbell

Comment ID#: 8141 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

Thank you for seeking feedback on this measure. As a new nurse scientist, I've had the opportunity to become extensively familiar with the PES-NWI and its use. The instrument remains the most frequently used measure of the nurse work environment globally, allowing for the comparison of nurse work environments across settings and cultures. Additionally, prior research has supported the PES-NWI's association with both patient and nurse outcomes. The COVID-19 pandemic has illuminated many concerns within the healthcare environment, but especially pertaining to the role of nurses. The PES-NWI and its subscales provide a measure of the nurse work environment and provides leaders with information that can allow them to specifically target deficits within the environment. Ultimately, the PES-NWI can be used to help identify work environments that enhance or inhibit nurses' ability to safely provide patient care. While the dust is still settling around the result of pandemic to healthcare workers, it is evident there are concerns about nurse recruitment, retention, and the provision of patient care. The PES-NWI has been associated with variables such as these for years, and can continue to be used to identify work environments in

which nurses want to work. Therefore, I recommend continuing the endorsement of the PES-NWI by the NQF. Thank you for your time.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Cheryl Peterson, American Nurses Association ; Submitted by Ms. Cheryl Peterson, MSN, RN

Comment ID#: 8174 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: Member Does Support

Comment

The American Nurses Association (ANA) continues to focus on the need for strong work environments to support and retain the nursing workforce. ANA strongly supports NQF re-endorsement of the Practice Environment Scale of the Nursing Work Index. This instrument is the most widely used and respected for measuring the nurse work environment. In recent work by the Nurse Staffing Think Tank (<https://www.nursingworld.org/~49940b/globalassets/practiceandpolicy/nurse-staffing/nurse-staffing-think-tank-recommendation.pdf>) (2022) has endorsed creating a Centers for Medicare and Medicaid Services (CMS) Condition of Participation that requires organizations to regularly assess/measure the health of the work environment and demonstrate evidence of continual improvement. The continued endorsement of the PES-NWI is essential to the success of our recommendations

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Christopher Friese, University of Michigan School of Nursing

Comment ID#: 8138 (Submitted: 08/31/2022)

Council / Public: Public

Level of Support: N/A

Comment

NQF #3450 - Practice Environment Scale - Nursing Work Index (PES-NWI) (composite and five subscales) (previously NQF#0206 - Undergoing Maintenance) As a nurse scientist and clinician, I support re-endorsement of the Practice Environment Scale of the Nursing Work Index (PES-NWI). In 2022, there is a heightened concern for the quality of inpatient care across the United States and nurses are the fulcrum for that care delivered. Without valid and reliable measures endorsed by NQF to measure the nursing practice environment, I fear there will be a missed opportunity to identify targets for improving the clinical environment and ultimate quality of care delivered. Importance. There is ample evidence to support the use of the measure and its relevance to clinical quality improvement. In work cited by the National Academy of Medicine Future of Nursing Report, Friese and colleagues (2008) identified the quality of the nursing practice environment as a significant and independent predictor of 30-day mortality and failure to rescue (death following a postoperative complication). More recently, my team has adapted the PES-NWI slightly for use in the ambulatory oncology setting, and have used the measure to identify targets for quality improvement in a large multi-site NCI-designated comprehensive cancer center (Friese, et al., 2016). Friese, C. R., Lake, E. T., Aiken, L. H., Silber, J. H., & Sochalski, J. (2008). Hospital nurse practice environments and outcomes for surgical oncology patients. *Health services research*, 43(4), 1145-1163. Friese, C. R., Siefert, M. L., Thomas-Frost, K., Walker, S., & Ponte, P. R. (2016). Using data to strengthen ambulatory oncology nursing practice. *Cancer nursing*, 39(1), 74. I would also ask the committee to strongly consider the alternatives available to reliably measure and discriminate across nurses' practice environments. There are none that would meet NQF standards. Our work has shown that Magnet hospital recognition is a proxy measure for pre-existing excellence and many institutions with excellent environments forgo the fees and effort of voluntary Magnet recognition (Friese, et al., 2015). Therefore, direct measurement of the practice environment, by those directly in the field, using a valid, reliable, and discriminatory measure, is far preferable and has greater likelihood to improve structure, processes, and outcomes of hospital care. Friese, C. R., Xia, R., Ghaferi, A., Birkmeyer, J. D., & Banerjee, M. (2015). Hospitals in 'Magnet' program show better patient outcomes on mortality measures compared to non-'Magnet' hospitals. *Health Affairs*, 34(6), 986-992. Thank you for the opportunity to provide this feedback. Christopher R. Friese, PhD, RN, AOCN® (he/him/his) Elizabeth Tone Hosmer Professor of Nursing, Health Management & Policy Director: Center for Improving Patient and Population Health Associate Director for Cancer Control and Population Sciences University of Michigan Rogel Cancer Center University of Michigan 400 North Ingalls, Suite 1174, Ann Arbor, MI 48109-5482 734-647-4308

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Connie Barden, American Association of Critical-Care Nurses; Submitted by Dr. Melissa Jones

Comment ID#: 8136 (Submitted: 08/30/2022)

Council / Public: Public

Level of Support: N/A

Comment

The American Association of Critical-Care Nurses (AACN) strongly supports continued National Quality Forum (NQF) endorsement of the Practice Environment Scale of the Nursing Work Index (PES-NWI), which measures the nurse work environment. The PES-NWI is a highly utilized, validated tool for measuring the nurse work environment. The establishment of widespread healthy nurse work environments is a major initiative for AACN, and this instrument is essential to the evidence base connected with our work. The metric is key to measuring and assuring work environments are positioned to provide the safest possible care to patients. In addition, AACN is a founding co-convenor of the Nurse Staffing Think Tank, along with the American Nurses Association, The American Organization of Nursing Leadership, the Healthcare Financial Management Association, and the Institute for Healthcare Improvement. The Think Tank's goal was to identify recommendations that can be implemented within 12-18 months to improve nurse staffing. Improving the health of nursing work environments was a key priority identified by the Think Tank and this will require empirical measurement of factors that directly influence nurses' willingness to stay and work in patient care areas. The PES-NWI solidly provides such a measure. The Think Tank endorsed creating a Centers for Medicare and Medicaid Services (CMS) Condition of Participation that requires organizations to regularly assess/measure the health of the work environment and demonstrate evidence of continual improvement. The continued endorsement of the PES-NWI is essential to the success of our recommendations. We strongly support NQF re-endorsement of the entire PES-NWI. This instrument is the most widely used and respected for measuring the nurse work environment.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Aoyjai Prapanjaroensin Montgomery

Comment ID#: 8146 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

Thank you for the opportunity to comment on re-endorsement of the PES-NWI. I recommend continuing the endorsement of the PES-NWI because of this measure helps healthcare organization to monitor, provide baseline of many interventions to improve the work environment for nurses, and compare the work environment before and after the intervention(s) as well as compare to other national and international healthcare organizations. Drs. Patrician and Montgomery have been using the PES-NWI in several projects as follows 1) Alabama nurse staff study in 2018 which was a statewide study examining how work environment impacts quality of nursing care, patient safety, and patient outcomes (such as mortality rates, hospitalized-acquired infections, and patient

experience). Based on this study, we published 3 peer-reviewed articles that related to PES-NWI and 3 more articles that are in progress. A total of 25 either podium or poster presentations in both national and international conferences; 2) Workforce Engagement for Compassionate Advocacy, Resilience, and Empowerment (WE CARE) which is funded by Health Resources & Services Administration (HRSA) for 3 years (2022-2025). This study aims to develop, deliver, spread, and sustain an evidence-based training program for nurses, clinical support staff, and nursing students. We are using the PES-NWI to evaluate what issues in the work environment that nurses are facing to help develop what types of interventions are needed in the organization. Also, we will use the PES-NWI to measure the change in the work environment every year. Based on the Alabama nurse staff study in 2018, we found that Alabama nurses rated work environments differently based on the hospitals. Overall, Alabama nurses rated poor work environments when compared to other states or countries. Also, we found that poor work environments were related to high burnout, high missed nursing care, high medication administration errors, poor patient safety grade, and poor patient outcomes. We were able to present these findings to the Alabama nurse leaders. Based on the Workforce Engagement for Compassionate Advocacy, Resilience, and Empowerment (WE CARE), we found that nurses reported work environments differently based on their work divisions. Therefore, we are able to focus on the divisions that are in crisis. We are considering specific interventions by divisions based on how nurses rated work environment.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Blake McGee

Comment ID#: 8175 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

The Practice Environment Scale of the Nursing Work Index (PES-NWI) is a reliable and valid measure that captures how the wide variation in nurses' work environments affects patient outcomes, among other things. For example, a 2019 meta-analysis published in Medical Care found that better work environments as measured by the PES-NWI were associated with lower odds of poor safety or quality ratings (average OR of 0.65) and negative patient outcomes (average OR of 0.93), and higher odds of patient satisfaction (OR of 1.16). As a registered nurse and PhD-prepared health services researcher myself, I can personally attest to how much variability there is in nurses' workplace environments and how that directly affects the quality and safety of patient care, to say nothing of nurses' well-being. Therefore, I recommend continued endorsement of this measure.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Carol Susan Johnson, RN

Comment ID#: 8188 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

I have used the PES-NWI and believe it is vital in evaluating nursing practice. It is particularly important to identify performance gaps in clinical practice and diverse work environments. This is a vital aspect of the PES-NWI and I recommend re-endorsement of all criteria in the PES-NWI. Nurses currently are frustrated with less than optimal work environments and we must use the PES-NWI to improve work environments for all nurses and other employees. This is essential for individuals to receive the highest possible health care. Identifying performance gaps and addressing them enables organizations to monitor their performance and compare that performance with peers. The PES-NWI requires all components to be successful. Since 5 of the 6 criteria have been endorsed, I ask you to endorse the Performance Gap criterion also. It is essential to obtain a complete picture of the current nursing work environment. Thank you!

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Catherine H. Ivory

Comment ID#: 8157 (Submitted: 09/02/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a nurse executive with strategic oversight for nursing practice at a large academic health system in the southeast. Safe and effective nurse staffing, and nurse well-being are the two most important issues facing the nursing profession and the importance of both issues has only intensified during the pandemic. PES-NWI is a valuable tool for quantifying the work environment of nurses. Results give valuable insight in support of various care models, and give objective voice to the nurse. Our health system, like most since the pandemic began, is understaffed for nursing and must evaluate new and different care models that will impact the work environment of nurses. The PES-NWI is valuable in helping us evaluate such models. For organizations who are Magnet

designated for nursing excellence, like ours, the PES-NWI is a toll that permits us to measure and report how nurses perceive their work environment. Please re-endorse the PES-NWI.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Eileen Lake, PhD, RN, University of Pennsylvania, Center for Health Outcomes and Policy Research

Comment ID#: 8178 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

I submit this additional information on measure #3450, which I steward, as public comment on the spring 2022 Patient Safety Consensus Development Process. _Performance Gap_ Regarding criterion 1b: Performance Gap, the committee questioned why the submission did not provide data more recent than 2016 showing a continued performance gap. Here, more recent data are provided, as described in text and table below and presented in figures online:

<https://www.nursing.upenn.edu/live/files/94-dr-eileen-lake> NQF Figures are not compatible with the public comment platform. Figure 1 online and Table 1 below display the variation in hospital-level PES-NWI scores across general acute care hospitals in two large U.S. states (NY, IL) in two survey waves: pre-pandemic Wave 1: December 2019 through February 2020 (265 hospitals) and Wave 2: April – June, 2021 (217 hospitals). These data were collected in research conducted by the Center for Health Outcomes and Policy Research, funded by the National Council of State Boards of Nursing (Linda H. Aiken, PI). The online pdf figures are box-and-whisker plots depicting the sample median at the center of each box, the 25th and 75th percentiles at the edges of each box, and the maximum and minimum at the whiskers of each diagram. The left diagram is the composite score. The remaining diagrams are the subscale scores. Similar statistics are displayed in Table 1. Here we see the performance gap at the hospital level continues to be large as compared to Figure 2, from 2015, which provides data from four other states. In Figure 1, we see composite values nearly identical to the 2015 values reported in Figure 2, although the Figure 2 values were five years earlier in four different states from these. Additionally, the Figure 1 Wave 2 during-pandemic data exhibit greater variation in the first (Nurse Manager Ability and Support - maroon) and fourth (Staffing and Resource Adequacy - aqua) subscales than the same states' pre-pandemic data. Furthermore, in NY/IL in recent years, three of the five subscales exhibit worse (lower) median/IQR, and minimum and maximum as compared to the Figure 2 data from five years earlier. These worse values likely represent overall deterioration nationally in work environments over this period. Interestingly, the two subscales with favorable values from the 2015 sample have even better values in this sample. These comparisons demonstrate the capacity of the instrument to discriminate across the various domains of importance to assuring patient safety through nursing care. Clearly, a large fraction of hospitals have suboptimal work environments for their nurses.

Here is a table with the NY/IL data: Table 1. PES-NWI Summary Statistics from two waves of NY and IL Registered Nurse Survey data Wave 1 survey: December 2019 - February 2020 (n = 265 hospitals) Wave 2 survey: April to June 2021 (n = 217 hospitals)

	Wave 1	Wave 2	Mean	SD	IQR	Min	Max
Composite	2.67	0.27	0.41	1.90	3.60	2.62	0.29
Hospital Affairs	2.42	0.34	0.50	1.38	3.36	2.30	0.39
Nurse Manager	2.81	0.30	0.36	1.75	3.62	2.79	0.32
RN-MD Collegiality	3.10	0.23	0.29	2.42	3.82	3.21	0.21
Staffing/Resource Adequacy	2.23	0.38	0.54	1.20	3.80	2.01	0.42
Nursing foundations for Quality	2.80	0.32	0.44	1.89	3.80	2.76	0.34

Note. Average number of respondents per hospital = 58. Figure 2 online displays the variation across 525 general acute care hospitals in four large U.S. states (CA, PA, NJ, FL) in 2015. These data were collected by the Center for Health Outcomes and Policy Research, funded by the National Institute of Nursing Research (R01-NR014855, Linda H. Aiken, PI). The performance gap at the hospital level is large, ranging for the composite from a score of about 2.00 (equivalent to nurses on average “disagreeing” that the organizational traits are present in their current job) to 3.50 (the midpoint between “agree” and “strongly agree.”) Among the five subscales, only two have values that are considered favorable: (nurse-physician collegiality [orange] and nursing foundations for quality [pink]). The remaining three diagrams exhibit very wide variation. _Disparities Data_ On p. 26, the report states “the Standing Committee was concerned with the lack of disparities data provided as a whole and thus did not reach consensus on performance gap.” The published disparities data described below are from 5 to 15 years ago. This evidence gap derives from requiring nurse survey data to be linked for each hospital to patient race data to evaluate potential disparities. The data sources for the PES-NWI are grants and benchmarking databases such as the NDNQI. Contractual restrictions, however, prevent linkage by external researchers of the NDNQI data to hospital administrative databases, which contain patient’s race data. Researchers at the University of Pennsylvania Center for Health Outcomes and Policy Research (CHOPR), the measure steward, conduct NIH-funded multistate surveys of random samples of licensed registered nurses, on which the publications below are based. Presently CHOPR researchers are funded to conduct the next waves of this series in 2023 and 2026. Therefore, the hypothesized ongoing disparities in nurse work environments and their association to disparities in patient outcomes will be reevaluated in the future. Note that in the pre-evaluation public comment period (see below dated June 17, 2022), as measure steward I presented data from a 2015 publication documenting statistically significant differences in the work environment in hospitals caring for low, medium, and high proportions of very low birthweight (VLBW) infants of Black race. Here is additional detail: In Lake et al (2015) the terciles from the distribution of percent of VLBW infants of Black race across hospitals comprised these groups: low (<11% infants of Black race), medium (11–31%), and high (>31%). These classifications were derived from national data on the distribution of VLBW infants of Black race obtained from the Vermont Oxford Network, which maintains a clinical registry of nearly all neonatal intensive care units in the United States. Therefore, these terciles represent the national distribution of VLBW infants of Black race at the hospital level, which implies that significant differences in the work environment in neonatal intensive care units classified according to VLBW infants of Black race are nationally representative. For this Sept 2022 public comment, here are additional publications providing evidence of racial disparities in the nurse work environment more broadly, i.e., in nursing units throughout a hospital. Brooks-Carthon et al (2016) report data from 2006 and 2007 from 69,065 patients in 253 hospitals in three large states (CA, NJ, PA). The patient sample was aged 65 to 90 with a principal diagnosis of Acute Myocardial Infarction. The hospitals were classified based on the PES-NWI into three groups, labelled Poor, Mixed, and Good work environment. The proportions of patients of Black and White race differed significantly across these work environment categories. Whereas 48% of all patients were cared for in hospitals with “poor” work environments, among

patients of Black race, this proportion was 51%. Conversely, 26% of patients overall were cared for in hospitals with “good” work environments, but this proportion for patients of Black race was 21%. These data from 15 years ago demonstrate racial disparities in access to good work environments. Brooks-Carthon et al (2011) report data from 2006 and 2007 from 568 hospitals in four large states (CA, NJ, PA, FL). These researchers classified hospitals into three groups of better, mixed and poor work environments. They also classified hospitals into three groups of high, medium, and low concentration of Black patients: low (<11% patients of Black race), medium (11–23%), and high (>23%). Although 26.6% of hospitals overall had “good” work environments, this fraction was 28.5% in the low-concentration Black hospitals as compared to 20.6% in the high-concentration Black hospitals. That is, about 3 in ten as compared to 1 in five. Clark et al (in preparation) reports data on disparities in cesarean delivery among low-risk women from 2016 from 258 hospitals in four large states (PA/NJ/FL/CA). It is notable that, despite racial groups having equivalent low-risk status, women of Black race still have higher rates of cesarean delivery than women of White race. Only women without any comorbidities or other known risk factors are included in this rate. The authors classified hospitals into three categories based on percentages of birthing women of Black race: low (0-15.2% Black women; n = 185), medium (15.3% - 40.8%; n = 57), and high (41.2% - 69.6%; n = 16). The work environment as measured by the composite score of the PES-NWI was best in the low concentration women of Black race (2.80), moderate in the middle category (2.73) and worst in the high-concentration of Black race (2.64). Although these differences were not statistically significant ($p = .13$) the trend suggests the possibility that poorer work environments in high percentage of women of Black race may contribute to poorer care quality and disparities in the cesarean delivery rates. References: Brooks-Carthon, M., et al. (2011). "Quality of Care and Patient Satisfaction in Hospitals With High Concentrations of Black Patients." *Journal of Nursing Scholarship* 43(3): 10. Brooks-Carthon, J. M., et al. (2016). "Unmet Nursing Care Linked to Rehospitalizations Among Older Black AMI Patients A Cross-Sectional Study of US Hospitals." *Medical Care* 54(5): 457-465. Clark, R.S., Srinivas, S, and Lake, E.T. (in preparation). Disparities in Low-Risk Cesarean Delivery Linked to Variation in Nursing Resources. Lake, E. T., et al. (2015). "Disparities in perinatal quality outcomes for very low birth weight infants in neonatal intensive care." *Health Services Research* 50(2): 374-397.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Elisabeth Brie Thumm

Comment ID#: 8186 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

Perinatal workforce development is an essential strategy to addressing the racialized disparities in maternal health outcomes in the US. In my work as a perinatal workforce well-being researcher,

my findings consistently demonstrates that the work environment is a driver of workforce stability and improved outcomes. The PES-NWI served as the foundation for my team's midwifery work environment scale: the Midwifery practice Climate Scale. Items derived from the PES-NWI demonstrated strong reliability and validity in a midwifery population, supporting the psychometric soundness of the PES-NWI. Thumm, E. B., Shaffer, J., & Meek, P. (2020). Development and initial psychometric testing of the midwifery practice climate scale-part 2. *Journal of Midwifery & Women's Health*, 65(5), 651-659. Thumm, E. B., & Meek, P. (2020). Development and initial psychometric testing of the midwifery practice climate scale. *Journal of Midwifery & Women's Health*, 65(5), 643-650.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Ernest Grant

Comment ID#: 8162 (Submitted: 09/03/2022)

Council / Public: Public

Level of Support: N/A

Comment

“As president of the American Nurses Association, I am personally concerned about how the COVID-19 pandemic has disrupted the work environment in health facilities, to the detriment of patient safety and nurse wellbeing. Without this tool to systematically measure nurses’ work environments at this precarious time, I fear that crucial guidance to our health system administrators and managers will be lost. The track record of this instrument is impeccable, demonstrating sizable advances in nursing knowledge and clinical practice over two decades. I strongly support the re-endorsement by the NQF of the Practice Environment Scale of the Nursing Work Index.”

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Heather Brom

Comment ID#: 8161 (Submitted: 09/02/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a health services researcher and nurse scientist. My work centers on how variations in nursing (like the practice environment) influence patient outcomes. One key measure in my research has been the Practice Environment Scale of the Nursing Work Index (PES-NWI), which I have used for the past several years. This valid and reliable measure of the nursing practice environment has allowed me to examine how variations in practice environments across hospitals are associated with patient outcomes. Measured as an organization construct, the practice environment is something that hospital administrators can influence and change and therefore can be a powerful level to improving a variety of patient outcomes and I support its re-endorsement. Specifically, I have found in my research that hospitals with more favorable practice environments experienced fewer 30-day readmissions and shorter lengths of stay for ischemic stroke patients. These findings have implications for patients, nurses, and hospital administrators alike (Brom, H. Brooks Carthon, J.M. McHugh, M., Sloane, D. Aiken, L. (2021). Better Nurse Work Environments Associated with Fewer Readmissions and Shorter Length of Stay Among Adults with Ischemic Stroke: A Cross-Sectional Analysis of United States Hospitals, *Research in Nursing & Health*, 44:525-533). I have previous experience in hospital administration and know firsthand the importance of the nursing practice environment in creating a positive culture for nurses to be able to practice to the top of their abilities, make clinical decisions and have good working relationships with physicians and colleagues. Understanding and measuring the practice environment is more important than ever in the context of the COVID pandemic and ongoing threats to public health that all nurses will continue to face. With this in mind, I ask that you endorse this valuable measure. Thank you, Heather Brom, PhD, RN

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Jack Needleman, PhD, FAAN, University of California, Los Angeles School of Public Health

Comment ID#: 8177 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a Professor in the Department of Health Policy and Management, UCLA Fielding School of Public Health. For reference, I am a member of the NQF Scientific Methods Committee and the NQF Standing Committee on Admissions and Readmissions, and previously served on the NQF Cost and Efficiency Measures Committee and its predecessors. I was also a member of the Technical Expert Panel for the NQF committee that reviewed the National Voluntary Consensus Standards for Nursing Sensitive Care and endorsed a 15-item Performance Measure Set. The PES-NWI was part of that initial measure set. I offer this comment in support of the reendorsement of the Practice Environment Scale of the Nurse Work Index. The PES-NWI is a component measure in the National

Database of Nursing Quality Measures, used by the American Nurse Credentialing Center in its Magnet designation program, widely used in internal monitoring by health facilities of their nurse environment. It is an important measure, found to be independently associated with important patient outcomes, including mortality, and nurse outcomes, such as burnout and intent to leave. It has also been shown to interact with and modify the positive effects of higher staffing levels on these outcomes. That is, when work environment is poor, the impact of higher staffing levels on outcomes is reduced. The PES-NWI is one of the most frequently used measures to study the delivery of safe and reliable nurse staffing in hospitals, not only in practice, as discussed above, but in research as well. My quick PubMed Search on PES-NWI (ignoring other variants in how the measure might be cited), identified 14 articles using this measure nationally and internationally: Mihdawi, M., R. Al-Amer, R. Darwish, S. Randall, T. Afaneh. The Influence of Nursing Work Environment on Patient Safety. *Workplace Health Saf.* 2020;68(8):384-90. Yuan, L., C. Yumeng, Z. Chunfen, F. Jinbo. Analyzing the Impact of Practice Environment on Nurse Burnout Using Conventional and Multilevel Logistic Regression Models. *Workplace Health Saf.* 2020;68(7):325-36. Al-Ghraiyyah, T., J. Sim, L. Lago. The relationship between the nursing practice environment and five nursing-sensitive patient outcomes in acute care hospitals: A systematic review. *Nurs Open.* 2021;8(5):2262-71. PMCID: PMC8363353. Falguera, C. C., J. A. A. De Los Santos, J. R. Galabay, C. N. Firmo, K. Tsaras, R. A. Rosales, E. C. Mirafuentes, L. J. Labrague. Relationship between nurse practice environment and work outcomes: A survey study in the Philippines. *Int J Nurs Pract.* 2021;27(1):e12873. Fu, C. M., J. Ou, X. M. Chen, M. Y. Wang. Potential effects of the nursing work environment on the work-family conflict in operating room nurses. *World J Clin Cases.* 2021;9(26):7738-49. PMCID: PMC8462227. Intas, G., M. Simeon, L. Eleni, C. Platis, E. Chalari, P. Stergiannis. Investigating Nursing Leadership in Intensive Care Units of Hospitals of Northern Greece and Its Relationship to the Working Environment. *Adv Exp Med Biol.* 2021;1337:227-35. Kritsotakis, G., E. Andreadaki, M. Linardakis, G. Manomenidis, T. Bellali, P. Kostagiolas. Nurses' ehealth literacy and associations with the nursing practice environment. *Int Nurs Rev.* 2021;68(3):365-71. Lucas, P., E. Jesus, S. Almeida, B. Araújo. Validation of the Psychometric Properties of the Practice Environment Scale of Nursing Work Index in Primary Health Care in Portugal. *Int J Environ Res Public Health.* 2021;18(12). PMCID: PMC8296248. Malinowska-Lipień, I., A. Micek, T. Gabryś, M. Kózka, K. Gajda, A. Gniadek, T. Brzostek, J. Fletcher, A. Squires. Impact of the Work Environment on Patients' Safety as Perceived by Nurses in Poland-A Cross-Sectional Study. *Int J Environ Res Public Health.* 2021;18(22). PMCID: PMC8623184. Ogata, Y., K. Sato, Y. Kodama, N. Morioka, K. Taketomi, Y. Yonekura, K. Katsuyama, S. Tanaka, M. Nagano, Y. M. Ito, K. Kanda. Work environment for hospital nurses in Japan: The relationships between nurses' perceptions of their work environment and nursing outcomes. *Nurs Open.* 2021;8(5):2470-87. PMCID: PMC8363352. Naseri, S., M. Ghafourifard, A. Ghahramanian. The Impact of Work Environment on Nurses' Compassion: A Multicenter Cross-Sectional Study. *SAGE Open Nurs.* 2022;8:23779608221119124. PMCID: PMC9411735. Patrician, P. A., D. M. Olds, S. Breckenridge-Sproat, T. Taylor-Clark, P. A. Swiger, L. A. Loan. Comparing the Nurse Work Environment, Job Satisfaction, and Intent to Leave Among Military, Magnet®, Magnet-Aspiring, and Non-Magnet Civilian Hospitals. *J Nurs Adm.* 2022;52(6):365-70. PMCID: PMC9154298. Rodríguez-García, M. C., I. M. Martos-López, G. Casas-López, V. V. Márquez-Hernández, G. Aguilera-Manrique, L. Gutiérrez-Puertas. Exploring the relationship between midwives' work environment, women's safety culture, and intent to stay. *Women Birth.* 2022. Sarıköse, S., N. Göktepe. Effects of nurses' individual, professional and work environment characteristics on job performance. *J Clin Nurs.* 2022;31(5-6):633-41. My understanding is that the measure was not endorsed for use because there were questions about whether the Performance Gap criterion was met. Research suggests significant variations exist, and variations of sufficient magnitude to influence outcomes. Recent literature by

Aiken and Lasater has not reported actual scores for the PES-NWI but has divided scores into Low (bottom quartile), Medium (middle two quartiles) and High (top quartile) and found these differences significantly correlated with differences in both nurse and patient outcomes. This argues for a performance gap. The Patrician article cited above, reports scores across its subgroups of its sample of 87 hospitals. Among Military hospitals, the mean on a 5 point scale was 2.97, and the standard deviation 0.22. The 5%-95% range would be 2.5-3.4, nearly a one-point spread across a five point scale. The 22%-67% range (+/- 1 SD) would be 2.75-3.19, nearly a half-point spread in a five-point scale. And these differences have been shown in other research to be meaningfully associated with patient and nurse outcomes. Furthermore, the mean level of work environment found through the use of this measure is not where we should want nurses work environments to be. Some measures, like CLABSI rates, can be driven to zero, and whether there is variation across performance within a cohort, if the rate is not zero, there is a performance gap. Similarly, while the PES-NWI may not have a natural top of 5, the median and mean scores reported of around 3 are well below where work environment should be. Endorsement is justified not only by the variation in performance reported in the literature but the performance gap between typical work environments and the aspirational work environment we should be encouraging through measurement. It is premature to end endorsement of the PES-NWI because there is no performance gap. There are substantial performance gaps both among hospitals and between where the work environment for nurses is at the typical hospital and where it should be. Continued endorsement will encourage the continued use of this important measure for improvement in nurse work environments and, through this improvement, in patient safety and quality of care.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Margo Brooks Brooks Carthon, PhD, APRN

Comment ID#: 8159 (Submitted: 09/02/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a nurse scientist who has used the Practice Environment Scale of the Nursing Work Index (PES-NWI) for the past decade to investigate the association between the work environment and patient outcomes. Having published widely, we have come to rely on the validity and reliability of the PES and strongly support its re-endorsement. The PES-NWI offers superior advantages in distinguishing excellent work environments from those that are unfavorable, and the subscales provide targeted opportunities for system-level interventions. Our team has repeatedly used the PES-NWI to evaluate the association between the work environment and a range of outcomes. In each study, we have found notable improvements in missed nursing care, burnout, and patient satisfaction when the organizational factors measured in the PES (e.g. managerial support, the adequacy of resources, nurse's involvement in organizational decision making) are sufficiently present. Brom, H.

Brooks Carthon, J.M. McHugh, M., Sloane, D. Aiken, L. (2021). Better Nurse Work Environments Associated with Fewer Readmissions and Shorter Length of Stay Among Adults with Ischemic Stroke: A Cross-Sectional Analysis of United States Hospitals, *Research in Nursing & Health*, 44:525-533. Brooks Carthon, J.M., Hatfield, L., Brom, H., Kelly-Hellyer, E., Houton, M. Schlak, A., Aiken, L. (2021). System-level improvements in work environments lead to lower nurse burnout and higher patient satisfaction. *Journal of Nursing Care Quality*, 6(1):7-13. Brooks Carthon, J.M., Lassater, KM, Sloane, D.M. Kutney-Lee, A. (2015). The quality of hospital work environments and missed nursing care are linked to heart failure readmissions: A cross sectional study of U.S. hospitals, *BMJ Qual Saf*, 24 (4), 255-263. PMID:PMC4440316 From a clinical perspective, our findings suggest that investments in work environments provide nurses with the time and support necessary to attend to the multifaceted needs of an increasingly complex patient population. Such investments may also reduce the emotional and cognitive burden that nurses experience when working in unsupportive environments. Given the toll that the past 2 years of the pandemic has taken on nurses and the health care system, a continued focus on ways to measure and improve working environments for nurses remains of continued importance. With these considerations in mind, we strongly support the re-endorsement of this measure. Thank you for your consideration. Margo Brooks Carthon, PhD, APRN, FAAN

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Pamela F. Cipriano

Comment ID#: 8163 (Submitted: 09/04/2022)

Council / Public: Public

Level of Support: N/A

Comment

As president of the International Council of Nurses, comprising over 130 national nurses associations, and a member of the U.S. Nurse Staffing Think Tank, I strongly support the re-endorsement by the NQF of the Practice Environment Scale of the Nursing Work Index. The worldwide empirical evidence that this instrument has provided, which demonstrates that better work environments are significantly associated with patient safety, patient satisfaction, patient health outcomes, and nurse burnout and turnover, is so extensive, that our Think Tank this year (2022) has endorsed creating a Centers for Medicare and Medicaid Services (CMS) Condition of Participation that requires organizations to regularly assess/measure the health of the work environment and demonstrate evidence of continual improvement. The Practice Environment Scale has two decades of global use on which to build such a Condition of Participation. Re-endorsement is crucial to continued assessment and improvement of the nurse work environment in health facilities. As a former member of the NQF Consensus Standards Approval Committee, I appreciate the rigor of review for endorsement and re-endorsement. Measure #3450-PES-NWI is vital to the global measurement of nursing work environments and must be maintained.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Rebecca Clark

Comment ID#: 8170 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a health services researcher and midwife whose work focuses on birth outcomes and racial disparities in those outcomes. In addition to being an Assistant Professor, I am the Nurse Scientist for a large, urban, community hospital. The PES-NWI, therefore, is critical for my own research, as well as for the benchmarking (and QI and research initiatives) at my hospital. I have used the PES-NWI in examining variation in the quality and safety of maternity units, as well as variation in maternity nursing resources across the country, and in hospitals serving greater proportions of Black women. In recent qualitative work I've been conducting, I've seen PES-NWI concepts emerge organically from comments made by maternity nurses, reinforcing the importance of measuring these concepts (e.g., having supportive management - or not, having collegial relationships with physicians - or not, having adequate staffing and resources, etc.), especially as nurses connect these concepts directly to patient care and outcomes (in my case, maternity care and outcomes, including healthy inequities). These nurses highlight the existence of many maternity units with sub-optimal work environments. In some of my quantitative research, poorer work environments are associated with poorer safety and quality of maternity care. My work around racial disparities shows a trend to worsening work environments in hospitals where Black women are more likely to receive care, especially poorer staffing and resources. From my personal experience as a clinician in a variety of places, I can attest to the existence of less than optimal work environments (no opportunity for professional development, limited ability to shape policies directing the care we provided, lack of collegial relationships with physicians, etc.). Finally, as I mentioned, I'm the Nurse Scientist at a hospital and the PES-NWI is crucial for allowing our hospital to compare units to each other, identifying units that need special attention/intervention to improve work environments, as well as to other hospitals (for Magnet accreditation, to see whether hospital-wide initiatives are needed and in what areas, etc.). I strongly urge the NQF to maintain Measure #3450.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Sharon Pappas

Comment ID#: 8189 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

The NQF Measure #3450 is an essential measure that reports the strength of the nursing work environment. The environment is a known variable in nurse engagement and most of all patient safety. The measures are also an essential part of the Magnet program accreditation and advancing nursing science in areas of leadership and culture. The PES-NWI has been in place for many years and is sensitive to variation in function and impact of the work environment across hospitals. It has recently been effectively used in the ambulatory environment. I serve as the Chief Nurse Executive of Emory Healthcare at Emory University, and we have five Magnet organizations in the system including the first stand-alone ambulatory site, The Emory Clinic. I also serve as a Commissioner for the Magnet program where we see monthly of the sizable variation across facilities in the work environment that is captured by this instrument through nurse surveys. This instrument helps organizations monitor performance, compare with peers, and for CNOs to create a roadmap for improvement. Never in my 40+ year career has nurse engagement been more important, and work environment is a key lever to that engagement. Please endorse.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Sunny Hallowell

Comment ID#: 8185 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

For more than two decades the PES-NWI has guided the development of interventions to improve the quality of nursing practice in a variety of healthcare settings. My research using this measure focuses on the outcomes of infants and families in the neonatal intensive care unit (NICU). Limited improvements related to significant shifts in the survival and outcomes of very-low birth weight and premature infants in the NICU have occurred since the late 1990's ; yet, there remains sizable variation across facilities related to the nurse work environment and patient outcomes in the NICUs that this instrument captures through a nurse survey. Outcome variation has long been linked to the quality of nursing care as measured by the PES-NWI which quantifies the often overlooked contributions of nursing practice and the work environment that directly influence patient

outcomes. I have been able to use the PES-NWI to describe the associations between nursing care and breastfeeding support, successful discharge of very low birthweight infants on human milk, and parental support in the NICU. The PES-NWI has been instrumental to identifying the association between robust nursing leadership, higher quality of care, implementation of hospital lactation policy, and patient safety. The clinical significance of these associations is related to the ability for nursing practice leaders to advocate for funding, implementation of interventions, and shifts in evidence-based practice to improve patient care. The continued endorsement of the PES-NWI measure by the NQF is necessary to allow hospitals to continue to measure and compare hospital, nursing, and infant outcomes in order to deliver optimal care to the most vulnerable patients in a hospital, premature infants admitted to the NICU. Hallowell, S.G. (2022). An Exploratory Study of the Associations Between the Hospital Work Environment and Implementation of Baby-Friendly Hospital Policy. *Journal of Perinatal Education*. 31 (3): 142-50, doi: 10.1891/JPE.31.3 Hallowell, S.G., Lake, E.T., Rogowski, J.A. (2017). How Nurse Work Environments Relate to the Presence of Parents in Neonatal Intensive Care. *Advances in Neonatal Care*. (Published online ahead of print 09.23.17) doi: 10.1097/ANC.0000000000000431 Hallowell, S.G. Spatz, D.L., Hanlon, A.L., Rogowski, J.A., Kenny, M., Lake, E.T. (2015). Factors associated with infant feeding of human milk at discharge from neonatal intensive care: Cross-sectional analysis of survey and infant outcomes data. *International Journal of Nursing Studies*. 53: 290-203 doi: 10.1016/j.ijnurstu.2015.09.016 (Epub. Ahead of print October 9, 2015) Lake, E.T., Hallowell, S.G., Kutney-Lee, A., Hatfield, L.A., DelGuidice, M., Boxer, B.A., Ellis, L.N., Verica, L., Aiken, L.H. (2015). Higher Quality of Care and Patient Safety Associated with Better NICU Work Environments. *Journal of Nursing Care Quality*. 31(1): 24-32 (Epub. Ahead of print August 8, 2015). Hallowell, S.G., Spatz, D.L., Hanlon, A.L., Rogowski, J.A., Lake, E.T. (2014). Characteristics of the NICU Work Environment Associated with Breastfeeding Support. *Advances in Neonatal Care*. 14(4): 290-300. doi: 10.1097/ANC.0000000000000102. Published online July 31, 2014.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Vallire Hooper

Comment ID#: 8143 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

Thank you for the opportunity to comment in support of re-endorsement of the Practice Environment Scale of the Nursing Work Index (PES-NWI). The PES-NWI has served as a valid and reliable instrument for the assessment of the nursing work environment for almost 20 years and continues to remain relevant and essential in the monitoring and evaluation of the ever-evolving performance evaluation and research exploration of the post-COVID nursing practice environment. As a Clinical Nurse Scientist, I have used the PES-NWI in the study of nursing workforce issues

across both for-profit and non-profit healthcare systems over the last 11 years. The PES-NWI provides an accurate assessment of evolving practice environment issues across all facets of nursing care, both in large tertiary care hospitals as well as small, rural Critical Access hospitals. The instrument has also been essential in supporting measurement of the impact of COVID on the practice environment and how this might impact nursing intent-to-stay in the workforce across multiple high-risk nursing specialties, to include perioperative/perianesthesia nursing. NQF re-endorsement of this measure assures the maintenance of a consistent, national measure of the ongoing status and quality of the nursing practice environment across the nation, thus enabling a comprehensive assessment of practice environment issues across like healthcare systems, hospitals, hospital units, and specialty nursing populations. The criticality of the re-endorsement of this measure has never been more urgent. I wholeheartedly endorse the measure and support its re-endorsement by the NQF. Cordially, Vallire Hooper PhD, RN, CPAN, FASPAN, FAAN

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Eileen Lake, University of Pennsylvania School of Nursing ; Submitted by Emma L. Kurnat-Thoma

Comment ID#: 8192 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

To Whom It May Concern at NQF, I am writing per multiple nursing policy advocacy group requests to support NQF's current review of the Practice Environment Scale of the Nursing Work Index (PES-NWI). Specifically, that PES-NWI is in need of public comment from a variety of nurse scientist stakeholders to better support NQF's Importance/Performance Gap evaluation and approval for this endorsement review cycle. The PES-NWI is an unparalleled tool for supporting healthy work environments of professional nurses, for not just the US, but globally. Frankly, the SOS emails sent to various nursing policy groups that the PES-NWI was in need of additional public comment support as to its importance was surprising. I've personally evaluated this tool for its optimal use in Magnet accreditation processes while working in the clinical setting. I've also reviewed research manuscripts referencing and using the PES-NWI. Post-COVID-19 recovery, the PES-NWI becomes that much more important for protection of the integrity and resilience of our profession. This is due to its well-established psychometric properties in a wide variety of clinical settings (adult, neonatal, peds ICUs; medical surgical, combined, oncology, ER, ortho, mental health, etc.) and contexts (nursing homes, nursing support staff, domestic and global-international applications) for the 5 subscales: Nurse Participation in Hospital Affairs, Nursing Foundations for Quality of Care, Nurse Manager Ability, Leadership & Support of Nurses, Staffing and Resource Adequacy, and Collegial Nurse-Physician Relations (Swiger et al, 2017). Due PES-NWI's unique historical significance and importance in the standardized evaluation of nursing work environments, it also provides a reliable and valid mechanism for which to examine multiple system, patient, quality, and

nursing outcomes at a greater scale, such as that which is performed in meta-analyses (Lake, et al, 2019; Zangaro & Hones, 2019). For this reason, I strongly support the renewal endorsement and inclusion of the PES-NWI in NQF's repertoire for evaluating excellence and high quality in nursing care performance. Thank you for your kind attention in this regard and for making the PES-NWI available as a trusted instrument of high quality for ensuring public accountability. Best Regards, Emma Kurnat-Thoma, PhD, MS, RN, FAAN Adjunct Associate Professor Georgetown University School of Nursing St. Mary's Hall 3700 Reservoir Rd, NW Washington, DC 20057 Email: elk65@georgetown.edu

References Lake, E., Sanders, J., Duan, R., Riman, K., Shoenauer, & Chen, Y. (2019). A meta-analysis of the associations between the nurse work environment in hospitals and 4 sets of outcomes. *Medical Care*, 57(5), 353-361. doi: 10.1097/MLR.0000000000001109 Swiger, P., Patrican, P., Miltner, R., Raju, D., Breckenridge-Sproat, S., & Loan, L. (2017). The practice environment scale of nursing work index: An updated review and recommendations for use. *International Journal of Nursing Studies*, 74, 76-84. <https://doi.org/10.1016/j.ijnurstu.2017.06.003> Zangaro, G. & Jones, K. (2019). Practice environment of the nursing work index: A reliability generalization meta-analysis. *Western Journal of Nursing Research*, 41(11), 1658-1684. <https://doi.org/10.1177/0193945918823779>

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Eileen Lake, University of Pennsylvania School of Nursing ; Submitted by Ms. Hannah Ingber

Comment ID#: 8116 (Submitted: 06/17/2022)

Council / Public: Public

Level of Support: N/A

Comment

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 UsabilityX 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."

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Elizabeth Madigan

Comment ID#: 8142 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

The PES-NWI is widely used in research. It is widely known among nurse scientists and health services researchers and easily allows for comparison across studies. In this era where the nursing workforce is severely impacted and there are dire predictions of nurses exiting the workforce, it is a critical measure for comparing pre- and post-pandemic as well as between different kinds of institutions/health systems. It also allows for measure of change over time, again critical as the health care system looks to see what workforce interventions are effective. The value of this measure is high and it is easy to use, accessible and valuable. I would encourage full endorsement of this measure.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Jessica Smith

Comment ID#: 8140 (Submitted: 08/31/2022)

Council / Public: Public

Level of Support: N/A

Comment

As a health services researcher who has been using the PES-NWI since 2016, I am in strong support of its re-endorsement as a highly reliable and valid measure essential for tracking correlations between the nurse work environment and nurse well-being and patient outcomes. I have conducted research linking better nurse work environment scores (as measured by the PES-NWI) with lower workplace incivility scores among nurses in the hospital setting. It is important to understand the relationship between the nurse work environment and workplace violence and incivility over time, and re-endorsement of this measure would help provide hospitals with support to more broadly adopt this measure and understand how the work environment could relate to workplace violence and incivility as it affects nurses. Thank you for considering this comment. Jessica G. Smith, PhD, MSN, RN, CNE Assistant Professor University of Texas at Arlington College of Nursing and Health Innovation Email: jessica.smith2@uta.edu

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Joseph Potts

Comment ID#: 8187 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

As a nurse, a front-line hospital leader, and the husband of a bedside nurse I feel confident in stating that this is an extremely difficult time in healthcare. Hospitals are facing unprecedented staff shortages resulting in unsustainable turnover and labor budgets. One of the most important factors cited by nurses for staying with an organization is a favorable work environment. The Practice Environment Scale-Nursing Work Index (PES-NWI) has been an invaluable tool for nurse leaders and accreditation bodies to objectively measure the work environment. These measurements then allow nurses to differentiate between organizations with positive and negative practice environments as well as assisting healthcare organizations in target practice environment improvements. The loss of this long utilized tool would be detrimental to both nurses and healthcare organizations. I implore the committee to endorse the PES-NWI.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Karen Lasater

Comment ID#: 8150 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a health services researcher who has published research for a decade in high-impact peer-reviewed interdisciplinary journals using the PES-NWI. The PES-NWI has been an important instrument for measuring the nurse work environment, its variation across hospitals, and its association with patient outcomes, safety/quality of care, and nurse job outcomes such as burnout and intent to leave. The nurse work environment continues to be an important area of study since my ongoing multi-state survey efforts shows wide variation in the quality of nurse work environments across hundreds of hospitals, with some hospitals reporting less-than-optimal work environments that are strongly associated with poor nurse outcomes (higher rates of burnout, job dissatisfaction, and intent to leave) and worse quality of care for patients. The subscales and items of the PES-NWI point to actionable areas for organizational improvement that may be central to organizational evidence-based efforts to attract and retain nurses in the workforce amid the ongoing COVID pandemic and the chronic understaffing of nurses in hospitals. Continued NQF

endorsement of the PES-NWI will support efforts to study how organizational nurse work environments have changed (improved, worsened, stayed the same) over time, including during major public health emergencies like the COVID pandemic.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Kathleen Rosenbaum

Comment ID#: 8191 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

As a predoctoral fellow at the Center for Health Outcomes and Policy Research at the University of Pennsylvania School of Nursing, I have been able to utilize data collected through the Practice Environment Scale-Nursing Work Index (PES-NWI) to inform my research and further my scholarly development. As part of multiple research teams collecting data from across the country, I have seen the associations between the nurse work environment and patient outcomes, such as patients cared for in hospitals with better nurse work environments, tend to have better patient outcomes. The inverse of these associations has also been seen with data showing nurses working in poor nurse work environments have higher rates of burnout, job dissatisfaction, and intent to leave. Additionally, variation in the nurse work environment has been associated with variation across hospital patient satisfaction. Studying these variations in the nurse work environment across hospitals enables us to study what organizational factors contribute to better nurse work environments; thereby, providing the necessary data to develop and implement timely and critical interventions to improve the nurse work environment, patient outcomes, nurse wellbeing, and patient satisfaction.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Kathryn Riman

Comment ID#: 8156 (Submitted: 09/02/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a practicing intensive care unit (ICU) nurse and postdoctoral research fellow. My work largely focuses on designing, implementing, and testing novel organizational strategies to improve critical care outcomes. With the invaluable tool, the Practice Environment Scale of the Nursing Work Index (PES-NWI), researchers across the globe have been able to obtain objective measurements of ICU work environments and benchmark their performance relative to others. With 66% of nurses feeling their experiences during the pandemic have caused them to consider leaving nursing (American Association of Critical Care Nurses, 2021), it imperative that we have the tools to accurately measure and optimize ICU work environments. Thank you for your time and consideration. Please feel free to reach out with any questions.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Ms. Lillee Smith Gelinas, DNP, RN, CPPS, FAAN, University of North Texas Health Science Center at Fort Worth

Comment ID#: 8176 (Submitted: 09/06/2022)

Council / Public: Public

Level of Support: N/A

Comment

Thank you for the opportunity to comment on the re-endorsement of the PES-NWI. As Editor-in-Chief of American Nurse Journal, the official, peer reviewed publication of the American Nurses Association, current member of the CMS Hospital Harms Technical Expert Panel and with Dr. Mary Naylor, co-chair of the original NQF Nursing Care Performance Measures Steering Committee whose work was published in 2004

https://www.qualityforum.org/Publications/2004/10/National_Voluntary_Consensus_Standards_for_Nursing-Sensitive_Care_An_Initial_Performance_Measure_Set.aspx, I strongly support the re-endorsement of the Practice Environment Scale of the Nursing Work Index (PES-NWI). I have served as a nursing and healthcare system executive for 30+ years, using the PES-NWI in numerous practice settings. These data were enlightening as to the state of the work environment, allowing targeted action planning for quality improvement. The valuable, longitudinal learning over many years from use of the PES-NWI cannot be over emphasized. As a former member of several NQF committees, including most recently the Patient Safety Standing Committee, I have witnessed firsthand the rigor and thoroughness of the NQF evidence-based measure endorsement and re-endorsement process, which is considered the gold standard for healthcare quality and safety measurement. The focus of the work on the PES-NWI by the original NQF Nursing Care Performance Measures Steering Committee has continued to be strengthened and enhanced by numerous qualitative and quantitative research studies for the past 20+ years, resulting in one of the most valid instruments for measuring the nursing work environment and impact on patient

outcomes. The PES-NWI is recently highlighted in the NQF Patient Safety Steering Committee's report: Patient Safety Final Technical Report published August 9, 2019

https://www.qualityforum.org/Publications/2019/08/Patient_Safety_Final_Technical_Report_-_Fall_2018_Cycle.aspx

Today, we witness the variability of the nursing work environment due to several factors, including COVID-19, a worsening nursing shortage and the rise of violence in the workplace. Therefore, the continued use of the PES-NWI could not be more urgent to measure these factors and support health system actions to improve care, enhance transparency and support the nursing workforce. Re-endorsement is critical. I would be happy to provide any follow-up to the committee needed. Thank you. Lillie Gelinas, DNP, RN, CPPS, FAAN

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Ms. Rosemary Kennedy, PhD, MBA, RN, FAAN, eCare Informatics

Comment ID#: 8139 (Submitted: 08/31/2022)

Council / Public: Public

Level of Support: N/A

Comment

I have been using the Practice Environment Scale of the Nursing Work Index since 2015. This instrument helps me to measure the nursing practice environment [defined as factors that enhance or attenuate a nurse's ability to practice nursing skillfully and deliver high quality care. I use this measure to assess the current state practice environment BEFORE implementing practice change or technology. If the scale is less than adequate, changes are implemented within the practice environment before implementing technology. I have used this scale in practice and research. There are many less than optimal work environments and this instrument helps me quantify the environment so when technology and process change is implemented we have better outcomes.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Ms. Tilithia McBride, GlaxoSmithKline

Comment ID#: 8137 (Submitted: 08/31/2022)

Council / Public: SPI

Level of Support: N/A

Comment

The Federation of American Hospitals (FAH) believes that this measure provides information that is useful and linked to improved patient outcomes. While the measure developer may not have been able to provide a robust set of data addressing potential disparities, a continued gap in care was demonstrated. In addition, future reporting of this measure by the Leapfrog Group will also provide opportunities to understand potential workforce issues in the future. We recommend that the committee pass the measure on performance gap.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Patricia Patrician, UNiversity of Alabama at Birmingham

Comment ID#: 8145 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am a nurse scientist who has used this measure throughout my entire research career (since 2000) to investigate work environments and to improve them. This instrument is spot on in distinguishing excellent work environments from those that are unfavorable, and perhaps more importantly, the subscales and individual items can pinpoint areas for improvement. We have used this instrument in military environments and its psychometric properties hold up extremely well. My PhD student recently completed her dissertation evaluating whether the items in the PES-NWI remain important to the job satisfaction of nurses today and their ability to deliver quality patient care (questions upon which the original items are based) and it is striking that the vast majority of the items remain relevant to contemporary nursing, with some minor language modifications. Her work will be published very soon. This instrument is truly one-of-a-kind in evaluating the work environments of acute and critical care nurses. It has certainly stood the test of time. It correlates very strongly with a variety of patient quality measures, such as patient experience scores, hospital acquired infection rates, and other quality indicators that we know are sensitive to nursing care. It would really be a terrible disservice to nurse scientists everywhere not to endorse this measure. I ask you to please fully endorse the PES-NWI - its composite and five subscales. Endorsing this measure supports ongoing work to improve work environments of nurses everywhere, something so badly needed in our post-COVID world. I humbly ask you to fully endorse this measure! - Pat Patrician, PhD, RN, FAAN, Professor, School of Nursing, University of Alabama at Birmingham

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

NQF #3690 Inappropriate diagnosis of urinary tract infection (UTI) in hospitalized medical patients; Abbreviated form: Inappropriate diagnosis of UTI (Recommended)

Dr. Timothy Hofer, University of Michigan Health System

Comment ID#: 8094 (Submitted: 06/09/2022)

Council / Public: PRO

Level of Support: N/A

Comment

It is incorrect to say that a measure has insufficient reliability by just looking at the intra-class correlation coefficient which is an estimate of the reliability of using a single observation (or patient outcome) to distinguish between the objects of measurement (in this case hospitals). Using the spearman-brown prophecy formula is a standard way of estimating the reliability of a measurement averaged, as in this example, over multiple measurements of the same hospital as represented by an average of multiple patient outcomes within that hospital. As noted in a classic text, *The Statistical Evaluation of Measurement Errors* (2nd Ed) by Grahm Dunn Arnold, London, 1989 (p 27-28), as well as countless other places: "The reliability of a randomly-selected subject [in this case a hospital] by a randomly selected rater [in this case a patient] is an intraclass correlation... If this reliability is not sufficiently high, then we can replicate [make multiple] measurements, and the reliability of the mean of the assessments of m independent [patients] on a given [hospital] ...can be calculated using the Spearman-Brown formula." This is the argument behind using mortality rates to assess hospitals (where the ICC is often less than 0.01 for using a single patient survival or death to measure the hospital mortality rate) but with sufficient cases the reliability of the hospital average mortality can approach 0.70-0.80. It is also the rationale for all psychometric scales, where the ICC of using a single randomly selected item from the scale to measure the trait is low but when a sum or mean of the N items in the scale is used the reliability approaches or exceeds 0.80. The technique is widely cited in the medical literature relating to quality measures. It is surprising that the NQF review did not seem to appreciate this argument and rated the reliability as insufficient stating that: "... the intraclass correlation coefficient is well below 0.5, a range generally agreed to show poor reliability. It is not clear from the submission how applying the Spearman Brown prophecy formula leads to an overall reliability of 0.9." By this reasoning you would consider every psychometric scale ever constructed as unreliable. You certainly would never consider using readmission rates or mortality rates or basically any patient outcome a reliable measure of hospital performance. Again, the ICC is **not** the relevant reliability estimate to refer to in assessing the reliability of this measurement as defined when it is not intended that a hospital measure will be based on a single measurement (or patient outcome). The relevant calculation for the measure reliability must take into account the expected number of measurements (patients) per hospital that will be used to construct the measure. I work on clinical and performance measurement and have over 20 years of experience and publications on this topic and have advised the team constructing this measure.

Developer Response

This comment accurately describes the reliability calculations and interpretation for our measure, and we concur.

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

NQF #3658 Adult Blood Culture Contamination Rate; A national measure and standard for clinical laboratories and antibiotic stewardship programs (Recommended)

Barbara DeBaun, Cynosure Health ; Submitted by Kathy Lester

Comment ID#: 8152 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

I write in support of NQF Measure # 3658 : Adult Blood Culture Contamination Rate; A national measure and standard for clinical laboratories and antibiotic stewardship programs. Given the enormous implications of blood culture contamination on patient safety, antibiotic stewardship, and antibiotic-resistance, I write to express strong support for the approval, adoption, and national implementation of this important new quality measure. As brief context, I have worked in the field of Infection Prevention and Quality Improvement for over 40 years. In my current role as Improvement Advisor with Cynosure Health, I promote processes and strategies designed to prevent patient harm and improve patient outcomes. During my tenure I have personally observed the serious consequences of blood culture contamination on unnecessary and prolonged broad-spectrum antibiotic therapy, C. difficile infection, MDROs, acute kidney injury, extended length of hospital stay, readmissions, and significant avoidable hospital costs. These observations and other direct personal experience have motivated me to advocate for the establishment of a new blood culture quality measure including a significantly reduced blood culture contamination benchmark of 1%. As you know, the Clinical Laboratory Standards Institute (CLSI) has long supported a target benchmark of "3% or below" contamination rate for hospitals nationwide. Recently, CLSI adopted their new M47 2nd Edition, 2022 Principles and Procedures for Blood Cultures. Importantly, a new blood culture contamination rate goal of 1% using best practices is now advocated in these new guidelines. In February of last year, many of my colleagues in the disciplines of clinical microbiology, infectious diseases and infection prevention joined me in signing a letter that was sent to Dr. Lee Fleisher, Chief Medical Officer of CMS in February of 2021. Our goal was to summarize the on-going broad and meaningful impacts of blood culture contamination. I enclose that letter here and encourage each member of the patient safety committee to review the details contained in this letter as well as associated references prior to your June 23rd meeting. I applaud CDC's efforts in crafting and submitting this new blood culture contamination quality measure application and strongly support NQF's approval and adoption of this important new measure. Should you have any questions and/or if additional input based on my experience associated with the significant consequences of blood culture contamination would be helpful, please don't hesitate to contact me. Respectfully, Barbara DeBaun, MSN, RN, CIC Improvement Advisor Cynosure Health

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Deborah Campbell, Kentucky Hospital Association ; Submitted by Kathy Lester

Comment ID#: 8151 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

I support NQF measure 3658 : Adult Blood Culture Contamination Rate; A national measure and standard for clinical laboratories and antibiotic stewardship programs. Given the clinical importance that accurate blood culture results have on patient safety, diagnostic and antibiotic stewardship, I am writing today to express my strong support for the approval and implementation of this important new quality measure. As an Infection Prevention Professional and a Certified Professional in Healthcare Quality, with over 30 years of experience and as Vice President Quality and Health Professions at the Kentucky Hospital Association, I have seen first-hand the clinical and economic consequences of contaminated blood culture results within our state hospitals. Due to the clinical significance of accurate blood cultures, and the critical need for combating antibiotic resistance, we are in the process of instituting a state blood culture contamination reportable metric of 1% within our association of hospitals. We have experienced the clinical cost of inaccurate blood cultures leading to unnecessary antibiotics increasing the potential for driving antimicrobial resistance, acute kidney injury, and antibiotic associated infections. The use of any antimicrobial has the potential for causation of Clostridium difficile infection, which results in the death of 15,000 + Americans each year, within the first 30 days of onset. Other clinical consequences include dysregulation of the immune system due to antibiotic therapy, delays in establishing a definitive diagnosis and substantial prolongation in hospital stays. My personal experiences as a nurse executive, certified in quality, have convinced me that a 1% goal is now possible with the combination of evidence-based techniques and evidence-based technology solutions. As you may know, recently, the Clinical and Laboratory Standards Institute (CLSI) published its Blood Culture guidelines in the form of the M47 2nd Edition, 2022 Principles and Procedures for Blood Cultures. Within these guidelines, CLSI has adopted a new blood culture contamination goal of 1% using best practices. In closing, I would like to commend CDC 's efforts in spearheading this new blood culture contamination quality measure and strongly support NQF's approval and adoption of this measure. Should you have any questions and/or the need for additional information on the consequences of blood culture contamination and the specific methods we implemented to dramatically reduce our blood culture contamination rates, please do not hesitate to contact me. Respectfully, Deborah Campbell, RN-BC, MSN, CPHQ Vice President, Quality and Health Professions Kentucky Hospital Association dcampbell@kyha.com 502.992.4383

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Dr. Jacob Sramek, UnityPoint Health ; Submitted by Stephanie Collingwood

Comment ID#: 8144 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: Member Does Support

Comment

UnityPoint Health is supportive of NQF measure 3658 with additional considerations as outlined below. Tracking the blood culture contamination rate is accepted as an evidence-based intervention which is important to positive patient outcomes. Reduction in blood culture contamination rates reduces unnecessary antibiotic exposure and prevents prolonged length of hospitalization. Our organization does not track the single set blood culture rate, as our EMR order sets require providers to order blood cultures x 2. Regarding tracking the blood culture contamination rate, we suggest there exists a disconnect between patient care and the reported metric of 'overall contamination rate' as currently defined. We acknowledge this overall contamination rate is a normal metric shared and compared in literature, but question its utility. As an example, of the patients in one of our hospitals with positive blood cultures, 2 out of the 5 patients are growing contaminants, and thus 40% of our patients with positive blood cultures had antibiotics initiated inappropriately. That number resonates with clinicians and more accurately encompasses the complexities of blood culture ordering. Inpatients routinely will have several sets of blood cultures ordered in an inpatient stay, per patient, and thus the denominator (total blood cultures) can become diluted in non-ED or non-outpatient settings. We encourage NQF to acknowledge this discrepancy by considering a metric like "% of positive blood cultures judged to be contaminants" or "% of patients in whom any blood cultures were ordered and were deemed to have 1 or more contaminants". This would: 1. Better reflect the number of patients at risk for inappropriate antibiotic prescribing 2. Be a better education piece for providers; "40% of all positives are false positives, and this is better than the national average" is helpful for providers needing to decide whether or not to start ABX. "< 3 % of all blood culture orders are a false positive" is not helpful. 3. Better signal for when an institution may have a process-related problem with collection.

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Gary Doern, University of Iowa College of Medicine ; Submitted by Kathy Lester

Comment ID#: 8154 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

I am writing to support NQF Measure # 3658 : Adult Blood Culture Contamination Rate; A national measure and standard for clinical laboratories and antibiotic stewardship programs. Given the enormous implications of blood culture contamination on patient safety, I write to express strong support for the approval, adoption, and national implementation of this important new quality measure. As brief context, I spent over 30 years as a clinical microbiologist. During my tenure as Director of the Clinical Microbiology Laboratories at the University of Massachusetts and Professor of Pathology at the University of Iowa College of Medicine & Director of the Clinical Microbiology Laboratories at the University of Iowa Hospital and Clinics, I saw first-hand the serious consequences of blood culture contamination on patient safety, unnecessary and avoidable laboratory resource consumption as well as our hospital's budget. These observations and other direct personal experience have motivated me to advocate for the establishment of a new, significantly reduced blood culture contamination performance standard. As you may be aware, the Clinical Laboratory Standards Institute (CLSI) has long supported a target benchmark of "3% or below" contamination rate for hospitals nationwide. Recently, CLSI adopted their new M47 2nd Edition, 2022 Principles and Procedures for Blood Cultures. Importantly, a new blood culture contamination rate goal of 1% using best practices is now advocated in these new guidelines. In February of last year, many of my colleagues in the disciplines of clinical microbiology, infectious diseases and infection prevention joined me in sending a letter to Dr. Lee Fleisher, Chief Medical Officer of CMS. Our goal was to summarize the on-going broad and meaningful impacts of blood culture contamination. I enclose that letter here and encourage each member of the patient safety committee review the details contained in this letter as well as associated references prior to your June 23rd meeting. We applaud CDC's efforts in crafting and submitting this new blood culture contamination quality measure application and strongly support NQF's approval and adoption of this important new measure. Should you have any questions and/or if additional input based on my experience associated with the compelling consequences of blood culture contamination would be helpful, please don't hesitate to contact me. Best regards, Gary V. Doern, PhD Emeritus Professor of Pathology University of Iowa College of Medicine

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Lucy Tompkins, Stanford University School of Medicine/Stanford University Hospital ; Submitted by Kathy Lester

Comment ID#: 8155 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A**Comment**

It is my understanding that review of a new proposed quality measure for Blood Culture Contamination developed by the CDC was recommended for endorsement by the NQF Patient Safety Committee back in June and will be voted on for endorsement by NQF in early September. Given the enormous implications of blood culture contamination on patient safety, antibiotic stewardship, and antibiotic-resistance, false-positive CLABSI reporting, I write to express strong support for endorsement, approval, adoption, and national implementation of this important new quality measure. As brief background, I have worked in the fields of Infectious Diseases, Clinical Microbiology, Epidemiology, and Infection Prevention and Control for over 40 years. In my current roles as Professor of Medicine and Infectious Diseases and Professor of Microbiology and Immunology at Stanford University School of Medicine, and Hospital Epidemiologist and Medical Director of the Infection Prevention and Control Department at Stanford HealthCare I promote processes and strategies designed to prevent patient harm and improve antimicrobial stewardship and patient outcomes. During my tenure I have personally observed the serious consequences of blood culture contamination on unnecessary and prolonged broad-spectrum antibiotic therapy, *C. difficile* infection, MDROs, acute kidney injury, extended length of hospital stay, readmissions, false-positive CLABSI reporting and its impacts on CMS reimbursement, and significant avoidable hospital costs. These observations and other direct personal experience have motivated me to advocate for the establishment of a new blood culture quality measure including a significantly reduced blood culture contamination benchmark of 1%. When we combined best practice technique with evidence-based technology to collect blood cultures we dramatically reduced blood culture contamination and clearly demonstrated that getting to 0% contamination is achievable. As a result of our experience, we join others in the national movement to establish a goal of 0.0% blood culture contamination starting with a new national benchmark of less than 1.0% as the new standard of care. As you know, the Clinical Laboratory Standards Institute (CLSI) has long supported a target benchmark of “3% or below” contamination rate for hospitals nationwide. Recently, CLSI adopted their new M47 2nd Edition, 2022 Principles and Procedures for Blood Cultures. Importantly, a new blood culture contamination rate goal of 1% using best practices is now advocated in these new guidelines. Additionally, just last month, the CDC published their new guidelines to reduce blood culture contamination reinforcing CLSI’s 1% goal for blood culture contamination and highlighting the evidence-based guidelines to achieve it. In February of last year, many of my colleagues in the disciplines of clinical microbiology, infectious diseases and infection prevention joined me in signing a letter that was sent to Dr. Lee Fleisher, Chief Medical Officer of CMS in February of 2021. Our goal was to summarize the on-going broad and meaningful impacts of blood culture contamination. I enclose that letter here and encourage each member of the NQF quality measure committee to review the details contained in this letter as well as associated references prior to the vote to endorse the CDC’s blood culture quality measure. I applaud CDC’s efforts in crafting and submitting this new blood culture contamination quality measure application and strongly support NQF’s formal endorsement, approval, and adoption of this important new measure. Should you have any questions and/or if additional input based on my experience associated with the significant consequences of blood culture contamination would be helpful, please feel free to contact me. Respectfully, Lucy S. Tompkins, MD, PhD Lucy Becker Professor of Medicine (Division of Infectious Diseases and Geographic Medicine) Professor of Microbiology and Immunology Stanford University School of Medicine Hospital Epidemiologist and Medical Director, Infection Prevention and Control Department Stanford University Hospital Stanford CA 94305

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

Mark Povroznik, WVU Medicine – United Hospital Center ; Submitted by Kathy Lester

Comment ID#: 8153 (Submitted: 09/01/2022)

Council / Public: Public

Level of Support: N/A

Comment

I support NQF Measure # 3658 : Adult Blood Culture Contamination Rate; A national measure and standard for clinical laboratories and antibiotic stewardship programs. Given the role of accurate blood culture results on patient safety and antibiotic and diagnostic stewardship, I am writing today to express my strong support for the approval and implementation of this important new quality measure. As an Infection Prevention Professional with over 20 years of experience and the Chairman of the Infection Control Committee for WVU Medicine, the largest health system in Kentucky, I have personally observed the clinical and economic consequences of a contaminated blood culture result within a major health system. In 2019, I collaborated with Infection Prevention professionals across WVU Medicine to decrease blood culture contamination rates by over 50%. At United Hospital Center, the institution for which I have direct oversight, we piloted various methods before achieving success by combining best practice techniques for blood culture collection and an engineered technology solution. Today, I am proud to share that we have sustained a contamination rate well below the national average of 3% and are trending toward a 1% rate. My personal experiences at United Hospital Center have convinced me that a sustained 1% or less blood culture contamination rate is achievable with best practice techniques and evidence-based technology solutions. Most recently, the Clinical and Laboratory Standards Institute (CLSI) published its Blood Culture M47 2nd Edition, 2022 Principles and Procedures for Blood Cultures. Within these guidelines, a new blood culture contamination goal of 1% using best practices was adopted. In closing, I would like to commend CDC 's efforts in spearheading this new blood culture contamination quality measure and strongly support NQF's approval and adoption of this measure. If you have any questions and/or I can provide any additional information regarding the consequence of blood culture contamination and the specific methods we implemented to dramatically reduce our rates, please do not hesitate to contact me. Best regards, Mark D. Povroznik, PharmD VP, Quality and Safety / CQO Chairman, Infection Control Chairman, System Infection Control Affinity WVU Medicine – United Hospital Center

Developer Response

N/A

NQF Response

Thank you for your comment. It has been shared with the Standing Committee and measure developer.

NQF Committee Response

N/A

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