NATIONAL QUALITY FORUM

NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR PATIENT SAFETY: A CONSENSUS REPORT

NATIONAL QUALITY FORUM

NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR PATIENT SAFETY: A CONSENSUS REPORT

TABLE OF CONTENTS

NATIONAL QUALITY FORUM

NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR PATIENT SAFETY: A CONSENSUS REPORT

EXECUTIVE SUMMARY

Americans are exposed to more preventable medical errors than patients in other industrialized nations; medical errors within the United States health care system occur every day in the tens of thousands and potentially hundreds of thousands. These errors cause injuries in as many as 1 out of every 25 hospital patients and lead to an estimated 44,000- 98,000 patient deaths annually. If using low mortality estimates, medical errors would rank as the eighth leading cause of death in the United States. Preventable errors cost the United States $17-$29 billion per year in healthcare expenses, lost worker productivity, and disability. As healthcare expenditures grow at more than seven percent each year, patient safety is improving by only one percent.

Adverse events can occur throughout the healthcare delivery system and can include healthcare-associated infections (HAIs), medication errors, surgical errors, diagnostic inaccuracies and system failures. In November 2008, the National Priorities Partnership (NPP) named patient safety as one of the six national priorities, with a specific focus on reduction of hospital-level mortality rates, serious adverse events, and HAIs. Among the National Quality Forum's (NQF) inventory of 550 endorsed measures, over 100 measures relate to patient safety. NQF's recent Patient Safety Measures project solicited measures to fill gap areas and to address environment-specific issues with the highest potential leverage for improvement. The measures recommended in this report focus specifically on HAIs, and also address issues related to radiation dosing. It is important to note that several measures related to colonoscope processing and medication safety or querying and counseling measures were submitted for evaluation but none were recommended for endorsement. The NQF Steering Committee reviewed the submitted patient safety measures and recommended the measures that they considered to have the potential for broad and far-reaching impact. The Steering Committee further based their recommendations on significant evidence that implementation would reduce mortality or mitigate severe harm. Ultimately, the Steering Committee stated that NQF endorsement should signify the importance of allocating resources to collect and report on these measures.

NATIONAL QUALITY FORUM

In this report of NQF's Patient Safety Measures project, six measures have been endorsed as voluntary consensus standards suitable for public reporting and quality improvement. Two measures have received time-limited endorsement. These measures were submitted by the Centers for Disease Control and Prevention (CDC), the American College of Surgeons (ACS), the American College of Radiology (ACR), and the University of California San Francisco. The measures are listed below:

ENDORSED MEASURES

- 0138: National Healthcare Safety Network (NHSN) catheter-associated urinary tract infection (CAUTI) Outcome (CDC)
- 0139: National Healthcare Safety Network (NHSN) Central line-associated bloodstream infection (CLABSI) outcome measure (CDC)
- 0751: Risk adjusted urinary tract infection outcome measure (ACS)
- 0753: American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure

TIME-LIMITED ENDORSED MEASURES

- 0739: Radiation Dose Computed Tomography (CT) (University of California San Francisco)
- 0740: Participation in a Systematic National Dose Index Registry (ACR)

NATIONAL QUALITY FORUM

BACKGROUND

Americans are exposed to more preventable medical errors than patients in other industrialized nations; medical errors within the United States health care system occur every day in the tens of thousands and potentially hundreds of thousands.[1] These errors cause injuries in as many as 1 out of every 25 hospital patients and lead to an estimated 44,000-98,000 patient deaths annually. If using the low mortality estimates, medical errors would rank as the eighth leading cause of death in the United States. Preventable errors cost the United States $17-$29 billion per year in healthcare expenses, lost worker productivity, and disability. As healthcare expenditures grow at more than seven percent each year, patient safety is improving by only one percent.[2]

Adverse events can occur throughout the healthcare delivery system and include medication errors, surgical errors, diagnostic inaccuracies and system failures.[3] In November 2008, the National Priorities Partnership (NPP) named patient safety as one of the six national priorities, with specific focus on reduction of hospital-level mortality rates, serious adverse events, and healthcare-associated infections (HAIs).

Due to the high impact and widespread incidence of medical errors, interest in measurement and reporting of such events has increased among consumers, providers, purchasers, and oversight organizations. Measurement drives improvement and informs consumers and payers, all of which are imperative for improving patient safety and decreasing medical errors.[4]

The National Quality Forum (NQF) has produced an array of products that focus on measuring, evaluating, reporting, and preventing patient safety events. Presently, NQF has endorsed over 100 performance measures that are directly related to patient safety. These endorsed measures are relevant in several different environments of care (e.g., hospitals, ambulatory care, and long term care) as well as applicable to a variety of healthcare professionals (e.g., physicians, nurses). In 2002, NQF first published a list of 27 adverse events in its report *Serious Reportable Events in Healthcare*, designating these events as important for public reporting at the state and national levels, with the aims of facilitating education about the events and developing strategies for prevention of the events.[5] NQF's *Safe Practices for Better Healthcare*, first published in 2003, identifies best practices for improving the safety and quality of healthcare.[6]

NQF's Patient Safety Measures project solicited measures to fill gap areas and to address environment-specific issues with the highest potential leverage for improvement. Initially, this project was divided into two separate but related phases. This final report combines all of the recommended Patient Safety Measures focusing specifically on HAIs, urinary tract infections (UTIs), surgical site infections (SSIs), bloodstream infections and radiation dosing.

The Steering Committee recommended measures with a strong evidence base that demonstrated that implementation would reduce patient mortality and/or harm. The Steering Committee also stated that NQF endorsement should signify the importance of allocating resources to both measure and publicly report; additionally, measures that lacked rigorous evidence in support of an outcome were not recommended for endorsement.

STRATEGIC DIRECTIONS FOR NQF

NQF's mission includes three parts: 1) setting national priorities and goals for performance improvement, 2) endorsing national consensus standards for measuring and publicly reporting on performance, and 3) promoting the attainment of national goals through education and outreach programs. As greater numbers of quality measures are developed and brought to NQF for consideration of endorsement, it is incumbent on NQF to assist stakeholders to "measure what makes a difference" and address what is important to achieve the best outcomes for patients and populations. For more information see www.qualityforum.org.

Several strategic issues have been identified to guide consideration of candidate consensus standards:

DRIVE TOWARD HIGH PERFORMANCE. Over time, the bar of performance expectations should be raised to encourage the achievement of higher levels of system performance.
EMPHASIZE COMPOSITES. Composite measures provide much needed summary information pertaining to multiple dimensions of performance and are more comprehensible to patients and consumers.

MOVE TOWARD OUTCOME MEASUREMENT. Outcome measures provide information of keen interest to consumers and purchasers, and when coupled with healthcare process measures, they provide useful and actionable information to providers. Outcome measures also focus attention on much needed system-level improvements, because achieving the best patient outcomes often requires carefully designed care processes, teamwork, and coordinated action on the part of many providers.

CONSIDER DISPARITIES IN ALL THAT WE DO. Some of the greatest performance gaps relate to care of minority populations. Particular attention should be focused on the most relevant race/ethnicity/language/socioeconomic strata to identify relevant measures for reporting.

NATIONAL PRIORITIES PARTNERSHIP

NQF seeks to endorse measures that address the National Priorities and Goals of the National Priorities Partnership.[7] The National Priorities Partnership represents those who receive, pay for, provide, and evaluate healthcare. The National Priorities and Goals focus on these areas:

- patient and family engagement,
- population health,
- safety,
- care coordination,
- palliative and end-of-life care,
- overuse,
- equitable access, and
- infrastructure support.

NQF'S CONSENSUS DEVELOPMENT PROCESS (CDP)

Patient Safety Measures Project[8]

The National Quality Forum's National Voluntary Consensus Standards for Patient Safety Measures project seeks to endorse patient safety-related measures that address healthcare-associated infections (HAIs), medication safety, and other areas. Potential consensus standards focus on a broad range of areas including but not limited to safety risk assessment and/or risk

identification, hospital standardized mortality rates, reporting and follow-up or critical test results, and leadership and culture of safety.

The full constellation of consensus standards, along with those presented in this report, provide a growing number of NQF-endorsed® voluntary consensus standards that directly reflect the importance of measuring and improving the quality of care provided to patients. Organizations that adopt these consensus standards will promote the delivery of safer and higher-quality care for patients.

Evaluating Potential Consensus Standards

Candidate standards were solicited though an open "Call for Measures" in January 2010 and were actively sought by NQF staff through literature reviews, a search of the National Quality Measures Clearinghouse, NQF Member websites, and an environmental scan. The measures were evaluated using NQF's standard evaluation criteria.[9] Technical Advisory Panels (TAPs) related to HAIs and medication safety measures rated the subcriteria for each candidate consensus standard and identified strengths and weaknesses to assist the Steering Committee (Committee) in making recommendations. A 21-member, multi-stakeholder Committee provided final evaluations of the four main criteria: importance to measure and report, scientific acceptability of the measure properties, usability, and feasibility. Measure developers participated in the TAP and Steering Committee discussions to respond to questions and clarify any issues or concerns.

ENDORSED STANDARDS

Endorsed Candidate Consensus Standards

Healthcare-Associated Infection (HAI) Measures

These four measures have been endorsed as voluntary consensus standards suitable for public reporting and quality improvement.

0138: National Healthcare Safety Network (NHSN) Catheter-associated urinary tract Infection (CAUTI) outcome measure (CDC). *Standardized Infection Ratio (SIR) of healthcare-associated, catheter-associated urinary tract infections (CAUTI) will be calculated among patients in the following patient care locations:*

- *Intensive Care Units (ICUs) (excluding patients in neonatal ICUs [NICUs: Level II/III and Level III nurseries])*
- *Specialty Care Areas (SCAs) - adult and pediatric: long term acute care, bone marrow transplant, acute dialysis, hematology/oncology, and solid organ transplant locations*
- *Other inpatient locations (excluding Level I and Level II nurseries).*

Data from these locations are reported from acute care general hospitals (including specialty hospitals), freestanding long term acute care hospitals, rehabilitation hospitals, and behavioral health hospitals. Only locations where patients reside overnight are included, i.e., inpatient locations.

Urinary tract infections are estimated to be the most frequently-occurring HAIs, accounting for approximately 36 percent of HAIs in U.S. hospitals.[15] UTIs can cause significant increases in morbidity, mortality, and costs. The Steering Committee agreed that this measure strongly meets the criteria for importance to measure and report.

During the course of this project, measure #0138 was modified by its developer to extend the measure's scope of coverage beyond intensive care units (ICUs) and acute care hospitals to include non-ICU locations, acute care general hospitals, free standing long-term acute care hospitals, rehabilitation hospitals and behavioral health hospitals where patients reside overnight. CMS has requested measures in these domains for Inpatient Prospective Payment System (IPPS) reporting requirements. The measure developer noted that the measures are currently in use in non-ICU locations, acute care hospitals and inpatient and long-term care facilities.

Similar to the CDC's CLABSI and SSI outcome measures, this measure uses a SIR to compare a given healthcare facility's observed CAUTI rate to that facility's expected CAUTI rate. The expected rate is based on standardized rates that account for length of stay, length of urinary catheterization, patient care location, and other factors. As with previous discussions about the

CDC's CLABSI and SSI measures, the Committee questioned the usability outside NHSN participation and believed that a SIR may also lead to increased manual data collection and entry. The developer reiterated the benefits of utilizing an indirect standardization of cumulative SSI experiences across several stratified groups of data.

Measure development in this topic area has generally focused on specific sites and/or settings like nursing homes. The Committee discussed the benefits of developing more cross-cutting measures and suggested broader application beyond the ICU (i.e., to long term care settings across the whole continuum of care) in the future. The CDC's subsequent update to measure #0138 expanded the application of the measure to Specialty Care Areas and other inpatient locations (excluding Level I and Level II nurseries). Following its conference call to review the updated specifications, the Steering Committee agreed that the expanded measure continues to meet the major evaluation criteria.

This outcome measure addresses the National Priority area of safety.

0139: National Healthcare Safety Network (NHSN) Central line-associated bloodstream infection (CLABSI) outcome measure (CDC)

Standardized Infection Ratio (SIR) of healthcare-associated, central line-associated bloodstream infections (CLABSI) will be calculated among patients in the following patient care locations:

- *Intensive Care Units (ICUs)*
- *Specialty Care Areas (SCAs) - adult and pediatric: long term acute care, bone marrow transplant, acute dialysis, hematology/oncology, and solid organ transplant locations*
- *Other inpatient locations. (Data from these locations are reported from acute care general hospitals (including specialty hospitals), freestanding long term acute care hospitals, rehabilitation hospitals, and behavioral health hospitals. Only locations where patients reside overnight are included, i.e., inpatient locations.*

This measure was designed to capitalize on increased reporting to the National Healthcare Safety Network (NHSN), a voluntary, nationwide HAI surveillance system managed by the Centers for Disease Control and Prevention (CDC). Hospitals and other healthcare providers use

standardized definitions and protocols to report HAI data to the NHSN regularly, allowing the CDC to estimate the prevalence of HAIs, recognize trends, and assist healthcare facilities in quality improvement activities. The measure uses a standardized infection ratio (SIR) to compare a given healthcare facility's observed CLABSI rate to that facility's expected CLABSI rate. The expected rate is based on standardized rates that account for length of stay, length of central line use, patient care location, and other factors.

During the course of this project, measure #0139 was modified by its developer to extend the measure's scope of coverage beyond intensive care units (ICUs) and acute care hospitals to include non-ICU locations, acute care general hospitals, free standing long-term acute care hospitals, rehabilitation hospitals and behavioral health hospitals where patients reside overnight. CMS has requested measures in these domains for the IPPS reporting requirements. The measure developer noted that the measures are currently in use in non-ICU locations, acute care hospitals and inpatient and long-term care facilities.

This measure addresses a high impact area; the CDC estimates that 248,000 bloodstream infections occur in U.S. hospitals each year, and that a large proportion of these are central line-related. CLABSIs are associated with significant increases in mortality and healthcare costs.[13] Moreover, evidence-based interventions have shown significant reductions in CLABSI rates and improved health outcomes. For these reasons, the Committee agreed that this expanded measure strongly meets the criteria of importance to measure and report.

While the Committee appreciated the detail within the measure specifications, members expressed concern about the absence of a risk adjustment model or specific exclusions that consider the variability of disease severity from unit to unit or within units. Committee members also requested clarification on the measure developer's unit type classifications. The developer explained that as part of the NHSN enrollment process, facilities must map internal location to pre-defined locations in the NHSN Patient Safety Manual. The criteria or unit designation are included in the Manual. Although the measure is based on unit experience and not patient-level data, there are mechanisms to stratify patients by risk. Units with increased risk related to disease severity are identified as "special care areas" separate from critical care units or intensive care

units (ICUs). The developer noted that patient-level analysis would add to the data collection and manual calculation burden. The developer added that data could be stratified on several levels including by hospital type (i.e. teaching versus non-teaching hospital). Ultimately, the Committee and the developer acknowledged the inevitable variability from patient to patient that might be missed with this type of unit-based analysis. Following its conference call to review the updated specifications, the Steering Committee agreed that the expanded measure meets the scientific acceptability criterion.

The Committee raised several questions about how data are reported within the NHSN—specifically, the level of granularity used to report organism types and the specific reporting time period (i.e., whether reporting is cumulative, ongoing, annual, or quarterly). For public reporting, bloodstream infections are grouped together regardless of pathogen type. The developer stated that pathogen-specific data are captured on CLABSI events when available, and that appropriate exclusionary rules are applied to those events. Although annual data are published in the *American Journal of Infection Control*, the NHSN application also houses aggregate data, which provides facilities an opportunity to compare their performance with the national aggregate over specific time intervals. The developer acknowledged that they have not explored all potential issues associated with quarterly public reporting. The Committee recommended that the developer define a specific reporting timeframe, especially if the metric is adopted by a regulatory agency that requires quarterly reporting. No clarification has been received from the developer yet. The expanded measure retains the same reporting structure. The developer noted that in SCAs, because of differing infection risks, the number of patients with temporary central lines and those with permanent central lines is collected daily, at the same time each day, during the month. If a patient had both a temporary and permanent central line, the day would be counted only as a temporary central line day.

On the issue of feasibility, the Committee voiced concerns about reporting a SIR rather than a rate, since several states already mandate the reporting of CLABSI rates. The Committee questioned the usability outside NHSN participation and believed that a SIR may also lead to increased manual data collection and entry. The measure developer stated that using the SIR

creates significant added value by enabling comparisons of observed HAIs to expected HAIs based on nationally aggregated data.

This outcome measure addresses the National Priority area of safety.

0751: Risk Adjusted Urinary Tract Infection Outcome Measure (ACS) *This is a risk adjusted, case mix adjusted urinary tract infection outcome measure of adults 18+ years after surgical procedure.*

This measure is currently used in the ACS NSQIP surveillance system. The developer reiterated that the measure assesses UTIs within 30 days of surgical procedure and it is not catheter-specific. Nonetheless, urinary catheterizations account for the vast majority of UTIs. In a recent study of 36,000 major surgery patients, 86 percent of the study cohort had perioperative urinary catheters. Patients who had indwelling catheters for longer than two days postoperative, were twice as likely to develop a catheter associated urinary tract infection (CAUTI).[16] In monetary terms, UTIs contribute to approximately $340-450 million in additional health care costs annually.[17] For these reasons, the Steering Committee agreed that this measure strongly meets the criteria for importance to measure and report.

Both TAP and Committee members were concerned that reliability and validity testing have only been conducted through modeling. The developer noted that inter-rater reliability is tested regularly. The Committee observed that, based on the model's estimates, a minimum case load of approximately 300 patients is required to achieve adequate reliability. Some members were concerned that the data collection associated with this requirement could impose a burden on providers
The 30-day patient follow-up, specifically the clinical expertise needed to identify and differentiate infections and all associated financial costs, were cited by TAP and Committee members as a barrier to data collection and implementation.

The Committee also discussed the benefits of developing more cross-cutting measures and suggested broader application beyond the surgical population.

This outcome measure addresses the National Priority area of safety.

Head-to-Head Comparison of UTI measures (#0138 and #0751)

The Steering Committee evaluated the benefits of potential harmonization between proposed measures #0138 and #0751. Although both measures address UTIs, the Committee noted that there are substantial differences between the targeted populations and data sources of the measures. Even with the subsequent expansion of #0138, the Committee agreed that there would still be value in having both measures. Therefore, the Committee did not think that it was necessary to make a determination on best-in-class or render a recommendation for harmonization.

Harmonization of SSI Measures

The CDC and the ACS submitted two surgical site infection measures – PSM-002-10 (NHSN surgical site infection outcome measure) and PSM-006-10 (Risk adjusted surgical site infection outcome measure), respectively. The Committee compared the two SSI measures to determine if one measure could be considered best-in-class. The Committee noted that both measures capture similar information using different data sources. Steering Committee members acknowledged that each measure may offer benefits for quality improvement because they assess populations differently. Both measures are currently in use in the NSQIP and NHSN surveillance systems; however, it was difficult for the Committee to compare these measures, where the advantages and disadvantages of one measure may be offset by those of a competing measure without additional evidence from the field on their use. Committee members also discussed the possibility of harmonization.[14] In addition, there were a significant number of public comments on the report expressing concern about the recommendation of two potentially competing SSI measures. Ultimately, the Committee recommended both measures for endorsement, independently, with the following suggestions:

- Harmonization of both measures should be complete by the first maintenance review; and

- The developers should conduct focus groups with current NSQIP and NSHN participating facilities to assess how both surveillance programs are working, with regard to feasibility and usability.

At that time, the CDC and the ACS requested time to harmonize the measures, and it was agreed that this effort should be supported. The following, the newly-submitted SSI measure, represents the results of their harmonization efforts.

0753: American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure. *Prototype measure for the facility adjusted Standardized Infection Ratio (SIR) of deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged >= 18 years as reported through the ACS National Surgical Quality Improvement Program (ACS-NSQIP) or CDC National Health and Safety Network (NHSN). Prototype also includes a systematic, retrospective sampling of operative procedures in healthcare facilities. This prototype measure is intended for time-limited use and is proposed as a first step toward a more comprehensive SSI measure or set of SSI measures that include additional surgical procedure categories and expanded SSI risk-adjustment by procedure type. This single prototype measure is applied to two operative procedures, colon surgeries and abdominal hysterectomies, and the measure yields separate SIRs for each procedure.*

This surgical site infection outcome measure focuses on two procedures: colon surgeries and abdominal hysterectomies. It is specified using ICD-9-CM procedure codes for NHSN operative procedure categories, with additional CPT mappings to those categories for use in NSQIP. The target population is inpatients over 18 years old with deep incisional and organ/space SSIs. The measure will use separate Standardized Infection Ratios (SIRs) for the two operative procedure categories, and risk adjustment will be based on age and the American Society of Anesthesiology (ASA) Physical Status Classification system. For hospitals performing more than 42 colon surgeries per year, SIRs will be calculated using a sample based on the first colon surgery per 8-day cycle for hospitals. For hospitals performing over 200 abdominal hysterectomies per year, SIRs will be calculated using a sample of the first 5 abdominal hysterectomies per 8-day cycle.

Data collected and reported to the ACS National Surgical Quality Improvement Program (NSQIP) would be available for data transfer to NHSN. Follow-up will occur within 30 days using admission, readmission, and post-discharge surveillance. This measure is the first in a planned larger set of measures focused on surgical procedure categories with additional risk factors incorporated.

The measure addresses a high impact area. Each year, approximately 11 percent of all deaths in ICUs are associated with SSIs, resulting in up to 20,000 deaths and $2 billion in additional costs.[2] Moreover, evidence-based interventions have shown significant reductions in SSI rates and improved health outcomes.

The Steering Committee discussed the newly-harmonized measure in a supplemental conference call, reviewing the relevant changes, while also receiving clarification from the developers on several issues. Committee members inquired as to why these two particular measures had been chosen, and asked for clarification on the plan for public reporting. The developer explained that the CMS IPPS requirements released on August 1, 2011, call for abdominal hysterectomies and colon surgeries to be reported by the CDC to CMS. The NHSN will serve as the single reporting system for CMS-required reporting. However, facilities may choose which calculations of performance on the measure can be accomplished using either the NHSN or NSQIP data system. The measure developer acknowledged that for hospitals participating in both systems, there could be duplication.

The Steering Committee questioned why both organ space and deep incisional infections were included in the measure. The developer described the approach as a long standing precedent and stated that superficial infections are considered trivial events and therefore not included. However, organ space infections that drain through the incisions are classified as deep incisional infections. The combination of organ space and deep incisional infections are considered a clinically coherent grouping.

The Committee expressed their appreciation for the developers' efforts at harmonization, and agreed that the measure continues to meet the four major evaluation criteria. The Steering Committee recommended this measure for endorsement in a unanimous vote.

This outcome measure replaces NQF-endorsed measure #0299 (Surgical Site Infection Rate) and addresses the National Priority area of safety.

Radiation Dosing Measures

These measures have received time-limited endorsement as voluntary consensus standards suitable for public reporting and quality improvement.

Measurement of radiation dosing and radiation exposure from computed tomography (CT) scans is a difficult and complicated undertaking. Dosing levels are not easily quantified, and radiation absorption rates can vary significantly between organs and between patients. In combination with a lack of standardization in terminology (different facilities may have very different naming conventions for the scans they perform) and other variations in practice, these factors can confound attempts to gauge the extent of radiation exposure, either for a particular patient or at a broader public health level.

Because of the difficulties involved in measuring radiation exposure and absorption, both of the radiation safety measures submitted for this project use dose indices rather than actual dosing levels for each patient. Dose indices, such as "volume CT dose index" (CTDIvol) or "dose length product" (DLP), are calculations related to the amount of radiation generated to form an image. Nearly all CT machines are able to document and provide a dose index for any given scan. Several concerns were raised during the commenting period about the relationship between measured dose indices and the amount of radiation absorbed by patients. The Committee maintained that dose indices do allow for comparability and benchmarking of CT dosing levels, and are a reasonable basis for measurement efforts.

0740: Participation in a Systematic National Dose Index Registry (American College of Radiology) *Participation in a multi-center, standardized data collection and feedback program*

that will establish national dose index benchmarks for designated examinations. The registry will eventually provide a comparison of practice or facility dose indices such as CTDIvol and DLP for specified examinations relative to national and regional benchmarks. Data is captured electronically from the images of CT examinations using Digital Imaging and Communications in Medicine (DICOM) standards and the Integrating the Healthcare Enterprise (IHE) Radiation Exposure Monitoring (REM) profile.

This measure has received time-limited endorsement.

This is strictly a participation measure, requiring only a yes/no answer: does the reporting facility participate in a national dose index registry or not? Specifically, the measure calls for a facility or practice to attest that it is participating in a systematic, multi-center, standardized data collection program. The American College of Radiology (ACR) has established its own National Dose Index Registry (NDIR), which is in the midst of a second pilot run and is anticipated to be ready for use by mid- to late 2011. However, if any other organization or entity were to develop a systematic, standardized CT dose registry, participation in such a registry would also fulfill the measure's requirements.

The measure developers emphasized that their aim is not just to drive radiation levels down but to also address the need to produce images that are detailed enough to allow successful interpretations or diagnoses. The goal of this measure is to optimize, not merely reduce, radiation levels.

In response to questions from the Steering Committee, the developers cited the Society of Thoracic Surgeons National Adult Cardiac Database and the Breast Cancer Surveillance Consortium as examples of registry participation being associated with improvements in quality, and noted that performance improvement had already been observed within the ACR registry pilot program.

The Steering Committee agreed that this measure met the criterion of importance to measure and report. Committee members discussed whether implementation of the measure was feasible for a

large percentage of facilities, noting that electronic picture archiving and communication systems (PACS), where CT images and associated data are stored, have a high penetration rate in radiology practices. The Committee agreed that the reporting required for this measure could be done by a fairly high number of institutions with relatively little burden.

The Steering Committee agreed that the measure met the criteria for scientific acceptability, feasibility, and usability, and recommended the measure for time-limited endorsement in a unanimous vote. This measure addresses the National Priority of safety.

0739: Radiation Dose of Computed Tomography (University of California San Francisco)
The measure has two components. Part A is an outcome measure; Part B is a process measure. Both would work together towards improving quality and allowing hospitals and imaging facilities to conduct ongoing quality improvement. Part A: radiation dose associated with computed tomography (CT) examinations of the head, neck, chest, abdomen/pelvis, and lumbar spine, obtained in children and adults. Part B: The proportion of CT examinations where a measure of dose is included in the final medical report.

This measure has received time-limited endorsement.

This measure would first require CT scan providers to record the dose index (CTDIvol, DLP, or "effective dose"– an estimate based on DLP and other factors) for a consecutive sample of CTs conducted in the head, chest, abdomen/pelvis, and lumbar spine. Under the second part of the measure, these dose indices would be required to be included in patients' final medical reports. The minimum sample size for this measure to generate sufficient accuracy for adults is 100 scans; the minimum sample size for children is 50. Because different facilities will reach these thresholds at different rates, the time window for the measure's numerator may vary depending on the number of scans done at a facility.

Responding to concerns from the Committee about whether patients and non-radiology providers—the intended users—could use the measure, the developer stated that increased transparency around dosing information is important for fostering accountability and driving improvement; furthermore, inclusion of dose indices in the final medical report was the simplest,

most concrete way for a patient or ordering physician to evaluate CT dosing information. The developer added that collecting this information outside of the radiology department will create better incentives and will allow information tracking over time. A number of concerns were also raised during the public and member commenting period regarding usability for patients and referring physicians. In response to submitted comments, further discussions were held on this 350 subject, with the measure developer presenting additional information to support the measure. Some Committee members expressed discomfort with endorsing a measure where there appears to be disagreement among experts as to its readiness for use at a national level. However, other Committee members thought that a sufficient case had been made for the measure, stating that, given the clear need for increased transparency in radiation dosing levels and the importance of reducing radiation exposure from CT scans, providing metrics to assist with these efforts was of greater urgency.

The Steering Committee ultimately agreed that the measure met the criteria for scientific acceptability, usability, and feasibility, and recommended the measure for time-limited endorsement. Upon CSAC review of the Steering Committee's recommendation, the developer was encouraged to work with parties that expressed concerns with the implementation of the measure to further refine it in the future. This measure addresses the National Priority of safety.

Comparison of Radiation Dosing Measures (#0739 and #0740)

Both of the radiation safety measures submitted for this project share the ultimate goal of achieving safer patient care through reduced variation in CT scan doses and the use of more appropriate CT dosing levels. However, the measure developers differ notably in their approaches and in their proximate goals regarding the use of data generated through their measures. Measure #0739 is currently specified to facilitate internal safety improvement efforts by CT scan providers. There is a public reporting component by which aggregate registry data will be published periodically; in addition, facilities will receive feedback to enable them to compare their dosing levels with regional or national averages. Measure #0740 has a more direct public reporting component that requires dosing information be included in the final medical report so that it is accessible to patients and primary care providers or other ordering physicians.

The Steering Committee noted that these two measures are complementary, and suggested that the measures could potentially lend themselves to a "stepwise" process—meaning measure #0740, which could be implemented fairly rapidly, could be used to collect and review dosing information at the patient care level, increase awareness of dosing levels, and provide incentives for improvement. The same data could then be incorporated into a national registry to enable comparisons and tracking of trends at the population level once measure #0739 became more fully and widely implemented. Following the Steering Committee's discussion of the radiation dosing measures, the developers engaged in a collaborative effort to further harmonize their measures. As a result of this collaboration, the two measures' specifications are aligned in such a way that participation in one measure will facilitate participation in the other with minimal incremental effort and without undue burden.

Candidate Consensus Standards Not Recommended for Endorsement

The following measures have been divided into three topic areas—colonoscope measures; querying and counseling on side-effects measures; and medication safety measures. Several of the issues raised by the Steering Committee cut across the specifications for all measures within each topic area; therefore, the discussion and recommendations for each are presented jointly. Each measure was evaluated independently against NQF's evaluation criteria on importance. For the querying and counseling on side-effects measures and medication safety measures, the Committee grounded their final recommendations on the degree to which the impact, opportunity for improvement, and evidence were demonstrated for each measure. The Committee encourages additional measure development in these areas and has outlined several recommendations in this section and under "Additional Recommendations". The colonoscope measures were recommended as a group by the Committee; however, comments from NQF Members and the public, in addition to NQF Member voting results, were not particularly favorable. The CSAC ultimately voted against all three measures. Their decision is summarized below.

Colonoscope Processing Measures

PSM-014-10: Colonoscope processing personnel instruction (AAAHC Institute for Quality Improvement) *Percentage of all colonoscope reprocessing personnel at ambulatory surgery centers and office-based practices who receive device-specific instructions at least annually, as well as whenever any changes are made in colonoscope equipment or in manufacturers' recommendations, to ensure proper colonoscope reprocessing* **grouped[11] with PSM-015-10: Colonoscope processing currency (AAAHC Institute for Quality Improvement)** *Whether or not ambulatory surgery centers and office-based practices performing colonoscopies review national device-specific reprocessing guidelines and manufacturers' recommendations for reprocessing colonoscopes at least annually (every 12 months), as well as whenever any changes are made in colonoscope equipment or in manufacturers' recommendations, and revise their policies and procedures to incorporate any changes that have occurred,* **and PSM-016-10: Colonoscope processing competency (AAAHC Institute for Quality Improvement)** *Percentage of all colonoscope reprocessing personnel at ambulatory surgery centers and office-based practices who are documented to be competent at reprocessing colonoscopes on initial assignment and at least annually thereafter, as well as whenever any changes are made in colonoscope equipment or in manufacturers' recommendations.*

Colonoscopy is the most frequently performed procedure in ambulatory care settings. The measure developer cited data that indicated low compliance with proper reprocessing procedures. The data also demonstrated that the vast majority of viral outbreaks from this procedure have been linked to improper cleaning techniques. Incorporating current national and manufacturer recommendations into colonoscopy processing policies and procedures is likely to significantly reduce the adverse health and other effects associated with improper reprocessing. For these reasons, the Committee agreed that these measures strongly met the criteria of importance to measure and report. The Steering Committee also agreed that these measures met the criteria for scientific acceptability, feasibility, and usability, and recommended the measures, as a group, for time-limited endorsement.

During the public comment period, a number of commenters questioned whether these measures would be more appropriate as safe practice guidelines or accreditation standards instead of

performance metrics, adding that proceeding with these measures could lead to the endorsement of other device-related measures in the future.

Noting several well-publicized studies that indicated the potential for serious adverse health outcomes as a result of inadequate colonoscope processing, the Steering Committee determined that there was a need for publicly-reported measures in this area, and upheld its recommendation for endorsement. The Committee reiterated that, as with all measures submitted to NQF, any future device-related measures would be evaluated against NQF's criteria for measure endorsement; therefore, endorsement of these colonoscope measures would not automatically warrant the endorsement of future measures related to medical devices.

Following the Committee's recommendation, these measures were submitted to an NQF member vote and were reviewed by the Consensus Standards Approval Committee (CSAC). Member voting did not demonstrate consensus across stakeholders, and the CSAC did not recommend the measures for endorsement to the Board of Directors. The CSAC's decision was based on the following concerns:

- Lack of adequate consensus across stakeholders. After considering concerns raised by various councils, the CSAC concluded that additional efforts should be made by measure developers or others to address these concerns before making an endorsement decision on the measure.
- Importance of the measure. Although Steering Committees assess whether a measure addresses an important aspect of performance, the CSAC also has the prerogative to consider "importance to measure and report". For example, it is within the CSACs purview to conclude that a measure would not add significant value to the overall NQF portfolio. CSAC concluded that these measures are more appropriate for quality improvement activities and not for public reporting and accountability.
- Standard of care. The CSAC stated that these measures are more appropriate as basic accreditation standards and should be considered a competency and safe practice issue.

Querying and Counseling on Side-effects Measures

PSM-010-10: Querying and counseling about anti-epileptic drug (AED) side-effects (American Academy of Neurology) *Percentage of patient visits for patients with a diagnosis of epilepsy where the patients were queried and counseled about anti-epileptic drug (AED) side-effects and the querying and counseling was documented in the medical record.*

PSM-011-10: Counseling about epilepsy specific safety issues (American Academy of Neurology) *Percentage of patients with diagnosis of epilepsy (or their caregiver(s) counseled about context-specific safety issues, appropriate to the patient's age, seizure type(s) and frequency(ies), occupation and leisure activities, etc. (e.g., injury prevention, burns, appropriate driving restrictions, or bathing) at least once a year.*

PSM-012-10: Querying about falls (Parkinson's disease patients) (American Academy of Neurology) *Percentage of visits for patients with a diagnosis of Parkinson's disease where the patients (or caregiver(s), as appropriate) were queried about falls.*

PSM-013-10: Parkinson's disease related safety issues counseling (American Academy of Neurology) *Percentage of patients with a diagnosis of Parkinson's disease (or caregiver(s), as appropriate) who were counseled about context-specific safety issues appropriate to the patient's stage of disease (e.g., injury prevention, medication management, or driving) at least annually.*

These process measures were developed for inclusion in the AAN Maintenance of Certification Performance in Practice Toolkit (currently under development), to assess an element of treatment for non-stroke and non-stroke rehabilitation neurologic conditions. While the Committee recognized the importance of educating epilepsy and Parkinson's disease patients about medication management, falls, and context-specific safety issues, they voiced several universal concerns about these measures including the lack of specificity related to performance gaps and linkages to outcomes, and the reliance on consensus-based clinical practice guidelines.

Measure #PSM-010-10: Querying and counseling about anti-epileptic drug (AED) side-effects, is the only metric within the measure set that captures both querying and counseling. Although

this measure met the threshold for importance to measure and report, Committee members questioned why the measure was limited to physicians, and noted that advanced practice nurses and pharmacists, for example, also query and counsel patients on AED side effects. The Committee suggested that the developer expand application of the measure to include services provided by "physician extenders" (i.e., advanced practice nurses, clinical pharmacists, and other advanced care providers). The developer agreed to include physician extenders in the measure.

The measure includes only those patients with a principal diagnosis of epilepsy. The specifications were modified to make this clearer. In response to the Committee's concern about how the developer intended to qualify "querying and counseling", the developer revised the specifications to include explicit examples of querying and counseling.

The Committee appreciated the developer's efforts but did not believe that these modifications sufficiently addressed their concerns and did not recommend this measure for endorsement. The developer requested a reconsideration of the measure, asking for an opportunity to present additional information and more fully respond to the Steering Committee's concerns. The Committee granted this request and held further discussions on the measure, but upheld its decision not to recommend the measure for endorsement. No public comments were submitted on this measure.

Medication Safety Measures

PSM-017-10: Patient(s) with rheumatoid arthritis taking methotrexate, sulfasalazine, or leflunomide that had serum ALT or AST test in last 3 reported months (Ingenix, Inc.) *This measure identifies individuals with rheumatoid arthritis, 2 years of age or older, taking methotrexate, sulfasalazine, or leflunomide that had a serum ALT/AST test in last 3 months of the report period.*

PSM-018-10: Patient(s) with rheumatoid arthritis taking methotrexate or sulfasalazine that had a serum creatinine in last 6 reported months (Ingenix, Inc.) *This measure identifies*

individuals with rheumatoid arthritis, 2 years of age or older, taking methotrexate or sulfasalazine that had a serum creatinine test in last 6 months of the report period.

PSM-019-10: Patient(s) with rheumatoid arthritis taking methotrexate, sulfasalazine, gold, or leflunomide that had a CBC in last 3 reported months (Ingenix, Inc.) *This measure identifies individuals with rheumatoid arthritis, 2 years of age or older, taking methotrexate, sulfasalazine, gold, or leflunomide that had a CBC test in last 3 months of the report period.*

PSM-020-10: Patient(s) with inflammatory bowel disease taking methotrexate, azathioprine, or mercaptopurine that had serum ALT or AST test in last 6 reported months (Ingenix, Inc.) *This measure identifies individuals with inflammatory bowel disease, 12 years of age or older, taking methotrexate, azathioprine, or mercaptopurine that had a serum ALT/AST test in last 6 months of the report period.*

PSM-021-10: Adult patient(s) with multiple sclerosis taking interferon that had a serum ALT/AST test in last 12 reported months (Ingenix, Inc.) *This measure identifies adults with multiple sclerosis taking interferon that had at least one serum ALT/AST test in last 12 months of the report period.*

PSM-022-10: Adult patient(s) with multiple sclerosis taking interferon that had a CBC in last 12 reported months (Ingenix, Inc.) *This measure identifies adults with multiple sclerosis taking interferon that had at least one CBC test in last 12 months of the report period.*

PSM-023-10: Patient(s) with hepatitis C infection taking interferon that had periodic serum ALT monitoring (Ingenix, Inc.) *This measure identifies hepatitis C virus (HCV) infected persons, 3 years of age or older, taking interferon that had at least two serum tests in last 6 months of the report period.*

PSM-024-10: Patient(s) with hepatitis C infection taking interferon that had periodic CBC with differential monitoring (Ingenix, Inc.) *This measure identifies hepatitis C virus (HCV)*

infected persons, 3 years of age or older, taking interferon that had at least two CBCs with differential tests in last 6 months of the report period.

PSM-025-10: Patient(s) with HIV infection taking antiretroviral medications that had a serum ALT or AST test in last 6 reported months (Ingenix, Inc.) *This measure identifies HIV-infected persons, 2 years of age or older, taking antiretroviral medications that had at least one serum ALT or AST test in last 6 months of the report period.*

PSM-026-10: Patient(s) with HIV infection taking antiretroviral medications that had a CBC in last 6 reported months (Ingenix, Inc.) *This measure identifies HIV-infected persons, 2 years of age or older, taking antiretroviral medications that had at least one CBC test in last 6 months of the report period.*

PSM-030-10: Patient(s) with inflammatory bowel disease taking methotrexate, sulfasalazine, mercaptopurine, or azathioprine that had a CBC in last 3 reported months (Ingenix, Inc.) *This measure identifies individuals with inflammatory bowel disease, 12 years of age or older, taking methotrexate, sulfasalazine, mercaptopurine, or azathioprine that had a CBC test in last 3 months of the report period.*

PSM-031-10: Patient(s) with inflammatory bowel disease taking methotrexate that had a serum creatinine in last 6 reported months (Ingenix, Inc.) *This measure identifies individuals with inflammatory bowel disease, 12 years of age or older, taking methotrexate that had a serum creatinine test in last 6 months of the report period.*

These process measures focus on medication safety issues related to rheumatoid arthritis, inflammatory bowel disease, multiple sclerosis, hepatitis C, HIV, and routine laboratory monitoring for specific adverse events. As with the querying and counseling measures, Committee members were concerned that evidence-base for the measures was derived from consensus and not from formal epidemiologic studies or trials that assessed toxicities of these medications and monitoring frequencies. For example, while there is wide agreement for the need for medication monitoring for methotrexate, sulfasalazine, and leflunomide (drugs used to

treat rheumatoid arthritis), the frequency of monitoring has not been widely agreed on or based on evidence.

The Steering Committee also questioned the variation in the reporting period time window across the measures. The developer explained that these timeframes were defined as written to accommodate different guidelines from specialty societies. Another overarching issue identified by the Committee was the apparent limited focus of each measure and condition. Many of these measures are considered high volume but not high impact for patients. The incidence of harm was deemed relatively low and monitoring medications within the defined time windows was not indicative of better patient care.

The Committee acknowledged the difficulties and challenges in developing and evaluating these measures, and commended the developer for contributing to this area of patient safety. Members also encouraged the developer's continued work with specialty societies for future measure development. The Committee suggested that agreement on appropriate time windows for monitoring medication use and strong empirical evidence of impact would further strengthen these measures. Finally, the Committee advocated for the creation of broader measures with far reaching impact on patient health outcomes. More information is included in the "Additional Recommendations" section.

Additional Recommendations

The Perinatal Technical Advisory Panel (TAP) and the Steering Committee presented a number of recommendations for further research and measure development. Recommendations were related to specific measure development topic areas, focusing on perinatal outcomes and medication safety, as well as general areas such as measure evaluation and harmonization.

During the initial stages of this project, a perinatal TAP was convened to consider a set of measures forming a composite index for adverse outcomes in perinatal care. After discussion between the measure developer and the TAP co-chairs, the set of perinatal measures was ultimately withdrawn. However, perinatal TAP members convened via conference call to

identify gaps in perinatal care measurement and to offer thoughts on potential areas of focus in the future.

The TAP members noted the following gap areas in NQF's perinatal measures portfolio:

- Measures that assess quality of care during the labor and delivery process;
- Measures that assess quality and optimal care administered (e.g., of women who indicate a desire to breastfeed, how many are given instructions prior to discharge);
- Measures of appropriateness of care for women who do not require extensive intervention;
- Meaningful maternal outcome measures;
- New onset conditions that women experience in the first 2 months after hospital discharge;
- New onset conditions that women experience in the first 6 months after hospital discharge;
- Readmission following delivery and postpartum readmission measures;
- Measures that address disparities, care coordination and shared decision-making; and
- Full-term newborns that are discharged with or without complications.

The TAP noted that NQF's current set of perinatal measures is focused primarily at the facility-level and acknowledged that these data are easily attainable and accessible. Nonetheless, they encouraged a broader focus for future measure development.

The Steering Committee also discussed future areas of focus for measurement, particularly related to medication safety. Committee members expressed an interest in assessing broader, more cross-cutting measures of medication safety or, alternatively, "templates" for medication management and safety that could be applied to different medications or conditions. The Committee was interested in research on standard medication monitoring and its effect on outcomes or complications. Committee members thought that Ingenix's set of measures, for example, could be useful as a basis for comparative effectiveness studies focused on prevention of complications.

Along these lines, Committee members challenged the current way of thinking about quality improvement by placing measures within a certain spectrum related to their intended use or their relevance for different objectives within health care. The Committee suggested categorizing measures into classes or tiers based on their place in this spectrum. For instance, standards could be split into three groups: 1) measures suitable for public accountability and reporting; 2) measures geared towards quality improvement; and 3) practice guidelines, or baseline standards of care. The Steering Committee recommended further study of this idea and possible development of a framework or system for classifying measures.

The Steering Committee suggested that increasing the opportunities to harmonize would relieve some of the current reporting burden. In some cases, harmonization would be prudent and useful. However, it is important to note that harmonization may not be feasible in all circumstances. Therefore, clustering measures into meaningful topic categories that creates a suite of tools might assist the healthcare industry with evaluating measures at multiple levels. For example, in the case of urinary tract infections, a cluster of measures could be identified that uses any one of the following: lab results, physician diagnosis from empirical symptoms, a transfer diagnosis from hospital to long-term care, patient qualitative report, device usage patterns, or physician antibiotic orders. Defining the numerators and denominators would vary depending on the source and use of the data. The selection of the right measure would depend on the users' intentions.

Finally, as clinical information technologies become fully deployed throughout the healthcare system, antibiotics or lab result data may be useful from a surveillance perspective for public accountability, while clinical judgment and empirical symptoms may be more useful for improved patient care. Further discussion about this issue is needed to more clearly define the usability characteristics of each measure in relationship to other similar measures. Only by clustering the measures into groups can in-depth analysis of the similarities and the differences be obtained. From there, more thoughtful dialogue on the "value" of each measure can be assessed.

NOTES

1. The Institute of Medicine: Achieving a New Standard for Care (2004). IOM; 2010. Available at http://www.nap.edu/openbook.php?record_id=10863&page=30#. Last accessed December 2010.
2. Reducing Errors in Healthcare: Translating Research Into Practice (2000). The Agency for Healthcare Research and Quality (AHRQ); 2000. Available at http://www.ahrq.gov/qual/errors.htm. Last accessed December 2010.
3. Ibid.
4. National Quality Forum (NQF), *The ABCs of Measurement*, Washington, DC: NQF; 2010.
5. National Quality Forum (NQF), *Serious Reportable Events in Healthcare*, Washington, DC: NQF; 2002.
6. National Quality Forum (NQF), *Safe Practices for Better Healthcare*, Washington, DC: NQF; 2003.
7. National Quality Forum (NQF), National Priorities Partnership, Washington, DC: NQF. Available at www.nationalprioritiespartnership.org. Last accessed December 2010.
8. National Quality Forum (NQF), Patient Safety Measures, Washington, DC: NQF. http://www.qualityforum.org/projects/patient_safety_measures.aspx. Last accessed December 2010.
9. National Quality Forum (NQF). Measure Evaluation Criteria. Washington, DC: NQF; 2008. Available at http://www.qualityforum.org/docs/measure_evaluation_criteria.aspx. Last accessed December 2010.
10. Harmonization refers to the standardization of specifications for similar measures on the same topic (e.g., *influenza immunization* of patients in hospitals or nursing homes), or related measures for the same target population (e.g., eye exam and HbA1c for *patients with diabetes*), or definitions applicable to many measures (e.g., age designation for children) so that they are uniform or compatible, unless differences are dictated by the evidence. The dimensions of harmonization can include numerator, denominator, exclusions, and data source and collection instructions. The extent of harmonization depends on the relationship of the measures, the evidence for the specific measure focus, and differences in data sources.

11. Paired or grouped measures refer to two or more measures grouped together for the purpose of public reporting. The measures maintain separate scores.

NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR PATIENT SAFETY MEAURES: A CONSENSUS REPORT APPENDIX A: MEASURE SPECIFICATIONS

The following table presents the detailed specifications for the National Quality Forum (NQF)-endorsed® *National Voluntary Consensus Standards for Patient Safety*. All information presented has been derived directly from measure sources/developers without modifications or alteration (except when the measure developer agreed to such modifications during the NQF Consensus Development Process) and is current as of October 11, 2011. All NQF-endorsed voluntary consensus standards are open source, meaning they are fully accessible and disclosed. Measures were developed by the Centers for Disease Control and Prevention, and the American College of Surgeons.

Measure Numbers	Measure Title	Measure Steward	Measure Description	Numerator	Denominator	Exclusions	Data Source	Level of Analysis
0139	National Healthcare Safety Network (NHSN) Central line-associated Bloodstream Infection (CLABSI) Outcome Measure	Centers for Disease Control and Prevention	Standardized Infection Ratio (SIR) of healthcare-associated, central line-associated bloodstream infections (CLABSI) will be calculated among patients in the following patient care locations: • Intensive Care Units (ICUs) • Specialty Care Areas (SCAs) - adult and pediatric: long term acute care, bone marrow transplant, acute dialysis, hematology/oncology, and solid organ transplant locations • other inpatient locations. (Data from these locations are reported from acute care general hospitals (including specialty hospitals), freestanding long term acute care hospitals, rehabilitation hospitals, and behavioral health hospitals. Only locations where patients reside overnight are included, i.e., inpatient locations.	Total number of observed healthcare-associated CLABSI among patients in ICUs, NICUs, SCAs and other acute care hospital locations where patients reside overnight.	Total number of expected CLABSIs, calculated by multiplying the number of central line device days for each location under surveillance for CLABSI during the period by the CLABSI rate for the same types of locations obtained from the standard population. Central line device- day denominator data that are collected differ according to the location of the patients being monitored. See 2a.8.	1. Pacemaker wires and other nonlumened devices inserted into central blood vessels or the heart are excluded as central lines 2. Peripheral intravenous lines are excluded from this measure	Electronic clinical data; Electronic Health/ Medical Record; Lab data; Paper medical record/ flow-sheet; Special or unique data	Population: states; Facility/ Agency; Population: national

Measure Numbers	Measure Title	Measure Steward	Measure Description	Numerator	Denominator	Exclusions	Data Source	Level of Analysis
0753	American College of Surgeons – Centers for Disease Control and Prevention (ACS-CDC) Harmonized Procedure Specific Surgical Site Infection (SSI) Outcome Measure	American College of Surgeons-Centers for Disease Control and Prevention (ACS-CDC)	Prototype measure for the facility adjusted Standardized Infection Ratio (SIR) of deep incisional and organ/space Surgical Site Infections (SSI) at the primary incision site among adult patients aged >= 18 years as reported through the ACS National Surgical Quality Improvement Program (ACS-NSQIP) or CDC National Health and Safety Network (NHSN). Prototype also includes a systematic, retrospective sampling of operative procedures in healthcare facilities. This prototype measure is intended for time-limited use and is proposed as a first step toward a more comprehensive SSI measure or set of SSI measures that include additional surgical procedure categories and expanded SSI risk-adjustment by procedure type. This single prototype measure is applied to two operative procedures, colon surgeries and abdominal hysterectomies, and the measure yields separate SIRs for each procedure.	Deep incisional primary (DIP) and organ/space SSIs during the 30-day postoperative period among patients = 18 years of age, who undergo inpatient colon surgeries or abdominal hysterectomies. SSIs will be identified before discharge from the hospital, upon readmission to the same hospital, or during outpatient care or admission to another hospital (post-discharge surveillance). Case accrual will be guided by sampling algorithms as described below.	Using multivariable logistic regression models for colon surgeries and abdominal hysterectomies, the expected number of SSIs is obtained. These expected numbers are summed by facility and surgical procedure and used as the denominator of this measure (see also 2a.8).	Persons under the age of 18, those having a procedure performed on an outpatient basis, those with ASA Class VI (6) are excluded. In the NHSN, patients without primary closure of the surgical incision are not considered eligible cases and are excluded- the NSQIP will match this practice for this measure, although this is not standard practice within the NSQIP.	Electronic clinical data; Electronic Health/ Medical Record; Lab data; Paper medical record/ flow-sheet; Special or unique data	Facility/ Agency; Population: national; Population: states

Measure Numbers	Measure Title	Measure Steward	Measure Description	Numerator	Denominator	Exclusions	Data Source	Level of Analysis
0138	National Healthcare Safety Network (NHSN) Catheter-associated Urinary Tract Infection (CAUTI) Outcome Measure	Centers for Disease Control and Prevention	Standardized Infection Ratio (SIR) of healthcare-associated, catheter-associated urinary tract infections (CAUTI) will be calculated among patients in the following patient care locations: • Intensive Care Units (ICUs) (excluding patients in neonatal ICUs [NICUs: Level II/III and Level III nurseries]) • Specialty Care Areas (SCAs) - adult and pediatric: long term acute care, bone marrow transplant, acute dialysis, hematology/oncology, and solid organ transplant locations • other inpatient locations (excluding Level I and Level II nurseries). Data from these locations are reported from acute care general hospitals (including specialty hospitals), freestanding long term acute care hospitals, rehabilitation hospitals, and behavioral health hospitals. Only locations where patients reside overnight are included, i.e., inpatient locations.	Total number of observed healthcare-associated CAUTI among patients in ICUs (excluding patients in NICUs), SCAs, and other inpatient locations (excluding Level I and Level II nurseries).	Total number of expected CAUTIs, which is calculated by multiplying the number of urinary catheter days for each location under surveillance for CAUTI during the period by the CAUTI rate for the same types of locations obtained from the standard population. These expected numbers are summed across locations and used as the denominator of this measure (see also 2a.8).	Non-indwelling catheters by NHSN definitions: 1.Suprapubic catheters 2.Condom catheters 3.“In and out” catheterizations	Electronic clinical data; Electronic Health/ Medical Record; Lab data; Paper medical record/ flow-sheet; Special or unique data	Population: states; Population: national; Facility/ Agency

Measure Numbers	Measure Title	Measure Steward	Measure Description	Numerator	Denominator	Exclusions	Data Source	Level of Analysis
0751	Risk Adjusted Urinary Tract Infection Outcome Measure After Surgery	American College of Surgeons	Risk adjusted, case mix adjusted urinary tract infection outcome measure of adults 18+ years after surgical procedure.	The outcome of interest is a hospital-specific assessment of risk-adjusted Urinary Tract Infection (UTI: as defined by American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) defined below) within 30 days of any listed (CPT) surgical procedure: the list of eligible CPT codes is attached separately.	Patients undergoing any of the listed (CPT) surgical procedures- list is attached separately. Specifically excluded are certain CPTs involving the urinary tract (excluded: 50220, 50545, 50400, 50205, 51040, 54640, 53852, 55866, 52450, 52234). See attached submitted list of eligible CPT codes.	Major trauma and transplant surgeries are excluded as are surgeries not on the supplied CPT list as eligible for selection. Patients who are ASA 6 (brain-death organ donor) are not eligible surgical cases. A patient who has a second surgical procedure performed within 30 days after an index procedure cannot be accrued into the measure as a new (second) index procedure since the measure is based on 30 day outcomes.	Documentation of original self-assessment; Paper medical record/ flow-sheet; Pharmacy data; Electronic clinical data; Electronic Health/ Medical Record; Lab data; Management data	Facility/ Agency; Population: national; Population: regional/ network; Population: states

Measure Numbers	Measure Title	Measure Steward	Measure Description	Numerator	Denominator	Exclusions Adjustments	Data Source	Level of Analysis
0740	Participation in a Systematic National Dose Index Registry	©American College of Radiology	Participation in a multi-center, standardized data collection and feedback program that will establish national dose index benchmarks for designated examinations. The registry will eventually provide a comparison of practice or facility dose indices such as CTDIvol and DLP for specified examinations relative to national and regional benchmarks. Data is captured electronically from the images of CT examinations using Digital Imaging and Communications in Medicine (DICOM) standards and the Integrating the Healthcare Enterprise (IHE) Radiation Exposure Monitoring (REM) profile.	Participation in a systematic national dose index registry.	The measure does not have a numerator/ denominator. It is strictly an attestation – Yes or No.		Registry data; Documentation of original self-assessment	Clinicians: Group; Facility/Agency; Integrated delivery system; Multi-site/ corporate chain; Population: national; Population: regional/ network; Can be measured at all levels; Population: states; Population: counties or cities

Measure Numbers	Measure Title	Measure Steward	Measure Description	Numerator	Denominator	Exclusions Adjustments	Data Source	Level of Analysis
0739	Radiation Dose of Computed Tomography (CT)	University of California San Francisco	The measure has two components. Part A is an outcome measure; Part B is a process measure. Both would work together towards improving quality and allowing hospitals and imaging facilities to conduct ongoing quality improvement. Part A: radiation dose associated with computed tomography (CT) examinations of the head, neck, chest, abdomen/pelvis and lumbar spine, obtained in children and adults. Part B: The proportion of CT examinations where a measure of dose is included in the final medical report	Part A: Radiation Dose, quantified using DLP, CTDIvol; within anatomic area, age, and machine-type strata Part B: The proportion of CT scans of one of the included anatomic areas with a measure of radiation dose reported in the final approved report. (The reported measure can be DLP, CTDIvol or Effective Dose.)	Part A and Part B: Consecutive sample of CTs conducted in the head, chest, abdomen/pelvis and lumbar spine.	Part A and Part B. CT examinations conducted in anatomic areas not included above (such as CTs of the extremities). Note: among examination types not to be included in adults are “limited abdomen” or “limited pelvis” studies. In children, all abdomen and pelvis CT scans are included in the abdomen/pelvis category.	Electronic Health/ Medical Record	Facility/ Agency

Patient Safety Measures HAI TAP

Dr. Darrell A. Campbell, Jr., MD (Chair)

University of Michigan Hospitals & Health Centers, Ann Arbor, MI

Ms. Jan Allison, RN

Surgical Care Affiliates, Washington, OK

Ms. Sue Barnes, RN, BSN, CIC

Kaiser Permanente, Oakland, CA

Dr. Brian Fennerty, MD

Oregon Health & Science University, Portland, OR

Dr. Juan Sanchez, MD, MPA

Saint Mary's Health System, Waterbury, CT

Ms. Carolyn C. Scott, RN, MEd, MHA

Premier, Charlotte, NC

Dr. Kathleen Squires, MD

Thomas Jefferson University Hospital, Philadelphia, PA

Dr. Patricia Stone, PhD, FAAN

Columbia University, New York, NY

Patient Safety Measures Medication Safety TAP

David Nau, PhD, RPh, CPHQ (Chair)

UMass Memorial Medical Center, Worcester, MA

Eric Alper, MD, FACP, FHM

Johns Hopkins University, Baltimore, MD

Clifton Bingham, MD

Virginia Mason Medical Center, Seattle, WA

Kris Kowdley, MD, FACP, FACG, FA

Texas Health Resources, Arlington, TX

Jessica Maack-Rangel, RN, MS

Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Stephen Muething, MD

Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Daniel Solomon, MD

Brigham and Women's Hospital, Boston, MA

Peter Wong, MBA, MS, PhD, RPh

Sisters of Charity of Leavenworth Health System, Lenexa, KS

Patient Safety Measures Perinatal TAP

Steven Clark, MD (Chair)

Hospital Corporation of America, Nashville, TN

Alan Fleischman, MD

March of Dimes - National Office, White Plains, NY

Diana Jolles, CNM, MS

California Maternal Quality Care Collaborative, Stanford, CA

Elliott Main, MD

Association of Women's Health, Obstetric and Neonatal Nurses, Washington, DC

Karen Peddicord, PhD

Massachusetts General Hospital, Boston, MA

Laura Riley, MD

Childbirth Connection, New York, NY

Patient Safety Measures Steering Committee

William Conway, MD (Co-Chair)

Henry Ford Health System, Birmingham, MI

Lisa Thiemann, CRNA, MNA (Co-Chair)

American Association of Nurse Anesthetists, Park Ridge, IL

Jan Allison, RN

Surgical Care Affiliates, Washington, OK

Robert Bunting, MSA, CPHRM, CPHQ, MT

WellPoint, Columbus, GA

Darrell Campbell, MD

University of Michigan Hospitals & Health Centers, Ann Arbor, MI

Steven Clark, MD

Hospital Corporation of America, Nashville, TN

Cynthia de Luise, MPH, PhD

Pfizer, New York, NY

Ellis Diamond, MD

Tri-City Medical Center, Oceanside, CA

Donald Kennerly, MD, PhD

Baylor Health Care System, Dallas, TX

Clifton Knight, MD

Community Hospital of Indiana, Inc., Indianapolis, IN

Kris Kowdley, MD, FACP, FACG, FA

Virginia Mason Medical Center, Seattle, WA

Stephen Lawless, MD, MBA

Nemours Foundation, Wilmington, DE

Alan Levine

Consumers Advancing Patient Safety, Alexandria, VA

Stephen Muething, MD

Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Janet Nagamine, MD, RN

Society of Hospital Medicine, Aptos, CA

Paul Nagy, PhD

University of Maryland School of Medicine, Baltimore, MD

David Nau, PhD, RPh, CPHQ

Pharmacy Quality Alliance, Lexington, KY

Paul Sierzenski, MD

Pharmacy Quality Alliance, Lexington, KY

Daniel Solomon, MD

Brigham and Women's Hospital, Boston, MA

Iona Thraen, MSW

Utah Department of Health, Salt Lake City, Utah

David Turner, MD, PhD, MPH

Monsanto, Saint Louis, MO

NQF Staff

Peter Angood, MD

Senior Advisor

Heidi Bossley, MSN, MBA

Managing Director

Helen Burstin, MD

Senior Vice President

Andrew Lyzenga, MPP

Project Manager

Elisa Munthali, MPH

Project Manager

Lindsey Tighe, MPH

Research Analyst

Jessica Weber, MPH

Research Analyst

NQF-endorsed® Patient Safety Measures

Table of Contents

Measure# 0019: Documentation of medication list in the outpatient record	
Steward	Centers for Medicare & Medicaid Services, National Committee for Quality Assurance
Description	Percentage of patients having a medication list in the medical record.
Numerator	Patients with a medication list in their medical record
Denominator	All patients who were continuously enrolled during the measurement year.
Exclusions	
Risk Adjustment	
Data Source	Paper Medical Record
Level	Individual clinician (physician, nurse)
Setting	Ambulatory Care (office/clinic)
Measure# 0020: Documentation of allergies and adverse reactions in the outpatient record	
Steward	Centers for Medicare & Medicaid Services, National Committee for Quality Assurance
Description	Percentage of patients having documentation of allergies and adverse reactions in the medical record.
Numerator	Patients with allergy and adverse reaction status present in medical record
Denominator	All patients who were continuously enrolled during the measurement year.
Exclusions	
Risk Adjustment	
Data Source	Paper Medical Record
Level	Individual clinician (physician, nurse)
Setting	Ambulatory Care (office/clinic)
Measure# 0021: Therapeutic monitoring: Annual monitoring for patients on persistent medications	
Steward	National Committee for Quality Assurance
Description	Percentage of patients 18 years and older who received at least 180-day supply of medication therapy for the selected therapeutic agent and who received annual monitoring for the therapeutic agent. Percentage of patients on ACE inhibitors or ARBs with a
Numerator	a: The number of patients with at least one serum potassium and either a serum creatinine or a blood urea nitrogen therapeutic monitoring test in the measurement year. b: The number of patients with at least one serum potassium and either a serum creatinine or a blood urea nitrogen therapeutic monitoring test in the measurement year. c: The number of patients with at least one serum potassium and either a serum creatinine or a blood urea nitrogen therapeutic monitoring test in the measurement year. Note: The two tests do not need to occur on the same service date, only within the measurement year. d: The number of patients with at least one drug serum concentration level monitoring test for the prescribed drug in the measurement year. If a patient received only one type of anticonvulsant, the drug serum concentration level test must be for the specific drug taken as a persistent medication. If a patient persistently received multiple types of anticonvulsants, each anticonvulsant medication and drug monitoring test combination is counted as a unique event (i.e., a patient on both phenytoin and valproic acid with at least a 180-days supply for each drug in the measurement year must separately show evidence of receiving drug serum concentration tests for each drug to be considered numerator-compliant for each drug). e: The number of patients with both an ALT and an AST liver enzyme test in the measurement year. A hepatic function panel (which includes both a ALT and AST) also counts as numerator compliant. F: Sum of the five numerators (a-e)
Denominator	a: The number of patients ages 18 years and older who received at least a 180-days supply of ACE inhibitors or ARBs, including any combination products during the measurement year. b: The number of patients ages 18 years and older who received at least a 180-days supply of digoxin, including any combination products, during the measurement year. c: The number of patients ages 18 years and older who received at least a 180-days supply of a diuretic, including any combination products, during the measurement year

	d: The number of patients in the denominator who received at least a 180-days supply for any anticonvulsant for phenytoin, phenobarbital, valproic acid or carbamazepine during the measurement year. Each patient-drug combination is considered a unique event. e: The number of patients in the denominator who received at least a 180-days supply for any statin (HMG CoA Reductase Inhibitors), including any combination product, during the measurement year. F: Sum of the five denominators (a-e)
Exclusions	a. Exclude patients from each rate denominator with a hospitalization in the measurement year. These patients may have received a monitoring event during the hospitalization which may not be captured Hospitalizations can be identified using either codes for inpatient discharges or non acute care or through the medical record. B. Exclude patients from each rate denominator with a hospitalization in the measurement year. These patients may have received a monitoring event during the hospitalization which may not be captured. Hospitalizations can be identified using either codes for inpatient discharges or non acute care or through medical records. C. Exclude patients from each rate denominator with a hospitalization in the measurement year. These patients may have received a monitoring event during the hospitalization which may not be captured. Hospitalizations can be identified using either codes for inpatient discharges or non acute care or medical records. D. Exclude patients from each rate denominator with a hospitalization in the measurement year. These patients may have received a monitoring event during the hospitalization which may not be captured. Hospitalizations can be identified using either codes for inpatient discharges or non acute care. E. Exclude patients from each rate denominator with a hospitalization in the measurement year. These patients may have received a monitoring event during the hospitalization which may not be captured. Hospitalizations can be identified using either codes for inpatient discharges or non acute care or medical records.
Risk Adjustment	
Data Source	Electronic Claims
Level	Individual clinician (physician, nurse)
Setting	Ambulatory Care (office/clinic)
Measure# 0022: Drugs to be avoided in the elderly: a. Patients who receive at least one drug to be avoided, b. Patients who receive at least two different drugs to be avoided.	
Steward	National Committee for Quality Assurance
Description	Percentage of patients ages 65 years and older who received at least one drug to be avoided in the elderly in the measurement year. Percentage of patients 65 years of age and older who received at least two different drugs to be avoided in the elderly in
Numerator	a: at least one prescription for any drug to be avoided in the elderly in the measurement year. b: At least two different drugs to be avoided in the elderly in the measurement year.
Denominator	All patients ages 65 years and older as of December 31 of the measurement year.
Exclusions	
Risk Adjustment	
Data Source	Electronic Claims
Level	Individual clinician (physician, nurse)
Setting	Ambulatory Care (office/clinic)
Measure# 0035: Fall risk management in older adults: a. Discussing fall risk, b.Managing fall risk	
Steward	National Committee for Quality Assurance
Description	Percentage of patients aged 75 and older who reported that their doctor or other health provider talked with them about falling or problems with balance or walking Percentage of patients aged 75 and older who reported that their doctor or other health pr
Numerator	a- Discussing Fall Risk: The number of patients in the denominator a who responded "yes" to the question, "A fall is when your body goes to the ground without being pushed. In the past 12 months, did your doctor or other health provider talk with you about falling or problems with balance or walking?

	b- Managing Fall Risk: The number of patients in the denominatorb who responded "yes" to the question, "Has your doctor or other health provider done these or anything else to help prevent falls or treat problems with balance or walking? "
Denominator	a- Discussing Fall Risk: All patients 75 years and older as of December 31 of the measurement year, AND patients 65 years to 74 years as of December 31 of the measurement year who responded "yes" to either of the questions, "Did you fall in the past 12 months?" - - Q2 OR "yes" to the question, "In the past 12 months, have you had problems with balance or walking?" - - Q3 and who indicated they were seen by a provider during the measurement year. b- Managing Fall Risk: Patients 65 years and older as of December 31 of the measurement year who responded "yes" to either of the questions, "Did you fall in the past 12 months?" - - Q2 OR "yes" to the question, "In the past 12 months, have you had problems with balance or walking?" - - Q3 and who indicated they were seen by a provider during the measurement year.
Exclusions	
Risk Adjustment	
Data Source	Electronic Claims
Level	Individual clinician (physician, nurse)
Setting	Ambulatory Care (office/clinic)
Measure# 0101: Falls: Screening for Fall Risk	
Steward	American Geriatrics Society, American Medical Association, National Committee for Quality Assurance, American Medical Association - Physician Consortium for Performance Improvement
Description	Percentage of patients aged 65 years and older who were screened for fall risk (2 or more falls in the past year or any fall with injury in the past year) at least once within 12 months
Numerator	Patients who were screened for future fall risk (patients are considered at risk for future falls if they have had 2 or more falls in the past year or any fall with injury in the past year) at least once within 12 months Definition: A fall is defined as a sudden, unintentional change in position causing an individual to land at a lower level, on an object, the floor, or the ground, other than as a consequence of sudden onset of paralysis, epileptic seizure, or overwhelming external force (Tinetti).
Denominator	All patients aged 65 years and older
Exclusions	Documentation of medical reason(s) for not screening for future fall risk (e.g., patient is not ambulatory) Exclude patients for whom patient was not an eligible candidate for fall risk screening by reason of medical exclusion.
Risk Adjustment	
Data Source	Electronic Claims
Level	Individual clinician (physician, nurse)
Setting	Ambulatory Care (office/clinic)

Measure# 0138: Urinary catheter-associated urinary tract infection for intensive care unit (ICU) patients	
Steward	Centers for Disease Control and Prevention
Description	Percentage of intensive care unit patients with urinary catheter-associated urinary tract infections
Numerator	Number of indwelling urinary catheter-associated UTIs (defined by CDC case definitions of symptomatic UTI or asymptomatic bacteriuria, excludes other infections of the urinary tract) x 1,000
Denominator	Number of indwelling urinary catheter days for ICU patients ?Reported by type of ICU (coronary, cardiothoracic, medical, medical-surgical (major teaching and all others), neurosurgical, pediatric, surgical, trauma, burn, and respiratory)
Exclusions	
Risk Adjustment	Comparisons are made among ICUs of similar type: Coronary, Cardiothoracic, medical, medical-surgical (major teaching and all others), Neurosurgical, Pediatric, Surgical, Trauma, Burn and Respiratory
Data Source	Electronic Clinical Database
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0139: Central line catheter-associated blood stream infection rate for ICU and high-risk nursery (HRN) patients	
Steward	Centers for Disease Control and Prevention
Description	Percentage of ICU and high-risk nursery patients, who over a certain amount of days acquired a central line catheter-associated blood stream infections over a specified amount of line-days
Numerator	Number of central line-associated blood stream infections (laboratory-confirmed bloodstream infection or clinical sepsis) x 1,000 Number of umbilical and central line-associated blood stream infections (laboratory-confirmed bloodstream infection or clinical sepsis) x 1,000
Denominator	Number of central line-days for ICU patients. Reported by type of ICU (coronary, cardiothoracic, medical, medical-surgical (major teaching and all others), neurosurgical, pediatric, surgical, trauma, burn, and respiratory) Number of central-line days for HRN patients ?Reported for HRNs by birth weight category (<1,000, 1,001-1,500, 1,501-2,500, and >2,500g)
Exclusions	
Risk Adjustment	The measure is reported stratified by ICU-type, and the denominator as stated per 1,000 line days adjusts for the increased risk over time after a central line is inserted
Data Source	Electronic Clinical Database
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0140: Ventilator-associated pneumonia for ICU and high-risk nursery (HRN) patients	
Steward	Centers for Disease Control and Prevention
Description	Percentage of ICU and HRN patients who over a certain amoint of days have ventilator-associated pneumonia
Numerator	Number of ventilator-associated pneumonias x 1,000
Denominator	Number of ventilator-days for ICU patients: Reported by type of ICU (coronary, cardiothoracic, medical, medical-surgical (major teaching and all others), neurosurgical, pediatric, surgical, trauma, burn, and respiratory) Number of ventilator days for HRN patients: Reported for HRNs by birth weight category (<1,000, 1,001-1,500, 1,501-2,500, and >2,500g)
Exclusions	
Risk Adjustment	Risk Adjustment: This measure of ventilator-associated pneumonias per ventilator days is adjusted for the major risk factor, which is use of catheters, as well as length of stay.
Data Source	Electronic Clinical Database
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0141: Patient Fall Rate	
Steward	American Nurses Association
Description	All documented falls, with or without injury, experienced by patients on an eligible unit in a calendar quarter.
Numerator	Total number of patient falls (with or without injury to the patient and whether or not assisted by a staff member) by hospital Unit during the month X 1000. Time window: Month Fall Definition: A patient fall is an unplanned descent to the floor (or extension of the floor, e.g., trash can or other equipment) with or without injury to the patient, and occurs on an eligible reporting nursing unit. All types of falls are to be included whether they result from physiological reasons (fainting) or environmental reasons (slippery floor). Include assisted falls – when a staff member attempts to minimize the impact of the fall. Included Populations: • Patient falls occurring while on an eligible reporting unit • Assisted falls • Repeat falls Excluded Populations: Falls by: •Visitors •Students •Staff members •Falls by patients from eligible reporting unit, however patient was not on unit at time of fall (e.g., patients falls in radiology department) •Falls on other unit types (e.g., pediatric, psychiatric, obstetrical, rehab, etc) Data Elements: Collected at a patient level • Month • Year • Age • Gender • Event Type (fall, assisted fall, repeat fall) • Type of Unit • Fall Risk Assessment • Fall Risk • Fall Prevention Protocol
Denominator	Patient days by hospital Unit during the calendar month Time window: Calendar Month Included Populations: •Inpatients, short stay patients, observation patients and same day surgery patients who receive care on eligible in-patient units for all or part of a day. •Adult critical care, step-down, medical, surgical, medical-surgical combined units. •Any age patient on an eligible reporting unit is included in the patient day count. Four (4) Patient Days reporting methods are recognized: •Method 1-Midnight Census This is adequate for units that have all in-patient admissions. It is the least accurate method for units that have both in-patient and short stay patients. The daily number should be summed for every day in the month. •Method 2-Midnight Census + Patient Days from Actual Hours for Short Stay Patients This is an accurate method for units that have both in-patients and short stay patients. The short stay "days" should be reported separately from midnight census and will be summed to obtain patient days. The total daily hours for short stay patients should be summed for the month and divided by 24. •Method 3-from Average Hours for Short Stay Patients This method has been eliminated from the list of acceptable reporting methods. •Method 4-Patient Days from Actual Hours This is the most accurate method. An increasing number of facilities have accounting systems that track the actual time spent in the facility by each patient. Sum actual hours for all patients, whether in-patient or short stay, and divide by 24. •Method 5-Patient Days from Multiple Census Reports Some facilities collect censuses multiple times per day (e.g., every 4 hours or each shift). This method is more

	accurate than the Midnight Census, but not as accurate as Midnight Census + Actual Short Stay hours, or as Actual Patient Hours. A sum of the daily average censuses can be calculated to determine patient days for the month on the unit. For all patient day reporting methods, it is recommended that hospitals consistently use the same method for a reporting unit over time. However, units with short stay patients should transition either to Method 2 or Method 4 when it becomes feasible. Data Elements: • Month • Year • Patient Days Reporting method which includes midnight census and short stay patient days • Type of Unit
Exclusions	Excluded Populations: Other unit types (e.g., pediatric, psychiatric, obstetrical, rehab, etc)
Risk Adjustment	Stratification by facility size and unit; documentation of falls risk assessment on admission; fall protocol implementation; level of patient activity prior to fall
Data Source	Paper Medical Record, Electronic Health/Medical Record, Electronic source – Other, Other
Level	Group of clinicians (facility, dept/unit, group)
Setting	Hospital
Measure# 0184: Residents who have a catheter in the bladder at any time during the 14-day assessment period. (risk adjusted)	
Steward	Centers for Medicare & Medicaid Services
Description	Percentage of residents with a valid target assessment who have a catheter in the bladder at any time during the 14-day assessment period.
Numerator	Indwelling catheter on target assessment (H3d=checked)
Denominator	All residents with a valid target assessment.
Exclusions	Exclusions: Residents satisfying any of the following conditions: 1. The target assessment is an admission (AA8a = 01). 2. H3d is missing on the target assessment. 3. The resident is in a facility with a Chronic Care Admission Sample size of 0 (i.e., there are no admission assessments with AA8a = 01 in the facility over the previous 12 months). Covariates: 1. Indicator of bowel incontinence on the prior assessment: Covariate =1 if H1a =4. Covariate =0 if H1a = 0,1,2, or 3. 2. Indicator of pressure ulcers on the prior assessment: Covariate =1 if M2a = 3 or 4. Covariate =0 if M2a = 0.
Risk Adjustment	Risk adjustment: For each of the five risk-adjusted QMs, a resident- level logistic regression was estimated. Data came from the chronic or post acute residents in the 20 percent random samples of all facilities for a one-year period, Quarter 4 of 2001 (Q4 2001) through Quarter 3 of 2002 (Q3 2002). The resident- level observed QM score was the dependent variable. The predictor variables were one or more resident- level covariates associated with the QM. More information is available here: http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/NHQIQMUsersManual.pdf
Data Source	Standardized clinical instrument
Level	Facility (e.g., hospital, nursing home)
Setting	Nursing home/ Skilled Nursing Facility (SNF)

Measure# 0187: Recently hospitalized residents with pressure ulcers (risk adjusted)	
Steward	Centers for Medicare & Medicaid Services
Description	Recently hospitalized residents with pressure ulcers
Numerator	SNF PPS Patients who satisfy either of the following conditions: 1. On the SNF PPS 5-day assessment, the patient had no pressure ulcers (M2a[t-1]=0) AND, on the SNF PPS 14-day assessment, the patient has at least a stage 1 pressure ulcer (M2a[t]=1,2,3, or 4). 2. On the SNF PPS 5-day assessment, the patient had a pressure ulcer (M2a[t-1] = 1,2,3, or 4) AND on the SNF PPS 14-day assessment, pressure ulcers worsened or failed to improve (M2a[t]>=M2a[t-1]).
Denominator	All patients with a valid SNF PPS 14-day assessment (AA8b=7) AND a valid preceding SNF PPS 5-day assessment (AA8b=1).
Exclusions	Exclusions: Patients satisfying the following condition: 1.M2a is missing on the 14-day assessment [t 2. M2a is missing on the 5-day assessment [t-1] and M2a shows presence of pressure ulcers on the 14-day assessment (M2a=1,2,3, or 4. 3. The Patient is in a facility with a Post Acute Care Admission Sample size of 0 (i.e., there are no SNF PPS 5-day assessments with AA8b =1 in the facility over the previous 12 months) Covariates: 1. Indicator of history of unresolved pressure ulcer on the SNF PPS 5-day assessment. Covariate =1 if M3 =1. Covariate =0 if M3 =0. 2. Indicator of requiring limited or more assistance in bed mobility on the SNF PPS 5-day assessment: Covariate = 1 if G1a(A) = 2,3,4, or8. Covariate = 0 if G1a(A) =0 or 1. 3. Indicator of bowel incontinence at least one/week on the SNF PPS 5-day assessment: Covariate =1 if H1a 2,3, or 4. Covariate =0 if H1a = 0 or 1. 4. Indicator of diabetes or peripheral vascular disease on the SNF PPS 5-day assessment: Covariate =1 if I1a checked (value 1) or I1j checked (value 1). Covariate =0 if I1a not checked (value 0) and I1j not checked (value 0). 5. Indicator of Low Body Mass Index (BMI) on the SNF PPS 5-day assessment: Covariate = 1 if BMI >=12 and <=19. Covariate = 0 if BMI > 19 and <= 40. Where: BMI = weight(kg)/height2 (m2) = ((K2b*0.45)/(((K2a)*.0254)^2)) (Note: An implausible BMI value <12 or >40 will be treated as a missing value on this covariate.
Risk Adjustment	Risk adjustment: For each of the five risk-adjusted QMs, a resident- level logistic regression was estimated. Data came from the chronic or post acute residents in the 20 percent random samples of all facilities for a one-year period, Quarter 4 of 2001 (Q4 2001) through Quarter 3 of 2002 (Q3 2002). The resident- level observed QM score was the dependent variable. The predictor variables were one or more resident- level covariates associated with the QM. More information is available here: http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/NHQIQMUsersManual.pdf
Data Source	Standardized clinical instrument
Level	Facility (e.g., hospital, nursing home)
Setting	Nursing home/ Skilled Nursing Facility (SNF)

Measure# 0193: Residents who were physically restrained daily during the 7-day assessment period	
Steward	Centers for Medicare & Medicaid Services
Description	Percentage of residents on most recent assessments who were physically restrained daily during the 7-day assessment period
Numerator	Residents who were physically restrained daily on most recent assessment.
Denominator	All residents on most recent assessments.
Exclusions	
Risk Adjustment	
Data Source	Standardized clinical instrument
Level	Facility (e.g., hospital, nursing home)
Setting	Nursing home/ Skilled Nursing Facility (SNF)
Measure# 0196: Residents with a urinary tract infection	
Steward	Centers for Medicare & Medicaid Services
Description	Percentage of residents on most recent assessment with a urinary tract infection
Numerator	Residents with urinary tract infection on target assessment. (I2j = checked)
Denominator	All residents with a valid target assessment.
Exclusions	Exclusions: Residents satisfying any of the following conditions: 1. The target assessment is an admission (AA8a = 01) assessment. 2. I2j is missing on the target assessment.
Risk Adjustment	
Data Source	Standardized clinical instrument
Level	Facility (e.g., hospital, nursing home)
Setting	Nursing home/ Skilled Nursing Facility (SNF)

Measure# 0198: High-risk residents with pressure ulcers	
Steward	Centers for Medicare & Medicaid Services
Description	Percentage of residents with a valid target assessment and one of the following inclusion criteria: 1.Impaired in mobility or transfer on the target assessment 2. Comatose on the target assessment 3. Suffer malnutrition on the target assessment who
Numerator	Residents with pressure ulcers (Stage 1-4) on target assessment (M2a >0 OR I3a-3 =707.0)
Denominator	All residents with a valid target assessment and any one of the following inclusion criteria 1.Impaired in mobility or transfer on the target assessment as indicated by G1a(A) = 3, 4, or 8 OR G1b(A) = 3, 4, or 8. 2. Comatose on the target assessment as indicated by B1 = 1. 3. Suffer malnutrition on the target assessment as indicated by I3a through I3e = 260, 261, 262, 263.0, 263.1, 263.2, 263.8, or 263.9.
Exclusions	Exclusions for both measures: Residents satisfying any of the following conditions are excluded from all risk groups (high and low, high, and low)—this is 1, with 1, 2, and 3 below being 1.1, 1.2, and 1.3: 1. The target assessment is an admission (AA8a = 01) assessment. 2. The QM did not trigger (resident is not included in the QM numerator) AND the value of M2a is missing on the target assessment. 3. The resident is in a facility with a Chronic Care Admission Sample size of 0 (i.e., there are no admission assessments with AA8a = 01 in the facility over the previous 12 months. 4. The resident does not qualify as high-risk AND the value of G1a(A) or G1b(A) is missing on the target assessment. 5. The resident does not qualify as high-risk AND the Value of B1 is missing on the target assessment.
Risk Adjustment	None.
Data Source	Standardized clinical instrument
Level	Facility (e.g., hospital, nursing home)
Setting	Nursing home/ Skilled Nursing Facility (SNF)
Measure# 0199: Average-risk residents with pressure ulcers	
Steward	Centers for Medicare & Medicaid Services
Description	Percetage of residents with a valid target assessment and not qualifying as high risk with pressure ulcers
Numerator	Residents with pressure ulcers (Stage 1-4) on target assessment (M2a >0 OR I3a-e =707.0)
Denominator	All residents with a valid target assessment and not qualifying as high risk.
Exclusions	Exclusions for both measures: Residents satisfying any of the following conditions are excluded from all risk groups (high and low, high, and low)—this is 1, with 1, 2, and 3 below being 1.1, 1.2, and 1.3: 1. The target assessment is an admission (AA8a = 01) assessment. 2. The QM did not trigger (resident is not included in the QM numerator) AND the value of M2a is missing on the target assessment. 3. The resident is in a facility with a Chronic Care Admission Sample size of 0 (i.e., there are no admission assessments with AA8a = 01 in the facility over the previous 12 months. 4. The resident does not qualify as high-risk AND the value of G1a(A) or G1b(A) is missing on the target assessment. 5. The resident does not qualify as high-risk AND the Value of B1 is missing on the target assessment.
Risk Adjustment	None.
Data Source	Standardized clinical instrument
Level	Facility (e.g., hospital, nursing home)
Setting	Nursing home/ Skilled Nursing Facility (SNF)

Measure# 0201: Pressure ulcer prevalence	
Steward	The Joint Commission, California Nursing Outcome Coalition
Description	The total number of patients that have hospital-acquired (nosocomial) stage II or greater pressure ulcers on the day of the prevalence study.
Numerator	Patients surveyed on an eligible reporting unit that have at least one stage II or greater [National Pressure Ulcer Advisory Panel (NPUAP)] hospital-acquired pressure ulcer on the day of the prevalence study. Time Window: Quarterly Prevalence Study Day Eligible reporting units are those units meeting the requirements as defined in the Type of Unit data element and listed in the strata definitions provided under section number 10. See study methodology in item #9 below. Included Populations: • Hospital-Acquired Pressure Ulcers – Pressure Ulcers of Stage II or greater AND the ulcer is discovered or documented after the first 24 hours from the time of inpatient admission. Data Elements: • Observed Pressure Ulcer • Observed Pressure Ulcer – Hospital-Acquired • Observed Pressure Ulcer – Stage
Denominator	All patients on the selected unit at the time of the study who are surveyed for the study by Type of Unit and overall. Time window: Quarterly Prevalence Study Day The current language "selected units" is not suggesting that hospitals "choose" units for survey. Rather, inherent in prevalence study method is that ALL eligible units are surveyed at the same point in time (note labor, delivery, post partum and psychiatry units are excluded). Hospitals do not choose units to be surveyed; units surveyed are standardized across institutions by those eligible reporting units as defined in the Type of Unit data element and listed in the strata definitions provided under section number 10. The word "selected" will be deleted for clarity. Included Populations: Patients 18 years or older who are admitted to critical care, step-down, medical, surgical and medical-surgical combined units that are surveyed for the study. Data Elements: • Admission Date • Birthdate • Sex • Type of Unit • Prevalence Study Date
Exclusions	Excluded Populations: • Patients less than 18 years of age • Patients who refuse to be assessed • Patients who are off the unit at the time of the prevalence study, i.e., surgery, x-ray, physical therapy, etc. • Patients who are medically unstable at the time of the study for whom assessment would be contraindicated at the time of the study, i.e., unstable blood pressure, uncontrolled pain, or fracture waiting repair. • Patients who are actively dying and pressure ulcer prevention is no longer a treatment goal.
Risk Adjustment	Stratified by hospital size.
Data Source	Paper Medical Record, Electronic Health/Medical Record, Other
Level	Group of clinicians (facility, dept/unit, group), Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0202: Falls with injury	
Steward	American Nurses Association
Description	All documented patient falls with an injury level of minor (2) or greater.
Numerator	Total number of patient falls of injury level minor or great (whether or not assisted by a staff member) by hospital unit during month x 1000. Included Populations: • Falls with Fall Injury Level of 2 "minor" or greater, including assisted and repeat falls with an Injury level of 2 or greater • Patient injury falls occurring while on an eligible reporting unit Excluded Populations: Falls by: •Visitors •Students •Staff members •Falls by patients from eligible reporting unit, however patient was not on unit at time of fall (e.g., patients falls in radiology department) •Falls on other unit types (e.g., pediatric, obstetrical, rehab, etc) •Falls with Fall Injury Level of 1 "none" Data Elements: Collected at a patient level • Month • Year • Age • Gender • Event Type (fall, assisted fall, or repeat fall) • Fall Injury Level • Type of Unit • Fall Risk Assessment • Fall Risk • Fall Prevention Protocol
Denominator	Denominator Statement: Patient days by Type of Unit during the calendar month. Time Window: Calendar Month Included Populations: • Inpatients, short stay patients, observation patients and same day surgery patients who receive care on in-patient units for all or part of a day. • Adult critical care, step-down, medical, surgical, medical-surgical combined units Four (4) Patient Days reporting methods are recognized: Method 1-Midnight Census This is adequate for units that have all in-patient admissions. It is the least accurate method for units that have both in-patient and short stay patients. The daily number should be summed for every day in the month. Method 2-Midnight Census + Patient Days from Actual Hours for Short Stay Patients This is an accurate method for units that have both in-patients and short stay patients. The short stay "days" should be reported separately from midnight census and will be summed to obtain patient days. The total daily hours for short stay patients should be summed for the month and divided by 24. Method 3-Midnight Census + Patient Days from Average Hours for Short Stay Patients This method has been eliminated from the list of acceptable reporting methods. Method 4-Patient Days from Actual Hours This is the most accurate method. An increasing number of facilities have accounting systems that track the actual time spent in the facility by each patient. Sum actual hours for all patients, whether in-patient or short stay, and divide by 24. Method 5-Patient Days from Multiple Census Reports Some facilities collect censuses multiple times per day (e.g., every 4 hours or each shift). This method is more accurate than the Midnight Census, but not as accurate as Midnight Census + Actual Short Stay hours, or as Actual Patient Hours. A sum of the daily average censuses can be calculated to determine patient days for the

	month on the unit. It is recommended that data colectors consistently use the same method for reporting patient days. However, units with short stay patients should transtion from MIdnight Census to Method 2 or Method 4 when it becomes feasbile. Data Elements: • Month • Year • Patient Days Reporting method which includes midnight census and short stay patient days • Type of Unit
Exclusions	Excluded Populations: Other unit types (e.g., pediatric, psychiatric, obstetrical, rehab, etc.)
Risk Adjustment	Stratification by facility size and unit; documentation of falls risk assessment on admission; fall protocol implementation; level of patient activity prior to fall
Data Source	Paper Medical Record, Electronic Health/Medical Record, Electronic source – Other, Other
Level	Group of clinicians (facility, dept/unit, group)
Setting	Hospital
Measure# 0203: Restraint prevalence (vest and limb only)	
Steward	The Joint Commission, California Nursing Outcome Coalition
Description	Total number of patients that have vest and/or limb restraint (upper or lower body or both) on the day of the prevalence study.
Numerator	Patients surveyed on the eligible reporting unit that have a vest restraint and/or limb restraint (upper or lower or both) on the day of the prevalence study. Time Window: Quarterly Prevalence Study Day Excluded Populations: • Restraints that are only associated with medical, dental, diagnostic, or surgical procedures and is based on standard practice for the procedure (sometimes referred to as "treatment restraints") • seclusion • restraint uses that are forensic or correctional restrictions used for security purposes unrelated to clinical care • devices used to meet the assessed needs of a patient who requires adaptive support or a medical protective device Data Elements: • Physical Restraint • Type of Restraint
Denominator	All patients on an eligible reporting unit at the time of the study and are surveyed for the study by Type of Unit. Time Window: Quarterly Prevalence Study Day Eligible reporting units are those units meeting the requirements as defined in the Type of Unit data element and listed in the strata definitions provided below section number 10 Stratification Details. Included Populations: Patients 18 years or older who are admitted to critical care, step-down, medical, surgical and medical-surgical combined units that are surveyed for the study. Data Elements: • Admission Date • Birthdate • Prevalence Study Date • Sex • Type of Unit
Exclusions	Excluded Populations: • Patients less than 18 years of age • Patients who are off the unit at the time of the prevalence study, i.e. surgery, x-ray, physical therapy, etc.
Risk Adjustment	
Data Source	Paper Medical Record, Electronic Health/Medical Record
Level	Group of clinicians (facility, dept/unit, group), Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0239: Venous Thromboembolism (VTE) Prophylaxis	
Steward	American College of Emergency Physicians, American Medical Association, National Committee for Quality Assurance, American Medical Association - Physician Consortium for Performance Improvement
Description	Percentage of patients aged 18 years and older undergoing procedures for which VTE prophylaxis is indicated in all patients, who had an order for Low Molecular Weight Heparin (LMWH), Low-Dose Unfractionated Heparin (LDUH), adjusted-dose warfarin, fondapar
Numerator	Surgical patients, who had an order for VTE prophylaxis (low molecular weight heparin (LMWH), low-dose unfractionated heparin (LDUH), adjusted-dose warfarin, fondaparinux or mechanical prophylaxis) to be given within 24 hours prior to incision time or within 24 hours after surgery end time.
Denominator	All surgical patients aged 18 years and older undergoing procedures for which VTE prophylaxis is indicated in all patients.
Exclusions	Documentation of medical reason(s) for patient not receiving any accepted form of VTE prophylaxis (LMWH, LDUH, adjusted-dose warfarin, fondaparinux or mechanical prophylaxis) within 24 hours prior to incision time or 24 hours after surgery end time Exclude patients for whom VTE prophylaxis was not ordered by reason of appropriate denominator exclusion. If using electronic data, exclude patients using the following code: Append a modifier (1P) to the CPT Category II code to report patients with documented circumstances that meet the denominator exclusion criteria.
Risk Adjustment	
Data Source	Electronic Claims
Level	Individual clinician (physician, nurse)
Setting	Hospital
Measure# 0263: Patient Burn	
Steward	Ambulatory Surgical Centers Quality Collaborative
Description	Percentage of ASC admissions experiencing a burn prior to discharge
Numerator	Ambulatory surgical center (ASC) admissions experiencing a burn prior to discharge.
Denominator	All ASC admissions.
Exclusions	None
Risk Adjustment	None.
Data Source	Paper Medical Record, Electronic Claims, Other
Level	Individual clinician (physician, nurse)
Setting	Hospital, Ambulatory Surgical Centers
Measure# 0265: Hospital Transfer/Admission	
Steward	Ambulatory Surgical Centers Quality Collaborative
Description	Percentage of ASC admissions requiring a hospital transfer or hospital admission prior to being discharged from the ASC.
Numerator	ASC admissions requiring a hospital transfer or hospital admission prior to being discharged from the ASC.
Denominator	All ASC admissions
Exclusions	None.
Risk Adjustment	
Data Source	Other
Level	Individual clinician (physician, nurse)
Setting	Hospital, Ambulatory Surgical Centers

Measure# 0266: Patient Fall	
Steward	Ambulatory Surgical Centers Quality Collaborative
Description	Percentage of ASC admissions experiencing a fall in the ASC.
Numerator	ASC admissions experiencing a fall in the ASC.
Denominator	All ASC admissions.
Exclusions	ASC admissions experiencing a fall outside the ASC.
Risk Adjustment	None
Data Source	Other
Level	Individual clinician (physician, nurse)
Setting	Hospital, Ambulatory Surgical Centers
Measure# 0267: Wrong Site, Wrong Side, Wrong Patient, Wrong Procedure, Wrong Implant	
Steward	Ambulatory Surgical Centers Quality Collaborative
Description	Percentage of ASC admissions experiencing a wrong site, wrong side, wrong patient, wrong procedure, or wrong implant.
Numerator	ASC admissions experiencing a wrong site, wrong side, wrong patient, wrong procedure, or wrong implant.
Denominator	All ASC admissions.
Exclusions	None
Risk Adjustment	None.
Data Source	Other
Level	Individual clinician (physician, nurse)
Setting	Hospital, Ambulatory Surgical Centers
Measure# 0298: Central Line Bundle Compliance	
Steward	Institute for Healthcare Improvement
Description	Percentage of intensive care patients with central lines for whom all elements of the central line bundle are documented and in place. The central line bundle elements include: •Hand hygiene , •Maximal barrier precautions upon insertion •Chlorhex
Numerator	Number of intensive care patients with central lines for whom all elements of the central line bundle are documented and in place. The central line bundle elements include: • Hand hygiene , • Maximal barrier precautions upon insertion • Chlorhexidine skin antisepsis • Optimal catheter site selection, with subclavian vein as the preferred site for non-tunneled catheters in patients 18 years and older • Daily review of line necessity with prompt removal of unnecessary lines
Denominator	Total number of intensive care patients with central lines on day of week of sample.
Exclusions	Exclude patients less than 18 years of age at the date of ICU admission and patients outside the intensive care unit and patients whose lines were not placed in the intensive care unit
Risk Adjustment	
Data Source	Paper Medical Record
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0299: Surgical Site Infection Rate	
Steward	Centers for Disease Control and Prevention, Centers for Medicare & Medicaid Services
Description	Percentage of surgical site infections occurring within thirty days after the operative procedure if no implant is left in place or with one year if an implant is in place in patients who had an NHSN operative procedure performed during a specified time
Numerator	Number of surgical site infections occurring within thirty days after the operative procedure if no implant is left in place or with one year if an implant is in place in patients who had an NHSN operative procedure performed during a specified time period and the infection appears to be related to the operative procedure. Infections are identified on original admission or upon readmission to the facility of original operative procedure within the relevant time frame (30 days for no implants; within 1 year for implants). Two types of CDC-defined SSIs are included: (1) A deep incisional SSI must meet the following criteria: • Infection occurs within 30 days after the operative procedure if no implant is left or within one year if implant is in place and the infection appears to be related to the operative procedure and • involves deep soft tissues (e.g., fascial and muscle layers) of the incision and • patient has at least one of the following: a) purulent drainage from the deep incision but not from the organ/space component of the surgical site b) a deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least one of the following signs or symptoms: fever (>38°C), or localized pain or tenderness. A culture-negative finding does not meet this criterion. c) an abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination d) diagnosis of a deep incisional SSI by a surgeon or attending physician. Note: There are two specific types of deep incisional SSIs: 1) Deep Incisional Primary (DIP) – a deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CABG) 2) Deep Incisional Secondary (DIS) - a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB) (2) An organ/space SSI must meet the following critieria: • Infection occurs within 30 days after the operative procedure if no implant is left or within one year if implant is in place and the infection appears to be related to the operative procedure and • infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure and • patient has at least one of the following: a). purulent drainage from a drain that is placed through a stab wound into the organ/space b). organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space c). an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination d) diagnosis of an organ/space SSI by a surgeon or attending physician. Specific sites of an organ/space SSI may be identified11
Denominator	Number of NHSN operative procedures performed during a specified time period stratified by: • Type of NHSN operative procedure and • NNIS SSI risk index: Every patient having the selected procedure is assigned one (1) risk point for each of the following three factors: o Surgical wound classification = clean contaminated or dirty

	o American Society of Anesthesiologists (ASA) preoperative severity of illness score = 3, 4, or 5 o Duration of operation >t hours, where t varies by type of NHSN operative procedure and is the approximate 75th percentile of the duration of the procedure rounded to the nearest whole number of hours. Note: For operative procedures performed using lapyroscopes and endoscopes the use of a lapyroscope is an additional factor that modifies the risk index.
Exclusions	Exclude Procedures Not Included Under The Definition Of NHSN Operative Procedure And Excludes Superficial SSI.
Risk Adjustment	
Data Source	Paper Medical Record
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0301: Surgery patients with appropriate hair removal	
Steward	The Joint Commission
Description	Percentage of surgery patients with surgical hair site removal with clippers or depilatory or no surgical site hair removal
Numerator	Surgery patients with surgical hair site removal with clippers or depilatory or no surgical site hair removal
Denominator	All selected surgery patients Include patients with an ICD-9-CM Principal Procedure code or ICD-9-CM Other Procedure Codes of selected surgeries.
Exclusions	Exclude the following patients: • less than 18 years of age; • performed their own hair removal; and • patients whose mode of hair removal could not be determined.
Risk Adjustment	
Data Source	Paper Medical Record, Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0302: Ventilator Bundle	
Steward	Institute for Healthcare Improvement
Description	Percentage of intensive care unit patients on mechanical ventilation at time of survey for whom all four elements of the ventilator bundle are documented and in place. The ventilator bundle elements are: •Head of bed (HOB) elevation 30 degrees or great
Numerator	Number of intensive care unit patients on mechanical ventilation at time of survey for whom all four elements of the ventilator bundle are documented and in place. The ventilator bundle elements are: • Head of bed (HOB) elevation 30 degrees or greater (unless medically contraindicated); noted on 2 different shifts within a 24 hour period • Daily ""sedation interruption" and daily assessment of readiness to extubate; process includes interrupting sedation until patient follow commands and patient is assessed for discontinuation of mechanical ventilation; Parameters of discontinuation include: resolution of reason for intubation; inspired oxygen content roughly 40%; assessment of patients ability to defend airway after extubation due to heavy sedation; minute ventilation less than equal to 15 liters/minute; and respiratory rate/tidal volume less than or equal to 105/min/L(RR/TV< 105) • SUD (peptic ulcer disease) prophylaxis • DVT (deep venous thrombosis) prophylaxis
Denominator	Total number of intensive care unit patients on mechanical ventilation.
Exclusions	Patients less than 18 years of age at the date of ICU admission.
Risk Adjustment	
Data Source	Paper Medical Record
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0337: Decubitus Ulcer (PDI 2)	
Steward	Agency for Healthcare Research and Quality
Description	Percent of surgical and medical discharges under 18 years with ICD-9-CM code for decubitus ulcer in secondary diagnosis field.
Numerator	All discharges, age under 18 years, with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes denoting decubitus ulcer in any secondary diagnosis field
Denominator	All surgical and medical discharges age under 18 years defined by specific Surgical and Medical Diagnosis Related Group (DRG), include only patients with a length of stay of 5 or more days
Exclusions	Exclude patients with an ICD-9-CM code of decubitus ulcer in the principal diagnosis field; with an ICD-9-CM procedure code for debridement or pedicle graft before or on the same day as a major operating room procedure (surgical cases only); with an ICD-9-CM procedure code for debridement or pedicle graft as the only major operating room procedure (surgical cases only); Major Diagnostic Category (MDC) 9 (Skin, Subcutaneous Tissue, and Breast) or MDC 14 (Pregnancy, Childbirth and the Puerperium); newborns less than 500 grams; Neonates (age < 28 days) and patients transferring in from long term care facility (ASOURCE =3) or an acute care facility (ASOURCE = 2)
Risk Adjustment	
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0345: Accidental Puncture or Laceration (PSI 15)	
Steward	Agency for Healthcare Research and Quality
Description	Percent of medical and surgical discharges, 18 years and older, with ICD-9-CM code denoting accidental cut, puncture, perforation, or laceration in any secondary diagnosis field.
Numerator	Medical and surgical discharges with ICD-9-CM code denoting accidental cut, puncture, perforation, or laceration in any secondary diagnosis field.
Denominator	Discharges, age 18 years and older, defined by specific DRGs
Exclusions	• with ICD-9-CM code denoting technical difficulty (e.g., accidental cut, puncture, perforation, or laceration) in the principal diagnosis field or secondary diagnosis present on admission, if known • MDC 14 (pregnancy, childbirth, and puerperium). • with ICD-9-CM code for spine surgery
Risk Adjustment	The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age (in 5-year age groups), modified CMS DRG, and the AHRQ Comorbidity category. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 90 million discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Required data elements: CMS Diagnosis Related Group (DRG); CMS Major Diagnostic Category (MDC); patient gender; age in years at admission; International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal and secondary diagnosis codes.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0346: Iatrogenic Pneumothorax (PSI 6) (risk adjusted)	
Steward	Agency for Healthcare Research and Quality
Description	Percent of medical and surgical discharges, 18 years and older, with ICD-9-CM code of iatrogenic pneumothorax in any secondary diagnosis field.
Numerator	Discharges with ICD-9-CM code of iatrogenic pneumothorax in any secondary diagnosis field
Denominator	Discharges, age 18 years and older, defined by specific surgical and medical DRGs
Exclusions	Patients in MDC 14 (pregnancy, childbirth and puerperium); with principal diagnosis (ICD-9-CM) code of iatrogenic pneumothorax (secondary diagnosis field if present on admission); with an ICD-9-CM diagnosis code of chest trauma or pleural effusion; with an ICD-9-CM procedure code of diaphragmatic surgery; and with an ICD-9-CM procedure code indicating thoracic surgery, lung or pleural biopsy, or assigned to cardiac surgery DRGs
Risk Adjustment	The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, age (in 5-year age groups), modified CMS DRG, and the AHRQ Comorbidity category. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 90 million discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Required data elements: CMS Diagnosis Related Group (DRG); CMS Major Diagnostic Category (MDC); patient gender; age in years at admission; International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal and secondary diagnosis codes.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0347: Death in Low Mortality DRGs (PSI 2)	
Steward	Agency for Healthcare Research and Quality
Description	Percent of in-hospital deaths, age 18 years and older, in DRGs with less than 0.5% mortality rate.
Numerator	Number of in-hospital deaths
Denominator	Discharges, age 18 years and older, in DRGs with less than 0.5% mortality rate. If a DRG is divided into "without/with complications," both DRGs must qualify as low mortality for inclusion
Exclusions	Patients with any ICD-9-CM code for trauma, immunocompromised state or cancer
Risk Adjustment	None.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0348: Iatrogenic Pneumothorax in Non-Neonates (PDI 5) (risk adjusted)	
Steward	Agency for Healthcare Research and Quality
Description	Percent of medical and surgical discharges, age under 18 years, with ICD-9-CM code of iatrogenic pneumothorax in any secondary diagnosis field.
Numerator	Discharges with ICD-9-CM code of iatrogenic pneumothorax in any secondary diagnosis field
Denominator	Discharges, age under 18 years, defined by specific surgical and medical DRGs
Exclusions	Neonates (birth weight less than 2500 grams); patients with an ICD-9-CM code of iatrogenic pneumothorax in neonates in the principal diagnosis field (secondary diagnosis field if present on admission); with an ICD-9-CM code of thoracic surgery, lung or pleural biopsy or diaphragmatic surgery repair or assigned to a cardiac surgery DRG; with a diagnosis code of chest trauma or pleural effusion; MDC of 14 (pregnancy, childbirth, puerperium) normal newborn and newborns less than 500 grams
Risk Adjustment	The predicted value for each case is computed using a hierarchical model (logistic regression with hospital random effect) and covariates for gender, birthweight (500g groups), age in days (29-60, 61-90, 91+), age in years (in 5-year age groups), modified CMS DRG and AHRQ CCS comorbities. The reference population used in the regression is the universe of discharges for states that participate in the HCUP State Inpatient Data (SID) for the years 2002-2004 (combined), a database consisting of 37 states and approximately 20 million pediatric discharges. The expected rate is computed as the sum of the predicted value for each case divided by the number of cases for the unit of analysis of interest (i.e., hospital, state, and region). The risk adjusted rate is computed using indirect standardization as the observed rate divided by the expected rate, multiplied by the reference population rate. Required data elements: CMS Diagnosis Related Group (DRG); CMS Major Diagnostic Category (MDC); age in days up to 364, then age years at admission; International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) principal and secondary diagnosis codes.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0349: Transfusion Reaction (PSI 16)	
Steward	Agency for Healthcare Research and Quality
Description	Percent of medical and surgical discharges, 18 years and older, with ICD-9-CM code for transfucsion reaction in any secondary diagnosis field.
Numerator	Discharges with an ICD-9-CM code for transfusion reaction in any secondary diagnosis field
Denominator	Discharges, age 18 years and older, defined by specific surgical and medical DRGs
Exclusions	Patients with an ICD-9-CM code for transfusion reaction in the principal diagnosis field (secondary diagnosis field if present on admission)
Risk Adjustment	None.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0350: Transfusion Reaction (PDI 13)	
Steward	Agency for Healthcare Research and Quality
Description	Percent of medical and surgical discharges, under 18 years of age, with an ICD-9-CM code for transfusion reaction in any secondary diagnosis field.
Numerator	Discharges with an ICD-9-CM code for transfusion reaction in any secondary diagnosis field
Denominator	Discharges, age under 18 years, defined by specific surgical and medical DRGs
Exclusions	Patients with MDC 14 (pregnancy, childbirth, pueperium); with an ICD-9-CM code for transfusion reaction in the principal diagnosis field (secondary diagnosis field if present on admission); and neonates less than 500 grams
Risk Adjustment	
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0352: Failure to Rescue In-Hospital Mortality (risk adjusted)	
Steward	Children's Hospital of Philadelphia
Description	Percentage of patients who died with a complications in the hospital.
Numerator	Patients who died with a complication plus patients who died without documented complications. Death is defined as death in the hospital. All patients in an FTR analysis have developed a complication (by definition). Complicated patient has at least one of the complications defined in Appendix B. Complications are defined using the secondary ICD9 diagnosis and procedure codes and the DRG code of the current admission. Comorbidities are defined in Appendix C using secondary ICD9 diagnosis codes of the current admission and primary or secondary ICD9 diagnosis codes of previous admission within 90 days of the admission date of the current admission. *When physician part B is available, the definition of complications and comorbidities are augmented to include CPT codes.
Denominator	General Surgery, Orthopedic and Vascular patients in specific DRGs with complications plus patients who died in the hospital without complications. Inclusions: adult patients admitted for one of the procedures in the General Surgery, Orthopedic or Vascular DRGs (see appendix A)
Exclusions	Patients over age 90, under age 18.
Risk Adjustment	Risk Adjustment: Model was developed using logistic regression analysis. Associated data elements: age in years, sex, race, comorbidities, DRGs (combined with and without complications) and procedure codes within DRGs, transfer status. Failure to rescue is adjusted using a logistic regression model where y is a failure and the total N is composed of patients who develop a complication and patients who died without a complication. According to developer: The model adjustment variables can vary. We have found that FTR results are fairly stable, even with little adjustment, since all patients in an FTR analysis have developed a complication (by definition), they are a more homogenous group of patients than the entire population. Hence severity adjustment plays somewhat less of a role than in other outcome measures.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0353: Failure to Rescue 30-Day Mortality (risk adjusted)	
Steward	Children's Hospital of Philadelphia
Description	Percentage of patients who died with a complication within 30 days from admission.
Numerator	Patients who died with a complication plus patients who died without documented complications. Death is defined as death within 30 days from admission. Complicated patient has at least one of the complications defined in Appendix B. Complications are defined using the secondary ICD9 diagnosis and procedure codes and the DRG code of the current admission. Comorbidities are defined in Appendix C using secondary ICD9 diagnosis codes of the current admission and primary or secondary ICD9 diagnosis codes of previous admission within 90 days of the admission date of the current admission. *When physician part B is available, the definition of complications and comorbidities are augmented to include CPT codes.
Denominator	General Surgery, Orthopedic and Vascular patients in specific DRGs with complications plus patients who died without complications within 30 days of admission. Inclusions: adult patients admitted for one of the procedures in the General Surgery, Orthopedic or Vascular DRGs (see appendix A)
Exclusions	Patients over age 90, under age 18.
Risk Adjustment	Risk Adjustment: Model was developed using logistic regression analysis. Associated data elements: age in years, sex, race, comorbidities, DRGs (combined with and without complications) and procedure codes within DRGs, transfer status. Failure to rescue is adjusted using a logistic regression model where y is a failure and the total N is composed of patients who develop a complication and patients who died without a complication. According to developer: The model adjustment variables can vary. We have found that FTR results are fairly stable, even with little adjustment, since all patients in an FTR analysis have developed a complication (by definition), they are a more homogenous group of patients than the entire population. Hence severity adjustment plays somewhat less of a role than in other outcome measures.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0362: Foreign Body left after procedure (PDI 3)	
Steward	Agency for Healthcare Research and Quality
Description	Discharges with foreign body accidentally left in during procedure per 1,000 discharges
Numerator	All discharges, age under 18 years, with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes for foreign body left in during a procedure in any secondary diagnosis field
Denominator	All surgical and medical discharges age under 18 years defined by specific Surgical and Medical Diagnosis Related Group (DRG)
Exclusions	Exclude patients with an ICD-9-CM code of foreign body left in during a procedure in the principal diagnosis field, Major Diagnostic Category (MDC) 14 (Pregnancy, Childbirth and the Puerperium), newborns less than 500 grams and neonates (age < 28 days)
Risk Adjustment	None.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0363: Foreign Body Left in During Procedure (PSI 5)	
Steward	Agency for Healthcare Research and Quality
Description	Discharges with foreign body accidentally left in during procedure per 1,000 discharges
Numerator	Number of discharges, age 18 years and older, with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code for foreign body in any secondary diagnosis field
Denominator	All surgical and medical discharges age 18 years and older defined by specific Surgical and Medical Diagnosis Related Group (DRG) Include patients in MDC 14
Exclusions	Exclude patients with principal diagnosis (ICD-9-CM) code of foreign body
Risk Adjustment	None.
Data Source	Electronic Claims
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital
Measure# 0371: Venous Thromboembolism (VTE) Prophylaxis	
Steward	The Joint Commission
Description	This measure assesses the number of patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given the day of or the day after hospital admission or surgery end date for surgeries that start the day of or the day after hosp
Numerator	Patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given: ? the day of or the day after hospital admission ? the day of or the day after surgery end date for surgeries that start the day of or the day after hospital admission
Denominator	All patients Inclusions: Not applicable
Exclusions	Patients: ? Patients less than 18 years of age ? Patients who have a length of stay (LOS) < two days and > 120 days ? Patients with Comfort Measures Only documented ? Patients enrolled in clinical trials ? Patients who are direct admits to intensive care unit (ICU), or transferred to ICU the day of or the day after hospital admission with ICU LOS = one day ? Patients with ICD-9-CM Principal Diagnosis Code of Mental Disorders or Stroke as defined in Appendix A, Table 7.01, 8.1 or 8.2 ? Patients with ICD-9-CM Principal or Other Diagnosis Codes of Obstetrics or VTE as defined in Appendix A, Table 7.02, 7.03 or 7.04 ? Patients with ICD-9-CM Principal Procedure Code of Surgical Care Improvement Project (SCIP) VTE selected surgeries as defined in Appendix A, Tables 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24
Risk Adjustment	
Data Source	Paper Medical Record, Electronic Claims, Electronic Health/Medical Record
Level	Facility (e.g., hospital, nursing home)
Setting	Hospital

Measure# 0589: Rheumatoid Arthritis New DMARD Baseline Serum Creatinine	
Steward	Resolution Health, Inc.
Description	This measure identifies adult patients with a diagnosis of rheumatoid arthritis who received appropriate baseline serum creatinine testing within 90 days before to 14 days after the new start of methotrexate, leflunomide, azathioprine, D-Penicillamine, i
Numerator	Patients in the denominator who received serum creatinine testing within 90 days before to 14 days after the new start of methotrexate, leflunomide, azathioprine, D-Penicillamine, intramuscular gold, cyclosporine, or cyclophosphamide during the measurement year.
Denominator	Patients >=18 years old with a history of rheumatoid arthritis and a new start of methotrexate, leflunomide, azathioprine, D-Penicillamine, intramuscular gold, cyclosporine, or cyclophosphamide anytime from the beginning of the measurement year to 14 days prior to the end of the measurement year. (This list of DMARDs will hereafter be refered to as 'DMARD needing baseline SCr')
Exclusions	The measure excludes patients who have had an inpatient hospitalization during the measurement year because UB04 claims do not document individual lab tests ordered during an inpatient stay.
Risk Adjustment	no
Data Source	Electronic Claims, Electronic Pharmacy Data, Other
Level	Individual clinician (physician, nurse), Community/Population, Health Plan, Group of clinicians (facility, dept/unit, group), Integrated delivery system
Setting	Ambulatory Care (office/clinic), Community Healthcare, Health Plan