Patient Outcomes

National Voluntary Consensus Standards for Patient Outcomes 2009

A CONSENSUS REPORT

National Quality Forum

The National Quality Forum (NQF) operates under a three-part mission to improve the quality of American healthcare by:

- building consensus on national priorities and goals for performance improvement and working in partnership to achieve them;
- endorsing national consensus standards for measuring and publicly reporting on performance; and
- promoting the attainment of national goals through education and outreach programs.

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Chapter 1

Background

THE RESULTS OR OUTCOMES of an episode of healthcare are inherently important because they reflect the reason consumers seek healthcare (e.g., to improve function, decrease pain, or survive), as well as the result healthcare providers are trying to achieve. Patient outcomes reflect the wide assortment of care processes and coordination of efforts among all caregivers as well as other contributing factors that determine the end result of an episode of care.

Donabedian defined outcomes as "changes (desirable or undesirable) in individuals and populations that are attributed to healthcare."[1] Outcome measures also provide an integrative assessment of quality reflective of multiple care processes across the continuum of care. There are a variety of types of outcome measures. Some represent an end result such as mortality or function; others are considered intermediate outcomes (e.g., physiological or biochemical values such as blood pressure or LDL cholesterol) that precede and may lead to a longer-range end-result outcome. Sometimes proxies are used to indicate an outcome (e.g., hospital readmission indicates deterioration in health status since discharge). To date the National Quality Forum (NQF) has endorsed more than 200 outcome measures in a variety of topic areas (Appendix E). As greater focus is placed on evaluating the outcome of episodes of care, additional measures of patient outcomes are needed to fill gaps in the current portfolio.

Strategic Directions for NQF

NQF's mission includes three parts: 1) building consensus on national priorities and goals for performance improvement and working in partnership to achieve them, 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. 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.

FOCUS ON DISPARITIES IN ALL 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.[2] 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)

Scope of Patient Outcomes

The Steering Committee defined outcomes quite broadly to encompass a variety of types of patient outcomes within the scope of this project:

- patient function, symptoms, health-related quality of life (physical, mental, social);
- intermediate clinical outcomes (physiologic, biochemical);
- patient experience with care; knowledge, understanding, motivation; health risk status or behavior (including adherence);

- service utilization as a proxy for patient outcome (e.g., change in condition) or potential indicator of efficiency;
- non-mortality clinical morbidity related to disease control and treatment;
- healthcare-acquired adverse event or complication (non-mortality); and
- mortality.

Additionally, the project considered gaps in important outcome measures (Chapter 4).

Evaluating Potential Consensus Standards

This chapter presents the evaluation of 39 measures in the areas of pulmonary/intensive care, surgery, diabetes, cardiovascular, and cross-cutting conditions. Chapters 2 and 3 discuss the evaluation of candidate measures for mental health and child health. Candidate consensus standards were solicited through a Call for Measures in September 2009 and actively sought through searches of the National Quality Measures Clearinghouse, NQF Member websites, and an environmental scan. NQF staff contacted potential measure stewards to encourage submission of measures for this project. Despite active searching for measures, few or no measures were submitted for chronic kidney disease, arthritis, eye care, bone and joint conditions, or cancer.

Thirty-nine measures were evaluated for suitability as voluntary consensus standards for accountability and public reporting. The measures were evaluated using NQF's standard evaluation criteria.[3] Several Technical Advisory Panels (TAPs) rated the subcriteria for each candidate consensus standard in condition-specific topic areas and identified strengths and weaknesses to assist the project Steering Committee (Committee) in making recommendations (see Appendix D for TAP and Committee lists). The 24-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, as well as the recommendation for endorsement. Measure developers participated in the TAP and Committee discussions to respond to questions and clarify any issues or concerns.

Evaluating Composite Measures

Several composite measures were submitted for consideration in the Patient Outcomes project. NQF has established a framework and criteria for evaluating composite measures.[4] An important evaluation principle outlined in the framework states that components of the composite (i.e., individual measures or component composite measures) must be either NQF-endorsed measures or determined to meet the individual measure evaluation criteria as the first step in evaluating the composite measure. A component measure might not be deemed to be appropriate for public reporting in its own right as an individual measure but could be determined to be an important component of a composite. Another important principle states that the methods for constructing a composite should be explicitly stated and transparent so that the composite can be deconstructed.

Endorsed Consensus Standards

Nineteen patient outcomes measures are endorsed as voluntary consensus standards suitable for public reporting and quality improvement.

Cardiovascular conditions

730 **Acute myocardial infarction (AMI) mortality rate** (Agency for Healthcare Research & Quality [AHRQ])

Number of deaths per 100 discharges with a principal diagnosis code of acute myocardial infarction.

This measure provides a rate of in-hospital AMI mortality using administrative data. It was compared to another endorsed in-hospital AMI mortality measure from The Joint Commission (161 AMI inpatient mortality). The Joint Commission is no longer reporting their in-hospital AMI mortality measure[5] on their website in favor of CMS's NQF-endorsed 230 AMI 30-day mortality measure. This candidate AMI mortality measure from AHRQ differs from measure 161 in that the risk-adjustment model is based on all patient refined diagnosis related groups (APR DRGs), uses administrative coding rather than manual medical record abstraction, and does include transfers into the facility. Reliability of the coding was demonstrated to be 93 percent to 98 percent. The population measured is determined by the principal diagnosis, and the definition of AMI is harmonized with the endorsed 30-day AMI mortality measure from CMS. The Committee considered the differences in the measures and the benefits of having both inpatient and 30-day mortality measures. Unlike the 30-day mortality measure, which includes only patients aged >65 years, this candidate standard includes all patients experiencing AMI as a primary diagnosis. The inpatient measure is more feasible for some implementers since tracking out-of-hospital deaths can be difficult. Members of the Steering Committee also felt that knowing the proportion of in-hospital deaths was important in addition to the 30-day mortality data and that the two measures are complementary. Committee members asked the developers about the 30 percent of AMI patients who are excluded with a secondary AMI diagnosis and are not captured in the measure currently. The developer clarified that most excluded patients experienced an AMI postoperatively, and the Committee suggested that future measures should address this population.

704 **Proportion of AMI patients that have a potentially avoidable complication (during the index stay or in the 30-day post-discharge period)** (Bridges to Excellence [BTE])

Percent of adult population aged 18-65 years who were admitted to a hospital with acute myocardial infarction (AMI), were followed for one month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period.

This measure counts the PACs for 30 days after a primary discharge diagnosis of AMI. The Committee discussed the risk-adjustment

methodology used with the developers who reported that RAND is comparing this methodology to other methods. Committee members were supportive of the model, which is based on a combination of factors with both clinical significance and as well as statistical significance. The Committee felt risk models should include risk factors that are clinically meaningful and not just statistically significant. The Committee agreed that the model may evolve over time with more use. The developers explained that CABG patients are excluded as they represent a slightly different population. The Committee recommended this measure because it is meaningful to patients and highlights important adverse outcomes. This measure is not appropriate for use at the individual clinician level and should only be used at the group, plan, or system level of analysis. The measure addresses the priority area of patient safety.

705 **Proportion of stroke patients that have a potentially avoidable complication (during the index stay or in the 30-day post-discharge period)** (BTE)

Percent of adult population aged 18-65 years who were admitted to a hospital with stroke, were followed for one month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period.

Similar to measure #704, this measure counts the PACs for patients discharged with stroke. The developer acknowledged that some PACs are not entirely preventable. The measure developer's expert panel believed that while some complications might be preventable, all complications were included because the goal is not to reach zero PACs but to reduce PACs from current high levels. The Committee recommended the measure because it provides important information for patients and offers an important outcome to improve. This measure is not appropriate for use at the individual clinician level and should be used only at the group, plan, or system level of analysis. The measure addresses the priority area of patient safety.

694 **Hospital risk-standardized complication rate following implantation of implantable cardioverter-defibrillator (ICD)** (Yale New Haven Health Services Corporation/Center for Outcomes Research and Evaluation [CMS])

This measure provides hospital-specific risk-standardized rates of procedural complications following the implantation of an ICD in patients at least 65 years of age. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) ICD Registry for risk-adjustment that has been linked with CMS administrative claims data used to identify procedural complications. This measure can be applied to all Medicare patients at least 65 years of age.

This measure was designed to combine clinical data from the National Cardiovascular Data Registry (NCDR)[6] ICD Registry and administrative data. All patients over age 65 years are required to be entered into the registry, and 70 percent of hospitals report all patients to NCDR. The Committee and TAP agreed that the measure is important in addressing a costly procedure that has a high

complication rate (18 percent). The TAP also commended the strong performance characteristics of the risk model. Committee members were interested in including patients below age 65 years. The measure developers advised the Committee that the measure was developed in the Medicare 65 and older fee-for-service population because this is the only cohort of patients for whom the data are available to reliably identify outcomes (complications and vital status) beyond the index hospitalization. The measure could be applied to a broader population of patients undergoing ICD implantation if the required data elements were available with some additional work to optimize the risk-adjustment methodology.

A Committee member noted that the variation of values in the technical report is very narrow due to hierarchical modeling and therefore will not discriminate among providers. Others suggested that clustering of the complication rate at 18 percent represents opportunity for improvement overall. This measure addresses the National Priority of safety.

695 **Hospital 30-day risk-standardized readmission rates following percutaneous coronary intervention (PCI)** (Yale New Haven Health Services Corporation/Center for Outcomes Research and Evaluation [CMS])

This measure estimates hospital risk-standardized 30-day readmission rates following PCI in patients at least 65 years of age. As PCI patients may be readmitted electively for staged revascularization procedures, we will exclude such elective readmissions from the measure. The measure uses clinical data available in the National Cardiovascular Disease Registry (NCDR) CathPCI Registry for risk-adjustment that has been linked with the CMS administrative claims data used to identify readmissions. This measure can be applied to all Medicare patients at least 65 years of age.

The measure developers advised the Committee and TAP that this measure was developed using the same approach as the NQF-endorsed® readmission measure for AMI. Twenty-nine percent of patients undergoing PCI have also had an MI and will be captured in both measures. The major discussion centered on the all-cause readmissions and the 30-day timeframe. Some Committee and TAP members suggested that a 15-day timeframe would be more directly related to the antecedent PCI procedure. The measure developers presented their hazard of readmission analysis over 90 days that found that risk of readmission was greatest in the first 15 days but remained elevated up to 60 days following discharge (with a plateau between 30 to 45 days). The developers asserted that a shorter timeframe would have a stronger association with the initial care of the patients but would miss the substantial number of readmissions between 15 to 30 days that are likely attributable to the care delivered within the index hospitalization and during the transition from that setting.

Committee and TAP members noted that the risk model performance characteristics are not as strong as for some measures, such as ICU mortality, but are comparable to other readmission measures endorsed by NQF. Again, the Committee recommended broadening the population and not specifying the measure

by type of insurance. The measure developers replied that the measure can be applied to a broader population if the data are available, and inclusion of other populations will require re-estimation of the model covariates.

The Committee noted a philosophical difference among stakeholders. Many supported a patient-centered, episode of care perspective in which a procedure is a part of the overall care for a chronic condition. Dissenting comments advocated for a focus on the immediate and related aspects of the procedure only. The Committee strongly supported the patient-centered approach. This measure addresses the National Priority of overuse.

696 **The STS CABG composite score** (Society of Thoracic Surgeons [STS])

This multidimensional performance measure is comprised of four domains consisting of 11 individual NQF-endorsed cardiac surgery metrics: (1) operative care—use of the internal mammary artery; (2) perioperative medical care (use of preoperative beta blockade; discharge beta blockade, antiplatelet agents, and lipid-lowering agents—an "all-or-none" measure); (3) risk-adjusted operative mortality; and (4) risk-adjusted postoperative morbidity (occurrence of postoperative stroke, renal failure, prolonged ventilation, re-exploration, or deep sternal wound infection—an "any-or-none" measure).

The STS database collects data from more than 90 percent of hospitals performing CABG surgery and 95 percent of all of the CABG surgeries performed in the United States. The Committee generally supported the method of combining process and outcome measures to create a summary score and noted the equal weightings of the four domains. The Committee questioned the selection of 98 percent confidence intervals rather than the more commonly used 95 percent level and the understandability of the star rating system to consumers. In addition, the measure construction raised a broader policy issue. To date, these types of specifications have not been included in NQF-endorsed measure specifications, but rather considered to be part of reporting protocols. The Steering Committee recommended endorsement of the composite measure, but only the numerical result with confidence intervals and not the rating system proposed by STS. The Committee also recommended that NQF consider establishing policies that distinguish between how the measure is calculated and how it is reported.

Responding to questions raised by the Steering Committee about the confidence intervals and star rating system, the measure developer noted that the STS rating system uses a true Bayesian probability (and Bayesian credible intervals) rather than confidence intervals; and the 99 percent level was chosen by the STS after considerable pilot testing because it offered the best balance between high specificity and high sensitivity. STS also noted that the "star" rating system, modeled after the work of Professor Judith Hibbard, had been field tested for nearly four years and that Consumers Union found it understandable among consumers.

The developer discussed these issues directly with the CSAC and Board of Directors during the consensus development process and also provided written comments. (See correspondence from STS to NQF dated October 23, 2010, at

http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=66560.

CSAC and the Board supported the recommendations of the Steering Committee, and the measure is endorsed with a numerical result and confidence intervals only. The Board affirmed a preference for maintaining a distinction between measure specifications and reporting guidelines.

698 **30-day post-hospital AMI discharge care transition composite measure** (Brandeis University/CMS)

This measure scores a hospital on the incidence among its patients during the month following discharge from an inpatient stay having a primary diagnosis of AMI for three types of events: readmissions, ED visits, and evaluation and management (E&M) services.

Component measures:

- *0505: 30-day all-cause risk standardized readmission rate following acute myocardial infarction (AMI) hospitalization*
- *OT1-002-09: 30-day post-hospital AMI discharge ED visit rate*
- *OT1-003-09: 30-day post-hospital AMI discharge evaluation and management service*

699 **30-day post-hospital heart failure (HF) discharge care transition composite measure** (Brandeis University/CMS)

This measure scores a hospital on the incidence among its patients during the month following discharge from an inpatient stay having a primary diagnosis of heart failure for three types of events: readmissions, ED visits, and evaluation and management (E&M) services.

Component measures:

- *0330: 30-day all-cause risk standardized readmission rate following heart failure hospitalization*
- *OT1-006-09: 30-day post-hospital HF discharge ED visit rate*
- *OT1-004-09: 30-day post-hospital HF discharge evaluation and management service*

These two composite measures were developed using the same methodology. They bring together NQF-endorsed readmission measures for AMI (0505) and heart failure (0330) and new candidate measures for ED visits and evaluation and management (E&M) services within 30 days of discharge for AMI or HF. The risk models for the new measures use the same methodology as the endorsed readmission measures. The development team assigned weights of (-4) for readmissions, (-2) for ED visits, and (+1) for E&M services to arrive at the composite score. The measure developers suggested that these weightings represent the values of a desirable post-discharge care trajectory in which readmissions are least desirable, ED visits are not desirable but are less so than a readmission, and follow-up outpatient care is desirable. The Committee agreed that although the weightings are arbitrary, they seem reasonable and can be re-evaluated once the measures are in widespread use.

The measure developers presented an analysis of the spread of sample composite scores for individual hospitals from high to low and the relative contributions of the three

component measures. Some Committee members found the mix of positive and negative weightings arbitrary and confusing; others thought a composite of readmission and ED visits would be more meaningful for care transitions. A majority of Committee members found the composite measures addressed care transitions and the outcomes of hospitalization. These hospital-level measures address the National Priority of care coordination.

Respiratory/ICU

708 **Proportion of pneumonia patients that have a potentially avoidable complication (during the index stay or in the 30-day post-discharge period)** (BTE)

Percent of adult population aged 18-65 years who were admitted to a hospital with pneumonia, were followed for one month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period.

This measure counts the PACs for 30 days after hospitalization with a primary diagnosis of pneumonia. As they had with other PAC measures described above, the Committee rated the measure very highly on importance, usability, and feasibility. Consumer members noted the great salience for patients. This measure is not appropriate for use at the individual clinician level and should be used only at the group, plan, or system level of analysis. The measure addresses the priority area of patient safety.

707 **30-day post-hospital PNA (pneumonia) discharge care transition composite measure** (Brandeis University/CMS)

This measure scores a hospital on the incidence among its patients during the month following discharge from an inpatient stay having a primary diagnosis of PNA for three types of events: readmissions, ED visits, and evaluation and management (E&M) services.

This pneumonia transition composite measure is similar to the care transition composite measures for AMI and heart failure that were recommended in the first report of Patient Outcomes Phases 1 and 2. This composite measure combines the NQF-endorsed® 30-day readmission measure for pneumonia and two new measures: 30-day ED visit measure and 30-day E&M service measure. All three component measures are risk adjusted using the same risk-adjustment methodology as the previously recommended measures. The Committee rated the measure very highly on importance, usability, and feasibility. The Committee evaluated the new component measures and found them to be satisfactory as components for the composite measure though not sufficiently usable as stand-alone measures. The composite measure addresses the priority area of care coordination.

700 **Health-related quality of life in COPD patients before and after pulmonary rehabilitation** (AACVPR)

The percentage of patients with COPD enrolled in pulmonary rehabilitation (PR) who are found to increase their health-related quality of life score (HRQOL). **Time-limited endorsement**

Committee and TAP members noted that a new Medicare benefit for pulmonary rehabilitation effective January 2010 will increase the number of PR providers as well as referrals to PR. Committee members noted that there are few endorsed measures of quality of life—a significant gap in NQF's portfolio. This measure does not address appropriate referrals for PR and captures only patients who complete PR. TAP members suggested that lack of completing the PR program may indicate a quality problem. The Chronic Respiratory Disease Questionnaire (CRQ) specified in the measure is well tested and validated and widely used in PR programs. However, some alternative tools are equally validated and used widely, such as the St. George's Respiratory Questionnaire (SGRQ).

There were some concerns with the selection of the age inclusion. The Pulmonary TAP specifically questioned why age 20 years and older was chosen, because COPD generally presents later in life, and younger patients usually have asthma and not COPD. The measure developer responded that the lower age will capture patients with alpha-1 antitrypsin deficiency; however, in the interest of harmonization[7] the measure developer is willing to use ages 40 years and older.

Although the CRQ tool has been well tested and validated at the individual patient level, this measure, as specified, has not been tested for reliability and validity as a performance measure and is therefore recommended for time-limited endorsement. The HRQOL survey is performed as part of care; and while typically hand-scored at the current time, there is no reason it cannot be embedded in an EHR. AACVPR also anticipates establishing a registry to collect data. This measure addresses the National Priority of patient and family engagement.

701 **Functional capacity in COPD patients before and after pulmonary rehabilitation** (AACVPR)

The percentage of patients who are enrolled in pulmonary rehabilitation (PR) who are found to increase their functional capacity by at least 25 meters (82 feet), as measured by a standardized 6-minute walk test (6MWT). **Time-limited endorsement**

The 6MWT is a widely used and well-validated assessment of functional status of individual patients. TAP members were initially concerned with the original submission that specified a 54-meter threshold that seemed quite high. A publication in February 2010[8] indicated that a threshold of 25 meters is more reasonable, and the measure was aligned with the newest data. The issues regarding appropriate referral, completion of PR programs, age inclusion, and testing are the same as for the HRQOL measure.

702 **Intensive care unit (ICU) length-of-stay (LOS)** (Phillip R. Lee Institute for Health Policy Studies, University of California San Francisco)

This measure is paired with 703 Intensive care: In-hospital mortality rate.[9] *For all patients admitted to the ICU, total duration of time spent in ICU until time of discharge; both observed and risk-adjusted LOS reported with the predicted LOS measured using an adjustment model based on the Intensive Care Outcomes Models ($ICOM_{LOS}$).*

The Committee and TAP agreed that length of stay is an important outcome, particularly in terms of resource use and efficiency; however, all agreed that the ICU LOS measure must be paired with the ICU mortality measure to balance potential unintended consequences of inappropriate reductions in LOS. The LOS measure uses the same risk-adjustment model and data collection as the ICU mortality measure. Committee and TAP members noted some issues around identifying the start of an ICU stay, particularly with patients remaining in the emergency department for long periods of time before admission to the ICU. Again, the Committee noted there are cultural influences that affect the length of stay, so some means to address disparities is strongly recommended. This measure addresses the National Priority of overuse.

703 **Intensive care: In-hospital mortality rate** (Phillip R. Lee Institute for Health Policy Studies, University of California San Francisco)

For all adult patients admitted to the ICU, the percentage of patients whose outcome is death; both observed and risk-adjusted mortality rates are reported using predicted rates based on the Intensive Care Outcomes Models ($ICOM_{MORT}$).

Both Committee and Pulmonary/ICU TAP members agreed that this measure is an important outcome, with documented variation in outcomes. The TAP rated this measure highly for its technical characteristics. The risk model[10] has been published and refined over several years. It is parsimonious compared to other models such as APACHE or SAPA III and demonstrates strong performance characteristics. Committee members were extremely interested in how disparities might be handled. Race, ethnicity, and socioeconomic status (SES) are not included in the risk model, which is consistent with NQF's evaluation criteria. The measure developer noted that data for race, ethnicity, and SES are generally not available. Committee members suggested insurance type or ZIP code might be proxies. The Committee strongly encouraged the measure developer to consider how to address disparities for future implementation. This measure is voluntarily reported by 246 hospitals in California on **www.CalHospitalCompare.org**. Data collection is compatible with electronic health records (EHRs; some vendors have already built in the data elements), and an electronic submission tool is available.

Two appeals were submitted after endorsement of measures 702 and 703. The appellants cited the potential for unintended consequences of the measures as specified that may harm patients and increase healthcare costs such as: 1) the measures reflect processes that are independent of quality and are easily manipulated, i.e., transferring patients early in their course to post-acute care facilities or premature discharge from the ICU that may increase readmissions; 2) the potential to unfairly reward hospitals that transfer a large number of patients and encourage overuse of post-acute care facilities; 3) safety net hospitals may be penalized if they are unable to transfer patients; 4) the measures could discourage hospitals from providing time-consuming yet important end-of-life care for ICU patients; and 5) the lack of a well-validated risk adjustment for length of ICU stay. The appellants also recommended that a 30-day ICU mortality measure that is less susceptible to discharge bias be considered.

The CSAC and Board of Directors upheld endorsement of the measures and noted that the issues raised in the appeals had been considered during the Consensus Development Process and the theoretical concerns outweighed the benefits of the information generated from measurement and the potential benefits to improved quality for patients. However, the developer offered to revise the measure to exclude transfers to address the concerns raised in the appeal noting that it would not change the results in the California reporting program significantly. The endorsed measures include the revised specifications.

Diabetes

729 **Optimal diabetes care** (Minnesota Community Measurement [MNCM])

The percentage of adult diabetes patients who have optimally managed modifiable risk factors (A1c, LDL, blood pressure, tobacco non-use, and daily aspirin usage) with the intent of preventing or reducing future complications associated with poorly managed diabetes. Patients ages 18-75 with a diagnosis of diabetes, who meet all the numerator targets of this composite measure: A1c <8.0, LDL <100, blood pressure (BP) <140/90, tobacco non-user, and for patients age 41+ daily aspirin use unless contraindicated.

On initial submission, the Committee noted that this "all or none" composite measure aligns with endorsed component measures, with the exception of the BP target level at <130/80. Committee members referred to the recently published results of the ACCORD trial that did not find improved outcomes for aggressive blood pressure management below 140/90, while the occurrence of adverse outcomes such as syncope were higher. The Committee generally supported the measure but asked the developers about any potential changes to the measure in light of the ACCORD trial. The developers responded that the measure is based on the guidelines from the Institute for Clinical Systems Improvement (ICSI) and they would wait until any changes are made to the guidelines before considering changes to the measure. ICSI completed its review of the diabetes guidelines in August 2010. Overall, the Committee was supportive of the measure and would recommend after resolution of the

BP threshold. In addition, some Committee members suggested that the developer should also consider including eye exams and screening for renal function.

In late July 2010, the measure developer submitted revisions to the measure specifications to change the blood pressure target to <140/90. After the revisions, the Committee recommended the measure go forward for endorsement and noted that this patient-centered measure is more "aspirational" by setting a high performance target. This measure is publicly reported in Minnesota at the clinician group level.

731 **Comprehensive Diabetes Care** (National Committee for Quality Assurance [NCQA])

The percentage of individuals 18-75 years of age with diabetes (type 1 and type 2) who had each of the following:

- *HbA1c poor control (>9.0 percent)*
- *HbA1c control (<8.0 percent)*
- *HbA1c control for a special population (<7.0 percent)*
- *Blood pressure control (≥140/90 mm Hg)*
- *Eye examination*
- *Smoking status and cessation advice or treatment*
- *LDL control (≥130 mg/dL)*
- *LDL control (<100 mg/dL)*
- *Nephropathy assessment*

This composite measure includes nine endorsed component measures that were recently reviewed by the Diabetes TAP for their scheduled maintenance review. While the Committee did not recommend endorsement of the measure #OT1-028-09 HbA1c control (<7.0 percent) as a standalone measure as discussed in the main report, the Committee was supportive of all three HbA1c control measures being used together to describe the complete picture of diabetes management by a provider. The composite uses threshold cutoffs and weights to generate a summary score out of a possible 100 points.

The Committee considered several comments regarding inclusion of the HbA1c <7 component measure. The Committee revisited the implications of the recent published results of the ADVANCE[11] and ACCORD trials[12,13] that suggested that very strict control does not lead to better clinical outcomes and may be associated with significant side effects. The Committee decided to re-evaluate this measure at the same time as the final evaluation of the revised OT1-009-09 Optimal Diabetes Care measure.

The Steering Committee reconsidered this weighted composite measure at the same time as final review of measure #729. The Committee suggested that this measure is more comprehensive and flexible, though some members expressed concern that the embedded thresholds in the measure are not very "apirational." The Committee reviewed the submitted table of performance results by health plan in the measure submission, which demonstrated that most of the measure thresholds were set at levels at or below national means. This measure is in use in NCQA's Physician Recognition Program, with wide acceptance among clinicians.

With the change in blood pressure threshold, the Steering Committee noted that the individual components of the composite measures were harmonized. The Steering Committee acknowledged the significant differences between the two diabetes composite measures, especially

the underlying composite methodology (all/none and weighted), and determined that it was reasonable to recommend both measures for endorsement. The CSAC and Board of Directors also consider whether these two diabetes composites were competing measures but concluded that each measure uses a different approach, and it is not possible to determine "best in class" at this time.

Surgery

706 **Risk-adjusted colorectal surgery outcomes measure** (American College of Surgeons [ACS])

This is a hospital based, risk-adjusted, case-mix-adjusted morbidity and mortality composite outcome measure of adults 18+ years undergoing colorectal surgery.

This surgery outcome measure captures mortality and major morbidity for colorectal surgery and is currently used in the National Surgical Quality Improvement Program (NSQIP), in which 270 hospitals participate. The measure has been specified for broader implementation by hospitals that do not participate in NSQIP. The risk-adjustment model uses a lean set of clinical risk factors collected in the database. The sample size requirement of 65 cases per year would capture only 40 percent to 50 percent of hospitals but would capture 85 percent of colorectal surgery cases. Overall, the Steering Committee rated the measure highly, though feasibility was rated lower given the reliance on clinical data that could not be collected using administrative data. In response to concerns expressed during comment about the burden of data collection, the Committee acknowledged that there was some burden but believed it was offset by having robust measures in this topic area. The measure addresses the priority area of patient safety.

Cross-cutting outcome measures

697 **Risk-adjusted case-mix-adjusted elderly outcomes measure** (ACS)

This is a hospital based, risk-adjusted, case-mix-adjusted elderly surgery aggregate clinical outcomes measure of adults 65 years of age and older.

This surgery outcomes measure captures mortality and major morbidity for many different surgeries. Groups of risk-similar surgeries are scaled, and the scores are used in the regression model. The Committee supported the broad scope of the measure and clarified with the developer that hip fractures from standing or walking would be included in the measure, though a fracture from a fall or other major trauma would not be. Committee members suggested that a separate measure for outcomes of hip fracture would fill a huge gap for the elderly population as well as a similar measure for patients under the age of 65. As with the colorectal surgery measure, Committee members highlighted the data abstraction burden and the need to conform to the NSQIP methodology as challenges to feasibility for non-NSQIP hospitals. The Committee acknowledged the burden with data collection but believed that the burden was offset by having a cross-cutting measure on outcomes. This measure addresses the priority area of patient safety.

709 **Proportion of patients with a chronic condition that have a potentially avoidable complication during a calendar year** (BTE)

Percent of adult population aged 18-65 years who were identified as having at least one of the following six chronic conditions: diabetes mellitus (DM), congestive heart failure (CHF), coronary artery disease (CAD), hypertension (HTN), chronic obstructive pulmonary disease (COPD), or asthma, were followed for one-year, and had one or more potentially avoidable complications (PACs).

The Committee was very supportive of this patient-centered measure that provides understandable information about complications. The measure developer noted that this measure was developed as a by-product of their work for the Prometheus episode payment model, and the episode for chronic conditions is one year. When determining the appropriate care a patient should receive during an episode, the developers created the concept of "potentially avoidable complications" (PACs)—things that should not generally occur to patients. The PACs were identified by an expert panel (convened by the measure developer) as three types: those associated with the index condition, those associated with co-morbidities, and those associated with a patient safety failure. The measure is a sum of all PACs occurring during the year as determined by coding from administrative data. The developers advise that present on admission conditions are not included in the PACs, nor are patient factors that are considered risk factors. To date the measure has been developed only in the commercial population for patients younger than 65 years of age. The developers acknowledge that not all PACs may be avoidable all of the time, and a target of 0 percent is not appropriate. Current performance on this measure is approximately 70 percent, which indicates much room for improvement. This measure is not appropriate for use at the individual clinician level and should be used only at the group, plan, or system level of analysis. This measure addresses the priority area of patient safety.

Candidate Consensus Standards Not Recommended for Endorsement

The following measures are included in the AMI, Heart Failure, and Pneumonia Care Transitions Composite measures recommended for endorsement. Although the Committee recommended them as part of the composite measure, a narrow majority of Committee members did not recommend these as standalone measures.

OT1-002-09: **30-day post-hospital AMI discharge ED visit rate** (Brandeis University/CMS)

This measure estimates the percentage of Medicare beneficiaries (age 65 years and older) discharged from the hospital with a diagnosis of AMI and evidence of an emergency department (ED) visit within 30 days of discharge and prior to a readmission.

OT1-006-09: **30-day post-hospital HF discharge ED visit rate** (Brandeis University/CMS)

This measure estimates the percentage of Medicare beneficiaries (age 65 years and older) discharged from the hospital with a diagnosis of heart failure (HF) and evidence of an emergency department (ED) visit within 30 days of discharge and prior to a readmission.

OT2-003-09: **30-day post-hospital PNA discharge ED measure** (Brandeis University/CMS)

This measure estimates the percentage of Medicare beneficiaries age 65 years and older discharged from the hospital with the diagnosis of pneumonia (PNA) who had an emergency department (ED) visit within 30 days of the hospital discharge and prior to any hospital readmission.

Committee and TAP members were concerned with "all-cause" ED visits, particularly ED visits for issues unrelated to the recent hospitalization. Committee members noted wide variation in local use of EDs, particularly in areas with limited primary care services or where sending patients to the ED after hours is common practice. Committee members noted that the risk model performance is not robust, and the measure developers replied that these risk models perform similarly to the endorsed readmission measures that use the same methodology.

OT1-003-09: **30-day post-hospital AMI discharge evaluation and management service** (Brandeis University/CMS)

This measure estimates the percentage of Medicare beneficiaries age 65 years and older discharged from the hospital with the diagnosis of AMI receiving an evaluation and management service within 30 days of the hospital discharge and prior to a hospital readmission or ED visit.

OT1-004-09: **30-day post-hospital HF discharge evaluation and management service** (Brandeis University/CMS)

This measure estimates the percentage of Medicare beneficiaries age 65 years and older discharged from the hospital with the diagnosis of heart failure receiving an evaluation and management service within 30 days of the hospital discharge and prior to a hospital readmission or ED visit.

OT2-004-09: **30-day post-hospital PNA discharge evaluation and management service visit measure** (Brandeis University/CMS)

This measure estimates the percentage of eligible Medicare hospital discharges with a diagnosis of pneumonia (PNA) for which beneficiaries receive an evaluation and management (E&M) service within 30 days of hospital discharge and prior to a hospital readmission or ED visit.

Committee members agreed that post-discharge follow-up is important but that a specific E&M may not be the only effective

mechanism to achieve care coordination. Committee members cited ongoing approaches to reducing readmissions in their own institutions that include nurse visits, as demonstrated in the research of Dr. Mary Naylor[14,15] or other innovative approaches. Committee members reported that some regional CMS carriers do not accept billing for certain types of nurse visits, so innovative approaches to reduce readmissions may be stifled by crediting only E&M services.

OT1-011-09: **Post-operative stroke or death in asymptomatic patients undergoing carotid endarterectomy** (Society for Vascular Surgery [SVS])

Percentage of patients without carotid territory neurologic or retinal symptoms within the 12 months immediately preceding carotid endarterectomy (CEA) who experience stroke or death following surgery while in the hospital. This measure is proposed for both hospitals and individual surgeons.

Stroke and death are typical outcomes to assess in patients undergoing carotid endarterectomy (CEA). The Committee has numerous concerns with this in-hospital measure for asymptomatic patients undergoing CEA, including the two day average length of stay for carotid endarterectomy patients, which limits the window for capturing stroke complications and the lack of a standardized evaluation for stroke. TAP members noted the variation in diagnosis of stroke depending on whether the assessment is performed by the surgeon, a neurologist, or use of a standardized assessment tool. Committee members also noted that the measure does not address the appropriate use of carotid endarterectomy procedures, which may be another focus for measurement. In addition, the measure developer did not provide data on the reliability of the results and the stroke diagnosis.

OT1-012-09: **Coronary artery bypass graft (CABG) procedure and postoperative stroke during the hospitalization or within 7 days of discharge** (Ingenix)

This measure identifies patients 20 years and older with a coronary artery bypass graft (CABG) procedure who had a postoperative stroke (CVA) during the hospitalization or within seven days of discharge.

NQF has previously endorsed a risk-adjusted, 30-day postoperative stroke morbidity measure for CABG patients from STS. The Committee did not believe that this candidate measure provided added value as it is not risk adjusted and includes a shorter observation period. The Cardiovascular TAP noted that strokes are more frequently identified by neurologists rather than surgeons and that use of a stroke assessment tool would standardize capture of the data.

OT1-028-09: **HbA1c control for a selected population** (NCQA)

Comprehensive diabetes care: The percentage of patients 18-65 years of age with either type I or type II diabetes who had an HbA1c level of less than or equal to 7.0 percent.

This candidate standard is part of a group of process and outcome measures for diabetes, most of which have been endorsed by NQF.

This measure assesses a smaller population compared to the other HbA1c control measures, focusing on younger patients without significant comorbidities. The Diabetes/Metabolic TAP and Steering Committee members discussed the implications of the recent published results of the ADVANCE[16] and ACCORD trials,[17,18] which suggested that very strict control does not lead to better clinical outcomes and may be associated with significant side effects. Committee members also noted that the measure is not risk adjusted. The Committee thought this measure would be valuable when used with the other NQF-endorsed HbA1c control measures (#0575: HgbA1c <8% and #0059: HgbA1c >9%) as a group, but not as a stand-alone measure. The measure developer did not agree with grouping the three HbA1c control measures together, so the Committee did not recommend this measure, except within the diabetes composite measure.

OT2-008-09: **Bariatric surgery and complications during the hospitalization or within 180 days of discharge** (Ingenix)

This measure identifies patients 12 years and older with bariatric surgery who had a defined complication during hospitalization or within 180 days of discharge.

OT2-012-09: **Bariatric surgery and complications during the hospitalization or within 30 days of discharge** (Ingenix)

This measure identifies patients 12 years and older with bariatric surgery who had a defined complication during hospitalization or within 30 days of discharge.

The GI/Biliary TAP and Steering Committee had concerns with the lack of risk adjustment for these measures. Committee members felt that patient risk was likely to vary based on degree of obesity (body mass index [BMI]) 30-35 compared to BMI >50), type of surgery (laparoscopy compared to open surgical procedures), and comorbidities. The developer offered possible stratifications for BMI (30-34.9; 35-39.9 and >40) by four types of procedure or by the number of comorbidities. The developer noted that only 55 percent of bariatric surgery cases include the codes to capture BMI. Committee members felt that these measures need further development and testing to determine the best methods to adjust for patient risk factors before they could be considered for endorsement.

OT2-015-09: **Functional assessment of chronic illness therapy-fatigue (FACIT-F)** (FACIT)

The Functional Assessment of Chronic Illness Therapy-Fatigue Scale (FACIT-F Scale) is a 13-item questionnaire that assesses self-reported fatigue and its impact upon daily activities and function. It was developed in 1994-1995 to meet a growing demand for the precise evaluation of fatigue associated with anemia in

cancer patients. Subsequent to its development, it has been employed in more than 70 published studies including more than 20,000 people. Since 1995, studied groups have included cancer patients receiving chemotherapy, cancer patients not receiving chemotherapy, long-term cancer survivors, childhood cancer survivors, and several other clinical samples including people with rheumatoid arthritis, multiple sclerosis, psoriasis, paroxysmal nocturnal hemoglobinuria, and Parkinson's disease, as well as the general U.S. population. In all cases, the FACIT-F Scale has been found to be reliable and valid. It has been validated for use in adults with chronic health conditions. There also is a validated modified version suitable with pediatric populations. It has been translated into more than 60 non-English languages.

OT2-016-09: **Functional assessment of cancer therapy-lung (FACT-L)** (FACIT)

The Functional Assessment of Cancer Therapy-Lung (FACT-L) Scale is a 36-item self-report instrument that measures multidimensional quality of life. It was developed from 1987-1993 and was first published in 1995. The FACT-L meets a growing need for disease-specific health-related quality of life (HRQOL) questionnaires that address the general and unique concerns of patients diagnosed with lung cancer. Subsequent to its development, it has been employed in more than 20 papers from 15 unique data sets including more than 2,500 people with lung cancer. Since 1995, studied groups have included cancer patients receiving chemotherapy, cancer patients receiving radiotherapy, terminally ill patients, and disease-free survivors. In all cases, the FACT-L scale has been found to be reliable and valid. It has been validated with adult lung cancer patients and disease-free survivors.

OT2-017-09: **Functional assessment of cancer therapy-breast (FACT-B)** (FACIT)

The measurement system, under development since 1987, began with the creation of a generic CORE questionnaire called the Functional Assessment of Cancer Therapy-General (FACT-G). The FACT-G (now in Version 4) is a 27-item compilation of general questions divided into four primary QOL domains: physical well-being, social/family well-being, emotional well-being, and functional well-being. It is considered appropriate for use with patients with any form of cancer, and has also been used and validated in other chronic illness conditions (e.g., HIV/AIDS and multiple sclerosis) and in the general population (using a slightly modified version). In the case of FACT-B, it is comprised of the aforementioned FACT-G plus the 9-item BCS (breast cancer subscale). Combined, the questionnaire is called the FACT-B.

OT2-019-09: **Functional assessment of cancer therapy-general version (FACT-G)** (FACIT)

The FACIT Measurement System is a collection of QOL questionnaires targeted to the management of chronic illness. "FACIT" (Functional Assessment of Chronic Illness Therapy) was adopted as the formal name of the measurement system in 1997 to portray the expansion of the more familiar "FACT" (Functional Assessment of Cancer Therapy) series of questionnaires into

other chronic illnesses and conditions. Thus, FACIT is a broader, more encompassing term that includes the FACT questionnaires under its umbrella. The measurement system, under development since 1987, began with the creation of a generic CORE questionnaire called the Functional Assessment of Cancer Therapy-General (FACT-G). The FACT-G (now in Version 4) is a 27-item compilation of general questions divided into four primary QOL domains: physical well-being, social/family well-being, emotional well-being, and functional well-being. It is considered appropriate for use with patients with any form of cancer, and has also been used and validated in other chronic illness conditions (e.g., HIV/AIDS and multiple sclerosis) and in the general population (using a slightly modified version).

These measures are a sample of patient–level survey tools available from Functional Assessment of Chronic Illness Therapy (FACIT) that assess patient functioning and quality of life that are generally used in clinical trials and care management. The tools are well tested and widely used at the individual patient level; however, the tools have not been used to assess the quality of care at a clinician or practice level. The Cancer TAP and Steering Committee agreed the survey tools are excellent but believed that additional work was needed to determine how they could be used for public reporting and making comparisons among providers.

Additional Recommendations

1. **Apply measures to the broadest populations possible.**
   The Committee strongly recommends that measure developers consider the broadest application of measures and not include restrictive specifications, such as payer or coverage type, or age limitations, unless appropriate for the condition.
2. **More attention to disparities is needed.**
   The Committee strongly recommends that measure developers address measurement of disparities in measure specifications. According to NQF measure evaluation criteria, factors such as race, ethnicity, and socioeconomic status should not be included in risk models; however, the data should be collected to allow for stratification. Some providers serve patient populations that are extremely vulnerable to disparities, and the stratified results would not be small numbers.
3. **Provide rationale for use of risk model methodology.**
   Committee members recommend that measure developers provide the rationale for selecting the risk model methodology and describe the impact on discrimination and usability of the results for public reporting and quality improvement compared to other methods. The Committee also discussed the use of stepwise modeling that can leave out important confounders or effect modifiers. The Committee recommends that NQF establish more guidance and criteria for evaluating risk models, particularly those that seem to minimize variation and reduce differentiation among providers.

Notes

1. Donabedian A, The quality of care. How can it be assessed? *JAMA,* 1988;260(12):1743-1748.
2. National Quality Forum (NQF), *National Priorities Partnership,* Washington, DC: NQF. Available at **www.nationalprioritiespartnership.org**. Last accessed April 2010.
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4. NQF, *Composite Measure Evaluation Framework and National Voluntary Consensus Standards for Mortality and Safety — Composite Measures,* Washington, DC: NQF; 2009. Available at **www.qualityforum.org/Publications/2009/08/Composite_Measure_Evaluation_Framework_and_National_Voluntary_Consensus_Standards_for_Mortality_and_Safety—Composite_Measures.aspx**. Last accessed June 2010.
5. In November 2010, The Joint Commission requested retirement of measure 161 from NQF's portfolio of endorsed measures.
6. National Cardiovascular Data Registry (NCDR), Washington, DC: NCDR. Available at **www.ncdr.com**. Last accessed April 2010.
7. Harmonization refers to the standardization of specifications for similar measures on the same topic (e.g., influenza immunization of patients in hospitals, nursing homes, etc.), 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 various measures and the evidence for the specific measure focus, as well as differences in data sources.
8. Holland AE, Hill CJ, Rasekaba T, et al., Updating the minimal important difference for six-minute walk distance in patients with chronic obstructive pulmonary disease, *Arch Phys Med Rehabil,* 2010;91(2):221-225.
9. Paired measures are individual measures that theoretically could have been approved singly but are recommended for NQF endorsement only if both are approved and used together.
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Chapter 2: Mental Health

Background

TO DATE, NQF HAS ENDORSED few outcome measures specific to mental health or substance abuse (see Appendix E). Major gaps remain for basic outcomes of response to treatment or remission of core mental health disorders, as well as for more patient-focused outcomes, such as patient-reported health-related quality of life issues, benefits accruing from health services and care coordination, and productivity. With approximately one in four Americans 18 years and older suffering from some form of a mental illness, the need for targeted mental health outcome measures is paramount.[1]

While mental illness is prevalent throughout the general population, the substantial burden of disease is concentrated in the six percent who suffer from a serious mental illness (SMI).[2] People with a serious mental illness are now dying 25 years earlier than the general population.[3] Although most of the years of lost life due to premature death can be attributed to medical illnesses, an individual's mental health status has a significant impact on engagement in treatment of medical conditions, therapeutic response, and overall outcome.[4]

Despite the widespread prevalence of mental health disorders in the United States, significant barriers—lack of access to services, low socioeconomic status, social isolation (stigma), and the explicit separation of "health" and mental health services—have hindered treatment and improvements in quality of care.[5] To implement change and improve the health and well-being of those with a mental illness, the field will need strong measures of quality that target both the healthcare and community settings.

Scope of Mental Health Outcomes

As part of the Patient Outcomes project the Mental Health Steering Committee was tasked to identify and develop a framework for Mental Health and Substance Use (MHSU) outcome measures. The Steering Committee reviewed and discussed at length current measures, research, interventions, policies, and health trends in the MHSU arena. The Committee also

considered the connection between performance measures in the healthcare arena with activities in the community setting, specifically focusing on areas of dual accountability. Ultimately the Steering Committee identified five important characteristics that should be considered in an "MHSU outcome framework":

1. Mental health, including substance use disorders, should always be included in broad, cross-cutting measures whenever appropriate, such as patient safety and some adverse events. Mental health should not be viewed as something apart but should be included in the measured population whenever possible.
2. Consumer, patient, family, and caregiver satisfaction represents a critical feedback mechanism for assessing quality.
3. Health behaviors and environment should be promoted in relation to persons afflicted by an MHSU disorder.
4. Non-traditional measures (e.g., homelessness or interaction with the justice system) should be used as a domain of measurement.
5. Accountability should be promoted across episodes of care, with special attention on care coordination.

This framework (Table 1) encompasses a variety of types of patient and or caregiver outcomes.

Table 1: Mental Health and Substance Use Outcomes Measurement Framework

PATIENT, CAREGIVER, AND POPULATION OUTCOMES	EXAMPLES OF POTENTIAL MENTAL HEALTH OUTCOMES
Symptoms	Improvement or remission of pain, anxiety, depression, psychosis, unhealthy use of alcohol or other substances; Symptom, frequency, severity, and longitudinal trajectory; Sleep disorders; medical and other comorbidities (e.g., smoking, metabolic syndrome, and cardiovascular disorders)
Function	Improvement in or maintenance of ability/diminishing disability; Basic and instrumental activities of daily living and ability to function in social roles (work, school, play, family, and social interaction)
Health-related quality of life/global well-being	Improvement or change, as measured by objective psychometrically-sound symptom checklists
Change in health-related behaviors	Patient engagement and self-management; use of advanced directives; Medication adherence; physical activity and nutrition; smoking cessation; decrease in unhealthy alcohol or substance use; Improved health decisionmaking; enhanced willingness or readiness to change; change in high-risk behaviors

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Table 1: Mental Health and Substance Use Outcomes Measurement Framework *(continued)*

PATIENT, CAREGIVER, AND POPULATION OUTCOMES	EXAMPLES OF POTENTIAL MENTAL HEALTH OUTCOMES
Social determinants of health/built environment (effects on populations and individuals)	Decrease in homelessness and improved housing stability; enhanced foster care/out-of-home placement; absence of violence in the home setting; stable and age-appropriate (e.g., with family or independent) home environment; improved social support and network; ability to engage in safe recreation; access to affordable, culturally appropriate food; improved promotion of social engagement; reduction in legal consequences/incarceration; positive changes in absenteeism/ presenteeism
Service use (appropriate and inappropriate use)	Reduction in emergency department (ED) visits and hospitalizations (both medical and psychiatric); visits to primary care provider; use of sobering/detox centers; improved continuity of care (hand-offs between providers) and care coordination; use of evidence-based care; enhancing care for medical conditions
Direct physiologic measures	Appropriate drug screening and therapeutic drug monitoring; appropriate BMI, blood glucose, lipid level, blood pressure, renal and liver function testing or monitoring
Patient/caregiver experience	Enhanced satisfaction/perceptions of care; improved health literacy/ numeracy; cultural competency; Understanding of treatment changes/transitions; understanding of potential hazards to patient; caregiver burden/distress/health status and outcomes
Patient safety/adverse events	Reducing medication side effects/complications/errors; reduction of suicide attempts/completions and self-harm; restraint; elopements; avoiding injury, violence, and motor vehicle crashes; reduced falls and wandering; reduced delirium; appropriate pain medication management
Non-mental health medical outcomes (general medical)	Appropriate management of comorbidities; enhancing preventive care medical outcomes associated with mental health treatment and enhanced outcomes of medical illnesses; reducing disability; improved oral health
Mortality	Reducing suicide and alcohol/drug mortality; improved life expectancy
Recovery	Enhancing recovery model-specific elements; improving shared decisionmaking; enhanced perception of hopefulness/optimism; patient's meeting self-directed wellness goals; absence of disease or reduction in disease status and patient reported happiness

more

Table 1: Mental Health and Substance Use Outcomes Measurement Framework *(continued)*

PATIENT, CAREGIVER, AND POPULATION OUTCOMES	EXAMPLES OF POTENTIAL MENTAL HEALTH OUTCOMES
Incidence/prevalence of mental and substance use conditions	Longitudinal prevalence and incidence of conditions at a population level; screening in medical populations; improved treatment rates
End of life/palliative care	Enhanced use of hospice and advanced directives; improved pain control and well-being and patient perception of self-efficacy/control
Composite measures	Enhancing combined medical, mental health, substance use, dental, and other health outcome measures

Evaluating Candidate Consensus Standards

This chapter presents the evaluation of an initial group of 18 mental health outcome measures in the following clinical focus areas: depression, psychosis, and other serious mental illnesses. Candidate consensus standards were solicited through a Call for Measures in December 2009 and actively sought through searches of the National Quality Measures Clearinghouse, NQF Member websites, and an environmental scan. The Call for Measures explicitly solicited measures for Alzheimer's and other dementias as they were identified as gap areas in the NQF portfolio; yet, no Alzheimer's or dementia measures were submitted to the project for consideration. NQF staff contacted potential measure owners to encourage submission of measures for this project.

The multi-stakeholder Steering Committee evaluated the 18 measures on the four main NQF criteria: importance to measure and report, scientific acceptability of the measure properties, usability, and feasibility and recommended for endorsement those measures that met the NQF criteria. Measure developers participated in Steering Committee discussions to respond to questions and clarify any issues or concerns.

Endorsed Consensus Standards for Mental Health Outcomes

One measure and two measure pairs are endorsed as voluntary consensus standards suitable for public reporting and quality improvement.

711 **Depression remission at six months** (MNCM)

Adult patients age 18 and older with major depression or dysthymia and an initial PHQ-9 score >9 who demonstrate remission at six months defined as a PHQ-9 score less than 5. This measure applies to both patients with newly diagnosed and existing depression whose current PHQ-9 score indicates a need for treatment.

AND

712 **Depression utilization of the Patient Health Questionnaire (PHQ-9) tool**[7] (paired measure)

Adult patients age 18 and older with the diagnosis of major depression or dysthymia (ICD-9 296.2x, 296.3x, or 300.4) who have a PHQ-9 tool administered at least once during the four month measurement period. The PHQ-9 tool is a widely accepted, standardized tool. (Copyright © 2005 Pfizer, Inc. All rights reserved.) that is completed by the patient, ideally at each visit, and utilized by the provider to monitor treatment progress.

710 **Depression remission at 12 months** (MNCM)

Adult patients age 18 and older with major depression or dysthymia and an initial PHQ-9 score >9 who demonstrate remission at 12 months defined as a PHQ-9 score less than 5. This measure applies to both patients with newly diagnosed and existing depression whose current PHQ-9 score indicates a need for treatment.

AND

712 **Depression utilization of the Patient Health Questionnaire (PHQ-9) tool** (paired measure)

Two of the three measures, 711 Depression remission at six months and 710 Depression remission at twelve months are identical in their constructs except for different timeframes assessing depression remission. These measures assess a patient's longitudinal change in the PHQ-9 score at 6 and 12 months. While the Steering Committee acknowledged alternative depression remission tools, the PHQ-9 is a widely accepted and standardized instrument used in the diagnosis and monitoring of depression treatment. The Steering Committee acknowledged the value of the PHQ-9 to document a baseline and monitor symptoms and signs of major depression, and to catalyze standardized measurement of response and remission for depression care. The measures are currently being implemented on a voluntary basis throughout the state of Minnesota. The measures are being considered for use in "pay-for-performance" models within the state.

The Committee discussed in detail the time specifications outlined in the measures. The measure developer explained the rationale for selecting the 6-month and 12-month measurement points, indicating earlier tests assessing remission in timeframes less than 6 months were often uninformative, since insufficient time had elapsed to treat a patient adequately. When the Steering Committee inquired about the average numbers of patients who continued treatment at 6 and 12 months, the developer attested that the follow-up rate is about the same for the 2 timeframes, approximately 20 percent.

The Steering Committee explicitly discussed the absence of any risk-adjustment methodology. While the Committee affirmed the need for most outcome measures to employ some degree of risk adjustment, the Committee believed the PHQ-9 depression remission measures as currently written meet NQF's measure evaluation criteria. The Committee was encouraged by the measure developer's current efforts to explore the value and potential use of risk adjustment in

the future and supports their efforts in moving the field of quality measurement forward.

In response to public and Member comments, the Steering Committee revisited the discussion surrounding the measures' lack of risk-adjustment methodology. Some Committee members expressed reservations about using unadjusted outcome measures for public reporting, while others reiterated the importance of these measures that are currently being used for public reporting in Minnesota. The Committee noted that mental health lags behind in having good performance measures. After reviewing the submitted comments and their previous deliberations and discussions with the measure developer, the majority of the Committee again voted to recommend the three PHQ-9 depression remission measures.

The Committee acknowledged that measure 710 Depression utilization of the PHQ-9 Tool is a process measure; however, the Steering Committee noted the measure forms the basis of the denominator for the two depression remission measures 711 and 712. For this reason, the Committee recommended that it be endorsed as a paired measure with each of the two depression remission measures. The pairing of these measures is critical as it ensures that clinicians are administering the PHQ-9, building the denominator for the two depression remission measures.

Overall, the Committee rated the measures highly and agreed they address a critical measurement area. The Committee was encouraged by the level of testing and current use of the measure and noted that the score from the PHQ-9 can be used for patient care as well as quality measurement. Moreover, the Committee deemed these standards important as they reflect a byproduct of care. While extended timeframes (6 and 12 months) are measured, current guidelines specify achieving remission for a period of at least 4 to 9 months following acute phase treatment—a period corresponding to the measurement period. Overall, the PHQ-9 is an easy instrument to administer with a relatively low burden.

726 **Inpatient Consumer Survey (ICS)** (National Association of State Mental Health Program Directors Research Institute, Inc.)

Survey developed to gather clients' evaluation of their inpatient care. Each domain is scored as the percentage of adolescent clients aged 13-17 years and adult clients at time of discharge or at annual review who respond positively to the domain on the survey for a given month. Five domains in the survey include outcome, dignity, rights, treatment, and environment. Questions in each domain are based on a standard five-point scale, ranging from strongly disagree to strongly agree.

The Committee acknowledged this measure addresses an area that is important to measure and publicly report. The Steering Committee discussed the existence, commonalities, and value of similar tools (i.e., Hospital Consumer Assessment of Healthcare Provider and Systems [HCAHPS]), but after performing a crosswalk between the ICS and HCAHPS found unique differences supporting the value of the ICS in the mental health arena. While the Committee affirmed the need for measures to have a broad range of applicability, the Committee identified unique components of the measure that would be irrelevant to other care settings.

While the Committee suggested the measure developer explore reliability and validity testing in broader settings and not solely at state hospitals, they found the level of testing already completed sufficient for evaluation and recommendation for endorsement. The measure developer offered data about the current use of this survey, stating that the responses were captured at discharge. Variability in response rates range from 20 percent to 80 percent with an average around 45 percent. The developer noted that facilities with large populations of patients with low health literacy may be more likely to have lower response rates, thus contributing to the variability. The Committee was in favor of the measure as it was developed via consumer workgroups and there is an existing infrastructure to support the measure.

Candidate Consensus Standards Not Recommended for Endorsement

OT3-001-10: **Suicide deaths of "at risk" adult psychiatric inpatients within 30 days of discharge**
(Psychiatric Solutions Inc.)

Rate of suicide deaths within 30 days of discharge from an inpatient psychiatric setting of adult patients (aged 18 and older) rated as "at risk."

The Committee believed that the measure addressed an important area but had limitations, specifically feasibility and usability. Concerns focused on the measure specifications for capturing suicide deaths at 30 days following discharge as the measure relied on collecting patient status information through follow-up phone calls. In addition, the Committee strongly suggested that risk adjustment was essential for this measure, as there are many exogenous factors that can affect the outcome of an individual's suicidal ideations or completion. Overall, the Committee believes this measure needs refinement, including testing in additional settings and inclusion of risk adjustment.

OT3-002-10: **Patient attitudes toward and ratings of care for depression (PARC-D 30) questionnaire**
(Johns Hopkins University School of Medicine)

A comprehensive, patient-centered approach to develop an instrument to measure primary care patients' attitudes toward and ratings of care for depression (PARC-D questionnaire).

Patients' and caregivers' attitudes toward care are essential outcomes necessary to assessing quality within the healthcare system. This measure starts to address this important measurement area, but as currently constructed is used to evaluate the process of assessing patient values and is not an actual performance measure to assess outcomes. The tool lacks the necessary link from patient attitudes to actual outcomes of care. Because this measure lacks a demonstrated relation to patient outcomes, the Committee determined that this tool fails to meet the NQF's threshold criterion of importance to measure and report and was not recommended for endorsement.

OT3-003-10: **Day readmissions** (Western Psychiatric Institute and Clinic of UPMC Presby Shadyside)

Percentage of patients readmitted within 30 days of discharge reported as a percent of discharges for an inpatient psychiatric hospital or unit. The patient is admitted to the hospital within 30 days after being discharged from an earlier hospital stay.

OT3-004-10: **7 Day readmissions** (Western Psychiatric Institute and Clinic of UPMC Presby Shadyside)

Percentage of patients readmitted within 7 days of discharge reported as a percent of discharges for an inpatient psychiatric hospital or unit. The patient is admitted to the hospital within 7 days after being discharged from an earlier hospital stay.

OT3-006-10: **48 Hour readmissions** (Western Psychiatric Institute and Clinic of UPMC Presby Shadyside)

Percentage of patients readmitted within 48 hours of discharge reported as a percent of discharges for an inpatient psychiatric hospital or unit. The patient is admitted to the hospital within 48 hours after being discharged from an earlier hospital stay.

These three measures pertaining to psychiatric readmission were identical in their constructs except for the timeframes. Committee deliberations on all three measures highlighted concerns with the lack of testing and risk adjustment and the overall scientific acceptability of the measures. The Committee highlighted the need for risk adjustment for outcome measures particularly when a measure specifies a long time interval that might increase the likelihood of readmission rates as a result of exogenous factors regardless of the quality of care provided during a patient's hospital stay.

The Committee noted these candidate standards are similar in their constructs to other hospital readmission measures currently in use (e.g., #0329 All-cause readmission index [risk adjusted]) and did not support isolating mental health readmissions from broader care settings. For this reason, the Committee recommended that current NQF measures should consider expanding the types of readmissions to include MHSU conditions at the time of maintenance review. NQF has initiated discussions with the measure steward and anticipates the steward will address the inclusion of MHSU conditions at the time of measure maintenance. Measures that delineate specific care settings inevitably create a conceptual barrier, limiting measurement and broad adoption. The Steering Committee believes the focus on strictly mental health settings runs counter to the value of integrating MHSU care into broader medical care settings. The Committee believes that the measures are potentially of great value but require refinement before being considered for public reporting.

OT3-008-10: **Fall rate per 1,000 patient days** (Western Psychiatric Institute and Clinic of UPMC Presby Shadyside)

All documented falls, with or without injury, experienced by patients on an eligible behavioral health or psychiatric inpatient unit.

The Committee agreed that this candidate standard is focused in an area where performance measurement is lacking because there is no existing national database to assess fall rates among psychiatric patients. This standard is similar to two existing NQF measures (#0141: Patient fall rates and #0202: Falls with injury), but they do not include the MHSU arena. In an effort to determine "best in class" the Committee recommended that the NQF-endorsed® measures be expanded to include psychiatric settings and then perhaps stratified by relevant variables, such as the presence of substance abuse or medical comorbidity rather than endorse and additional measure. The measure developer of the currently endorsed measures indicated a willingness to expand the measure to include inpatient mental health settings. NQF has initiated discussions with the measure steward and anticipates the steward will address the inclusion of MHSU settings at the time of measure maintenance.

OT3-009-10: **Adverse/serious event** (Western Psychiatric Institute and Clinic of UPMC Presby Shadyside)

Incidents that resulted in serious injury or death reported as a rate per 1,000 patient days.

The Committee noted this measure addressed an important topic area that has not been addressed by measurement in the mental health area. However, the measure as submitted was not adequately tested or specified. Inadequate testing and a lack of standardized specifications across care settings hinders the adoption or implementation of the measure as "serious" or "adverse" may be interpreted or recorded differently. The Committee affirmed further testing was needed for the measure to be ready for broad implementation.

OT3-010-10: **Milestones of Recovery Scale (MORS)** (Mental Health America of Los Angeles)

The Milestones of Recovery Scale (MORS) is a one-item staff-administered scale that indicates where an individual is in the process of recovery from severe and persistent mental illness. The scale is designed for use with adults with severe and persistent mental illnesses 18 years of age and above. The scale measures three underlying constructs: 1) level of risk, 2) level of engagement, and 3) level of skills and supports.

The Committee noted the merit of this standard is its approach to examining the recovery process from the patient perspective, a point of view often overlooked in the mental health arena. The Steering Committee was pleased by the fact that the measure is currently in use in existing programs. Despite the measure's importance, the Committee had substantial concerns regarding the measure's scientific acceptability and usability. Concerns centered on the measure's lack of testing for validity and reliability, lack of risk adjustment, and lack of attention to health disparities. Separate but equally important concerns centered on the measure's link between improvement and important patient-oriented outcomes and being able to assign accountability. The Committee was enthusiastic about the potential concept of the measure and encouraged the developer to address the Committee's suggestions and submit a revised measure to NQF at a later date. This standard was not recommended for NQF endorsement.

OT3-013-10: **Time from first face-to-face treatment encounter to buprenorphine dosing**
(Baltimore Substance Abuse Systems, Inc.)

Number of hours opioid dependent, non-pregnant adults aged 18 or older have to wait between their first face-to-face treatment encounter and receiving their first dose of buprenorphine medication (i.e., medication induction).

The Committee acknowledged this measure's attempt to improve treatment times for patients with a substance abuse problem but had concerns about the lack of testing of the measure and the link between this measure and patient outcomes. While the Committee acknowledged there could be obvious gains from moving toward shorter time intervals, the relationship between the first face-to-face encounter and the time when the first dose of buprenophine is received to patient outcomes has not been demonstrated. The developer explained that the measure addressed an intermediate outcome; but with no formal reliability or validity testing, the Committee questioned the measure's use in public reporting. The Committee was supportive of the concept and encouraged the developer to make improvements for future submission.

OT3-016-10: **Retention in treatment**
(Western Psychiatric Institute and Clinic of UPMC Presby Shadyside)

Percentage of patients who complete (minimum) of 3 additional ambulatory sessions within 90 days of intake assessment over all patients who complete an intake assessment. An ambulatory session includes any session with a doctor, clinician, or a medication management appointment.

While the Committee acknowledged the value of assessing treatment retention, the connection between patient outcomes and treatment retention was not demonstrated. For example, a patient can be seen multiple times (treatment retention); but if the quality of care provided is suboptimal, then patient outcomes may not improve. Because testing, including the need to assess for risk adjustment, has not been completed, the Committee could not support moving the measure forward for endorsement at this time. The Committee is supportive of the concept and encourages the developer to make improvements for future submission.

Candidate Consensus Standards Determined to be Out of Scope

All measures were first evaluated to determine whether they addressed the scope of the project and were deemed either "in or out of scope." All submitted process measures were indicated as "out of scope." Below is the list of measure determined to be out of scope by the Steering Committee:

- OT3-005-10: Services offered for psychosocial needs (paired with measure OT3-021, Assessment of psychosocial needs) (RAND Corporation)
- OT3-014: Psychiatrist-rated assessment of psychiatric inpatients' clinical status (Department of Psychiatry & Behavioral Sciences at Harborview Medical Center)

- OT3-017: Percentage of eligible patients who transfer from a substance abuse treatment program to a continuing care physician for ongoing buprenorphine maintenance therapy (Baltimore Substance Abuse Systems, Inc.)
- OT3-021: Assessment of psychosocial needs (paired with measure OT3-005, Services offered for psychosocial needs) (RAND Corporation)

Additional Recommendations

1. Develop a broad definition for mental health outcomes

The Steering Committee supports the development of a concise definition for MHSU outcomes to be used as a standard within the field. Such a definition would enable more effective measurement of patient outcomes across care settings.

2. When appropriate, apply measures across care settings rather than developing MHSU-specific measures

The Steering Committee strongly recommends measure developers consider the broadest application of measures, assuring applicability across care settings (i.e., a measure of patient fall rates should be applicable in both a mental health and other care settings). The Steering Committee recommended NQF examine their portfolio of existing outcome measures and consider stratification for the MHSU populations, thereby allowing these measures to be applied to persons with various MHSU conditions across care settings.

3. Support efforts to develop Alzheimer's and dementia outcome measures

The Steering Committee strongly affirms the need for measure developers and the MHSU arena to develop Alzheimer's and dementia outcome measures. With Alzheimer's as 1 of the top 20 Medicare condition priorities, the Steering Committee was troubled by the lack of Alzheimer's or dementia outcome measures submitted to the project. The Steering Committee identified potential Alzheimer's outcome measures and made efforts to solicit their submission. The Steering Committee encourages their submission to future NQF projects.

In an effort to facilitate the development and future submission of Alzheimer's and dementia related outcome measures, the Committee believed it necessary to further extend the discussion on this clinical area. Measure development for Alzheimer's and dementia requires a different approach than traditional perspectives to measure development. With no proven intervention to arrest or reverse the prognosis of Alzheimer's or dementia, the focus of measure development must narrow in on factors that can be influenced or changed. Examples of potential Alzheimer's or dementia-related measurement themes are:

- patient safety/adverse events;
- patient/caregiver experience or burden;
- service utilization (appropriate and inappropriate use), e.g., number of emergency consultations in dementia patients;
- satisfaction of the patient and the informal caregiver; and
- continuity of care.

4. Align measures with the National Priorities Partnership

The National Priorities Partnership established a clear set of principles for improving the health and well-being of all Americans. The Steering Committee affirmed the need for the mental health community to align their work in the performance measurement arena with the initiatives currently underway within NQF in association with the National Priorities Partnership.

5. Establish important measurement focus areas in the MHSU arena

The Steering Committee identified five key measurement focus areas needed to help improve the quality and value of care in the mental health arena. Further, the Committee indicated the need to use not only individual, but population-based measures in the measurement of behavioral health outcomes.

- initiatives geared toward the inclusion of MHSU care into the broader healthcare setting;
- Alzheimer's and dementia;
- the relationship of environment (e.g., housing) to mental health disorders;
- evidence-based measures that address larger social determinates of health (e.g., employment or incarceration status); and
- overuse/underuse of mental health and supporting services.

Notes

1. Kessler RC, Chiu WT, Demler O, et al., Prevalence, severity, and comorbidity of twelve-month DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R), *Arch Gen Psychiatry,* 2005;62(6):617-627.
2. Parks, J, Radke, A, Mazade, N, *Measurement of Health Status for People with Serious Mental Illness.* Alexandria, VA:National Association of State Mental Health Program Directors, 2008. Available at **www.nasmhpd.org/general_files/publications/med_directors_pubs/NASMHPD%20Medical%20Directors%20Health%20Indicators%20Report%2011-19-08.pdf**. Last accessed November 2009.
3. Ibid.
4. Ibid.
5. Ibid.
6. The PHQ-9 is publically available and is free of charge. The instrument was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc.

Chapter 3: Child Health

Background

TO DATE, the National Quality Forum (NQF) has endorsed few outcomes measures related to child health, and, of those, most focus on the hospital level (see Appendix E). However, there are a larger number of NQF-endorsed® process measures that are related directly to child health conditions. Major gaps remain for outcome measures focused on child function, health-related quality of life, patient and caregiver experience with care, and promotion of healthful behaviors. To ensure quality of care across the continuum of a child's experience, it is necessary to develop and implement child health outcome measures that promote health and well-being across all spectrums of care and influence.

Scope of Child Health Outcomes

As part of the Patient Outcomes project, the Child Health Steering Committee (Appendix D) was tasked to identify and develop a prioritization for child health outcome measures. The Steering Committee reviewed and discussed at length current measures, research, interventions, policies, and health trends in the child health arena. The Committee also considered the connection between performance measures in healthcare with activities and influences in the community, such as schools, specifically focusing on areas of shared accountability. Ultimately, the Committee identified a variety of types of child health outcomes that fall within the scope of this project:

- patient function, symptoms, healthcare-related quality of life;
- intermediate clinical outcomes;
- child development;
- patient/parent experience with care;
- patient and family functioning;
- service utilization as a proxy for or potential indicator of efficiency;
- non-mortality clinical morbidity related to disease control and treatment;

- healthcare-acquired events/complications;
- safe and healthful living environment; and
- mortality.

Many of the endorsed consensus standards evaluate the quality of care at the population level rather than at the provider level. The Committee included population-level measures within the scope of the project because they support at least one of the National Priorities Partnership's Priority areas. The Child Health Outcomes Steering Committee strongly supported this broad view of performance measurement because it captures influences and cost information on children's well-being outside of traditional healthcare, such as the community, schools, and the environment.

Evaluating Potential Consensus Standards

Candidate consensus standards were solicited through a Call for Measures in December 2009 and actively sought through searches of the National Quality Measures Clearinghouse and NQF Member websites and an environmental scan. NQF staff contacted potential measure developers to encourage the submission of measures for this project.

Twenty-six outcome measures were evaluated for their suitability as voluntary consensus standards for accountability and public reporting using NQF's standard evaluation criteria. The Steering Committee recommended for endorsement those measures that meet the NQF criteria and for time-limited endorsement those measures that meet all criteria except for those that had not undergone testing. Measure developers participated in Steering Committee discussions to respond to questions and clarify any issues or concerns.

Endorsed Consensus Standards for Child Health Outcomes

Fifteen measures are endorsed as voluntary consensus standards suitable for public reporting and quality improvement.

716 **Healthy term newborn**
(California Maternal Quality Care Collaborative)

This measure provides the percentage of term singleton live births (excluding those with diagnoses originating in the fetal period) who do not have significant complications during birth or post partum arising from the management of the birth process itself. This measure is intended to be used at the facility level of measurement.

This measure assesses the optimal outcome of pregnancy and childbirth, specifically a healthy term newborn. Some stakeholders have raised concerns that attempts at reducing C-section rates, and early inductions of labor will jeopardize the newborn. This measure will evaluate the impact of any changes in management or intervention on the most desirable outcome for the newborn. The Committee agreed that this measure is well specified, using only codes from the newborn record. This measure has been tested on California discharge data sets for several years (2004 to 2007) with approximately 560,000 births per year and found good intra-hospital consistency year over year. The measure was also field tested in a large health system in northern California with 25 maternity hospitals; testing identified almost 150 percent to 200 percent variation. The Committee noted that the measure does not account for disadvantaged

populations according to race, socioeconomic status, or living conditions and suggested that future testing based on stratification be conducted.

727 **Gastroenteritis admission rate (pediatric)** (AHRQ)

This measure provides the admission rate for gastroenteritis in children ages 3 months to 17 years, per 100,000 population. This measure is intended to be used at the population level of measurement.

The intent of this measure is to monitor the admission rate for gastroenteritis in children at the population level. The Committee noted that this measure addresses a high-frequency illness and is very actionable. This measure highlights issues of communication, such as when healthcare providers may face cultural or social challenges in educating parents about their child's health. The Committee agreed that the measure is feasible but suggested that an accompanying tool be developed to enable facilities to ensure accurate implementation. The Committee also noted concerns with potential misuse of the measure at facility or provider levels of analysis as well as the potential unintended consequence of avoiding appropriate admissions. This measure addresses the National Priority of Population Health.

728 **Asthma admission rate (pediatric)** (AHRQ)

This measure provides the admission rate for asthma in children ages 2 to 17 years, per 100,000 population. This measure is intended to be used at the population level of measurement.

The intent of this measure is to monitor the hospital admission rate for asthma in children at the population level. Committee members noted that point-in-time assessments of hospitalizations for asthma may lead to inaccuracies; assessments of emergency department (ED) visits would be more sensitive to the quality of ambulatory care for asthma. This measure includes children ages two to five years, ages when the diagnosis of asthma is frequently associated with an infectious condition such as pneumonia and is more complex to manage. Concerns were raised about the harmonization[1] of the age at diagnosis for asthma. The Committee mentioned that conventional wisdom on asthma diagnosis suggests that you cannot diagnose asthma before age 2, and some would say there is "wiggle room" between ages 2 and 5. Also, it is likely easier to clinically diagnose a child with asthma over the age of 5. In addition, the Committee noted concerns with the potential misuse of the measure at facility level or provider levels of analysis as well as the potential unintended consequence of avoiding appropriate admissions. Overall, the Committee agreed this demonstrated importance and feasible for implementation. This measure addresses the National Priority of Population Health.

Consensus Standards Derived from the National Survey of Children's Health (NSCH) 2007

The next seven population-level measures are derived from the National Survey of Children's Health (NSCH) 2007, which asks parents or guardians a variety of questions about their child's health. These measures were developed

by the Maternal Child Health Bureau (MCHB) and Child and Adolescent Health Measurement Initiative (CAHMI).

717 **Number of school days children miss due to illness** (MCHB/CAHMI)

This measure identifies how many school days children miss due to illness or injury among a sample of children and adolescents ages 6 to 17 years. This measure is intended to be used at the population level of measurement.

This measure assesses the correlation between the number of school days children miss and the number of days children miss due to illness. The Committee agreed this measure was very important, usable, and feasible to implement. There was discussion with regard to the validity of the data collected, particularly the absence of clear definitions of injury, illness of "healthy kids," and "unhealthy kids." There is a potential for responder bias because the number of school days missed is based on caregiver recollection as opposed to some standard method of collection, i.e., school records. In addition, the national survey is administered only every four years, which can limit its usefulness. The Committee suggested exploring other means of capturing the data, such as including this question in other instruments that are administered more frequently for the future. Overall, despite these concerns expressed, the Committee agreed this measure was an important outcome for Child Health. This measure addresses the National Priority of Population Health. Reviewers noted that days missed at school could also be obtained from school data and questioned the reliability of parent reports compared to school data.

718 **Children who have problems obtaining referrals when needed** (MCHB/CAHMI)

This candidate standard ascertains the perceived difficulty in obtaining referrals for children when needed for optimum health. This measure is intended to be used at the population level of measurement.

This measure assesses access to healthcare for children. The Committee members agreed that access to healthcare is important to measure and report but held varying opinions on the scientific acceptability, usability, and feasibility of the measure. Some Committee members raised concerns about the possibility of reporter bias because results are based on parental reporting and the subjective evaluation of "needed" versus "wanted." The measure developer referenced a study that evaluated the degree of need for referrals from a provider perspective and a parental perspective, and the results demonstrated a lack of correlation.[2,3] The Committee suggested this population-level measure could be supported by more specific provider-level measures to increase overall quality improvement but agreed overall that this measure addressed an important concept related to Child Health Outcomes. This measure addresses the National Priority of Population Health.

719 (a) Children who did not receive sufficient care coordination services when needed (b) Children who did not receive satisfactory communication among providers when needed (MCHB/CAHMI)

This two-part candidate standard assesses the need and receipt of care coordination services for children who required care and assesses the need and receipt of care coordination communication services for children who required care. This measure is intended to be used at the population level of measurement.

This two-part measure assesses: 1) care coordination services and 2) communication among providers. The Committee agreed this measure was important and supported a measure focused on capturing parental satisfaction/experience with communication. The Committee also agrees the candidate standard addresses two important areas: 1) satisfaction/experience with the coordination of care and 2) communication. However, the two different constructs (coordination and communication) raised issues related to validity. The Committee agreed the two components of this measure, while related, should be separate. The developers addressed the concerns of the Committee by separating out the communication component. This measure addresses the National Priorities of Population Health and Care Coordination. Commenters emphasized the importance of including all providers, including school nurses, dentists and ophthalmologists, urgent care and emergency departments, as essential participants in care coordination for children.

720 Children who live in communities perceived as safe (MCHB/CAHMI)

This candidate standard ascertains the parents' perceived safety of the child's community or neighborhood. This measure is intended to be used at the population level of measurement.

This measure assesses the perceived safety of the communities in which children live. The Committee agreed that the topic area addresses an important social determinant of health and that the measure is well specified. The Committee noted that the term "safe" must be explicitly defined because parental perspectives of "safe" vary depending on location, upbringing, and political views. The Committee also noted that safety may need to be evaluated outside the realm of medical care, that is, in juvenile detention centers or in relation to housing. This measure addresses the National Priority of Population Health.

721 Children who attend schools perceived as safe (MCHB/CAHMI)

This candidate standard ascertains the perceived safety of a child's school. This measure is intended to be used at the population level of measurement.

The Committee agreed that this measure serves as an important indicator and noted the clear correlation between the safety of a school and the overall health of its students. Committee members discussed the notion of perceived safety and the differences in perception within the community and the school. The Committee and commenters noted that bullying at school is an important safety concern for

some children. The Committee also believed that this measure is highly actionable because of its focus on schools and the measure encourages shared accountability a focus for the Committee and child health. This measure demonstrates favorable results for feasibility and usability and addresses the National Priority of Population Health.

723 **Children who have adequate insurance coverage for optimal health** (MCHB/CAHMI)

This candidate standard determines whether or not current insurance program coverage is adequate for the child's health needs. This measure is intended to be used at the population level of measurement.

This measure assesses adequacy of insurance coverage to allow children to achieve optimal health. Committee members noted the importance of this measure in the context of health reform to assess new plans and programs. They also noted that this measure reports the parents'/caregivers' perception of the insurance plan, which can be subjective and can vary by socioeconomic status. The measure developer stated that the measure has strong face validity and can be stratified by vulnerability characteristics or income. This measure addresses the National Priority of Population Health.

724 **Measure of medical home for children and adolescents** (MCHB/CAHMI)

This candidate standard assesses whether children receive healthcare within a medical home. This measure is intended to be used at the population level of measurement.

The intent of this measure is to assess if children are receiving care in a medical home, the definition of which is based on six of the seven components of the medical home as described by the American Academy of Pediatrics (AAP)—healthcare that is accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally effective. The Committee agreed that the concept of the medical home is important and demonstrates a linkage to outcomes and noted that this measure is a true outcome, i.e., the parent's perception of whether these characteristics of a medical home actually occurred for their child. In addition, the Committee discussed the specific medical home concepts and the consistency of these concepts with national initiatives focused on the medical home, such as the National Committee for Quality Assurance (NCQA) Patient-Centered Medical Home standards. The Committee did recognize the idealistic nature of some concepts within the standard; however, it also considered the use and potential beneficial impact of implementation. This measure addresses the National Priority of Population Health and Care Coordination. Several reviewers cited lack of alignment with the NCQA structural measure. The Committee responded that this population-level measure was more relevant to the pediatric population and represents an outcome.

Candidate Consensus Standards Recommended for Time-Limited Endorsement[4]

713 **Ventriculoperitoneal (VP) shunt malfunction rate in children** (Children's Hospital Boston)

This candidate standard measures VP shunt malfunction requiring operative intervention or shunt infection occurs within 30 days of discharge following initial placement for hospitals that perform cerebrospinal ventriculoperitoneal shunt operations in children ages 1 month to 18 years. This measure is intended to be used at the facility level of measurement.

Time-limited endorsement

The Committee agreed that this is an important outcome to measure because shunt malfunction occurs in 10 percent of patients.[5] The largest impact on shunt function is misplacement or infection control, and variation in malfunction rates ranges from 3 percent to 25 percent.[6] Shunt malfunction is a major problem in children's hospitals, with an estimated admission rate for shunt malfunction of 10,000 patients and an average cost per patient of $17,000 to $20,000. In 2003, more than 300 hospitals performed VP shunts. While the measure had limited testing data from a single institution, the Committee agreed the measure is important to measure and report as an outcome because it addresses a high-impact procedure for this specific population of pediatric patients and meets all other criteria. The Committee also questioned whether the time period required to gather data (three years) may be too lengthy and may affect the usability and feasibility of the measure. The developer noted that the measure has been stratified among different race and ethnicity groups and found that African Americans have a higher rate of malfunction compared to whites. This measure addresses the National Priority of Safety.

714 **Standardized mortality ratio for neonates undergoing non-cardiac surgery** (Children's Hospital Boston)

This candidate standard measures the ratio of observed to expected rates of in-hospital mortality following non-cardiac surgery among infants less than or equal to 30 days of age (neonates). This measure is intended to be used at the facilty level of measurement.

Time-limited endorsement

The Committee agreed that this provider-level candidate standard is important to measure and report as an outcome but noted the lack of variability across sites. Surgeries in this age group are typically related to congenital anomalies. The measure was developed using the KIDS 2000 database[7] and validated using the KIDS 2003 database. The Committee observed that the measure is based on the number of procedures rather than on the number of patients who undergo any of 63 procedures because some patients have multiple operations. The Committee asked for more information on the survival curve for these procedures beyond 30 days. The measure developer noted that its initial data is limited to one year from 15 institutions and that variability would be more likely using a longer timeframe with more sites. All of the included procedures require anesthesia and

represent 85 percent of the procedures performed. The risk model demonstrates excellent performance characteristics.[8] The Committee also noted that the measure directly associates mortality with the surgery, which excludes the possibility that other comorbidities may contribute to mortality. In addition, the Committee discussed the use of the measure among different ethnic and racial groups to show the effects across populations. Overall, the Committee supported this measure and recommended future refinements to the measure. This measure addresses the National Priority of Safety.

715 **Standardized adverse event ratio for children <18 years of age undergoing cardiac catheterization** (Children's Hospital Boston)

This candidate standard measures the ratio of observed to expected clinically important adverse events, risk-adjusted. This measure is intended to be used at the facility level of measurement. **Time-limited endorsement**

The Committee agreed that this provider-level measure is important and demonstrates high face validity. In addition, the Committee noted that catheterization is evolving from a primary diagnostic modality to a significant interventional procedure in which the potential for adverse events is greater. Approximately 100 institutions perform an average of 300 to 1,200 catheterizations per year for an overall total of 50,000 procedures nationwide. An initial review of the measure raised concerns about the specifications and feasibility of the measure. The Committee questioned why adults were included in the target population and suggested separating children from adults because the outcomes will vary based on the patient's age. The Committee discussed the need to clearly define adverse events. The measure developer addressed these concerns by revising the measure to include only persons 18 years or younger and by clarifying the definition of adverse events as well as of the settings and providers for which this measure is intended. This measure addresses the National Priority of Safety.

722 **Pediatric Symptom Checklist (PSC)** (Massachusetts General Hospital)

This candidate standard measures the overall psychosocial functioning in children from 4 to 16 years of age. This measure is intended to be used at the group or facility level of measurement. **Time-limited endorsement**

The Committee agreed that this measure is important and mentioned the scarcity of psychosocial tests for young children, particularly those as young as 4 years old. This measure is intended for various levels of analysis including clinician, program, and population. The Committee raised concerns about the data used to link the PSC score to an improved outcome, the lack of clarity in the measure's specifications, and a possible need to further develop the measure for use with Spanish-speaking populations. However, the Committee also recognized that this measure has been used in numerous studies as a "pre-post" tool to evaluate children. In addition, efforts are underway to improve the comfort level of primary care physician's ability to diagnose and treat mild to moderate mental health problems in children. Further insight on evidence related to the use of the PSC as an outcome and clarifications on

specifications were provided to the Committee. This measure addresses the National Priority of Safety.

725 **Validated family-centered survey questionnaire for parents' and patients' experiences during inpatient pediatric hospital stay** (Children's Hospital Boston)

This candidate standard assesses various aspects of care experiences during inpatient pediatric hospital stays. This measure is intended to be used at the facility level of measurement. **Time-limited endorsement**

This measure evaluates the parents' experiences with care during inpatient pediatric hospital stays by using a survey composed of 62 individual questions. The Committee voiced great enthusiasm for this measure and agreed that it is important to measure and report. The Committee noted the similarities between this survey and the Hospital Consumer Assessment of Healthcare Provider Surveys (HCAHPS), but it recognized that the HCAHPS population excludes children and therefore suggested that this survey be harmonized with the HCAHPS. The Committee raised concerns about the scientific acceptability of the measure, specifically, the number of questions and biases resulting from varying parental expectations and the fact that those who are more pleased with the experience may be more inclined to complete the survey than others. In addition, the Committee discussed the specific domains of the measure (e.g., experience with the nurse, care coordination, admission process) as well as the use of this measure, which has not been applied across institutions. The measure developer provided comparative reliability and validity data and additional information on the scoring of domains within the measure. The developer also explained that an external validation with various hospitals will be performed within the coming year. This addresses the National Priority of Patient and Family Engagement. In response to several comments, the developer advised that they are continuing to harmonize the survey with HCAHPS.

Candidate Consensus Standards Not Recommended for Endorsement

OT3-037-10: **Children living with illness: the effects of condition on daily life** (MCHB/CAHMI)

This candidate standard measures the extent to which the conditions of children with special healthcare needs result in limitations of their daily activities despite the healthcare services they receive. This measure is intended to be used at the population level of measurement.

The Committee agreed this measure showed a specific limitation that is important to measure and report but raised several concerns about its scientific acceptability. Committee members discussed the issue of confounding relative to the individual patients captured in the numerator and recommended that risk adjustment be incorporated into the testing. It was also suggested that the measure be further developed to include stratification data based on diagnoses to create an outcome measure that is more actionable. The Committee acknowledged that this candidate standard is derived from a national survey and is therefore feasible,

especially at the population level. However, the Committee did not believe that this candidate standard as constructed is ready to be included in the existing NQF portfolio of measures.

OT3-040-10: **Children who live in neighborhoods with certain essential amenities** (MCHB/CAHMI)

This candidate standard assesses whether or not children live in neighborhoods that contain elements that are known to have an impact on health status and functioning. This measure is intended to be used at the population level of measurement.

The Committee agreed that this measure is more of a structural measure than an outcome measure and is therefore out of scope for this project. The measure focuses on the utilization of specific infrastructure (sidewalk, bike paths, recreation facility, libraries, and parks). These elements are defined by the measure developer as "essential amenities" that must be available to qualify for having met the measure requirements. The Committee agreed that this measure was more focused on the availability of these amenities rather than any observed outcome that would result from their utility.

OT3-048-10: **Plan of care for inadequate hemodialysis** (American Medical Association–Physician Cosortium for Performance Improvement)

This candidate standard measures the percentage of patients ages 17 and under who have a diagnosis of end-stage renal disease (ESRD) and receive hemodialysis with a documented plan of care for inadequate hemodialysis. This measure is intended to be used at the provider level of measurement.

The Committee noted that this candidate standard is similar to an NQF-endorsed time-limited measure for adults that is maintained by the same developer but is reported in a different KT/V value. Regarding the specifications, the Committee believed that the number of patients who did not have a documented plan of care would be very small, which in turn would offer very limited results. There were concerns with the inclusion of a plan of care option in the measure. If plan of care was to be included in the measure, the Committee recommended that the definition and elements of a "documented plan" should be more explicit. The Committee suggested to the measure developer to stratify the reporting results of the measure by age and include elements of the plan of care. In addition, the Committee believed that the definition of a "documented plan" should be more explicit and should account for adequacy of the plan of care. The Committee suggested that the measure developer stratify the results by age and include elements of the plan of care.

Several commenters requested reconsideration of this measure. The Steering Committee continued to have concerns regarding adjustments for weight and age and lack of specificity of the plan of care. The Committee suggested the measure be evaluated by NQF's End-Stage Renal Disease project that began in August 2010.

OT3-049-10: **Primary caries prevention intervention as part of well/ill child care as offered by primary care medical providers** (University of Minnesota)

This candidate standard measures the number of states currently reimbursing for the primary caries prevention intervention as identified by a specific code to reflect application of fluoride varnish to the teeth of high-risk children. This measure is intended to be used at the population level of measurement.

The Committee agreed that this measure is important and fills a gap in healthcare for children but raised several concerns about the precision of the specifications, which indicate several options for the numerator and denominator. The Committee noted that "dental home" is not clearly defined. The Committee observed that the measure included two measures—the number of varnish applications over the number of EPSDT exams[9] and the number of children with varnish over the number of children with exams. The Committee mentioned that in the past there have been issues with the content associated with an EPSDT visit. The Committee agreed that this is a process measure but acknowledged that dental care is a very important area to measure and strongly recommended that the measure developer submit a measure with precise specifications in the future.

OT3-054-10: **Urinary tract infection admission rate** (AHRQ)

This measure provides the admission rate for urinary tract infection in children ages 3 months to 17 years of age, per 100,000 population. This measure is intended to be used at the population level of measurement.

In general, the Committee members believed that this measure should be more explicitly linked to patient outcomes and questioned the preventability of urinary tract infections (UTIs), especially for very young children. The lack of actionable information that would improve quality was also mentioned. The Committee noted concerns with the potential misuse of the measure at the facility or provider levels of analysis as well as the potential unintended consequence of avoiding appropriate admissions. Concerns were also raised about socioeconomic status and social determinants of health influence hospitalization. The Committee suggested that the measure be stratified by age and gender to address the various causes of UTIs at different ages.

OT3-056-10: **Diabetes, short-term complication rate (pediatric)** (AHRQ)

This measure provides the admission rate for diabetes short-term complications in children ages 6 to 17 years, per 100,000 population. This measure is intended to be used at the population level of measurement.

The majority of the Committee members agreed that this measure should not be recommended for endorsement, particularly

because the measure does not differentiate primary hospitalizations when the diagnosis of diabetes is first made. Committee members noted differences between patients who have Type I and Type II diabetes; Type I diabetes is often initially diagnosed when a child is hospitalized for the first time for a short-term complication of the condition. The measure specifications do not exclude undiagnosed diabetes cases, and coding for first-time admissions for diabetes is not available. The Committee recommended that the possibilities for excluding undiagnosed diabetes admissions from the measure specifications be explored.

Candidate Consensus Standards Determined To Be Out of Scope

The scope of this phase of the Patient Outcomes project was to enlarge NQF's portfolio of outcome measures for child health. In the Call for Measures, the Steering Committee established broad concepts for the measures that would be evaluated for endorsement recommendation. All submitted measures were first evaluated to determine whether they addressed the scope of the project and were deemed to be either in or out of scope. Measures that were deemed to be process measures were considered to be out of scope. Below is a list of the process measures determined by the Steering Committee to be out of scope for this outcome-focused project:

- OT3-033-10: National Survey of Children's Health 2007—quality measures (MCHB/CAHMI)
- OT3-034-10: National Survey of Children with Special Health Care Needs 2005/2006— quality measures (MCHB/CAHMI)
- OT3-035-10: Children who take medication for ADHD, emotional, or behavioral issues (MCHB/CAHMI)
- OT3-042-10: Children who receive the mental health care they need (MCHB/CAHMI)
- OT3-050-10: Children who receive standardized developmental and behavioral screening (MCHB/CAHMI)
- OT3-051-10: Pediatric pain assessment, intervention, and reassessment (AIR) cycle—all pediatric patients (American Nurses Association)
- OT3-052-10: Pediatric pain assessment, intervention, and reassessment (AIR) cycle—pediatric patients in pain (American Nurses Association)
- OT3-053-10: Pediatric pain assessment frequency per 24 hours (American Nurses Association)

Additional Recommendations

During its deliberations, the Steering Committee identified several overarching recommendations regarding the measurement of outcomes for child health:

1. **Parent preference regarding treatment and medications administered.**
   The Committee agreed that this parameter should be incorporated into measuring outcomes for children due to its importance in decisionmaking.
2. **More detailed measures at the plan and provider level to answer the "why" questions that arise within population-level measurement.**
   The Committee recommends that measure developers consider measures that will inform the identification of the inputs that contribute to population-level measure results.
3. **Measures around referral management.**
   The Committee recommends that measure developers include the communication loop, including timely reports from consultants, referrals, and coordinated child healthcare.
4. **More attention to disparities.**
   The Committee recommends that measure developers address disparities in measure specifications. According to NQF measure evaluation criteria, factors such as race, ethnicity, and socioeconomic status should not be included in risk models; however, the data should be collected to allow for stratification. Particularly with regard to children, factors such as socioeconomic status greatly influence the care provided and patient outcomes.

Recommendations for Measure Development

During their discussions the Steering Committee identified many areas lacking performance measures. Additionally, during the comment period, many reviewers offered recommendations for development of important outcome measures for child health. To date, NQF has not endorsed many of the types of outcome measures on the list identified by the Committee for the scope of this project, such as symptom control, quality of life, child development, health promotion, use of services such as ED or urgent care, and patient and family functioning. Specific recommendations for outcome measures for child health include:

- additional provider-level outcome measures to enable consumers to compare providers;
- communication and care coordination among all providers caring for a child, including those outside the traditional healthcare arena, such as school nurses;
- meeting developmental milestones, particularly for low-birthweight babies;
- measures for dental care, including caries prevention;
- accident and injury prevention;
- school achievement and graduation rates;
- healthy weight and nutritional status;
- disease-specific measures such as ED use in patients with asthma and hospitalization for Type I diabetes; and
- availability of school nurses and urgent consultations for behavioral and mental health concerns at school.

Notes

1. Harmonization refers to the standardization of specifications for similar measures on the same topic (e.g., influenza immunization of patients in hospitals, nursing homes, etc.), 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 various measures and the evidence for the specific measure focus, as well as differences in data sources.
2. Albertson GA, Lin CT, Kutner J, Schilling LM, et al., Recognition of patient referral desires in an academic managed care plan: frequency, determinants, and outcomes, *J Gen Intern Med,* 2000;15:242-247.
3. Kravitz RL, Callahan EJ, Paterniti D, et al., Prevalence and sources of patients' unmet expectations for care, *Ann Intern Med,* 1996;125:730-737.
4. Information regarding NQF's time-limited endorsement policy and the 2010 addendum is available at **www.qualityforum.org/Measuring_Performance/Consensus_Development_Process/CSAC_Decision.aspx**.
5. Berry JG, Hall MA, Sharma V, et al., A multi-institutional, 5-year analysis of initial and multiple ventricular shunt revisions in children, *Neurosurgery,* 2008;62(2):445-453; discussion 453-454.
6. Prusseit J, Simon M, von der Brelie C, et al., Epidemiology, prevention and management of ventriculoperitoneal shunt infections in children, *Pediatr Neurosurg,* 2009;45(5): 325-336.
7. Agency for Healthcare Research and Quality (AHRQ), *Introduction to the HCUP KIDS' Inpatient Database (KID) 2006. Health Cost and Utilization Project (HCUP),* Rockville, MD: AHRQ; 2008. Available at **www.hcup-us.ahrq.gov/reports.jsp**. Last accessed May 2010.
8. Son JK, Lillehei CW, Gauvreau K, et al., A risk adjustment method for newborns undergoing noncardiac surgery, *Ann Surg,* 2010;251(4):754-758.
9. Early Periodic Screening, Diagnosis, and Treatment (EPSDT) Programs, as defined by the Health Resources and Services Administration, are a child health component of Medicaid required in every state and designed to improve the health of low-income children by financing appropriate and necessary pediatric services.

Chapter 4: Gaps in NQF-Endorsed Outcomes Measures

Introduction

AS PART OF the Patient Outcomes project, the Department of Health and Human Services (HHS) requested an analysis of important gap areas in outcomes measures to inform measure development activities within the federal government. In addition to responding to HHS's request, this analysis provides guidance to the private-sector measure developer community and the quality measurement enterprise to fill critical measure gaps, resulting in a portfolio of NQF-endorsed measures useful for providers, consumers, policymakers, and other stakeholders. NQF members and other interested stakeholders should encourage and support priority development of important outcomes measures identified in this report. This report is also an important input to NQF's Measure Development and Endorsement Agenda project.

The NQF portfolio of endorsed consensus standards contains a substantial number of outcomes measures; however, stakeholders have identified additional important patient outcomes that are not addressed by current measurement, such as functional status and quality of life. Outcomes measures are inherently important to all stakeholders because such measures describe what happened over a course of care—the outcome. Outcomes measures reflect the combined efforts of providers, practitioners, and patients and the effectiveness of the care plan.

The healthcare quality and delivery system provisions of the 2010 Affordable Care Act (ACA) require additional outcome measures not only to help consumers choose providers, but also to help determine which new payment models (e.g., ACOs, medical homes, and bundled payments) improve outcomes while reducing costs. Outcome measures are integral to the hospital and physician value-based purchasing programs outlined in ACA. Outcome measures, stratified by race, ethnicity, gender, and language are needed to identify and address disparities in care. During the discussions of NQF's three Patient Outcomes Steering Committees, the absence of important and needed outcomes measures was identified. This report outlines a framework for outcomes measurement and recommendations to fill the gaps.

Scope

As a specific deliverable from the Patient Outcomes project, this analysis is limited to the conditions addressed with the Patient Outcomes project, namely the top 20 Medicare conditions plus pneumonia, asthma, and child health. The Steering Committees discussed gaps in outcomes measures as they considered candidate measures submitted for consideration for endorsement in this project. Other topic areas were outside the scope of this analysis, but suggestions offered during the public comment period have been included at the end of the analysis.

Types of Outcomes Measures

The Steering Committees of the Patient Outcomes project have identified various categories of outcomes measures that provide a basic framework for outcomes measurement:

- patient function, symptom management, health-related quality of life (physical, mental social);
- intermediate clinical outcomes (physiologic, biochemical);
- patient experience with care; patient knowledge, health literacy, language barriers, understanding, motivation; health risk status or behaviors (including adherence to medications or attendance to healthcare visits and procedures);
- service utilization as a proxy for patient outcome (e.g., change in condition) or as a potential indicator of efficiency;
- nonmortality clinical morbidity related to disease control and treatment, such as inability to do usual activities from poorly controlled asthma;
- healthcare-acquired adverse event or complication (nonmortality);
- end-of-life care; and
- mortality.

A review of the currently endorsed outcome consensus standards (Appendix E) reveals a focus on some categories, such as mortality measures, intermediate clinical outcomes measures, and adverse outcomes. Very few outcomes measures have been endorsed in the categories of patient function, symptom management, health-related quality of life, risk factor modification, lifestyle optimization, or end-of-life care. The current portfolio emphasizes condition-specific measures rather than cross-cutting measures.

Other NQF Activities Identifying Gaps in Measurement

Other NQF activities provide additional guidance for identifying important and needed measures:

The National Priorities Partnership (NPP),[1] a collaborative effort of 32 major national organizations that collectively influence every part of the healthcare system, has identified the following eight Priorities as those with the greatest potential to eradicate disparities, reduce harm, and remove waste from the American healthcare system:

- **Patient and Family Engagement**—Patients who play an active role in their healthcare are critical to improved outcomes and lower costs.
- **Population Health**—Poor lifestyle choices and inconsistent use of preventive services have led to a decline in the health of many Americans. Sixty percent of American deaths are attributable to behavioral factors, social circumstances, and physical environmental exposures.
- **Safety**—Each year, 1.7 million infections occur in U.S. hospitals, accounting for nearly 99,000 associated deaths. It is estimated that preventable errors cost the United States $17 billion-$29 billion per year in healthcare expenses, lost worker productivity, and disability.
- **Care Coordination**—A lack of care coordination leads to medical errors, higher costs, and unnecessary pain for patients and their families. Increased communication between patients and providers, stronger record keeping, and more efficient, patient-centered care can reduce harm while making healthcare more reliable and accessible.
- **Palliative and End-of-Life Care**—Unfortunately, more than one million people die each year without ever having access to hospice and palliative care services. Many of those lacking adequate access will endure prolonged and needless suffering and costly or ineffective treatments.
- **Overuse**—An estimated 30 percent of healthcare spending—$600 billion-$700 billion—is unnecessary and wasteful. Over-use puts patients at risk, drains resources, and makes healthcare more costly, less accessible, and less effective. Beyond the negative impact of wasted resources that we can ill afford, inappropriate use can harm millions of Americans.
- **Equitable Access.**
- **Infrastructure Supports.**

In October 2010, the National Priorities Partnership provided input to the Secretary of Health and Human Services on Priorities for the 2011 National Quality Strategy.[2] The outcome measures identified in this gaps analysis support a number of the recommendations, including patient safety (adverse outcomes and mortality); care coordination (transitions and readmissions); and healthy lifestyle behaviors (behavioral change).

The Prioritization of High-Impact Medicare Conditions and Measure Gaps (May 2010) report[3] of NQF's Measure Prioritization Advisory Committee (MPAC) provides strategic guidance for a measure development and endorsement agenda to address critical measure gaps and result in a portfolio of measures useful to consumers, purchasers, providers, policymakers, and other healthcare stakeholder groups. The Committee considered the prioritization of measure gaps, including the tension between the need for condition-specific measures and those that can be applied more generally across multiple conditions. The MPAC concluded that while arguments exist for either approach in terms of specificity, utility, and actionability, a balanced approach that incorporates measure sets that are applicable across populations and supplemented with disease-specific modular components as needed may prove most useful.

As part of their work, MPAC considered the 5 dimensions of cost, prevalence, variability, improvability, and disparities to prioritize the 20 high-impact Medicare conditions. Although these dimensions are critical, MPAC actively

discussed other issues such as quality of life and opportunity cost of disease and agreed that it would be an oversight to discount the burden of illness on patients, their families and caregivers, and society. The top 10 priority gap areas identified by MPAC are: 1) appropriateness/efficiency, 2) communication, 3) patient follow-up, 4) direct costs, 5) effective preventive services, 6) functional status, 7) medication management, 8) accountability for care coordination, 9) use of care plans, and 10) patient engagement.

The Measure Development and Endorsement Agenda Project (ongoing) focuses on establishing a working Measure Development and Endorsement Agenda. NQF again convened MPAC to use members' expertise to build on the recently completed gap prioritization work for the top 20 Medicare conditions. MPAC is developing a consolidated list of measure gap domains and subdomains for a measure development and endorsement agenda. MPAC priorities for the consolidated list include child health conditions and risks as well as child health measure gap domains and subdomains, population health measure gap domains and subdomains, and Medicare conditions, as well as Medicare measure gap domains and subdomains. The top 10 gap areas the MPAC identified from the consolidated list include: 1) appropriateness/efficiency; 2) shared decisionmaking; 3) function, symptoms, and quality of life; 4) prevention of adverse events; 5) communication; 6) effective preventive services; 7) medication management (appropriateness, adherence); 8) medication safety; 9) transitions; and 10) system capacity and health IT.

Patient Outcomes Project Recommendations

During the evaluation of candidate consensus standards, the Technical Advisory Panels (TAPs) and Steering Committees of the Patient Outcomes project identified gaps in important outcomes measures that should be developed to create a comprehensive portfolio of outcomes measures for NQF. The Committees offered several general recommendations and numerous condition-specific recommendations.

General Recommendations

Patient-Reported Outcomes

The main Steering Committee urged greater use of the patient or family as a data source for measuring healthcare outcomes. The patient's voice is not readily captured in traditional health records and data systems, yet the beneficiary of healthcare services is often in the best position to evaluate the effectiveness of those services. The outcomes of certain services, such as pain management, can be determined only through patient reports. Also, additional research is needed on what outcomes are most important to patients.

Many patient-reported outcome (PRO) tools have been developed for use in clinical trials to test the efficacy of medications and therapeutics. The Patient-Reported Outcomes Measurement Information System (PROMIS) is a network of NIH-funded primary research sites and coordinating centers working collaboratively to develop a series of dynamic tools to measure patient-reported outcomes (PROs)[4] reliably and validly. Some of these tools, which are well tested at the individual patient level, could be

further developed as performance measures. Stakeholders stress the need for more patient-reported outcome measures to assess pain, anxiety, depression, sleep, and physical and social functioning across conditions.

PRO tools and measurement are well positioned for incorporation into electronic health records (EHRs). Tools such as the PHQ 9 are often embedded into existing EHRs. The Quality Data Model (QDM)[5] has fields for "functional status assessment" and "health risk assessment" that capture numerical values for various tools and instruments of patient-reported data. According to NQF Senior Vice-President for Health Information Technology Floyd Eisenberg, MD, future measure re-tooling and the measure authoring tool have anticipated and are able to adapt patient-reported outcomes measures.

Patient-Focused Episodes of Care

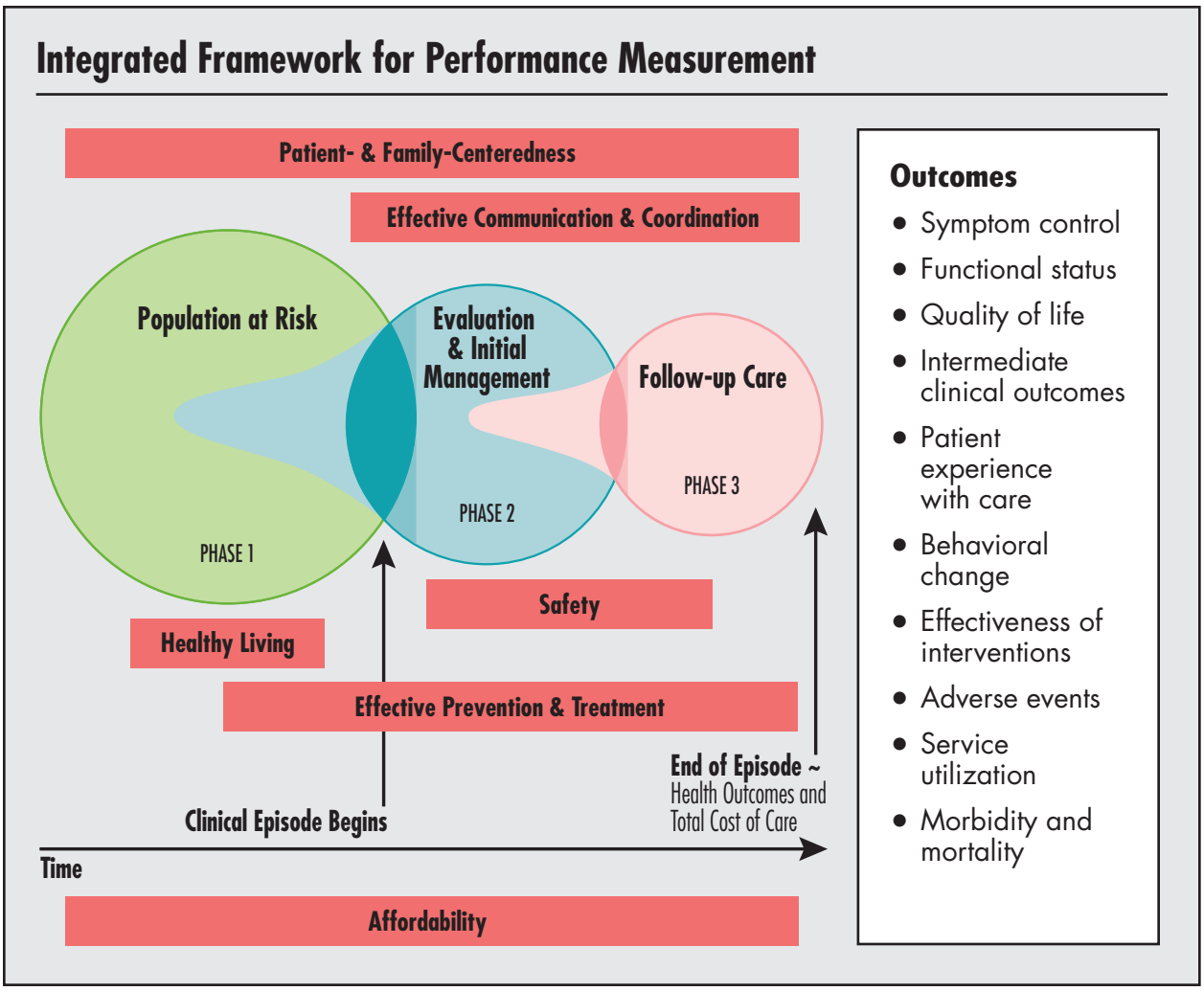
The Steering Committees' recommendations strongly support NQF's ongoing work on patient-focused episodes of care. An episode of care is defined as "a series of temporally contiguous healthcare services related to the treatment of a given spell of illness or provided in response to a specific request by the patient or other relevant entity."[6] A generic episode of care model, which can be used to track the core components—population at risk, evaluation and initial management, and follow-up care—that must be measured and evaluated over the course of an episode of care has been combined with the work of NPP to provide an integrated framework for performance measurement.

The Patient Outcomes Steering Committees recommend that outcomes measure development take a patient-centered view and address episodes of care rather than narrowly focus on one procedure or intervention. The timeframe for an episode of care for patients with chronic disease may be years and decades. Certain elements of the patient-focused episode of care model deserve emphasis:

- **Appropriateness—** Outcomes measures generally do not address appropriateness of procedures or interventions for a particular patient. Appropriate patient selection, based on evidence-based effectiveness data and shared decisionmaking with informed patients, should be included in outcomes measurement.
- **Longitudinal Outcomes—** Most outcomes measures look at rather limited timelines, such as 30 days, and rarely 6 months. For many patients, the true outcome of their conditions extends much longer into several years or more. Measures with a longer timeframe are needed to provide better information on the effectiveness of healthcare services and interventions. Measures should consider the influence of patient decision-making on outcomes, such as at the end of life, when mortality may not represent a poor outcome.
- **Including Influences of Communities and Environment—** The influences of the community and environment play a significant role in the health of a population, particularly when taking a longer-term view. Often what the community does might be more important to the health of more people than what the traditional healthcare system does. The episode of care should include community and environmental influences as part of the system, and information systems should be planned to incorporate data from nontraditional sources.

Functional Status Measures

Very few measures of functional status have been endorsed to date. The Committees highlighted



an urgent need to develop measures that evaluate the improvement or maintenance of functioning as outcomes of healthcare services and interventions. Functional status and participation may address activities of daily living (ADLs); employment, including absenteeism and presenteeism; school attendance and achievement; or participation in usual activities such as walking, exercise regimens, or sports. Assessing functional status is important for patients with chronic diseases as well as for patients undergoing procedures intended to improve symptoms or functioning. A variety of tools are available and used to assess patient functioning as part of clinical care. Additional development is needed to transform these tools into performance measures.

Broader Measures

During their deliberation of candidate measures, the Steering Committees noted that many measures could apply to broader populations than specified. Below are examples of some of the limitations the committee identified:

- **Age Limitations**—Measures often have limited age inclusion, such as excluding children or patients over or under age 65 years. For example, 697 Risk-adjusted case mix adjusted elderly surgery outcome (ACS) focuses on multiple outcomes for a variety of types of surgery but only for patients age 65 years and older. The developers justify the age limitation by noting that the most significant surgical complications occur in the elderly; however, the Steering Committee noted that information on surgical outcomes for younger patients also is important. The Committee recommended that the measure be expanded to include all ages and could be stratified by age bands.
- **Data Availability Limitations**—Measure developers report their measures are limited to population due to the developmental database available to them. Measure 699 30-Day Post-Hospital HF Discharge Care Transition (Brandeis/CMS) is limited to "Medicare fee-for-service" patients because this was the only dataset available to the developers with all the required data elements. Similarly, 704 Patients Hospitalized with AMI with Potentially Avoidable Complications (BTE) is limited to patients under 65 years of age because the commercial dataset available to developers does not include Medicare patients. The topics of both of these measures are not restricted in importance to certain age groups. To develop the broadest, most useful measures, use of combined datasets such as available in health information exchanges should be a fundamental starting point for measure development. Developers should look ahead to future data sources, such as EHRs, when developing measures so that eventual retooling does not require complete redevelopment of measures.
- **Absence of Data for Secondary Diagnosis**—Frequently the denominator population for a measure is identified using diagnosis codes either from discharge or encounter, though often limited to the primary diagnosis. Measure 730 Acute Myocardial Infarction (AMI) Mortality Rate (AHRQ) captures only patients with AMI as the primary diagnosis; however, 30 percent of AMIs occurring in hospitals are coded as the secondary diagnosis, most often complicating the course of a surgical procedure. The Steering Committee recommended further development of the measure or a companion measure to include all AMIs.
- **Lack of Applicability to all Appropriate Settings of Care**—Measures are typically developed for use in a specific setting of care, though the measure focus can apply to many care settings. In reviewing several candidate measures for adverse events in mental health facilities, the Mental Health Steering Committee did not support numerous similar measures for various settings of care and recommended that appropriate measures (falls, readmissions, etc.) include all potential settings of care in one measure that could be stratified by setting if needed. The Committee believed that specifically excluding behavioral health facilities is not warranted for important cross-cutting and patient safety measures.

In summary, as the quality measurement enterprise matures, greater collaboration among measure developers is needed to ensure the most efficient use of measure development resources. Many of the currently endorsed measures could be expanded in their applicability, such as by maximizing age inclusions and applying measures to all appropriate settings of care. Combining datasets, using clinically enriched datasets, and planning for transition to EHR data are additional strategies that would yield the most useful measures and maximize the dollars spent on measure development. Measure development resources should be provided to

knowledgeable and skilled measure developers who are willing to tackle these challenges.

Cross-Cutting Measures

The main Steering Committee was enthusiastic about the few cross-cutting measures submitted to the Patient Outcomes project. 709 Proportion of patients with a chronic condition that have a potentially avoidable complication during a calendar year (BTE) and 697 Risk adjusted case mix adjusted elderly surgery outcome (ACS) include patients with multiple chronic conditions or undergoing a variety of surgeries. Patient outcomes measures associated with improved medication management in patients at high risk for medication errors that are not linked to a limited number of disease state-specific outcomes are needed to ensure medication management methodologies utilized by health plans, health systems, and physician groups translate into improved medication effectiveness and safety. These cross-cutting measures capture a large number of patients, often with conditions or surgeries that are not otherwise captured in condition-specific measures.

Population Health

The Patient Outcomes project has recommended several population-based measures that cannot be attributed to any specific healthcare entity but that provide a critical view of the overall quality and can be followed to monitor improvements. To understand how improvements can be achieved, companion measures at the provider level (facility and clinician) are needed. There are a growing number of community and regional reporting mechanisms to distribute population-level information. Local and regional comparisons can identify areas for quality improvement and promote best practices that will impact the population level results.

Disparities

The Steering Committees evaluated each measure's ability to address disparities of care. In the measures the Committees evaluated, too often the data elements that would allow for stratification by disparities were not specified. Therefore, the Committee recommended that measure developers create specifications that include stratification by demographic characteristics, allowing for an evaluation of performance of care to detect disparities by socioeconomic status. In addition, the Committees reinforced the NQF measure evaluation criterion that "risk models should not obscure disparities in care for populations by including factors that are associated with differences/inequalities in care such as race, socioeconomic status, or gender (e.g., poorer treatment outcomes of African American men with prostate cancer, inequalities in treatment for CVD risk factors between men and women). It is preferable to stratify measures by race and socioeconomic status rather than adjusting out differences."

Risk Adjustment

Consideration of risk adjustment is an essential component of useful outcomes measures. Choice of methodology for risk adjustment often weights sensitivity versus specificity. The Committees have noted that many developers have chosen methodologies that favor specificity and generate results with limited variation and usefulness as performance measures. For measures to be actionable, outcomes measures must provide differentiation in performance. Additionally, broader thinking on risk-adjustment methodology is needed to enrich risk adjustment with a patient-centered perspective of care and consider risk stratification.

Data Availability

Availability of necessary data was frequently found to be an impediment to better measures. While developers may be constrained to the data that is currently available, developers should also plan for EHR retooling in the near future. Additionally, collection of data that remains proprietary does not contribute to the quality measurement enterprise or the collaborative efforts to improve quality. Any data collected or supported by any public funds should be available for use in performance measurement. Additionally, the data from government-sponsored programs should be made available at a granular level to allow for aggregation with private-sector data to provide a more comprehensive picture of individual provider performance.

Public Reporting

The main Steering Committee considered the challenges of moving strictly health services research methodology to performance measurement for public reporting. More information is needed on how patient reports reflect the quality of care and how different reporting systems make a difference to the patients themselves. Research is needed to discover what will actually move the public.

Crosswalk of Existing Measures

As the library of NQF-endorsed measures grows, a crosswalk of the measures would be useful to understand which patients are being measured and which are not. For example, the NQF portfolio contains many measures for patients with cardiovascular conditions and very few for patients with dermatologic conditions. There is currently overlap among the various measures, such as 697 Risk-adjusted case mix adjusted elderly surgery outcome (ACS) and 0534 Hospital specific risk-adjusted measure of mortality or one or more major complications within 30 days of a lower extremity bypass (LEB), which will capture many of the same patients, thereby adding to burden of measurement without adding significant information. A high-level view of the existing measures and which patients are being measured will aid in understanding where measure development is needed.

Condition-Specific Recommendations

The framework for outcomes measures created using both the types of outcomes measures and the integrated patient-focused episodes of care framework is useful to highlight gaps in existing outcomes measures. During the discussions of the Technical Advisory Panels (TAPs) of the Patient Outcomes project, gaps in important outcomes measures for specific conditions were identified.

Cardiovascular Disease

Many outcomes measures have been developed and endorsed for CAD, AMI, PCI, and CABG, though they tend to focus on acute events or procedures rather than on the entire episode of care (Table 1). To date there are no endorsed measures addressing effectiveness of treatment (medication or procedures) in controlling symptoms, maintaining function, determining changes in health status or quality of life during the episode of care. Measures are needed to evaluate the appropriate use and effectiveness of medication management, procedures, and cardiac rehabilitation services. Measures are needed that assess appropriate interventions to reduce complications associated with cardiovascular conditions such as stroke prevention for atrial fibrillation and care coordination and transitions for patients with multiple conditions. Measures to evaluate the care for cardiovascular conditions such as atrial fibrillation, peripheral vascular disease, and cerebral vascular disease are also needed.

Table 1: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cardiovascular Conditions

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

TYPE OF OUTCOME MEASURE	CORONARY ARTERY DISEASE (CAD)	ACUTE MYOCARDIAL INFARCTION (AMI)	HEART FAILURE	ATRIAL FIBRILLATION	STROKE
Patient function, symptoms, health-related quality of life (physical, mental, social)					
Intermediate clinical outcomes (physiologic, biochemical)	**0075** IVD: LDL <100 (NCQA) **0073** IVD: BP< 140/90 (NCQA)				
Patient and/or caregiver experience with care; knowledge, understanding, motivation; health-risk status/behavior (including adherence)	**0543** CAD and MPR for statins (CMS) **0551** ACEI/ARB use and persistence among members with coronary artery disease at high risk for coronary events (IMS Health)				

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Table 1: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cardiovascular Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

TYPE OF OUTCOME MEASURE	CORONARY ARTERY DISEASE (CAD)	ACUTE MYOCARDIAL INFARCTION (AMI)	HEART FAILURE	ATRIAL FIBRILLATION	STROKE
Healthcare service utilization as proxy for patient outcome (e.g., change in condition) or potential indicator of efficiency	**695** Hospital 30-day risk-standardized readmission rates Following PCI Yale New Haven Health Services Corporation/ Center for Outcomes Research and Evaluation (CMS)	**0505** Thirty-day all-cause risk standardized readmission rate following acute myocardial infarction (AMI) hospitalization	**0277** Congestive heart failure admissions (AHRQ) **0330** 30-Day all-cause risk standardized readmission rate following heart failure hospitalization (risk adjusted)		
Non-mortality clinical morbidity related to disease control and treatment					
Healthcare-acquired adverse event or complication (nonmortality)	**0130** CABG: deep sternal wound infection rate (STS) **0129** CABG: prolonged intubation (STS) **0115** CABG: surgical re-exploration (STS) **0114** CABG: Post-op renal failure (STS) **0131** Post-op stroke/CVA (STS)			**694** Hospital risk-standardized complication rate following ICD Yale New Haven Health Services Corporation/ Center for Outcomes Research and Evaluation (CMS)	

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Table 1: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cardiovascular Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

TYPE OF OUTCOME MEASURE	CORONARY ARTERY DISEASE (CAD)	ACUTE MYOCARDIAL INFARCTION (AMI)	HEART FAILURE	ATRIAL FIBRILLATION	STROKE
Mortality	**0133** PCI mortality(risk adjusted) (ACC) **0535** 30-Day all-cause, risk standardized mortality following PCI for patients without STEMI and cardiogenic shock (CMS) **0536** 30-Day all-cause, risk standardized mortality following PCI for patients with STEMI or cardiogenic shock (CMS) **0119** Risk-adjusted operative mortality for CABG (STS) **0122** Risk-adjusted operative mortality MVR+CABG surgery (STS) **0123** Risk-Adjusted Operative Mortality for AVR+CABG	**0230** Acute myocardial infarction 30-day mortality (CMS) **730** AMI [inpatient] mortality rate (AHRQ)	**0229** Heart failure 30-day mortality (CMS) **0358** Congestive heart failure mortality (IQI 16) (risk adjusted) (AHRQ)		

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Table 1: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cardiovascular Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

TYPE OF OUTCOME MEASURE	CORONARY ARTERY DISEASE (CAD)	ACUTE MYOCARDIAL INFARCTION (AMI)	HEART FAILURE	ATRIAL FIBRILLATION	STROKE
Composite	**0076** CAD: optimally managed modifiable risk (Minn Comm Measure) **696** CABG composite score (STS)	**698** 30-Day post-hospital AMI discharge care transition composite measure (CMS)	**699** 30-Day post-hospital HF discharge care transition composite measure (CMS)		

Metabolic Conditions, Including Diabetes and Chronic Kidney Disease (CKD)

For diabetes, NQF-endorsed outcomes measures primarily focus on control of risk factors (Table 2). None of the measures assesses a patient's symptom management or functional status nor the outcome of lifestyle and behavioral improvement strategies, such as weight reduction, smoking cessation, and exercise. Patient reported outcomes are critical to assess the effectiveness of healthcare services, as are measures of shared decisionmaking and effectiveness of self-management.

The only outcomes measures for CKD to date address dialysis adequacy. Additional measures are urgently needed to address functional status, effectiveness of preserving kidney function, quality of life, and appropriate use of healthcare services. Measures for CKD are also needed to address better integration of care with primary physicians, improve patient awareness and involvement in shared decision-making and prepare the patient better for their treatment modality of choice. Specific examples of needed measures include measurement of eGFR and classification of disease into one of 5 categories; referral of the patient with Stage 4 CKD to a nephrologist; and documentation that the nephrologist discussed therapeutic modalities with the patient including end of life options, preemptive transplantation, home hemodialysis or peritoneal dialysis or in-center dialysis.

Table 2: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Metabolic Conditions

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

TYPE OF OUTCOMES MEASURE	DIABETES	CHRONIC KIDNEY DISEASE (CKD)
Patient function, symptoms, health-related quality of life (physical, mental, social)		
Intermediate clinical outcomes (physiologic, biochemical)	**0059** Hemoglobin A1c management—Percentage of adult patients with diabetes aged 18-75 years with most recent A1c level greater than 9.0% (poor control) (Alliance/NCQA) EC-013-09** Comprehensive diabetes care: HbA1c control (<8.0%) (NCQA) **0064** Diabetes measure pair: A) Lipid management: low density lipoprotein cholesterol (LDL-C) <130, B) Lipid management: LDL-C <100 * -A) Percentage of adult patients with diabetes aged 18-75 years with most recent (LDL-C) <130 mg/dL; B) Percentage of patients 18-75 years of age with 0547 diabetes whose most recent LDL-C test result during the measurement year was <100 mg/dL (Alliance/NCQA) **0061** Blood pressure management—Percentage of adult patients with diabetes aged 18-75 years with most recent blood pressure <140/80 mm Hg (Alliance/NCQA) **729** Optimal diabetes care—Composite "all or none" measure of BP< 140/90 and LDL < 100 and Hgb A1c < 8 and non-smoker and daily aspirin if age 41+ years. (Minnesota Community Measurement) **0731** Comprehensive Diabetes Care (NCQA)	

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Table 2: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Metabolic Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

TYPE OF OUTCOMES MEASURE	DIABETES	CHRONIC KIDNEY DISEASE (CKD)
Patient and/or caregiver experience with care; knowledge, understanding, motivation; health-risk status/behavior (including adherence)	**0550** *CKD, diabetes and hypertension—Medication possession ratio (MPR) for ACEI/ARB therapy (CMS)* **0547** *Diabetes and MPR for statin therapy (CMS)* **0545** *MPR for chronic meds (oral hypoglycemic, statins and ACEI/ARBs) in diabetics over age 18 years (CMS)*	
Healthcare service utilization as proxy for patient outcome (e.g., change in condition) or potential indicator of efficiency	**0272** *Diabetes, short-term complications (PQI 1) [AHRQ]*	
Non-mortality clinical morbidity related to disease control and treatment	**0274** *Diabetes, long-term complications (PQI 3) [AHRQ]* **0285** *Lower extremity amputations among patients with diabetes (PQI 16) [AHRQ]*	
Healthcare-acquired adverse event or complication (non-mortality)		
Mortality		

Cancer

The main Steering Committee and Cancer TAP were extremely disappointed at the few outcomes measures submitted for cancer care. Very few outcomes measures for cancer have been endorsed to date (Table 3), and those that have focus primarily on end-of-life care. More outcomes measures for cancer patients are urgently needed, such as functional status and quality-of-life measures for cancer patients during and after therapy, symptom management and effectiveness (e.g., fatigue management), patient experience with cancer care, patient safety measures specific to cancer treatment, cancer treatment morbidity, and survival rates for the major cancers. Population-level measures of cancer incidence are needed to understand community and environmental contributions to the development of cancer.

The cancers included in this analysis were determined by the top 20 Medicare conditions scope of this project. During public comment, reviewers suggested that bladder cancer, hematologic cancer, and lymphoma should be included. Despite the lack of cancer-specific measures, there are cross-cutting NQF-endorsed measures applicable to the cancer population (e.g., falls, central line catheter-associated blood stream infection rate for ICU, surgical site infection, UTI, ventilator-associated pneumonia, VTE, and pressure ulcers). Public comments from the cancer community point out that the development of robust risk-adjustment methodologies for the cancer population is integral to successful outcome measures and that while volume and experience may be the most important factors in developing these methodologies for some cancers, development of meaningful metrics for comparative purposes should include severity adjustments, such as stage of disease and comorbidities.

Table 3: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cancer-Related Conditions

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

Type of Outcome Measure	Prostate Cancer	Breast Cancer	Lung Cancer	Endometrial Cancer	Colorectal Cancer	Other Cancer	General Cancer Measures
Patient function, symptoms, health-related quality of life (physical, mental, social)							
Intermediate clinical outcomes (physiologic, biochemical)							

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Table 3: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cancer-Related Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

Type of Outcome Measure	Prostate Cancer	Breast Cancer	Lung Cancer	Endometrial Cancer	Colorectal Cancer	Other Cancer	General Cancer Measures
Patient and/or caregiver experience with care; knowledge, understanding, motivation; health-risk status/behavior (including adherence)							
Healthcare service utilization as proxy for patient outcome (e.g., change in condition) or potential indicator of efficiency			**0459:** Risk-adjusted morbidity after lobectomy for lung cancer		**706:** Risk-adjusted colorectal surgery outcome measure	**0460:** Risk-adjusted morbidity esophagectomy for cancer	
Non-mortality clinical morbidity related to disease control and treatment							

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Table 3: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cancer-Related Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

Type of Outcome Measure	Prostate Cancer	Breast Cancer	Lung Cancer	Endometrial Cancer	Colorectal Cancer	Other Cancer	General Cancer Measures
Healthcare-acquired adverse event or complication (non-mortality)							
Mortality						**0360:** Risk-adjusted esophageal resection mortality rate **0365:** Risk-adjusted pancreatic resection mortality rate	**0211:** Percentage of patients who died from cancer with more than one emergency room visit in the last days of life (NCI) **0212:** Percentage of patients who died from cancer with more than one hospitalization in the last 30 days of life to hospice

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Table 3: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Cancer-Related Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

Type of Outcome Measure	Prostate Cancer	Breast Cancer	Lung Cancer	Endometrial Cancer	Colorectal Cancer	Other Cancer	General Cancer Measures
Mortality (continued)							**0213:** Percentage of patients who died from cancer admitted to the ICU in the last 30 days of life **0214:** Proportion dying from cancer in an acute care setting **0215:** Percentage of patients who died from cancer not admitted

Pulmonary/ICU Conditions

To date, NQF has not endorsed any outcomes measures for asthma or COPD. For patients with COPD, additional measures for pulmonary rehabilitation (PR) would be useful, such as appropriateness or selection of referral for PR, evaluation of quality of life for patients not receiving PR, adherence/completion rates for PR, and patient assessment of PR services. For patients with asthma, functional status including absenteeism or presenteeism for work or school and patient reported outcomes of asthma management are needed. Hospital admissions and ED visits may reflect effectiveness of asthma management but may also reflect outpatient healthcare resource availability. For intensive care patients, return to the ICU or recidivism would be another important outcomes measure.

Bone and Joint Conditions

The only endorsed outcomes measure for bone and joint conditions is 354 Hip fracture mortality rate (AHRQ). Outcomes measures for arthritis and osteoporosis have not been submitted for consideration. Measures of the effectiveness of symptom management and functional status for patients with arthritis are urgently needed. Many functional status assessment tools exist and are used during patient care, but few have been developed and tested for use as performance measures. As younger patients are undergoing joint replacement, measures of appropriate selection for surgery, functional improvement, patient experience, racial/ethnic disparities, morbidity, and mortality all after surgery are needed. For older patients, outcomes measures for hip fractures are particularly important to assess the post-operative functional status and recovery. For osteoporosis, measures of treatment effectiveness, symptom management, and disability are needed, as well as population measures of nontraumatic fractures to assess whether preventive measures are effective.

GI and Biliary Conditions

Gallbladder disease, gastroesophageal reflux disease (GERD), and ulcers are important conditions that have not been addressed in outcomes measurement. Measures of symptom management; appropriate, effective, and efficient use of diagnostic studies and interventions; and adverse events are important measures for these conditions.

Infectious Disease

Pneumonia, sinusitis, and urinary tract infections (UTIs) are common infections that account for many ambulatory care visits and occasional hospital admissions. Several outcomes measures for pneumonia have been endorsed (e.g., mortality and readmission), though no outcomes measures address sinusitis or UTIs. Measures for appropriate evaluation and appropriate use of antibiotics are needed.

Eye Care

Several outcomes measures for eye care (glaucoma, cataracts, macular degeneration, and diabetic retinopathy) have been endorsed (Table 4). Measures of patient function, symptoms, health-related quality of life (physical, mental, social), intermediate clinical outcomes (physiologic, biochemical), and nonmortality clinical morbidity related to disease control and treatment are all potential important outcomes for eye care. Eye care measures should look at appropriate therapies that improve patients' visual function and quality of life while decreasing costs. Measures that address appropriateness of services and treatment and composites that represent comprehensive eye care for given conditions should be prioritized.

Table 4: Gap Areas in NQF-Endorsed® and Candidate Outcomes Measures for Eye-Related Conditions *(continued)*

Table Key: NQF-Endorsed® measures are in **black**. Candidate measures in the Patient Outcomes project are in **red**. **Gray** boxes identify gaps in measures.

TYPE OF OUTCOMES MEASURE	GLAUCOMA	CATARACT
Patient function, symptoms, health-related quality of life (physical, mental, social)		**0565** 20/40 or better visual acuity within 90 days after cataract surgery
Intermediate clinical outcomes (physiologic, biochemical)	**0563** Reduction in IOP >15%	
Patient and/or caregiver experience with care; knowledge, understanding, motivation; health-risk status/behavior (including adherence)		
Healthcare service utilization as proxy for patient outcome (e.g., change in condition) or potential indicator of efficiency		**0564** Cataract surgery complications within 30 days requiring additional surgery
Non-mortality clinical morbidity related to disease control and treatment		
Healthcare-acquired adverse event or complication (non-mortality)		
Mortality		

Mental Health and Substance Use (MHSU)

The Mental Health Steering Committee recommended development of a definition for MHSU outcomes to be used as a standard within the field. Such a definition would enable more effective measurement of patient outcomes across care settings. The Steering Committee identified five key measurement focus areas needed to help improve the quality and value of care in the mental health arena. They include initiatives geared toward the inclusion of MHSU care into the broader healthcare setting:

- Alzheimer's and dementia;
- the relationship of environment (e.g., housing) to mental health disorders;
- evidence-based measures that address larger social determinates of health (e.g., employment or incarceration status); and
- overuse/underuse of mental health and supporting services.

Further, the Committee indicated the need to use not only individual but also population-based measures for MHSU health outcomes.

Inclusion of MHSU into cross-cutting measures

The Committee recommends that when appropriate, cross-cutting measures should include MHSU, rather than develop similar measures for use in MHSU. The Steering Committee strongly recommends measure developers consider the broadest application of measures, assuring applicability across care settings (i.e., a measure of patient fall rates should be applicable in both a mental health and other care settings). The Steering Committee recommended NQF examine its portfolio of existing outcome measures and consider stratification for the MHSU populations, thereby allowing these measures to be applied to persons with various MHSU conditions across care settings.

Alzheimer's and dementia outcome measures

The Steering Committee strongly affirmed the need for measure developers and the MHSU arena to develop Alzheimer's and dementia outcome measures. With Alzheimer's as one of the top 20 Medicare condition priorities, the Steering Committee was troubled by the lack of Alzheimer's or dementia outcome measures submitted to the project. The Steering Committee identified potential Alzheimer's outcome measures and made efforts to solicit their submission. The Steering Committee encourages their submission to future NQF projects.

In an effort to facilitate the development and future submission of Alzheimer's and dementia-related outcome measures, the Committee believed it necessary to further extend the discussion on this clinical area. Measure development for Alzheimer's and dementia- requires a different approach than traditional perspectives to measure development. With no proven interventions to arrest or reverse the prognosis of Alzheimer's or dementia, the focus of measure development should be on factors that can be influenced or changed. Examples of potential Alzheimer's or dementia related measurement themes include:

- patient safety/adverse events;
- patient/caregiver experience or burden;
- service utilization (appropriate and inappropriate use), e.g., number of emergency consultations in dementia patients;
- satisfaction of the patient and the informal caregiver; and
- continuity of care.

Child Health

During its deliberations, the Child Health Outcomes Steering Committee identified several overarching recommendations regarding the measurement of outcomes for child health:

- **Parent preference regarding treatment and medications administered**
  The Committee agreed that this parameter should be incorporated into measuring outcomes for children due to its importance in decisionmaking.
- **More detailed measures at the plan and provider level to answer the "why" questions that arise within population-level measurement**
  The Committee recommends that measure developers consider measures that will inform the identification of the inputs that contribute to population-level measure results.
- **Measures around referral management**
  The Committee recommends that measure developers include the communication loop, including timely reports from consultants, referrals, and coordinated child healthcare.
- **More attention to disparities**
  The Committee recommends that measure developers address disparities in measure specifications. According to NQF measure evaluation criteria, factors such as race, ethnicity, and socioeconomic status should not be included in risk models; however, the data should be collected to allow for stratification. Particularly with regard to children, factors such as socioeconomic status greatly influence the care provided and patient outcomes.

Recommendations for Measure Development

During its discussions the Child Health Outcomes Steering Committee identified many areas lacking performance measures. Additionally, during the comment period, many reviewers offered recommendations for development of important outcome measures for child health. To date, NQF has not endorsed many of the types of outcome measures in the framework identified by the Committee, such as symptom control, quality of life, child development, health promotion, use of services such as ED or urgent care, and patient and family functioning. Specific recommendations for development of additional outcome measures for child health include:

- additional provider-level outcome measures to enable consumers to compare providers;
- communication and care coordination among all providers caring for a child, including those outside the traditional healthcare arena, such as school nurses;
- meeting developmental milestones, particularly for low-birthweight babies;
- measures for dental care, including caries prevention;
- accident and injury prevention;
- school achievement and graduation rates;
- healthy weight and nutritional status;
- disease-specific measures such as ED use in patients with asthma and hospitalization for Type I diabetes; and
- availability of school nurses and urgent consultations for behavioral and mental health concerns at school.

Recommendations Outside the Scope of this Analysis

Numerous suggestions for conditions that should be addressed were offered during the public comment review of this gaps report that were outside the scope of the Patient Outcomes project and this gaps analysis. These comments underscore the need for outcome measures in a wide variety of topic areas:

- maternity care, including the outcomes of labor and delivery;
- low back pain;
- skin conditions;
- gout;
- hematological disorders;
- pulmonary conditions, such as care transitions and readmissions for COPD;
- additional cancers, such as bladder cancer, hematologic cancers, and lymphoma; and
- composite measures for diabetes and COPD.

Notes

1. National Quality Forum (NQF), *National Priorities Partnership,* Washington, DC: NQF. Available at **www.nationalprioritiespartnership.org**. Last accessed August 2010.
2. NQF, *The Prioritization of High-Impact Medicare Conditions and Measure Gaps,* Washington, DC: NQF; 2010.
3. Ibid.
4. Patient-Reported Outcomes Measurement Information System (PROMIS). Available at **www.nihpromis.org/default.aspx**. Last accessed July 2010.
5. NQF, *Quality Data Set Model,* Washington, DC: NQF; 2010. Available at **www.qualityforum.org/QualityDataModel.aspx**. Last accessed August 2010.
6. NQF, *Measurement Framework: Evaluating Efficiency Across Patient-focused Episodes of Care.* Washington, DC: NQF; 2010. Available at **www.qualityforum.org/Publications/2010/01/Measurement_Framework__Evaluating_Efficiency_Across_Patient-Focused_Episodes_of_Care.aspx**. Last accessed August 2010.

Appendix A
Specifications of the National Voluntary Consensus Standards for Patient Outcomes 2009

THE FOLLOWING TABLE PRESENTS the detailed measure specifications for the Nation Quality Forum (NQF)-endorsed® *National Voluntary Consensus Standards Patient Outcomes 2009*. All information presented here has been derived directly from the measure developers without modification or alteration (except where measure developers agreed to such modifications) and is current as of June 1, 2011. All voluntary consensus standards are open source, meaning they are fully accessible and disclosed.

694: HOSPITAL RISK-STANDARDIZED COMPLICATION RATE FOLLOWING IMPLANTATION OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR (ICD)

Measure Steward: Yale New Haven Health Services Corporation/Center for Outcomes Research and Evaluation/Centers for Medicare and Medicaid Services

Description: This measure provides hospital specific risk-standardized rates of procedural complications following the implantation of an ICD in patients at least 65 years of age. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) ICD Registry for risk adjustment that has been linked with administrative claims data used to identify procedural complications.

Numerator: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we are using this field to define the outcome (i.e., adverse events) following ICD implantation.

The measured outcome for each index admission is one or more complications or mortality within 30 or 90 days (depending on the complication) following ICD implantation. Complications are counted in the measure only if they occur during a hospital admission.

Numerator Details: Complications are identified using International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) diagnosis and procedure codes as well as the Medicare Enrollment Database (vital status) as indicated below:

Complications measured for 30 days:

1. Pneumothorax or hemothorax plus a chest tube
   Definition: (a) Pneumothorax/hemothorax: 512.1 or 511.8 (diagnosis code)
   (b) Chest tube: 34.04, 34.05, 34.06, or 34.09 (procedure code)
2. Hematoma plus a blood transfusion or evacuation
   Definition: (a) Hematoma: 998.1 (diagnosis code)
   (b) Blood transfusion: 518.7, 287.4, V59.01, V58.2 (diagnosis code), or 99.00, 99.03, 99.04 (procedure code); Evacuation: 34.04, 34.09 (procedure code)
3. Cardiac tamponade or pericardiocentesis
   Definition: (a) Cardiac tamponade: 420, 423.0, 423.3, 423.9 (diagnosis code), or 37.0, 37.12 (procedure code)
4. Death Source: Medicare enrollment database
   Complications measured for 90 days
5. Mechanical complications requiring a system revision
   Definition: (a) Mechanical complications with system revision: 996.0 (diagnosis code)
   (b) System revision: 37.75, 37.79, 37.97, 37.99, or 00.52 (procedure code)
6. Device related infection
   Definition: (a) Infection: 996.61 (diagnosis code)

694: HOSPITAL RISK-STANDARDIZED COMPLICATION RATE FOLLOWING IMPLANTATION OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR (ICD) *(continued)*

Numerator Details: *(continued)*

7. Additional ICD implantation
   Definition: (a) Inpatient or outpatient ICD implantation: 00.50, 00.51, 00.52, 00.53, 00.54, or 37.94 (procedure codes)
   (b) Outpatient ICD implantation: 33216, 33217, 33218, 33220,33223, 33240, 33241, or 33249 (CPT codes)

The rationale for using complication specific timeframes is detailed in section 1c.

Denominator: The target population for this measure includes inpatient or outpatient ICD implants for patients at least 65 years of age at the time of implantation who have matching information in the National Cardiovascular Disease Registry (NCDR) ICD Registry.

The patient cohort is defined by ICD-9 procedures codes from inpatient claims and Healthcare Common Procedure Coding System/Current Procedural Terminology (HCPCS/CPT) procedure codes from outpatient claims as outlined in the denominator details.

Denominator Details: ICD-9 and CPT codes used to define the target population are listed below:

ICD-9 codes
00.50 Implantation of cardiac resynchronization pacemaker without mention of defibrillation, total system (crt-p)
00.51 Implantation of cardiac resynchronization defibrillator, total system (crt-d)
00.52 Implantation or replacement of transvenous lead (electrode) into left ventricular coronary venous system
00.53 Implantation or replacement of cardiac resynchronization pacemaker pulse generator only (crt-p)
00.54 Implantation or replacement of cardiac resynchronization defibrillator pulse generator device only (crt-d)
37.94 Implantation or replacement of automatic cardioverter/defibrillator, total system (aicd)

CPT codes
33216 Insertion, single chamber transvenous electrode ICD
33217 Insertion, dual chamber transvenous electrode ICD
33218 Repair, single chamber transvenous electrode ICD
33220 Repair, dual chamber transvenous electrode ICD
33223 Pocket revision ICD
33240 Insertion of single or dual chamber ICD pulse generator
33241 Removal of single or dual chamber ICD pulse generator
33249 Insertion or repositioning of electrode lead(s) for single or dual chamber pacing ICD and insertion of pulse generator

694: HOSPITAL RISK-STANDARDIZED COMPLICATION RATE FOLLOWING IMPLANTATION OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR (ICD) *(continued)*

Exclusions: We are using this field to define exclusions to the patient cohort:

1. Not the first claim in the same claim bundle. When several claims in the same hospital representing the same patient stay exist in the data together (bundled), any claim other than the first in such a bundle is excluded. Rationale: Inclusion of these patients could result in duplicate counting in the measure.
2. Patient stays which lack 90-days of follow-up in administrative claims. Patients who cannot be tracked for 90 days following discharge are excluded. Rationale: There will not be adequate follow-up data to assess complications.
3. Previous ICD placement. Patient stays in which the patient had an ICD implanted prior to the index hospital stay are excluded. Rationale: Ideally, the measure would include patients with a prior ICD, as this is a population known to be at high risk of adverse outcomes. However, for these patients it is difficult to distinguish in the administrative data whether adverse events such as infection were complications of the second ICD placement or were present on admission. The indications for reimplantation include events included in our definition of procedural complications such as device infection, device malfunction, or lead dislodgement. Given current coding practices, we are unable to determine whether a 'complication' code is present on admission or in fact represents a procedural complication. In order to avoid misclassification, we exclude these patients from the measure.

Exclusions Details: See above. We are deriving the corresponding codes based on the data for exclusion.

Risk Adjustment: We developed a risk adjustment model for the measure and calculated hospital 30-day risk-standardized complication rates (RSCRs) using hierarchical regression. Because of the natural clustering of the observations within hospitals, we estimated hierarchical generalized linear models (HGLMs). These models extend generalized linear models (GLMs) to include additional random terms in the linear predictor.

As described in the "Calculation Algorithm," we perform risk adjustment to account for differences in patient severity present before the implantation of the ICD using a hierarchical logistic regression model to calculate RSCRs. The risk adjustment variables are abstracted from the NCDR ICD Registry data.

We used logistic regression with stepwise selection (entry $p<0.15$; retention with $p<0.05$) for variable selection. We also assessed the direction and magnitude of the regression coefficients. This resulted in a final risk-adjusted complications model that included 13 variables. The final risk adjustment variables include:

Demographic

1. Age (10 year increments)
2. Female

Admission

3. Hospital Reason
   Admitted for this procedure
   Hospitalized: Cardiac
   Hospitalized: Non-Cardiac
   History and Risk Factors

694: HOSPITAL RISK-STANDARDIZED COMPLICATION RATE FOLLOWING IMPLANTATION OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR (ICD) *(continued)*

Risk Adjustment: (continued)

4. New York Heart Association (NYHA) Class: Current Status
   NYHA I
   NYHA II
   NYHA III
   NYHA IV
5. Previous Coronary Artery Bypass Graft (CABG)
6. Chronic Lung Disease
7. Hypertension
8. Renal Failure- Dialysis

Diagnostics

9. Atrioventricular Conduction (AVC)
   AVC: Normal
   AVC: Abnormal- First Degree Heart Block Only
   AVC: Abnormal- 2nd/3rd Degree Heart Block
   AVC: Paced (any)
10. BUN >30 mg/dl
11. Sodium
    <135 mg/dl
    135 to 145 mg/dl
    >145 mg/dl
12. Systolic Blood Pressure <100mmHG
13. ICD Type
    Single Chamber
    Dual Chamber
    Biventricular

694: HOSPITAL RISK-STANDARDIZED COMPLICATION RATE FOLLOWING IMPLANTATION OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR (ICD) *(continued)*

Stratification: This measure is not stratified.

Numerator Time Window: 30 or 90 days from ICD implantation, depending on the complication (see numerator details).

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic administrative data/claims

Level: Population: national; Facility/Agency

Setting: Ambulatory Care: Hospital Outpatient; Hospital

695: HOSPITAL 30-DAY RISK-STANDARDIZED READMISSION RATES FOLLOWING PERCUTANEOUS CORONARY INTERVENTION (YNHHSC/CORE)/CMS

Measure Steward: Yale New Haven Health Services Corporation/Center for Outcomes Research and Evaluation/Centers for Medicare and Medicaid Services

Description: This measure estimates hospital risk-standardized 30-day readmission rates following PCI in patients at least 65 years of age. As PCI patients may be readmitted electively for staged revascularization procedures, we will exclude such elective readmissions from the measure. The measure uses clinical data available in the National Cardiovascular Disease Registry (NCDR) CathPCI Registry for risk adjustment that has been linked with the administrative claims data used to identify readmissions.

Numerator: This outcome measure does not have a traditional numerator and denominator like a core process measure (e.g., percentage of adult patients with diabetes aged 18-75 years receiving one or more hemoglobin A1c tests per year); thus, we are using this field to define readmissions.

The outcome for this measure is 30-day all-cause readmission. We define a readmission as a subsequent hospital inpatient admission within 30 days of either the discharge date of an admission with PCI (for admitted patients) or the outpatient PCI claim end date (for patients whose PCI was performed as an outpatient service).

Numerator Details: In the CathPCI Registry, admissions are identified with field 614 (PCI=Yes).

We do not count readmissions associated with a "staged" revascularization procedure. Staged readmissions are not counted in this measure as readmissions (some patients have planned readmissions for revascularization procedures – for example, to perform PCI on a second vessel or a second location in the same vessel, or to perform coronary artery bypass graft (CABG) surgery after AMI and a period of recovery outside the hospital). Because admissions for PCI and CABG may be staged or scheduled readmissions, we do not count as readmissions those admissions after discharge that include PCI or CABG procedures unless the principal discharge diagnosis for the readmission is one of the following diagnoses (which are not consistent with a scheduled readmission): heart failure (HF), acute myocardial infarction (AMI), unstable angina, arrhythmia, and cardiac arrest (i.e., readmissions with these diagnoses and a PCI or CABG procedure are counted as readmissions.

695: HOSPITAL 30-DAY RISK-STANDARDIZED READMISSION RATES FOLLOWING PERCUTANEOUS CORONARY INTERVENTION (YNHHSC/CORE)/CMS *(continued)*

Denominator: The target population for this measure includes inpatient or outpatient PCI procedures for patients at least 65 years of age at the time of the procedure who have matching information in the National Cardiovascular Disease Registry (NCDR) CathPCI Registry.

The patient cohort is defined by International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) procedure codes for both inpatient and outpatient claims and Current Procedural Terminology (CPT) procedure codes for outpatient claims.

Denominator Details: ICD-9 and CPT odes used to define the target population are listed below:

ICD-9 codes
00.66 Percutaneous transluminal coronary angioplasty or coronary atherectomy 36.01 Single vessel PTCA or coronary atherectomy
36.02 Percutaneous transluminal coronary angioplasty or coronary atherectomy with mention of thrombolytic agent
36.05 Multiple vessel PTCA or coronary atherectomy
36.06 Insertion of non-drug-eluting coronary artery stent(s)
36.07 Insertion of drug-eluting coronary artery stent (s)

CPT codes
92973 Percutaneous transluminal coronary thrombectomy
92980 Coronary Stents (single vessel)
92981 Coronary Stents (each additional vessel)
92982 Coronary Balloon Angioplasty (single vessel)
92984 Coronary Balloon Angioplasty (each additional vessel)
92995 Percutaneous Atherectomy
92996 Percutaneous Atherectomy

Exclusions: Note: We are using this field to define exclusions to the patient cohort.

1. Patient stays that are not the first claim in the same claim bundle Rationale: Multiple claims from an individual hospital can be bundled together. In order to ensure that the selected PCI is the index PCI, those PCI procedures that were not the first claim in a specific bundle are excluded.
2. The PCI is not performed within 10 days of admission Rationale: Patients who have a PCI after many days of hospitalization are rare and represent a distinct population that likely has risk factors for readmission related to the hospitalization that are not well quantified in the registry. It seems clinically sensible to exclude these patients.
3. The patient is transferred out Rationale: Patient stays in which the patient received a PCI and was then transferred to another hospital are excluded as the hospital that performed the PCI procedure does not provide discharge care and cannot be fairly held responsible for their outcomes following discharge.
4. The patient dies during hospitalization Rationale: Subsequent admissions (readmissions) are not possible.

695: HOSPITAL 30-DAY RISK-STANDARDIZED READMISSION RATES FOLLOWING PERCUTANEOUS CORONARY INTERVENTION (YNHHSC/CORE)/CMS *(continued)*

Exclusions: (continued)

5. The patient leaves against medical advice (AMA) Rationale: Hospitals and physicians do not have the opportunity to provide highest quality care.
6. The patient lacks a full month of follow-up in administrative claims data Rationale: Patient stays that cannot be tracked for the full 30-day follow-up period do not provide adequate information to determine readmissions.
7. A subsequent admission with PCI within 30-days of an index admission Rationale: A subsequent readmission for PCI within 30 days of the index PCI cannot be considered an index hospital stay; it is a readmission.

Exclusions Details: See above. We are deriving the corresponding codes based on the data for exclusion.

Risk Adjustment: We developed a risk adjustment model for the measure and calculate hospital 30-day risk-standardized readmission rates (RSRRs) using hierarchical logistic regression. Because of the natural clustering of the observations within hospitals, we estimated hierarchical generalized linear models (HGLMs). These models extend generalized linear models (GLMs) to include random effect on the intercept in the models.

As described in the "Calculation Algorithm", we perform risk adjustment to account for differences in patient severity present before the performance of the PCI using a hierarchical logistic regression model to calculate RSRRs. The risk adjustment variables are abstracted from the CathPCI Registry data.

We used logistic regression with stepwise selection (entry $p<0.05$; retention with $p<0.01$) for variable selection. We also assessed the direction and magnitude of the regression coefficients. This resulted in a final risk-adjusted readmission model that included 20 variables. The final risk adjustment variables include:

Demographic

1. Age (10 year increments)
2. Female

History and Risk Factors

3. Body Mass Index
4. Heart failure-previous history
5. Previous valvular surgery
6. Cerebrovascular Disease
7. Peripheral Vascular Disease
8. Chronic Lung Disease
9. Diabetes
   None
   Non-Insulin Diabetes
   Insulin Diabetes

695: HOSPITAL 30-DAY RISK-STANDARDIZED READMISSION RATES FOLLOWING PERCUTANEOUS CORONARY INTERVENTION (YNHHSC/CORE)/CMS *(continued)*

Risk Adjustment: (continued)

10. Glomerular Filtration Rate (GFR)
    - Not Measured
    - GFR<30
    - 30=GFR<60
    - 60=GFR<90
    - GFR=90
11. Renal Failure – dialysis
12. Hypertension
13. History of tobacco use
14. Previous PCI

Cardiac Status

15. Heart failure – current status
16. Symptoms present on admission
    - No MI
    - MI within 24 hours
    - MI after 24 hours

Cath Lab Visit

17. Ejection Fraction (EF) Percentage
    - Not Measured
    - EF<30
    - 30=EF<45
    - EF=45

PCI Procedure

18. PCI status
    - Elective
    - Urgent
    - Emergency
    - Salvage

695: HOSPITAL 30-DAY RISK-STANDARDIZED READMISSION RATES FOLLOWING PERCUTANEOUS CORONARY INTERVENTION (YNHHSC/CORE)/CMS *(continued)*

Risk Adjustment: (continued)

19. Highest Risk Lesion – location
    pRCA/mLAD/pCIRC
    pLAD
    Left main

Other

20. Highest pre-procedure TIMI flow: none

Stratification: This measure is not stratified.

Numerator Time Window: 30 days from discharge or outpatient claim end date.

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic administrative data/claims;

Level: Population: national; Facility/Agency

Setting: Ambulatory Care: Hospital Outpatient; Hospital

729: OPTIMAL DIABETES CARE

Measure Steward: MN Community Measurement

Description: The percentage of adult diabetes patients who have optimally managed modifiable risk factors (A1c, LDL, blood pressure, tobacco non-use, and daily aspirin usage) with the intent of preventing or reducing future complications associated with poorly managed diabetes.

Patients ages 18 - 75 with a diagnosis of diabetes, who meet all the numerator targets of this composite measure: A1c <8.0, LDL <100, Blood Pressure <140/90, Tobacco non-user and for patients with cardiovascular disease daily aspirin use unless contraindicated.

729: OPTIMAL DIABETES CARE *(continued)*

Numerator: Patients ages 18 to 75 with diabetes who meet all of the following targets from the most recent visit during the measurement year:

A1c <8.0, LDL <100, Blood Pressure <140/90, Tobacco non-user and Daily aspirin for patients with cardiovascular disease use unless contraindicated.

Please note: MNCM has changed the definition of the aspirin numerator component of this all or none measure since the original application 9/18/2010 and presentation to NQF on 3/16/2010. The need for change was based on revised guidelines and feedback within our community and from NQF. A technical advisory group was convened 3/25/2010 to revise the aspirin component based on new guidelines for aspirin use from the American Diabetes Association. Previously the aspirin component was applicable to all diabetics age 41+ unless documented contraindication.

ADA guidelines published in January 2010 state:

- Consider aspirin therapy (75–162 mg/day) as a primary prevention strategy in those with type 1 or type 2 diabetes at increased cardiovascular risk (10-year risk >10%). This includes most men >50 years of age or women >60 years of age who have at least one additional major risk factor (family history of CVD, hypertension, smoking, dyslipidemia, or albuminuria).
- There is not sufficient evidence to recommend aspirin for primary prevention in lower risk individuals, such as men <50 years of age or women <60 years of age without other major risk factors. For patients in these age-groups with multiple other risk factors, clinical judgment is required.
- Use aspirin therapy (75–162 mg/day) as a secondary prevention strategy in those with diabetes with a history of CVD.

The group debated the merits and feasibility of identifying patients who were at risk for developing CVD in the next ten years to indicate aspirin use for primary prevention versus patients with known cardiovascular disease (secondary prevention). The group believes it is reasonable to consider aspirin for primary prevention in patients whose patient specific risk for cardiac event is high and their risk on aspirin therapy is low. However, this is a decision that the patient and the provider need to collaboratively make and may not be amenable to accurate measurement. The group decided to change the numerator component for aspirin to be only for patients with known cardiovascular disease. The recommendation was made based on updated guidelines, expert opinion, patient safety and feasibility for measurement. This change was approved by our Measurement and Reporting Committee 4/14/2010. This change will be made going forward for the reporting year of 2011 (dates of service 1/1/2010 to 12/31/2010).

Please Note: On 7/27/2010 the blood pressure component of this measure was changed to <140/90. MNCM's diabetes technical advisory group recommended this change based on ACCORD results, ICSI's most recent guideline changes (July 2010), and the national meaningful use measures for diabetic blood pressure control. A target set at <140/90 allows for individualization of patient goals.

Numerator Details: Please note that all of the denominator criteria apply to the numerator as well, but are not repeated in the numerator codes/descriptions.

HbA1c Date [Date (mm/dd/yyyy)] AND
HbA1c Value [Numeric]
Numerator calculation: numerator compliant is HbA1c during the last 12 months (measurement year) AND HbA1c value is <8.0.
Enter the date of the most recent HbA1c test prior to and including 12/31/YYYY (measurement year). Other considerations:

- If an HbA1c was never performed, leave the date field blank.
- Even if the most recent test is prior to the measurement period, enter this date.
- Do NOT enter any test dates beyond the measurement year; enter measurement year dates or prior dates only.

729: OPTIMAL DIABETES CARE *(continued)*

Numerator Details: (continued)

LDL Date [Date (mm/dd/yyyy)] AND
LDL Value [Numeric]
Numerator calculation: numerator compliant is LDL during the last 12 months (measurement year) AND LDL value is <100.
Enter the date of the most recent LDL test prior to and including 12/31/YYYY (measurement year).
Enter the value of the most recent LDL test prior to and including 12/31/ YYYY (measurement year). Other considerations:

- If an LDL was never performed, leave the date field blank.
- Even if the most recent test is prior to the measurement period, enter this date.
- Do NOT enter any test dates beyond the measurement year; enter date from the measurement year or prior dates only.
- Test from an outside referring provider or specialist is acceptable if they are documented in the primary care clinic's record.
- Elevated Triglyceride: If LDL is "too high to calculate," enter the LDL date field and leave the LDL value field blank.

Blood Pressure Date [Date (mm/dd/yyyy)] AND
BP Systolic [Numeric] AND
BP Diastolic [Numeric]
Numerator calculation: numerator compliant is BP during the measurement year AND Systolic < 140 AND Diastolic < 90.
Enter the date of the most recent Blood Pressure (BP) test prior to and including 12/31/YYYY (measurement year). Other considerations:

- If there are multiple BPs on the same date, you may use the lowest systolic value and lowest diastolic value from any of the readings on that date.
- Even if the most recent BP is prior to the measurement period, enter this date.
- Do NOT enter any dates of service beyond the measurement year. BP date; enter date from the measurement year or dates prior to the measurement year only.
- BP from an outside referring provider or specialist is acceptable if they are documented in the primary clinic's record; you may choose to use this reading only if it is more recent than your clinic's reading.
- Do not enter a BP that is associated with a surgical procedure, inpatient or ER visit, diagnostic testing or a diagnosis that is associated with acute pain.
- Do not enter a home monitored BP.

Enter the "systolic" value according to the rules above for selecting the correct BP date. The systolic BP is the upper number. In the example of a BP 124/72, the systolic value is "124."
Enter the "diastolic" value according to the rules above for selecting the correct BP date. The diastolic BP is the lower number. In the example of a BP 124/72, the diastolic value is "72."

729: OPTIMAL DIABETES CARE *(continued)*

Numerator Details: (continued)

Tobacco Status Documentation Date [Date (mm/dd/yyyy)] AND
Tobacco Status [Numeric]
1 = Tobacco Free (patient does not use tobacco) 2 = No Documentation 3 = Current Tobacco User
Numerator calculation: Numerator compliant is Value 1 = Tobacco Free AND valid date
Enter the most recent date (prior to and including 12/31/YYYY (measurement year) that the patient's tobacco status was documented. Other considerations:

- If a patient's status is "never used" or "quit," any date (measurement year date or a date prior to the measurement year) is counted positively in the optimal care score.
- The expectation is that current tobacco users are asked about tobacco use and counseled at least annually.
- If the patient was not asked or there is no associated date with the patient's tobacco status, leave the tobacco date field blank and enter "2=No Documentation" for the Tobacco Status.
- Do NOT enter any dates of service beyond the measurement year. Enter date from the measurement year or dates prior to the measurement year only.

Enter the tobacco status. Tobacco includes any amount of cigarettes, cigars, pipes, or "chew."

Aspirin Use or Documented Contraindication for the use of aspirin for patients with cardiovascular disease, patients without cardiovascular disease are automatically numerator compliant for this component.
Aspirin (ASA) Date [Date (mm/dd/yyyy)]
For patients with known cardiovascular disease; Ischemic Vascular Disease = Yes
As indicated by ischemic vascular disease ICD-9 codes of:
410 – 410.92 Acute Myocardial Infarction (AMI)
411 – 411.89 Post Myocardial Infarction Syndrome
412 Old AMI
413 – 413.9 Angina Pectoris
414.0 – 414.07 Coronary Arthrosclerosis
414.2 Chronic Total Occlusion of Coronary Artery
414.8 Other Chronic Ischemic Heart Disease (IHD)
414.3 Atherosclerosis due to lipid rich plaque
414.9 Chronic IHD
429.2 Cardiovascular (CV) disease, unspecified
433 – 433.91 Occlusion and stenosis of pre-cerebral arteries
434 – 434.91 Occlusion of cerebral arteries
440.1 Atherosclerosis of renal artery
440.2 – 440.29 Atherosclerosis of native arteries of the extremities, unspecified

729: OPTIMAL DIABETES CARE *(continued)*

Numerator Details: (continued)

440.4 Chronic Total Occlusion of Artery of the Extremities
444 – 444.9 Arterial embolism and thrombosis
445 - 445.8 Atheroembolism

Enter the most recent date of documented ASA or anti-platelet prior to and including 12/31/YYYY (measurement year).
FYI: any documented date in the measurement year of ASA or an anti-platelet is acceptable; the date does not need to be the most recent.
The following are accepted ASA or anti-platelet medications

- Aspirin (ASA)
- Plavix (clopidogrel)
- Ticlid (ticlopidine)
- Pravigard (aspirin/pravastatin)
- Aggrenox (aspirin/dypyridamole)
- Low dose enteric-coated 81 mg ASA (Ecotrin or Bayer)

Other considerations:

- If there is no documentation of daily ASA or anti-platelet, leave this date field blank.
- Even if the most recent date is prior to the measurement period, you can enter this date.
- Do NOT enter any dates of service beyond the measurement year. Enter date from the measurement year or dates prior to the measurement year only.
- If the patient has a contraindication to ASA, leave this date field blank.
- Do NOT enter any date of a documented ASA/narcotic combo medication that is used temporarily for pain.

Aspirin (ASA) Contraindication Date [Date (mm/dd/yyyy)]
If patient has a documented contraindication to ASA, enter the date of the contraindication. Any valid contraindication date will count positively for the measure.
Accepted contraindications:

- Anticoagulant use, Lovenox (Enoxaparin) or Coumadin (Warfarin)
- Any history of gastrointestinal (GI)* or intracranial bleed (ICB)
- Allergy to ASA

*Gastroesophogeal reflux disease (GERD) is not automatically considered a contraindication but may be included if specifically documented as a contraindication by the physician.

729: OPTIMAL DIABETES CARE *(continued)*

Numerator Details: *(continued)*

The following may be exclusions if specifically documented by the physician:

- Use of non-steroidal anti-inflammatory agents
- Documented risk for drug interaction
- Uncontrolled hypertension defined as >180 systolic, >110 diastolic
- Other provider documented reason for not being on ASA therapy

Other considerations:

- If ASA Date field is completed (patient is taking ASA), leave the ASA Contraindication Date field blank (this field is only needed for patients not taking daily ASA with a documented contraindication to ASA). For patients taking Coumadin or Lovenox AND ASA, enter the aspirin use date and NOT the contraindication date.
- Date does not need to be in the measurement period. If only the month and year is known like "GI Bleed- June 2007," enter a valid date to indicate the time, like 6/01/2007. Look back at least 3 years (dates of service in measurement year or two years prior) for contraindication date; you can also choose to look back further in the patient's record.
- If the patient is on an anticoagulant, enter the most recent date.
- If the ASA has been discontinued prior to a surgical procedure, do not count this as a contraindication; rather document this patient as taking ASA during the measurement period. However, do not assume that a pre-op standing order like, "Do not take ASA seven days prior to the procedure," means that a patient is taking ASA every day; there must be other documentation in the record that the patient is taking daily ASA.
- If there is no documentation of taking ASA, anti-platelets or a contraindication then both date fields should be blank.

Numerator calculation: numerator compliant for patients with known cardiovascular disease is valid dates in either the Aspirin Date (needs to be in the measurement year) or the Aspirin Contraindication Date (any valid date). Patients without cardiovascular disease are automatically numerator compliant.

Denominator: Patients ages 18 to 75 with diabetes who have at least two visits for this condition over the last two years (established patient) with at least one visit in the last 12 months.

Denominator Details: Birth date [Date (mm/dd/yyyy)

250.00 DMII WO CMP NT ST UNCNTR
250.01 DMI WO CMP NT ST UNCNTRL
250.02 DMII WO CMP UNCNTRLD
250.03 DMI WO CMP UNCNTRLD
250.10 DMII KETO NT ST UNCNTRLD
250.11 DMI KETO NT ST UNCNTRLD
250.12 DMII KETOACD UNCONTROLD
250.13 DMI KETOACD UNCONTROLD

729: OPTIMAL DIABETES CARE *(continued)*

Denominator Details: *(continued)*

250.20 DMII HPRSM NT ST UNCNTRL
250.21 DMI HPRSM NT ST UNCNTRLD
250.22 DMII HPROSMLR UNCONTROLD
250.23 DMI HPROSMLR UNCONTROLD
250.30 DMII O CM NT ST UNCNTRLD
250.31 DMI O CM NT ST UNCNTRLD
250.32 DMII OTH COMA UNCONTROLD
250.33 DMI OTH COMA UNCONTROLD
250.40 DMII RENL NT ST UNCNTRLD
250.41 DMI RENL NT ST UNCNTRLD
250.42 DMII RENAL UNCNTRLD
250.43 DMI RENAL UNCNTRLD
250.50 DMII OPHTH NT ST UNCNTRL
250.51 DMI OPHTH NT ST UNCNTRLD
250.52 DMII OPHTH UNCNTRLD
250.53 DMI OPHTH UNCNTRLD
250.60 DMII NEURO NT ST UNCNTRL
250.61 DMI NEURO NT ST UNCNTRLD
250.62 DMII NEURO UNCNTRLD
250.63 DMI NEURO UNCNTRLD
250.70 DMII CIRC NT ST UNCNTRLD
250.71 DMI CIRC NT ST UNCNTRLD
250.72 DMII CIRC UNCNTRLD
250.73 DMI CIRC UNCNTRLD
250.80 DMII OTH NT ST UNCNTRLD
250.81 DMI OTH NT ST UNCNTRLD
250.82 DMII OTH UNCNTRLD
250.83 DMI OTH UNCNTRLD
250.90 DMII UNSPF NT ST UNCNTRL
250.91 DMI UNSPF NT ST UNCNTRLD

729: OPTIMAL DIABETES CARE *(continued)*

Denominator Details: *(continued)*

250.92 DMII UNSPF UNCNTRLD
250.93 DMI UNSPF UNCNTRLD

Exclusions: Valid exclusions include patients who only had one visit to the clinic with diabetes codes during the last two years, patients who were pregnant, died or were in hospice or a permanent resident of a nursing home during the measurement year.

Exclusions Details:

- Patient was a permanent nursing home resident during the measurement period
- Patient was in hospice at any time during the measurement period
- Patient died prior to the end of the measurement period
- Patient was pregnant during measurement period (Diabetes mellitus complicating pregnancy, ICD-9 codes: 648.0-648.04)
- Documentation that diagnosis was coded in error

Risk Adjustment: Case-mix adjustment.

Risk adjustment for this measure is based on case mix (health plan product). Health plan product was selected because it can serve as a proxy for socioeconomic status, if more specific variables are not available. Socioeconomic status can be a variable in a patient's ability to comply with a treatment plan for achieving the intermediate outcomes that can postpone or prevent the long term complications of diabetes or cardiovascular disease.

The overall average state-wide distribution of patients across three major insurance types (Commercial, Medicare and MN Healthcare Programs plus Self-pay/Uninsured) is calculated and then each reporting site's patient distribution is adjusted to match the average mix. Rates are re-weighted based on the new distribution of patients and then rates are re-calculated.

Background and Evolution of Risk Adjustment:

- MN Community Measurement has been publicly reporting unadjusted ambulatory outcome rates at the clinic site level for several years dating back to 2004. Currently, the lowest level of reporting is at the clinic site and we do not publicly report any practitioner level information. As our state begins moving towards utilizing cost and quality measures to demonstrate value and utilizing these measures for incentive based payment and tiering by health plans, we began to explore risk adjustment of measures used for these purposes.
- Our subcommittee of the Board of Directors, the Measurement and Reporting Committee (MARC) has reviewed several methods for risk adjusting these measures. Part of their discussion included the use of the risk adjusted measures overall, especially for public reporting for consumers on our MN HealthScores website. The group agreed that risk adjustment would be more beneficial for tiering and incentive based programs and that there was value in the unadjusted clinic site level rate for consumers for the following reasons: rates reflect actual performance, confusion for consumers in terms of explaining risk adjustment or displaying two rates (adjusted and unadjusted), or creating a mindset that it is acceptable for patients in public programs to have different treatment standards than those with commercial insurance.
- There are no current plans to provide risk adjusted data on our consumer facing website; however we will provide both adjusted and unadjusted clinic site level rates on our corporate website (pdf format).

729: OPTIMAL DIABETES CARE *(continued)*

Stratification: The diabetes population is not currently stratified when publicly reported on our consumer website, MN HealthScores. The data is, however, stratified by public (MN Health Care Programs- Prepaid Medical Assistance including dual eligibles, MinnesotaCare, and General Assistance Medical Care) and private purchasers for our 2009 Health Care Disparities Report, a hard copy report available on our corporate website at **www.mncm.org/site/?page=our_work&view=2**. Please refer to Appendix 1, page 85 for methodology. Results for Optimal Diabetes Care are also stratified by race within this report (page 67). The race categories are American Indian/Alaskan Native, Asian/Pacific Islander/Native Hawaiian, Black or African American, White or Unknown. More detail about race/ ethnicity data collection can be found in the Handbook on the Collection of Race/Ethnicity/Language Data in Medical Groups on our corporate website at **www.mncm.org/site/?page=resources**.

Numerator Time Window: Values are collected as the most recent during the measurement year (calendar year January 1st through December 31st).

Type: Composite

Type Score: Weighted score/composite/scale

Data Source: Paper medical record/flow-sheet, Electronic Health/Medical Record, Registry data

Level: Clinicians: Other, Clinicians: Group Clinic Site Location

Setting: Ambulatory Care: Clinic, Ambulatory Care: Office

730: ACUTE MYOCARDIAL INFARCTION (AMI) MORTALITY RATE

Measure Steward: Agency for Healthcare Research and Quality

Description: Number of deaths per 100 discharges with a principal diagnosis code of acute myocardial infarction.

Numerator: Number of inpatient deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

Numerator Details: See above

Denominator: All discharges, age 18 years and older, with a principal diagnosis code of acute myocardial infarction.

Denominator Details: ICD-9-CM Acute Myocardial Infarction (AMI) diagnosis code in the principal diagnosis code position:
41001 AMI of anterolateral wall, initial episode of care
41011 AMI of other anterior wall, initial episode of care
41021 AMI of inferolateral wall, initial episode of care
41031 AMI of inferoposterior wall, initial episode of care
41041 AMI of other inferior wall, initial episode of care

730: ACUTE MYOCARDIAL INFARCTION (AMI) MORTALITY RATE *(continued)*

Denominator Details: *(continued)*
41051 AMI of other lateral wall, initial episode of care
41061 AMI, true posterior wall infarction, initial episode of care
41071 AMI, subendocardial infarction, initial episode of care
41081 AMI of other specified sites, initial episode of care
41091 AMI, unspecified site, initial episode of care

Exclusions: Exclude cases:
- Missing discharge disposition (DISP=missing)
- Transferring to another short-term hospital (DISP=2)

Exclusions Details: See above

Risk Adjustment: Case-mix adjustment. The risk adjustment model includes age, APR-DRG risk of mortality subclass, MDC and transfer in status.

Specific follow:

Parameter Label
Age Under 40
Age 40 to 44
Age 45 to 49
Age 50 to 54
Age 55 to 59
Age 65 to 79
Age 80 to 84
Age 85+
APR-DRG '1611' to'1612'
APR-DRG '1613' to'1614'
APR-DRG '1621' to'1622'
APR-DRG '1623'
APR-DRG '1624'
APR-DRG '1651' to'1652'
APR-DRG '1653'
APR-DRG '1654'

730: ACUTE MYOCARDIAL INFARCTION (AMI) MORTALITY RATE *(continued)*

Risk Adjustment: *(continued)*

APR-DRG '1731' to'1734'
APR-DRG '1742'
APR-DRG '1743'
APR-DRG '1744'
APR-DRG '1901'
APR-DRG '1902'
APR-DRG '1903'
APR-DRG '1904'
MDC 5
Transfer-in TRNSFER

Stratification: N/A

Numerator Time Window: During admission

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic administrative data/claims

Level: Facility/Agency

Setting: Hospital

696: THE STS CABG COMPOSITE SCORE

Measure Steward: The Society of Thoracic Surgeons

Description: This multidimensional performance measure is comprised of four domains consisting of 11 individual NQF-endorsed cardiac surgery metrics: (1) Operative Care—use of the internal mammary artery; (2) Perioperative Medical Care (use of preoperative beta blockade; discharge beta blockade, antiplatelet agents, and lipid-lowering agents—an "all-or-none" measure); (3) Risk-adjusted Operative Mortality; and (4) Risk-Adjusted Postoperative Morbidity (occurrence of postoperative stroke, renal failure, prolonged ventilation, re-exploration, or deep sternal wound infection—an "any-or-none" measure).

696: THE STS CABG COMPOSITE SCORE *(continued)*

Description: (continued)

All measures are based on audited clinical data collected in a prospective registry and are risk-adjusted (with the exception of internal mammary artery use and the four perioperative medications). Based on their percentage scores, a 1 (below average), 2 (average), or 3 (above average) star rating is provided for each STS database participant for each performance domain and overall.

Furthermore, the composite score is also deconstructed into its components to facilitate performance improvement activities by providers. This scoring methodology has now been implemented for over two years and has become for many stakeholders the preferred method of evaluating cardiac surgery performance. STS plans to make this report publicly available in the near future. (Additional materials are available upon request)

Numerator: Due to the complex methodology used to construct the composite measure, its is impractical to separately discuss the numerator and denominator. The following discussion describes how each domain score is calculated and how these are combined into an overall composite score. Additional documentation is available in the attached article published as a supplement of The Annals of Thoracic Surgery.

Numerator Details: Technical Details: The unit of measurement for the STS Composite Score can be either a participant (most often a cardiac surgical practice but occasionally an individual surgeon) or a hospital. The STS composite score is an aggregate of 4 scores corresponding to 4 domains of CABG quality (mortality, morbidity, operative care, perioperative medical care). Each domain score has a theoretical range of 0 to 1 and is interpreted as a probability. A description of these probabilities is presented in Table 1 below. Larger values imply better performance. Although the theoretical range of each score (probability) is 0 to 1, the actual scores tend to be clustered in the upper end of the 0-1 interval. For reporting purposes, the probabilities are expressed as percentages ranging from 0% to 100%.

Denominator: Please see response in numerator statement above

Denominator Details: Please see response in numerator statement above

Exclusions: Please see response in numerator statement above

Exclusions Details: Please see response in numerator statement above

Risk Adjustment: None Listed

Stratification: Not stratified

Numerator Time Window: The STS composite score currently is based on one year of data. However, we would request that NQF endorsement not be limited to this time window as alternative sampling periods may be employed in the future.

Type: Composite

696: THE STS CABG COMPOSITE SCORE *(continued)*

Type Score: Non-weighted score/composite/scale

Data Source: Paper medical record/flow-sheet; Electronic Health/Medical Record; Registry data; Electronic clinical data; lab data; pharmacy data

Level: Clinician: Group; Facility/agency; Program: Other; Population: All levels

Setting: Hospital

697: RISK ADJUSTED CASE MIX ADJUSTED ELDERLY SURGERY OUTCOMES MEASURE

Measure Steward: American College of Surgeons

Description: This is a hospital- based, risk- adjusted, case mix-adjusted, elderly surgery, aggregate, clinical outcomes measure of adults 65 years of age and older.

Numerator: The outcome of interest is hospital-specific risk-adjusted mortality, a return to the operating room, or any of the following morbidities as defined by American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP): Cardiac arrest requiring CPR, myocardial infarction, DVT requiring therapy, sepsis, septic shock, deep incisional SSI, organsSpace SSI, wound disruption, unplanned reintubation without prior ventilator dependence, pneumonia without pre-operative pneumonia, pulmonary embolism, progressive renal insufficiency or acute renal failure without pre-operative renal failure or dialysis, or UTI within 30 days of any ACS NSQIP listed (CPT) surgical procedure.

Numerator Details: Mortality-Death within 30 day follow-up period: Any death occurring through midnight on the 30th dayafter the date of the procedure, regardless of cause, in or out of the hospital. Additional operations within 30 days of the index operation are considered an outcome (return to OR) andare not eligible to become new index cases. Return to the Operating Room within Thirty Days after the Assessed Procedure: Return to the operating room includes all major surgical procedures that required the patient to be taken to the surgical operating room for intervention of any kind. "Major surgical procedures" are defined as those cases in any and all surgical subspecialties that meet Program criteria for inclusion. Cardiac Arrest Requiring CPR: The absence of cardiac rhythm or presence of chaotic cardiac rhythm that results in loss of consciousness requiring the initiation of any component of basic and/or advanced cardiac life support. Patients with automatic implantable cardioverter defibrillator (AICD) that fire but the patient has no loss of consciousness should be excluded. Myocardial Infarction: An acute myocardial infarction occurring within 30 days following surgery as manifested by one of the following three criteria: a. Documentation of ECG changes indicative of acute MI (one or more of the following):

- ST elevation > 1 mm in two or more contiguous leads
- New left bundle branch
- New q-wave in two of more contiguous leads

b. New elevation in troponin greater than 3 times upper level of the reference range in the setting of suspected myocardial ischemia

c. Physician diagnosis of myocardial infarction

697: RISK ADJUSTED CASE MIX ADJUSTED ELDERLY SURGERY OUTCOMES MEASURE *(continued)*

Numerator Details: (continued)

Deep Vein Thrombosis (DVT)/Requiring Therapy: The identification of a new blood clot or thrombus within the venous system, which may be coupled with inflammation. This diagnosis is confirmed by a duplex, venogram or CT scan. The patient must be treated with anticoagulation therapy and/or placement of a vena cava filter or clipping of the vena cava. Sepsis: Sepsis is the systemic response to infection. Report this variable if the patient has TWO OR MORE of the following five clinical signs and symptoms of Systemic Inflammatory Response Syndrome (SIRS):

a. Temp >38 degrees C (100.4 degrees F) or < 36 degrees C (96.8 degrees F)

b. HR >90 bpm

c. RR >20 breaths/min or PaCO2 <32 mmHg(<4.3 kPa)

d. WBC >12,000 cell/mm3, <4000 cells/mm3, or >10% immature (band) forms

e. Anion gap acidosis: this is defined by either: • [Na + K] – [Cl + HCO3 (or serum CO2)]. If this number is greater than 16, then an anion gap acidosis is present.

• Na – [Cl + HCO3 (or serum CO2)]. If this number is greater than 12, then an anion gap acidosis is present.

AND one of the following TWO:

a. positive blood culture

b. clinical documentation of purulence or positive culture from any site thought to be causative

Severe Sepsis/Septic Shock: Sepsis is considered severe when it is associated with organ and/or circulatory dysfunction. Report this variable if the patient has sepsis AND documented organ and/or circulatory dysfunction. Examples of organ dysfunction include: oliguria, acute alteration in mental status, acute respiratory distress. Examples of circulatory dysfunction include: hypotension, requirement of inotropic or vasopressor agents. Severe Sepsis/Septic Shock is assigned when it appears to be related to Sepsis and not a Cardiogenic or Hypovolemic etiology. Deep Incisional SSI: Deep Incision SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and infection involved deep soft tissues (for example, fascial and muscle layers) of the incision and at least one of the following: Purulent drainage from the deep incision but not from the organ/space component of the surgical site; A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (>38 C), localized pain, or tenderness, unless site is culture-negative; An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination; Diagnosis of a deep incision SSI by a surgeon or attending physician. Organ/Space SSI: Organ/Space SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and the infection involves any part of the anatomy (for example, organs or spaces), other than the incision, which was opened or manipulated during an operation and at least one of the following: Purulent drainage from a drain that is placed through a stab wound into the organ/space; Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space; 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; Diagnosis of an organ/space SSI by a surgeon or attending physician. Wound Disruption: Separation of the layers of a surgical wound, which may be partial or complete, with disruption of the fascia. Unplanned Intubation for Respiratory/Cardiac Failure (without preoperative ventilator dependent): Patient required placement of an endotracheal tube and mechanical or assisted ventilation because of the onset of respiratory or cardiac failure manifested by severe respiratory distress, hypoxia, hypercarbia, or respiratory acidosis. In patients who were intubated for their surgery, unplanned intubation occurs after they have been extubated after surgery. In patients who were not intubated during surgery, intubation at any time after their surgery is considered unplanned. Pneumonia (without preoperative pneumonia): if the patient has pneumonia meeting the definition below

697: RISK ADJUSTED CASE MIX ADJUSTED ELDERLY SURGERY OUTCOMES MEASURE *(continued)*

Numerator Details: (continued)

AND pneumonia was not present preoperatively. Patients with pneumonia must meet criteria from bothRadiology and Signs/Symptoms/Laboratory sections listed as follows:

Radiology: One definitive chest radiological exam (x-ray or CT) with at least one of the following: New or progressive and persistent infiltrate, Consolidation or opacity, Cavitation. In patients with underlying pulmonary or cardiac disease (e.g., respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), two or more serial chest radiological exams (x-ray or CT) are required. Signs/Symptoms/Laboratory FOR ANY PATIENT, at least one of the following three:

a. Fever (>38 degrees C or >100.4 degrees F) with no other recognized cause

b. Leukopenia (<4000 WBC/mm3) or leukocytosis(=12,000 WBC/mm3)

c. For adults = 70 years old, altered mental status with no other recognized cause

AND

At least one of the following four:

a. 5% Bronchoalveolar lavage (BAL) -obtained cells contain intracellular bacteria on direct microscopic exam (e.g., Gram stain)

b. Positive growth in blood culture not related to another source of infection

c. Positive growth in culture of pleural fluid

d. Positive quantitative culture from minimally contaminated lower respiratory tract (LRT) specimen (e.g., BAL or protected specimen brushing)

OR

At least two of the following four:

a. New onset of purulent sputum, or change in character of sputum, or increased respiratory secretions, or increased suctioning requirements

b. New onset or worsening cough, or dyspnea, or tachypnea

c. Rales or bronchial breath sounds

d. Worsening gas exchange (e.g., O2 desaturations (e.g., PaO2/FiO2 = 240), increased oxygen requirements, or increased ventilator demand)

Pulmonary Embolism: Lodging of a blood clot in a pulmonary artery with subsequent obstruction of blood supply to the lung parenchyma. The blood clots usually originate from the deep leg veins or the pelvic venous system. Pulmonary embolism is recorded if the patient has a V-Q scan interpreted as high probability of pulmonary embolism or a positive CT spiral exam, pulmonary arteriogram or CT angiogram. Treatment usually consists of:

Initiation of anticoagulation therapy, Placement of mechanical interruption (for example Greenfield Filter), for patients in whom anticoagulation is contraindicated or already instituted. Progressive Renal Insufficiency (without preoperative renal failure or dialysis): The reduced capacity of the kidney to perform its function as evidenced by a rise in creatinine of >2 mg/dl from preoperative value, but with no requirement for dialysis. Acute Renal Failure Requiring Dialysis (without preoperative renal failure or dialysis): In a patient who did not require dialysis preoperatively, worsening of renal dysfunction postoperatively requiring hemodialysis, peritoneal dialysis, hemofiltration, hemodiafiltration, or ultrafiltration. Urinary Tract Infection: Postoperative symptomatic urinary tract infection must meet ONE of the following TWO criteria:

697: RISK ADJUSTED CASE MIX ADJUSTED ELDERLY SURGERY OUTCOMES MEASURE *(continued)*

Numerator Details: (continued)

Criterion One:

One of the following five:

a. fever (>38 degrees C),

b. urgency,

c. frequency,

d. dysuria,

e. suprapubic tenderness

AND a urine culture of >100,000 colonies/ml urine with no more than two species of organisms.

OR

Criterion Two:

Two of the following five:

a. fever (>38 degrees C),

b. urgency,

c. frequency,

d. dysuria,

e. suprapubic tenderness

AND ANY ONE or MORE of the following seven:

f. Dipstick test positive for leukocyte esterase and/or nitrate,

g. Pyuria (>10 WBCs/mm3 or >3 WBC/hpf of unspun urine),

h. Organisms seen on Gram stain of unspun urine,

i. Two urine cultures with repeated isolation of the same uropathogen with >100 colonies/ml urine in non-voided specimen,

j. Urine culture with <100,000 colonies/ml urine of single uropathogen in patient being treated with appropriate antimicrobial therapy,

k. Physician's diagnosis,

l. Physician institutes appropriate antimicrobial therapy.

697: RISK ADJUSTED CASE MIX ADJUSTED ELDERLY SURGERY OUTCOMES MEASURE *(continued)*

Denominator: Patients undergoing any ACS NSQIP listed (CPT) surgical procedure who are 65 years of age or older (see separate list of ACS NSQIP CPT codes).

Denominator Details: Cases are collected so as to match ACS NSQIP inclusion and exclusion criteria, thereby permitting valid application of ACS NSQIP model-based risk adjustment.

Exclusions: Major multisystem trauma and transplant surgeries are excluded as are surgeries not on the ACS NSQIP CPT list as eligible for selection. Patients who are ASA 6 (brain-death organ donor) are not eligible surgical cases. Surgeries following within 30 d of an index procedure are an outcome (return to OR) and are not eligible to be new index cases. Thus, a patient known to have had a prior surgical operation within 30 days is excluded from having the subsequent surgery considered an index case.

Exclusions Details: NOT ON ELIGIBLE CPT LIST: Approximately 2900 codes are eligible list.

MAJOR TRAUMA: A patient who is admitted to the hospital with acute major or multisystem trauma and has surgery for that trauma is excluded, though any operation performed after the patient has been discharged from that trauma admission can be included. Exclusion of trauma cases does consider magnitude of injuries. If the patient has minor injuries, they are not excluded. If there are multiple severe injuries and the situation is emergent, the case would be excluded. For instance, ground level falls are included as they are not considered multisystem trauma, but a fall from a ladder or a fall from height would be excluded. Any emergent, major or multisystem trauma case is excluded. These algorithms are communicated to the data collectors via educational tools.

TRANSPLANT: A patient who is admitted to the hospital for a transplant and has a transplant procedure and any additional surgical procedures during the transplant hospitalization will be excluded, tough any operation performed after the patient has been discharged from the transplant stay is eligible for selection.

ASA 6: A patient classified as ASA Class 6 is not eligible for inclusion.

Risk Adjustment: From 271,368 patient records in the 2008 ACS NSQIP Data file ; 83,832 acceptable records from 211 hospitals (mean/hospital=397) were analyzed. Records were included if patients were >= 65 years of age and excluded either because of missing values for critical variables or because the primary CPT code was not a member of the CPT eligibility list. This CPT eligibility list includes CPT codes from 136 pre-established CPT "Groups". These categorizations have been defined and implemented for risk adjustment in previously published research.*

An outcome was defined as 30-day mortality or any serious morbidity including: cardiac arrest requiring CPR, myocardial infarction, DVT requiring therapy, sepsis, septic shock, organ space SSI, deep incisional SSI, wound disruption, unplanned reintubation without prior ventilator dependence, pneumonia without pre-operative pneumonia, pulmonary embolism, progressive renal insufficiency or acute renal failure without pre-operative renal failure or dialysis, urinary tract infection, or return to the operating room, according to ACS NSQIP definitions. Of the 83,832 patients, 13,960 (16.7%) experienced death or a serious morbidity event. CPT Group was originally considered a categorical variable but, because of frequent empty cells, which precluded logistic model convergence (quasi-complete separation), CPT Group was converted to continuous risk variable referred to as "CPT Risk". This was accomplished by making the categorical CPT Group variable a single predictor for mortality/morbidity and invoking the Firth penalized likelihood method in the logistic modeling software (SAS PROC LOGISTIC). For one CPT Group, composed of only two subjects, both of whom experience an event, the estimated log odds was unacceptably large and was replaced by the next largest value. The patient-based predicted log odds from this model was then used as a continuous predictor in subsequent logistic models which also included the standard predictors. This approach to generation and inclusion in regression modeling of a procedure-specific scalar risk score provides powerful standardization of the risk adjustment across different procedures, such that institutions are not advantaged nor disadvantaged by the types and mix of procedures they perform.

697: RISK ADJUSTED CASE MIX ADJUSTED ELDERLY SURGERY OUTCOMES MEASURE *(continued)*

Risk Adjustment: (continued)

Step-wise logistic regression (P<0.05 for inclusion), which selected from a total of 26 NSQIP predictors, identified 21 predictors for inclusion in the model. In order of inclusion these variables were: CPT Risk, pre-operative Functional Status, ASA Class, Emergent, history of COPD, Wound Class, Ventilator Dependent, Weight Loss, Dyspnea, Steroid Use, Disseminated Cancer, Age Group, Ascites, Smoking, Bleeding Disorder, Radio Therapy, BMI Class, Previous Vascular Event/Disease, Alcohol Use, Previous Neurological Event/Disease, and Diabetes. The c-statistic was 0.774 and the Hosmer-Lemeshow was 0.002. Because of the very large sample sizes studied here, a statistically significant Hosmer-Lemeshow statistic is not considered informative with respect to calibration.

Using only the first three selected variables (CPT Risk, Functional Status, and ASA Class), the c-statistic was 0.764 and the Hosmer-Lemeshow was 0.002. The use of these three predictors for modeling was further evaluated. Using a 95% confidence interval for the ratio of observed to expected events (O/E), this three variable logistic model identified 30 statistical outliers (16 low outliers and 14 high outliers). When the same three-variables were used in a random intercept, fixed slope, hierarchical model (SAS PROC GLIMMIX) using only the fixed portion of the prediction equation (NOBLUP option), 28 outliers were detected (14 low outliers and 14 high outliers). Thus, using a 95% confidence interval, logistic and hierarchical models identified 7% of hospitals as high outliers. When the logistic model parameters were applied to an independent validation data set (the 2007 Data file composed of 65,056 patients) after coding CPT Groups with log odds derived from the original 1-variable model on 2008 data, the c-statistic was essentially unchanged (c-statistic=0.762).

A GEE (generalized estimating equations) approach (SAS PROC GENMOD) with compound symmetry (which factors in multilevel, or hierarchical, data clustering) was used to estimate the intraclass correlation (ICC) which is reported in GENMOD as the exchangeable working correlation. The ICC was 0.00377. The relationship between sample size, the ICC, and reliability is defined as:

$N=R / [ICC(1 - R)] - R / (1 - R)$,

where N is the required number patients per hospital and R is reliability. Based on the estimated ICC, patients per hospital to achieve reliability levels of 0.3, 0.4, 0.5, 0.6, and 0.7 are 114, 177, 265, 397, and 617, respectively. Thus, for moderate reliability (>0.4) a minimum sample size of ≥180 cases is estimated.

For the table detailing risk factors, odds ratios, and parameters for the logistic model, please see attachment (Parsimonious Model for Elderly.doc)

For initial year(s) of measure use, ACS NSQIP data-derived model parameters will be used to construct risk-adjusted O/E ratios for participating hospitals. Once data from measure-participating hospitals is substantial, models will derived from that data.

*References utilizing CPT groups

1. Hall BL, Hamilton BH, Richards K, et al. Does Surgical Quality Improve in the American College of Surgeons National Surgical Quality Improvement Program: An Evaluation of All Participating Hospitals. Ann Surg, in press.
2. Hall BL, Hsiao EY, Majercik S, et al. The impact of surgeon specialization on patient mortality: examination of a continuous Herfindahl-Hirschman index. Ann Surg 2009; 249(5):708-16.
3. Cohen ME, Bilimoria KY, Ko CY, Hall BL. Development of an American College of Surgeons National Surgery Quality Improvement Program: morbidity and mortality risk calculator for colorectal surgery. J Am Coll Surg 2009; 208(6):1009-16.
4. Schilling PL, Dimick JB, Birkmeyer JD. Prioritizing quality improvement in general surgery. J Am Coll Surg 2008; 207(5):698-704.

697: RISK ADJUSTED CASE MIX ADJUSTED ELDERLY SURGERY OUTCOMES MEASURE *(continued)*

Stratification: The measure is risk adjusted and case mix adjusted. There is no risk adjustment of race or ethnicity, however race and ethnicity variables will be collected and secondary stratification by race/ethnicity to investigate disparities can be performed.

Numerator Time Window: Targeted events within 30 days of the operation are included.

Type: Outcome

Type Score: Ratio

Data Source: Documentation of original self-assessment, electronic clinical data, paper medical record/flowsheet, registry data, management data, pharmacy data

Level: Facility/Agency

Setting: Hospital; Ambulatory care: Hospital outpatient

698: 30-DAY POST-HOSPITAL AMI DISCHARGE CARE TRANSITION COMPOSITE MEASURE

Measure Steward: Brandeis University/CMS

Description: This measure scores a hospital on the incidence among its patients during the month following discharge from an inpatient stay having a primary diagnosis of heart failure for three types of events: readmissions, ED visits and evaluation and management (E&M) services.

These events are relatively common, measurable using readily available administrative data, and associated with effective coordination of care after discharge. The input for this score is the result of measures for each of these three events that are being submitted concurrently under the Patient Outcomes Measures Phase I project's call for measures (ED and E&M) or is already approved by NQF (readmissions). Each of these individual measures is a risk-adjusted, standardized rate together with a percentile ranking. This composite measure is a weighted average of the deviations of the three risk-adjusted, standardized rates from the population mean for the measure across all patients in all hospitals. Again, the composite measure is accompanied by a percentile ranking to help with its interpretation.

Numerator: The numerator is the weighted sum of the three deviations from their expected values for the individual measures comprising the component measure. The question of appropriate weights on the deviations is difficult and would probably lead to a wide variation in opinion. The weights of -4, -2, and 1 are selected to represent order of magnitude differences in seriousness of the three outcomes, which most would agree to (that is to say: readmission is more important than ED which is more important in a negative way than E & M service is in a positive way). The idea of not using weights was also considered, but this was noted to be itself a de facto weight scheme (with all weights the same), and as such, a weight scheme that was less appropriate than the one chosen.

Numerator Details: The details on each individual measure comprising the component measure are provided in their submission for NQF approval.

Denominator: The composite measure is the weighted sum of three individual measures. Thus, the denominator is one.

698: 30-DAY POST-HOSPITAL AMI DISCHARGE CARE TRANSITION COMPOSITE MEASURE *(continued)*

Denominator Details: None Listed

Exclusions: N/A

Exclusions Details: N/A

Risk Adjustment: None Listed

Stratification: The measure is risk adjusted and case mix adjusted. There is no risk adjustment of race or ethnicity, however race and ethnicity variables will be collected and secondary stratification by race/ethnicity to investigate disparities can be performed.

Numerator Time Window: Targeted events within 30 days of the operation are included.

Type: Composite

Type Score: Weighted score/composite/scale

Data Source: Electronic administrative data/claims

Level: Population: national

Setting: Hospital

699: 30-DAY POST-HOSPITAL HF DISCHARGE CARE TRANSITION COMPOSITE MEASURE

Measure Steward: Brandeis University/CMS

Description: This measure scores a hospital on the incidence among its patients during the month following discharge from an inpatient stay having a primary diagnosis of heart failure for three types of events: readmissions, ED visits and evaluation and management (E&M) services.

These events are relatively common, measurable using readily available administrative data, and associated with effective coordination of care after discharge. The input for this score is the result of measures for each of these three events that are being submitted concurrently under the Patient Outcomes Measures Phase I project's call for measures (ED and E&M) or is already approved by NQF (readmissions). Each of these individual measures is a risk-adjusted, standardized rate together with a percentile ranking. This composite measure is a weighted average of the deviations of the three risk-adjusted, standardized rates from the population mean for the measure across all patients in all hospitals. Again, the composite measure is accompanied by a percentile ranking to help with its interpretation.

699: 30-DAY POST-HOSPITAL HF DISCHARGE CARE TRANSITION COMPOSITE MEASURE *(continued)*

Numerator: The numerator is the weighted sum of the three deviations from their expected values for the individual measures comprising the component measure. The question of appropriate weights on the deviations is difficult and would probably lead to a wide variation in opinion. The weights of -4, -2, and 1 are selected to represent order of magnitude differences in seriousness of the three outcomes, which most would agree to (that is to say: readmission is more important than ED which is more important in a negative way than E & M service is in a positive way). The idea of not using weights was also considered, but this was noted to be itself a de facto weight scheme (with all weights the same), and as such, a weight scheme that was less appropriate than the one chosen.

Numerator Details: The details on each individual measure comprising the component measure are provided in their submission for NQF approval.

Denominator: The composite measure is the weighted sum of three individual measures. Thus, the denominator is one.

Denominator Details: N/A

Exclusions: N/A

Exclusions Details: N/A

Risk Adjustment: N/A

Stratification: None Listed

Numerator Time Window: Each of the individual measures in the composite is computed annually (January through December), as a three year rolling average.

Type: Composite

Type Score: Weighted score/composite/scale

Data Source: Electronic administrative data/claims

Level: Population: National

Setting: Hospital

700: HEALTH-RELATED QUALITY OF LIFE IN COPD PATIENTS BEFORE AND AFTER PULMONARY REHABILITATION

Measure Steward: American Association of Cardiovascular and Pulmonary Rehabilitation

Description: The percentage of patients with COPD enrolled in pulmonary rehabilitation (PR) who are found to increase their health-related quality of life score (HRQOL).

700: HEALTH-RELATED QUALITY OF LIFE IN COPD PATIENTS BEFORE AND AFTER PULMONARY REHABILITATION *(continued)*

Numerator: Number of patients with clinician diagnosed COPD who have participated in PR and have been found to increase their HRQOL score by 1.0 points, as measured by the Chronic Respiratory Disease Questionnaire (CRQ), or a similar tool, at the beginning and the end of PR.

Numerator Details: To perform the HRQOL assessment, a CRQ is administered by PR staff to each COPD patient enrolled in PR, in a private interview space.

The numerator is calculated as follows: A patient is counted as having increased his/her HRQOL score (measured by CRQ) if the HRQOL score at PR program completion is at least 1.0 points higher than the HRQOL score at PR program entry.

The Chronic Respiratory Disease Questionnaire provides a composite score of the patient's perception of their current health status and impact on daily life.

The Chronic Respiratory Disease Questionnaire is a 20 item interview instrument that measures patient perceptions of dyspnea, fatigue, emotional function, and mastery. The CRQ uses a 7-point numeric Likert-type scale. A change in the score of 0.5 on the 7 point scale, reflects a clinical significant small change (Redelmeier, et al. 1996; Jaeschke, et al., 1989). A change of 1.0 reflects a moderate change. Reliability and validity have been reported in multiple studies (Martin, 1994; Guyatt, et al. 1987).

1. Martin LL. Validity and reliability of a quality-of-life instrument. The chronic respiratory disease questionnaire. Clin Nurs Res 1994;3:146-156.
2. Guyatt GH, Berman LB, Townsend M, Puglsey SO, Chambers LW. A measure of quality of life for clinical trials in chronic lung disease. Thorax 1987;42:773-778.
3. Redelmeier DA, Guyatt GH, Goldstein RS. Assessing the minimal important difference in symptoms: a comparison of two techniques. J Clin Epidemiol 1996;49:1215-1219.
4. Jaeschke R, Singer J, Guyatt GH. Measurement of health status ascertaining the minimal clinically important difference. Controlled Clin Trials 1989;10:407-415.

Denominator: All patients with COPD, during the reporting period, who are enrolled in a PR program.

Denominator Details: All patients with a clinician diagnosis of COPD who are able to complete a CRQ (or similar tool) to assess HRQOL at PR program entry and PR program completion, who have completed at least 10 PR sessions within a 3 month period.

Exclusions: Inability to read and/or write in order to complete the self-administered CRQ, or presence of cognitive or neuropsychiatric impairment that impairs the patient's ability to answer the CRQ (or similar tool).

Exclusions Details: Patients enrolled in PR are to be excluded if he/she is unable to read and/or write, or who have significant cognitive or neuropsychiatric impairment that would preclude ability to answer the CRQ (or similar tool).

Risk Adjustment: No risk adjustment necessary

Stratification: Data are to be assessed by individual and group outcomes, can be reported as aggregate group data, and can also be stratified and reported for the group by age (by decade of life) and gender (male, female).

700: HEALTH-RELATED QUALITY OF LIFE IN COPD PATIENTS BEFORE AND AFTER PULMONARY REHABILITATION *(continued)*

Numerator Time Window: Assessments of HRQOL are to be performed within one week of PR program entry and again within one week of PR program completion. The time period between tests should be no more than 3 months.

Type: Outcome

Type Score: Rate/proportion

Data Source: External audit; Documentation of original self-assessment; Management data

Level: Population: regional/network; Clinicians: Group; Program: Other-Pulmonary rehabilitation program

Setting: Ambulatory Care: Hospital Outpatient; Ambulatory Care: Clinic

701: FUNCTIONAL CAPACITY IN COPD PATIENTS BEFORE AND AFTER PULMONARY REHABILITATION

Measure Steward: American Association of Cardiovascular and Pulmonary Rehabilitation

Description: The percentage of patients with COPD who are enrolled in pulmonary rehabilitation (PR) who are found to increase their functional capacity by at least 25 meters (82 feet), as measured by a standardized 6 minute walk test (6MWT).

Numerator: Number of patients with clinician diagnosed COPD who have participated in PR and have been found to increase their functional capacity by at least 25 meters (82 feet), as measured by 6MWT distance at the beginning and the end of PR.

Numerator Details: To perform the 6 minute walk test (6MWT) the patient is instructed to walk as fast and as far as they can in 6 minutes, but they are allowed to stop and rest during the test, if needed. The total distance covered in 6 minutes is measured (in meters or feet).

The numerator is calculated by the following formula: A patient is counted as having experienced a significant increase in functional capacity if (6MWT distance at program completion - 6MWT distance at program entry) ≥54 meters (176 feet).

The 6 minute walk test (6MWT) is a practical, simple, standardized, and validated test that measures the distance that a patient can quickly walk on a flat, hard surface in a period of 6 minutes (6MWD). It evaluates the global and integrated responses of all the systems involved during exercise, including the pulmonary and cardiovascular systems, systemic circulation, peripheral circulation, blood, neuromuscular units, and muscle metabolism. The 6MWT provides specific testing related to the activity of daily living, walking.(Guyatt, G.H., et al., 1984. Guyatt, G.H., et al., 1985, Sciurba, F.C. and W.A. Slivka, Steele, B). In performing the 6MWT, it has been reported that a 54 meter (176 feet) difference in 6MW difference is clinically significant (identified as clear change in clinical status) when compared to differences in self-rating of walking ability (Redelmeier, D.A., et al). The strongest indication for the 6MWT is for measuring the response to medical interventions in patients with moderate to severe heart or lung disease.

701: FUNCTIONAL CAPACITY IN COPD PATIENTS BEFORE AND AFTER PULMONARY REHABILITATION *(continued)*

Numerator Details: *(continued)*

Specific instructions regarding the administration of the 6MWT have been developed and published by the American Thoracic Society (ATS, 2002).

COPD (chronic obstructive pulmonary disease includes a clinician diagnosis of COPD, chronic bronchitis and/or emphysema (ICD-9 Codes include 490-492, 494, 496: Chronic obstructive pulmonary disease (COPD) includes chronic bronchitis (ICD-9 codes 490-491), emphysema (ICD-9 code 492),bronchiectasis (ICD-9 code 494), and chronic airway obstruction (ICD-9 code 496). These diseases are commonly characterized by irreversible airflow limitation.

1. Guyatt, G.H., et al., Effect of encouragement on walking test performance. Thorax, 1984. 39(11): p. 818-22.
2. Guyatt, G.H., et al., The 6-minute walk: a new measure of exercise capacity in patients with chronic heart failure. Canadian Medical Association Journal, 1985. 132(8): p. 919-23.
3. Redelmeier, D.A., et al., Interpreting small differences in functional status: the six minute walk test in chronic lung disease patients. American Journal of Respiratory and Critical Care Medicine, 1997. 155: p. 1278-1282.
4. Sciurba, F.C. and W.A. Slivka, Six minute walk testing. Seminars in Respiratory and Critical Care Medicine, 1998. 19(4): p. 383-392.
5. Steele, B., Timed walking tests of exercise capacity in chronic cardiopulmonary illness. Journal of Cardiopulmonary Rehabilitation, 1996. 16: p. 25-33.

Denominator: All patients with COPD, during the reporting period, who are enrolled in a pulmonary rehabilitation program.

Denominator Details: All patients with a clinician diagnosis of COPD who are able to perform a 6MWT at PR program entry and at PR program completion, and who have completed at least 10 PR sessions, that include exercise training, within a 3 months period.

The minimum length and duration of PR program is two one hour sessions per week over 6 weeks with at least two sessions per week including exercise training.

Exclusions: Patients who are unable to perform a 6MWT for health and/or safety reasons, and those who have not completed at least 10 PR sessions within 3 months of program entry.

Exclusions Details: Absolute contraindications for the 6MWT include the following: unstable angina during the previous month and myocardial infarction during the previous month. Relative contraindications include a resting heart rate of more than 120, a systolic blood pressure of more than 180 mm Hg, and a diastolic blood pressure of more than 100 mm Hg. Additional exclusion criteria include significant orthopedic, neurological, cognitive or psychiatric impairment.

Risk Adjustment: No risk adjustment necessary

Stratification: Data are to be assessed by individual and group outcomes, can be reported as aggregate group data, and can also be stratified and reported for the group by age (by decade of life) and gender (male, female).

Numerator Time Window: Assessments of 6 minute walk test are to be performed within one week of PR program entry and again within one week of PR program completion. The time period between tests should be no more than 3 months.

701: FUNCTIONAL CAPACITY IN COPD PATIENTS BEFORE AND AFTER PULMONARY REHABILITATION *(continued)*

Type: Outcome

Type Score: Rate/proportion

Data Source: Management data; Pharmacy data; Documentation of original self-assessment

Level: Population: regional/network; Program: Other-Pulmonary Rehabilitation Provider or Pulmonary Rehabilitation Program

Setting: Ambulatory Care: Hospital Outpatient; Ambulatory Care: Clinic

702: INTENSIVE CARE UNIT (ICU) LENGTH-OF-STAY (LOS)

Measure Steward: Philip R. Lee Institute for Health Policy Studies

Description: For all patients admitted to the ICU, total duration of time spent in the ICU until time of discharge; both observed and risk-adjusted LOS reported with the predicted LOS measured using the Intensive Care Outcomes Model - Length-of-Stay ($ICOM_{LOS}$)

Numerator: For all eligible patients admitted to the ICU, the time at discharge from ICU (either death or physical departure from the unit) minus the time of admission (first recorded vital sign on ICU flow sheet)

Numerator Details: Eligible patients include those with an ICU stay of at least 4 hours and >18 years of age whose primary reason for admission does not include trauma, burns, or immediately post-coronary artery bypass graft surgery (CABG), as these patient groups are known to require unique risk-adjustment. Only index (initial) ICU admissions are recorded given that patient characteristics of readmissions are known to differ.

Denominator: Total number of eligible patients who are discharged (including deaths and transfers)

Denominator Details: Eligible patients include those with an ICU stay of at least 4 hours and >18 years of age whose primary reason for admission does not include trauma, burns, or immediately post-coronary artery bypass graft surgery (CABG), as these patient groups are known to require unique risk-adjustment. Only index (initial) ICU admissions are recorded given that patient characteristics of readmissions are known to differ.

Exclusions: <18 years of age at time of ICU admission, ICU readmission, <4 hours in ICU, primary admission due to trauma, burns, or immediately post-CABG, admitted to exclude myocardial infarction (MI) and subsequently found without MI or any other acute process requiring ICU care, transfers from another acute care hospital

Exclusions Details: <18 years of age at time of ICU admission (with time of ICU admission abstracted preferably from ICU vital signs flowsheet), ICU readmission (i.e. not the patient's first ICU admission during the current hospitalization), <4 hours in ICU, primary admission due to trauma, burns, or immediately post-CABG, admitted to exclude myocardial infarction (MI) and subsequently found without MI or any other acute process requiring ICU care, patient transfers from another acute care hospital (i.e., patients whose physical site immediately prior to the index ICU admission was an acute care unit at an outside hospital)

702: INTENSIVE CARE UNIT (ICU) LENGTH-OF-STAY (LOS) *(continued)*

Risk Adjustment: Risk-adjustment devised specifically for this measure/condition. Risk-adjustment variables include: age, heart rate ≥150, SBP ≤90, chronic renal, acute renal, GIB, cardiac arrhythmia, intracranial mass effect, mechanical ventilation, received CPR, cancer, cerebrovascular incident, cirrhosis, coma, medical admission or status post non-elective surgery, zero factor status (no risk factors other than age), and full code status (no restrictions on therapies or interventions at the time of ICU admission). The LOS risk-adjustment model is based on the Intensive Care Outcomes Model - Length-of-Stay ($ICOM_{LOS}$) with candidate interactions among variables and variable coefficients customized for the population of interest.

Stratification: Not-applicable

Numerator Time Window: Not-applicable; Anyone with an ICU admission meeting eligibility criteria below is in the numerator.

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic clinical data; Electronic Health/Medical Record; Lab data; Paper medical record/flow-sheet

Level: Facility/Agency; Population: regional/network

Setting: Hospital

703: INTENSIVE CARE: IN-HOSPITAL MORTALITY RATE

Measure Steward: Philip R. Lee Institute for Health Policy Studies

Description: For all adult patients admitted to the intensive care unit (ICU), the percentage of patients whose hospital outcome is death; both observed and risk-adjusted mortality rates are reported with predicted rates using the Intensive Care Outcomes Model—Mortality ($ICOM_{MORT}$)

Numerator: Total number of eligible patients whose hospital outcome is death

Numerator Details: Eligible patients include those with an ICU stay of at least 4 hours and >18 years of age whose primary reason for admission does not include trauma, burns, or immediately post-coronary artery bypass graft surgery (CABG), as these patient groups are known to require unique risk-adjustment. Only index (initial) ICU admissions are recorded given that patient characteristics of readmissions are known to differ.

Denominator: Total number of eligible patients who are discharged (including deaths and transfers)

Denominator Details: Eligible patients include those with an ICU stay of at least 4 hours and >18 years of age whose primary reason for admission does not include trauma, burns, or immediately post-coronary artery bypass graft surgery (CABG), as these patient groups are known to require unique risk-adjustment. Only index (initial) ICU admissions are recorded given that patient characteristics of readmissions are known to differ.

703: INTENSIVE CARE: IN-HOSPITAL MORTALITY RATE *(continued)*

Exclusions: <18 years of age at time of ICU admission, ICU readmission, <4 hours in ICU, primary admission due to trauma, burns, or immediately post-CABG, admitted to exclude myocardial infarction (MI) and subsequently found without MI or any other acute process requiring ICU care, transfers from another acute care hospital

Exclusions Details: <18 years of age at time of ICU admission (with time of ICU admission abstracted preferably from ICU vital signs flowsheet), ICU readmission (i.e., not the patient's first ICU admission during the current hospitalization), <4 hours in ICU, primary admission due to trauma, burns, or immediately post-CABG, admitted to exclude myocardial infarction (MI) and subsequently found without MI or any other acute process requiring ICU care, patient transfers from another acute care hospital (i.e., patients whose physical site immediately prior to the index ICU admission was an acute care unit at an outside hospital).

Risk Adjustment: Risk-adjustment devised specifically for this measure/condition. Risk-adjustment variables include: age, heart rate ≥150, SBP ≤90, chronic renal, acute renal, GIB, cardiac arrhythmia, intracranial mass effect, mechanical ventilation, received CPR, cancer, cerebrovascular incident, cirrhosis, coma, medical admission or status post non-elective surgery, zero factor status (no risk factors other than age), and full code status (no restrictions on therapies or interventions at the time of ICU admission). The risk-adjustment model is based on the Intensive Care Outcomes Model—Mortality ($ICOM_{MORT}$) with candidate interactions among variable and variable coefficients customized for the population of interest.

Stratification: N/A

Numerator Time Window: Not-applicable; Anyone with an ICU admission meeting eligibility criteria below is in the numerator.

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic Health/Medical Record; Lab data; Paper medical record/flow-sheet

Level: Facility/Agency

Setting: Hospital

731: COMPREHENSIVE DIABETES CARE

Measure Steward: NCQA

Description: The percentage of individuals 18–75 years of age with diabetes (type 1 and type 2) who had each of the following.

- HbA1c poor control (>9.0%)
- HbA1c control (<8.0%)
- HbA1c control (<7.0%)*
- Eye exam (retinal) performed

731: COMPREHENSIVE DIABETES CARE *(continued)*

Description: *(continued)*

- LDL-C screening
- LDL-C control (<100 mg/dL)
- Medical attention for nephropathy
- BP control (<140/90 mm Hg)
- Smoking status and cessation advice or treatment

Numerator: Percentage of members 18-75 years of age with diabetes (type 1 and 2) who had each of the following:

HbA1c Testing - An HbA1c test performed during the measurement year as identified by claim/encounter or automated lab data.

2. HbA1c Poor Control >9% - Use automated lab data to identify the most recent HbA1c test during the measurement year. The member is numerator compliant if the most recent automated HbA1c level is >9.0% or is missing a result or if an HbA1c test was not done during the measurement year. The member is not numerator compliant if the automated result for the most recent HbA1c test during the measurement year is ≤9.0%.

   An organization that uses CPT Category II codes to identify numerator compliance for this indicator must search for all codesand use the most recent code during the measurement year to evaluate whether the member is numerator compliant.

   Note: For this indicator, a lower rate indicates better performance (i.e., low rates of poor control indicate better care).

3. HbA1c Control <8% - Use automated laboratory data to identify the most recent HbA1c test during the measurement year. The member is numerator compliant if the most recent automated HbA1c level is <8.0%. The member is not numerator compliant if the automated result for the most recent HbA1c test is ≥8.0% or is missing a result, or if an HbA1c test was not done during the measurement year. An organization that uses CPT Category II codes to identify numerator compliance for this indicator must search for all codes and use the most recent code during the measurement year to evaluate whether the member is numerator compliant.
4. HbA1c Control <7% - Use automated laboratory data to identify the most recent HbA1c test during the measurement year. The member is numerator compliant if the most recent automated HbA1c level is <7.0%. The member is not numerator compliant if the automated result for the most recent HbA1c test is ≥7.0% or is missing a result, or if an HbA1c test was not done during the measurement year.

   An organization that uses CPT Category II codes to identify numerator compliance for this indicator must search for all codes and use the most recent code during the measurement year to evaluate whether the member is numerator compliant.

   An organization that uses CPT Category II codes to identify numerator compliance for this indicator must search for all codes and use the most recent code during the measurement year to evaluate whether the member is numerator compliant.

   Note: This indicator uses the eligible population with additional eligible population criteria (e.g., removing members with required exclusions).

731: COMPREHENSIVE DIABETES CARE *(continued)*

Numerator: (continued)

5. Eye Exam - An eye screening for diabetic retinal disease as identified by administrative data. This includes diabetics who had one of the following.

   A retinal or dilated eye exam by an eye care professional (optometrist or ophthalmologist) in the measurement year, or

   A negative retinal exam (no evidence of retinopathy) by an eye care professional in the year prior to the measurement year

   Refer to codes to identify eye exams. For exams performed in the year prior to the measurement year, a result must be available.

6. LDL-C Screening - An LDL-C test performed during the measurement year, as identified by claim/ encounter or automated laboratory data. The organization may use a calculated or direct LDL for LDL-C screening and control indicators.
7. LDL-C Control <100 mg/dL - Use automated laboratory data to identify the most recent LDL-C test during the measurement year. The member is numerator compliant if the most recent automated LDL-C level is <100 mg/dL. If the automated result for the most recent LDL-C test during the measurement year is ≥100 mg/dL or is missing, or if an LDL-C test was not done during the measurement year, the member is not numerator compliant.

   An organization that uses CPT Category II codes to identify numerator compliance for this indicator must search for all codes and use the most recent code during the measurement year to evaluate whether the member is numerator compliant.

8. Medical Attention for Nephropathy - A nephropathy screening test or evidence of nephropathy, as documented through administrative data.
9. BP Control <140/90 mmHg - Use automated data to identify the most recent BP reading during the measurement year. Refer to Table CDC-N and use the most recent code to evaluate whether the member is numerator compliant.

   The member is numerator compliant if the BP is <140/90 mm Hg. The member is not compliant if the BP is ≥140/90 mm Hg or if there is no automated BP reading during the measurement year. If there are multiple BPs on the same date of service, use the lowest systolic and lowest diastolic BP on that date as the representative BP.

   An organization that uses CPT Category II codes to identify numerator compliance for this indicator must search for all codes and use the most recent codes during the measurement year to evaluate whether the member is numerator compliant for both systolic and diastolic levels.

10. Smoking status: PAtients with documentation of smoking status (e.e. non-smoker, smoker, not known) AND date of cessation couseling, OR treatmetn during the meaurement year if the patient is a tombacco smoker.

Numerator Details:

Codes to identify HbA1c tests

CPT: 83036, 83037

CPT Category II: 3044F, 3045F, 3046F

LOINC: 4548-4, 4549-2, 17856-6

731: COMPREHENSIVE DIABETES CARE *(continued)*

Numerator Details: (continued)

Codes to identify HbA1c levels >9%

-Numerator compliant

CPT Category II: 3046F

-Not numerator compliant

CPT Category II: 3044F, 3045F

Codes to identify HbA1c levels <8%

-Numerator compliant

CPT Category II: 3044F

-Not numerator compliant

CPT Category II: 3045F*, 3046F

*CPT Category II code 3045F indicates most recent HbA1c (HbA1c) level 7.0%–9.0% and is not specific enough to denote numerator compliance for this indicator. For members with this code, the organization may use other sources (laboratory data, hybrid reporting method) to determine if the HbA1c result was <8%.

Codes to identify HbA1c levels <7%

-Numerator compliant

CPT Category II: 3044F

-Not numerator compliant

CPT Category II: 3045F, 3046F

Codes to identify eye exams*

CPT: 67028, 67030, 67031, 67036, 67038-67043, 67101, 67105, 67107, 67108, 67110, 67112, 67113, 67121, 67141, 67145, 67208, 67210, 67218, 67220, 67221, 67227, 67228, 92002, 92004, 92012, 92014, 92018, 92019, 92225, 92226, 92230, 92235, 92240, 92250, 92260, 99203-99205, 99213-99215, 99242-99245

CPT Category II**: 2022F, 2024F, 2026F, 3072F***

*Eye exams provided by eye care professionals are a proxy for dilated eye examinations because there is no administrative way to determine that a dilated exam was performed.

**The organization does not need to limit CPT Category II codes or HCPCS S0625 to an optometrist or an ophthalmologist. These codes indicate an eye exam was performed by an eye care professional.

***CPT Category II code 3072F can only be used if the claim/encounter was during the measurement year because it indicates the member had "no evidence of retinopathy in the prior year." Additionally, because the code definition itself indicates results were negative, an automated result is not required.

731: COMPREHENSIVE DIABETES CARE *(continued)*

Numerator Details: (continued)

HCPCS: S0620, S0621, S0625**, S3000

ICD-9-CM Diagnosis: V72.0

ICD-9-CM Procedure: 14.1-14.5, 14.9, 95.02-95.04, 95.11, 95.12, 95.16

Codes to identify LDL-C screening

CPT: 80061, 83700, 83701, 83704, 83721

CPT Category II: 3048F, 3049F, 3050F

LOINC: 2089-1, 12773-8, 13457-7, 18261-8, 18262-6, 22748-8, 39469-2, 49132-4

Codes to identify LDL-C levels

-Numerator compliant

CPT Category II: 3048F

-Not numerator compliant

CPT Category II: 3049F, 3050F

Codes to identify nephropathy screening tests

CPT: 82042, 82043, 82044, 84156

CPT Category II: 3060F, 3061F

LOINC: 1753-3, 1754-1, 1755-8, 1757-4, 2887-8, 2888-6, 2889-4, 2890-2, 9318-7, 11218-5, 12842-1, 13801-6, 14956-7, 14957-5, 14958-3, 14959-1, 13705-9, 14585-4, 18373-1, 20621-9, 21059-1, 21482-5, 26801-1, 27298-9, 30000-4, 30001-2, 30003-8, 32209-9, 32294-1, 32551-4, 34366-5, 35663-4, 40486-3, 40662-9, 40663-7, 43605-5, 43606-3, 43607-1, 44292-1, 47558-2, 49023-5, 50949-7, 53121-0, 53530-2, 53531-0, 53532-8

Codes to identify evidence of nephropathy

-Urine macroalbumin test

CPT: 81000-81003, 81005

CPT Category II: 3062F

LOINC: 5804-0, 20454-5, 50561-0, 53525-2

-Evidence of treatment for nephropathy

CPT: 36145, 36800, 36810, 36815, 36818, 36819-36821, 36831-36833, 50300, 50320, 50340, 50360, 50365, 50370, 50380, 90920, 90921, 90924, 90925, 90935, 90937, 90940, 90945, 90947, 90957-90962, 90965, 90966, 90969, 90970, 90989, 90993, 90997, 90999, 99512

731: COMPREHENSIVE DIABETES CARE *(continued)*

Numerator Details: (continued)

CPT Category II: 3066F
HCPCS: G0257, G0314-G0319, G0322, G0323, G0326, G0327, G0392, G0393, S9339
ICD-9-CM Diagnosis: 250.4, 403, 404, 405.01, 405.11, 405.91, 580-588, 753.0, 753.1, 791.0, V42.0, V45.1, V56
ICD-9-CM Procedure: 38.95, 39.27, 39.42, 39.43, 39.53, 39.93-39.95, 54.98, 55.4-55.6
UB Revenue: 0367, 080x, 082x-085x, 088x
UB Type of Bill: 72x
POS: 65
-ACE inhibitor/ARB therapy
CPT Category II: 4009F
Codes to identify systolic and diastolic BP levels <130/80
-Numerator compliant
Systolic CPT Category II: 3074F
Diastolic CPT Category II: 3078F
-Not numerator compliant
Systolic CPT Category II: 3075F, 3077F
Diastolic CPT Category II: 3079F, 3080F
Codes to identify systolic and diastolic BP levels <140/90
-Numerator compliant
Systolic CPT Category II: 3074F, 3075F
Diastolic CPT Category II: 3078F, 3079F
-Not numerator compliant
Systolic CPT Category II: 3077F
Diastolic CPT Category II: 3080F
Smoking numerator complaint: CPT Category II:1034F, 4000F, 4001F
Foot examination numerator complaince: CPT Category II: 2028F

731: COMPREHENSIVE DIABETES CARE *(continued)*

Denominator: Members with diabetes (type 1 and 2) as of December 31 of the measurement year

Denominator Details: Eligible Population:

1. Collected by Commercial, Medicaid, Medicare plans
2. Must be 18-75 years as of Dec 31 of the measurement year with continuous enrollment in the measurement year
3. Must have diabetes (type 1 or 2) identified by pharmacy data and by claim/encounter data. When identifying diabetic members using pharmacy data, members must have been dispensed insulin or oral hypoglycemics/antihyperglycemics during the measurement year or year prior on an ambulatory basis. When identifying diabetic members using claim/encounter data, members must have had two face-to-face encounters with a diagnosis of diabetes on different dates of service in an outpatient setting or nonacute inpatient setting OR one face-to-face encounter in an acute inpatient or ED setting during the measurement year or year prior.

Codes to identify diabetes

ICD-9-CM Diagnosis: 250, 357.2, 362.0, 366.41, 648.0

Codes to identify visity type

-Outpatient

CPT: 92002, 92004, 92012, 92014, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456

UB Revenue: 051x, 0520-0523, 0526-0529, 057x-059x, 077x, 082x-085x, 088x, 0982, 0983

-Nonacute inpatient

CPT: 99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337

UB Revenue: 0118, 0128, 0138, 0148, 0158, 019x, 0524, 0525, 055x, 066x

-Acute inpatient

CPT: 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291

UB Revenue: 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x-022x, 072x, 080x, 0987

-Emergency Department

CPT: 99281-99285

UB Revenue: 045x, 0981

731: COMPREHENSIVE DIABETES CARE *(continued)*

Exclusions: Exclusions for the HbA1c Control <7% indicator ONLY:

1. 65-75 years of age in the measurement year
2. Members discharged alive for CABG or PTCA in the measurement year or year prior
3. Members with at least one outpatient visit w/an IVD diagnosis OR at least one acute inpatient claim/encounter w/an IVD diagnosis
4. Members who had at least one encounter, in any setting, w/chronic heart failure
5. Members who had at least one encounter, in any setting, w/any code to identify MI
6. Members who had at least one encounter, in any setting, w/any code to identify CRF/ESRD
7. Members who had at least one encounter, in any setting, w/any code to identify dementia
8. Members who had at least one encounter, in any setting, w/any code to identify blindness
9. Members who had at least one encounter, in any setting, w/any code to identify lower extremity amputation

Exclusions Details: Codes to identify Required Exclusions

-MI

ICD-9-CM Diagnosis: 410, 412

-CRF/ESRD

CPT: 36145, 36800-36821, 36831-36833, 90919-90921, 90923-90925, 90935, 90937, 90940, 90945, 90947, 90957-90962, 90965, 90966, 90969, 90970, 90989, 90993, 90997, 90999, 99512

HCPCS: G0257, G0311-G0319, G0321-G0323, G0325-G0327, G0392, G0393, S9339

ICD-9-CM Diagnosis: 585.4, 585.5, 585.6, V42.0, V45.1, V56

ICD-9-CM Procedure: 38.95, 39.27, 39.42, 39.43, 39.53, 39.93, 39.94, 39.95, 54.98

UB Revenue: 080x, 082x-085x, 088x

UB Type of Bill: 72x

Risk Adjustment: None Listed

Stratification: N/A

Numerator Time Window: Measurement Year

731: COMPREHENSIVE DIABETES CARE *(continued)*

Type: Composite

Type Score: Rate/Proportion

Data Source: Electronic admin data/claims, electronic health/medical record, electronic clinical data, lab data, pharmacy data

Level: Clinician: Individual, group, other: Health Plan; Population: All levels

Setting: Office

704: PROPORTION OF PATIENTS HOSPITALIZED WITH AMI THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD)

Measure Steward: Bridges to Excellence (BTE)

Description: Percent of adult population aged 18 – 65 years who were admitted to a hospital with acute myocardial infarction (AMI), were followed for one-month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period (Please reference attached document labeled NQF_AMI_PACs_Risk_Adjustment_2.16.10.xls, tabs labeled CIP_Index PAC_Stays and CIP_PAC_Readmission). We define PACs during each time period as one of three types

(A) PACs during the Index Stay (Hospitalization):

1. PACs related to the anchor condition: The index stay is regarded as having a PAC if during the index hospitalization the patient develops one or more complications such as cardiac arrest, ventricular fibrillation, cardiogenic shock, stroke, coma, acute post-hemorrhagic anemia etc. that may result directly due to AMI or its management.
2. PACs due to Comorbidities: The index stay is also regarded as having a PAC if one or more of the patient's controlled comorbid conditions is exacerbated during the hospitalization (i.e. it was not present on admission). Examples of these PACs are diabetic emergency with hypo- or hyperglycemia, tracheostomy, mechanical ventilation, pneumonia, lung complications gastritis, ulcer, GI hemorrhage etc.
3. PACs suggesting Patient Safety Failures: The index stay is regarded as having a PAC if there are one or more complications related to patient safety issues. Examples of these PACs are septicemia, meningitis, other infections, phlebitis, deep vein thrombosis, pulmonary embolism or any of the CMS-defined hospital acquired conditions (HACs).

(B) PACs during the 30-day post discharge period:

1. PACs related to the anchor condition: Readmissions and emergency room visits during the 30-day post discharge period after an AMI are considered as PACs if they are for angina, chest pain, another AMI, stroke, coma, heart failure etc.
2. PACs due to Comorbidities: Readmissions and emergency room visits during the 30-day post discharge period are also considered PACs if they are due to an exacerbation of one or more of the patient's comorbid conditions, such as a diabetic emergency with hypo- or hyperglycemia, pneumonia, lung complications, tracheostomy, mechanical ventilation etc.

704: PROPORTION OF PATIENTS HOSPITALIZED WITH AMI THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Description: (continued)

3. PACs suggesting Patient Safety Failures: Readmissions or emergency room visits during the 30-day post discharge period are considered PACs if they are due to sepsis, infections, phlebitis, deep vein thrombosis, or for any of the CMS-defined hospital acquired conditions (HACs).

The enclosed workbook labeled NQF_AMI_PACs_Risk_Adjustment_2.16.10.xls, gives the frequency and costs associated with each of these types of PACs during the index hospitalization (tab labeled CIP_Index PAC_Stays) and for readmissions and emergency room visits during the 30-day post-discharge period (tab labeled CIP_PAC_Readmission). The information is based on a two-year national commercially insured population (CIP) claims database. The database had 4.7 million covered lives and $95 billion in "allowed amounts" for claims costs. The database was an administrative claims database with medical as well as pharmacy claims. The two tabs demonstrate the most common PACs that occurred in patients hospitalized with AMI.

Numerator: Outcome: Potentially avoidable complications (PACs) in patients hospitalized for AMI occurring during the index stay or in the 30-day post-discharge period.

Numerator Details: Patients that had an index hospitalization for AMI, and were identified as having services for potentially avoidable complications (PACs) either during the index hospitalization or within one month after discharge from the index hospitalization. The enclosed excel workbook entitled NQF_AMI_all_codes_01.22.10 gives the detailed codes for PACs. Services for PACs are identified as followed:

a. In the EXPND AMI TRGS tab, claims with ICD-9 diagnosis codes, ICD-9 procedure codes or CPT codes marked with an assignment PAC in column B.

b. In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column E (labeled PAC)

c. In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in column D (labeled PAC)

d. In the Pharm tab, pharmacy claims that map to a category identified as a PAC in the AMI action descr column

These claims are included as PACs only if the PAC is NOT present on admission AND the claims are considered as relevant to AMI. Relevant claims are defined as claims that:

a. Have a "filter code" on the claim - see tab entitled "EXPND AMI TRGS" - all codes with an assignment as typical or PAC in the enclosed worksheet are filter codes. One of these codes needs to be present on a claim to be included as relevant to the episode, AND

b. Do not have an exclusion code. Exclusion codes for numerator are defined in the same fashion as in the Denominator Exclusion section.

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

Denominator: Adult patients aged 18 – 65 years who had a relevant hospitalization for AMI (with no exclusions) and were followed for one-month after discharge

704: PROPORTION OF PATIENTS HOSPITALIZED WITH AMI THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Denominator Details: Please refer to the enclosed excel workbook entitled

NQF_AMI_all_codes_1.22.10.

The target population should have the following criteria:

1. Have an index hospitalization with a trigger code as defined in the AMI TRIGGERS tab
2. The patient should have continuous enrollment for the entire time window with no enrollment gaps with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).
3. Do not have an exclusion code. Exclusion codes are defined in the same fashion as in the Denominator Exclusion section.

Exclusions: Denominator exclusions include exclusions of either "patients" or "claims" based on the following criteria: (1)"Patients" excluded are those that have any form of cancer, ESRD (end-stage renal disease), transplants such as lung or heart-lung transplant or complications related to transplants, pregnancy and delivery, HIV, or suicide. (2)"Claims" are excluded from the AMI measure if they are considered not relevant to AMI care or are for major surgical services that suggests that AMI may be a comorbidity associated with the procedure e.g., CABG procedure. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

Exclusions Details: Denominator exclusions include exclusions of "patients" as well as "claims" not relevant to AMI care. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

Please refer to the enclosed excel workbook entitled NQF_AMI_all_codes_1.22.10.

1. "Patients" are excluded from the AMI measures if they meet one of the following criteria:

a. If age is < 18 years or >= 65 years
b. If gender is missing
c. If they do not have continuous enrollment for the entire time window with the entity providing the data (this helps determine if the database has captured all the claims for the patient in the time window).
d. During the index hospitalization, patients have an in-hospital death or leave against medical advice.
e. The index hospital stay cost is an outlier (less than $50 or greater than $1 million).
f. In the EXPND AMI TRGS tab, patients that have claims with ICD-9 diagnosis codes marked with an assignment Terminate in column B.
g. In the medical tab, patients with claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column C labeled Irrelevant_cases.
h. The total episode cost is an outlier (for medical claims total costs are less that $20 or greater than $1 million; and for pharmacy claims, total costs are greater than $1 million).

704: PROPORTION OF PATIENTS HOSPITALIZED WITH AMI THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Exclusions Details: (continued)

2. "Claims" are excluded from the AMI measure if they meet one of the following criteria:

a. In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column D labeled Irrelevant_claims.

b. In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in column C labeled Irrelevant_ claims.

c. In the Pharm tab, pharmacy claims that map to a category identified as a delete in the AMI action descr column

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT (This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

Risk Adjustment: Conceptual Model: Variations in outcomes across populations may be due to patient-related factors or due to provider controlled factors. When we adjust for patient-related factors, the remaining variance in PACs are due to factors that could be controlled by all providers that are managing or co-managing the patient, both during and after hospitalization. We have developed a "severity index" based on patient-related factors such as patient demographics and comorbidities. The severity-adjusted PAC rates give a fair comparison of PAC rates from population to population and help providers determine the degree of PACs that are not related to patient-level factors but due to factors that they could control and thus result in fewer PACs being incurred by patients and paid for by payers. Methodology Overview: A severity index is calculated for each patient based on the risk-adjustment model for professional andother services that determines the cost drivers for typical care for a given condition. Demographic variables, comorbid conditions, various types of services as well as different patient-level pharmacy indicators are fed into the model. Conditions and services that lead to higher costs and increased resource consumption are weighted more heavily in our model. For example, use of intracoronary thrombolytics or stents in the setting of AMI, are associated with higher coefficients in the model. The model determines the patient-level factors that are drivers for increased financial risk. For each patient the "predicted" log coefficients from the severity adjustment model are summed to give the patient-level severity-index. Adjusting the overall PAC rates by the severity-index for the population helps adjust for variations in outcomes related to severity. The risk-adjustment variables that were included were patient demographic factors such as age and gender, medical comorbidities, procedures performed, as well as pharmacy variables.

Variable Descriptions:

AGE CONTINUOUS VARIABLE
GENDER FEMALE (MALE IS REFERENCE)
BACL1 ANTICOAGULANTS
EDIAB ANTIDIABETICS
GIACD ANTACIDS AND ANTISPASMODICS
HACEI ACEI, ARB, ANTI-RENIN DRUGS

704: PROPORTION OF PATIENTS HOSPITALIZED WITH AMI THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: (continued)

HBBLK BETA-BLOCKERS
HCLBK CALCIUM CHANNEL BLOCKING AGENTS
HNITR NITRATES AND OTHER ANTIANGINALS
HOTHR OTHER CARDIOVASCULAR AGENTS
HPLT ANTIPLATELET AGENTS, THROMBIN INHIBITORS
HSTN STATINS AND OTHER ANTI-LIPID AGENTS
HVSDL VASODILATORS
LDECG DECONGESTANTS AND ANTIHISTAMINICS
LOTHR INHALERS AND RESPIRATORY AGENTS
M10 DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS
M12 ESSENTIAL HYPERTENSION
M14 HEART VALVE AND CONGENITAL HEART DISORDERS
M18 DISEASES OF ARTERIES ARTERIOLES AND CAPILLARIES
M20 CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND BRONCHIECTASIS
M21 ASTHMA
M22 OTHER RESPIRATORY INFECTIONS AND DISEASES
M23 ESOPHAGEAL DISORDERS
M24 DISEASES OF THE DIGESTIVE SYSTEM
M27 DISEASES OF THE GENITOURINARY SYSTEM
M29 DISEASES OF THE SKIN AND CONNECTIVE TISSUE
M3 THYROID DISORDERS
M35 DISEASES OF BONES, JOINTS, SPINE
M36 PREVENTATIVE, REHABILITATION AND AFTER CARE
M37 NAUSEA, VOMITING, MALAISE, FATIGUE, FEVER
M4 DIABETES MELLITUS WITHOUT COMPLICATION
M5 FLUID AND ELECTROLYTE DISTURBANCES
M6 OTHER ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS
M7 DISORDERS OF LIPID METABOLISM

704: PROPORTION OF PATIENTS HOSPITALIZED WITH AMI THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: (continued)

M8 ANEMIA, COAGULATION, HEMORRHAGIC DISORDERS
M9 MENTAL AND BEHAVIORAL ILLNESS
MIRF1 INITIAL EPISODE OF AMI
MIRF10 HEART FAILURE, CARDIOMYOPATHY, CARDIOMEGALY, HYPERTENSIVE HEART
MIRF14 OBESITY, SLEEP APNEA
MIRF15 INTRA-AORTIC BALLOON PUMP
MIRF2 UNSPECIFIED EPISODE OF AMI
MIRF3 SUBSEQUENT CARE FOR AMI
MIRF4 SUBENDOCARDIAL INFARCT
MIRF5 CARDIAC CATHETERIZATION, ANGIOGRAPHY
MIRF6 PTCA, STENT, INTRACORONARY THROMBOLYTICS
MIRF7 PACEMAKER, AICD IMPLANTATION
MIRF8 ELECTROPHYSIOLOGICAL STUDIES, CRYOABLATION, CARDIOVERSION
MIRF9 CARDIAC ARRTHYTHMIAS AND CONDUCTION DISORDERS
NDEPR ANTIDEPRESSANTS
NSEDT SEDATIVES AND HYPNOTICS
P13 RESPIRATORY DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P14 NERVOUS SYSTEM, ENDOCRINE, HEAD AND NECK MINOR PROCEDURES
P23 RADIOLOGY AND RADIONUCLEAR DIAGNOSTIC SERVICES
P26 PHYSICAL THERAPY AND REHABILITATION
P27 ANCILLARY, HOME HEALTH, TRANSPORT
P28 MEDICATION ADMINISTRATION
P31 DME, VISUAL AND HEARING AIDS
P4 INVASIVE VASCULAR DIAGNOSTIC & MINOR THERAPEUTIC PROCEDURES

The risk adjustment variables and their prevalence in our population are listed in the enclosed workbook entitled NQF_AMI_Risk-Adjustment_2.16.10.xls – see tabs CIP_RiskFactors. The output of the regression model are given in the same workbook in the tab CIP_Prof_Risk-Adj Model.

The details of the codes that map to the risk-adjustment variables are given in the excel workbook entitled NQF_AMI_all_codes_1.22.10.xls

704: PROPORTION OF PATIENTS HOSPITALIZED WITH AMI THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Stratification: None

Numerator Time Window: The time window starts with a hospitalization for AMI and continues for one month after discharge.

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic administrative data/claims; Pharmacy data

Level: Clinicians: Group; Population: states; Population: counties or cities; Health Plan; Population: national; Population: regional/network

Setting: Other: Across entire continuum

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD)

Measure Steward: BTE

Description: Percent of adult population aged 18 – 65 years who were admitted to a hospital with stroke, were followed for one-month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period (Please reference attached document labeled NQF_Stroke_PACs_Risk_Adjustment_2.16.10.xls, tabs labeled CIP_Index PAC_Stays and CIP_PAC_Readmission). We define PACs during each time period as one of three types:

(A) PACs during the Index Stay (Hospitalization):

1. PACs related to the anchor condition: The index stay is regarded as having a PAC if during the index hospitalization for stroke the patient develops one or more complications such as hypertensive encephalopathy, malignant hypertension, coma, anoxic brain damage, or respiratory failure etc. that may result directly from stroke or its management.
2. PACs due to Comorbidities: The index stay is also regarded as having a PAC if one or more of the patient's controlled comorbid conditions is exacerbated during the hospitalization (i.e., it was not present on admission). Examples of these PACs are diabetic emergency with hypo- or hyperglycemia, pneumonia, lung complications, acute myocardial infarction, gastritis, ulcer, GI hemorrhage, etc.
3. PACs suggesting Patient Safety Failures: The index stay is regarded as having a PAC if there are one or more complications related to patient safety issues. Examples of these PACs are septicemia, meningitis, other infections, phlebitis, deep vein thrombosis, pulmonary embolism, or any of the CMS-defined hospital acquired conditions (HACs).

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Description: (continued)

(B) PACs during the 30-day post-discharge period:

1. PACs related to the anchor condition: Readmissions and emergency room visits during the 30-day post discharge period after a stroke are considered as PACs if they are for hypertensive encephalopathy, malignant hypertension, respiratory failure, coma, anoxic brain damage, etc.
2. PACs due to Comorbidities: Readmissions and emergency room visits during the 30-day post discharge period are also considered PACs if they are due to an exacerbation of one or more of the patient's comorbid conditions, such as a diabetic emergency with hypo- or hyperglycemia, pneumonia, lung complications, acute myocardial infarction, acute renal failure, etc.
3. PACs suggesting Patient Safety Failures: Readmissions or emergency room visits during the 30-day post discharge period are considered PACs if they are due to sepsis, infections, deep vein thrombosis, pulmonary embolism, or for any of the CMS-defined hospital acquired conditions (HACs).

The enclosed workbook labeled NQF_Stroke_PACs_Risk_Adjustment_2.16.10.xls, gives the frequency and costs associated with each of these types of PACs during the index hospitalization (tab labeled CIP_Index PAC_Stays) and for readmissions and emergency room visits during the 30-day post-discharge period (tab labeled CIP_PAC_Readmission). The information is based on a two-year national commercially insured population (CIP) claims database. The database had 4.7 million covered lives and $95 billion in "allowed amounts" for claims costs. The database was an administrative claims database with medical as well as pharmacy claims. The two tabs demonstrate the most common PACs that occurred in patients hospitalized with stroke.

Numerator: Outcome: Potentially avoidable complications (PACs) in patients hospitalized for stroke occurring during the index stay or in the 30-day post-discharge period.

Numerator Details: Patients that had an index hospitalization for stroke, and were identified as having services for potentially avoidable complications (PACs) either during the index hospitalization or within one month after discharge from the index hospitalization.

The enclosed excel workbook entitled NQF_Stroke_all_codes_1.22.10 gives the detailed codes for PACs. Services for PACs are identified as follows:

a. In the EXPND Stroke TRGS tab, claims with ICD-9 diagnosis codes, ICD-9 procedure codes or CPT codes marked with an assignment PAC in column B.

b. In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column E (labeled Stroke PAC)

c. In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in column D (labeled Stroke PAC)

d. In the Pharm tab, pharmacy claims that map to a category identified as a PAC in the Stroke Action Descr column

These claims are included as PACs only if the PAC is NOT present on admission AND the claims are considered as relevant to Stroke. Relevant claims are defined as claims that:

a. Have a "filter code" on the claim - see tab entitled "EXPND Stroke TRGS" - all codes with an assignment as typical or PAC in the enclosed worksheet are filter codes. One of these codes needs to be present on a claim to be included as relevant to the episode, AND

b. Do not have an exclusion code. Exclusion codes for numerator are defined in the same fashion as in the Denominator Exclusion section.

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Numerator Details: (continued)

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

Denominator: Adult patients aged 18 – 65 years who had a relevant hospitalization for stroke (with no exclusions) and were followed for one-month after discharge.

Denominator Details: Please refer to the enclosed excel workbook entitled NQF_Stroke_all_codes_1.22.10.

The target population should have the following criteria:

1. Have an index hospitalization with a trigger code as defined in the Stroke TRIGGERS tab
2. The patient should have continuous enrollment for the entire time window with no enrollment gaps with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).
3. Do not have an exclusion code. Exclusion codes are defined in the same fashion as in the Denominator Exclusion section.

Exclusions: Denominator exclusions include exclusions of either "patients" or "claims" based on the following criteria: (1)"Patients" excluded are those with that have any form of cancer, ESRD (end-stage renal disease), transplants such as lung or heart-lung transplant or complications related to transplants, intracranial trauma, pregnancy and delivery, HIV, or suicide. (2)"Claims" are excluded from the stroke measure if they are considered not relevant to stroke care or are for major surgical services that suggests that stroke may be a comorbidity or complication associated with the procedure, e.g., CABG procedure. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

Exclusions Details: Denominator exclusions include exclusions of "patients" as well as "claims" not relevant to stroke care. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

Please refer to the enclosed excel workbook entitled NQF_Stroke_all_codes_1.22.10.

1. "Patients" are excluded from the stroke measures if they meet one of the following criteria:

a. If age is <18 years or ≥65 years

b. If gender is missing

c. If they do not have continuous enrollment for the entire time window with no enrollment gaps with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Exclusions Details: (continued)

d. During the index hospitalization, patients have an in-hospital death or leave against medical advice.

e. The index hospital stay cost is an outlier (less than $50 or greater than $1 million).

f. Patients that have claims with ICD-9 diagnosis codes marked with an assignment "Termination" in column B in the EXPND Stroke TRGS tab.

g. Patients with claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column C labeled "Stroke Irrelevant cases (Terminate)" in the medical tab.

h. The total episode cost with all medical and pharmacy claims included for the episode time window is an outlier (less that $20 or greater than $2 million).

2. "Claims" are excluded from the stroke measure if they meet one of the following criteria:

a. In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column D labeled "Stroke Irrelevant claims (exclude)"

b. In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in column C labeled "Stroke Irrelevant claims (Exclude)"

c. In the Pharm tab, pharmacy claims that map to a category identified as a delete in the "Stroke Action Descr" column

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

Risk Adjustment: Conceptual Model: Variations in outcomes across populations may be due to patient-related factors or due to provider-controlled factors. When we adjust for patient-related factors, the remaining variance in PACs are due to factors that could be controlled by all providers that are managing or co-managing the patient, both during and after the hospitalization. We have developed a "severity index" based on patient-related factors such as patient demographics and comorbidities. The severity-adjusted PAC counts give a fair comparison of PACs and PAC rates from population to population and helps providers determine the degree of PACs that are not related to patient-level factors but due to factors that they could control and thus result in fewer PACs being incurred by patients and paid for by payers. Methodology Overview: A severity index is calculated for each patient based on the risk-adjustment model for professional and other services that determines the cost drivers for typical care for a given condition. Demographic variables, comorbid conditions, various types of services as well as different patient-level pharmacy indicators are fed into the model. Conditions and services that lead to higher costs and increased resource consumption are weighted more heavily in our model. For example, DME use is associated with a higher coefficient in the model. The model determines the patient-level factors that are drivers for increased financial risk. For each patient the "predicted" log coefficients from the severity adjustment model are summed to give the patient level severity index. Summing the patient level severity index helps derive the population level severity index. Adjusting the overall PAC rates by the severity-index for the population helps adjust for variations in outcomes related to severity. The risk-adjustment variables that were included were patient demographic factors such as age and gender, medical comorbidities, procedures performed, as well as pharmacy variables.

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: (continued)

Variable Descriptions:

AGE CONTINUOUS VARIABLE
GENDER FEMALE (MALE IS REFERENCE)
BACL1 ANTICOAGULANTS
EDIAB ANTIDIABETICS
ESTER STEROIDS
ETHYR THYROID DRUGS
GIACD ANTACIDS AND ANTISPASMODICS
GIEM ANTIEMETICS
HACEI ACEI, ARB, ANTI-RENIN DRUGS
HBBLK BETA-BLOCKERS
HCLBK CALCIUM CHANNEL BLOCKING AGENTS
HDIUR DIURETICS
HNITR NITRATES AND OTHER ANTIANGINALS
HOTHR OTHER CARDIOVASCULAR AGENTS
HPLT ANTIPLATELET AGENTS, THROMBIN INHIBITORS
HSTN STATINS AND OTHER ANTI-LIPID AGENTS
HVSDL VASODILATORS
IANTB ANTIBIOTICS
LBDIL BRONCHODILATORS AND OTHER ANTIASTHMATICS
LDECG DECONGESTANTS AND ANTIHISTAMINICS
LOTHR INHALERS AND RESPIRATORY AGENTS
M10 DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS
M12 ESSENTIAL HYPERTENSION
M13 HYPERTENSION WITH COMPLICATIONS AND SECONDARY HYPERTENSION
M14 HEART VALVE AND CONGENITAL HEART DISORDERS
M15 CORONARY ATHEROSCLEROSIS AND OTHER HEART DISEASE
M16 CHF, CARDITIS, CARDIOMYOPATHY

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: (continued)

M18 DISEASES OF ARTERIES ARTERIOLES AND CAPILLARIES
M2 DIABETES MELLITUS WITH CHRONIC END-ORGAN DAMAGE
M20 CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND BRONCHIECTASIS
M22 OTHER RESPIRATORY INFECTIONS AND DISEASES
M23 ESOPHAGEAL DISORDERS
M24 DISEASES OF THE DIGESTIVE SYSTEM
M26 CHRONIC RENAL FAILURE AND OTHER KIDNEY DISEASE
M29 DISEASES OF THE SKIN AND CONNECTIVE TISSUE
M32 CARDIAC DYSRHYTHMIAS
M35 DISEASES OF BONES, JOINTS, SPINE
M36 PREVENTATIVE, REHABILITATION AND AFTER CARE
M37 NAUSEA, VOMITING, MALAISE, FATIGUE, FEVER
M39 DEMENTIA, PARKINSON'S DISEASE
M4 DIABETES MELLITUS WITHOUT COMPLICATION
M40 RETINOPATHY, VISION DEFECTS, BLINDNESS
M5 FLUID AND ELECTROLYTE DISTURBANCES
M6 OTHER ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS
M7 DISORDERS OF LIPID METABOLISM
M8 ANEMIA, COAGULATION, HEMORRHAGIC DISORDERS
M9 MENTAL AND BEHAVIORAL ILLNESS
MSKRL SKELETAL MUSCLE RELAXANT COMBINATIONS
NACNV ANTICONVULSANTS
NANLG ANALGESICS AND ANTI-INFLAMMATORY
NDEPR ANTIDEPRESSANTS
NMCNS MISCALLENAEOUS CNS AGENTS
NSEDT SEDATIVES AND HYPNOTICS
P1 EYE, ENT, ORAL PROCEDURES
P13 RESPIRATORY DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: (continued)

P14 NERVOUS SYSTEM, ENDOCRINE, HEAD AND NECK MINOR PROCEDURES
P15 GI DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P23 RADIOLOGY AND RADIONUCLEAR DIAGNOSTIC SERVICES
P26 PHYSICAL THERAPY AND REHABILITATION
P27 ANCILLARY, HOME HEALTH, TRANSPORT
P28 MEDICATION ADMINISTRATION
P29 MENTAL HEALTH SERVICES
P31 DME, VISUAL AND HEARING AIDS
P35 CT HEAD, CEREBRAL ANGIOGRAM, DIAGNOSTIC TESTS HEAD AND NECK
P4 INVASIVE VASCULAR DIAGNOSTIC & MINOR THERAPEUTIC PROCEDURES
P6 NON-INVASIVE CARDIOVASCULAR PROCEDURES
SRF1 HEMORRHAGIC STROKE
SRF2 ISCHAEMIC, MIGRAINE, THROMBOEMBOLIC STROKE, CVA
SRF3 TRANSIENT CEREBRAL ISCHEMIA, TIA
SRF5 CHRONIC CEREBROVASCULAR DISEASE
SRF6 SYNCOPE, COLLAPSE, DIZZINESS, HYPOTENSION
SRF7 LATE EFFECTS OF CEREBROVASCULAR DISEASE
SRF8 OBESITY, SLEEP APNEA
SRF9 TOBACCO USE
ZNUTR IRON AND OTHER NUTRITIONAL SUPPLEMENTS

The risk adjustment variables and their prevalence in our population are listed in the enclosed workbook entitled NQF_Stroke_PACs_Risk_Adjustment_2.16.10 – see tabs CIP_RiskFactors. The output of the regression model are given in the same workbook in the tab CIP_Prof_Risk-Adj Model.

The details of the codes that map to the risk-adjustment variables are given in the excel workbook entitled NQF_Stroke_all_codes_1.22.10.xls

Stratification: None Listed

Numerator Time Window: The time window starts with a hospitalization for stroke and continues for one month after discharge.

Type: Outcome

705: PROPORTION OF PATIENTS HOSPITALIZED WITH STROKE THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Type Score: Rate/proportion

Data Source: Electronic administrative data/claims; Pharmacy data

Level: Clinicians: groups; Population: states; Population: counties or cities; Health Plan; Population: national; Population: regional/network; Facility/Agency

Setting: Other

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE

Measure Steward: American College of Surgeons

Description: This is a hospital based, risk adjusted, case mix adjusted morbidity and mortality aggregate outcome measure of adults 18+ years undergoing colorectal surgery.

Numerator: The outcome of interest is 30-day, hospital-specific risk-adjusted (all cause) mortality, a return to the operating room, or any of the following morbidities as defined by American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP): Cardiac Arrest requiring CPR, Myocardial Infarction, DVT requiring therapy, Sepsis, Septic Shock, Deep Incisional ssi, Organ/Space SSI, Wound Disruption, Unplanned Reintubation without prior ventilator dependence, Pneumonia without pre-operative pneumonia, Pulmonary Embolism, progressive Renal Insufficiency or Acute Renal Failure without pre-operative renal failure or dialysis, or UTI. All outcomes are definitively resolved within 30 days of any ACS NSQIP listed (CPT) surgical procedure. All variables (fields) are explicitly defined in the tradition of the ACS NSQIP and definitions are also submitted in these materials.

The current set of mortality and major complications for this measure was chosen based on prior work revealing that these complications are related to other important criteria such as large contributions to excess length of stay, large complication burdens, or correlations with mortality. Of note, the measure does specifically include return to the operating room within 30 days as a dependent outcome. In addition, the desire to limit the outcomes to significant events (i.e., some degree of severity according to certain criteria) is the reason that superficial wound infection is excluded from the measure.

Numerator Details: Mortality- "All cause" Death within 30 day follow-up period: Any death occurring through midnight on the 30th day after the date of the procedure, regardless of cause, in or out of the hospital.

All other outcome fields also defined explicitly in the tradition of ACS NSQIP:

Return to the Operating Room within Thirty Days after the Assessed Procedure: Return to the operating room includes all major surgical procedures that required the patient to be taken to the surgical operating room for intervention of any kind. "Major surgical procedures" are defined as those cases in any and all surgical subspecialties that meet Program criteria for inclusion.

Cardiac Arrest Requiring CPR: The absence of cardiac rhythm or presence of chaotic cardiac rhythm that results in loss of consciousness requiring the initiation of any component of basic and/or advanced cardiac life support. Patients with automatic implantable cardioverter defibrillator (AICD) that fire but the patient has no loss of consciousness should be excluded.

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE *(continued)*

Numerator Details: (continued)

Myocardial Infarction: An acute myocardial infarction occurring within 30 days following surgery as manifested by one of the following three criteria:

a. Documentation of ECG changes indicative of acute MI(one or more of the following):

- ST elevation >1 mm in two or more contiguous leads
- New left bundle branch
- New q-wave in two of more contiguous leads

b. New elevation in troponin greater than 3 times upper level of the reference range in the setting of suspected myocardial ischemia

c. Physician diagnosis of myocardial infarction.

Deep Vein Thrombosis (DVT)/Requiring Therapy: The identification of a new blood clot or thrombus within the venous system, which may be coupled with inflammation. This diagnosis is confirmed by a duplex, venogram or CT scan. The patient must be treated with anticoagulation therapy and/or placement of a vena cava filter or clipping of the vena cava.

Sepsis: Sepsis is the systemic response to infection. Report this variable if the patient has TWO OR MORE of the following five clinical signs and symptoms of Systemic Inflammatory Response Syndrome (SIRS):

a. Temp >38 degrees C (100.4 degrees F) or <6 degrees C (96.8 degrees F)

b. HR >90 bpm

c. RR >20 breaths/min or PaCO2 <32 mmHg(<4.3 kPa)

d. WBC >12,000 cell/mm3, <4000 cells/mm3, or >10% immature (band) forms

e. Anion gap acidosis: this is defined by either:

- [Na + K] – [Cl + HCO3 (or serum CO2)]. If this number is greater than 16, then an anion gap acidosis is present.
- Na – [Cl + HCO3 (or serum CO2)]. If this number is greater than 12, then an anion gap acidosis is present.

AND one of the following TWO:

a. positive blood culture

b. clinical documentation of purulence or positive culture from any site thought to be causative

Severe Sepsis/Septic Shock: Sepsis is considered severe when it is associated with organ and/or circulatory dysfunction. Report this variable if the patient has sepsis AND documented organ and/or circulatory dysfunction. Examples of organ dysfunction include: oliguria, acute alteration in mental status, acute respiratory distress. Examples of circulatory dysfunction include: hypotension, requirement of inotropic or vasopressor agents. Severe Sepsis/Septic Shock is assigned when it appears to be related to Sepsis and not a Cardiogenic or Hypovolemic etiology.

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE *(continued)*

Numerator Details: (continued)

Deep Incisional SSI: Deep Incision SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and infection involved deep soft tissues (for example, fascial and muscle layers) of the incision and at least one of the following: Purulent drainage from the deep incision but not from the organ/space component of the surgical site; A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (>38 C), localized pain, or tenderness, unless site is culture-negative; An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination; Diagnosis of a deep incision SSI by a surgeon or attending physician.

Organ/Space SSI: Organ/Space SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and the infection involves any part of the anatomy (for example, organs or spaces), other than the incision, which was opened or manipulated during an operation and at least one of the following: Purulent drainage from a drain that is placed through a stab wound into the organ/space; Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space; 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; Diagnosis of an organ/space SSI by a surgeon or attending physician.

Wound Disruption: Separation of the layers of a surgical wound, which may be partial or complete, with disruption of the fascia.

Unplanned Intubation for Respiratory/Cardiac Failure (without preoperative ventilator dependent): Patient required placement of an endotracheal tube and mechanical or assisted ventilation because of the onset of respiratory or cardiac failure manifested by severe respiratory distress, hypoxia, hypercarbia, or respiratory acidosis. In patients who were intubated for their surgery, unplanned intubation occurs after they have been extubated after surgery. In patients who were not intubated during surgery, intubation at any time after their surgery is considered unplanned.

Pneumonia (without preoperative pneumonia): if the patient has pneumonia meeting the definition below AND pneumonia was not present preoperatively. Patients with pneumonia must meet criteria from both Radiology and Signs/Symptoms/Laboratory sections listed as follows:

Radiology: One definitive chest radiological exam (x-ray or CT) with at least one of the following: New or progressive and persistent infiltrate, Consolidation or opacity, Cavitation. In patients with underlying pulmonary or cardiac disease (e.g., respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), two or more serial chest radiological exams (x-ray or CT) are required.

Signs/Symptoms/Laboratory

FOR ANY PATIENT, at least one of the following three:

a. Fever (>38 degrees C or >100.4 degrees F) with no other recognized cause

b. Leukopenia (<4000 WBC/mm3) or leukocytosis(=12,000 WBC/mm3)

c. For adults = 70 years old, altered mental status with no other recognized cause

AND

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE *(continued)*

Numerator Details: (continued)

At least one of the following four:

a. 5% Bronchoalveolar lavage (BAL) -obtained cells contain intracellular bacteria on direct microscopic exam (e.g., Gram stain)

b. Positive growth in blood culture not related to another source of infection

c. Positive growth in culture of pleural fluid

d. Positive quantitative culture from minimally contaminated lower respiratory tract (LRT) specimen (e.g., BAL or protected specimen brushing)

OR

At least two of the following four:

a. New onset of purulent sputum, or change in character of sputum, or increased respiratory secretions, or increased suctioning requirements

b. New onset or worsening cough, or dyspnea, or tachypnea

c. Rales or bronchial breath sounds

d. Worsening gas exchange (e.g., 02 desaturations (e.g., Pa02/Fi02 = 240), increased oxygen requirements, or increased ventilator demand)

Pulmonary Embolism: Lodging of a blood clot in a pulmonary artery with subsequent obstruction of blood supply to the lung parenchyma. The blood clots usually originate from the deep leg veins or the pelvic venous system. Pulmonary embolism is recorded if the patient has a V-Q scan interpreted as high probability of pulmonary embolism or a positive CT spiral exam, pulmonary arteriogram or CT angiogram. Treatment usually consists of: Initiation of anticoagulation therapy, Placement of mechanical interruption (for example Greenfield Filter), for patients in whom anticoagulation is contraindicated or already instituted.

Progressive Renal Insufficiency (without preoperative renal failure or dialysis): The reduced capacity of the kidney to perform its function as evidenced by a rise in creatinine of >2 mg/dl from preoperative value, but with no requirement for dialysis.

Acute Renal Failure Requiring Dialysis (without preoperative renal failure or dialysis): In a patient who did not require dialysis preoperatively, worsening of renal dysfunction postoperatively requiring hemodialysis, peritoneal dialysis, hemofiltration, hemodiafiltration, or ultrafiltration.

Urinary Tract Infection: Postoperative symptomatic urinary tract infection must meet ONE of the following TWO criteria:

Criterion One:

One of the following five:

a. fever (>38 degrees C),

b. urgency,

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE *(continued)*

Numerator Details: (continued)

c. frequency,
d. dysuria,
e. suprapubic tenderness

AND a urine culture of >100,000 colonies/ml urine with no more than two species of organisms.

OR

Criterion Two:
Two of the following five:
a. fever (>38 degrees C),
b. urgency,
c. frequency,
d. dysuria,
e. suprapubic tenderness

AND ANY ONE or MORE of the following seven:

f. Dipstick test positive for leukocyte esterase and/or nitrate,
g. Pyuria (>10 WBCs/mm3 or >3 WBC/hpf of unspun urine),
h. Organisms seen on Gram stain of unspun urine,
i. Two urine cultures with repeated isolation of the same uropathogen with >100 colonies/ml urine in non-voided specimen,
j. Urine culture with <100,000 colonies/ml urine of single uropathogen in patient being treated with appropriate antimicrobial therapy,
k. Physician's diagnosis,
l. Physician institutes appropriate antimicrobial therapy.

Denominator: Patients undergoing any ACS NSQIP listed (primary CPT) colorectal surgical procedure. (44140, 44141, 44143, 44144, 44145, 44146, 44147, 44150, 44151, 44155, 44156, 44157, 44158, 44160, 44204, 44205, 44206, 44207, 44208, 44210, 44211, 44212, 45110, 45111, 45112, 45113, 45114, 45116, 45119, 45120, 45121, 45123, 45126, 45130, 45135, 45160, 45395, 45397, 45402, 45550)

Notes: following codes are not included in this denominator list: 44152 (not found), 44153 (not found), 44239 (not found), 45540 (proctopexy without resection), 45499 (unlisted laparoscopy, rectum).

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE *(continued)*

Denominator Details: Cases are collected so as to match ACS NSQIP inclusion and exclusion criteria, thereby permitting valid application of ACS NSQIP model-based risk adjustment. See also exclusions below.

Exclusions: As noted above, cases are collected so as to match ACS NSQIP inclusion and exclusion criteria, thereby permitting valid application of ACS NSQIP model-based risk adjustment. Therefore, trauma and transplant surgeries are excluded as are surgeries not on the ACS NSQIP CPT list as eligible for selection (see details in next item). Patients who are ASA 6 (brain-death organ donor) are not eligible surgical cases. Of note, the measure excludes patients identified as having had prior surgical procedures within 30 days of a potential index procedure, since this measure is based on 30 day outcomes. A patient who is identified as having had a prior surgical procedure within 30 days of the index case being considered is excluded from accrual. A patient who has a second surgical procedure performed within 30 days after an index procedure has the second procedure recorded as a "Return to the operating room within 30 days" (one of the outcomes defined), but the second procedure cannot be accrued into the program as a new index procedure.

Exclusions Details: A patient who is admitted to the hospital with acute trauma and has surgery for that trauma is excluded though any operation performed after the patient has been discharged from the trauma stay can be included. A patient who is admitted to the hospital for a transplant and has a transplant procedure and any additional surgical procedures during the transplant hospitalization will be excluded, though any operation performed after the patient has been discharged from the transplant stay is eligible for selection. Donor procedures on living donors are not excluded unless meeting other exclusion criteria. If surgeries do not appear in the list of ACS NSQIP CPT codes, they are not eligible for selection. A patient classified as ASA Class 6 is not eligible for inclusion.

As noted above, the measure excludes patients identified as having had prior surgical procedures within 30 days of a potential index procedure, since this measure is based on 30 day outcomes. A patient who is identified as having had a prior surgical procedure within 30 days of the index case being considered is excluded from accrual. A patient who has a second surgical procedure performed within 30 days after an index procedure has the second procedure recorded as a "Return to the operating room within 30 days" (one of the outcomes defined), but the second procedure cannot be accrued into the program as a new index procedure.

Risk Adjustment: Case-mix adjustment. From 271,368 patient records in the 2008 ACS NSQIP Data file ; 21,694 acceptable records from 211 hospitals (mean/hospital=103) were analyzed. Records were excluded either because of missing values for critical variables or because the primary CPT code could not be categorized into 1 of the 136 pre-established CPT "Risk" groups. These categorizations have been defined and implemented for risk adjustment in previously published research.* Missing variables within the ACS NSQIP framework are traditionally handled by imputation, generally invoked mainly for laboratory variables since case inclusion typically requires complete data (For a discussion of imputation issues within the program approach see J Am Coll Surg 2010;210:125-139).

An outcome was defined as 30-day mortality or any serious morbidity including: cardiac arrest requiring CPR, myocardial infarction, DVT requiring therapy, sepsis, septic shock, organ space SSI, deep incisional SSI, wound disruption, unplanned reintubation without prior ventilator dependence, pneumonia without pre-operative pneumonia, pulmonary embolism, progressive renal insufficiency or acute renal failure without pre-operative renal failure or dialysis, urinary tract infection, or return to the operating room, according to ACS NSQIP definitions. Of the 21,694 patients, 4,862 (22.4%) experienced death or a serious morbidity event.

To control for procedure-specific effects, CPT code was originally considered a categorical variable but, to maintain methodological consistency with other proposed measures, CPT code was converted to a continuous scalar risk variable: "CPT Risk". This was accomplished by making the categorical CPT code variable a single predictor for mortality/morbidity and invoking the Firth penalized likelihood method in the logistic modeling software (SAS PROC LOGISTIC). The patient-based predicted log odds from this model for each CPT code was then used as a continuous predictor in subsequent

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE *(continued)*

Risk Adjustment: (continued)

logistic models which also included all other specified risk predictors. The result is that the scalar "CPT Risk" variable included in the subsequent regressions provides a very high level of control for "procedure" or "procedure mix" within the measure. This alleviates the majority of concern over the measure being dominated by unique, procedure-specific effects. This control is further enhanced by the limited CPT code set for the measure focusing on colon and rectal surgery.

Step-wise logistic regression ($P<0.05$ for inclusion), which selected from a total of 26 NSQIP predictors, identified 20 predictors for inclusion in the model. In order of inclusion these variables were: ASA Class, pre-operative Functional Status, Indication, Log Odds CPT (CPT Risk), Emergent, Wound Class, Dyspnea, Weight Loss, Steroid Use, Smoking, Disseminated Cancer, History of COPD, Ascites, Hypertension, Ventilator Dependent, Age Group, Radio Therapy, Alcohol Use, Bleeding Disorder, and Previous Vascular Event/Disease. The c-statistic was 0.738 and the Hosmer-Lemeshow was 0.043. Because of the very large sample sizes studied here, a statistically significant Hosmer-Lemeshow statistic is not considered informative with respect to calibration.

Using only the first six selected variables (ASA Class, pre-operative Functional Status, Indication, Log Odds CPT (CPT Risk), Emergent, and Wound Class), the c-statistic was 0.727 and the Hosmer-Lemeshow was 0.177). The use of these six predictors for modeling was further evaluated. Using a 95% confidence interval for the ratio of observed to expected events (O/E), this six-variable logistic model identified 16 statistical outliers (10 low outliers and 6 high outliers). When the same six variables were used in a random intercept, fixed slope, hierarchical model (SAS PROC GLIMMIX) using only the fixed portion of the prediction equation (NOBLUP option), 17 outliers were detected (11 low outliers and 6 high outliers). Thus, using a 95% confidence interval, logistic and hierarchical models identified 3% of hospitals as high outliers. When the logistic model parameters were applied to an independent validation data set (the 2007 Data file composed of 18,098 patients) after coding CPT Risk with log odds derived from the original 1-variable model on 2008 data, the c-statistic was essentially unchanged (c-statistic=0.721).

A GEE (generalized estimating equations) approach (SAS PROC GENMOD) with compound symmetry was used to estimate the intraclass correlation (ICC) which is reported in GENMOD as the exchangeable working correlation. The ICC was 0.0106. The relationship between sample size, the ICC, and reliability is defined as: $N=R / [ICC(1 - R)] - R / (1 - R)$, where N is the required number patients per hospital and R is reliability. Based on the estimated ICC, patients per hospital to achieve reliability levels of 0.3, 0.4, 0.5, 0.6, and 0.7 are 41, 63, 94, 141, and 219, respectively.

For the table detailing risk factors, odds ratios, and parameters for the logistic model, please see attachment (Parsimonious Model for Colorectal.doc)

For initial year(s) of measure use, ACS NSQIP data-derived model parameters will be used to construct risk-adjusted O/E ratios for participating hospitals. Once data from measure-participating hospitals is substantial, models will derived from that data.

*References utilizing CPT groups

1. Hall BL, Hamilton BH, Richards K, et al. Does Surgical Quality Improve in the American College of Surgeons National Surgical Quality Improvement Program: An Evaluation of All Participating Hospitals. Ann Surg, in press.
2. Hall BL, Hsiao EY, Majercik S, et al. The impact of surgeon specialization on patient mortality: examination of a continuous Herfindahl-Hirschman index. Ann Surg 2009; 249(5):708-16.
3. Cohen ME, Bilimoria KY, Ko CY, Hall BL. Development of an American College of Surgeons National Surgery Quality Improvement Program: morbidity and mortality risk calculator for colorectal surgery. J Am Coll Surg 2009; 208(6):1009-16.
4. Schilling PL, Dimick JB, Birkmeyer JD. Prioritizing quality improvement in general surgery. J Am Coll Surg 2008; 207(5):698-704.

706: RISK ADJUSTED COLORECTAL SURGERY OUTCOME MEASURE *(continued)*

Stratification: There is no stratification of this risk-adjusted measure.
Note: if an implementation required stratification by race or ethnicity post-hoc, then race/ethnicity variables could be added to the implementation with no other changes necessary under the measure.

Numerator Time Window: Targeted events within 30 days of the index operation are included.

Type: Outcome

Type Score: Ratio

Data Source: Paper medical record/flow-sheet; Electronic clinical data; Electronic Health/Medical Record; Lab data; Management data

Level: Facility/Agency; Population: national; Population: regional/network; Population: states

Setting: Hospital; Ambulatory Care: Hospital Outpatient

707: 30-DAY POST-HOSPITAL PNA (PNEUMONIA) DISCHARGE CARE TRANSITION COMPOSITE MEASURE

Measure Steward: Brandeis University/CMS

Description: This measure scores a hospital on the incidence among its patients during the month following discharge from an inpatient stay having a primary diagnosis of PNA for three types of events: readmissions, ED visits, and evaluation and management (E&M) services. These events are relatively common, measurable using readily available administrative data, and associated with effective coordination of care after discharge. The input for this score is the result of measures for each of these three events that are being submitted concurrently under the Patient Outcomes Measures Phase II project's Call for Measures. Each of these individual measures is a risk-adjusted, standardized rate together with a percentile ranking. This composite measure is a weighted average of the deviations of the three risk-adjusted, standardized rates from the population mean for the measure across all patients in all hospitals. Again, the composite measure is accompanied by a percentile ranking to help with its interpretation.

Numerator: The numerator is the weighted sum of the three deviations from their expected values for the individual measures comprising the component measure. The question of appropriate weights on the deviations is difficult and would probably lead to a wide variation in opinion. The weights of –4, –2, and 1 are selected to represent order of magnitude differences in seriousness of the three outcomes, which most would agree to (that is to say: readmission is more important than ED, which is more important in a negative way than E & M service is in a positive way). The idea on not using weights was also considered, but this was noted to be itself a de facto weight scheme (with all weights the same), and as such, a weight scheme that was less appropriate than the one chosen.

Numerator Details: The details on each individual measure comprising the component measure are provided in their submission for NQF approval.

Denominator: N/A The composite measure is the weighted of three individual measures. Thus, the denominator is one.

707: 30-DAY POST-HOSPITAL PNA (PNEUMONIA) DISCHARGE CARE TRANSITION COMPOSITE MEASURE *(continued)*

Denominator Details: N/A

Exclusions: N/A

Exclusions Details: N/A

Risk Adjustment:

Stratification: N/A

Numerator Time Window: Each of the individual measures in the composite is computed annually, as a three year rolling average.

Type: Composite

Type Score: Weighted score/composite/scale

Data Source: Electronic adminstrative data/claims

Level: Population: national

Setting: Hospital

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD)

Measure Steward: BTE

Description: Percent of adult population aged 18 – 65 years who were admitted to a hospital with Pneumonia, were followed for one-month after discharge, and had one or more potentially avoidable complications (PACs). PACs may occur during the index stay or during the 30-day post discharge period (Please reference attached document labeled NQF Pneumonia PACs Risk Adjustment 2.16.10.xls, tabs labeled CIP_Index PAC_Stays and CIP_PAC_Readmission). We define PACs during each time period as one of three types:

(A) PACs during the Index Stay (Hospitalization):

1. PACs related to the anchor condition: The index stay is regarded as having a PAC if during the index hospitalization the patient develops one or more of the avoidable complications that can result from pneumonia, such as respiratory failure, respiratory insufficiency, pneumothorax, pulmonary collapse, or requires respiratory intubation and mechanical ventilation, incision of pleura, thoracocentesis, chest drainage, tracheostomy etc.

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Description: (continued)

2. PACs due to Comorbidities: The index stay is also regarded as having a PAC if one or more of the patient's controlled comorbid conditions is exacerbated during the hospitalization (i.e., it was not present on admission). Examples of these PACs are diabetic emergency with hypo- or hyperglycemia, stroke, coma, gastritis, ulcer, GI hemorrhage, acute renal failure, etc.
3. PACs suggesting Patient Safety Failures: The index stay is regarded as having a PAC if there is one or more complication related to patient safety issues. Examples of these PACs are infections, sepsis, phlebitis, deep vein thrombosis, pulmonary embolism or any of the CMS-defined hospital acquired conditions (HACs).

(B) PACs during the 30-day post discharge period:

1. PACs related to the anchor condition: Readmissions and emergency room visits during the 30-day post discharge period are considered PACs if they are for potentially avoidable complications of pneumonia such as respiratory failure, respiratory insufficiency, pneumonia, respiratory intubation, mechanical ventilation, etc.
2. PACs due to Comorbidities: Readmissions and emergency room visits during the 30-day post discharge period are also considered PACs if they are due to an exacerbation of one or more of the patient's comorbid conditions, such as a diabetic emergency with hypo- or hyperglycemia, stroke, coma, gastritis, ulcer, GI hemorrhage, acute renal failure, etc.
3. PACs suggesting Patient Safety Failures: Readmissions or emergency room visits during the 30-day post discharge period are considered PACs if they are due to sepsis, infections, phlebitis, deep vein thrombosis, or for any of the CMS-defined hospital acquired conditions (HACs).

The enclosed workbook labeled NQF Pneumonia PACs Risk Adjustment 2.16.10.xls, gives the frequency and costs associated with each of these types of PACs during the index hospitalization (tab labeled CIP_Index PAC_Stays) and for readmissions and emergency room visits during the 30-day post-discharge period (tab labeled CIP_PAC_Readmission). The information is based on a two-year national commercially insured population (CIP) claims database. The database had 4.7 million covered lives and $95 billion in "allowed amounts" for claims costs. The database was an administrative claims database with medical as well as pharmacy claims. The two tabs demonstrate the most common PACs that occurred in patients hospitalized with pneumonia.

Numerator: Outcome: Potentially avoidable complications (PACs) in patients hospitalized for pneumonia occurring during the index stay or in the 30-day post-discharge period.

Numerator Details: Patients that had an index hospitalization for pneumonia, and were identified as having services for potentially avoidable complications (PACs) either during the index hospitalization or within one month after discharge from the index hospitalization.

The enclosed excel workbook entitled NQF_Pneumonia_all_codes_1 22 10 gives the detailed codes for PACs. Services for PACs are identified as follows:

a. In the EXPND Pneumonia TRGS tab, claims with ICD-9 diagnosis codes, ICD-9 procedure codes or CPT codes marked with an assignment PAC in column B.

b. In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column E (labeled Pneumonia PAC)

c. In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in column D (labeled Pneumonia PAC)

d. In the Pharm tab, pharmacy claims that map to a category identified as a PAC in the Pneum action descr column

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Numerator Details: (continued)

These claims are included as PACs only if the PAC is NOT present on admission AND the claims are considered as relevant to Pneumonia. Relevant claims are defined as claims that:

a. Have a "filter code" on the claim - see tab entitled "EXPND Pneumonia TRGS" - all codes with an assignment as typical or PAC in the enclosed worksheet are filter codes. One of these codes needs to be present on a claim to be included as relevant to the episode, AND

b. Do not have an exclusion code. Exclusion codes for numerator are defined in the same fashion as in the Denominator Exclusion section.

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

Denominator: Adult patients aged 18 – 65 years who had a relevant hospitalization for pneumonia (with no exclusions) and were followed for one-month after discharge.

Denominator Details: Please refer to the enclosed excel workbook entitled NQF_Pneumomia_all_codes_1 22 10.

The target population should have the following criteria:

1. Have an index hospitalization with a trigger code as defined in the Pneumonia TRIGGERS tab
2. The patient should have continuous enrollment for the entire time window with no enrollment gaps with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).
3. Do not have an exclusion code. Exclusion codes are defined in the same fashion as in the Denominator Exclusion section.

Exclusions: Denominator exclusions include exclusions of either "patients" or "claims" based on the following criteria: (1)"Patients" excluded are those that have any form of cancer (especially cancer of lung and bronchus), thalassemia, sickle-cell disease, ESRD (end-stage renal disease), transplants such as lung or heart-lung transplant or complications related to transplants, pregnancy and delivery, HIV, or suicide. (2)"Claims" are excluded from the Pneumonia measure if they are considered not relevant to pneumonia care or are for major surgical services that suggests that pneumonia may be a comorbidity associated with the procedure e.g., CABG procedure. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Exclusions Details: Denominator exclusions include exclusions of "patients" as well as "claims" not relevant to pneumonia care. Patients where the index hospitalization claim is excluded are automatically excluded from both the numerator and the denominator.

Please refer to the enclosed excel workbook entitled NQF_Pneumonia_all_codes_1 22 10.

1. "Patients" are excluded from the Pneumonia measures if they meet one of the following criteria:

a. If age is <18 years or ≥65 years

b. If gender is missing

c. If they do not have continuous enrollment for the entire time window with no enrollment gaps with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).

d. During the index hospitalization, patients do not have an in-hospital death or do not leave against medical advice.

e. The index hospital stay cost is not an outlier (less than $50 or greater than $1 million).

f. In the EXPND Pneumonia TRGS tab, patients that have claims with ICD-9 diagnosis codes marked with an assignment Terminate in column B.

g. In the medical tab, patients with claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column C labeled Pneumonia Irrelevant cases (Terminate).

h. The total episode cost is not an outlier (for medical claims total costs are not less that $20 or greater than $1 million; and for pharmacy claims, total costs are not greater than $1 million).

2. "Claims" are excluded from the pneumonia measures if they meet one of the following criteria:

a. In the medical tab, claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in column D labeled Pneumonia Irrelevant claims (exclude)

b. In the proc tab, claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in column C labeled Pneumonia Irrelevant claims

c. In the Pharm tab, pharmacy claims that map to a category identified as a delete in the Pneumonia action descr column

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: Conceptual Model: Variations in outcomes across populations may be due to patient-related factors or due to provider-controlled factors. When we adjust for patient-related factors, the remaining variance in PACs are due to factors that could be controlled by all providers that are managing or co-managing the patient, both during and after the hospitalization. We have developed a "severity index" based on patient-related factors such as patient demographics and comorbidities. The severity-adjusted PAC counts give a fair comparison of PACs and PAC rates from population to population and helps providers determine the degree of PACs that are not related to patient-level factors but due to factors that they could control and thus result in fewer PACs being incurred by patients and paid for by payers. Methodology Overview: A severity index is calculated for each patient based on the risk-adjustment model for professional and other services that determines the cost drivers for typical care for a given condition. Demographic variables, comorbid conditions, various types of services as well as different patient-level pharmacy indicators are fed into the model. Conditions and services that lead to higher costs and increased resource consumption are weighted more heavily in our model. For example, DME use is associated with a higher coefficient in the model. The model determines the patient-level factors that are drivers for increased financial risk. For each patient the "predicted" log coefficients from the severity adjustment model are summed to give the patient level severity index. The risk-adjustment variables that were included were patient demographic factors such as age and gender, medical comorbidities, procedures performed, as well as pharmacy variables.

Variable Descriptions:

AGE CONTINUOUS VARIABLE
BACL1 ANTICOAGULANTS
EDIAB ANTIDIABETICS
ESTER STEROIDS
GENDER 1=M 0=F
GIEM ANTIEMETICS
HACEI ACEI, ARB, ANTI-RENIN DRUGS
HBBLK BETA-BLOCKERS
HCLBK CALCIUM CHANNEL BLOCKING AGENTS
HDIUR DIURETICS
HNITR NITRATES AND OTHER ANTIANGINALS
HOTHR OTHER CARDIOVASCULAR AGENTS
HPLT ANTIPLATELET AGENTS, THROMBIN INHIBITORS
HVSDL VASODILATORS
IANTB ANTIBIOTICS
LBDIL BRONCHODILATORS AND OTHER ANTIASTHMATICS
LDECG DECONGESTANTS AND ANTIHISTAMINICS
LOTHR INHALERS AND RESPIRATORY AGENTS

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: (continued)

M1 TB, MYCOSES, OTHER INFECTIOUS AND PARASITIC DISEASES
M10 DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS
M12 ESSENTIAL HYPERTENSION
M13 HYPERTENSION WITH COMPLICATIONS AND SECONDARY HYPERTENSION
M14 HEART VALVE AND CONGENITAL HEART DISORDERS
M15 CORONARY ATHEROSCLEROSIS AND OTHER HEART DISEASE
M16 CHF, CARDITIS, CARDIOMYOPATHY
M18 DISEASES OF ARTERIES ARTERIOLES AND CAPILLARIES
M20 CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND BRONCHIECTASIS
M21 ASTHMA
M22 OTHER RESPIRATORY INFECTIONS AND DISEASES
M23 ESOPHAGEAL DISORDERS
M24 DISEASES OF THE DIGESTIVE SYSTEM
M26 CHRONIC RENAL FAILURE AND OTHER KIDNEY DISEASE
M29 DISEASES OF THE SKIN AND CONNECTIVE TISSUE
M3 THYROID DISORDERS
M32 CARDIAC DYSRHYTHMIAS
M35 DISEASES OF BONES, JOINTS, SPINE
M36 PREVENTATIVE, REHABILITATION AND AFTER CARE
M37 NAUSEA, VOMITING, MALAISE, FATIGUE, FEVER
M4 DIABETES MELLITUS WITHOUT COMPLICATION
M5 FLUID AND ELECTROLYTE DISTURBANCES
M6 OTHER ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS
M7 DISORDERS OF LIPID METABOLISM
M8 ANEMIA, COAGULATION, HEMORRHAGIC DISORDERS
M9 MENTAL AND BEHAVIORAL ILLNESS
NSEDT SEDATIVES AND HYPNOTICS
P14 NERVOUS SYSTEM, ENDOCRINE, HEAD AND NECK MINOR PROCEDURES

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Risk Adjustment: (continued)

P15 GI DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P23 RADIOLOGY AND RADIONUCLEAR DIAGNOSTIC SERVICES
P27 ANCILLARY, HOME HEALTH, TRANSPORT
P28 MEDICATION ADMINISTRATION
P31 DME, VISUAL AND HEARING AIDS
P35 BRONCHOSCOPY, MEDIASTINOSCOPY
P36 CT SCAN AND OTHER RESPIRATORY DIAGNOSTIC PROCEDURES
P6 NON-INVASIVE CARDIOVASCULAR PROCEDURES
PNRF10 OBESITY, SLEEP APNEA
PNRF11 OTHER RESPIRATORY SYMPTOMS, SUPPL O2
PNRF12 PNEUMONIA: SALMONELLA, POST VIRAL, TB, FUNGAL, OTHER
PNRF2 STREPT, PNEUMOCOCCAL, H.INFLUENZAE, OTHER SPECIFIED PNEUMONIAE
PNRF3 MYCOPLASMA, CHLAMYDIA, BRONCHOPNEUMONIA
PNRF5 STAPH, MRSA, GRAM NEG & ANAEROBIC PNEUMONIA
PNRF6 ACUTE RESPIRATORY INFECTIONS
PNRF7 ACUTE EXACERBATION OF COPD, ASTHMA
PNRF8 PLEURAL EFFUSION
PNRF9 TOBACCO USE
SMKS SMOKING CESSATION AGENTS
ZNUTR IRON AND OTHER NUTRITIONAL SUPPLEMENTS

The risk adjustment variables and their prevalence in our population are listed in the enclosed workbook entitled NQF Pneumonia PACs Risk Adjustment 2.16.10.xls – see tabs CIP_Risk Factors. The output of the regression model are given in the same workbook in the tab CIP_Prof_Risk_adj Model.

The details of the codes that map to the risk-adjustment variables are given in the excel workbook entitled NQF_Pneumonia_all_codes_1 22 10.xls

Stratification: None Listed

Numerator Time Window: The time window starts with a hospitalization for pneumonia and continues for one month after discharge

Type: Outcome

708: PROPORTION OF PATIENTS HOSPITALIZED WITH PNEUMONIA THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION (DURING THE INDEX STAY OR IN THE 30-DAY POST-DISCHARGE PERIOD) *(continued)*

Type Score: Rate/proportion

Data Source: Pharmacy data; Electronic administrative data/claims

Level: Population: national; Population: regional/network; Population: states; Population: counties or cities; Clinicians: Group; Health Plan

Setting: Other

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR

Measure Steward: BTE

Description: Percent of adult population aged 18 – 65 years who were identified as having at least one of the following six chronic conditions: Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma, were followed for one-year, and had one or more potentially avoidable complications (PACs). A Potentially Avoidable Complication is any event that negatively impacts the patient and is potentially controllable by the physicians and hospitals that manage and co-manage the patient. Generally, any hospitalization related to the patient's core chronic condition or any co-morbidity is considered a potentially avoidable complication, unless that hospitalization is considered to be a typical service for a patient with that condition. Additional PACs that can occur during the calendar year include those related to emergency room visits, as well as other professional or ancillary services tied to a potentially avoidable complication. (Please reference attached document labeled NQF_Chronic_Care_PACs_Risk_Adjustment_2.9.10.xls). We define PAC hospitalizations and PAC professional and other services as one of three types:

(A) PAC-related Hospitalizations:

1. Hospitalizations related to the anchor condition: Hospitalizations due to acute exacerbations of the anchor condition are considered PACs. For example, a hospitalization for a diabetic emergency in a diabetic patient, or a hospitalization for an acute pulmonary edema in a CHF patient. Note that for patients with CAD, many hospitalizations are part of typical care and not considered PACs.
2. Hospitalizations due to Comorbidities: Hospitalizations due to any of the patient's comorbid conditions are considered PACs. For example, a diabetic emergency or pneumonia hospitalization for a patient with heart failure. Note that hospitalizations for a major surgical procedure (such as joint replacement, CABG, etc.) are not counted as PACs.
3. Hospitalizations suggesting Patient Safety Failures: Hospitalizations for major infections, deep vein thrombosis, adverse drug events, and other patient safety-related events are considered PACs.

(B) Other PACs during the calendar year studied:

1. PACs related to the anchor condition: Emergency room visits, professional and ancillary services related to the anchor condition are considered PACs if they are due to an acute exacerbation of the anchor condition such as acute exacerbation of COPD in patients with lung disease, or acute heart failure in patients with CHF.
2. PACs due to Comorbidities: Emergency room visits, professional and ancillary services are considered PACs if they are due to an exacerbation of one or more of the patient's comorbid conditions, such as an acute exacerbation of COPD or acute heart failure in patients with diabetes.

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*

Description: (continued)

3. ACs suggesting Patient Safety Failures: Emergency room visits, professional and ancillary services for major infections, deep vein thrombosis, adverse drug events, and other patient safety-related events are considered PACs.

The summary tab in the enclosed workbook labeled NQF_Chronic_Care_PACs_Risk_Adjustment_2.9.10.xls gives the overview of the frequency and costs associated with each of these types of PACs for each of the six chronic conditions. Detailed drill-down tabs (e.g., DM IP Stay and DM Prof + OP fac) are also provided in the same workbook for each of the six chronic conditions to highlight high-frequency PACs.

The information is based on a two-year, national, commercially insured population (CIP), claims database. The database had 4.7 million covered lives and $95 billion in "allowed amounts" for claims costs. The database was an administrative claims database with medical as well as pharmacy claims. It is important to note that while the overall frequency of PAC hospitalizations are low (for all chronic care conditions summed together, PAC frequency was 6.32% of all PAC occurrences), they amount to over 58% of the PAC medical costs.

Numerator: Outcome: Potentially avoidable complications (PACs) in patients having one of six chronic conditions: Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma, during the episode time window of one calendar year (or 12 consecutive months).

Numerator Details: Patients that had a trigger for one of the six chronic conditions: Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma, and were identified as having services for potentially avoidable complications (PACs) either due to hospitalizations, emergency room visits or related professional services during the one-calendar year (12 months) from the trigger code.

The enclosed excel workbook entitled NQF_Chronic_Care_All_Codes_2.9.10 gives the detailed codes for PACs.

Services for PACs are identified as follows:

1. All hospitalizations and emergency room visits related to care of one of the chronic care conditions are considered PACs except in CAD, where some hospitalizations and ER visits are considered part of typical care.
2. There are six "Expanded triggers" tabs for each of the six chronic conditions identified above (i.e., Diabetes Expnd_trgs, CHF Expnd_trgs, CAD Expnd_trgs, HTN Expnd_trgs, COPD Expnd_trgs, Asthma Expnd_trgs). In each of the Expnd Trgs tab, PAC assignments are given in column A for ICD-9 diagnosis codes, ICD-9 procedure codes as well as CPT codes.
3. In the Medical tab, ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in columns labeled PAC. There are six columns for each of the six chronic conditions.
4. In the Procedural tab, ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in columns labeled PAC. There are six columns for each of the six chronic conditions.
5. In the Pharm tab, pharmacy codes that map to a category 2 with an assignment PAC. There are six columns for each of the six chronic conditions.

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*

Numerator Details: (continued)

Claims are only included as PACs if they are considered as relevant to the anchor chronic condition. Relevant claims are defined as claims that:

a. Have a "filter code" on the claim – in the tabs entitled "Expnd Trgs" - all codes with an assignment as typical or PAC are filter codes. One of these codes needs to be present on a claim to be included as relevant to the episode, AND

b. Do not have an exclusion code. Exclusion codes for numerator are defined in the same fashion as in the Denominator Exclusion section.

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification Syastem to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

Denominator: Adult patients aged 18 – 65 years who had a trigger code for one of the six chronic conditions: Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma (with no exclusions), and were followed for one year from the trigger code.

Denominator Details: Please refer to the enclosed excel workbook entitled NQF_Chronic_Care_All_Codes_2.9.10.

The target population should have the following criteria:

1. Patients that had a trigger for one of the six chronic conditions: Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma, and were followed up for a one-year from the trigger code (see tab entitled "Triggers" in the enclosed workbook).
2. The trigger claim should not be an inpatient stay claim
3. The trigger claim should not have one of the acute exacerbation codes as identified in the "Triggers" tab labeled as "trigger exclusions"
4. The patient should have continuous enrollment for the one year from the trigger code with a maximum of 30-day continuous enrollment gap with the entity providing the data (so we can ensure that the database has captured most of the claims for the patient in the time window).
5. Does not have an exclusion code. Exclusion codes are defined in the Denominator Exclusion section.

Exclusions: Denominator exclusions include exclusions of either "patients" or "claims" based on the following criteria:

1. "Patients" excluded are those with that have any form of cancer, ESRD (end-stage renal disease), transplants such as lung or heart-lung transplant or complications related to transplants, pregnancy and delivery, HIV, or suicide.
2. "Patients" are also excluded if they have case-breaker situations such as cardiac arrest, shock, coma or brain damage.

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*

Exclusions: (continued)

3. "Claims" are excluded from the chronic care measure if they are not considered relevant to the care for the chronic condition, such as trauma related claims; or are for major surgical services that suggest that the chronic condition should be a comorbidity associated with the procedure, e.g., CABG procedure, or Hip replacement surgery etc.
4. Additionally, the episode does not start until there is a stable trigger claim. For patients where the initial trigger code is on a hospital claim, or if the initial trigger claim has a trigger exclusion code (suggesting that the patient is unstable at the time of trigger), the episode is triggered only when a stable trigger claim is identified. Claims relevant to the chronic condition but prior to the trigger claim are therefore excluded from the measure. This gives the physicians the benefit of being measured on patients that are stable at the time the episode period (12 months) is triggered.

Exclusions Details: Denominator exclusions include exclusions of "patients" as well as "claims" not relevant to the care of any of the six chronic conditions being studied, namely Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma.

Please refer to the enclosed excel workbook entitled NQF_Chronic_Care_All_Codes_2.9.10.

1. "Patients" are excluded from the chronic care measures if they meet one of the following criteria:

a. If age is <18 years or ≥65 years

b. If gender is missing

c. If they do not have continuous enrollment for the entire one-year time window from the trigger claim with a maximum of 30-day continuous enrollment gap with the entity providing the data (so we can ensure that the database has captured all the claims for the patient in the time window).

d. If patient had an in-hospital death or leave against medical advice.

e. Patients that have claims with ICD-9 diagnosis codes, ICD-9 procedure codes or CPT codes marked with an assignment "Termination" in column A in the Expnd trgs tab of the chronic condition under study (e.g., CHF Expnd trgs for CHF episode).

f. Patients with claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in any of the six columns labeled "Irrelevant cases (exclude patient)" in the medical tab.

g. The total episode cost with all medical and pharmacy claims included for the one-year time window is an outlier (less that $20 or greater than $2 million).

2. "Claims" are excluded from the chronic care measure if they meet one of the following criteria:

a. Claims that do not have a "filter" code for the chronic condition under study are considered irrelevant to that episode and are excluded. All codes with an assignment of Typical or PAC in each of the "Expnd Trgs" tab are filter codes for that chronic condition.

b. Claims with ICD-9 diagnosis codes that map to one of the CCS diagnosis categories identified as a "1" in any of the columns labeled "Irrelevant claims (exclude claim)" in the medical tab.

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*

Exclusions Details: (continued)

c. Claims with either ICD-9 procedure codes or CPT codes that map to one of the CCS procedure categories identified as a "1" in any of the columns labeled "Irrelevant claims (exclude claim)" in the procedural tab.

d. In the Pharm tab, pharmacy codes that map to a category 3 with an assignment delete. There are six columns for each of the six chronic conditions.

For the CCS category mapping to ICD-9 diagnosis codes see tab named CCSDX (This gives the AHRQ Clinical Classification System to categorize ICD-9 diagnosis codes into AHRQ diagnosis categories)

For the CCS category mapping to ICD-9 procedure codes see tab named CCSPX (This gives the AHRQ Clinical Classification System to categorize ICD-9 procedure codes into AHRQ procedure categories)

For the CCS category mapping to CPT codes see tab named CCSCPT ((This gives the AHRQ Clinical Classification System to categorize CPT codes into the same AHRQ procedure categories as for ICD-9 codes)

Risk Adjustment: Conceptual Model: Variations in outcomes across populations may be due to patient-related factors or due to provider-controlled factors. When we adjust for patient-related factors, the remaining variance in PAC rates are due to factors that could be controlled by all providers that are managing or co-managing the patient, during the entire episode time window. We have developed a severity index based on patient-related factors, such as patient demographics and comorbidities. The severity-adjusted PAC counts give a fair comparison of PAC rates from population to population and helps providers determine the degree of PACs that are not related to patient-level factors but due to factors that they could control. Methodology Overview: A severity index is calculated for each patient based on the risk-adjustment model for professional and other services that determines the cost drivers for typical care for a given condition. Demographic variables, comorbid conditions, various types of services as well as patient-level pharmacy indicators are fed into the model. Conditions and services that lead to higher costs and increased resource consumption are weighted more heavily in our model. The model determines the patient-level factors that are drivers for increased financial risk. For example, DME use is associated with a high coefficient in the diabetes model. For each patient the "predicted" log coefficients from the severity adjustment model are summed to give the patient level severity index. Summing the patient level severity indices helps derive the population level severity index. Adjusting the overall PAC rates by the severity index for the population helps adjust for variations in outcomes related to severity. There were six separate risk-adjustment models created for the six chronic conditions under study, namely: Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma (with no exclusions). The risk-adjustment variables that were included were patient demographic factors such as age and gender, medical comorbidities, procedures performed, as well as pharmacy variables. Some of the risk factor variables were condition specific, e.g., for diabetes, the type of diabetes and whether or not it was controlled were separate risk factors that were fed into the model. The list of risk factors that were fed into the diabetes model is shown in the table below as an example:

Variable Descriptions:

AGE CONTINUOUS VARIABLE
FEMALE FEMALE (Male is the reference population)
BACL1 ANTICOAGULANTS
EDIAB ANTIDIABETICS

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*

Risk Adjustment: (continued)

ESTER STEROIDS
ETHYR THYROID DRUGS
GIACD ANTACIDS AND ANTISPASMODICS
GIMSC MISCALLANEOUS GI AGENTS
HACEI ACEI, ARB, ANTI-RENIN DRUGS
HBBLK BETA-BLOCKERS
HCLBK CALCIUM CHANNEL BLOCKING AGENTS
HDIUR DIURETICS
HNITR NITRATES AND OTHER ANTIANGINALS
HOTHR OTHER CARDIOVASCULAR AGENTS
HPLT ANTIPLATELET AGENTS, THROMBIN INHIBITORS
HSTN STATINS AND OTHER ANTI-LIPID AGENTS
HVSDL VASODILATORS
LBDIL BRONCHODILATORS AND OTHER ANTIASTHMATICS
LDECG DECONGESTANTS AND ANTIHISTAMINICS
LOTHR INHALERS AND RESPIRATORY AGENTS
M10 DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS
M12 ESSENTIAL HYPERTENSION
M13 HYPERTENSION WITH COMPLICATIONS AND SECONDARY HYPERTENSION
M14 HEART VALVE AND CONGENITAL HEART DISORDERS
M15 CORONARY ATHEROSCLEROSIS AND OTHER HEART DISEASE
M16 CHF, CARDITIS, CARDIOMYOPATHY
M17 RETINOPATHY, VISION DEFECTS, EYE INFECTIONS
M18 DISEASES OF ARTERIES ARTERIOLES AND CAPILLARIES
M19 DISEASES OF VEINS AND LYMPHATICS
M20 CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND BRONCHIECTASIS
M21 ASTHMA
M22 OTHER RESPIRATORY INFECTIONS AND DISEASES
M23 ESOPHAGEAL DISORDERS

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*

Risk Adjustment: (continued)

M24 DISEASES OF THE DIGESTIVE SYSTEM
M25 LIVER AND PANCREATIC DISORDERS
M26 CHRONIC RENAL FAILURE AND OTHER KIDNEY DISEASE
M27 DISEASES OF THE GENITOURINARY SYSTEM
M28 WOMEN'S HEALTH
M29 DISEASES OF THE SKIN AND CONNECTIVE TISSUE
M3 THYROID DISORDERS
M30 NAUSEA, VOMITING, ABD PAIN, FEVER
M31 ALLERGIC REACTIONS
M32 CARDIAC DYSRHYTHMIAS
M35 DISEASES OF BONES, JOINTS, SPINE
M36 PREVENTATIVE, REHABILITATION AND AFTER CARE
M5 FLUID AND ELECTROLYTE DISTURBANCES
M6 OTHER ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS
M8 ANEMIA, COAGULATION, HEMORRHAGIC DISORDERS
M9 MENTAL AND BEHAVIORAL ILLNESS
MSKIN LOCAL SKIN AGENTS
NANLG ANALGESICS AND ANTI-INFLAMMATORY
NDEPR ANTIDEPRESSANTS
NSEDT SEDATIVES AND HYPNOTICS
OPH2 OPHTHALMIC GLAUCOMA AGENTS
P1 EYE, ENT, ORAL PROCEDURES
P13 RESPIRATORY DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P14 NERVOUS SYSTEM, ENDOCRINE, HEAD AND NECK MINOR PROCEDURES
P15 GI DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P16 GENITOURINARY DIAGNOSTIC AND MINOR THERAPEUTIC PROCEDURES
P18 MINOR MUSCULOSKELETAL PROCEDURES
P23 RADIOLOGY AND RADIONUCLEAR DIAGNOSTIC SERVICES
P26 PHYSICAL THERAPY AND REHABILITATION

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*

Risk Adjustment: *(continued)*

P27 ANCILLARY, HOME HEALTH, TRANSPORT
P28 MEDICATION ADMINISTRATION
P31 DME, VISUAL AND HEARING AIDS
P7 CARDIOVASCULAR STUDIES
RF1 DIABETES MELLITUS-NIDDM, CONTROLLED
RF10 DIABETES MELLITUS WITH RENAL MANIFESTATIONS
RF11 DIABETES MELLITUS WITH URINARY / SEXUAL DYSFUNCTION
RF12 DIABETES MELLITUS WITH OPHTHALMIC MANIFESTATIONS
RF14 OTHER DIABETICS
RF2 DIABETES MELLITUS-NIDDM, UNCONTROLLED
RF3 DIABETES MELLITUS-IDDM, CONTROLLED
RF4 DIABETES MELLITUS-IDDM, UNCONTROLLED
RF7 HYPERLIPIDEMIA, OBESITY, SLEEP APNEA
RF8 DIABETES MELLITUS WITH PERIPHERAL CIRCULATORY DISORDERS
RF9 DIABETES MELLITUS WITH NEUROLOGIC MANIFESTATIONS
SMKS SMOKING CESSATION AGENTS
UVAG1 URINARY AND VAGINAL PREPARATIONS
ZNUTR IRON AND OTHER NUTRITIONAL SUPPLEMENTS

The full risk adjustment models for each of the six chronic ECRs are shown in the enclosed workbook entitled NQF_Chronic_Care_PACs_Risk_Adjustment_2.9.10. There are six tabs for each of the six chronic conditions (e.g., Diabetes_prof_risk-adj_model). All the variables that were statistically significant and so were retained in the models are shown, along with their partial R-square values and the Adjusted R-square values for each model.

The details of the codes that map to the risk-adjustment variables are given in the excel workbook entitled NQF_Chronic_Care_All_codes_2.9.10.xls

The detailed methodology is described in the "Scientific Acceptability" tab under the section "Risk Adjustment Strategy".

Stratification: None

Numerator Time Window: The time window starts with a professional claim that carries a trigger code for one of the six chronic care conditions (Diabetes Mellitus (DM), Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Hypertension (HTN), Chronic Obstructive Pulmonary Disease (COPD) or Asthma), and continues for a period of one year (12 months) from the trigger code.

709: PROPORTION OF PATIENTS WITH A CHRONIC CONDITION THAT HAVE A POTENTIALLY AVOIDABLE COMPLICATION DURING A CALENDAR YEAR *(continued)*
Type: Outcome
Type Score: Rate/proportion
Data Source: Electronic administrative data/claims; Pharmacy data
Level: Clinicians: Group; Health Plan; Population: states; Population: counties or cities; Population: national; Population: regional/network
Setting: Other

Appendix B
Specifications of the National Voluntary Consensus Standards for Patient Outcomes, Mental Health

712: DEPRESSION UTILIZATION OF THE PHQ-9 TOOL

Measure Steward: MN Community Measurement

Description: Adult patients age 18 and older with the diagnosis of major depression or dysthymia (ICD-9 296.2x, 296.3x or 300.4) who have a PHQ-9 tool administered at least once during the four month measurement period. The Patient Health Questionnaire (PHQ-9) tool is a widely accepted, standardized tool [Copyright © 2005 Pfizer, Inc. All rights reserved] that is completed by the patient, ideally at each visit, and utilized by the provider to monitor treatment progress.

This process measure is related to the outcome measures of "Depression Remission at Six Months" and "Depression Remission at Twelve Months". This measure was selected by stakeholders for public reporting to promote the implementation of processes within the provider's office to insure that the patient is being assessed on a routine basis with a standardized tool that supports the outcome measures for depression. Currently, only about 20% of the patients eligible for the denominator of remission at 6 or 12 months actually have a follow-up PHQ-9 score for calculating remission (PHQ-9 score less than 5).

Numerator: Adult patients age 18 and older with the diagnosis of major depression or dysthymia (ICD-9 296.2x, 296.3x or 300.4) who have a PHQ-9 tool administered at least once during the four month measurement period.

Numerator Details:

Adults age 18 and older; no upper age limit
Have the diagnosis of major depression or dysthymia defined by any of the following ICD-9* codes:
296.2x Major depressive disorder, single episode
296.3x Major depressive disorder, recurrent episode
300.4 Dysthymic disorder

*For primary care providers the diagnosis codes can be in any position (primary or secondary). For behavioral health providers the diagnosis codes need to be in the primary position. This is to more accurately define major depression and exclude patients who may have other more serious mental health diagnoses (e.g., schizophrenia, psychosis) with a secondary diagnosis of depression.

Of the patients meeting the above inclusion criteria, the numerator is defined as those patients who had at least one PHQ-9 tool administered during the four month measurement period.

The numerator rate is calculated as follows:

- adult patients with major depression or dysthymia (296.2x, 296.3x or 300.4) with at least one PHQ-9 tool administered during the four month measurement period/
- adult patients with major depression or dysthymia (296.2x, 296.3x or 300.4)

Denominator: Adult patients age 18 and older with the diagnosis of major depression or dysthymia (ICD-9 296.2x, 296.3x or 300.4

712: DEPRESSION UTILIZATION OF THE PHQ-9 TOOL *(continued)*

Denominator Details: *(continued)*

Adults age 18 and older; no upper age limit
Have the diagnosis of major depression or dysthymia defined by any of the following ICD-9* codes:
296.2x Major depressive disorder, single episode
296.3x Major depressive disorder, recurrent episode
300.4 Dysthymic disorder

*For primary care providers the diagnosis codes can be in any position (primary or secondary). For behavioral health providers the diagnosis codes need to be in the primary position. This is to more accurately define major depression and exclude patients who may have other more serious mental health diagnoses (e.g., schizophrenia, psychosis) with a secondary diagnosis of depression.

Patients with the above diagnosis codes who are either seen in the office or contacted via another method (phone, email) during a four month time period defined by dates of service that fall into that time period, for example 6/1/2009 to 9/30/2009.

Exclusions: There are no exclusions for this process measure.

Exclusions Details: N/A

Risk Adjustment: No risk adjustment necessary

Stratification: Stratification is not applicable for this process measure.

Numerator Time Window: Adult patients age 18 and older with the diagnosis of major depression or dysthymia (ICD-9 296.2x, 296.3x or 300.4) who are either seen in the office or contacted via another method (phone, email) during a four month time period defined by dates of service that fall into that time period, for example 6/1/2009 to 9/30/2009 and have a documented PHQ-9 tool administered as evidenced by at least one PHQ-9 score during that same time period.

Type: Process

Type Score: Rate/proportion

Data Source: Survey: Patient, lab data, organizational policies and procedures

Level: Clinicians: Other

Setting: Ambulatory Care: Office; Ambulatory Care: Clinic; Behavioral health/psychiatric unit

710: DEPRESSION REMISSION AT TWELVE MONTHS

Measure Steward: MN Community Measurement

Description: Adult patients age 18 and older with major depression or dysthymia and an initial PHQ-9 score 9 who demonstrate remission at twelve months defined as a PHQ-9 score less than 5. This measure applies to both patients with newly diagnosed and existing depression whose current PHQ-9 score indicates a need for treatment.

The Patient Health Questionnaire (PHQ-9) tool is a widely accepted, standardized tool [Copyright © 2005 Pfizer, Inc. All rights reserved] that is completed by the patient, ideally at each visit, and utilized by the provider to monitor treatment progress.

This measure additionally promotes ongoing contact between the patient and provider as patients who do not have a follow-up PHQ-9 score at twelve months (+/- 30 days) are also included in the denominator.

Numerator: Adults age 18 and older with a diagnosis of major depression or dysthymia and an initial PHQ-9 score greater than nine who achieve remission at twelve months as demonstrated by a twelve month (+/- 30 days) PHQ-9 score of less than five.

Numerator Details:

Adults age 18 and older; no upper age limit
Have the diagnosis of major depression or dysthymia defined by any of the following ICD-9* codes:
296.2x Major depressive disorder, single episode
296.3x Major depressive disorder, recurrent episode
300.4 Dysthymic disorder

AND

PHQ-9 Score is greater than nine.

Of the patients meeting the above inclusion criteria, the numerator is defined as those patients with a twelve month (+/- 30 days) PHQ-9 score of less than five.

The numerator rate is calculated as follows:

- adult patients with major depression or dysthymia (296.2x, 296.3x or 300.4) with a PHQ-9 score less than 5 at 12 months (+/- 30 days)/
- adult patients with major depression or dysthymia (296.2x, 296.3x or 300.4) with index contact PHQ-9 9

Patients who do not have a twelve month +/- 30 day PHQ-9 score obtained are included in the denominator for this measure.

*For primary care providers the diagnosis codes can be in any position (primary or secondary). For behavioral health providers the diagnosis codes need to be in the primary position. This is to more accurately define major depression and exclude patients who may have other more serious mental health diagnoses (e.g., schizophrenia, psychosis) with a secondary diagnosis of depression.

Denominator: Adults age 18 and older with a diagnosis of major depression or dysthymia and an initial PHQ-9 score greater than nine.

710: DEPRESSION REMISSION AT TWELVE MONTHS *(continued)*

Denominator Details: (continued)

Adults age 18 and older; no upper age limit
Have the diagnosis of major depression or dysthymia defined by any of the following ICD-9* codes:
296.2x Major depressive disorder, single episode
296.3x Major depressive disorder, recurrent episode
300.4 Dysthymic disorder

AND

PHQ-9 Score is greater than nine.

*For primary care providers the diagnosis codes can be in any position (primary or secondary). For behavioral health providers the diagnosis codes need to be in the primary position. This is to more accurately define major depression and exclude patients who may have other more serious mental health diagnoses (e.g., schizophrenia, psychosis) with a secondary diagnosis of depression.

Patients who do not have a twelve month +/- 30 day PHQ-9 score obtained are included in the denominator for this measure.

Exclusions: Patients who die, are a permanent resident of a nursing home or are enrolled in hospice are excluded from this measure. Additionally, patients who are initially diagnosed with major depression and after further treatment are determined to have bipolar or personal disorders are excluded.

Exclusions Details:

- Patients who die during the measurement time frame
- Patients who are a permanent nursing home resident during the measurement time frame
- Patients who are enrolled in hospice during the measurement time frame
- Bipolar Disorder (Principal Diagnosis; initially diagnosed as depression but upon further treatment & evaluation primary diagnosis changed to bipolar disorder). See bipolar disorder codes below.
- Personality Disorder (Principal Diagnosis; initially diagnosed as depression but upon further treatment & evaluation primary diagnosis changed to personality disorder). See personality disorder codes below.

For patients with bipolar or personality disorder:

Do not exclude patients who have these bipolar or personality codes just because the codes are present. If the patient has major depression codes and bipolar or personality codes, the patient needs to be included. Exclusions are only to be used if the patient is initially thought to have major depression or dysthymia and it is determined at a later date that the patient has bipolar or personality disorder. For example, a patient is diagnosed in April with major depression and a PHQ-9 score of 23, therefore meeting the inclusion criteria. Several visits/ contacts with PHQ-9s occur in April and May. In June the patient has a first manic episode and is determined to have bipolar disorder. At this point the patient can be excluded from the denominator.

710: DEPRESSION REMISSION AT TWELVE MONTHS *(continued)*

Exclusions Details: *(continued)*

Bipolar Disorder Codes:
296.00 Bipolar I Disorder, Single Manic Episode, Unspecified
296.01 Bipolar I Disorder, Single Manic Episode, Mild
296.02 Bipolar I Disorder, Single Manic Episode, Moderate
296.03 Bipolar I Disorder, Single Manic Episode, Severe Without Psychotic Features
296.04 Bipolar I Disorder, Single Manic Episode, Severe With Psychotic Features
296.05 Bipolar I Disorder, Single Manic Episode, In Partial Remission
296.06 Bipolar I Disorder, Single Manic Episode, In Full Remission
296.10 Manic disorder, recurrent episode; Unspecified
296.11 Manic disorder, recurrent episode; Mild
296.12 Manic disorder, recurrent episode; Moderate
296.13 Manic disorder, recurrent episode; Severe Without Psychotic Features
296.14 Manic disorder, recurrent episode; Severe With Psychotic Features
296.15 Manic disorder, recurrent episode; In Partial Remission
296.16 Manic disorder, recurrent episode; In Full Remission
296.40 Bipolar I Disorder, Most Recent Episode Manic, Unspecified
296.41 Bipolar I Disorder, Most Recent Episode Manic, Mild
296.42 Bipolar I Disorder, Most Recent Episode Manic, Moderate
296.43 Bipolar I Disorder, Most Recent Episode Manic, Severe Without Psychotic Features
296.44 Bipolar I Disorder, Most Recent Episode Manic, Severe With Psychotic Features
296.45 Bipolar I Disorder, Most Recent Episode Manic, In Partial Remission
296.46 Bipolar I Disorder, Most Recent Episode Manic, In Full Remission
296.50 Bipolar I Disorder, Most Recent Episode Depressed, Unspecified
296.51 Bipolar I Disorder, Most Recent Episode Depressed, Mild
296.52 Bipolar I Disorder, Most Recent Episode Depressed, Moderate
296.53 Bipolar I Disorder, Most Recent Episode Depressed, Severe Without Psychotic Features
296.54 Bipolar I Disorder, Most Recent Episode Depressed, Severe With Psychotic Features
296.55 Bipolar I Disorder, Most Recent Episode Depressed, In Partial Remission
296.56 Bipolar I Disorder, Most Recent Episode Depressed, In Full Remission

710: DEPRESSION REMISSION AT TWELVE MONTHS *(continued)*

Exclusions Details: (continued)

296.60 Bipolar I Disorder, Most Recent Episode Mixed, Unspecified
296.61 Bipolar I Disorder, Most Recent Episode Mixed, Mild
296.62 Bipolar I Disorder, Most Recent Episode Mixed, Moderate
296.63 Bipolar I Disorder, Most Recent Episode Mixed, Severe Without Psychotic Features
296.64 Bipolar I Disorder, Most Recent Episode Mixed, Severe With Psychotic Features
296.65 Bipolar I Disorder, Most Recent Episode Mixed, In Partial Remission
296.66 Bipolar I Disorder, Most Recent Episode Mixed, In Full Remission
296.7 Bipolar I Disorder, Most Recent Episode Unspecified
296.80 Bipolar Disorder NOS
296.89 Bipolar II Disorder

Personality Disorder Codes:
301.0 Paranoid personality disorder
301.1 Affective personality disorder
301.10 Affective personality disorder unspecified
301.11 Chronic hypomanic personality disorder
301.12 Chronic depressive personality disorder
301.13 Cyclothymic disorder
301.2 Schizoid personality disorder
301.20 Schizoid personality disorder unspecified
301.21 Introverted personality
301.22 Schizotypal personality disorder
301.3 Explosive personality disorder
301.4 Obsessive-compulsive personality disorder
301.5 Histrionic personality disorder
301.50 Histrionic personality disorder unspecified
301.51 Chronic factitious illness with physical symptoms
301.59 Other histrionic personality disorder

710: DEPRESSION REMISSION AT TWELVE MONTHS *(continued)*

Exclusions Details: *(continued)*

301.6 Dependent personality disorder
301.7 Antisocial personality disorder
301.8 Other personality disorders
301.81 Narcissistic personality disorder
301.82 Avoidant personality disorder
301.83 Borderline personality disorder
301.84 Passive-aggressive personality
301.89 Other personality disorders
301.9 Unspecified personality disorder

Risk Adjustment: None Listed

Stratification: This measure is currently not stratified. We will be convening a workgroup in the spring of 2010 to determine if stratification by severity of depression is clinically meaningful for data stratification and reporting.

Numerator Time Window: PHQ-9 scores are collected for each patient from the time they meet the inclusion criteria of diagnosis ICD-9 codes and PHQ-9 score greater than nine (this is the index or anchor date) until thirteen months have elapsed. This allows for calculation of a remission rate +/- 30 days from the index date.

Type: Outcome

Type Score: Rate/proportion

Data Source: Lab data, survey: patient, organizational policies and procedures

Level: Clinicians: Other

Setting: Ambulatory Care: Office; Ambulatory Care: Clinic; Behavioral health/psychiatric unit

711: DEPRESSION REMISSION AT SIX MONTHS

Measure Steward: MN Community Measurement

Description: Adult patients age 18 and older with major depression or dysthymia and an initial PHQ-9 score > 9 who demonstrate remission at six months defined as a PHQ-9 score less than 5. This measure applies to both patients with newly diagnosed and existing depression whose current PHQ-9 score indicates a need for treatment.

The Patient Health Questionnaire (PHQ-9) tool is a widely accepted, standardized tool [Copyright © 2005 Pfizer, Inc. All rights reserved] that is completed by the patient, ideally at each visit, and utilized by the provider to monitor treatment progress.

This measure additionally promotes ongoing contact between the patient and provider as patients who do not have a follow-up PHQ-9 score at six months (+/- 30 days) are also included in the denominator.

Numerator: Adults age 18 and older with a diagnosis of major depression or dysthymia and an initial PHQ-9 score greater than nine who achieve remission at six months as demonstrated by a six month (+/- 30 days) PHQ-9 score of less than five.

Numerator Details:

Adults age 18 and older; no upper age limit
Have the diagnosis of major depression or dysthymia defined by any of the following ICD-9* codes:
296.2x Major depressive disorder, single episode
296.3x Major depressive disorder, recurrent episode
300.4 Dysthymic disorder

AND

PHQ-9 Score is greater than nine.

Of the patients meeting the above inclusion criteria, the numerator is defined as those patients with a six month (+/- 30 days) PHQ-9 score of less than five.

The numerator rate is calculated as follows:

- adult pts with major depression or dysthymia (296.2x, 296.3x or 300.4) with a PHQ-9 score < 5 at 6 months (+/- 30 days)/
- adult pts with major depression or dysthymia (296.2x, 296.3x or 300.4) with index contact PHQ-9 > 9

Patients who do not have a six month +/- 30 day PHQ-9 score obtained are included in the denominator for this measure.

*For primary care providers the diagnosis codes can be in any position (primary or secondary). For behavioral health providers the diagnosis codes need to be in the primary position. This is to more accurately define major depression and exclude patients who may have other more serious mental health diagnoses (e.g., schizophrenia, psychosis) with a secondary diagnosis of depression.

711: DEPRESSION REMISSION AT SIX MONTHS *(continued)*

Denominator: Adults age 18 and older with a diagnosis of major depression or dysthymia and an initial PHQ-9 score greater than nine.

Denominator Details:

Adults age 18 and older; no upper age limit
Have the diagnosis of major depression or dysthymia defined by any of the following ICD-9* codes:
296.2x Major depressive disorder, single episode
296.3x Major depressive disorder, recurrent episode
300.4 Dysthymic disorder

AND

PHQ-9 Score is greater than nine.

*For primary care providers the diagnosis codes can be in any position (primary or secondary). For behavioral health providers the diagnosis codes need to be in the primary position. This is to more accurately define major depression and exclude patients who may have other more serious mental health diagnoses (e.g., schizophrenia, psychosis) with a secondary diagnosis of depression.

Patients who do not have a six month +/- 30 day PHQ-9 score obtained are included in the denominator for this measure.

Exclusions: Patients who die, are a permanent resident of a nursing home or are enrolled in hospice are excluded from this measure. Additionally, patients who are initially diagnosed with major depression and after further treatment are determined to have bipolar or personal disorders are excluded.

Exclusions Details:

- Patients who die during the measurement time frame
- Patients who are a permanent nursing home resident during the measurement time frame
- Patients who are enrolled in hospice during the measurement time frame
- Bipolar Disorder (Principal Diagnosis; initially diagnosed as depression but upon further treatment & evaluation primary diagnosis changed to bipolar disorder). See bipolar disorder codes below.
- Personality Disorder (Principal Diagnosis; initially diagnosed as depression but upon further treatment & evaluation primary diagnosis changed to personality disorder). See personality disorder codes below.

For patients with bipolar or personality disorder:

Do not exclude patients who have these bipolar or personality codes just because the codes are present. If the patient has major depression codes and bipolar or personality codes, the patient needs to be included. Exclusions are only to be used if the patient is initially thought to have major depression or dysthymia and it is determined at a later date that the patient has bipolar or personality disorder. For example, a patient is diagnosed in April with major depression and a PHQ-9 score of 23, therefore meeting the inclusion criteria. Several visits/ contacts with PHQ-9s occur in April and May. In June the patient has a first manic episode and is determined to have bipolar disorder. At this point the patient can be excluded from the denominator.

711: DEPRESSION REMISSION AT SIX MONTHS *(continued)*

Exclusions Details: *(continued)*

Bipolar Disorder Codes:
296.00 Bipolar I Disorder, Single Manic Episode, Unspecified
296.01 Bipolar I Disorder, Single Manic Episode, Mild
296.02 Bipolar I Disorder, Single Manic Episode, Moderate
296.03 Bipolar I Disorder, Single Manic Episode, Severe Without Psychotic Features
296.04 Bipolar I Disorder, Single Manic Episode, Severe With Psychotic Features
296.05 Bipolar I Disorder, Single Manic Episode, In Partial Remission
296.06 Bipolar I Disorder, Single Manic Episode, In Full Remission
296.10 Manic disorder, recurrent episode; Unspecified
296.11 Manic disorder, recurrent episode; Mild
296.12 Manic disorder, recurrent episode; Moderate
296.13 Manic disorder, recurrent episode; Severe Without Psychotic Features
296.14 Manic disorder, recurrent episode; Severe With Psychotic Features
296.15 Manic disorder, recurrent episode; In Partial Remission
296.16 Manic disorder, recurrent episode; In Full Remission
296.40 Bipolar I Disorder, Most Recent Episode Manic, Unspecified
296.41 Bipolar I Disorder, Most Recent Episode Manic, Mild
296.42 Bipolar I Disorder, Most Recent Episode Manic, Moderate
296.43 Bipolar I Disorder, Most Recent Episode Manic, Severe Without Psychotic Features
296.44 Bipolar I Disorder, Most Recent Episode Manic, Severe With Psychotic Features
296.45 Bipolar I Disorder, Most Recent Episode Manic, In Partial Remission
296.46 Bipolar I Disorder, Most Recent Episode Manic, In Full Remission
296.50 Bipolar I Disorder, Most Recent Episode Depressed, Unspecified
296.51 Bipolar I Disorder, Most Recent Episode Depressed, Mild
296.52 Bipolar I Disorder, Most Recent Episode Depressed, Moderate
296.53 Bipolar I Disorder, Most Recent Episode Depressed, Severe Without Psychotic Features
296.54 Bipolar I Disorder, Most Recent Episode Depressed, Severe With Psychotic Features
296.55 Bipolar I Disorder, Most Recent Episode Depressed, In Partial Remission
296.56 Bipolar I Disorder, Most Recent Episode Depressed, In Full Remission

711: DEPRESSION REMISSION AT SIX MONTHS *(continued)*

Exclusions Details: (continued)

296.60 Bipolar I Disorder, Most Recent Episode Mixed, Unspecified
296.61 Bipolar I Disorder, Most Recent Episode Mixed, Mild
296.62 Bipolar I Disorder, Most Recent Episode Mixed, Moderate
296.63 Bipolar I Disorder, Most Recent Episode Mixed, Severe Without Psychotic Features
296.64 Bipolar I Disorder, Most Recent Episode Mixed, Severe With Psychotic Features
296.65 Bipolar I Disorder, Most Recent Episode Mixed, In Partial Remission
296.66 Bipolar I Disorder, Most Recent Episode Mixed, In Full Remission
296.7 Bipolar I Disorder, Most Recent Episode Unspecified
296.80 Bipolar Disorder NOS
296.89 Bipolar II Disorder

Personality Disorder Codes:
301.0 Paranoid personality disorder
301.1 Affective personality disorder
301.10 Affective personality disorder unspecified
301.11 Chronic hypomanic personality disorder
301.12 Chronic depressive personality disorder
301.13 Cyclothymic disorder
301.2 Schizoid personality disorder
301.20 Schizoid personality disorder unspecified
301.21 Introverted personality
301.22 Schizotypal personality disorder
301.3 Explosive personality disorder
301.4 Obsessive-compulsive personality disorder
301.5 Histrionic personality disorder
301.50 Histrionic personality disorder unspecified
301.51 Chronic factitious illness with physical symptoms
301.59 Other histrionic personality disorder
301.6 Dependent personality disorder

711: DEPRESSION REMISSION AT SIX MONTHS *(continued)*

Exclusions Details: *(continued)*

301.7 Antisocial personality disorder
301.8 Other personality disorders
301.81 Narcissistic personality disorder
301.82 Avoidant personality disorder
301.83 Borderline personality disorder
301.84 Passive-aggressive personality
301.89 Other personality disorders
301.9 Unspecified personality disorder

Risk Adjustment: None Listed

Stratification: This measure is currently not stratified. We will be convening a workgroup in the spring of 2010 to determine if stratification by severity of depression is clinically meaningful for data stratification and reporting.

Numerator Time Window: PHQ-9 scores are collected for each patient from the time they meet the inclusion criteria of diagnosis ICD-9 codes and PHQ-9 score greater than nine (this is the index or anchor date) until seven months have elapsed. This allows for calculation of a remission rate +/- 30 days from the index date.

Type: Outcome

Type Score: Rate/proportion

Data Source: Survey: Patient, lab data, organizational policies and procedures

Level: Clinicians: Other

Setting: Ambulatory Care: Office; Ambulatory Care: Clinic; Behavioral health/psychiatric unit

726: INPATIENT CONSUMER SURVEY (ICS)

Measure Steward: National Association of State Mental Health Program Directors Research Institute, Inc.

Description: Survey developed to gather client's evaluation of their inpatient care. Each domain is scored as the percentage of adolescent clients aged 13-17 years and adult clients at time of discharge or at annual review who respond positively to the domain on the survey for a given month. Five domains in the survey include outcome, dignity, rights, treatment, and environment. Questions in each domain are based on a standard 5-pt scale, evaluated on a scale from strongly disagree to strongly agree.

726: INPATIENT CONSUMER SURVEY (ICS) *(continued)*

Numerator: Number of clients who respond positively to the domain. Domains include outcome, dignity, rights, treatment, and environment. Each domain is calculated separately.

Five domains are embedded in the survey. Facilities can choose to participate in any of the five performance measures, one for each domain. The outcome domain includes questions about the effect of the hospital stay on the clients' ability to deal with their illness and with social situations. The dignity domain includes questions about the quality of interactions between staff and clients that highlight a respectful relationship. The rights domain includes questions about the ability of clients to express disapproval with conditions or treatment and receive an appropriate response from the organization. The participation in treatment domain includes questions about clients' involvement in their hospital treatment as well as coordination with the clients' doctor or therapist from the community. The facility environment domain includes questions about feeling safe in the facility and the aesthetics of the facility.

Numerator Details: Clients who are discharged or have an annual review during the month, complete at least 2 questions in the domain, and average a positive rating for those questions.

A positive rating is a categorization of the responses in the domain. Each item is evaluated on a 5-point scale where 1 represents strongly disagree and 5 represents strongly agree. The values for items in the domain are averaged. When the average score for a domain is greater than 3.5, the response is categorized as responded positively.

Denominator: Number of clients completing at least 2 items in the domain. Domains include outcome, dignity, rights, treatment, and environment. Each domain is calculated separately.

Denominator Details: Clients who were discharged or had an annual review during the month and completed at least 2 questions in the domain. The count of clients is determined separately for each domain.

Exclusions: Non-respondents, persons who submit a blank survey, and persons completing only 1 question in the domain.

Exclusions Details: None Listed

Risk Adjustment: None Listed

Stratification: Age, Sex, Race, LOS. Stratifications can be compiled using the demographic items in the survey.

Numerator Time Window: During month of client discharge or during month of annual review for the client.

Type: None Listed

Type Score: Rate/proportion

Data Source: Registry data

Level: Facility/Agency; Population: national; Other

Setting: Hospital; Long term acute care hospital; Behavioral health/psychiatric unit

Appendix C
Specifications of the National Voluntary Consensus Standards for Patient Outcomes, Child Health

713: VENTRICULOPERITONEAL (VP) SHUNT MALFUNCTION RATE IN CHILDREN

Measure Steward: Children's Hospital Boston - Program for Patient Safety & Quality

Description: This measure is a 30-day malfunction rate for hospitals that perform cerebrospinal ventriculoperitoneal shunt operations in children between the ages of 0 and 18 years.

Numerator: The number of initial cerebrospinal VP shunt placement procedures performed on children between the ages of 0 and 18 years of age that malfunction and result in shunt revision within 30 days of initial placement.

Numerator Details: Number of cases of initial VP shunt placement ICD-9 procedure code 02.34 (Ventricular shunt to abdominal cavity and organs) among patients between the ages of 0 and 18 years at the time of placement resulting in malfunction characterized by a shunt revision within 30 days of initial procedure.

Shunt malfunction is identified by ICD-9 procedure codes 02.42 (Replacement of ventricular catheter or revision of ventriculoperitoneal shunt at ventricular site), 54.95 (Incision of Peritoneum—revision of VP shunt at peritoneal site), or the combination of codes 02.43 (Removal of ventricular shunt) and 02.34 (Ventricular shunt to abdominal cavity and organs) during the same admission.

Denominator: The total number of initial cerebrospinal VP shunt procedures performed on children between the ages of 0 and 18 years.

Denominator Details: The total number of initial VP shunt placements (ICD-9 procedure code 02.34) among patients between the ages of 0 and 18 years at the time of procedure.

Exclusions: None

Exclusions Details: None

Risk Adjustment: Other

Stratification: We are currently testing stratification of shunt revision based on infection of the shunt vs. mechanical malfunction of the shunt. We are also testing disparities to inform results stratification presentation by race/ethnicity.

Numerator Time Window: Within 30 days of initial VP shunt placement.

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic clinical data; Electronic administrative data/claims

Level: Facility/Agency

Setting: Hospital

714: STANDARDIZED MORTALITY RATIO FOR NEONATES UNDERGOING NON-CARDIAC SURGERY

Measure Steward: Children's Hospital Boston - Program for Patient Safety & Quality

Description: Ratio of observed to expected rate of in-hospital mortality following non-cardiac surgery among infants 30 days of age, risk-adjusted.

Numerator: Cases of non-cardiac surgery among infants less than 30 days of age resulting in in-hospital death.

Numerator Details: Number of cases of non-cardiac surgery among infants 30 days of age undergoing one of 63 eligible procedures where patient disposition is death prior to hospital discharge.

Eligible Surgical Procedures:
ICD-9-CM procedure codes are listed with each surgical procedure.
02.12 Other repair of cerebral meninges
02.2 Ventriculostomy
02.34 Ventricular shunt to abdominal cavity and organs
02.42 Replacement of ventricular shunt
03.51 Repair of spinal meningocele
03.52 Repair of spinal myelomeninigocele
18.29 Excision or destruction of other lesion of external ear (not preauricular sinus)
25.91 Lingual frenotomy
25.92 Lingual frenectomy
27.54 Repair of cleft lip
31.73 Closure of other fistula of trachea (tracheoesophageal fistulectomy)
33.1 Incision of lung
33.93 Puncture of lung
34.09 Other incision of pleura
43.11 Percutaneous endoscopic gastrostomy
43.19 Other gastrostomy
43.3 Pyloromyotomy
44.29 Other pyloroplasty (revision of pylorus)
44.66 Other procedures for creation of esophagogastric sphincteric competence
45.02 Other incision of small intestine (not duodenum)
45.26 Open biopsy of large intestine
45.62 Other partial resection of small intestine (duodenectomy, ileectomy, jejunectomy)

714: STANDARDIZED MORTALITY RATIO FOR NEONATES UNDERGOING NON-CARDIAC SURGERY *(continued)*

Numerator Details: (continued)

45.73 Right hemicolectomy (ileocolectomy, right radical colectomy)
45.76 Sigmoidectomy
45.79 Other partial excision of large intestine (enterocolectomy NEC)
45.91 Small-to-small intestinal anastomosis
46.01 Exteriorization of small intestine (loop ileostomy)
46.03 Exteriorization of large intestine
46.10 Colostomy, not otherwise specified
46.11 Temporary colostomy
46.13 Other permanent colostomy
46.20 Ileostomy, not otherwise specified
46.21 Temporary ileostomy
46.39 Other enterostomy (duodenostomy, feeding enterostomy)
46.51 Closure of stoma of small intestine
46.79 Other repair of intestine (duodenoplasty)
46.81 Intra-abdominal manipulation of small intestine
47.09 Other appendectomy (not laparoscopic)
48.25 Open biopsy of rectum
48.41 Soave submucosal resection of rectum
48.49 Other pull-through resection of rectum
49.79 Other repair of anal sphincter (repair of old obstetric laceration of anus)
53.02 Repair of indirect inguinal hernia
53.10 Bilateral repair of inguinal hernia, not otherwise specified
53.12 Bilateral repair of indirect inguinal hernia
53.49 Other umbilical herniorrhaphy (not with prosthesis)
53.7 Repair of diaphragmatic hernia, abdominal approach
53.80 Repair of diaphragmatic hernia with thoracic approach, not otherwise specified
54.11 Exploratory laparotomy
54.12 Reopening of recent laparotomy site
54.21 Laparoscopy (peritoneoscopy)

714: STANDARDIZED MORTALITY RATIO FOR NEONATES UNDERGOING NON-CARDIAC SURGERY *(continued)*

Numerator Details: *(continued)*

54.3 Excision or destruction of lesion or tissue of abdominal wall or umbilicus (debridement of abdominal wall, omphalectomy)
54.59 Other lysis of peritoneal adhesions (not laparoscopic)
54.71 Repair of gastroschisis
54.72 Other repair of abdominal wall
54.95 Incision of peritoneum
62.3 Unilateral orchiectomy
62.5 Orchiopexy
64.49 Other repair of penis
64.91 Dorsal or lateral slit of prepuce
64.92 Incision of penis
64.93 Division of penile adhesions
84.03 Amputation through hand

Denominator: Total cases of non-cardiac surgery among infants less than 30 days of age.

Denominator Details: Number of cases of non-cardiac surgery among infants 30 days of age undergoing one of 63 eligible procedures. See below for eligible procedures.

Eligible Surgical Procedures:
ICD-9-CM procedure codes are listed with each surgical procedure.
02.12 Other repair of cerebral meninges
02.2 Ventriculostomy
02.34 Ventricular shunt to abdominal cavity and organs
02.42 Replacement of ventricular shunt
03.51 Repair of spinal meningocele
03.52 Repair of spinal myelomeninigocele
18.29 Excision or destruction of other lesion of external ear (not preauricular sinus)
25.91 Lingual frenotomy
25.92 Lingual frenectomy
27.54 Repair of cleft lip
31.73 Closure of other fistula of trachea (tracheoesophageal fistulectomy)

714: STANDARDIZED MORTALITY RATIO FOR NEONATES UNDERGOING NON-CARDIAC SURGERY *(continued)*

Denominator Details: (continued)

33.1 Incision of lung
33.93 Puncture of lung
34.09 Other incision of pleura
43.11 Percutaneous endoscopic gastrostomy
43.19 Other gastrostomy
43.3 Pyloromyotomy
44.29 Other pyloroplasty (revision of pylorus)
44.66 Other procedures for creation of esophagogastric sphincteric competence
45.02 Other incision of small intestine (not duodenum)
45.26 Open biopsy of large intestine
45.62 Other partial resection of small intestine (duodenectomy, ileectomy, jejunectomy)
45.73 Right hemicolectomy (ileocolectomy, right radical colectomy)
45.76 Sigmoidectomy
45.79 Other partial excision of large intestine (enterocolectomy NEC)
45.91 Small-to-small intestinal anastomosis
46.01 Exteriorization of small intestine (loop ileostomy)
46.03 Exteriorization of large intestine
46.10 Colostomy, not otherwise specified
46.11 Temporary colostomy
46.13 Other permanent colostomy
46.20 Ileostomy, not otherwise specified
46.21 Temporary ileostomy
46.39 Other enterostomy (duodenostomy, feeding enterostomy)
46.51 Closure of stoma of small intestine
46.79 Other repair of intestine (duodenoplasty)
46.81 Intra-abdominal manipulation of small intestine
47.09 Other appendectomy (not laparoscopic)
48.25 Open biopsy of rectum
48.41 Soave submucosal resection of rectum

714: STANDARDIZED MORTALITY RATIO FOR NEONATES UNDERGOING NON-CARDIAC SURGERY *(continued)*

Denominator Details: (continued)

48.49 Other pull-through resection of rectum
49.79 Other repair of anal sphincter (repair of old obstetric laceration of anus)
53.02 Repair of indirect inguinal hernia
53.10 Bilateral repair of inguinal hernia, not otherwise specified
53.12 Bilateral repair of indirect inguinal hernia
53.49 Other umbilical herniorrhaphy (not with prosthesis)
53.7 Repair of diaphragmatic hernia, abdominal approach
53.80 Repair of diaphragmatic hernia with thoracic approach, not otherwise specified
54.11 Exploratory laparotomy
54.12 Reopening of recent laparotomy site
54.21 Laparoscopy (peritoneoscopy)
54.3 Excision or destruction of lesion or tissue of abdominal wall or umbilicus (debridement of abdominal wall, omphalectomy)
54.59 Other lysis of peritoneal adhesions (not laparoscopic)
54.71 Repair of gastroschisis
54.72 Other repair of abdominal wall
54.95 Incision of peritoneum
62.3 Unilateral orchiectomy
62.5 Orchiopexy
64.49 Other repair of penis
64.91 Dorsal or lateral slit of prepuce
64.92 Incision of penis
64.93 Division of penile adhesions
84.03 Amputation through hand

Exclusions: Patients greater than 30 days of age at time of surgery; those undergoing cardiac surgery or having a major structural cardiac defect (excluding atrial and ventricular septal defects and patent ductus arteriosus); premature infants; neonates undergoing procedures which were endoscopic or closed; catheterizations; circumcisions; and sutures of superficial lacerations.

714: STANDARDIZED MORTALITY RATIO FOR NEONATES UNDERGOING NON-CARDIAC SURGERY *(continued)*

Exclusions Details: Neonates undergoing cardiac surgery are excluded because a risk adjustment method for congenital heart surgery already exists. Premature infants are defined as less than 37 weeks gestation. Other excluded procedures are: endoscopy (through natural anatomic openings, through previously made stomas, endoscopic procedures, endoscopic biopsies); closed (percutaneous) biopsies; closed reductions; sutures of superficial lacerations; catheterizations; dilations; injections; aspirations; radiologic procedures; dental extractions; laser/cryo/photocoagulation therapies; circumcisions; incidental procedures.

Risk Adjustment: Case-mix adjustment

Stratification: N/A

Numerator Time Window: Not pre-specified, but a minimum of one year is recommended.

Type: Outcome

Type Score: Ratio

Data Source: Electronic clinical data; Paper medical record/flow-sheet; Electronic administrative data/claims

Level: Facility/Agency

Setting: Hospital

715: STANDARDIZED ADVERSE EVENT RATIO FOR CHILDREN AND ADULTS UNDERGOING CARDIAC CATHETERIZATION FOR CONGENITAL HEART DISEASE

Measure Steward: Children's Hospital Boston - Program for Patient Safety & Quality

Description: Ratio of observed to expected clinically important preventable and possibly preventable adverse events, risk-adjusted

Numerator: Diagnostic and interventional cardiac catheterization cases performed in a pediatric cardiac catheterization lab resulting in a clinically important preventable or possibly preventable adverse event.

Numerator Details: Clinically important events are defined as follows: Moderate adverse event (transient change in condition may be life-threatening if not treated, condition returns to baseline, required monitoring, required intervention such as reversal agent, additional medication, transfer to the intensive care unit for monitoring, or moderate transcatheter intervention to correct condition); major adverse event (change in condition, life-threatening if not treated, change in condition may be permanent, may have required an intensive care unit admission or emergent re-admit to hospital, may have required invasive monitoring, required interventions such as electrical cardioversion or unanticipated intubation or required major invasive procedures or transcatheter interventions to correct condition); or catastrophic adverse event (any death or emergent surgery or heart lung bypass support to prevent death with failure to wean from bypass support).

715: STANDARDIZED ADVERSE EVENT RATIO FOR CHILDREN AND ADULTS UNDERGOING CARDIAC CATHETERIZATION FOR CONGENITAL HEART DISEASE *(continued)*

Numerator Details: (continued)

Preventable or possibly preventable events are defined as follows: Events in which a definite breach of standard technique was identified, necessary precautions were not taken, event was preventable by modification of technique or care; or events in which a definite breach of standard technique was not identified but may have occurred, necessary precautions may not have been taken, the event may have been preventable by modification of technique or care.

Types of cardiac catheterization procedures eligible for this measure are listed below:
Any diagnostic catheterization within 72 hours of surgery
Any interventional catheterization within 72 hours of surgery
Atrial septostomy / BAS
Atrial septostomy / dilation and stent
Atrial septostomy / static balloon dilation
Balloon angioplasty / aorta
Balloon angioplasty / lobar segment LPA RPA
Balloon angioplasty / native RVOT
Balloon angioplasty / proximal LPA or RPA
Balloon angioplasty / RV to PA conduit
Balloon angioplasty / RVOT s/p surgery (no conduit)
Balloon angioplasty / systemic artery (not aorta)
Balloon angioplasty / systemic shunt
Balloon angioplasty / systemic vein
Balloon angioplasty or stent / pulmonary vein(s)
Coil / coronary fistula
Coil occlusion / device / systemic arterial collaterals
Coil occlusion / LSVC
Coil occlusion / PDA
Coil occlusion / systemic shunt
Coil occlusion / veno-veno collaterals
Device closure / ASD
Device closure / baffle leak
Device closure / fenestration

715: STANDARDIZED ADVERSE EVENT RATIO FOR CHILDREN AND ADULTS UNDERGOING CARDIAC CATHETERIZATION FOR CONGENITAL HEART DISEASE *(continued)*

Numerator Details: (continued)

Device closure / PDA
Device closure / perivalvar leak
Device closure / PFO
Device closure / venous collateral
Device closure / VSD
Diagnostic catheterization with EPS
Hemodynamic catheterization
Interventional techniques / atherectomy catheter
Interventional techniques / atretic valve perforation
Interventional techniques/ recanulization of jailed vessel in stent
Interventional techniques / recanulization of occluded peripheral vessels
Interventional techniques / snare foreign body
Interventional techniques / trans-septal puncture
Invasive procedure / central line placement
Invasive procedure / elective chest tube pericardiocentesis
Invasive procedure / pericardiocentesis
Other intended hemodynamic alteration / oxygen-nitric trial or ionotropes
Other procedures: bronchoscopy, drains, echo, TEE
RV biopsy diagnostic
RV biopsy elective post-transplant
Stent placement / aorta
Stent placement / intracardiac / atria
Stent placement / intracardiac / ventricular
Stent placement / lobar segment LPA or RPA
Stent placement / native RVOT
Stent placement / proximal LPA or RPA
Stent placement / RV to PA conduit
Stent placement / RVOT s/p surgery (no conduit)
Stent placement / systemic artery (not aorta)

715: STANDARDIZED ADVERSE EVENT RATIO FOR CHILDREN AND ADULTS UNDERGOING CARDIAC CATHETERIZATION FOR CONGENITAL HEART DISEASE *(continued)*

Numerator Details: *(continued)*

Stent placement / systemic shunt
Stent placement / systemic vein
Stent redilation / aorta
Stent redilation / intracardiac / atria
Stent redilation / intracardiac / ventricular
Stent redilation / lobar segment LPA or RPA
Stent redilation / proximal LPA or RPA
Stent redilation / pulmonary vein
Stent redilation / RV to PA conduit
Stent redilation / systemic artery not aorta
Stent redilation / systemic vein
Ultrasound / IVUS
Valvuloplasty / aorta
Valvuloplasty / mitral
Valvuloplasty / pulmonary
Valvuloplasty / tricuspid

ASD = atrial septal defect, BAS = balloon atrial septostomy, EPS = electrophysiology study, IVUS = intravascular ultrasound, LPA = left pulmonary artery, LSVC = left superior vena cava, PA = pulmonary artery, PDA = patent ductus arteriosus, PFO = patent foramen ovale, RPA = right pulmonary artery, RV = right ventricle, RVOT = right ventricular outflow tract, TEE = transesophageal echocardiogram, VSD = ventricular septal defect.

Denominator: Diagnostic and interventional cardiac catheterization procedures performed in a pediatric cardiac catheterization lab.

Denominator Details: Types of cardiac catheterization procedures eligible for this measure are listed in Item 2a.3.

Exclusions: Primary electrophysiology cases, ablation cases, pericardiocentesis only, thoracentesis only.

Exclusions Details: Primary electrophysiology cases, ablation cases, pericardiocentesis only, thoracentesis only.

Risk Adjustment: Case-mix adjustment

Stratification: N/A

715: STANDARDIZED ADVERSE EVENT RATIO FOR CHILDREN AND ADULTS UNDERGOING CARDIAC CATHETERIZATION FOR CONGENITAL HEART DISEASE *(continued)*

Numerator Time Window: Not pre-specified, but a minimum of one year is recommended

Type: Outcome

Type Score: Ratio

Data Source: Paper medical record/flow-sheet; Electronic clinical data; Registry data

Level: Facility/Agency

Setting: Hospital

716: HEALTHY TERM NEWBORN

Measure Steward: California Maternal Quality Care Collaborative

Description: Percent of term singleton live births (excluding those with diagnoses originating in the fetal period) who DO NOT have significant complications during birth or the nursery care.

Numerator: The absence of conditions or procedures reflecting morbidity that happened during birth and nursery care to an otherwise normal infant. The morbidities may or may not have clearly been the result of medical care.

Numerator Details:

Birth trauma/injuries		
Fetus or newborn affected by:		
other complications of labor and delivery	763.0,1,2,3,4,5	
Subdural/cerebral hemorrhage	767.0	(In NQF Birth Injury Measure)
Subgaleal hemorrhage	767.11	(In NQF Birth Injury Measure)
Clavicle fracture	767.2	
Other skeletal injuries	767.3	(In NQF Birth Injury Measure)
Spine/spinal cord injuries	767.4	(In NQF Birth Injury Measure)
Facial nerve injury	767.5	(In NQF Birth Injury Measure)
Brachial plexus injury	767.6	
Other cranial/peripheral nerves	767.7	(In NQF Birth Injury Measure)
Other specified birth trauma	767.8	(In NQF Birth Injury Measure)

716: HEALTHY TERM NEWBORN *(continued)*

Numerator Details: (continued)

Hypoxia/Asphyxia		
Severe birth asphyxia with neurologic involvement	768.5	
Mild or moderate birth asphyxia +/- neurologic involvement	768.6	
HIE	768.7	
Unspecified birth asphyxia	768.9	
Congenital or infantile CP	343	
Shock, Resuscitation and Complications		
DIC	776.2	
NEC	777.5	
Shock, hypotension	785.5	
Renal failure (ATN)	584.5	(Adult code but no applicable neonatal code)
—Procedures—		
Arterial catheterization	38.91	
Umbilical venous catheterization	38.92	
TPN	99.15	
Gastrostomy	43.1	
Gavage feeding	96.35	
Cardiopulmonary resuscitation	99.60	
Respiratory		
Pulmonary Hypertension	747.83	
RDS 769		
Meconium aspiration w/respiratory symptoms	770.12	
Clear AF aspiration w/respiratory symptoms	770.14	
Pneumothorax	770.2	
Pulmonary hemorrhage	770.3	
Primary and other atelectasis	770.4,5	
TTN	770.6	
Other respiratory problems after birth	770.81,2,3,4,6,7,8,9	(Apnea, cyanosis, respiratory arrest or failure, hypoxemia, aspiration of stomach contents)

716: HEALTHY TERM NEWBORN *(continued)*

Numerator Details: (continued)

—Procedures—		
Birth trauma/injuries		
Fetus or newborn affected by:		
other complications of labor and delivery	763.0,1,2,3,4,5	
Subdural/cerebral hemorrhage	767.0	(In NQF Birth Injury Measure)
Subgaleal hemorrhage	767.11	(In NQF Birth Injury Measure)
Clavicle fracture	767.2	
Other skeletal injuries	767.3	(In NQF Birth Injury Measure)
Spine/spinal cord injuries	767.4	(In NQF Birth Injury Measure)
Facial nerve injury	767.5	(In NQF Birth Injury Measure)
Brachial plexus injury	767.6	
Other cranial/peripheral nerves	767.7	(In NQF Birth Injury Measure)
Other specified birth trauma	767.8	(In NQF Birth Injury Measure)
Hypoxia/Asphyxia		
Severe birth asphyxia with neurologic involvement	768.5	
Mild or moderate birth asphyxia +/- neurologic involvement	768.6	
HIE	768.7	
Unspecified birth asphyxia	768.9	
Congenital or infantile CP	343	
Shock, Resuscitation and Complications		
DIC	776.2	
NEC	777.5	
Shock, hypotension	785.5	
Renal failure (ATN)	584.5	(Adult code but no applicable neonatal code)
—Procedures—		
Arterial catheterization	38.91	
Umbilical venous catheterization	38.92	

716: HEALTHY TERM NEWBORN *(continued)*

Numerator Details: (continued)

TPN	99.15	
Gastrostomy	43.1	
Gavage feeding	96.35	
Cardiopulmonary resuscitation	99.60	
Respiratory		
Pulmonary Hypertension	747.83	
RDS 769		
Meconium aspiration w/respiratory symptoms	770.12	
Clear AF aspiration w/respiratory symptoms	770.14	
Pneumothorax	770.2	
Pulmonary hemorrhage	770.3	
Primary and other atelectasis	770.4,5	
TTN	770.6	
Other respiratory problems after birth	770.81,2,3,4,6,7,8,9	(Apnea, cyanosis, respiratory arrest or failure, hypoxemia, aspiration of stomach contents)
—Procedures—		
Non-invasive mechanical ventilation without (delivery through) endotracheal tube or tracheostomy	93.90	(Bi-level airway pressure, BiPAP, CPAP, Mechanical ventilation NOS, Non-invasive positive pressure (NIPPV), Non-invasive PPV, NPPV, That delivered by non-invasive interface: face mask, nasal mask, nasal pillow, oral mouthpiece, oronasal mask)
Other respiratory therapy	93.91,3,4,5,6,8,9	(Other non-invasive ventilation and oxygen therapy)
Mechanical ventilation delivered through endotracheal tube or tracheostomy (invasive interface)	96.70,1,2	(Includes: BiPAP, CPAP, Endotracheal respiratory assistance, Invasive positive pressure ventilation [IPPV], Mechanical ventilation through invasive interface. 4th digit is for duration
Inhaled nitric oxide	00.12	
Chest tube	34.04	
Infection		
Congenital pneumonia	770.0	
Septicemia of newborn	771.81	
Bacteremia of newborn	771.83	
Severe sepsis	995.92	

716: HEALTHY TERM NEWBORN *(continued)*

Numerator Details: (continued)

Neurologic Complications		
Intraventricular hemorrhage	772.10,1,2,3,4	(5th digits 1-4 refer to grade of IVH, 0 = not known)
Subarachnoid hemorrhage	772.2	
Seizures	779.0	
	345.3	(Adult code also given, used in some nurseries)
Other/unspecified cerebral irritability	779.1	
Coma and cerebral depression	779.2	
Periventricular leukomalacia	779.7	
Cardiac arrest newborn	779.85	
	427.5	(Adult code also given, used in some nurseries)
Encephalopathy	348.3	(Adult code, used in some nurseries)
Cerebral edema	348.5	(Adult code, used in some nurseries)
—Procedures—		
Computed tomography of head	87.03	
Other tomography of head	87.04	
MRI brain, brainstem	88.91	
EEG	89.14	

Disposition/LOS
Neonatal death Disposition On the discharge diagnosis record
Neonatal transfer out Disposition On the discharge diagnosis record

LOS; 5d Discharge date – birth date LOS is assessed on a sub-population that has none of the above complications or procedures. In this set of "no inclusions in the numerator and LOS>5 days", further exclude the codes below:
773.1 Hemolytic disease due to ABO isoimmunization
99.83 Phototherapy of the newborn
V60.0,1,2,3,4,6,8,9 Housing, household and economic circumstances
V61.05 Family disruption due to child in welfare custody
V61.06 Family disruption due to child in foster care or in the care of non-parental family member

716: HEALTHY TERM NEWBORN *(continued)*

Denominator: The denominator is composed of singleton, term (greater than 37 weeks), inborn, live births in their birth admission. The denominator further has eliminated fetal conditions likely to be present before labor. Maternal and obstetrical conditions (e.g., hypertension, prior cesarean, malpresentation) are not excluded unless evidence of fetal effect prior to labor (e.g., IUGR/SGA).

Denominator Details: Denominator criteria uses ICD9 codes to identify singleton inborns (code of V30.00 or V30.01), or alternatively term (765.29 = 37+ weeks). Date of admission needs to equal the date of birth.

Exclusions: Denominator exclusions: multiple gestations, preterm, congenital anomalies or fetuses affected by selected maternal conditions.

Exclusions Details:

Exclusions	ICD9 Codes	Comments
Multiple gestation	761.5	
Preterm	765.0,1	
CONGENITAL ANOMALIES	740.0,1,2	(Anencephalus and similar anomalies)
	741.0,9	(Spina bifida)
	742.0,1,2,3,4,5,8,9	(Other congenital anomalies of nervous system)
	743.0,1,2,3,4,5,6,8,9	(Congenital anomalies of eye)
	745.0,1,2,3,4,5,6,7,8,9	(Congenital anomalies of the cardiac septum)
	746.0,1,2,3,4,5,6,7,8,9	(Other congenital anomalies of heart)
	747.0,1,2,3,4	(Other congenital anomalies of circulatory system—but not single umbilical artery)
	748.0,1,2,3,4,5,6,8,9	(Congenital anomalies of the respiratory system)
	749.0,1,2	(Cleft palate and cleft lip)
	750.3,4,5,6,7,8,9	(Congenital anomalies of the upper alimentary tract)
	751.0,1,2,3,4,5,6,7,8,9	(Other congenital anomalies of the digestive system)
	753.0,1,2,3,5,6,8,9	(Congenital anomalies of the urinary system)
	754.0,1,2,3,4,5,6,7,8	(Certain congenital musculoskeletal deformities)
	757.1	(Ichthyosis congenital)
	758.0,1,2,3,5,6,8,9	(Chromosomal anomalies—but not balanced translocations and Klinefelters syndrome)
	759.5	(Tuberous Sclerosis)
	759.6	(Other hamartoses)
	759.7	(Multiple congenital anomalies)
	759.81,2,3,9	(Other specified anomalies)
	255.2	(Adrenogenital disorders)

716: HEALTHY TERM NEWBORN *(continued)*

Exclusions Details: *(continued)*

Fetus or newborn affected by placenta previa	762.0	
Fetus or newborn affected by abruptions	762.1	
Fetus or newborn affected by umbilical cord complications	762.6	(Umbilical thromboses, Vaso previa)
Impaired fetal growth, "light for dates"	764.0,1,9	(IUGR, SGA)
Hemolytic disease due to Rh or other isoimmunization	773.0,2	
Hydrops due to isoimmunization	773.3	
Idiopathic hydrops	778.0	
Drug withdrawal	779.5	
Laryngeal stenosis	478.74	

Risk Adjustment: No risk adjustment necessary

Stratification: Stratification is done by birthing unit size: based on the collected denominator after exclusions. The denominator as so calculated represents approximately 75% of any given hospital's birth numbers. We stratify many other maternity quality assessments at 1,000 and 3,000 births/year, so the denominator cuts would be at 750 and 2,250 (25% less).

Numerator Time Window: Initial neonatal birth hospitalization only.

Type: Outcome

Type Score: Rate/proportion

Data Source: Electronic administrative data/claims

Level: Clinicians: Group; Facility/Agency; Multi-site/corporate chain; Can be measured at all levels

Setting: Hospital

717: NUMBER OF SCHOOL DAYS CHILDREN MISS DUE TO ILLNESS

Measure Steward: MCHB/CAHMI

Description: Measures the quantitative number of days of school missed due to illness or condition among children and adolescents age 6-17 years.

Numerator: Number of school days missed during past 12 months due to illness or injury

717: NUMBER OF SCHOOL DAYS CHILDREN MISS DUE TO ILLNESS *(continued)*

Numerator Details: Answer to number of days missed during past 12 months is open-ended. Respondent may provide any number of days.

Denominator: Children and adolescents age 6-17 years who have been enrolled in school (public or private) at any time during the past 12 months.

Denominator Details: What kind of school does child currently attend? (Public, private, home school, none).

If none, ask if child has attended school at all during the past 12 months?

Exclusions: Children are excluded from denominator if

- child does not fall in target population age range (6-17 years)
- child is currently home schooled and parent indicated that therefore the question did not apply
- child has not attended school in the past 12 months

Exclusions Details: Children are excluded from denominator if

- child does not fall in target population age range (6-17 years). If child is less than six years old, skip questions
- child is currently home schooled and parent indicated that question did not apply (if parent indicated that child is homeschooled and then provided an answer to number of missed days—including 0 missed days—then they are included in the denominator)
- child has not attended school in the past 12 months

Risk Adjustment: No risk adjustment necessary

Stratification: No stratification is required.

When the missed school days due to illness or injury measure was administered in its most recent form, in the 2007 NSCH, the survey included a number of child demographic variables that allow for stratification of the findings by possible vulnerability:

- Age
- Gender
- Geographic location- State, HRSA Region, National level Rural Urban Commuter Areas (RUCA)
- Race/ethnicity
- Health insurance- status, type, consistency, adequacy
- Primary household language
- Household income
- Special Health Care Needs- status and type

717: NUMBER OF SCHOOL DAYS CHILDREN MISS DUE TO ILLNESS *(continued)*

Numerator Time Window: Encounter or point in time.

Type: Outcome

Type Score: Continuous variable

Data Source: Survey: Patient

Level: Population: national; Population: regional/network; Population: states

Setting: Other

718: CHILDREN WHO HAD PROBLEMS OBTAINING REFERRALS WHEN NEEDED

Measure Steward: MCHB/CAHMI

Description: The measure aims to ascertain the perceived difficulty in obtaining referrals for children when needed for optimum health.

Numerator: Children who need referrals and have no problems obtaining them

Numerator Details: The numerator describes the number of children who needed a referral to see other doctors or services had problems obtaining those referrals

Denominator: Children age 0-17 years

Denominator Details: The denominator includes all children age 0-17 years

Exclusions: Excluded from denominator if child does not fall in target population age range of 0-17 years and who did not need a referral to any doctor or service

Exclusions Details: If child did not need a referral, then they are excluded from the denominator

Risk Adjustment: No risk adjustment necessary

Stratification: No stratification is required.

Numerator Time Window: Encounter or point in time.

Type: Outcome

718: CHILDREN WHO HAD PROBLEMS OBTAINING REFERRALS WHEN NEEDED *(continued)*

Type Score: Rate/proportion

Data Source: Survey: Patient

Level: Population: states; Population: national; Population: regional/network

Setting: Other

719: CHILDREN WHO RECEIVE EFFECTIVE CARE COORDINATION OF HEALTHCARE SERVICES WHEN NEEDED

Measure Steward: MCHB/CAHMI

Description: This is a composite measure used to assess the need and receipt of care coordination services for children who required care from at least two types of health care services which may require communication between health care providers, or with others involved in child's care, (e.g., school).

Numerator: Children who used at least two health services and who received all needed care coordination

Numerator Details: For a child to be included in the numerator of receiving needed care coordination:

- Parent reports someone helping to arrange or coordinate child's care among the different doctors and services (K5Q20)
- Either parent reports that they have not felt that they could have used extra help arranging or coordinating child's care among the different health care providers or services (K5Q21)
- Or parent reports that they have felt that they could have used extra help arranging or coordinating child's care among the different health care providers or services (K5Q21) AND Parent reports that they got as much help as they wanted with arranging or coordinating child's care usually (K5Q22)
- Parent reports satisfaction with communication among doctors or other providers (when needed)

Denominator: Children age 0-17 years who used two or more health services in the past 12 months

Denominator Details: Children age 0-17 years who needed care coordination in the past 12 months

"Needed care coordination" is defined as needing two or more of the following services: a personal doctor or nurse, a mental health professional, a specialist, or the child's doctor felt that the child needed to see a specialist.

Exclusions: Excluded from denominator if child does not fall in target population age range of 0-17 years and/or does not receive two or more services which might require coordinating.

Exclusions Details: If child is older than 17 years of age, excluded from denominator.

If parent does not report the child using two or more healthcare services.

719: CHILDREN WHO RECEIVE EFFECTIVE CARE COORDINATION OF HEALTHCARE SERVICES WHEN NEEDED *(continued)*

Risk Adjustment: No risk adjustment necessary

Stratification: No stratification is required.

Numerator Time Window: Encounter or point in time.

Type: Outcome

Type Score: Weighted score/composite/scale

Data Source: Survey: Patient

Level: Population: states; Population: national; Population: regional/network

Setting: Other

720: CHILDREN WHO LIVE IN COMMUNITIES PERCEIVED AS SAFE

Measure Steward: MCHB/CAHMI

Description: This measure ascertains the parents' perceived safety of child's community or neighborhood.

Numerator: Children whose parents report their neighborhood or community is usually/always safe for children

Numerator Details: "How often do you feel that [child] is safe in your community or neighborhood? Would you say never, sometimes, usually or always?"

Safe neighborhood numerator combines responses of usually and always.

Denominator: Children age 0-17 years

Denominator Details: All children 0-17 years old

Exclusions: Excluded from denominator if child does not fall in target population age range of 0-17 years.

Exclusions Details: None Listed

Risk Adjustment: No risk adjustment necessary

Stratification: No stratification is required.

720: CHILDREN WHO LIVE IN COMMUNITIES PERCEIVED AS SAFE *(continued)*

Numerator Time Window: Encounter or point in time.

Type: Outcome

Type Score: Rate/proportion

Data Source: Survey: Patient

Level: Population: states; Population: national; Population: regional/network

Setting: Other

721: CHILDREN WHO ATTEND SCHOOLS PERCEIVED AS SAFE

Measure Steward: MCHB/CAHMI

Description: This measure ascertains the perceived safety of child's school.

Numerator: Children whose parents report their school is usually/always safe for children

Numerator Details: The numerator is based on responses to the following item: "How often do you feel that [child] is safe at school? Would you say never, sometimes, usually or always?" Numerator for safe schools combines usually and always.

Denominator: Children age 6-17 years who have been enrolled in school during the past 12 months.

Denominator Details: Children age 6-17 who have been enrolled in school during the past 12 months.

Exclusions: Children are excluded from the denominator:

- If the child is less than 6 years of age or over 17 years old
- If the child is homeschooled (K7Q01=3)
- If the child is not enrolled in school (K7Q01F=2)
- If the child did not go to school in the past 12 months (K7Q02=555)

Exclusions Details: None Listed

Risk Adjustment: No risk adjustment necessary

721: CHILDREN WHO ATTEND SCHOOLS PERCEIVED AS SAFE *(continued)*

Stratification: No stratification is required.

Numerator Time Window: Encounter or point in time.

Type: Outcome

Type Score: Rate/proportion

Data Source: Survey: Patient

Level: Population: states; Population: national; Population: regional/network

Setting: Other

722: PEDIATRIC SYMPTOM CHECKLIST (PSC)

Measure Steward: Massachusetts General Hospital

Description: The Pediatric Symptom Checklist (PSC) is a brief parent report questionnaire that is used to measure overall psychosocial functioning in children from 4 to 16 years of age. Originally developed to be a screen that would allow pediatricians and other health professionals to identify children with poor overall functioning who were in need of further evaluation or referral, the PSC has seen such wide use in large systems that it has been used as an outcome measure to assess changes in functioning over time. In addition to the original 35 item parent report form of the PSC in English, there are now many other validated forms including translations of the original form into more than a dozen other languages, a youth self-report, a pictorial version, and a briefer 17 item version for both the parent and youth forms.

Numerator: This survey asks parents to rate the frequency/severity of 35 emotional or behavioral problems (using response categories of never, sometimes, or often present) order to determine the presence/absence and degree of psychosocial problems at a single point in time or to measure change over time.

Numerator Details: The weighted item score (0, 1, 2) is calculated for each of the 35 items and the weighted total score is then calculated by summing the weighted scores for all items. Total score is compared to standards validated in a national sample. For school aged children scores of 28 or higher are considered to indicate the presence of a psychosocial problem. Subscale scores can be calculated in the same way by summing the scores for clusters of items related to attention, conduct, or anxiety/depression problems.

Denominator: Children 4-16 years who are seeing their pediatrician or care provider for health maintenance visits or children who are participating in mental health treatment or an intervention whose overall level of psychosocial functioning should be assessed at baseline or repeatedly.

Denominator Details: Populations of normal elementary school children, all pediatric outpatients seen for well child care or specialty populations like children in outpatient mental health care have been assessed.

722: PEDIATRIC SYMPTOM CHECKLIST (PSC) *(continued)*

Exclusions: Virtually no exclusions. Children too far out of the validated range because too young (3) or too old (greater than 18) should be excluded.

Exclusions Details: N/A

Risk Adjustment: No risk adjustment necessary

Stratification: N/A

Numerator Time Window: The PSC is given at a single point with scores compared to population norms for total score or subscales. The PSC can be readministered at later point in time to calculate pre post change (total score change or change from 'case' to 'non case'. For example the PSC is given quarterly when used as an outcome tracking measure in child psychiatry or annually when used as a screen for psychosocial problems in pediatrics...or after a mental health intervention.

Type: Outcome

Type Score: Weighted score/composite/scale

Data Source: Documentation of original self-assessment; Electronic administrative data/claims; Electronic clinical data; Paper medical record/flow-sheet; Electronic Health/Medical Record

Level: Clinicians: Group; Population: national; Population: regional/network; Population: states; Population: counties or cities; Program: Disease management; Program: QIO; Can be measured at all levels

Setting: Ambulatory Care: Office; Ambulatory Care: Clinic; Ambulatory Care: Emergency Dept; Ambulatory Care: Hospital Outpatient; Home; Hospice; Hospital; Long term acute care hospital; Behavioral health/psychiatric unit; All settings; Group homes

723: CHILDREN WHO HAVE INADEQUATE INSURANCE COVERAGE FOR OPTIMAL HEALTH

Measure Steward: MCHB/CAHMI

Description: The measure is designed to ascertain whether or not current insurance program coverage is adequate for the child's health needs—whether the out of pocket expenses are reasonable; whether the child is limited or not in choice of doctors; and whether the benefits meet child's healthcare needs.

Numerator: Percentage of children whose current health insurance coverage is adequate for meeting child's heath care needs

Adequate insurance is defined by these criteria: child currently has health insurance coverage AND benefits usually or always meet child's needs AND usually or always allow child to see needed providers AND either no out-of-pocket expenses or out-of pocket expenses are usually or always reasonable.

723: CHILDREN WHO HAVE INADEQUATE INSURANCE COVERAGE FOR OPTIMAL HEALTH *(continued)*

Numerator Details: For a child to be included in the numerator of having adequate insurance coverage, criteria from the following five questions must be met:

- Child has current health insurance coverage (K3Q01)
- Insurance allows the child to see needed health care providers (K3Q22)
- Insurance coverage is sufficient to meet the child's needs (K3Q20)
- If the family pays some health care costs out of pocket (K3Q21A), these costs are reasonable (K3Q21B)

For a child to be included in the numerator of having inadequate insurance coverage, criteria from the following five questions must be met:

- Child has current health insurance coverage (K3Q01)
- Insurance coverage is not sufficient to meet the child's needs (K3Q20)
- Insurance does not allow the child to see needed health care providers (K3Q22)
- If the family pays some health care costs out of pocket (K3Q21A), these costs are not reasonable (K3Q21B)

Denominator: Children age 0-17 years with current health insurance

Denominator Details: Children age 0-17 years with current health insurance.

"Current health insurance" is defined as any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicaid.

Exclusions: Excluded from denominator if child does not fall in target population age range of 0-17 years and/or does not have current health insurance

Exclusions Details: If child is older than 17 years of age, excluded from denominator.

If child does not have current health insurance (any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicaid), excluded from denominator.

Risk Adjustment: No risk adjustment necessary

Stratification: No stratification is required.

When the inadequate insurance coverage for optimal health of child measure was administered in its most recent form, in the 2007 NSCH, the survey included a number of child demographic variables that allow for stratification of the findings by possible vulnerability:

- Age
- Gender

723: CHILDREN WHO HAVE INADEQUATE INSURANCE COVERAGE FOR OPTIMAL HEALTH *(continued)*

Stratification: *(continued)*

- Geographic location- State, HRSA Region, National level Rural Urban Commuter Areas (RUCA)
- Race/ethnicity
- Health insurance- type, consistency
- Primary household language
- Household income
- Special Health Care Needs- status and type

Numerator Time Window: Encounter or point in time.

Type: Outcome

Type Score: Rate/proportion

Data Source: Survey: Patient

Level: Population: national; Population: states; Population: regional/network

Setting: Other

724: MEASURE OF MEDICAL HOME FOR CHILDREN AND ADOLESCENTS

Measure Steward: MCHB/CAHMI

Description: This composite measure assesses whether or not children and adolescents (age 0-17 years) receive health care within a medical home according to the survey respondent (almost always the child's parent). The medical home measure is based on six of the seven components of care first proposed by the American Academy of Pediatrics (AAP) — health care that is accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally effective. (Note: "accessible" is the one component of medical home that is not directly addressed in this composite measure. This will be explained in a later section)

The AAP policy statement emphasizes that a medical home is "not a building, house, or hospital, but rather an approach to providing continuous and comprehensive primary pediatric care from infancy through young adulthood, with availability 24 hours a day, 7 days a week, from a pediatrician or physician whom families trust," and this composite measure of medical home is designed to assess the receipt of quality health care using the AAP's recommended care guidelines.

724: MEASURE OF MEDICAL HOME FOR CHILDREN AND ADOLESCENTS *(continued)*

Numerator: The Measure of Medical Home for Children Adolescents measures whether or not a child or adolescent is receiving care within a medical home—that is, care that meets all of the following criteria—child has a regular doctor or nurse AND has a usual place for well and sick care AND receives care that is family-centered AND has no problems getting referrals when needed AND receives effective care coordination when needed.

Numerator Details: For a child to be included in the target numerator of receiving care within a medical home, the following numerator criteria must be met:

- Child has at least 1 healthcare provider considered as personal doctor or nurse (K4Q04)
- Child has usual source(s) for both sick and well-child care (K4Q01, K4Q02)
- If child used at least 1 of 5 different services in the past 12 months—preventive medical care, preventive dental care, mental health treatment or counseling, saw a specialist, or needed to see a specialist (K4Q20, K4Q21, K4Q22, K4Q23, K4Q25):
  - Received family-centered, compassionate, culturally effective care from ALL child's doctors and other health care providers (K5Q40, K5Q41, K5Q42, K5Q43, K5Q44, K5Q45, K5Q46)
  - If child needed referral(s), no problems getting referral(s) (K5Q10, K5Q11)
  - If child needed care coordination (used at least 2 of 5 different services in the past 12 months from above), no problems getting effective care coordination (K5Q20, K5Q21, K5Q22, K5Q30, K5Q31, K5Q32)

Denominator: Main denominator: Children age 0-17 years in the U.S. (this measure has only been officially tested on children in the United States and has not been tested for potential cultural differences among other countries).

Domain-Specific denominators:

- Established relationship with a specific provider:
  - Children age 0-17 years in the U.S.
- Family-centered/Compassionate:
  - Children age 0-17 years in the U.S. who received at least 1 service from a doctor or other health care provider in the past 12 months
- Comprehensive:
  - Children age 0-17 years in the U.S.
- Coordinated:
  - K5Q31, K5Q32 : Children age 0-17 years in the U.S. who received at least 1 service from a doctor or other health care provider in the past 12 months
  - K5Q20, K5Q21, K5Q22, and K5Q30: Children age 0-17 years in the U.S. who received 2 or more services from a doctor or other health care provider in the past 12 months
- Culturally effective:
  - K5Q42: Children age 0-17 years in the U.S. who received at least 1 service from a doctor or other health care provider in the past 12 months
  - K5Q45 and K5Q46: Children age 0-17 years in the U.S. who speak a primary household language other than English or unknown

724: MEASURE OF MEDICAL HOME FOR CHILDREN AND ADOLESCENTS *(continued)*

Denominator Details: Geographically defined— the sampling frame used on this measure (from the most recently tested 2007 National Survey of Children's Health) is a geographically representative sample at both the national and state levels. Other denominator sampling frames are possible, such as sub-state geographic regions or health plans.

- Children age 0 to 17 years in the U.S.
  - More specific denominators such as use of services-related skips are addressed in the Denominator Details field above.

Exclusions: The minimum denominator exclusions are: if the child is not between the ages of 0 and 17 years, if the child does not have at least 1 healthcare provider considered to be a personal doctor or nurse, or if the child does not have a usual source for both sick and well-child care, or if the child has not used any health-related services in the past 12 months. More specific denominator exclusions are explained in 2a.4. And 2a.10.

Exclusions Details: See 2a.4. For full description of the denominators for each component of the medical home composite measure. A case is EXCLUDED from the denominator of having a medical home if:

- Child is not between 0-17 years
- Child does not have at least 1 healthcare provider considered as personal doctor or nurse (K4Q04) OR
- Child does not have usual source(s) for both sick and well-child care (K4Q01, K4Q02) OR
- Child has not seen any health care provider in the past 12 months—preventive medical care, preventive dental care, mental health treatment or counseling, saw a specialist, or needed to see a specialist (K4Q20, K4Q21, K4Q22, K4Q23, K4Q25)

Risk Adjustment: No risk adjustment necessary

Stratification: No stratification is required.

When the medical home measure was administered most recently in the 2007 National Survey of Children's Health, the survey included a number of child demographic variables that allow for stratification of the findings by vulnerable groups or groups with known health care disparities such as:

- Age
- Gender
- Geographic location- State, HRSA Region, National level Rural Urban Commuter Areas (RUCA)
- Race/ethnicity
- Health insurance- status, type, consistency, adequacy
- Primary household language
- Household income
- Special Health Care Needs- status and type

724: MEASURE OF MEDICAL HOME FOR CHILDREN AND ADOLESCENTS *(continued)*

Numerator Time Window: Encounter or point in time.

Type: Patient experience

Type Score: Weighted score/composite/scale

Data Source: Survey: Patient

Level: Population: states; Population: national; Population: regional/network

Setting: Other

725: VALIDATED FAMILY-CENTERED SURVEY QUESTIONNAIRE FOR PARENTS' AND PATIENTS' EXPERIENCES DURING INPATIENT PEDIATRIC HOSPITAL STAY

Measure Steward: Children's Hospital Boston - Program for Patient Safety & Quality

Description: This family-centered survey questionnaire consists of 62 questions that assess various aspects of care experiences during inpatient pediatric hospital stays. The dimensions that are included are overall impressions, interactions with nurses, interactions with doctors, the admission and discharge process, home care preparation, medications, pain management, parent involvement, hospital environment, support staff and food. Demographic questions are included at the end of the survey. The majority of the survey questions are categorical in nature. Ordinal measures enable the rating of experiences, dichotomous measures are used to assess if subsequent questions apply to the experiences of parents and the patient but a small number of questions are open-ended to allow any additional or more detailed comments. Survey will be collected for a given time period, e.g., monthly. The target population is one of the parents, 18 years or older, of a child that stayed for at least one day in an inpatient unit at the hospital and was discharged during the previous time period, e.g., the last month. A random sample will be drawn of all discharged parent-patient units and receive the survey. The instrument is currently validated for mail and phone administration and is in English. All questions are asking about experiences during their last inpatient hospital stay. Further steps include validation for web administration and other languages.

Numerator: The 62-item survey evaluates parents' experiences during inpatient pediatric hospital stay.

Numerator Details: The dimensions that are included are overall impressions, interactions with nurses, interactions with doctors, the admission and discharge process, home care preparation, medications, pain management, parent involvement, hospital environment, support staff and food. Demographic questions are included at the end of the survey. The experiences are rated with various scales such as "Never to Always," "Very Easy to Very Hard," "Very Poorly to Very Well," "Poor to Excellent," "Not At All to Very Well," "Fell Far Below My Expectations to Exceeded My Expectations," "Very Unlikely to Very Likely," and "Strongly Disagree to Strongly Agree." "Not applicable" responses are available whenever applicable.

Denominator: Randomly sampled parents or caregivers, 18 years or older, of children who had an inpatient stay of at least one night at the hospital and responded to the survey.

725: VALIDATED FAMILY-CENTERED SURVEY QUESTIONNAIRE FOR PARENTS' AND PATIENTS' EXPERIENCES DURING INPATIENT PEDIATRIC HOSPITAL STAY *(continued)*

Denominator Details: The denominator includes all parents and caregivers:

1. Whose child stayed at least one night on an inpatient unit at the hospital 2. Was discharged during a certain time period
2. Was randomly selected
3. Answered the survey within 6 weeks after the end of the time period

Exclusions: The denominator excludes surveys that are received after 6 weeks after sending it out to the parents/caregivers. Patients from the hospital, e.g., ambulatory patients, that did not have an inpatient stay are not included in the target population and therefore not in the denominator.

Exclusions Details: The denominator excludes surveys that are received after 6 weeks after sending it out to the parents/caregivers. Patients from the hospital, e.g., ambulatory patients, that did not have an inpatient stay are not included in the target population and therefore not in the denominator.

Risk Adjustment: No risk adjustment necessary

Stratification: N/A

Numerator Time Window: Surveys received from parents of pediatric inpatients that were received within 6 week after sending the survey out to the parents that were randomly selected from all parents with children who had inpatient stays during a certain time period prior to sending the survey out, e.g., the prior month.

Type: Patient experience

Type Score: Rate/proportion

Data Source: Survey: Patient

Level: Facility/Agency

Setting: Hospital

727: GASTROENTERITIS ADMISSION RATE (PEDIATRIC)

Measure Steward: Agency for Healthcare Research and Quality

Description: Admission rate for gastroenteritis in children ages 3 months - 17 years, per 100,000 population (area level rate)

Numerator: Discharges ages 3 months to 17 years with ICD-9-CM principal diagnosis code of gastroenteritis, OR with secondary diagnosis code of gastroenteritis and a principal diagnosis code of dehydration.

727: GASTROENTERITIS ADMISSION RATE (PEDIATRIC) *(continued)*

Numerator:

Exclude cases:

- MDC 14 (pregnancy, childbirth, and puerperium)
- transfer from other institution
- age less than or equal to 90 days (or neonates if age in days is missing)
- with any diagnosis code of gastrointestinal abnormalities or bacterial gastroenteritis

Numerator Details: Inpatient discharges with ICD-9-CM principal diagnosis code of gastroenteritis:

ICD-9-CM Gastroenteritis diagnosis codes:
00861 ENTERITIS ROTAVIRUS
00862 ENTERITIS ADENOVIRUS
00863 ENTERITIS NORWALK VIRUS
00864 ENTERITIS OTH SML RND VIRUS
00865 ENTERITIS CALICIVIRUS
00866 ENTERITIS ASTROVIRUS
00867 ENTERITIS ENTEROVIRUS NEC
00869 ENTERITIS NOS
0088 VIRAL ENTERITIS NOS
0090 INFECTIOUS ENTERITIS NOS
0091 ENTERITIS OF INFECT ORIG
0092 INFECTIOUS DIARRHEA
0093 DIARRHEA OF PRESU INFECT ORIG
5589 NONINF GASTROENTERIT NEC

ICD-9-CM Dehydration diagnosis codes:
2765 HYPOVOLEMIA
27651 DEHYDRATION OCT06-
27650 VOL DEPLETION, UNSPECIFIED OCT06-
27652 HYPOVOLEMIA OCT06-

727: GASTROENTERITIS ADMISSION RATE (PEDIATRIC) *(continued)*

Numerator Details: (continued)

ICD-9-CM Gastrointestinal Abnormalities diagnosis codes (excluded):
53570 EOSINOPHILIC GASTRITIS WO HEM
538 GASTROINTESTINAL MUCOSITIS OCT08- (ULCERATIVE)
53571 EOSINOPHILIC GASTRITIS W HEM
5550 REGIONAL ENTERITIS, SMALL OCT08- INTESTINE
5551 REGIONAL ENTERITIS, LARGE INTESTINE
5552 REGIONAL ENTERITIS, SMALL INTESTINE WITH LARGE INTESTINE
5559 REGIONAL ENTERITIS, UNSPECIFIED SITE
5560 ULCERATIVE CHRONIC ENTEROCOLITIS
5561 ULCERATIVE CHRONIC ILEOCOLITIS
5562 ULCERATIVE CHRONIC PROCTITIS
5563 ULCERATIVE CHRONIC PROCTOSIGMOIDITIS
5564 PSEUDOPOLYPOSIS OF COLON
5565 LEFT-SIDED ULCERATIVE CHRONIC COLITIS
5566 UNIVERSAL ULCERATIVE CHRONIC COLITIS
5568 OTHER ULCERATIVE COLITIS
5569 ULCERATIVE COLITIS NOS
5581 GASTROENTERITIS AND COLITIS DUE TO RADIATION
5582 TOXIC GASTROENTERITIS AND COLITIS
5583 ALLERGIC GASTROENTERITIS AND COLITIS
55841 EOSINOPHILIC GASTROENTERITIS OCT08-
55842 EOSINOPHILIC COLITIS OCT08-
5790 CELIAC DISEASE
5791 TROPICAL SPRUE
5792 BLIND LOOP SYNDROME
5793 OTHER AND UNSPECIFIED POSTSURGICAL NONABSORPTION
5794 PANCREATIC STEATORRHEA
5798 OTHER SPECIFIED INTESTINAL MALABSORPTION
5799 UNSPECIFIED INTESTINAL MALABSORPTION

727: GASTROENTERITIS ADMISSION RATE (PEDIATRIC) *(continued)*

Numerator Details: (continued)

ICD-9-CM Bacterial Gastroenteritis diagnosis codes:
0030 SALMONELLA GASTROENTERITIS
0040 SHIGELLA DYSENTERIAE
0041 SHIGELLA FLEXNERI
0042 SHIGELLA BOYDII
0043 SHIGELLA SONNEI
0048 OTHER SPECIFIED SHIGELLA INFECTIONS
0049 SHIGELLOSIS, NOS
0050 STAPHYLOCOCCAL FOOD POISONING
0051 BOTULISM
0052 FOOD POISONING DUE TO CLOSTRIDIUM PERFRINGENS
0053 FOOD POISONING DUE TO OTHER CLOSTRIDIA
0054 FOOD POISONING DUE TO VIBRIO PARAHAEMOLYTICUS
0058 OTHER BACTERIAL FOOD POISONING
00581 FOOD POISONING DUE TO VIBRIO VULNIFICUS
00589 OTHER BACTERIAL FOOD POISONING
0059 FOOD POISONING NOS
0060 ACUTE AMEBIC DYSENTERY WO MENTION OF ABSCESS
0061 CHRONIC INTESTINAL AMEBIASIS WO MENTION OF ABSCESS
0062 AMEBIC NONDYSENTERIC COLLITIS
0070 BALANTIDIASIS
0071 GIARDIASIS
0072 COCCIDIOSIS
0073 INTESTINAL TRICHOMONIASIS
0074 CRYPTOSPORIDIOSIS
0075 CYCLOSPORIASIS
0078 OTHER SPECIFIED PROTOZOAL INTESTINAL DISEASES
0079 UNSPECIFIED PROTOZOAL INTESTINAL DISEASE
0080 ESCHERICHIA COLI

727: GASTROENTERITIS ADMISSION RATE (PEDIATRIC) *(continued)*

Numerator Details: *(continued)*

00800 E. COLI NOS
00801 ENTEROPATHOGENIC E. COLI
00802 ENTEROTOXIGENIC E. COLI
00803 ENTEROINVASIVE E. COLI
00804 ENTEROHEMORRHAGE E. COLI
00809 OTHER INTESTINAL E. COLI INFECTIONS
0081 ARIZONA GROUP OF PARACOLON BACILLI
0082 AEROBACTER AEROGENES
0083 PROTEUS
0084 OTHER SPECIFIED BACTERIA
00841 OTHER SPECIFIED BACTERIA, STAPHYLOCOCCUS
00842 OTHER SPECIFIED BACTERIA, PSEUDOMONAS
00843 OTHER SPECIFIED BACTERIA, CAMPYLOBACTER
00844 OTHER SPECIFIED BACTERIA, YERSINIA ENTEROCOLITICA
00845 OTHER SPECIFIED BACTERIA, CLOSTRIDIUM DIFFICILE
00846 OTHER SPECIFIED BACTERIA, OTHER ANAEROBES
00847 OTHER SPECIFIED BACTERIA, OTHER GRAM-NEGATIVE BACTERIA
00849 OTHER SPECIFIED BACTERIA, OTHER
0085 BACTERIAL ENTERITIS, NOS
11285 CANDIDAL ENTERITIS

Denominator: Population ages 3 mo. to 17 years in Metro Area or county.

Denominator Details: Population ages 3 mo. to 17 years in Metro Area or county.

Exclusions: There are no denominator exclusions

Exclusions Details: There are no denominator exclusions

Risk Adjustment: Case-mix adjustment

727: GASTROENTERITIS ADMISSION RATE (PEDIATRIC) *(continued)*

Stratification: The measure is not stratified.

Numerator Time Window: Time window can be determined by user, but is generally 1 year.

Type: Access

Type Score: Rate/proportion

Data Source: Electronic administrative data/claims

Level: Population: states; Population: counties or cities; Population: national; Population: regional/network

Setting: Other

728: ASTHMA ADMISSION RATE (PEDIATRIC)

Measure Steward: Agency for Healthcare Research and Quality

Description: Admission rate for asthma in children ages 2-17, per 100,000 population (area level rate)

Numerator: Inpatient discharges ages 2 to 17 years with ICD-9-CM principal diagnosis code of asthma.

Exclude cases:

- MDC 14 (pregnancy, childbirth, and puerperium)
- transfer from other institution
- age less than 2 years
- with any diagnosis code for cystic fibrosis and anomalies of the respiratory system

Numerator Details: Inpatient discharges with ICD-9-CM principal diagnosis code of asthma:

ICD-9-CM Asthma diagnosis codes
49300 EXT ASTHMA W/O STAT ASTH
49321 CH OB ASTHMA W STAT ASTH
49301 EXT ASTHMA W STATUS ASTH
49322 CH OBS ASTH W ACUTE EXAC OCT00¬

728: ASTHMA ADMISSION RATE (PEDIATRIC) *(continued)*

Numerator Details: (continued)

49302 EXT ASTHMA W ACUTE EXAC OCT00-
49381 EXERCSE IND BRONCHOSPASM OCT03-
49310 INT ASTHMA W/O STAT ASTH
49382 COUGH VARIANT ASTHMA OCT03-
49311 INT ASTHMA W STATUS ASTH
49390 ASTHMA W/O STATUS ASTHM
49312 INT ASTHMA W ACUTE EXAC OCT00-
49391 ASTHMA W STATUS ASTHMAT
49320 CH OB ASTH W/O STAT ASTH
49392 ASTHMA W ACUTE EXACERBTN OCT00

ICD-9-CM Cystic Fibrosis and Anomalies of the Respiratory System diagnosis codes
27700 CYSTIC FIBROS W/O ILEUS
74860 LUNG ANOMALY NOS
27701 CYSTIC FIBROS W ILEUS
74861 CONGEN BRONCHIECTASIS
27702 CYSTIC FIBROS W PUL MAN
74869 LUNG ANOMALY NEC
27703 CYSTIC FIBROSIS W GI MAN
7488 RESPIRATORY ANOMALY NEC
27709 CYSTIC FIBROSIS NEC
7489 RESPIRATORY ANOMALY NOS
74721 ANOMALIES OF AORTIC ARCH
7503 CONG ESOPH FISTULA/ATRES
7483 LARYNGOTRACH ANOMALY NEC
7593 SITUS INVERSUS
7484 CONGENITAL CYSTIC LUNG
7707 CHRONIC RESPIRATORY DISEASE
7485 AGENESIS OF LUNG ARISING IN THE PERINATAL PERIOD

728: ASTHMA ADMISSION RATE (PEDIATRIC) *(continued)*
Denominator: Population ages 2 to 17 years in Metro Area or county.
Denominator Details: Population ages 2 to 17 years in Metro Area or county.
Exclusions: There are no denominator exclusions
Exclusions Details: There are no denominator exclusions
Risk Adjustment: None Listed
Stratification: The measure is not stratified.
Numerator Time Window: Time window can be determined by user, but is generally 1 year.
Type: Access
Type Score: Rate/proportion
Data Source: Electronic administrative data/claims
Level: Population: states; Population: counties or cities; Population: national; Population: regional/network
Setting: Other

Appendix D
Steering Committees, Technical Advisory Panels, and NQF Staff

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Appendix E
NQF-Endorsed® Consensus Standards: Outcome Measures as of April 2010

NQF #	TITLE	STEWARD
5	CAHPS clinician/group surveys - (adult primary care, pediatric care, and specialist care surveys)	AHRQ
6	CAHPS Health Plan Survey v 4.0 - adult questionnaire	AHRQ
7	NCQA supplemental items for CAHPS 4.0 adult questionnaire (CAHPS 4.0H)	NCQA
8	Experience of Care and Health Outcomes (ECHO) Survey (behavioral health, managed care versions)	AHRQ
9	CAHPS Health Plan Survey v 3.0 children with chronic conditions supplement	AHRQ
10	Young Adult Health Care Survey (YAHCS)	Oregon Health & Science University
11	Promoting Healthy Development Survey (PHDS)	Oregon Health & Science University
22	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	NCQA
138	Urinary catheter-associated urinary tract infection for intensive care unit (ICU) patients	CDC
139	Central line catheter-associated blood stream infection rate for ICU and high-risk nursery (HRN) patients	CDC
140	Ventilator-associated pneumonia for ICU and high-risk nursery (HRN) patients	CDC
141	Patient fall rate	ANA
166	HCAHPS	AHRQ
167	Improvement in ambulation/locomotion	CMS

more

NQF #	TITLE	STEWARD
171	Acute care hospitalization (risk-adjusted)	CMS
173	Emergent care (risk adjusted)	CMS
174	Improvement in bathing	CMS
175	Improvement in bed transferring	CMS
176	Improvement in management of oral medications	CMS
177	Improvement in pain interfering with activity	CMS
178	Improvement in status of surgical wounds	CMS
179	Improvement in dyspnea	CMS
181	Increase in number of pressure ulcers	CMS
182	Residents whose need for more help with daily activities has increased	CMS
183	Low-risk residents who frequently lose control of their bowel or bladder	CMS
184	Residents who have a catheter in the bladder at any time during the 14-day assessment period (risk adjusted)	CMS
185	Recently hospitalized residents with symptoms of delirium (risk-adjusted)	CMS
186	Recently hospitalized residents who experienced moderate to severe pain at any time during the 7-day assessment period	CMS
187	Recently hospitalized residents with pressure ulcers (risk adjusted)	CMS
191	Residents who lose too much weight	CMS
192	Residents who experience moderate to severe pain during the 7-day assessment period (risk-adjusted)	CMS
193	Residents who were physically restrained daily during the 7-day assessment period	CMS
194	Residents who spent most of their time in bed or in a chair in their room during the 7-day assessment period	CMS
195	Residents with a decline in their ability to move about in their room and the adjacent corridor.	CMS
196	Residents with a urinary tract infection	CMS
197	Residents with worsening of a depressed or anxious mood.	CMS
198	High-risk residents with pressure ulcers	CMS
199	Average-risk residents with pressure ulcers	CMS

more

NQF #	TITLE	STEWARD
200	Death among surgical in-patients with treatable serious complications (failure to rescue)	AHRQ
201	Pressure ulcer prevalence	TJC
202	Falls with injury	ANA
228	3-Item Care Transition Measure (CTM-3)	University of Colorado Health Sciences Center
263	Patient burn	ASCQC
265	Hospital transfer/admission	ASCQC
266	Patient fall	ASCQC
267	Wrong site, wrong side, wrong patient, wrong procedure, wrong implant	ASCQC
299	Surgical site infection rate	CDC
327	Risk-adjusted average length of inpatient hospital Stay	Premier, Inc
328	Inpatient hospital average length of stay (risk adjusted)	United Health Group
329	All-cause readmission index (risk adjusted)	United Health Group
330	30-Day all-cause risk standardized readmission rate following heart failure hospitalization (risk adjusted)	CMS
331	Severity-standardized average length of stay—routine care (risk adjusted)	Leapfrog Group
332	Severity-standardized ALOS – special care	Leapfrog Group
333	Severity-standardized ALOS – deliveries	Leapfrog Group
337	Decubitus ulcer (PDI 2)	AHRQ
344	Accidental puncture or laceration (PDI 1) (risk adjusted)	AHRQ
345	Accidental puncture or laceration (PSI 15)	AHRQ
346	Iatrogenic pneumothorax (PSI 6) (risk adjusted)	AHRQ
347	Death in low mortality DRGs (PSI 2)	AHRQ
348	Iatrogenic pneumothorax in non-neonates (PDI 5) (risk adjusted)	AHRQ
349	Transfusion reaction (PSI 16)	AHRQ
350	Transfusion reaction (PDI 13)	AHRQ
351	Death among surgical inpatients with serious, treatable complications (PSI 4)	AHRQ

more

NQF #	TITLE	STEWARD
352	Failure to rescue in-hospital mortality (risk adjusted)	Children's Hospital of Philadelphia
353	Failure to rescue 30-day mortality (risk adjusted)	Children's Hospital of Philadelphia
362	Foreign body left after procedure (PDI 3)	AHRQ
363	Foreign body left in during procedure (PSI 5)	AHRQ
364	Incidental appendectomy in the elderly rate (IQI 24) (risk adjusted)	AHRQ
367	Post operative wound dehiscence (PDI 11) (risk adjusted)	AHRQ
368	Post operative wound dehiscence (PSI 14) (risk adjusted)	AHRQ
376	Incidence of potentially preventable VTE	TJC
422	Functional status change for patients with knee impairments	FOTO
423	Functional status change for patients with hip impairments	FOTO
424	Functional status change for patients with foot/ankle impairments	FOTO
425	Functional status change for patients with lumbar spine impairments	FOTO
426	Functional status change for patients with shoulder impairments	FOTO
427	Functional status change for patients with elbow, wrist or hand impairments	FOTO
428	Functional status change for patients with general orthopedic impairments	FOTO
429	Change in basic mobility as measured by the AM-PAC	CREcare
430	Change in daily activity function as measured by the AM-PAC	CREcare
442	Functional communication measure: writing	American Speech-Language-Hearing Association
443	Functional communication measure: swallowing	American Speech-Language-Hearing Association
444	Functional communication measure: spoken language expression	American Speech-Language-Hearing Association

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NQF #	TITLE	STEWARD
445	Functional communication measure: spoken language comprehension	American Speech-Language-Hearing Association
446	Functional communication measure: reading	American Speech-Language-Hearing Association
447	Functional communication measure: motor speech	American Speech-Language-Hearing Association
448	Functional communication measure: memory	American Speech-Language-Hearing Association
449	Functional communication measure: attention	American Speech-Language-Hearing Association
450	Postoperative DVT or PE (PSI 12)	AHRQ
495	Median time from ED arrival to ED departure for admitted ED patients	CMS
496	Median time from ED arrival to ED departure for discharged ED patients	CMS
497	Admit decision time to ED departure time for admitted patients	CMS
498	Door to diagnostic evaluation by a qualified medical personnel	LSU
499	Left without being seen	LSU
517	CAHPS® Home Health Care Survey	CMS
530	Mortality for selected conditions	AHRQ
531	Patient safety for selected indicators	AHRQ
533	Postoperative respiratory failure (PSI #11)	AHRQ
541	Proportion of days covered (PDC): 5 rates by therapeutic category	NCQA
542	Adherence to chronic medications	CMS
554	Medication reconciliation post-discharge (MRP)	NCQA

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NQF #	TITLE	STEWARD
Mental Health		
003	Bipolar disorder: assessment for diabetes	Center for Quality Assessment and Improvement in Mental Health
004	Initiation and engagement of alcohol and other drug dependence treatment: a. initiation, b. engagement	NCQA
008	Experience of Care and Health Outcomes (ECHO) Survey (behavioral health, managed care versions)	AHRQ
095	Assessment mental status for community-acquired bacterial pneumonia	AMA PCPI
103	Major depressive disorder: diagnostic evaluation	AMA PCPI
104	Major depressive disorder: suicide risk assessment	AMA PCPI
105	New episode of depression: (a) optimal practitioner contacts for medication management, (b) effective acute phase treatment, (c) effective continuation phase treatment	NCQA
109	Bipolar disorder and major depression: assessment for manic or hypomanic behaviors	Center for Quality Assessment and Improvement in Mental Health
110	Bipolar disorder and major depression: appraisal for alcohol or chemical substance use	Center for Quality Assessment and Improvement in Mental Health
111	Bipolar disorder: appraisal for risk of suicide	Center for Quality Assessment and Improvement in Mental Health
112	Bipolar disorder: level-of-function evaluation	Center for Quality Assessment and Improvement in Mental Health
197	Residents with worsening of a depressed or anxious mood	CMS
260	Assessment of health-related quality of life (physical & mental functioning)	RAND
316	LBP: mental health assessment	NCQA

more

NQF #	TITLE	STEWARD
Mental Health *(continued)*		
418	Screening for clinical depression	CMS
518	Depression assessment conducted [home health]	CMS
544	Use and adherence to antipsychotics among members with schizophrenia	Health Benchmarks, Inc
Child Health		
138	Urinary catheter-associated urinary tract infection for intensive care unit (ICU) patients	Centers for Disease Control and Prevention
139	Central line catheter-associated blood stream infection rate for ICU and high-risk nursery (HRN) patients	Centers for Disease Control and Prevention
140	Ventilator-associated pneumonia for ICU and high-risk nursery (HRN) patients	Centers for Disease Control and Prevention
278	Low birth weight (PQI 9)	AHRQ
303	Late sepsis or meningitis in neonates (risk-adjusted)	Vermont Oxford Network
304	Late sepsis or meningitis in very low birth weight (VLBW) neonates (risk-adjusted)	Vermont Oxford Network
335	PICU unplanned readmission rate	National Association of Children's Hospitals and Related Institutions
339	Pediatric heart surgery mortality (PDI 6) (risk adjusted)	Agency for Healthcare Research and Quality
340	Pediatric heart surgery volume (PDI 7)	Agency for Healthcare Research and Quality
343	PICU standardized mortality ratio	National Association of Children's Hospitals and Related Institutions
344	Accidental puncture or laceration (PDI 1) (risk adjusted)	Agency for Healthcare Research and Quality
348	Iatrogenic pneumothorax in non-neonates (PDI 5) (risk adjusted)	Agency for Healthcare Research and Quality
350	Transfusion reaction (PDI 13)	Agency for Healthcare Research and Quality
362	Foreign body left after procedure (PDI 3)	Agency for Healthcare Research and Quality

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NQF #	TITLE	STEWARD
Child Health *(continued)*		
367	Post operative wound dehiscence (PDI 11) (risk adjusted)	Agency for Healthcare Research and Quality
469	Elective delivery prior to 39 completed weeks gestation	Hospital Corporation of America
471	Cesarean rate for low-risk first birth women (aka NTSV CS rate)	California Maternal Quality Care Collaboration
474	Birth trauma rate: injury to neonates (PSI #17)	AHRQ/National Perinatal Information Center
477	Under 1500g infant not delivered at appropriate level of care	California Maternal Quality Care Collaboration
478	Nonsocomial blood stream infections in neonates (NQI #3)	AHRQ
480	Exclusive breastfeeding during birth hospitalization	California Maternal Quality Care Collaborative
482	First NICU temperature <36°C	Vermont Oxford Network

THE NATIONAL QUALITY FORUM (NQF) is a private, nonprofit, open membership, public benefit corporation whose mission is to improve the American healthcare system so that it can be counted on to provide safe, timely, compassionate, and accountable care using the best current knowledge. Established in 1999, NQF is a unique public-private partnership having broad participation from all parts of the healthcare industry. As a voluntary consensus standard-setting organization, NQF seeks to develop a common vision for healthcare quality improvement, create a foundation for standardized healthcare performance data collection and reporting, and identify a national strategy for healthcare quality improvement. NQF provides an equitable mechanism for addressing the disparate priorities of healthcare's many stakeholders.

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