

## **Recommendations for Hospital Quality Measures in 2011:**

### **Pediatric Measures:**

Based on the input of a group of healthcare stakeholders, the following new hospital measures are recommended:

- 1) Home Management Plan of Care Given to Patient/Caregiver for Pediatric Asthma
- 2) Pediatric Heart Surgery Volume
- 3) Pediatric Heart Surgery Mortality
- 4) Central Venous Catheter-related Bloodstream Infections
- 5) Late Sepsis or Meningitis in Neonates
- 6) Late Sepsis or Meningitis in Very Low Birth Weight Neonates

A seventh indicator was considered – a composite of several measures from the Agency for Healthcare Research and Quality (AHRQ) having to do with post-operative complications for pediatric patients. After determining that the denominators in each of the individual measures varied in volume by a factor of 10, this measure was not forwarded for consideration at this time due to concerns of accurate calculation.

All of these measures should be applied only to hospitals that have sufficient volume of pediatric patients to measure – at least 25 patients in a measure in a given year. The specifications for the measures are listed in the appendices.

The steering group applied the following criteria to selecting among the candidate measures:

- Opportunity for improvement
- Impact (enough patients affected?)
- Accessibility of data/ease of collection
- Accuracy of measure
- Known ways to improve performance
- Relevance to consumers
- Outcome or process measure

- Home Management Plan of Care Given to Patient/Caregiver for Pediatric Asthma:

This is a process measure that can currently be reported to the Joint Commission and be displayed on Hospital Compare. The source of the data is medical record abstraction. According to Hospital Compare, the current national rate of compliance with this measure is 56%, which leaves much room for improvement. The topic addresses asthma which is a key concern for the pediatric population, though inpatient care for pediatric asthma is relatively uncommon. Compliance with this measure should lead to reduced use of emergency department and hospital services, thus saving healthcare costs.

- Pediatric Heart Surgery Volume & Pediatric Heart Surgery Mortality

Though these are a highly specialized pair of indicators that will only measure three Minnesota hospitals, it was believed that it would be of high interest to the families who may benefit from the information. These are AHRQ outcome measures derived from administrative data.

- Central Venous Catheter-related Bloodstream Infections

This is another AHRQ outcome measure derived from administrative data. The topic of healthcare acquired infections (HAIs) is of high consumer interest. This measure combines several types of HAIs due to medical care.

- Late Sepsis or Meningitis in Neonates & Late Sepsis or Meningitis in Very Low Birth Weight Neonates

These outcomes measures are derived from medical record data and are currently reported to the Vermont Oxford Network by hospitals that have neonatal intensive care units. They are also measuring HAIs and are approved by the National Quality Forum for public reporting.

**AHRQ Measures:**

As previously mandated, MHA will be supplying three new AHRQ measures in 2011 which are the composite measures for medical mortality, patient safety and pediatrics.

## Appendix - Measure Specifications

### **1. Home Management Plan of Care Given to Patient/Caregiver for Pediatric Asthma (Joint Commission)**

**Numerator:** Pediatric asthma inpatients with documentation that they or their caregivers were given a written Home Management Plan of Care (HMPC) document that addresses **all** of the following:

1. Arrangements for follow-up care
2. Environmental control and control of other triggers
3. Method and timing of rescue actions
4. Use of controllers
5. Use of relievers

**Included Populations:** Pediatric asthma inpatients discharged with a distinct or stand alone HMPC document that addresses the five specific topic areas above.

**Excluded Populations:** None

**Denominator:** Pediatric asthma inpatients discharged home

**Included Populations:** Discharges with:

- An ICD-9-CM Principal Diagnosis Code of asthma
- An age of 2 through 17 years
- Discharge to home

**Excluded Populations:**

- Patients with an age less than 2 years or 18 years or greater
- Patients who have a Length of Stay greater than 120 days
- Patients enrolled in clinical trials

### **2&3. Pediatric Heart Surgery, Volume & Mortality Rate (AHRQ)**

**Numerator:** Number of in-hospital deaths in pediatric patients undergoing surgery for congenital heart disease

**Denominator:** Pediatric patients undergoing surgery for congenital heart disease (Volume)

**Include:**

- Discharges with a procedure codes for surgical intervention for congenital heart disease in any field or non-specific heart surgery in any field with a diagnosis code of congenital heart disease in any field.
- Age less than 18 years old.

**Exclude:**

- a. MDC 14 (pregnancy, childbirth and puerperium)

- b. patients with transcatheter interventions as single cardiac procedures, performed without bypass but with catheterization
- c. patients with septal defects (4P) as single cardiac procedures without bypass
- d. heart transplant
- e. premature infants with PDA closure as only cardiac procedure
- f. age less than 30 days with PDA closure as only cardiac procedure
- g. missing discharge disposition
- h. transferring to another short-term hospital

#### **4. Central Venous Catheter-related Bloodstream Infections (AHRQ)**

**Definition:** Number of patients with specific infection codes (see definition and exclusions below) per 1,000 eligible admissions (population at risk).

**Definition of infection:**

- Other infection (Infection, sepsis or septicemia following infusion, injection, transfusion, or vaccination) [999.3]
- Infection and inflammatory reaction due to other vascular device, implant, and graft [996.62]

**Definition of population at risk:**

Include:

- All medical and surgical patients (defined by DRG), age 0-17 years, except exclusions (see below).

Exclude:

- Patients with principal diagnosis code of 999.3 or 996.62
- Patients with length of stay of less than 2 days
- All newborns (born in-hospital) and neonates (age <28 days) transferred from an acute care facility
- Obstetric patients (MDC 14)

#### **5. Late Sepsis or Meningitis in Neonates (Vermont Oxford Network)**

Numerator: Eligible infants with one or more of the following criteria:

- **Criterion 1. Bacterial Pathogen**  
A bacterial pathogen is recovered from a blood and/or cerebral spinal fluid culture obtained after Day 3 of life.
- **Criterion 2. Coagulase-Negative Staphylococcus**  
Coagulase-negative staphylococcus is recovered and the infant has all three of the following:
  - Coagulase-negative staphylococcus is recovered from a blood culture obtained from either a central line or peripheral blood sample and/or is recovered from cerebrospinal fluid obtained by lumbar puncture, ventricular tap, or ventricular drain, AND

- Signs of generalized infection (such as apnea, temperature instability, feeding intolerance, worsening respiratory distress, or hemodynamic instability), AND
  - Treatment with five or more days of intravenous antibiotics after the above cultures were obtained. If the infant died, was discharged, or transferred prior to the completion of five days of intravenous antibiotics, this condition would still be met if the intention were to treat for five or more days.
- Criterion 3. Fungal Infection  
A fungus was recovered from a blood culture obtained from either a central line or peripheral blood sample after Day 3 of life.

Denominator:

- Any infant who is born at the hospital and whose birth weight is between 401 and 1500 grams OR whose gestational age is between 22 weeks 0 days and 29 weeks 6 days (inclusive) is eligible, regardless of where in the hospital the infant receives care
- Any outborn infant who is admitted to any location in the hospital within 28 days of birth, without first having gone home, and whose birth weight is between 401 and 1500 grams OR whose gestational age is between 22 weeks 0 days and 29 weeks 6 days (inclusive) is eligible, regardless of where in the hospital the infant receives care
- Any infant whose birth weight is over 1500 grams and who is admitted to a neonatal intensive care unit (NICU) in your hospital within the first 28 days of life, regardless of gestational age
- Any infant whose birth weight is over 1500 grams and who dies at any location in your hospital within 28 days of birth without first having gone home. This includes inborn and outborn infants.

Exclusions: Exclude patients if:

- The infant is discharged home or dies on or before Day 3
- The infant is transferred from your center to another hospital on or before Day 3 and either, a) is not readmitted to the center/hospital before discharge home, death, or first birthday, or b) is transferred a second time on or before Day 3.

## **6. Late Sepsis or Meningitis in Very Low Birth Weight Neonates (Vermont Oxford Network)**

Numerator: Eligible infants with one or more of the following criteria:

- Criterion 1. Bacterial Pathogen  
A bacterial pathogen is recovered from a blood and/or cerebral spinal fluid culture obtained after Day 3 of life.
- Criterion 2. Coagulase-Negative Staphylococcus  
Coagulase-negative staphylococcus is recovered and the infant has all three of the following:

- Coagulase-negative staphylococcus is recovered from a blood culture obtained from either a central line or peripheral blood sample and/or is recovered from cerebrospinal fluid obtained by lumbar puncture, ventricular tap, or ventricular drain, AND
  - Signs of generalized infection (such as apnea, temperature instability, feeding intolerance, worsening respiratory distress, or hemodynamic instability), AND
  - Treatment with five or more days of intravenous antibiotics after the above cultures were obtained. If the infant died, was discharged, or transferred prior to the completion of five days of intravenous antibiotics, this condition would still be met if the intention were to treat for five or more days.
- Criterion 3. Fungal Infection  
A fungus was recovered from a blood culture obtained from either a central line or peripheral blood sample after Day 3 of life.

Denominator:

- Any infant who is born at the hospital and whose birth weight is between 401 and 1500 grams OR whose gestational age is between 22 weeks 0 days and 29 weeks 6 days (inclusive) is eligible, regardless of where in the hospital the infant receives care
- Any outborn infant who is admitted to any location in the hospital within 28 days of birth, without first having gone home, and whose birth weight is between 401 and 1500 grams OR whose gestational age is between 22 weeks 0 days and 29 weeks 6 days (inclusive) is eligible, regardless of where in the hospital the infant receives care.

Exclusions: Exclude patients if:

- The infant is discharged home or dies on or before Day 3
- The infant is transferred from your center to another hospital on or before Day 3 and either, a) is not readmitted to the center/hospital before discharge home, death, or first birthday, or b) is transferred a second time on or before Day 3.

Risk-adjustment:

Uses logistic regression to model the dichotomous measure with several case mix variables: gestational age and its quadratic term, APGAR score at 1 minute, maternal race, infant gender, multiple birth (Yes/No), vaginal delivery (Yes/No), birth location (Inborn/Outborn), birth defect severity (No Defect, Moderately Severe, Severe, Very Severe, Most Severe), and small for gestational age (Yes/No). From the logistic model, the number of expected cases and a standardized morbidity ratio (SMR) is calculated for each hospital. An estimate is made of the “systematic” variation associated with the hospital SMRs using the method suggested by Martuzzi and Hills. This method assumes that the SMRs are distributed gamma, and that deviations from the gamma distribution are associated with random variation. The systematic variation is used to “shrink” center SMR values and their confidence limits based on the number of infants reported. The values for centers with a smaller number of infants shrink more toward the mean of all centers than do centers with more infants. Values for estimates of the number of

observed cases minus the number of expected cases (O-E) and control limits for O-E values are also shrunken using the systematic variation value.