National Voluntary Consensus Standards for Perinatal Care 2008

A CONSENSUS REPORT
The mission of the National Quality Forum is to improve the quality of American healthcare by setting national priorities and goals for performance improvement, endorsing national consensus standards for measuring and publicly reporting on performance, and promoting the attainment of national goals through education and outreach programs.

This document includes the foreword, executive summary, and the measure specification appendix from the National Quality Forum report *National Voluntary Consensus Standards for Perinatal Care 2008: A Consensus Report*.

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Foreword

THERE ARE MORE THAN 4 MILLION BIRTHS per year in the United States, and pregnancy/childbirth is the second most common reason for hospital admission. Because the volume of maternity admissions is so high, deficiencies in perinatal care affect a large population of vulnerable patients and represent a significant opportunity for quality improvement. Yet there have been relatively few standardized measures in the field of perinatal care to assess and publicly report on the safety and quality of care. There is an enormous need for more standardized consensus standards in this area.

Mortality and morbidity associated with pregnancy and childbirth are substantial and to a large extent are preventable through the provision of high-quality perinatal care. Poor-quality care provided during the third trimester, labor and delivery, and the postpartum period translates into unnecessary complications, prolonged lengths of stay, costly neonatal intensive care unit admissions, and anxiety and suffering for patients and families.

The set of NQF-endorsed measures featured in this report are patient focused and address care provided by individual clinicians such as doctors, nurses, and midwives, both in hospitals and in freestanding birth centers. The perinatal standards fill gaps in quality measurement and measure care at critical points for the mother and baby from the third trimester through hospital discharge and reflect aspects of care that can be substantially influenced by provider performance. Ultimately, through public reporting and accountability, the standards—such as birth trauma rate for the mother and baby and relevant vaccinations for newborns—can increase patient safety and decrease serious complications from childbirth.

NQF thanks the members of the Perinatal Care Steering Committee and NQF Members for their commendable work in developing this much-needed measure set that can help improve the quality of healthcare for mothers and babies.

Janet M. Corrigan, PhD, MBA
President and Chief Executive Officer
Executive Summary

TO DATE, QUALITY MEASUREMENT AND REPORTING has focused primarily on common medical conditions such as acute coronary syndrome, pneumonia, and surgical performance, while the focus on maternal-child care has been limited. Morbidity and mortality associated with pregnancy and childbirth remain substantial and, research suggests, are to a large extent preventable through adherence to existing evidence-based guidelines. Because pregnancy/childbirth is the second most common reason for hospital admission, deficiencies in perinatal care affect a large population of vulnerable patients and represent a significant opportunity for quality improvement. However, without appropriate information about hospital performance at a national level, perinatal quality improvement efforts will be unfocused and incentives for improvement limited.

In 2003, the National Quality Forum (NQF) endorsed five measures for public reporting of hospital performance in obstetrical and newborn care, and through subsequent consensus projects NQF endorsed four additional measures specifically addressing prenatal care in the ambulatory setting. Despite these efforts, however, providers, consumers, and other stakeholders who use publicly reported performance measures are still faced with considerable gaps in the information available on the quality of perinatal care.

This report presents 17 consensus standards addressing care received during the last trimester of pregnancy through hospital discharge for both mother and newborn. The consensus standards address care provided by both individual clinicians (i.e., physicians and midwives) and facilities, including both hospitals and freestanding birthing centers. These standards reflect aspects of care—both processes and outcomes—that can be substantially influenced by provider performance. Four of the five measures previously endorsed by NQF have been retired and replaced by this measure set. The purpose of these consensus standards is to improve the quality of maternal-child care—through accountability and public reporting—by standardizing quality measurement in all relevant care settings.
National Voluntary Consensus Standards for Perinatal Care 2008

- Elective delivery prior to 39 completed weeks gestation
- Incidence of episiotomy
- Cesarean rate for low-risk first birth women
- Prophylactic antibiotic in C-section
- Appropriate DVT prophylaxis in women undergoing cesarean delivery
- Birth trauma rate measures (harmonized)
- Hepatitis B vaccine administration to all newborns prior to discharge
- Appropriate use of antenatal steroids
- Infants under 1500g delivered at appropriate site
- Nosocomial blood stream infections in neonates
- Birth dose of hepatitis B vaccine and hepatitis immune globulin for newborns of mothers with chronic hepatitis B
- Exclusive breastfeeding at hospital discharge
- First temperature within one hour of admission to NICU AND
- First NICU temperature <36°C (paired measures)
- Retinopathy of prematurity screening
- Timely surfactant administration to premature neonates
- Neonatal immunization
Appendix A
Specifications of the National Voluntary Consensus Standards for Perinatal Care 2008

THE FOLLOWING TABLE PRESENTS the detailed specifications for the National Quality Forum (NQF)-endorsed® National Voluntary Consensus Standards for Perinatal Care 2008. All information presented has been derived directly from measure sources/developers without modification or alteration (except when the measure developer agreed to such modification during the NQF Consensus Development Process) and is current as of October 20, 2008. All NQF-endorsed voluntary consensus standards are open source, meaning they are fully accessible and disclosed.
<table>
<thead>
<tr>
<th>MEASURE TITLE</th>
<th>MEASURE NUMBERS</th>
<th>IP OWNER(S)</th>
<th>NUMERATOR</th>
<th>DENOMINATOR</th>
<th>EXCLUSIONS</th>
<th>DATA SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective delivery prior to 39 completed weeks gestation*</td>
<td>Measure ID #: 0469</td>
<td>HCA/ St. Marks Perinatal Center</td>
<td>Babies from the denominator electively delivered prior to 39 completed weeks gestation.</td>
<td>All singletons delivered at ≥ 37 completed weeks gestation.</td>
<td>Post-dates (ICD-9 code 645), IUGR (656.5), oligohydramnios (658.0), hypertension (642), diabetes (648.0), maternal cardiac disease (648.8), previous stillbirth (648.5), placental abruption (648.6), placenta previa (641), unspecified antenatal hemorrhage (646.2), maternal renal disease (646.7), acute fatty liver or pregnancy (651), multiple gestation (652), malpresentation (656.1), isoimmunization (656.2), maternal coagulopathy (656.4), fetal demise (657), hydranios (658.1), and ruptured membranes (649.3), V27.1.</td>
<td>Medical records.</td>
</tr>
</tbody>
</table>

* Time-limited endorsement.

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AHQR - Agency for Healthcare Research and Quality (www.ahrq.gov)
Asian Liver Center at Stanford (http://liver.stanford.edu)
CMQCC - California Maternal Quality Care Collaborative (www.cmqcc.org)
CDC - Centers for Disease Control and Prevention (www.cdc.gov)
Child Health Corporation of America (www.chca.com)
Christiana Care Health Services (www.christianacare.org)
CWISH - Council of Women and Infants Specialty Hospitals (www.cwish.org)
HCA - Hospital Corporation of America, Inc./St. Marks Perinatal Center (www.hcahealthcare.com)
Massachusetts General Hospital (www.massgeneral.org)
NPIC - National Perinatal Information Center (www.npic.org)
Providence St. Vincent Medical Center (www.providence.org)
Vermont Oxford Network (www.vtoxford.org)
### Incidence of episiotomy

<table>
<thead>
<tr>
<th>MEASURE TITLE</th>
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</thead>
<tbody>
<tr>
<td>Cesarean rate for low-risk first birth women</td>
<td>Measure ID #: 0470</td>
<td>Christiana Care Health Services NPIC</td>
<td>Number of patients from the denominator with episiotomy procedures (CPT code: 59410 or ICD-9 codes 72.1, 72.21, 72.31, 72.71; 73.6 code with 75.6) performed.</td>
<td>Number of vaginal deliveries (CPT 59410 or by DRG).</td>
<td>Vaginal deliveries complicated by a shoulder dystocia (ICD-9 660.41 or 660.42).</td>
<td>Claims, medical records, electronic health records.</td>
</tr>
</tbody>
</table>

### Prophylactic antibiotic in C-section

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>Measure ID #: 0472</td>
<td>Massachusetts General Hospital</td>
<td>Number of patients who received prophylactic antibiotics within one hour prior to surgical incision or at the time of delivery.</td>
<td>All patients undergoing cesarean section without evidence of prior infection or already receiving prophylactic antibiotics for other reasons.</td>
<td>Patients who had a principal ICD-9 diagnosis code suggestive of preoperative infectious disease (as defined in Appendix A, Table 5.09 of the Specification Manual for National Hospital Quality Measures, Version 2.2, and future updates). Patients who were receiving antibiotics within 24 hours prior to surgery, except that prophylaxis with penicillin or ampicillin for group B streptococcus (GBS) is not a reason for exclusion. Patients with physician/advanced practice nurse/physician assistant/certified nurse midwife documented infection or prophylaxis for infection, except that prophylaxis for GBS is not a reason for exclusion. Patients who undergo other surgeries within 3 days before or after the cesarean section.</td>
<td>Administrative, medical records, clinician survey, paper medical record, and electronic health record.</td>
</tr>
</tbody>
</table>
### Appendix A – Specifications of the National Voluntary Consensus Standards for Perinatal Care 2008

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<th>MEASURE TITLE</th>
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<tr>
<td>Appropriate DVT prophylaxis in women undergoing cesarean delivery*</td>
<td>Measure ID #: 0473  Review #: PN-006-07</td>
<td>HCA/ St. Marks Perinatal Center</td>
<td>Patients from the denominator who receive either fractionated or unfractionated heparin or pneumatic compression devices prior to surgery.</td>
<td>All women undergoing cesarean delivery.</td>
<td>None.</td>
<td>Medical records.</td>
</tr>
<tr>
<td>Birth trauma rate measures (harmonized)*</td>
<td>Measure ID #: 0474  Review #: PN-002/019-07</td>
<td>AHRQ NPIC</td>
<td>Discharges from the denominator with one of the following birth outcomes: 1. ICD-9-CM code 7670: subdural and cerebral hemorrhage due to trauma, intrapartum anoxia, or hypoxia 2. 76711: epicranial subaponeurotic hemorrhage (massive) 3. 7673: injuries to skeleton (excludes clavicle) 4. 7674: injury to spine and spinal cord 5. 7675: facial nerve injury 6. 7677: other cranial and peripheral nerve injuries 7. 7678: other specified birth trauma 8. 767.8: other specified birth trauma, eye damage, hematoma of liver, testes, vulva, rupture of liver, spleen, scalpel wound, traumatic glaucoma.</td>
<td>All neonates within a hospital. A neonate is any newborn aged 0 to 28 days (inclusive) at discharge with: 1. An ICD-9-CM code for in-hospital liveborn birth; OR 2. An admission type of newborn, age in days at admission equal to 0, and no code for an out-of-hospital birth; OR 3. Any DRG in MDC 15 (if age in days is missing).</td>
<td>Infants with a birth weight of less than 2000g (ICD-9-CM codes 765.00-07, 765.11-17). Infants with any diagnosis code of osteogenesis imperfecta (756.51). Infants with injury to the brachial plexus, palsy or paralysis, Erb's palsy (767.6).</td>
<td>Claims/discharge abstract data.</td>
</tr>
</tbody>
</table>
### Measure Title

- **Hepatitis B vaccine administration to all newborns prior to discharge**
- **Appropriate use of antenatal steroids**
- **Infants under 1500g delivered at appropriate site**

### Measure Numbers

- **Hepatitis B vaccine administration to all newborns prior to discharge**: Measure ID #: 0475, Review #: PN-001-07
- **Appropriate use of antenatal steroids**: Measure ID #: 0476, Review #: PN-016-07
- **Infants under 1500g delivered at appropriate site**: Measure ID #: 0477, Review #: PN-022-07

### Numerator

- **Hepatitis B vaccine administration to all newborns prior to discharge**: Number of newborns from the denominator administered hepatitis B vaccine (CPT for hepatitis B vaccine - 90744, CPT for immunization administration 90471, diagnosis code V05.3 for hepatitis B vaccination) prior to discharge.
- **Appropriate use of antenatal steroids**: Number of mothers from the denominator receiving antenatal steroids (corticosteroids administered IM) during pregnancy at any time prior to delivery.
- **Infants under 1500g delivered at appropriate site**: Liveborn infants from the denominator with birthweight <1500g at the given birth hospital.

### Denominator

- **Hepatitis B vaccine administration to all newborns prior to discharge**: Number of live newborns discharged from the hospital.
- **Appropriate use of antenatal steroids**: Total number of mothers who delivered preterm infants (24-32 weeks with preterm premature rupture of membranes or 24-34 weeks with intact membranes).
- **Infants under 1500g delivered at appropriate site**: All live births over 24 weeks gestation at the given birth hospital.

### Exclusions

- **Hepatitis B vaccine administration to all newborns prior to discharge**: Parental refusal.
- **Appropriate use of antenatal steroids**: None.
- **Infants under 1500g delivered at appropriate site**: None.

### Data Source

- **Hepatitis B vaccine administration to all newborns prior to discharge**: Claims, medical records, clinical database, pharmacy data, and electronic health record data.
- **Appropriate use of antenatal steroids**: Medical record, clinical database, electronic health record.
- **Infants under 1500g delivered at appropriate site**: Birth records.

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*Level III subspecialty NICUs have the personnel and equipment to care for infants <1500 grams. Hospitals that do not have Level III NICUs should have low rates for this measure, indicating appropriate transfer of a mother at risk of preterm delivery to a facility capable of providing Level III care for a very low birthweight infant.*

**American Academy of Pediatrics guidelines for Levels of Care:** http://aappolicy.aapublications.org/cgi/reprint/pediatrics;114/5/1341.pdf.
## MEASURE TITLE
Nosocomial bloodstream infections in neonates*

## MEASURE NUMBERS
Measure ID #: 0478
Review #: PN-003-07

## IP OWNER(S)*
AHRQ

## NUMERATOR
Any diagnosis code for:
- Staphylococcal septicemia, unspecified [038.10]
- *Staphylococcus aureus* septicemia [038.11]
- Other staphylococcal septicemia [038.19]
- Gram-negative organism NOS [038.40]
- Septicemia due to other gram-negative organisms, *Escherichia coli* [038.42]
- Septicemia due to other gram-negative organisms, *Pseudomonas* [038.43]
- Septicemia due to other gram-negative organisms, *Serratia* [038.44]
- Septicemia due to other gram-negative organisms, other [038.49]
- Disseminated candidiasis/Systemic candidiasis [112.5].

OR Patients with one of the following diagnosis codes:
- Septicemia (sepsis) of newborn [771.81] OR
- Bacteremia of newborn [771.83] OR
- Bacteremia [790.7]

AND one of the following diagnosis codes:
- Streptococcus group D (*Enterococcus*) [041.04]
- Staphylococcus, unspecified [041.10]
- *Staphylococcus aureus* [041.11]
- Other staphylococcus [041.19]
- Friedländer’s bacillus (*Klebsiella pneumoniae*) [041.3]
- *Escherichia coli* [041.4]
- *Pseudomonas* [041.7].

## DENOMINATOR
All inborn and outborn infants (admitted at 0-28 days) with a birthweight between 500 and 1499g OR a gestational age between 24 and 30 weeks AND all inborn and outborn infants with a birthweight greater than or equal to 1500g, if the infant experienced death, major surgery, mechanical ventilation or transfer in or out from/to an acute care facility.

Inborn refers to neonates born within that institution, outborn refers to neonates born elsewhere but transferred within the first 2 days of life.

## EXCLUSIONS
Patients with a principal diagnosis of sepsis or bacterial infection.
Patients with a length of stay of less than 2 days.

## DATA SOURCE
Claims/discharge abstract data.

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<tr>
<td>Nosocomial bloodstream infections in neonates*</td>
<td>Measure ID #: 0478, Review #: PN-003-07</td>
<td>AHRQ</td>
<td>Any diagnosis code for:</td>
<td>All inborn and outborn infants (admitted at 0-28 days) with a birthweight between 500 and 1499g OR a gestational age between 24 and 30 weeks AND all inborn and outborn infants with a birthweight greater than or equal to 1500g, if the infant experienced death, major surgery, mechanical ventilation or transfer in or out from/to an acute care facility. Inborn refers to neonates born within that institution, outborn refers to neonates born elsewhere but transferred within the first 2 days of life.</td>
<td>Patients with a principal diagnosis of sepsis or bacterial infection. Patients with a length of stay of less than 2 days.</td>
<td>Claims/discharge abstract data.</td>
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<tr>
<td>Birth dose of hepatitis B vaccine and hepatitis immune globulin for newborns of mothers with chronic hepatitis B*</td>
<td>Measure ID #: 0479 Review #: PN-025-07</td>
<td>Asian Liver Center at Stanford University</td>
<td>Number of newborns from the denominator who receive birth doses of HBV vaccine and HBIG within 12 hours of delivery.</td>
<td>Number of newborns delivered from mothers who tested positive for HBsAg during pregnancy.</td>
<td>Stillbirths.</td>
<td>Medical records, clinical database, laboratory data, and electronic health record data.</td>
</tr>
<tr>
<td>Exclusive breast-feeding at hospital discharge</td>
<td>Measure ID #: 0480 Review #: PN-021-07</td>
<td>California Maternal Quality Care Collaborative</td>
<td>Proportion of the denominator that were fed by “breast only” since birth.</td>
<td>Livebirths not discharged from the NICU who had newborn genetic screening performed.</td>
<td>Infants in the NICU at time of newborn screen and infants who received TPN or other nutrition supplements.</td>
<td>Newborn screening data.</td>
</tr>
<tr>
<td><strong>PAIR MEASURES:</strong></td>
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<tr>
<td><strong>First temperature within one hour of admission to NICU AND</strong></td>
<td>Measure ID #: 0481 Review #: PN-029-07A</td>
<td>Vermont Oxford Network</td>
<td>Patients from the denominator with a first temperature taken within 1 hour of NICU admission.</td>
<td>All NICU admissions with a birth weight of 501-1500g.</td>
<td>Outborn infants admitted more than 28 days after birth. Outborn infants that had been home prior to admission.</td>
<td>Medical records, registries, the Vermont Oxford Network database (when applicable), and the eNICQ data collection instrument.</td>
</tr>
<tr>
<td><strong>First NICU temperature &lt;36°C</strong></td>
<td>Measure ID #: 0482 Review #: PN-029-07B</td>
<td></td>
<td>Patients from the denominator whose first temperature was below 36°C.</td>
<td>All NICU admissions with a birth weight of 501-1500g whose first temperature was measured within one hour of admission to the NICU.</td>
<td>Infants without temperature taken within 1 hour of NICU admission.</td>
<td></td>
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<tr>
<td><strong>Retinopathy of prematurity screening</strong></td>
<td>Measure ID #: 0483 Review #: PN-030-07</td>
<td>Vermont Oxford Network</td>
<td>Number of infants from the denominator receiving a retinal exam for ROP.</td>
<td>Number of infants aged 22 to 29 weeks gestation hospitalized at the postnatal age at which a retinal exam is recommended by the American Academy of Pediatrics.</td>
<td>Outborn infants admitted more than 28 days after birth. Outborn infants that had been home prior to admission.</td>
<td>Medical records, registries, the Vermont Oxford Network database (when applicable), and the eNICQ data collection instrument.</td>
</tr>
<tr>
<td><strong>Timely surfactant administration to premature neonates</strong></td>
<td>Measure ID #: 0489 Review #: PN-031-07</td>
<td>Vermont Oxford Network</td>
<td>Patients from the denominator treated with surfactant within 2 hours of birth.</td>
<td>Number of infants born at 22 to 29 weeks gestation treated with surfactant at any time.</td>
<td>Outborn infants admitted more than 28 days after birth. Outborn infants that had been home prior to admission.</td>
<td>Medical records, registries, and the Vermont Oxford Network database (when applicable).</td>
</tr>
<tr>
<td><strong>Neonatal immunization</strong></td>
<td>Measure ID #: 0145 Review #: PN-032-07</td>
<td>Child Health Corporation of America</td>
<td>Patients from the denominator receiving the following immunizations according to current AAP guidelines:  - DtaP  - HepB  - IPV  - Hib  - PCV</td>
<td>Neonates with a length of stay greater than 60 days.</td>
<td>Documented parent refusal and mortalities. The developer recommends that the measure be suspended when there are vaccine shortages rather than including vaccine unavailability as an exclusion.</td>
<td>Retrospective review of both administrative and medical records data. Manual collection is required for parent refusal and cross-reference to administrative data.</td>
</tr>
</tbody>
</table>

\[b\] Previously endorsed measure; evaluated as part of NQF’s ongoing measure maintenance activities.